DRAFT FINAL REMEDIAL INVESTIGATION / FEASIBILITY STUDY
FORMER BOTHELL PAINT AND DECORATING SITE
BOTHELL, WASHINGTON
HWA Project No. 2007-098-2021

Prepared for
City of Bothell

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HWA GEOSCIENCES INC.
- *Geotechnical Engineering*
- *Hydrogeology*
- *Geoenvironmental Services*
- *Inspection & Testing*

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES (FOLLOWING TEXT)

APPENDICES

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1. INTRODUCTION

This Draft Remedial Investigation/Feasibility Study (RI/FS) was prepared for the former Bothell Paint and Decorating site (Site) located in Bothell, Washington. The RI/FS is being conducted under Agreed Order DE 6296, dated February 3, 2009, as amended by Amendment No. 1 to Agreed Order, dated June 9, 2010, between the City of Bothell (City) and the Washington State Department of Ecology (Ecology) to address soil and ground water contamination related to historical releases of hazardous substances at the Site. Requirements under the Agreed Order include performance of an RI/FS and development of a draft Cleanup Action Plan (dCAP).

The City acquired the Bothell Paint property in 2008 for construction of the SR 522 realignment, and entered into an Agreed Order with Ecology in 2009. RI activities were initiated in 2009, and finalized in 2016. Interim action soil cleanups were conducted in 2010, 2013 and 2014 at the Site.

Additional RI activities were performed between February 2013 and March 2015 following Ecology's approval of the final RI/FS Work Plan and in accordance with the Ecology-approved project work plans (HWA, 2009a; Parametrix, 2010b). Due to accessibility issues, Ecology approved a phased approach to conduct limited RI's whose results would ultimately be incorporated in this draft RI/FS report. This RI/FS report documents the results of the RI and interim action soil cleanups conducted in 2010 and 2013 at the Site (HWA, 2011; HWA, 2014). Figure 1 depicts the Site location and vicinity.

The Ecology project coordinator is Jerome Cruz, 3190 160th Ave SE, Bellevue, WA 98008, (425) 649-7000. The Project Coordinator for the City of Bothell is Steven Morikawa, 9654 NE 182nd Street, Bothell, WA 98011, (425) 486-2768, ext. 4443.

The City owns the Site, a portion of which accommodates the newly realigned State Route (SR) 522. Figure 2A depicts the previous alignment of SR 522 through the Site and adjacent properties. The realignment of SR 522 split the Site into three areas: a portion of new City Parcel, a portion of City Right-of-Way, and a portion of new Lot C (see Figures 2A and 2B). The two new lots north and south of the new SR 522 roadway will be redeveloped as part of the City's overall Downtown Revitalization Plan.

The interim action total petroleum hydrocarbon (TPH) soil cleanups conducted prior to and concurrent with this RI were completed in two phases; the first one in 2010, before the roadway realignment; and the second one in 2013/2014, after the roadway realignment. This phasing was necessary in order to effectively manage access to contaminated soils beneath the old (operational in 2010) and the new roadways (operational in 2013), with minimal impacts to traffic. The interim action cleanups were performed in compliance with the terms and conditions of the 2009 Agreed Order as amended between Ecology and the City.

Tasks performed to-date to fulfill the Agreed Order include:

1. Preparation and submittal to Ecology of the *Remedial Investigation and Feasibility Study Work Plan* (HWA, 2009a)
2. Remedial investigation (RI) activities in 2009
3. Initiation of a feasibility study (FS) in 2009
4. Preparation and submittal to Ecology of the *Bothell Paint and Decorating Remedial Investigation/Feasibility Study,* which has not been finalized or approved pending completion of interim actions and ground water monitoring (Parametrix, 2009)
5. Preparation and submittal to Ecology of an *Interim Action Work Plan* (Parametrix, 2010b)
6. Preparation and submittal to (and approval by) Ecology of the Final RI/FS Work Plans for Bothell Paint & Decorating Site (Parametrix, 2010). A copy of this work plan is included in Appendix A (on CD).
7. Completion of the interim action soil cleanups in 2010 and 2013/2014, and submittal of interim action reports:
   - Documentation of Interim Action at Former Bothell Paint & Decorating Site (HWA, 2011)
   - Interim Action Cleanup Report, Bothell Paint & Decorating Site (HWA, 2014a)
8. Work performed in response to Ecology letter dated June 28, 2011: Summary of Cleanup Status for Bothell Paint & Decorating Site (Agreed Order No. 6296). A copy of this letter is included in Appendix B.
9. Work performed in response to Ecology letter dated July 30, 2012: Summary of Site Issues and Next Steps for Bothell Paint & Decorating, Bothell Former Hertz and Bothell Landing sites. A copy of this letter is included in Appendix C.
10. Completion of four Quarterly Ground Water Letter Reports submitted (HWA, 2014 a, b, c; HWA, 2015a, b)

Remaining tasks to fulfill terms and conditions of the Agreed Order include preparation of this RI/FS report (Deliverables 5 and 6), and draft cleanup action plan (dCAP, Deliverable 7).

1.1. SITE LOCATION AND DESCRIPTION

The Site was defined in the Agreed Order (prior to completion of this RI) as consisting of the extent of contamination caused by the release of hazardous substances from a former 0.79-acre property generally located at 18004 and 18005 Bothell Way NE (former King County Tax Parcel Nos. 945720-0081 and 945720-0072) and the adjacent parcel to the east (Figure 2C). The 0.79-acre parcel no longer exists in its original configuration (as depicted in the Agreed Order), although the City still currently owns that land, which includes public right-of-way for the newly constructed and re-aligned SR 522, and portions of the former SR 522 and NE 180th street roadways, which now lie on two newly formed parcels north (Lot C) and south (the City Parcel) of the new roadway. Ecology's Facility Site ID is # 93536765. The latitude of the Site is generally 47.75885 and the longitude is -122.21012.

The legal description of the former 0.79 acre property is:

> TAX PARCEL 9457200081: LOT 8, WILSON'S GARDEN TRACTS, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 22 OF PLATS, PAGE 91, IN KING COUNTY. WASHINGTON; EXCEPT THAT PORTION OF SAID PREMISES CONVEYED TO THE STATE. OF WASHINGTON FOR ROAD PURPOSES BY DEEDS RECORDED UNDER RECORDING NUMBERS 2783224 ANO 2839172.
>
> TAX PARCEL 9457200072: THE WEST 47.17 FEET OF TRACT 7, WILSON'S GARDEN TRACTS. ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 22 OF PLATS, PAGE 91, RECORDS OF KING COUNTY, WASHINGTON; EXCEPT THOSE PORTIONS OF SAID TRACT 7 CONVEYED TO THE STATE OF WASHINGTON FOR ROAD PURPOSES RECORDED UNDER RECORDING NUMBERS 2783219 ANO 2783222.

The City acquired the original two parcels comprising the Site from Victory Development LLC, and from Leonard P. Giannola in 2008 (Ecology, 2010). Prior property use was mixed commercial and retail.

Per MTCA, a "Site" is "*any site or area where a hazardous substance…has been deposited, stored, disposed of, or placed, or otherwise come to be located*." Site boundaries are established through the RI process. Whereas the Site was originally defined as including a 0.79-acre property (which no longer exists due to re-platting of parcels and construction of the new roadway) the findings of this RI establish the Bothell Paint and Decorating Site suggest the boundaries as shown on Figure 2B.

1.2. OBJECTIVES

The objective of the RI/FS report is to meet the requirements of the Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Cleanup Regulation (Washington Administrative Code [WAC] 173-340) to characterize the Site and to evaluate any proposed remedial actions to address the contamination.

The RI is designed to characterize Site conditions, including site physical characteristics, nature and extent of contaminants of concern, media impacted, source areas, contaminant migration pathways, rates, and directions, potential receptors, and develop a site conceptual model. This was accomplished using existing data as well as conducting site-specific investigations. The RI findings were then used to complete the FS (Section 8 below); i.e., to evaluate remedial alternatives for the Site and recommend a cleanup action as described in WAC 173-340-360 through 173-340-390. The recommended cleanup alternatives are then detailed in Section 10.

The primary historical environmental concerns at the Site are associated with petroleum- and metals-impacted soil at the Site related to historic releases at the Site. Previous investigations (HWA, 2008 a,b,c,d; HWA, 2009, Parametrix 2009) did not detect other possible contaminants at the site.

Specific objectives of the RI/FS include:

- Identify potential sources of hazardous substances for all potentially contaminated media and carry out sufficient investigation to characterize the distribution of hazardous substances present at the site and any associated threat to human health and the environment. Section 5.1 of this report contains a list of chemicals of concern (COCs) and describes the process by which they were selected.
- Investigate site geology, hydrogeology, and ground water flow/transport characteristics, including the potential for preferential contaminant migration pathways (e.g., utility trenches)
- Develop a conceptual site model (exposure pathways and receptors)
- Discuss preliminary cleanup standards and remedial action objectives
- Identify and screen feasible remedial technologies
- Assemble and screen remediation alternatives
- Perform a detailed evaluation of the screened remediation alternatives
- Propose and describe a preferred cleanup alternative

1.3. HISTORIC PROPERTY USE AND PREVIOUS SITE ASSESSMENTS

Details of historic property use and the several site assessments performed to date at the Site can be found in HWA (2008a, b, c, d), HWA (2009b), and Parametrix (2009). The following is a summary of those assessments, some of which were carried out before the property became a formal MTCA site.

Past owners of the former 0.79-acre property include the following:

- Victory Development LLC- 2005 to 2009
- Leonard P. Giannola – 1993 to 2009
- City of Bothell – 2009 to present

Based on studies conducted prior to the Agreed Order, a former tenant conducted sandblasting operations in the southern portion of the Site resulting in shallow soils containing metals and petroleum hydrocarbons in concentrations exceeding MTCA cleanup levels. Locations of sandblast grit form these operations are shown on Figure 3. Heavy metals in soil were from surficial deposition of sandblast grit and paint residue. Shallow petroleum soil impacts were from an air compressor blowdown pipe discharging to the ground surface in the south portion of the Site (see Figure 3). One soil sample collected in the sandblast area contained cadmium exceeding Washington State Dangerous Waste requirements (Chapter 173-303 WAC) (Ecology, 2010). Ground water samples collected in the sandblast area had lead and arsenic concentrations exceeding MTCA cleanup levels (HWA, 2008c, d).

A 1,000-gallon underground storage tank (UST) was removed in the western area of the Site in 1988 (see Figure 3). A hole in the UST was observed at the time of removal. Petroleum liquid (free product) was reported in the excavation on the surface of ground water. A soil sample collected from the sidewall of the excavation during tank removal contained petroleum hydrocarbons above MTCA cleanup levels (HWA, 2008a). Further environmental investigations were conducted by HWA (2008c, d) and Parametrix (2009) at the property. During those investigations, low concentrations of volatile organic compounds (VOCs) not exceeding MTCA cleanup levels were detected in ground water adjacent to the former leaking UST.

1.4. CURRENT AND PLANNED SITE USE

Past property use was mixed commercial and retail, including a floor covering and home fixtures retailer, preserved fruit distributor, pottery distributor, welding shop, and espresso kiosk. The Site now partly accommodates the new SR 522 roadway and related utilities and infrastructure, while remaining portions not occupied by the roadway will be redeveloped as part of the City's overall Downtown Revitalization Plan.

Figure 2E shows zoning in the study area. Zoning of the Site is designated as:

- North of SR522: General commercial - comprises more intensive retail and service uses, typically requiring outdoor display and/or storage of merchandise; tends to generate noise as a part of operations. Uses include but are not limited to auto, boat and recreational vehicle sales lots, tire and muffler shops, equipment rental, and mini-warehouses and vehicle storage.
- South of SR522: Park and Public Open Space - pedestrian oriented retail is allowed and the land is intended for uses including passive enjoyment of natural open space, picnicking, pet-walking, etc.
- Roadway and area southeast of roadway - SR-522 corridor zoning - business functions on routes to and from the Downtown Core such as corridor configured lodging, workplace and residential buildings.

No changes to the current zoning are anticipated.

2. ENVIRONMENTAL SETTING

2.1 PHYSICAL CONDITIONS / TOPOGRAPHY

The property and surrounding land is generally flat lying at an elevation of approximately 30 feet above mean sea level and slopes gently to the south/southeast towards the Sammamish River. A small retaining wall at the west-central portion of the site was removed, and the land filled and graded to accommodate the new roadway after the interim action soil cleanup described herein. The site and land to the east was preloaded and regraded to mitigate compressible peat soils prior to construction of the roadway.

2.2 GEOLOGY

Site soils typically consist of silty sand fill over alluvial soil consisting of interbedded silt and peat. Interbedded alluvial sand and silt occurs below the peat. Much of the fill material is likely dredged spoils placed on the property from realignment of the Sammamish River in the 1960s (HWA, 2008d). Peat or silt beds with high organic content up to 13 feet thick are present within the alluvial soil, generally at depths greater than 7 feet below ground surface (bgs). These compressible, organic-rich beds appear to underlie much of the Site. Boring logs for various investigations are included in Appendix D.

2.3 HYDROGEOLOGY

Ground water generally occurs between approximately 2 and 9.5 feet bgs, with confined artesian (flowing) conditions observed in the southwest portion of the site prior to regrading. Based on water level surveys of the area, ground water flow is to the east-southeast toward the Sammamish River located approximately 300 feet to the southeast A ground water contour map showing flow directions is illustrated on Figure 4. Appendix E contains ground water gradient maps prepared on various dates when more wells were present at the Site.

The measured ground water gradient, i, ranged from 0.035 to 0.06 feet per foot. The estimated hydraulic conductivity, K, for the water-bearing zone ranged from 6.8×10^{-4} to 1.1×10^{-3} feet per minute (0.98 to 1.58 feet per day) based on slug testing (Parametrix, 2009). Assuming an effective porosity, n_e, of 0.2 for the aquifer materials at the site, ground water flow velocities in the water-bearing zone, based on the relationship
$V = Ki / n_e$ are estimated to range from:

0.98 ft/d x 0.03536 / 0.2 = 0.17 feet/day = 63 feet/year to
1.58 ft/d x 0.0576 / 0.2 = 0.45 feet/day = 166 feet/year.

3. INTERIM ACTION SOIL CLEANUPS

The interim actions were performed in order to allow for the construction of the realigned SR522 roadway in newly remediated areas. The two interim actions for contaminated soil at the Site included excavation and off-site disposal of all accessible impacted soils as documented in various soil cleanup documents submitted to Ecology (refer to Section 1). The following sections describe the soil cleanups, confirmation sampling results, and findings obtained as part of the interim cleanups. Interim action cleanup reports are included in Appendices C and D.

2010 interim action – The City engaged a construction contractor, Hos Brothers Construction of Woodinville, Washington, to perform the interim action soil cleanup in August through October of 2010; HWA personnel monitored the cleanup activities and sampled soil to confirm successful cleanup. Prior to site cleanup, the Contractor demolished all the building slabs and parking lots and cleared and grubbed the Site in preparation for the soil cleanup and subsequent construction of the SR 522 realignment.

2013 interim action – The City engaged a construction contractor, Guy Atkinson of Renton, Washington, to perform the interim action soil cleanup during the 2013/2014 construction season, as part of and during construction of the new SR 522 roadway. HWA personnel monitored the cleanup activities and sampled soil to confirm successful cleanup.

3.1 PRE-CLEANUP CHARACTERIZATION

Prior to the large scale excavation activities at the Site in 2010 and 2013, HWA personnel conducted test pit characterization (i.e., “pot holing”) to 1) delineate clean overburden soils at the Site, 2) to assess the lateral and vertical extent of petroleum and metals impacted soils with respect to previous investigations, and 3) to characterize excess soils excavated for utility and roadway construction for disposal.

HWA’s initial test pit characterization activities included collecting samples of petroleum-impacted soil for analysis of petroleum hydrocarbon fractionation and other target compounds in order to calculate MTCA Method B risk-based soil cleanup levels for protection of human health and potable ground water. The results of the of the Method B risk analysis are presented in Appendix F and summarized in Table 1. Results of the pre-excavation test pits are included in Table 2.

During the first phase of the interim action, twenty seven test pits were excavated in August 2010 using a rubber-tired backhoe operated by the Contractor. Fifteen additional test pits were excavated and sampled from March through October 2013 during the second phase of interim action. Figure 5 shows test pit locations. Test pits were excavated to a maximum depth of 8 feet bgs. HWA personnel collected a total of thirty representative soil samples at various depths within the test pits for chemical analysis. Additional samples were collected in some of the deeper test pits and were put on hold at the laboratory in the event that analysis of shallower test pit soils indicated that analysis of deeper soil was not warranted.

The soil cleanup area was selected on the basis of the test pit and prior sampling results, i.e., areas where soil samples were found to exceed the cleanup levels were selected for excavation and cleanup.

3.2 SOIL EXCAVATION

2010 interim action – HWA (2011) documents the 2010 interim action cleanup. Interim Actions were conducted per Amendment No. 1 to the Agreed Order, dated June 9, 2010. The Contractor excavated contaminated soil at the Site between September 9 and October 11, 2010. HWA personnel directed the cleanup based upon prior sampling, as well as field screening information such as soil color, odor, and photoionization detector readings. When the screening information indicated clean soil, HWA collected confirmation samples for laboratory analyses to document that the soils left in place met the Site cleanup levels. Where confirmation sample results exceeded cleanup levels, the Contractor and HWA performed additional excavation and sampling until the cleanup goals were achieved.

Soil excavation generally proceeded from south to north. Contaminated soil was excavated generally down to the contact with a peat horizon underlying the site, which was found to meet the cleanup levels. The approximate limits of soil excavation are shown on Figure 5. The final excavation was approximately 150 by 180 feet in its maximum width and length. The depth of the excavation ranged from approximately 4 to 11 feet bgs.

Along the northern property boundary, contaminated soil was left in place adjacent to SR 522 to protect the structural integrity of the active roadway and associated sidewalk and underground utilities. Soils excavated in the northern portion of the Site contained sections of cut logs, broken concrete, and small quantities of metal and glass debris from about 2 to 10 feet bgs and lying immediately above the peat horizon. The Contractor segregated and stockpiled the broken concrete for recycling (after HWA testing confirmed it was not contaminated) and transported the other debris with contaminated soil to the CEMEX USA (formerly Rinker) facility in Everett, Washington for thermal desorption treatment followed by permitted landfill disposal. Contaminated soils that could not be treated by thermal desorption were transported to alternate licensed disposal facilities. A total of 7,083.05 tons of soil were excavated and transported to the CEMEX facility.

A total of 56.22 tons of metals-impacted soil presumed to be sandblast grit was disposed of at the Allied Waste Services / Regional Disposal Company RCRA Subtitle D landfill in Klickitat County, Washington. These soils were located in the vicinity of one sample found to contain cadmium exceeding Washington State Dangerous Waste requirements, and were visually segregated and stockpiled for testing. The additional testing determined the soil did not classify as Dangerous Waste (Table 2).

2013 interim action – HWA (2014) documents the 2013 interim action. Interim Actions were conducted per Amendment No. 1 to the Agreed Order, dated June 9, 2010. That cleanup was conducted in three stages to align with the contractor's work sequencing:

- UST area in the western portion of the Site
- NE 180th street, immediately adjacent to and south of the former property
- Vacated SR 522 roadway immediately adjacent to the former northern property boundary

UST area – in March 2013, the area around a former UST was over-excavated to remove all contaminated soils (see Figure 5). Three confirmation samples collected at the bottom and sidewalls of the excavation all met the Site cleanup levels. Approximately 22 tons of excavated petroleum-affected soils from this area were disposed of off-site at CEMEX in March 2013.

NE 180th Street area – On March 29, 2013, the contractor encountered suspected petroleum contaminated soils during the excavation of a deep (18 feet) utility trench, for installation of a 72-inch diameter storm drain pipe, in an area under the former NE 180th Street right-of-way, and now located under the SR 522 roadway.

HWA collected three confirmation soil samples during trench excavation to document the limited soil remediation. One soil sample was collected from the south sidewall of the trench (approximately 14 feet bgs) one at the excavation base (approximately 18 feet bgs) and one at the north sidewall (approximately 14 feet bgs) (see Figure 5). The north sidewall sample was collected in an area of suspected impacted soils. A sample of excavated, stockpiled soils was also collected.

Confirmation samples collected from the south sidewall (180th-3-14) and base of the excavation (180th-1-18) did not contain detectable concentrations of petroleum hydrocarbons. The sample collected from north sidewall (sample 180th-2-14) contained gasoline and oil-range petroleum hydrocarbons exceeding MTCA Method A cleanup levels (Table 2). Soils associated with this sample were left in place due to the disproportionate cost of attempting to excavate under the network of multiple active utilities. However, this sample location is now located under the new SR 522 roadway, and therefore, the impacted soils that were left in place are capped by the roadway pavement.

The marked increase in petroleum hydrocarbon concentration over such a small area, as well as the absence of petroleum impacts in nearby former sampling locations, suggests a very localized impact and small quantity of impacted soils, estimated at 10 cubic yards. Similarly, petroleum hydrocarbons in ground water at monitoring well BC-11, located 40 feet directly downgradient of sample 180th-2-14, are at concentrations less than MTCA cleanup levels (Table 3) suggesting limited impacts to ground water from the residual soil contamination at location 180th-2-14.

Approximately 150 tons of excavated petroleum-affected soils from this area were disposed of off-site at CEMEX's thermal treatment facility in March 2013.

Vacated SR 522 roadway – In March 2013, the area under the recently vacated SR 522 roadway was made accessible for cleanup of soil left in place in 2010 (see Figure 5). Ten confirmation samples collected at the bottom and sidewalls of the excavation all met the Site cleanup levels. Approximately 189 tons of excavated petroleum-affected soils from this area were disposed of off-site at the CEMEX facility.

3.3 CONFIRMATION SAMPLING

Table 2 summarizes the excavation sidewall and bottom confirmation samples. Figure 5 depicts confirmation sample locations. Sixteen pre-excavation test pit samples collected at the extents of the excavation, and in some cases beyond, are included in Table 2 as confirmation samples because the soils represented by those samples did not contain chemicals of potential concern at concentrations exceeding site cleanup levels. Other than one sample (sample 180th 2-14 listed in Table 2) beneath an active sewer pipe in the former NE 180th Street, (now the new SR 522 roadway), the interim action cleanup achieved the site cleanup levels. Sample 180th 2-14 had gasoline- and oil-range petroleum hydrocarbon concentrations exceeding site cleanup criteria.

One confirmation sample (out of 40) collected in the northwestern portion of the Site (sample P-PEX-19 in an area now under realigned SR 522) had an arsenic concentration of 21 mg/kg and its duplicate sample had an arsenic concentration of 25 mg/kg; both concentrations slightly exceeded the MTCA Method A cleanup level of 20 mg/kg. Per the MTCA, Site-wide compliance with the MTCA cleanup level is established based on the 95 percent upper confidence limit (UCL) of the mean of all confirmation soil sample concentrations. In addition, the following criteria must also be met:

- Data must be normally or log-normally distributed
- No single value can be greater than twice the cleanup level
- No more than 10 percent of samples can exceed the cleanup level

Per the *Statistical Guidance for Ecology Site Managers* (Ecology, 1992), and based on Ecology's recommendations for calculating compliance statistics, the above listed criteria were met. Ecology's Policy and Technical Support Unit, using recommended procedures for establishing compliance using statistical method for censored values, recommended the following options for calculating the 95% UCL:

- Using the maximum value of 25 mg/kg in the dataset be used in place of the upper 95% confidence limit.
- Using a calculated mean arsenic concentration of 13.6 mg/kg (at a 95 percent UCL) by substituting the corresponding PQL for censored values
- Substituting the censored values using Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs for a 95% KM (Percentile Bootstrap) UCL of 12.1 mg/kg [As] as described in the *Sediment Cleanup Users Manual II* (Ecology, 2015)

The Ecology recommendations and statistical analysis is presented in Appendix G. Based on the above options, the arsenic in soil is in compliance.

3.4 GROUND WATER MANAGEMENT

2010 interim action – Minor ground water seepage was present at approximately 8 to 10 feet below original grade at the Site. Ground water flow into the excavation was managed by creating sumps and ponding the water behind soil berms. Accumulated water was removed with a gasoline powered 'trash' pump for temporary storage and settling in an on-site 20,000 gallon storage tank. This dewatering effluent was stored, tested, and discharged by the Contractor under a King County Industrial Waste Division temporary dewatering discharge permit to sanitary sewer, for treatment at King County's wastewater treatment plant.

2013 interim action – No ground water was encountered during the 2013 interim action.

3.5 ORC PLACEMENT

2010 interim action – To facilitate bioremediation following soil removal, the Contractor applied 750 pounds of Oxygen Release Compound® (ORC) along excavation sidewalls where petroleum contaminated soil was left in place. The ORC was prepared by mixing the powdered compound with water in an excavator bucket to form a slurry. The Contractor applied ORC along the northern northwest sidewall along SR 522 at the elevation of ground water seeps (Photo 7). HWA estimates that the ORC slowly released dissolved oxygen to ground water following the cleanup thus encouraging destruction of residual hydrocarbons in soil and ground water by naturally-occurring aerobic bacteria in the soil; which, in addition to the polyethylene sheeting barrier reduced the possibility of re-contamination of clean fill south of the impacted soils.

The polyethylene sheeting was placed on this excavation sidewall prior to backfilling to 1) reduce the possibility of re-contamination of clean fill south of the impacted soils, and 2) provide a marker for the planned second phase of soil cleanup in 2011.

2013 interim action –The 2013 excavation located and removed the polyethylene sheeting placed in 2010, and proceeded northwards until cleanup levels were met, therefore no ORC was used.

3.6 WELL DECOMMISSIONING

Prior to the 2010 cleanup, Slead Construction Inc., a Washington State licensed well drilling contractor under subcontract to the Contractor, decommissioned ground water monitoring well BPMW-3 in accordance with WAC 173-160-381. This well was decommissioned because of its location within the cleanup excavation.

The riser pipes of monitoring wells MW-1 and BC-10, both located just outside the footprint of the new roadway, were extended to accommodate the higher grade of the Site after placement of the soil preload. After removing the well monuments, the riser pipes were extended by attaching a length of bell-ended 2-inch schedule 40 PVC pipe to the top of the existing well riser pipes. The pipes were joined using stainless steel pop rivets.

Wells BPMW-2 and BPMW-5 were decommissioned in 2014 during the Horse Creek realignment project, as they interfered with the new drainage improvements. Horse Creek is an urban drainage system located around 300 feet east of the Site, which was largely re-routed in 2016 to a new drainage system (consisting of pipes and open channel segments) located partly on the Site. The new channel is lined with impermeable membranes in areas of known contamination such that no interaction of ground water and surface water will occur. Figure 2A shows the former and new locations of the Horse Creek Channel.

3.7 SITE RESTORATION

The 2010 and 2013 Site restorations are documented in HWA (2011) and HWA (2014) respectively.

2010 interim action – After excavation of contaminated soil and receipt of confirmation sample analytical results, the Contractor backfilled and compacted the excavation with clean imported structural fill soils meeting the requirements of Select Borrow, per WSDOT Standard Specification 2-03.3(14)K. The imported select borrow was obtained from CEMEX, who mined the sandy soils from a quarry in Granite Falls, Washington (i.e., native quarry materials not excavated or reused from another developed property).

The select borrow and native soils were compacted to Method B of WSDOT Standard Specification 2-03.3(14)C, i.e., 90 percent of maximum dry density as determined using test method ASTM D 1557 (Modified Proctor) below two feet bgs, and 95 percent of maximum dry density for the upper two feet.

The backfilling occurred in stages as portions of the Site were confirmed to have been cleaned up. The excavation was generally backfilled from the south to north as contaminated soil was removed from the Site.

The Contractor placed additional clean imported soils to approximately 15 feet above original grade to preload the site prior to constructing the SR 522 realignment. The purpose of the preload was to consolidate compressible peat soils prior to construction of the roadway.

2013 interim action – The 2013 excavation was also backfilled with clean imported structural fill soils meeting the requirements of Select Borrow, per WSDOT Standard Specification 2-03.3(14)K.

4. REMEDIAL INVESTIGATION

As discussed in Section 3, soil RI activity consisted of sampling inside and outside of the excavation areas at the many locations shown on Figure 5 before and during the interim action cleanups. Soil sampling results are listed in Table 2. Copies of laboratory reports are presented in the interim action cleanup reports (HWA, 2011) (see Appendix H [on CD]) and (HWA, 2014a) (see Appendix I [on CD]). Copies of laboratory reports for soil samples collected subsequent to interim actions are included in Appendix J. The limits of excavation during the interim action cleanups illustrate the extent of soil contamination prior to the cleanups (see Figure 5).

For ground water, RI activities consisted of quarterly ground water monitoring of the approved well monitoring network performed between February 2013 and March 2015 following Ecology's approval of the final RI/FS Work Plan and Addendum #1 (Ecology letter dated February 15, 2013, and in accordance with the Ecology-approved project work plans (HWA 2010a, b). A copy of the final RI/FS work plan and Addendum #1 are included in Appendix K. Due to accessibility issues, Ecology approved a phased approach to conduct limited RI's whose results are now incorporated in this RI/FS report.

One year (four quarters) of ground water monitoring at the Site was performed between May 2014 and March 2015, with letter reports documenting the test results submitted to Ecology on a quarterly basis (HWA, 2014b; HWA, 2014c; 2015a; HWA, 2015b). Ground water at the Site has been investigated since 2008 at which time the former sand blasting operation was targeted for environmental assessment. For evaluation purposes, both historical and current ground water data were compared to MTCA Method A Cleanup Levels for Ground Water (WAC 173-340-900 Table 720-1). Historical ground water analytical data were compiled by Parametrix (2009) and are presented in Appendix E. Post-soil-cleanup ground water analytical data collected by HWA are presented in Table 3. Monitoring well locations are shown on Figure 2B. Monitoring well logs are presented in Appendix D. Appendix J contains copies of laboratory reports for soil samples collected subsequent to interim actions. A data quality assessment for the laboratory reports is included in Appendix L.

4.1 PETROLEUM HYDROCARBONS (INCLUDING BTEX)

All ground water samples collected during the RI were analyzed for petroleum hydrocarbons. Prior to the two soil cleanup efforts, petroleum hydrocarbons were detected in well BC-10 in the motor oil range and push-probe exploration GB-2 in the gasoline range. The BC-10 concentration was above the cleanup level and the GB-2 concentration was less than the cleanup level. BTEX (benzene, toluene, ethylbenzene, and xylenes) was also detected in GB-1, GB-2, VB-2, VB-4, VB-5, and VB-6. All were detected at less than the cleanup levels. One constituent (gasoline) was detected below the cleanup level in a single well (BPMW-2) (Parametrix, 2009). Pre-cleanup ground water analytical data are presented in Appendix E. Well locations where ground water monitoring was performed are illustrated on Figure 2B. Wells where TPH concentrations exceeded MTCA Method A cleanup levels are also illustrated on Figure 2C.

Following the two soil cleanups at the Site, diesel- and oil-range petroleum hydrocarbons were detected above cleanup levels sporadically in wells BC-10 and BPMW-6 (Table 3).

In the following correspondence, Ecology provided comments that have been addressed in Section 3, Interim Action Soil Cleanups and Section 5, Nature and Extent of Contamination:

- Ecology's letter dated June 28, 2011 – *Summary of Cleanup Status for Bothell Paint & Decorating site (Agreed order No. 6296)* (Appendix B);
- Ecology letter, July 30, 2012 – *Agreed Order Amendments for Bothell Paint & Decorating, Former Hertz, and Landing sites* (Appendix C); and,
- Ecology letter, February 15, 2013 – *September 14, 2012 response by City of Bothell on concerns with remedial investigation/feasibility study, and interim actions on Bothell Paint & Decorating, Bothell Former Hertz, and Bothell Landing sites,* Appendix K)

4.2 METALS

Historical data (see Appendix E) showed MTCA exceedances of total arsenic in the ground water at VB-11, BC-10, and BC-12, and dissolved arsenic in the ground water at VB-3 and VB-11. Ground water monitoring following the two soil cleanups indicates arsenic concentrations exceeding the Site cleanup level in wells BC-10, BC-11, BPMW-1, and BPMW-6 (Table 3). Figure 2D shows arsenic in ground water at the site and surrounding areas.

The cause for the elevated arsenic concentrations in Site ground water remains uncertain. It may be induced by site contamination or naturally occurring. Elevated arsenic concentrations in alluvial aquifers of Snohomish and King Counties have been well documented as a regional issue (HWA, 2007b). In particular, elevated arsenic concentrations (up to 169 μg/L) attributed to peat deposits were measured in 20 out of 21 ground water monitoring wells installed by King County in the Sammamish River Valley, the same drainage and geologic environment as the Site. Where this site is situated, Ecology (2015) determined a natural background of 6.6 μg/L for the Puget Sound Lowlands. Ecology has concluded that the highest beneficial use for ground water is drinking water. Therefore, the relevant cleanup level for this site is 10 μg/L, which is the EPA's current maximum Contaminant Level (MCL) for arsenic in drinking water.

The elevated concentrations in ground water may also be due to reducing conditions created by prior releases (e.g., petroleum hydrocarbons) or from arsenic-contaminated grit from prior sandblasting activities at the site. There are no strong correlations or consistency between arsenic concentrations and dissolved TPH contamination or the presence of peat deposits. Given this uncertainty, Ecology has determined that the highest beneficial use of ground water is for drinking water purposes. The EPA MCL for arsenic in drinking water is 10 µg/L and is the applicable cleanup standard chosen for the site. Thus, arsenic remains as a COC at this site based on site data.

One ground water sample collected from well BPMW-6 had a dissolved lead concentration exceeding Site cleanup levels (Table 3); however, this sample had quality control issues and may be biased high (see Section 4.3). Samples from the other three rounds of monitoring were below cleanup levels.

4.3 DATA QUALITY ASSESSMENT

Appendix J contains copies of laboratory reports for soil samples collected subsequent to interim actions. A data quality assessment for the laboratory reports is included in Appendix L. One significant data quality issue was identified for ground water sample BPMW-6 collected on December 19, 2014: the dissolved metals field filtered sample for the EPA 200.8 analysis was received containing solid material. The sample was digested according to the laboratory's standard operating procedure. HWA thinks that this QC issue may have resulted in elevated arsenic and lead concentrations in this sample compared to other ground water samples collected from this well. In particular, the dissolved lead concentration (27 micrograms per liter (µg/L)) was much higher than the concentrations reported for other samples collected from well BPMW-6 and also exceeded the MTCA ground water cleanup level of 15 µg/L for lead. This quality control issue appears to have compromised the analytical accuracy of the dissolved lead data for the ground water sample collected from well BPMW-6 on December 19, 2014 and the result should be qualified as being biased high.

All reported data should be considered valid as qualified and acceptable for further use.

5. NATURE AND EXTENT OF CONTAMINATION

5.1 CHEMICALS OF CONCERN

5.1.1 Soil COCs

Based on the studies before the interim cleanups, chemicals of potential concern (COPCs) in Site soil were:

- Total petroleum hydrocarbons (gasoline-, diesel-, and motor oil-range)
- Metals (arsenic, cadmium, lead, barium, chromium silver, mercury)
- Aromatic hydrocarbons (benzene)
- HVOCs
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs)

cPAHs and benzene were detected exceeding cleanup levels during initial RI activities in 2009, at depths of 0 to 2 feet, in sample BP-26. Two samples (P-TP-24 and P-TP-27) were collected in 2012 a few feet away from BP-26 on the east and west sides, respectively, at the same depth. No cPAHs or benzene were detected above laboratory reporting limits, indicating that the original detection in BP-26 was likely surficial and localized (e.g., drips from a vehicle).

cPAHs, cadmium, lead, and mercury were detected in soils excavated during the interim actions, but no confirmation samples contained any of these compounds exceeding Site cleanup levels.

Because barium, chromium silver, mercury, HVOCs, and cPAHs were never detected in Site soil at concentrations exceeding MTCA Method A or B cleanup levels or natural background concentrations during the two interim action cleanups, they were dropped as COPCs during subsequent RI activity. Hexavalent chromium was not detected above laboratory reporting limits (Parametrix, 2010a) and was also dropped as a COC.

Following both interim soil cleanups, only one sample remained on Site with cleanup level exceedances: sample 180th 2-14 shown on Figure 5 and having gasoline and oil-range petroleum hydrocarbon concentration exceeding Site cleanup levels. Sample 180th 2-14 was located under realigned SR 522 and beneath an active sewer pipe. Following the cleanups, no soil contamination remains on either Paint City Parcel or Paint Lot B (see Figures 2A and 2B for the lot locations).

Based on the above evaluation, the chemicals of concern (COCs) for soil at the Site following the two interim action cleanups are:

- Total petroleum hydrocarbons (gasoline- and motor oil-range)

5.1.2 Ground Water COCs

COPCs for ground water in the RI area before the interim cleanups were:

- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX
- Arsenic
- Lead

One ground water sample collected from well BPMW-6 had a lead concentration exceeding Site cleanup criteria (Table 3). Samples from the other three rounds of monitoring were below cleanup levels. The one ground water sample having an elevated lead concentration is thought to be a quality control issue, therefore lead is not considered to be a COC at the Site (see Section 4.3 above).

Ground water monitoring data following the soil cleanups (see Table 3) indicate the following COCs remain on Site:

- Diesel- and oil-range petroleum hydrocarbons
- Arsenic

5.2 EXTENT OF CONTAMINATION

The extent of soil contamination was defined prior to and during the interim action cleanups (see Figure 5). In the following correspondence, Ecology provided comments that have been addressed in Section 3, Interim Action Soil Cleanups and Section 3, Interim Action Soil Cleanups and herein.:

- Ecology's letter dated June 28, 2011 – *Summary of Cleanup Status for Bothell Paint & Decorating site (Agreed order No. 6296)* (see Appendix B);
- Ecology letter, July 30, 2012 – *Agreed Order Amendments for Bothell Paint & Decorating, Former Hertz, and Landing sites* (see Appendix C); and,
- Ecology letter, February 15, 2013 – *September 14, 2012 response by City of Bothell on concerns with remedial investigation/feasibility study, and interim actions on Bothell Paint & Decorating, Bothell Former Hertz, and Bothell Landing sites* (see Appendix K)

After the soil cleanups, petroleum contaminated soil remains in one area of the Site, under the active roadway (realigned SR 522) at sample location 180th-2-14 (see Figure 5).

After the soil cleanups arsenic was detected at concentrations greater than the Site cleanup level of 10 μg/L in wells BC-10, BC-11, BPMW-1 and BPMW-6 (Table 3). Elevated arsenic concentrations are higher than the Site cleanup level of 10 µg/L (Ecology, 2015), and thus arsenic remains as a COC in ground water at the Site at monitoring wells BPMW-6, BPMW-1, and BC-11. BC-10 will be monitored for a limited duration in order to confirm compliance.

Following the two soil cleanups at the Site, diesel- and oil-range petroleum hydrocarbons have been detected above cleanup levels in wells BC-10 and BPMW-6 (Table 3). Ground water from BC-10 has been below cleanup levels and mostly non-detect for petroleum hydrocarbons for the last four quarterly monitoring events. Ground water from BPMW-6 exceeded cleanup levels during three of the last four rounds. These residual impacts are likely to attenuate naturally over time.

6. CLEANUP OBJECTIVES AND PRELIMINARY CLEANUP STANDARDS

6.1 CONCEPTUAL SITE MODEL

The conceptual model for the Site identifies the primary contaminant sources, release mechanisms, transport mechanisms, secondary contaminant sources, potential pathways, and exposure routes. Existing chemical data, site characterization data, and identification of potential human and ecological receptors were used to develop the model are shown on Figure 6.

6.2 PRIMARY SOURCES OF CONTAMINATION AND PRIMARY RELEASE MECHANISMS

The primary contaminant sources are the former sand blasting facility (metals), including the compressor blowdown pipe (petroleum) and residual contamination from a leaking underground storage tank (LUST) removal (petroleum). The primary contaminants associated with the sand blasting business include metals (cadmium, lead, chromium) and petroleum hydrocarbons (Parametrix, 2009).

Dust is the primary potential release mechanism for contaminants associated with metals in the surface soil. Although surficially deposited arsenic was found in shallow soils at the Site, the source of arsenic in ground water at the Site is may be a naturally occurring background condition, based on arsenic detected in similar geologic conditions at other nearby MTCA sites and in other non-contaminated areas throughout the Sammamish Valley, or due to effects from petroleum hydrocarbon contamination in ground water.

6.3 SECONDARY SOURCES AND RELEASE MECHANISMS

When a released contaminant is retained in an environmental medium, such as soil, the medium functions as a secondary source for further chemical release. Secondary release mechanisms for contaminants potentially present at the Site include the following:

- Leaching from soil to ground water
- Volatilization from soil and ground water to air
- Downgradient discharge from ground water to surface water

The degree of contaminant leaching is controlled by chemical properties of the contaminants, ground water chemical properties, physical properties of the soil, characteristics of the ground water flow system, and precipitation recharge. Volatilization is controlled by the concentration and chemical properties of the contaminants, physical properties of the soil, and soil gas characteristics. Contaminant discharge from ground water to surface water is controlled by the ground water flow path and the concentrations present in ground water at the point where it discharges into surface water (Parametrix, 2009).

Actual secondary sources and release mechanisms, based on the RI data are limited to leaching from soil to ground water of TPH and possibly arsenic, as no air or surface water impacts were identified.

Elevated arsenic in ground water is likely the result of enhanced solubility of the soil-bound arsenic in ground water where reducing conditions are present, Reducing conditions may be caused by naturally-occurring organics in the soil, or petroleum contamination. Arsenic in ground water may also be from leaching from imported fill soils, although no spatial correlation between arsenic in soil and in ground water is apparent, rather, arsenic concentrations appear to increase with proximity to the river and thickness of alluvial deposits.

6.4 PATHWAYS AND POTENTIAL RECEPTORS

An exposure pathway is a mechanism by which receptors are assumed to contact COCs. The U.S. Environmental Protection Agency (EPA) (1989) describes a complete exposure pathway in terms of four components:

1. A source and mechanism of chemical release (e.g., a release of COCs to the subsurface)
2. A retention or transport medium (e.g., ground water)
3. A receptor at a point of potential exposure to a contaminated medium (e.g., commercial worker in an on-site building located above the ground water plume)
4. An exposure route at the exposure point (e.g., inhalation of vapors)

If any of these four components is not present, then a potential exposure pathway is considered incomplete and is not evaluated further in a risk assessment. If all four components are present, a pathway is considered complete.

Potential exposure routes for human and ecological receptors include the following:

Dermal/Direct Contact – Exposure to chemicals in soil may occur through direct contact with soil. Direct contact is a potential exposure route for current and future on-site workers or visitors. Burrowing or ground-dwelling mammals and invertebrates may be exposed directly to the soil contaminants.

Inhalation – Particulates from soil can be transported by air and inhaled by potential on-site and off-site receptors. Emissions of volatile chemicals from soil and ground water may also be transported as vapors by air. Terrestrial biota could also be exposed to chemicals volatilizing to outdoor air, but if this exposure actually occurs the duration of exposure would be expected to be relatively short. Burrowing animals may be exposed to volatile air contaminants in underground stagnant air while spending time within the burrow.

Ingestion – Ingestion of chemicals in Site soil is a primary exposure route for human and ecological receptors. Uptake by plants is also a potential exposure route.

Potentially complete exposure pathways after completion of the Interim Actions are::

Soil - TPH:

- Current/future construction/utility worker
    - Incidental soil ingestion and dermal contact

Remaining soil impacts are located under an active roadway, therefore the only potential receptors are future construction workers.

Ground water – TPH and Arsenic:

- Current/future construction/utility worker:
    - Direct ingestion of contaminated ground water
- Ecological receptors
    - Dermal contact with ground water in a burrow

Remaining ground water impacts are TPH and arsenic in ground water, which is generally greater than 6 feet below grade in the areas impacted, therefore park visitors or others are unlikely to be exposed to any ground water, as there are no drinking water wells and it is not planned or legal to install any in the impacted area. The only potential human receptors would be future construction workers involved in excavation below ground water level or dewatering work.

Vapor - TPH:

- Current/future construction/utility worker:
    - Inhalation of vapors from the subsurface (ground water and soil) in outdoor air
- Ecological receptors
    - Inhalation of vapors from the subsurface (ground water and soil) in a burrow

Remaining vapor impacts are located under an active roadway, therefore the only potential human receptors would be future construction workers involved in excavation or dewatering work. Arsenic in ground water does not pose a vapor risk, therefore there are no vapor-related risks in park-zoned areas.

6.5 FATE AND TRANSPORT

Petroleum - The primary contaminant transport mechanisms are advection and dispersion caused by seepage of ground water through the Site's shallow aquifer. Petroleum constituents desorb from contaminated soil particles into ground water and are transported in the downgradient direction where they may resorb to clean soil particles or continue to travel with flow. Site analytical data indicate that petroleum constituents are transported only a short distance at concentrations of concern and are not reaching Horse Creek or the Sammamish River. BPMW-2, located directly downgradient of BPMW-6, the only remaining well with petroleum impacts, had no detected petroleum hydrocarbons in ground water. However, it should be noted that the last sample taken in BPMW-2 was in September 2014, whereas the petroleum detections in BPMW-6 were observed later in December 2014 and March 2015 with no subsequent sampling of BPMW-2. Dissolved petroleum constituents are typically subject to biodegradation by naturally occurring aerobic soil bacteria.

Arsenic - Arsenic in ground water is likely derived from native alluvial sediments, or imported fill soils, although no spatial correlation between arsenic in soil and in ground water is apparent, rather, arsenic concentrations appear to increase with proximity to the river and thickness of alluvial deposits. Elevated arsenic in ground water is likely the result of enhanced solubility of the soil-bound arsenic in ground water where reducing conditions are present, Reducing conditions may be caused by naturally-occurring organics in the soil, or petroleum contamination.

6.6 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Cleanup actions under MTCA (WAC 173-340-710) require the identification of all applicable or relevant and appropriate requirements (ARARs). These requirements are defined as:

"Applicable" requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a site.

"Relevant and appropriate" requirements means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a site, address problems or situations sufficiently similar to those encountered at the site that their use is well suited to the particular site.

The potential ARARs for the Site include three types:

- Chemical-specific
- Location-specific
- Action-specific

Chemical-specific ARARs are typically health- or risk-based values that when applied to site-specific conditions represent cleanup standards. Location-specific ARARs are related to the geographical position and/or physical condition of the site and may affect the type of remedial action selected. Action-specific ARARs are usually technology-based or activity-based requirements or limitations on actions or conditions taken with respect to specific hazardous substances. The action-specific requirements do not determine the selected remedial alternative, but indicate how or to what level a selected alternative must perform.

Potential ARARs were identified for each medium of potential concern. These potential ARARs are shown in Table 4.

6.7 ASSESSMENT OF RISK

Exposure to contaminants could occur via the potentially complete exposure pathways described in Section 6.4 above. Based on the nature of the Site and the extent of contamination, current risks appear limited.

Remaining soil impacts are located under an active roadway, therefore the only potential receptors are future construction workers. These risks will be managed via health and safety planning, procedures, and monitoring, as typically carried out on construction projects and required under OSHA and WISHA regulations.

Remaining ground water impacts are TPH and arsenic in ground water, which is generally greater than 6 feet below grade in the areas impacted, therefore park visitors or others are unlikely to be exposed to any ground water, as there are no drinking water wells and it is not planned or legal to install any in the impacted area. The only potential human receptors would be future construction workers involved in excavation or dewatering work. These risks will be managed as described above for soil impacts.

Remaining vapor impacts are located under an active roadway. therefore the only potential human receptors would be future construction workers involved in excavation or dewatering work. These risks will be managed as described above for soil impacts. Arsenic in ground water does not pose a vapor risk, therefore there are no vapor-related risks in park-zoned areas.

6.8 PRELIMINARY CLEANUP STANDARDS

Cleanup standards consist of appropriate cleanup levels applied at a defined point of compliance that meet applicable state and federal laws (WAC 173-340-700). Proposed cleanup levels are described below and listed in Table 2.

6.8.1 Soil

Soil remediation levels proposed in the *Interim Action Work Plan* (Parametrix, 2010b) include:

- MTCA Method A Soil Cleanup Levels for Unrestricted Land Use (WAC 173-340, Table 740-1).
- MTCA Method B TPH Soil Cleanup Levels for direct contact and protection of ground water

An evaluation of Method B risk-based petroleum contaminated soil cleanup levels for the Site was specified in Section 3.1.1.1 of the *Compliance Monitoring Quality Assurance Project Plan* (CMQAPP) appendix of the *Interim Action Work Plan* (Parametrix, 2010b). The CMQAPP called for characterization of petroleum-impacted soil via analysis of petroleum hydrocarbon fractionation and other target compounds in order to evaluate whether the standard MTCA Method A soil cleanup levels were appropriate for the Site compared to MTCA Method B risk-based soil petroleum hydrocarbon cleanup levels. The results of the petroleum hydrocarbon fractionation analyses (NWVPH/NWEPH analysis) were input into Ecology's MTCATPH11.1 spreadsheet model to determine petroleum hydrocarbon soil cleanup levels protective of human health via direct contact and via leaching to a source of potable ground water. HWA's evaluation of MTCA Method B risk-based cleanup levels for petroleum-impacted soil at the site is presented in Appendix F of this report. Table 1 summarizes the results of the analysis. The calculated Method B cleanup levels for petroleum hydrocarbons at the Site range between 581 and 39,709 milligrams per kilogram (mg/kg) depending on the mixture of hydrocarbon fractions and specific compounds. The Method B TPH cleanup level of 581 mg/kg is a calculated value for protection of potable ground water from contamination by carcinogenic polycyclic aromatic hydrocarbons (cPAHs) based upon Ecology's three-phase partitioning model (Equation 747-1 in WAC 173-340-747). The MTCA Method A cleanup level for gasoline-range petroleum hydrocarbons without detectible benzene in soil such as at the Site is 100 mg/kg. The calculated Method B cleanup levels for diesel- and oil-range petroleum hydrocarbons at the Site range between 999 and 1,505 mg/kg depending on the mixture of hydrocarbon fractions and specific compounds.

The resulting soil remediation levels used (i.e., the more stringent of Method A or B) meet all the requirements of WAC 173-340-720 through 173-340-760 and should be considered the Site cleanup levels. Soil cleanup levels are summarized below:

Compound	Cleanup level (mg/kg)
TPH Diesel	999 B
TPH Oil	999 B
Gasoline	100/30 A*
Benzene	0.03 A
Xylenes	9 A
Arsenic	20 A
Barium	16,000 B
Cadmium	2 A
Chromium	2000 A
Lead	250 A
Mercury	2 A
Selenium	400 B
Silver	400 B
Naphthalenes	5 A**
cPAH/TEC	0.100 A

A – MTCA Method A soil cleanup level
B - MTCA Method B soil cleanup level
TEC – Toxicity equivalent concentration
* Gasoline mixtures without benzene and the total of ethyl benzene, toluene and xylene are less than 1% of the gasoline mixture = 100 mg/kg
All other gasoline mixtures = 30 mg/kg
** Naphthalenes. Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4). This is a total value for naphthalene, 1-methyl naphthalene and 2-methyl naphthalene.

6.8.2 Ground Water

Appropriate levels of cleanup for ground water are determined by the highest beneficial use of that ground water. Shallow ground water present at the Site is not currently used for drinking water, and no water wells are located downgradient of the Site. The appropriate ground water cleanup levels for the Site are MTCA Method A for ground water for almost all the contaminants listed in Table 3; however, for ground water arsenic, a cleanup level of 10.0 µg/L will be used based on the drinking water standard. Ground water cleanup levels are summarized below:

Compound	Cleanup level (µg/L)
TPH Gas	800
TPH Diesel	500
TPH Oil	500
Benzene	5
Toluene	1000
Ethylbenzene	700
Xylenes	1000
Arsenic	10
Cadmium	5
Chromium	50
Lead	15

6.8.3 Terrestrial Ecological Evaluation

Petroleum - With respect to petroleum, impacts, the Site qualifies for an exclusion from a terrestrial ecological evaluation, because remaining contaminated soil is greater than six feet deep (Table 2), and institutional controls (i.e., environmental covenant) preventing excavation in that area will be proposed. In addition, a barrier (the active roadway) will be present to prevent exposure.

Arsenic – With respect to Arsenic, the Site does not qualify for an exclusion from a terrestrial ecological evaluation . It also does not meet any of the criteria for a site specific terrestrial ecological evaluation:

- Site on/adjacent managed/maintained native/seminative vegetation
- Used by Federal or Washington sensitive, threatened, or endangered species (Washington Department of Fish & Wildlife provides maps of these)
- >10 acres native vegetation within 500 feet of contamination
- Other Ecology determination

The site therefore meets the requirements for a Simplified terrestrial ecological evaluation. Arsenic soil cleanup levels protective of terrestrial ecological receptors for sites qualifying for a Simplified terrestrial ecological evaluation (Arsenic III = 20 mg/kg, Arsenic V =95 mg/kg, per MTCA Table 749-2) were not exceeded at the site, therefore the site is protective with respect to terrestrial ecological receptors.

6.8.4 Point of Compliance

The point of compliance is the specific location(s) at which a particular cleanup level must be met in order to demonstrate compliance of a cleanup action. MTCA defines standard and conditional points of compliance.

6.8.4.1 Soil

The standard soil point of compliance under MTCA (WAC 173-340-740 (6)(b-(d))) is:

- For soil cleanup levels based on protection of ground water, the point of compliance shall be established throughout the Site
- For soil cleanup levels based on protection from vapors, the point of compliance shall be established throughout the Site from the ground surface to the uppermost ground water saturated zone
- For soil cleanup levels based on human exposure via direct contact or other exposure pathways where contact with the soil is required to complete the pathway, the point of compliance shall be established in the soils throughout the Site from the ground surface to 15 feet bgs.

MTCA recognizes that, for cleanup actions that involve containment or capping, cleanup levels may not be met at the standard point of compliance, but the cleanup action would be determined to comply with cleanup standards provided:

- The selected remedy is permanent to the maximum extent practicable
- The cleanup action is protective of human health and terrestrial ecological receptors
- Institutional controls are implemented to limit activities that could interfere with the long-term integrity of the containment system
- Compliance monitoring and periodic reviews are conducted
- The capped or contained COCs and measures to prevent migration and contact with them are specified in a CAP

The cleanup alternatives are evaluated based on standard soil point of compliance for removal and treatment alternatives (WAC 173-340-740(6)(a)-(e), and for containment remedies (WAC 173-340-740(6)(f)).

6.8.4.2 Ground Water

The standard ground water point of compliance under MTCA (WAC 173-340-720(8)(b)) is in ground water throughout the Site from the uppermost level of the saturated zone to the lowest depth which could potentially be affected.

For this Site, the standard ground water point of compliance is proposed for petroleum hydrocarbon and arsenic impacts, i.e., ground water throughout the Site.

6.9 VAPOR INTRUSION

Per the MTCA, RIs must include evaluation of vapor intrusion (VI) impacts to indoor air quality when volatile hazardous substances are present in the subsurface. The Ecology *Guidance for Evaluating Soil Vapor Intrusion in Washington State* (Ecology, 2009) provides a process for evaluating the VI pathway during an RI/FS (WAC 173-340-350) and subsurface media cleanup levels protective of indoor air quality. This process applies to buildings currently on a site, or future buildings, i.e., cleanup standards and actions must be protective of current and potential future site uses.

The guidance employs a tiered approach, starting with a preliminary assessment, and moving to Tier I and II assessments, if warranted. Initial screening steps in the preliminary assessment include the following:

- Are chemicals of sufficient volatility and toxicity known or reasonably suspected to be present?
- Are occupied buildings present (or could they be constructed in the future) above or near site contamination?

For this Site, neither criterion is met, thus no further VI evaluation is necessary. The rationale for this includes:

Soil – Remaining soil impacts at the Site include a small area now under SR 522 having volatile contaminants (gasoline-range petroleum hydrocarbons); therefore no buildings are present or possible in this one spot (see Figure 5. There are no plans to remove the recently constructed roadway. Figure 2D shows the current roadway configuration.

GROUND WATER – there are currently no impacts to ground water by volatile contaminants. arsenic and TPH as diesel and oil are the only remaining ground water impacts.

6.10 REMEDIAL ACTION OBJECTIVES

The following remedial action objectives were established for the interim action cleanups (Parametrix, 2009):

- Achieve MTCA Method A (and possibly Method B) soil and ground water cleanup levels at the point of compliance, thus reducing or eliminating human exposure through direct contact and inhalation of vapors.
- Use permanent solutions to the maximum extent practicable (which includes consideration of cost-effectiveness).
- Verify the petroleum hydrocarbon contaminated ground water plume is stable or shrinking due to natural attenuation.

- Properly manage contaminated ground water that may be generated during Site development activities, and ensure that activities at the Site do not result in exposure to contaminated ground water that may migrate onto the Site.

Remedial action objectives for current remaining impacts include:

- Achieve MTCA Method A and B soil and Method A ground water cleanup levels at the point of compliance.

6.11 DISCUSSION AND RECOMMENDATIONS

Following the two soil cleanups at the Site, oil- and gasoline-range petroleum hydrocarbon contamination remains under realigned SR 522 at sample location 180th-2-14 (see Table 2 and Figure 5).

Following the two soil cleanups at the Site, diesel- and oil-range petroleum hydrocarbons were detected above cleanup levels in ground water in wells BC-10 and BPMW-6 (see Table 3). Ground water from BC-10 has not exceeded cleanup levels during the last four rounds monitored. Ground water from BPMW-6 exceeded cleanup levels during three of the last four rounds. These residual impacts are likely to attenuate naturally over time.

Site analytical data indicate that petroleum constituents in ground water are transported only a short distance at concentrations of concern and are not reaching Horse Creek or the Sammamish River. Dissolved petroleum constituents are typically subject to biodegradation by naturally occurring aerobic soil bacteria.

After the soil cleanups arsenic was detected at concentrations greater than the Site cleanup level of 10 µg/L (Ecology, 2015), and thus arsenic remains as a COC in ground water at the Site at monitoring wells BPMW-6 and BPMW-1, BC-10, and BC-11. The arsenic in ground water is generally greater than 6 feet below grade in the areas impacted, therefore park visitors or others are unlikely to be exposed to any ground water, as there are no drinking water wells and it is not planned or legal to install any in the impacted area. The only potential human receptors would be future construction workers involved in excavation or dewatering work.

HWA and the City recommend:

- Adopting the lower of MTCA Method A or B soil cleanup levels listed in Table 2 as the Site soil cleanup levels.
- Adopting MTCA Method A ground water cleanup levels as the Site cleanup levels for dissolved petroleum hydrocarbons (diesel- and oil-range petroleum hydrocarbons) and the drinking water MCL of 10 µg/L for arsenic (per Ecology's recommendation).

- No further vapor intrusion evaluation since the remaining soil impacted by volatile contaminants is capped by realigned SR 522 and there are no impacts to ground water by volatile contaminants. .

7. FEASIBILITY STUDY

7.1 IDENTIFICATION OF CONTAMINATION TO BE REMEDIATED

Section 5.2 above details the current status of soil and ground water contamination at the Site, summarized as follows:

Soil – This work is documented in the HWA *Documentation of Interim Action at Former Bothell Paint & Decorating Site* (HWA, 2011) (see Appendix H [on CD]) and *Interim Action Cleanup Report, Former Bothell Paint and Decorating Site, Bothell, Washington* (HWA, 2014a)(see Appendix I [on CD]). Section 3 of this report summarizes the findings. Petroleum contaminated soil remains in one area of the Site:

- Under realigned SR 522 at sample location 180th-2-14 (see Figure 5)

The remaining soil impacts are under a recently constructed state highway (therefore very unlikely to be moved) and as such are not accessible for excavation or other remedial efforts. Future utility work risks will be managed via health and safety planning, procedures, and monitoring, as typically carried out on construction projects and required under OSHA and WISHA regulations.

Ground water – Referring to Table 3, remaining ground water impacts include:

- Diesel- and oil-range petroleum hydrocarbons in well BPMW-6
- Arsenic in wells BC-10, BC-11, BPMW-1, and BPMW-6

7.2 SCREENING OF REMEDIAL TECHNOLOGIES

This section describes technologies capable of meeting cleanup objectives are screened and then assembled into remedial alternatives. These alternatives are then evaluated, compared, and preferred alternatives identified.

This section includes review of available cleanup technologies, initial screening of the technologies, and selection of technologies to be further evaluated. The initial screening of treatment technologies is based on technical feasibility, i.e., available site data and knowledge of design parameters for potential treatment technologies. The selected cleanup technologies are then screened for overall effectiveness and implementability to identify a short-list of potentially applicable technologies, that are then assembled into cleanup alternatives.

The initial technologies screened for petroleum contaminated soil and ground water at the Site include:

- Excavation and removal
- In-situ bioremediation
- Monitored natural attenuation
- Engineering and institutional controls

The initial technologies screened for arsenic contaminated ground water at the Site include:

- Excavation and removal
- In-situ chemical fixation
- Institutional controls

Section 7.3 describes each of the remediation technologies evaluated during screening, including information on the technology effectiveness and implementability. Technologies retained to be carried forward in development of remedial alternatives are summarized in Section 8.

MTCA regulations place a preference on the use of permanent cleanup methods such as removal, disposal, or treatment relative to those that manage contaminants in place using institutional controls, natural attenuation and/or containment. The discussion of the benefits and disadvantages of each candidate technology is described but not weighted in this section. The MTCA preferences for selection of remedy are reflected in regulatory evaluation criteria which are described and applied in Section 9 (Evaluation of Remediation Alternatives).

7.3 REMEDIATION TECHNOLOGIES – PETROLEUM IMPACTS

HWA selected the following remediation alternatives as appropriate technologies to treat petroleum contaminated soil and ground water at the Site.

7.3.1 Soil Excavation and Removal

DESCRIPTION / ENGINEERING DISCUSSION

Excavation and off-site disposal of contaminated soils is a common remedial approach for source removal. Excavation would remove the source of contamination and is typically followed by various off-site treatment or disposal alternatives. Removing the contamination source would facilitate ground water cleanup.

APPLICABILITY

The advantages of source removal include:

- Contaminants are removed from the Site

- Rapid restoration timeframe

The disadvantages of source removal include:

- Transportation off site for treatment or disposal of contaminated soils carries some risks
- Requires importing and compacting clean backfill to replace removed soils
- Difficult / impractical to excavate below underground utilities (e.g., the active sewer pipe at sample location 180th 2-14) and below the ground water level
- High energy usage / carbon footprint
- Site disturbance (noise, traffic, dust, etc.)

Source removal is identified as a potentially applicable cleanup method for further evaluation. Source removal assumes some form or combination of off-site treatment and/or disposal.

7.3.2 In-situ Bioremediation

As stated above in Section 7.3, the following remediation technology may be appropriate to treat petroleum contaminated soil and ground water at the Site.

DESCRIPTION / ENGINEERING DISCUSSION

In-situ bioremediation involves enhancing the microbial degradation of contaminants in subsurface soils and/or ground water without excavating overlying soil. Treatment systems supply oxygen and in some cases nutrients and bacteria to the subsurface to stimulate activity of hydrocarbon degrading microorganisms. In most cases the native soil already contains hydrocarbon degrading bacteria. It is only necessary to enhance their environment so that degradation proceeds at a faster rate. In many cases, and especially for petroleum hydrocarbons, the limiting subsurface factor for bioremediation is oxygen. Many in-situ bioremediation approaches involve the addition of chemicals which release oxygen in the subsurface. Injection of oxygen-releasing compounds is commonly accomplished with direct-push probe drilling equipment, often in multiple treatments.

Treatability studies and/or pilot tests may be performed to determine the biological and chemical conditions in the subsurface at the site. These tests provide biodegradation rates for specific contaminants, as well as parameters for optimum performance of a full scale system (e.g., flow rates, oxygen and nutrient levels).

APPLICABILITY

Permeable soils at the site would facilitate in-situ treatment. The contaminants present (petroleum hydrocarbons) are generally amenable to bioremediation.

Advantages of an in-situ bioremediation system include:

- Contaminants break down into harmless by-products
- Less site disruption than mass excavation methods

Disadvantages of an in-situ bioremediation system include:

- Possible injection permit requirements
- Inability to access lower permeability zones in mixed (heterogeneous) subsurface conditions
- Injection of oxygen rich water may cause plugging of wells and/or the aquifer by chemical precipitation or biofouling
- Treatment progress is difficult to monitor; confirmatory borings are typically required

In-situ bioremediation is identified as a potentially applicable cleanup method for further evaluation.

7.3.3 Monitored Natural Attenuation

The following remediation technology may be appropriate to treat petroleum contaminated ground water at the Site.

DESCRIPTION

Monitored natural attenuation is the practice of allowing natural (physical, chemical and biological) processes in soil and ground water to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in those media. Monitored natural attenuation requires first establishing that conditions are favorable for those processes, and monitoring to ensure they are occurring, and in a reasonable time frame.

ENGINEERING DISCUSSION

Monitored natural attenuation processes include biodegradation, dispersion, dilution, adsorption, volatilization, and chemical or biological stabilization or destruction of contaminants. Monitored natural attenuation is a viable approach where dissolved contaminant concentrations in ground water are low, potential receptors are not in danger of being affected, and natural attenuation of contaminants is known or likely.

Under MTCA (WAC 173-340-370) natural attenuation may be appropriate at sites where:

- Source control has been conducted to the maximum extent practicable

- The contaminants remaining during the restoration timeframe do not pose an unacceptable threat to human health or the environment
- There is evidence that natural processes are occurring and will continue to occur at a reasonable rate
- Monitoring is conducted to ensure that the attenuation is occurring and human health and the environment are protected

APPLICABILITY

Petroleum hydrocarbons, particularly low molecular weight ones such as gasoline, are generally suited to monitored natural attenuation, as they are amenable to biodegradation and volatilization under a wide range of subsurface conditions.

Advantages of monitored natural attenuation include:

- Low impact to site
- Low cost

Disadvantages of monitored natural attenuation include:

- Long restoration time frame / ongoing monitoring particularly for oil range hydrocarbons

Monitored natural attenuation is identified as a potentially applicable cleanup method for further evaluation to remediate diesel and oil-range hydrocarbons present in Site soil and ground water.

7.3.4 Engineering and Institutional Controls

7.3.4.1 Engineering Controls

DESCRIPTION

Engineering control technologies typically include an access-restricting cap or cover over contaminated soils or ground water. Caps serve to 1) limit potential exposure to human or ecological receptors, 2) decrease volatilization of contaminants, 3) decrease leaching to ground water through reduction of recharge or infiltration of precipitation, and in some cases, 4) decrease migration of contaminants due to changing ground water gradients.

ENGINEERING DISCUSSION

Based on current development at the Site, the SR 522 pavement already caps the limited area of residual petroleum contamination at the Site. This low permeability and access-restricting cover addresses human health and protection of ground water pathways under MTCA. The roadway will be part of the institutional controls (which will be part of the cleanup remedy for the Site) and will be addressed in an environmental covenant, to ensure it will be maintained and left intact.

APPLICABILITY

The advantages of engineering controls include:

- Easily implementable
- Less site and vicinity disruption during cleanup

The disadvantages of engineering controls include:

- Contaminants are left on site
- Ongoing maintenance, institutional controls, and periodic review are needed
- Possible restrictions on site use

Engineering controls / capping is identified as a potentially applicable cleanup technology for further evaluation.

7.3.4.2 Institutional Controls

DESCRIPTION / ENGINEERING DISCUSSION

Institutional controls are administrative or legal mechanisms that ensure the long-term performance of cleanup actions, typically in conjunction with other cleanup technologies. Institutional controls are typically applied on cleanups where contaminants are not completely removed from a site. The institutional controls document the presence of remaining contaminants, regulate the disturbance and access to those contaminants, and ensure continued maintenance and monitoring of the cleanup action.

Examples of institutional controls include environmental covenants (deed restrictions), restrictions placed by a government agency (e.g., codes, ordinances, etc.), and O&M plans. Environmental covenants document the remedial action in Ecology and County property records, and include provisions which 1) prohibit activities that may impact the remedial action, create new exposure pathways, or create access to, or release of remaining contaminants, 2) ensure the provisions are met by property lessees, 3) ensure conveyance of the covenant with the land, 4) require notification of property transactions, and 5) allow site access to the regulatory agency. O&M plans are typically for on-site workers and similarly protect the integrity of remedial actions and ensure the health and safety of site workers and visitors.

Institutional controls are effective, implementable, and cost-effective mechanisms at sites where contaminants are not completely removed or destroyed, and site use is consistent with the overall remedial action. The likely institutional controls at this site would include an environmental covenant and monitoring.

The likely engineering and institutional controls for soil at the Site would include access restrictions, covering the impacted soils with an access-restricting cap, and/or controlling recharge and infiltration of storm water. For ground water, the likely institutional control would consist of an environmental covenant that documents remaining petroleum hydrocarbon and arsenic contamination in ground water, prohibits withdrawal and use for any purpose other than monitoring, site investigation, or construction-related activities with notification and approval by Ecology. A request to lift the covenant can be made to Ecology if ground water monitoring shows that the petroleum hydrocarbons and arsenic have reached compliance with cleanup levels. If petroleum hydrocarbon contamination is no longer detected or achieves compliance while arsenic remains at elevated concentrations above cleanup levels over an sufficiently long time period, a demonstration can be made that the elevated concentrations represents a locally high natural background for arsenic. Based on this evidence, a request can be made to Ecology to remove the institutional controls for ground water at the site .

APPLICABILITY

Institutional controls are not typically a stand-alone remedy; remediation objectives are usually met by combining with another cleanup method. The advantages of institutional controls include:

- Easily implementable and combined with other technologies
- Less site and vicinity disruption during cleanup

The disadvantages of institutional controls include:

- Institutional controls alone will not meet MTCA cleanup standards
- Contaminants are left on site
- Ongoing maintenance, institutional controls, and periodic review are needed
- Possible restrictions on site use

Institutional controls are identified as a potentially applicable cleanup method for further evaluation.

7.4 REMEDIATION TECHNOLOGIES – ARSENIC IMPACTS

The following remediation alternatives have been selected for consideration as appropriate technologies to treat arsenic in ground water at the Site.

7.4.1 Soil Source Excavation and Removal

DESCRIPTION / ENGINEERING DISCUSSION

Excavation and off-site disposal of contaminated soils is a common remedial approach for source removal. Excavation would remove the source of contamination and is typically followed by various off-site treatment or disposal alternatives.

APPLICABILITY

The advantages of source removal include:

- Contaminants are removed from the Site
- Rapid restoration timeframe

The disadvantages of source removal in this case include:

- An apparent source of arsenic – soil with sandblast material – is presumed to have been excavated during the August through October 2010 interim action.
- Transportation off site for treatment or disposal of contaminated soils carries some risks
- Requires importing and compacting clean backfill to replace removed soils
- Difficult / impractical to excavate below ground water level
- High energy usage / carbon footprint
- Site disturbance (noise, traffic, dust, etc.)

Source removal is ruled out as a potentially applicable cleanup method for further evaluation, because any apparently significant soil source of arsenic at the Site was excavated during interim action conducted in 2010.

7.4.2 In-situ Chemical Fixation

DESCRIPTION / ENGINEERING DISCUSSION

In-situ chemical fixation for metals contamination involves chemically altering the subsurface conditions to immobilize dissolved metals in ground water. Treatability studies and/or pilot tests are typically performed to determine the chemical conditions in the subsurface at the site, and the optimum formulation of chemicals to immobilize the metals

APPLICABILITY

Permeable soils at the site would facilitate in-situ treatment. The contaminants (arsenic) present are generally amenable to in situ fixation.
Advantages of in-situ chemical fixation system include:

- Less site disruption than mass excavation methods

Disadvantages of in-situ chemical fixation include:

- Inability to access lower permeability zones in mixed (heterogeneous) subsurface conditions
- Injection of chemicals (typically strong reducers) near surface water bodies (Sammamish River) may adversely impact surface water quality

In-situ chemical fixation is identified as a potentially applicable cleanup method for further evaluation.

7.4.3 Institutional Controls

DESCRIPTION / ENGINEERING DISCUSSION

Institutional controls are administrative or legal mechanisms that ensure the long-term performance of cleanup actions, typically in conjunction with other cleanup technologies. Institutional controls are typically applied on cleanups where contaminants are not completely removed from a site. The institutional controls document the presence of remaining contaminants, regulate the disturbance and access to those contaminants, and ensure continued maintenance and monitoring of the cleanup action.

Examples of institutional controls include environmental covenants (deed restrictions), restrictions placed by a government agency (e.g., codes, ordinances, etc.), and O&M plans. Environmental covenants document the remedial action in Ecology and County property records, and include provisions which 1) prohibit activities that may impact the remedial action, create new exposure pathways, or create access to, or release of remaining contaminants, 2) ensure the provisions are met by property lessees, 3) ensure conveyance of the covenant with the land, 4) require notification of property transactions, and 5) allow site access to the regulatory agency. O&M plans are typically for on-site workers and similarly protect the integrity of remedial actions and ensure the health and safety of site workers and visitors.

Institutional controls are effective, implementable, and cost-effective mechanisms at sites where contaminants are not completely removed or destroyed, and site use is consistent with the overall remedial action. The likely institutional controls at this site would include an environmental covenant and monitoring.

APPLICABILITY

Institutional controls are not typically a stand-along remedy; remediation objectives are usually met by combining with another cleanup method. The advantages of institutional controls include:

- Easily implementable and combined with other technologies
- Less site and vicinity disruption during cleanup

The disadvantages of institutional controls include:

- Institutional controls alone will not meet MTCA cleanup standards
- Contaminants are left on site
- Ongoing maintenance, institutional controls, and periodic review are needed
- Possible restrictions on site use

Institutional controls are identified as a potentially applicable cleanup method for further evaluation.

7.5 SUMMARY OF TECHNOLOGIES CARRIED FORWARD

The remedial technologies described above were screened for overall effectiveness and implementability resulting in a short-list of potentially applicable technologies for further evaluation. The following technologies are carried forward for assembly into cleanup alternatives that meet MTCA threshold and other requirements for selection of remedy:

Petroleum in soil and ground water
- Excavation and removal
- In-situ bioremediation
- Monitored natural attenuation
- Engineering and institutional controls

Arsenic in ground water
- In-situ chemical fixation with Institutional controls
- Institutional controls

8. ASSEMBLE AND SCREEN REMEDIATION ALTERNATIVES

8.1 PETROLEUM IN SOIL AND GROUND WATER IMPACTS

For soil, the interim actions implemented excavation and removal as the selected remediation alternative, and with only one exception was highly successful for the soil cleanup and one exception for the ground water cleanup. For the residual contamination, the technologies screened and identified for further consideration in the preceding sections were combined to meet the Site remedial action objectives and requirements of MTCA, resulting in the development of remedial alternatives. The alternatives were then evaluated to select preferred alternatives. Proposed alternatives for addressing residual soils under the SR 522 roadway and sporadically occurring petroleum contaminated ground water at the Site are:

- Excavation and removal with monitored natural attenuation (MNA)
- In-situ bioremediation with monitored natural attenuation and engineering / institutional controls
- MNA, Engineering and institutional controls

8.2 ARSENIC IN GROUND WATER IMPACTS

For arsenic in ground water impacts, the technologies screened and identified for further consideration in the preceding sections were combined to meet the Site remedial action objectives and requirements of MTCA, resulting in the development of remedial alternatives. The alternatives were then evaluated to select preferred alternatives. Proposed alternatives for addressing arsenic in ground water are summarized below:

8.3 PROPOSED COMBINED CLEANUP ALTERNATIVES

The proposed alternatives for addressing all impacts to the Site are summarized below:

- Excavation and removal (TPH), in-situ chemical fixation (arsenic), monitored natural attenuation (TPH), and engineering and institutional controls with compliance monitoring
- In-situ bioremediation (TPH), in-situ chemical fixation (arsenic), monitored natural attenuation (TPH), and engineering / institutional controls with compliance monitoring
- Monitored natural attenuation (TPH), and engineering / institutional controls with compliance monitoring

The following sections describe each alternative, including all component cleanup technologies and costs.

8.3.1 Excavation And Removal, Chemical Fixation, MNA, and Engineering And Institutional Controls With Compliance Monitoring

Following the interim actions conducted in 2010 and 2013, some residual contaminated soils remain. Remaining impacted soils containing petroleum hydrocarbon-related COCs exceeding Site cleanup levels could be excavated, loaded onto trucks, and transported to an approved Subtitle D landfill. The volume of this soil is estimated at around 100 tons, assuming an area 20 x 20 feet, by 5 feet depth x 1.7 tons per cubic yard. Remaining soils in the excavation sidewalls could be sampled to assure compliance with cleanup standards. The actual soil excavation and disposal is a fraction of the total cost; most of the cost is associated with excavating under an active state highway and active utilities. Due to the existing active roadways and underground utilities (e.g., an active sewer pipe), shoring of the excavation will be required, as well as traffic closures.

In-Situ Chemical Fixation of arsenic at the site would likely consist of injecting oxidizing or reducing agents and in some cases catalysts into the ground via direct push borings. Based on the area of the Site impacted, around 150 locations would be required assuming 10 foot spacings. Although treatability and pilot testing would be required for design and cost estimates, typical application rates are around 0.04% by weight of soil, resulting in a volume of fixative of around 130,000 lbs.

Monitoring for natural attenuation under a Compliance Monitoring Plan will be required for well BPMW-6, which is not in compliance for TPH in ground water, and for BC-10 and BPMW-2R (which will replace BPMW-2), which are in compliance, but will be monitored anyway, to ensure no plume migration has occurred to these wells. Monitoring for ground water arsenic will be required for wells BC-11, BC-10, BPMW-1 and BPMW-6.

A Compliance Monitoring Plan will be submitted as part of the Cleanup Action Plan to address this component of the cleanup. Compliance monitoring for the remaining petroleum hydrocarbon contamination in ground will be MNA-based. Compliance monitoring for arsenic will be concurrent with petroleum hydrocarbon compliance monitoring, but with an extended period of monitoring to determine if the arsenic is naturally occurring or induced by the petroleum contamination. Wells to be monitored are:

TPH-D - BPMW-6, BPMW-2R (which will replace BPMW-2), BC-10
Arsenic - BPMW-6, BPMW-1, BC-10, BC-11

A contingency plan for ground water will be part of the cleanup remedy in case the ground water has not reached compliance for petroleum and arsenic at the end of the compliance monitoring period.

The Engineered and Institutional Controls remedial alternative could apply to the remaining petroleum contaminated soil in an area now under realigned SR 522, as well as TPH and arsenic in ground water. The main engineering control would be the roadway capping the impacted soils. Institutional Controls could apply to ground water, documenting oil-range and diesel-range petroleum hydrocarbon and arsenic contamination in ground water. For TPH and arsenic in ground water, the institutional control could consist of an environmental covenant that documents remaining arsenic contamination in ground water, prohibits withdrawal and use for any purpose other than monitoring, site investigation, or construction-related activities with notification and approval by Ecology. A request to lift the covenant can be made to Ecology if quarterly compliance monitoring from the Site shows that the arsenic persists after historical petroleum hydrocarbon ground water contamination and the petroleum hydrocarbon contamination has not been detected for an appropriate period of time (two years after five years of combined TPH and arsenic monitoring). If arsenic remains at elevated concentrations over a sufficiently long time period with no other detections of petroleum hydrocarbon or solvent contamination, this data can be used to demonstrate that the elevated concentrations represents a locally high natural background for arsenic. Based on this evidence, a request can be made to remove the institutional controls for ground water at the site.

Estimated cost of this option is as follows.

Excavation	$ 138,024
Chemical Fixation	$1,353,024
MNA/Monitoring	$ 158,400
Institutional controls	$ 5,000
Total	$1,654,448

Cost estimates for this and other feasible remedial alternatives are included in Appendix M.

8.3.2 In-Situ Bioremediation, In-Situ Chemical Fixation, Monitored Natural Attenuation And Engineering And Institutional Controls With Compliance Monitoring

In-situ bioremediation may be implemented for impacted soil and ground water by introducing oxygen-releasing compounds into the ground in the vicinity of the impacted soil and ground water via direct push drilling techniques. The type and quantity of oxygen-releasing material is calculated based on the type, concentration, and estimated volume of residual petroleum hydrocarbons left in the ground. The oxygen-releasing material creates a zone of increased biological activity in those soils, biodegrading the hydrocarbons. If confirmation borings indicate petroleum hydrocarbon concentrations exceeding cleanup levels, additional oxygen-releasing material can be injected into the ground via direct push borings.

In-Situ Chemical Fixation of arsenic at the site would likely consist of injecting oxidizing or reducing agents and in some cases catalysts into the ground via direct push borings. Based on the area of the Site impacted, around 150 locations would be required assuming 10 foot spacings. Although treatability and pilot testing would be required for design and cost estimates, typical application rates are around 0.04% by weight of soil, resulting in a volume of fixative of around 130,000 lbs.

Monitoring for natural attenuation under a Compliance Monitoring Plan will be required for well BPMW-6, which is not in compliance for TPH in ground water, and for BC-10 and BPMW-2R (which will replace BPMW-2), which are in compliance, but will be monitored anyway, to ensure no plume migration has occurred to these wells. Monitoring for ground water arsenic will be required for wells BC-11, BC-10, BPMW-1 and BPMW-6.

A Compliance Monitoring Plan will be submitted as part of the Cleanup Action Plan to address this component of the cleanup. Compliance monitoring for the remaining petroleum hydrocarbon contamination in ground water will be MNA-based. Compliance monitoring for arsenic will be concurrent with petroleum hydrocarbon compliance monitoring, but with an extended period of monitoring to determine if the arsenic is naturally occurring or induced by the petroleum contamination. Wells to be monitored are:

TPH-D - BPMW-6, BPMW-2R (which will replace BPMW-2), BC-10
Arsenic - BPMW-6, BPMW-1, BC-10, BC-11

A contingency plan for ground water will be part of the cleanup remedy in case the ground water has not reached compliance for petroleum at the end of the compliance monitoring period.

The Engineered and Institutional Controls remedial alternative could apply to the remaining petroleum contaminated soil in an area now under realigned SR 522, as well as TPH and arsenic in ground water. The main engineering control would be the roadway capping the impacted soils. Institutional Controls could apply to ground water, documenting oil-range and diesel-range petroleum hydrocarbon and arsenic contamination in ground water. For TPH and arsenic in ground water, the institutional control could consist of an environmental covenant that documents remaining arsenic contamination in ground water, prohibits withdrawal and use for any purpose other than monitoring, site investigation, or construction-related activities with notification and approval by Ecology. A request to lift the covenant can be made to Ecology if quarterly compliance monitoring from the Site shows that the arsenic persists after historical petroleum hydrocarbon ground water contamination and the petroleum hydrocarbon contamination has not been detected for an appropriate period of time (two years after five years of combined TPH and arsenic monitoring). If arsenic remains at elevated concentrations over a sufficiently long time period with no other detections of petroleum hydrocarbon or solvent contamination, this data can be used to demonstrate that the elevated concentrations represents a locally high natural background for arsenic. Based on this evidence, a request can be made to remove the institutional controls for ground water at the site.

Estimated cost of this option is as follows.

In-Situ bioremediation	$ 32,400
Chemical Fixation	$1,353,024
MNA/Monitoring	$ 158,400
Institutional controls	$ 5,000
Total	$1,548,824

Cost estimates for this and other potential remedial alternatives are included in Appendix M.

8.3.3 Monitored Natural Attenuation, And Engineering / Institutional Controls With Compliance Monitoring

Monitoring for natural attenuation under a Compliance Monitoring Plan will be required for well BPMW-6, which is not in compliance for TPH in ground water, and for BC-10 and BPMW-2R (which will replace BPMW-2), which are in compliance, but will be monitored anyway, to ensure no plume migration has occurred to these wells. Monitoring for ground water arsenic will be required for wells BC-11, BC-10, BPMW-1 and BPMW-6.

A Compliance Monitoring Plan will be submitted as part of the Cleanup Action Plan to address this component of the cleanup. Compliance monitoring for the remaining petroleum hydrocarbon contamination in ground will be MNA-based. Compliance monitoring for arsenic will be concurrent with petroleum hydrocarbon compliance monitoring, but with an extended period of monitoring to determine if the arsenic is naturally occurring or induced by the petroleum contamination. Wells to be monitored are:

TPH-D - BPMW-6, BPMW-2R (which will replace BPMW-2), BC-10
Arsenic - BPMW-6, BPMW-1, BC-10, BC-11

A contingency plan for ground water will be part of the cleanup remedy in case the ground water has not reached compliance for petroleum and arsenic at the end of the compliance monitoring period.

The Engineered and Institutional Controls remedial alternative could apply to the remaining petroleum contaminated soil in an area now under realigned SR 522, as well as TPH and arsenic in ground water. The main engineering control would be the roadway capping the impacted soils. Institutional Controls could apply to ground water, documenting oil-range and diesel-range petroleum hydrocarbon and arsenic contamination in ground water. For TPH and arsenic in ground water, the institutional control could consist of an environmental covenant that documents remaining arsenic contamination in ground water, prohibits withdrawal and use for any purpose other than monitoring, site investigation, or construction-related activities with notification and approval by Ecology. A request to lift the covenant can be made to Ecology if quarterly compliance monitoring from the Site shows that the arsenic persists after historical petroleum hydrocarbon ground water contamination and the petroleum hydrocarbon contamination has not been detected for an appropriate period of time (two years after five years of combined TPH and arsenic monitoring). If arsenic remains at elevated concentrations over a sufficiently long time period with no other detections of petroleum hydrocarbon or solvent contamination, this data can be used to demonstrate that the elevated concentrations represents a locally high natural background for arsenic. Based on this evidence, a request can be made to remove the institutional controls for ground water at the site.

Estimated cost of this option is as follows.

MNA/Monitoring	$ 158,400
Institutional controls	$ 5,000
Total	$ 163,400

Cost estimates for this and other potential remedial alternatives are included in Appendix M.

9. EVALUATION OF REMEDIATION ALTERNATIVES

This section evaluates the cleanup alternatives selected in the previous section in accordance with the selection of remedy requirements under MTCA (WAC 173-340 through 370).

The proposed alternatives for all impacts and media at the Site are:

- Excavation and removal (TPH), in-situ chemical fixation (arsenic), monitored natural attenuation (TPH), and engineering and institutional controls with compliance monitoring
- In-situ bioremediation (TPH), in-situ chemical fixation (arsenic), monitored natural attenuation (TPH), and engineering / institutional controls with compliance monitoring
- Monitored natural attenuation (TPH), and engineering / institutional controls with compliance monitoring

9.1 MTCA THRESHOLD REQUIREMENTS

MTCA (WAC 173-340-360(2)(a)) specifies several threshold, or basic requirements that cleanup actions must meet in order to be considered. The four threshold requirements specify that the cleanup action must:

- Protect human health and the environment
- Comply with cleanup standards
- Comply with applicable state and federal laws
- Provide for compliance monitoring

The following sections evaluate the alternatives against the threshold criteria.

9.1.1 Protect Human Health and the Environment

The ‘protection of human health and environment’ criterion addresses whether a cleanup alternative will provide a minimum acceptable level of protection, i.e., a sufficiently low residual risk to human and ecological receptors. Alternatives are compared by relative degree of protection, which may include the second criterion ‘compliance with cleanup standards’ as well as short-term risks posed by remedial action (e.g., during construction and implementation of the cleanup action, such as mobilization of contaminants during construction or transport, or other ancillary safety risks during construction).

Petroleum In Soil - Of the three alternative remedies for petroleum hydrocarbon impacts, source removal is likely more protective than bioremediation, due to the removal of COC-containing material from the site. Bioremediation is likely more protective than engineered containment and institutional controls.

Arsenic in Ground Water – There is only one feasible alternative for dealing with arsenic in ground water, which may be naturally occurring or site contamination-induced, but will be evaluated after five years of monitoring. The proposed institutional control restricting ground water use would be protective of the drinking water pathway, which Ecology has concluded is the highest beneficial use for ground water at the Site.

9.1.2 Comply with Cleanup Standards

Compliance with cleanup standards is defined by meeting the requirements of WAC 173-340-700 through 760, i.e., meeting calculated cleanup levels at the established point of compliance. In addition to treatment or removal, MTCA includes provisions for meeting cleanup standards through containment.

Petroleum In Soil - Of the three alternative remedies for petroleum hydrocarbon impacts, source removal more directly complies with cleanup standards, although other alternatives can meet cleanup standards. Engineering and institutional controls for soil may not meet numeric cleanup levels at the standard point of compliance, but the cleanup action can comply with cleanup standards provided:

- The selected remedy is permanent to the maximum extent practicable
- The cleanup action is protective of human health and terrestrial ecological receptors
- Institutional controls are implemented to limit activities that could interfere with the long-term integrity of the containment system
- Compliance monitoring and periodic reviews are conducted, and
- The capped or contained COCs and measures to prevent migration and contact with them are specified in a CAP.

Arsenic in Ground Water - Institutional controls for ground water may not meet numeric cleanup levels at the standard point of compliance, but the cleanup action can comply with cleanup standards provided:

- The selected remedy is permanent to the maximum extent practicable
- The cleanup action is protective of human health and terrestrial ecological receptors
- Institutional controls are implemented to limit activities that could interfere with the long-term integrity of the containment system
- Compliance monitoring and periodic reviews are conducted, and
- The capped or contained COCs and measures to prevent migration and contact with them are specified in a CAP

9.1.3 Comply with Applicable State and Federal Laws

Compliance with State and Federal Laws includes legally applicable requirements and relevant and appropriate requirements (ARARs). ARARs for this site are summarized in Table 4. All alternative remedies for petroleum hydrocarbon and arsenic impacts meet ARARs to the same relative degree, as all of the appropriate and relevant regulations and requirements listed are complied with by the cleanup.

9.1.4 Provide for Compliance Monitoring

Compliance monitoring requirements (specified in WAC 173-340-410) include the following elements:

- Protection monitoring to confirm that human health and the environment are adequately protected during implementation of an alternative
- Performance monitoring to confirm that cleanup standards or other performance standards are met
- Confirmational monitoring to monitor the long-term effectiveness of the remedy after completion of the alternative

Petroleum In Soil - All alternative remedies for petroleum hydrocarbon impacts provide compliance monitoring. The source removal and bioremediation alternatives include protection, performance, and compliance monitoring, whereas engineered containment and institutional controls would include compliance monitoring by ground water monitoring for five years (frequency to be determined).

Arsenic in Ground Water - The institutional control remedy for arsenic in ground water provides for compliance monitoring by ground water monitoring for five years (frequency to be determined).

9.2 MTCA OTHER REQUIREMENTS

Other requirements specified in MTCA include:

- **Use permanent solutions to the maximum extent practicable –** The requirement to use permanent solutions to the maximum extent practicable includes a preference hierarchy to evaluate alternatives and cost effectiveness. Cleanup technologies in order of decreasing preference include reuse or recycling; destruction or detoxification; immobilization or solidification; on-site or off-site disposal in an engineered, lined and monitored facility; on-site isolation or containment with attendant engineering controls; and institutional controls and monitoring (MTCA 173-340-360(3)(f)(iv). Under MTCA these preferences may be weighed against costs and benefits using a “disproportionate cost analysis” (WAC 173-340-360(3)(e)). Per MTCA, WAC 173-340-360(2)(c)(i) a permanent cleanup action shall be used to achieve the cleanup levels for ground water at the standard point(s) of compliance where permanent cleanup action is practicable or determined by the department to be in the public interest.

- **Provide for a reasonable restoration time frame –** alternatives that can be implemented in less time (while equivalent in other respects) are preferred under MTCA
- **Consider public concerns –** MTCA specifies public notice and participation requirements for cleanups conducted by Ecology, conducted under an order or decree, where site-specific risk assessment is used to establish cleanup levels, or where cleanup would restrict future site use

9.3 EVALUATION OF ALTERNATIVES

The alternatives for evaluation are:

- Excavation and removal (TPH), in-situ chemical fixation (arsenic), monitored natural attenuation (TPH), and engineering and institutional controls with compliance monitoring
- In-situ bioremediation (TPH), in-situ chemical fixation (arsenic), monitored natural attenuation (TPH), and engineering / institutional controls with compliance monitoring
- Monitored natural attenuation (TPH), and engineering / institutional controls with compliance monitoring

Table 5 compares each of the remedial alternatives to the minimum requirements for remedial actions listed in WAC 173-340-360(2). The alternatives are evaluated under all of the requirements, including determining whether the action uses permanent solutions to the maximum extent practicable. This determination sometimes requires a Disproportionate Cost Analysis, which is a comparative evaluation of alternatives relative to each other under the ‘permanent to the maximum extent practicable’ criterion in WAC 173-340-360(3).

9.4 DISPROPORTIONATE COST ANALYSIS

A Disproportionate Cost Analysis (DCA) is presented herein for 1) the petroleum-impacted soils remaining under the SR 522 roadway and resulting ground water contamination due to the inability to excavate all impacted soils, and 2) arsenic in ground water. The DCA compares the selected remedy (engineering and institutional controls) to excavation/disposal, MNA, and in-situ bioremediation for TPH, and in situ chemical fixation for arsenic.

The DCA per MTCA compares the relative costs and benefits of the cleanup alternatives that meet threshold requirements to allow selection of the alternative such that incremental cost is not disproportionate to the benefit. This analysis determines which of the alternatives are "permanent to the maximum extent practicable" and uses the following criteria, as specified in MTCA (WAC 173-340-360(2) & (3).

Criteria	Relative weighting factor
* Overall protectiveness of human health and the environment	30%
* Permanent reduction of toxicity, mobility and volume	20%
* Long term effectiveness	20%
* Management of short-term risks	10%
* Technical and administrative implementability	10%
* Consideration of public concerns	10%
* Cost	compared against other criteria

The relative weighting of the factors shown above are not specified in MTCA, but are assigned specifically for this Site, based on relative importance. Assignment of weighting factors is discussed below.

The DCA compares both quantitative and qualitative relative environmental benefits of each alternative against those provided by the alternative most permanent to the maximum extent practicable. Costs are disproportionate to benefits if the incremental costs of the alternative most permanent to the maximum extent practicable over that of a lower cost alternative exceed the incremental degree of benefits achieved by the alternative most permanent to the maximum extent practicable over that of the other lower cost alternative (WAC 173-340-360(e)(i)). Where the quantitative and qualitative benefits of two alternatives are equivalent, the less costly alternative is selected (WAC 173-340-360(e)(ii)(C)).

9.4.1 DCA Criteria

Protectiveness – Overall protectiveness includes the extent to which human health and the environment are protected, including the degree to which overall risks at a site are reduced, both on- and off-site, by the cleanup action and the time required to meet cleanup standards. This criterion also accounts for whether the cleanup action surpasses MTCA standards, and measures the improvement of overall environmental quality at the Site. This criterion was assigned a weighting of 30 percent, the highest of all the criteria, to reflect the fact that this is the fundamental requirement of MTCA.

Permanence – Permanence of a cleanup action is measured by the relative reduction in toxicity, mobility, or volume of hazardous substances, including the original contaminated media and any residuals generated by the cleanup, and also reflects the need for further action after cleanup. This criterion was assigned a weighting of 20 percent, the second highest weighting (along with long-term effectiveness), due to the priority given to permanent solutions by MTCA.

Long-term effectiveness – This criterion reflects the degree of certainty that a cleanup action will maintain compliance with cleanup standards over time, the magnitude of residual risk after cleanup, and the effectiveness of controls required to manage treatment residues or remaining wastes. MTCA contains a preference ranking for different types of technologies, as follows: reuse or recycling; destruction or detoxification; immobilization or solidification; on-site or off-site disposal in an engineered, lined and monitored facility; on-site isolation or containment with attendant engineering controls; and institutional controls and monitoring. Cleanup alternatives often include a combination of technologies to accomplish remedial objectives. This ranking is used along with other site-specific factors in ranking long-term effectiveness. This criterion was assigned a weighting of 20 percent, the second highest weighting (along with permanence), due to the need for a cleanup action to remain protective of human health and the environment over time.

Management of short-term risks – This criterion measures relative risks to human health and the environment during construction and implementation of the cleanup action, and the effectiveness of measures that will be taken to manage such risks. Short-term risks during cleanup may include mobilization of contaminants during construction or transport, or other ancillary safety risks during construction. These risks are typically managed via monitoring, health and safety planning, spill control planning, best management practices, etc., during cleanup construction. This criterion was assigned a weighting of 10 percent, the lowest weighting, due to the short term nature of the risk, and ability to address or correct. Management of short-term risks is also reflected in the cost analysis, as mitigating measures are added to the cleanup method. This criterion, along with implementability, is therefore less important in considering a cleanup action than protectiveness, permanence, and long-term effectiveness.

Technical and administrative implementability – This criterion evaluates the relative difficulty and uncertainty of implementing the project, and includes consideration of whether the alternative is technically possible, availability of necessary off-site facilities, services and materials, administrative and regulatory requirements, scheduling, size, complexity, monitoring requirements, access for construction operations and monitoring, and integration with existing facility operations and other current or potential remedial actions. This criterion was assigned a weighting of 10 percent, the lowest weighting. Selected cleanup technologies are already deemed to be implementable, and technical or administrative criteria are not as important as environmental concerns, protectiveness, permanence, and long-term effectiveness.

Consideration of public concerns – This criterion includes concerns from the community regarding the cleanup, and the degree to which they are addressed. Community includes individuals, community groups, local governments, tribes, federal and state agencies, or any other organization that may have an interest in or knowledge of the Site. This criterion was assigned a weighting of 10 percent, as many of the other criteria (e.g., overall protectiveness, permanence, long-term effectiveness, management of short-term risks) capture public concerns.

This criterion is meant to capture specific public concerns not already addressed by the other criteria.

Cost – Analysis of cost includes all costs associated with implementing the alternative, including: design, construction, long-term monitoring, and institutional controls. Cost estimates for the cleanup alternatives should be comparable, to allow evaluation of relative costs and benefits of the different alternatives. Costs are evaluated against the cleanup benefits in order to assess cost-effectiveness and remedy practicability, therefore no weighting factor is applied.

9.4.2 Disproportionate Cost Analysis Scoring

Table 6 summarizes the disproportionate cost analysis scoring. A discussion of each alternative and the scoring factors assigned is presented below. In situ fixation of arsenic in ground water was added to all TPH alternatives, as it was the only alternative evaluated for arsenic in ground water. For this analysis, a hypothetical "no action" alternative was added, as a benchmark needed for the quantitative analysis. As noted in Section 9.1 and Table 5, all of the cleanup alternatives meet MTCA minimum requirements. The values assigned to each alternative reflect the degree to which one of the alternatives meets a particular criterion *compared to the other alternatives*. For the following discussion, the three alternatives are referred to as A, B, and C, as follows:

A. Excavation and removal (TPH), in-situ chemical fixation (arsenic), monitored natural attenuation (TPH), and engineering and institutional controls with compliance monitoring
B. In-situ bioremediation (TPH), in-situ chemical fixation (arsenic), monitored natural attenuation (TPH), and engineering / institutional controls with compliance monitoring
C. Monitored natural attenuation (TPH), and engineering / institutional controls with compliance monitoring

- **Overall protectiveness of human health and environment –** Alternative A is the most protective, because impacted soils would be removed from the Site and ground water arsenic would be treated, therefore was scored the highest (5); Alternative B was scored lower, at 4, due to some level of active treatment; and Alternative C was scored the lowest, at 3.

- **Permanent reduction of toxicity, mobility and volume –** Alternative A was scored the highest (5) with respect to the Site, even though moving the soil to another landfill does not reduce toxicity, mobility or volume. If off site treatment is added, permanent reduction of toxicity, mobility and volume are achieved; Alternative B was scored lower, at 4, due to the presumed low level of treatment with respect to the Site; and Alternative C was scored the lowest, at 3.

- **Long term effectiveness –** Alternative A was scored the highest (5), due to the removal of soils and treatment of ground water arsenic; Alternative B was scored lower, at 3, due to slower treatment time frame for the bioremediation compared to excavation; and Alternative C was scored the lowest, at 2, due to the slowest cleanup time frame.

- **Short term risks –** Alternative A was scored the lowest (3), because open soil excavation and utility work carries the most short term risk; Alternative B was scored higher, (4) due to some limited construction activity required to implement those cleanups, and Alternative C was ranked the highest, (5) due to the least amount of on-site activity required.

- **Implementability –** Implementability was ranked similarly to short term risks, based on the activities required to implement each option.

- **Community acceptance –** All options were ranked similarly for Community Acceptance, due to no perceived preference or impacts to the community. In actuality, the more active cleanup options A and B would rank lowest due to traffic closures, truck traffic, noise, dust, etc.

No Action

A "no action" alternative is presented solely for mathematical purposes, so the lowest ranked alternative has something to be compared against, i.e., to calculate the incremental cost and benefit. The "no action" alternative is not under consideration as an actual cleanup alternative.

- **Overall protectiveness of human health and environment –** The no action alternative would not be protective, and was scored 0.

- **Permanent reduction of toxicity, mobility and volume –** The no action alternative would not reduce mobility, toxicity or volume of contaminants, and was therefore scored 0.

- **Long term effectiveness –** The no action alternative would not be effective long term, and was assigned a score of 0.

- **Short term risks –** The no action alternative has little or no short term risk, and was assigned a score of 5.

- **Implementability –** The no action alternative is implementable, and was given a score of 5.

- **Community acceptance –** The no action alternative was given a score of 0 on the basis that there would be community concerns with taking no remedial action.

9.4.3 Disproportionate Cost Analysis Summary

The net benefit of the alternatives is determined by combining the criteria scores with the relative weighting factors assigned to the criteria. The net benefit, or overall non-cost scores, are shown in Table 6. The cleanup alternatives ranked by benefit as follows:

• Remove Soils + In situ fixation + MNA + Eng/Inst Controls/Monitoring	4.4
• In-situ Bio + In situ fixation + MNA + Eng/Inst Controls/Monitoring	3.7
• MNA+ Eng/Inst Controls/Monitoring	3.2
• No Action	1

Estimated costs for the remedial alternatives are summarized in Table 7 and included in Appendix M. Dividing net benefit by total cost gives the benefit-to-cost ratio, or cost effectiveness. Figure 7 shows a graph of cost to benefit. The soil removal / MNA / In situ fixation and bioremediation / MNA / In situ fixation / engineering/institutional controls alternatives had benefit-to-cost ratios of 0.0029 and 0.00026, respectively. Engineering/institutional controls has a higher benefit-to-cost ratio of 0.08, due primarily to its lower cost compared with the other options.

As stated in Section 9.4, MTCA considers costs to be disproportionate to benefits on the basis of incremental costs and incremental benefits. For this analysis, incremental benefit (the difference in net benefit from the next lowest scored alternative) is divided by the incremental cost (the difference in cost from the next lowest cost alternative).

For this analysis, a "no action" alternative was scored, so that the lower cost alternative did not have zero values for incremental cost or benefit. The "no action" alternative was assigned a net benefit of 1, and a cost of zero.

Incremental cost effectiveness values are shown in Table 7 and on Figure 8. The soil removal / MNA / fixation and bioremediation / MNA / fixation/ engineering/institutional controls alternatives had incremental benefit to incremental cost ratios of 0.0066 and 0.0004 respectively. The engineering/institutional controls alternative has a larger incremental benefit-to-cost ratio of 0.05, again due to its relatively low cost and similar benefit compared with the other options.

9.4.4 Sensitivity Analysis

Due to the large cost differential, the analysis is not sensitive to variations in scoring of the alternatives. For example, if the remove soils / MNA / fixation alternative was scored 5 for each criteria, the incremental cost effectiveness of engineering/institutional controls would still exceed that of removal by around 5 times.

10. RECOMMENDED REMEDIAL ALTERNATIVE

This section presents proposed remedial actions to be conducted at the Site.

10.1 DESCRIPTION OF RECOMMENDED REMEDIAL ALTERNATIVE

Based on the results of the remedial investigation and feasibility study conducted under MTCA and the application of the selection of remedy criteria, the preferred cleanup alternatives for contaminated soil and ground water at the Site (developed in accordance with WAC 173-340-350 through 173-340-390) includes:

1. Contaminated soil on site prior to interim actions – adopt soil excavation interim actions as part of the final cleanup
2. Remnant contaminated soil under roadway – leave in place and implement:
    - Engineering controls – paved SR 522 roadway capping petroleum impacted soils (Parcel labeled "CITY ROW" in Figure 2B).
    - Institutional controls – implement environmental covenants for all three parcels in Figure 2B)
3. Remnant petroleum contaminated ground water – leave in place and implement:
    - Institutional controls – implement environmental covenants. Option to lift or modify pending compliance monitoring results (City ROW and City parcels in Figure 2A).
    - Monitored natural attenuation – monitor for MNA parameters
    - Ground water monitoring – provide for compliance monitoring under a Compliance Monitoring Plan
4. Ground water arsenic – include institutional controls in new environmental covenant for the arsenic impacted area and provide compliance monitoring for ground water with option to remove arsenic from the covenant if monitoring shows naturally elevated concentrations unrelated to historical or current contamination at the site. For arsenic in ground water, the institutional control could consist of an environmental covenant that documents remaining arsenic contamination in ground water, prohibits withdrawal and use for any purpose other than monitoring, site investigation, or construction-related activities with notification and approval by Ecology. A request to lift the covenant can be made to Ecology if quarterly compliance monitoring from the Site shows that the arsenic persists after historical petroleum hydrocarbon ground water contamination has not been detected for an appropriate period of time (two years after five years of combined TPH and arsenic monitoring). If arsenic remains at elevated concentrations over a sufficiently long time period with no other detections of petroleum hydrocarbon contamination, this data can be used to demonstrate that the elevated concentrations represents a locally high natural background for arsenic. Based on this evidence, a request can be made to remove the institutional controls for ground water at the site.

The Site lies on three separate properties, two parcels of land and one public roadway.

- The north portion of the site lies on part of a tax parcel called Lot C, zoned General Commercial.
- The central portion of the site lies on a portion of City Right-of-Way (new SR 522 roadway)
- The south portion of the site (City Parcel) lies on part of a tax parcel owned by the City and zoned partly for park and open space use, and partly as SR522 Corridor.

The north portion of the Site (Lot C) has no remaining soil or ground water impacts. The central and southern portions of the Site have petroleum impacts to soil and ground water, and arsenic impacts to ground water.

Figure 2a shows the proposed institutional control areas for TPH and arsenic.

10.2 RATIONALE FOR SELECTING PROPOSED ALTERNATIVE

The preferred alternative was recommended in accordance with remedy selection requirements under MTCA, and meets all threshold and other requirements specified in WAC 173-340-360. This rationale is detailed in Section 9 above.

10.3 OTHER ALTERNATIVES EVALUATED

A range of other cleanup alternatives was evaluated, as detailed in Section 7.0, and includes:

- Source removal – excavation and disposal
- In-situ bioremediation
- Monitored Natural Attenuation
- Engineering/institutional controls with monitoring

10.4 SCHEDULE FOR CLEANUP IMPLEMENTATION

TPH in soil and ground water - The interim action soil cleanups were completed in 2014. The engineering controls (i.e., capping) were implemented during final SR 522 roadway construction, in 2013. Institutional controls (environmental covenant) are anticipated to be implemented once a final CAP is approved. In the dCAP, the final cleanup recommendation will be to adopt the interim action soil cleanups as the final cleanup. The dCAP will be submitted upon approval of the final RI/FS report, as described in Schedule C of the Agreed Order. MNA for petroleum in ground water is expected to reach cleanup levels within 10 years. If TPH in ground water does not reach cleanup levels or MNA targets, a contingency plan will be developed to treat the ground water via in situ bioremediation. In situ bioremediation may require additional testing to select appropriate treatment. Additional work plans will be provided to Ecology at this point.

Arsenic in ground water - Institutional controls (environmental covenant) and compliance monitoring are anticipated to be implemented after the dCAP is issued and approved, sometime in 2016.

Per Section 4.1, if monitoring shows elevated arsenic persisting after petroleum hydrocarbon impacts have diminished for an appropriate period of time (two years after five years of combined TPH and arsenic monitoring), arsenic can be attributed to a background condition, and a request can be made to Ecology to remove the institutional controls for ground water at the site. If arsenic in ground water is found not to be a background condition, not related to some other variable (e.g., precipitation), and a source of the arsenic can be determined or located, a contingency plan will be developed to treat the ground water via in situ chemical stabilization. Chemical stabilization will require additional laboratory testing of site ground water to speciate the arsenic, bench/lab scale testing to select appropriate treatment chemicals, pilot and tracer testing to verify cleanup viability, etc. Additional work plans will be provided to Ecology at this point.

10.5 APPLICABLE STATE AND FEDERAL LAWS

All applicable state and federal laws, if any, for the proposed cleanup action will be followed. Regulatory compliance will be addressed during the permitting phase of the project, and may include grading, storm water, and other permitting issues.

10.6 COMPLIANCE WITH THRESHOLD AND OTHER MTCA REQUIREMENTS

As stated in Section 8, the proposed cleanup action complies with threshold and other MTCA requirements specified in WAC 173-340-360.

10.7 TYPES, LEVELS, AND AMOUNTS OF CONTAMINATION REMAINING ON-SITE

Contaminants remaining on site after cleanup include gasoline- and oil-range petroleum hydrocarbons in soil and diesel- and oil-range petroleum hydrocarbons and arsenic in ground water. The volume of impacted soil estimated to remain on Site is around 100 tons, and likely less. The cleanup alternatives selected, as detailed in Sections 7.2 and 8, will adequately prevent migration and contact with those substances, in soil and ground water.

11. SUMMARY AND CONCLUSIONS

Soil contaminated by petroleum hydrocarbons and metals was remediated via excavation and removal in two interim actions, one in 2010 and the second in 2013.

The Bothell Paint and Decorating Site boundaries are identified on Figures 2A and 2B. The Site lies on three separate properties, two parcels of land and one public roadway:

- Lot C - The north portion of the site lies on part of a tax parcel called Lot C, zoned General Commercial.
- Roadway - The central portion of the site lies on a portion of City Right-of-Way (new SR 522 roadway)
- City Parcel - The south portion of the site lies on part of a tax parcel owned by the City and zoned partly for park and open space use, and partly as SR522 Corridor.

The north portion of the Site (Lot C) has no remaining soil or ground water impacts. The central and southern portions of the Site have petroleum impacts to soil and ground water, and arsenic impacts to ground water.

Site cleanup levels for soil are selected as MTCA Method A. Cleanup levels for ground water are selected as MTCA Method A for petroleum hydrocarbons and the Maximum Contaminant Level (MCL) for arsenic. Points of compliance are as follows:

1. Soil
    - ➢ Standard point of compliance (throughout the Site) based on protection of ground water
    - ➢ From the ground surface to 15 feet below ground surface based on direct contact exposure
2. Ground water
    - ➢ The standard ground water point of compliance is proposed, i.e., ground water throughout the Site

Other than one sample (sample 180th 2-14 listed in Table 2) beneath an active sewer pipe in the former NE 180th Street, (now the new SR 522 roadway), the interim action cleanups achieved the Site soil cleanup levels of MTCA Method A (see Table 2). Sample 180th 2-14 had gasoline- and oil-range petroleum hydrocarbon concentrations exceeding site cleanup levels.

One confirmation soil sample out of 40 (sample P-PEX-19) exceeded the MTCA Method A cleanup level for arsenic of 20 mg/kg by 1 mg/kg. However, Site-wide compliance with the arsenic cleanup level is demonstrated statistically per the MTCA (see Section 3.3). In addition, the proposed remedial alternative of Engineered and Institutional Controls would apply to arsenic in soils because the area represented by sample P-PEX-19 lies under the realigned SR 522 roadway.

After the soil cleanups, arsenic was detected in ground water at concentrations greater than the Site cleanup level of 10 µg/L in wells BC-11, BPMW-1 and BPMW-6 (Table 3). While there is some evidence of naturally high arsenic levels in ground water in the area, elevated arsenic concentrations above regional natural background occur at a few Site wells, and thus arsenic in ground water is a COC at the Site (see Section 4.2).

One ground water sample collected in December 2014 from well BPMW-6 had a lead concentration exceeding Site cleanup criteria (Table 3).). Samples from the other three rounds of monitoring were below cleanup levels. HWA thinks that the December 2014 exceedance is an anomaly due to a quality control issue during sampling (see Section 4.3).

Following the two soil cleanups at the Site, diesel- and oil-range petroleum hydrocarbons have been detected above cleanup levels in ground water only at wells BC-10 and BPMW-6 (Table 3). Ground water from well BC-10 has not exceeded cleanup levels during the last four rounds monitored. Ground water from BPMW-6 exceeded cleanup levels during three of the last four rounds. These residual impacts are likely to attenuate naturally over time.

Based on the results of the remedial investigation and feasibility study conducted under MTCA and the application of the selection of remedy criteria, the preferred cleanup alternatives for contaminated soil and ground water at the Site (developed in accordance with WAC 173-340-350 through 173-340-390) include:

1. Lot C
    a. Petroleum contaminated soil on site prior to interim actions – adopt interim actions as the final cleanup
    b. No remaining impacts, therefore no other cleanup alternatives
2. Roadway
    a. Petroleum contaminated soil on site prior to interim actions – adopt interim actions as the final cleanup
    b. Remnant petroleum contaminated soil – leave in place and implement:
        i. Engineering controls – paved SR 522 roadway is effectively capping petroleum and impacted soils
        ii. Institutional controls – implement an environmental covenant
    c. Arsenic contaminated ground water – leave in place and implement:
        i. Institutional controls – implement an environmental covenant. Option to lift or modify pending compliance monitoring results
        ii. Ground water monitoring – provide for compliance monitoring under a Compliance Monitoring Plan
3. City Parcel
    a. Petroleum contaminated soil on site prior to interim actions – adopt interim actions as the final cleanup

- b. Arsenic contaminated ground water – leave in place and implement:
    - i. Institutional controls – implement an environmental covenant. Option to lift or modify pending compliance monitoring results
    - ii. Ground water monitoring – provide for compliance monitoring under a Compliance Monitoring Plan
- c. Petroleum contaminated ground water – leave in place and implement:
    - i. Institutional controls – implement an environmental covenant. Option to lift or modify pending compliance monitoring results
    - ii. Monitored natural attenuation - monitor for MNA parameters
    - iii. Ground water monitoring – provide for compliance monitoring under a Compliance Monitoring Plan

Remaining soil impacts are located under an active roadway, therefore the only potential receptors are future construction workers. These risks will be managed via health and safety planning, procedures, and monitoring, as typically carried out on construction projects and required under OSHA and WISHA regulations.

Remaining ground water impacts are TPH and arsenic in ground water, which is generally greater than 6 feet below grade in the areas impacted, therefore park visitors or others are unlikely to be exposed to any ground water, as there are no drinking water wells and it is not planned or legal to install any in the impacted area. The only potential human receptors would be future construction workers involved in excavation or dewatering work. These risks will be managed as described above for soil impacts.

Remaining vapor impacts are located under an active roadway. therefore the only potential human receptors would be future construction workers involved in excavation or dewatering work. These risks will be managed as described above for soil impacts. Arsenic in ground water does not pose a vapor risk, therefore there are no vapor-related risks in park-zoned areas.

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Table 1
Summary of Site-Specific MTCA Method B Soil TPH Cleanup Levels
Bothell Paint and Decorating Site

Release area	**Former UST**	**Compressor blowdown**	**Fill soils**		
TPH Type	**Mineral spirits**	**Lube oil**	**Diesel and lube oil range hydrocarbons**		
Sample	**P-TP-23-2**	**P-TP-13-3**	**P-TP-1-3**	**P-TP-4-3**	**P-TP-18-2**
Calculated Method B TPH cleanup level for direct contact (mg/Kg)	581	39,709	1,153	999	1,505
Most stringent soil risk criterion for direct contact	cPAHs mixture	Hazard Index	cPAHs mixture	cPAHs mixture	cPAHs mixture
Method B soil TPH concentration protective of ground water (mg/Kg)	100% NAPL[1]	100% NAPL	100% NAPL	100% NAPL	100% NAPL
Most stringent soil risk criterion for protection of ground water	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture
Method A soil cleanup levels (mg/Kg)	30[2] (G) 2000 (D) 2000 (O) 5 (Naphthalenes)[3] 0.10 (cPAHs TEC)[4]	2000 (D) 2000 (O) 5 (Naphthalenes) 0.10 (cPAHs TEC)			

Notes:

1 - 100% NAPL means soil containing free product would not produce a TPH concentration ≥800 µg/L in ground water

2 - Cleanup level for gasoline mixtures with benzene

3 - Sum of Naphthalene + 1-Methylnaphthalene + 2-Methylnaphthalene

4 - Toxic Equivalent Concentration of carcinogenic polynuclear aromatic hydrocarbons (cPAHs) per WAC 173-340-708(e)

TABLE 2
INTERIM ACTION SOIL CLEANUP ANALYTICAL RESULTS, 2010 & 2013
BOTHELL PAINT AND DECORATING SITE
(all results in milligrams per kilogram (mg/kg))

Sample Location	Sample Depth ft bgs	Confirmation Sample[1] Sidewall	Confirmation Sample[1] Bottom	Diesel	Oil	Gasoline	Benzene	Xylenes	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Total Naphthalenes[2]	cPAHs TEC[3]	Notes
2010 Cleanup																			
P-TP-1-3	3			**280**	**950**	<5.8			**34**	**74**	<0.58	**29**	**130**	<0.29	<12	<0.58	**1.58**	**0.079**	Excavated as of 9/3
P-TP-1-6	6	X		<39	**100**				<16	**100**	<0.78	**67**	<7.8	<0.39	<16	<0.78			
P-TP-2-2	2			**810**	**3700**														Excavated as of 9/3
P-TP-2-6	6	X		**37**	**180**												0.000	0.000	
P-TP-3-3	3			**74**	**600**														Excavated as of 9/3
P-TP-3-7	7			<35	**290**														Excavated as of 9/3
P-TP-4-3	3			**200**	**650**	<5.3			**21**	**81**	<0.58	**41**	**77**	<0.29	<12	<0.58	**0.282**	**0.020**	Excavated as of 9/1
P-TP-4-6	6			**430**	**1700**				**28**	**92**	<0.58	**31**	**140**	<0.29	<12	<0.58			Excavated as of 9/3
P-TP-5-1	1			<140	**720**	**480**	<0.00087	<0.0017											Excavated as of 9/1
P-TP-5-3	3	X		<63	**170**	<20	<0.0036	<0.0036							<11	<0.55	0.000	0.000	
P-TP-6-1	1	X		<37	<74	<9.4	<0.0012	<0.0012											
P-TP-7-2	2			<28	<55	<4.4			<11	**53**	<0.55	**27**	<5.5	<0.28	<11	<0.55			Excavated as of 9/1
P-TP-7-5	5			<140	**490**	<53			<14	**380**	**2.0**	**100**	**250**	<1.4	<55	<2.8			Excavated as of 9/1
P-TP-8-3	3			<27	**96**				<11	33	<0.55	**22**	<5.5	<0.27	<11	<0.55			Excavated as of 9/1
P-TP-8-6	6			<230	**1500**				**27**	**140**	<1.9	**58**	**92**	<0.95	<38	<1.9			Excavated as of 9/1
P-TP-9-5	5		X	<27	<55				<11	**26**	<0.55	**19**	**7.5**	<0.27	<11	<0.55	0.000	0.000	
P-TP-10-6	6	X		<29	<57				<11	**41**	<0.57	**23**	**12**	<0.29	<11	<0.57	0.000	0.000	
P-TP-11-5	5		X	<26	<53				<11	**34**	<0.53	**18**	**6.3**	<0.26	<11	<0.53	**0.0089**	**0.001**	
P-TP-11-7	7																		
P-TP-12-2	2			<28	<55														Excavated as of 9/1
P-TP-12-4	4			<29	<59	<5.9			<12	**73**	<0.59	**30**	<5.9	<0.29	<12	<0.59			
P-TP-12-6	6			<75	**160**				<15	**82**	<1.5	**19**	**16**	<0.75	<30	<1.5			
P-TP-13-3	3			<320	**2900**	<5.9			<12	**56**	<0.59	**29**	**13**	<0.30	<12	<0.59	0.000	**0.001**	Excavated as of 9/1
P-TP-13-7	7		X	<29	<58	<5.9			<12	**61**	<0.58	**34**	**12**	<0.29	<12	<0.58	0.000	0.000	
P-TP-14-1	1			<28	<55				**32**	**470**	**12**	**170**	**860**	**0.66**	<11	<0.53			Excavated as of 9/1 - stockpile on site
P-TP-15-1	1								**21**	**860**	**41**	**280**	**770**	**0.48**	<10	<0.52			Excavated as of 9/1 - stockpile on site
P-TP-16-1	1								<11	**720**	**26**	**300**	**1600**	**5.1**	<11	<0.55			Excavated as of 9/1 - stockpile on site
P-TP-17-2	2					<5.5			<11	**49**	<0.55	**25**	**15**	<0.28	<11	<0.55			Excavated as of 9/1
P-TP-17-7	7			<34	<68														Excavated as of 9/3
P-TP-18-2	2			**210**	**1100**												**0.226**	**0.034**	Excavated as of 9/3
P-TP-18-7	7			**180**	**740**				**71**	**110**	<0.68	**36**	**150**	<0.34	<14	<0.68			Excavated as of 9/3
P-TP-19-3	3			<45	**220**														
P-TP-19-7	7	X		<69	**330**				**16**	**130**	<0.98	**64**	**190**	<0.49	<20	<0.98			
P-TP-20-4	4	X		<40	**230**												0.000	0.000	
P-TP-21-3	3		X	<27	<55				<11	**39**	<0.55	**23**	<5.5	<0.27	<11	<0.55			
P-TP-22-3	3	X		<71	**400**	<20	<0.0032	<0.0032	<13	**91**	<1.3	**32**	**81**	<0.64	<25	<1.3			
P-TP-23-2	2			<41	**230**	**8.6**	<0.0011	<0.0011	<11	**68**	<0.53	**37**	<5.3	<0.27	<11	<0.53	**0.113**	**0.050**	Excavated as of 9/1
P-TP-23-4	4			<120	**370**	<44	<0.0089	<0.0089	**27**	**190**	<1.2	**27**	**130**	<1.2	<47	<2.4			Excavated as of 9/1
P-TP-24-2						**48**	<0.023	<0.11										**0.047**	Near BP-26
P-TP-25-4	4			**260**	**560**	<6.5	<0.0011	**0.0022**	**62**	**83**	<0.59	**35**	**87**	<0.30	<12	<0.59	**0.209**	**0.019**	North sidewall, former UST, excavated as of 9/1
P-TP-25-8	6	X		<ND	**130**	**80**	<0.0025	**0.0079**	**20**	**97**	<0.88	**27**	**79**	<0.44	<18	<0.88			
P-TP-26-5	5	X		<26	<53				<11	**39**	<0.53	**22**	**18**	<0.26	<11	<0.53			
P-TP-26-7	7																		Sample put on hold at lab at HWA's request
P-TP-27-2						<5.4	<0.02	<0.054										0.0088	Near BP-26
P-PEX-1-7	7		X	<240	**690**				<8.5	**72**	<1.7	**13**	<34	<1.7	<68	<3.4	0.000	0.000	Over excavation at TP-8
P-PEX-2-6	6	X		<170	**620**				<8.6	**63**	<1.7	**11**	<34	<1.7	<69	<3.4	0.000	0.000	Over excavation at TP-7
P-PEX-3-4	4		X	<28	<57				**14**	**57**	<0.57	**29**	**15**	<0.28	<11	<0.57	0.000	0.000	Confirmation sample north of steel building location
P-PEX-4-6	3	X		<53	**130**	<16			<11	**5.6**	<1.1	**19**	**15**	<0.53	<21	<1.1	0.000	0.000	
P-PEX-5-3	3	X		<28	<55				**<11**	**40**	<0.55	**64**	**11**	0.28			0.000	**0.008**	East sidewall, near BP-MW-1
P-PEX-6-3	3			<250	**1600**	**7.4**			**27**	**64**	**0.68**	**35**	**120**	<0.31	<12	<0.62	0.000	**0.001**	West sidewall, All BETX = ND, excavated 9/3
P-PEX-7-3	3	X							<12								0.000	0.000	Over excavation of P-PEX-6-3
P-PEX-8-8	8		X						<12										Over excavation of TP-17 location
P-PEX-9-3	3	X		<300	**2500**														West sidewall, max extent
P-PEX-10-3	3	X		**1300**	**3100**														25' west of BPMW-3 - soils left in place under road
P-PEX-11-3	3	X		**<30**	**120**												**0.040**	**0.033**	25' east of BPMW-3 - soils left in place under road
P-PEX-12-3	3	X		**300**	**1700**														East sidewall, max extent
P-PEX-13-7	7								**93**										Between TP-4 and VB-1
P-PEX-14-3	3	X		<30	**260**				<11										East sidewall, near former catch basin
P-PEX-15-3	3			**210**	**2700**				**21**										
P-PEX-16-10	10			<58	**210**				**47**	**590**	**2.5**	**49**	**410**	**1.2**	<23	<1.2	0.000	**0.150**	Bottom sample in wood waste area
P-PEX-17-7	7			**490**	**970**				**62**	**70**	**1.4**	**46**	**160**	<0.29	<12	<0.58	**0.663**	**0.020**	Sidewall sample to west of wood waste area
P-PEX-18-9	9			<44	**270**				<17	**110**	<0.87	37	**80**	<0.44	<17	<0.87	0.000	**0.570**	Bottom sample on east side of wood waste area
P-PEX-19-7	7	X		<28	**110**				**21**	**62**	<0.57	35	**46**	<0.28	<11	<0.57	**0.092**	**0.030**	Sidewall sample on west side of wood waste area
P-PEX-21-11	11		X	<31	<62				<12	**32**	<0.62	20	<6.2	<0.31	<12	<0.62	0.000	**0.010**	Bottom sample in wood waste area
P-PEX-23-5	5	X		68	**410**				<12	**52**	<0.58	26	**26**	<0.29	<12	<0.58	**0.063**	**0.030**	Sidewall sample on east side of wood waste area
CONC-1,2,3,4 Comp.	NA			<27	<54				**11**	**69**	<0.54	**20**	**21**	<0.27	<11	<0.54			Composite of 3 concrete stockpile samples

TABLE 2
INTERIM ACTION SOIL CLEANUP ANALYTICAL RESULTS, 2010 & 2013
BOTHELL PAINT AND DECORATING SITE
(all results in milligrams per kilogram (mg/kg))

		Confirmation Sample[1]																	
Sample Location	Sample Depth ft bgs	Sidewall	Bottom	Diesel	Oil	Gasoline	Benzene	Xylenes	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Total Naphthalenes[2]	cPAHs TEC[3]	Notes
2013 Cleanup																			
Northwest excavation																			
P-PEX-24-6	6			<48	**250**	**33**	**0.022**	<0.075	**43**	**73**	<0.63	**53**	**100**	<0.32	<13	<1.3			
P-PEX-25-8	8	X		<36	<72	<9.0	<0.020	<0.09	<14	43	<0.72	44	<7.2	<0.36	<14	<1.4			
P-PEX-26-8	8	X				<5.5	<0.020	<0.055											
180th Street Drainage Improvements																			
180th-1-18	18		X	<29	<59	<6	<0.020	<0.06	<12	**35**	<0.59	**66**	<5.9	<0.29	<12	<1.2			
180th-2-14	14	X		<5100	**34000**	**150**	<0.020	**0.14**	<16	**74**	<0.81	**56**	**16**	<0.41	<16	<1.6			
180th-3-14	14	X		<29	<59	<5.3	<0.020	<0.053	<12	**31**	<0.58	**42**	<5.8	<0.29	<12	<1.2			
North (SR 522) remedial excavation																			
PTP28-9	9			<29	<59				<12	**40**	<0.59	**38**	<5.9	<0.29	<12	<1.2			
PTP28-11	11			<28	<56				<11	**29**	<0.56	**18**	<5.6	<0.28	<11	<1.1			
PTP29-5	5			<32	<63				<13	**66**	<0.64	**23**	<6.4	<0.32	<13	<1.3			
PTP29-11	11			<32	<64				<13	**43**	<0.63	**39**	<6.3	<0.31	<13	<1.3			
PTP30-6	6			<28	**120**				<11	**45**	<0.56	**41**	<5.6	<0.28	<11	<1.1			
PTP30-10	10			<32	<64				<13	**53**	<0.64	**37**	<6.4	<0.32	<13	<1.3			
PTP31-6	6			<30	<59				<12	**58**	<0.59	**36**	<5.9	<0.30	<12	<1.2			
PTP31-10	10			<29	<59				<12	**43**	<0.59	**31**	<5.9	<0.29	<12	<1.2			
PTP32-1.5	1.5			<120	**700**				<12	**76**	<0.60	**46**	**72**	<0.30	<12	<1.2			
PTP32-10	10			<29	**55**				<12	**57**	<0.58	**29**	**6.6**	<0.29	<12	<1.2			
PTP33-2	2			<30	**240**				<12	**75**	<0.60	**38**	**80**	<0.30	<12	<1.2			
PTP33-7	7			**100**	**190**				<13	**61**	<0.64	**38**	**25**	<0.32	<13	<1.3			
PTP33-9	9			**50**	**190**	<6.9			<12	**70**	<0.61	**42**	**62**	<0.31	<12	<1.2			
PTP33-11	11			**290**	**170**				<13	**57**	<0.64	**29**	**26**	<0.32	<13	<1.3			
PTP35-7	7			<31	**110**				<12	**80**	<0.62	**36**	**25**	<0.32	<12	<1.2			
PTP36-10	10			<29	<57				<11	**43**	<0.57	**38**	<6.7	<0.29	<11	<1.1			
PPEX-27-4	4	X		<32	<64														**Adjacent to P-PEX-9 (removed)**
PPEX-28-4	4	X		<31	**240**														**Adjacent to P-PEX-10 (removed)**
PPEX-29-8	8		X	<29	<59														**Adjacent to P-PEX-10 (removed)**
PPEX-30-3	3	X		**68**	**590**														
PPEX-31-7	7		X	<27	**180**														
PPEX-32-8	8		X	<27	**150**														
PPEX-33-6	6	X		<28	**69**														
PPEX-34-8	8		X	<29	<58														
PPEX-35-5	5	X		**65**	**310**														**Adjacent to P-PEX-12 (removed)**
PPEX-36-7	7		X	<29	**150**														**Adjacent to P-PEX-12 (removed)**
Monitoring Wells																			
BPMW-4	14					<5.7	<0.020	<0.057											
BPMW-5	5					<7.8	<0.020	<0.078											
BPMW-6	10					<4.8	<0.020	<0.048											
	MTCA Method A Cleanup Level[4]			2000		100/30[5]	0.03	9	20	NA	2	2000/19[6]	250	2	NA	NA	5	0.100	
	MTCA Method B Cleanup Level[7]			999		581			24	16,000	80	120,000	NA	24	400	400			
	Background[8]			NA		NA			7	255	1	48	24	0.07	0.78	0.61	NA	NA	

Notes:

< - Not detected at laboratory's reporting limit

Blank - Sample was not analyzed for this constituent

NA - Not applicable

Bold - Analyte Detected

Bold/Highlighted - Analyte detected above MTCA Method A soil cleanup level

▨ - Sample in area that was subsequently excavated

1 - Confirmation that soil remaining in place meets MTCA cleanup levels or was left in place at the limits of excavation adjacent to SR 522

2 - Sum of Napthalene + 1-Methylnaphthalene + 2-Methylnaphthalene

3 - Toxic Equivalent Concentration of carcinogenic polynuclear aromatic hydrocarbons (cPAHs) per WAC 173-340-708(e)

4 - Washington Model Toxics Control Act Method A (Table 740-1) soil cleanup levels for unrestricted land use

5 - The MTCA Method A soil cleanup level is 100 mg/kg for gasoline mixtures without benzene and if the total of ethylbenzene, toluene, plus xylenes is less than 1% of the gasoline mixture. The soil cleanup level for all other gasoline mixtures is 30 mg/kg

6 - The MTCA Method A soil cleanup level for trivalent chromium is 2,000 mg/kg. Geochemical conditions on site would not cause oxidation to hexavalent chromium having a cleanup level of 19 mg/kg

7 - Method B TPH cleanup levels are site specific values calculated using MTCATPH1.1. Method B cleanup levels for metals are from Ecology's CLARC (Cleanup Level & Risk Calculations) database for non-carcinogens

8 - Background metals concentrations per *Natural Background Soil Metals Concentrations in Washington State* (Ecology, 1994) for the Puget Sound area

Table 3
Bothell Paint Site
Ground Water Analytical Results

			FIELD PARAMETERS					LABORATORY RESULTS																				NOTES
Sample Location	**Screened Depth, (ft bgs)**	**Sample Date**	**Depth to Water (ft bgs)**	**pH (units)**	**Conductivity (mS)**	**Temperature (°C)**	**Dissolved Oxygen (mg/L)**	**WTPH-Gx (µg/L)**	**WTPH-Dx Diesel (µg/L)**	**WTPH-Dx Oil (µg/L)**	**Benzene (µg/L)**	**Toluene (µg/L)**	**Ethylbenzene (µg/L)**	**Xylenes (µg/L)**	**Total Arsenic (µg/L)**	**Dissolved Arsenic (µg/L)**	**Total Cadmium (µg/L)**	**Dissolved Cadmium (µg/L)**	**Total Chromium (µg/L)**	**Dissolved Chromium (µg/L)**	**Total Lead (µg/L)**	**Dissolved Lead (µg/L)**	**Dissolved Manganese (ug/L)**	**Nitrate (mg/L)**	**Sulfate (mg/L)**	**Alkalinity (mg/L)**	**Methane (ug/L)**	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)								**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**10****	**10****	**5**	**5**	**50**	**50**	**15**	**15**						
BC-10	10-20	2/4/2009	3.48	6.82	296	14	0.36	<100	<310	**1400**	<0.2	<1	<0.2	<0.4	**37**													
		9/18/2009		7.36	332	16.6	2.63	<100							**5.1**				**27.0**		**7.9**							
		6/13/2014	10.60	6.30	796	13.3	0.32	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**3.3**	**3.0**												
		9/18/2014	10.59	6.20	511	18.6	3.01	<100	**550**	**700**	<1.0	<1.0	<1.0	<1.0		<3.0												
		12/11/2014	11.14	6.46	441	13.6	0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0												
		4/2/2015	11.27	6.79	369	13.06	0.00	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0							**160**	**0.39**	<5	**190**	**220**	
		8/7/2015	11.92	6.49	359	17.41	0.00	<100	<270	<430	<1.0	<1.0	<1.0	<1.0														
		12/1/2015	11.05	6.30	359	14.42	0.00	**180**	<250	<410	<1.0	<1.0	<1.0	<1.0														
BC-11	10-20	12/30/2008	3.75	6.47	167	11.8	0.28	<100	<250	<400	<0.2	<1.0	<0.2	<0.4	<3.3													
		9/18/2009		7.05	221	13.8	2.91	<100							<3.3				<6.7		<1.1							
		5/27/2014	12.76	6.53	1514	13.0	0.05	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**6.2**	**5.1**												
		9/11/2014	11.62	6.71	778	15.8	0.84	<100	<260	**420**	<1.0	<5.0	<1.0	<5.0	**11**	**9.7**												
		12/10/2014	16.9	6.14	825	13.7	1.15	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	**9**	**8.9**												
		3/26/2015	11.01	6.2	767	13.7	0.00	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**7.7**	**6.3**												
BPMW-1	10-20	9/18/2009		7.57	443	13.8	2.97	<100							**5.1**				<6.7		<1.1							
		5/27/2014	12.22	6.62	1261	14.8	0.67	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0												
		9/8/2014	12.63	6.47	398	16.8	0.12	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**14**	**8.7**												
		12/10/2014	14.81	6.31	559	14	0.50	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	**19**	**12**												
		3/26/2015	14.43	6.20	420	15.14	0.00	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**15**	**9.9**								**0.21**	<5	**220**	**6300**	
		5/27/2014	2.91	6.76	644	13.0	0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0												
		9/7/2014	4.38	7.07	279	14.9	1.13	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0												
BPMW-4	10-20	5/28/2014	8.96	6.43	876	13.0	0.10	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0												
		9/9/2014	9.71	6.55	404	16.4	0.47	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0												
		12/10/2014	8.35	6.46	557	14.7	0.40	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	**4.3**	<3.0												
		3/30/2015	8.50	5.24	473	13.18	0.00	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	**4.5**	<3.0												
BPMW-5	5-15	5/28/2014	8.10	6.22	1059	13.1	0.31	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	**3.3**	<3.0												
		9/9/2014	8.30	6.4	659	18.8	0.40	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0												
		12/10/2014	6.27	7.01	577	13.5	2.10	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0												
BPMW-6	5-15	5/27/2014	6.67	6.39	1520	11.9	0.09	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	**3.3**	**3.0**	<4.4	<4	<11	<10	<1.1	<1						
		9/8/2014	7.00	6.43	660	17.0	0.41	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**39**	**23**		<4		<10		<1						
		12/19/2014	NA	6.13	5590	10.7	0.40	<400	**580**	**500**	<4.0	<4.0	<4.0	<4.0	**64**	**60***		<4.4		**18**		**27***						
		3/26/2015	NA	7.43	1595	11.97	0.00	<100	**1600**	**2300**	<1.0	**2**	<1.0	<1.0	**52**	**54**	<4.4	<4.0	<11	<10	**5.1**	**3.2**	**560**					
		8/6/2015	11.96	6.45	611	20.26	0.00	<100	**470**	**720**	<1.0	<1.0	<1.0	<1.0														
QC Samples																												
Duplicate		12/10/2014						<100	<250	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0												Duplicate of BPMW-5 12/10/14
Trip Blank		5/28/2014						<100			<1.0	<1.0	<1.0	<1.0														
		9/18/2014						<100			<1.0	<1.0	<1.0	<1.0														
		12/10/2014						<100			<1.0	<1.0	<1.0	<1.0														
		3/30/2015						<100			<1.0	<1.0	<1.0	<1.0														

* Results flagged as biased high by lab due to sediment in sample

** Arsenic ground water cleanup level based on drinking water MCL

< – Analyte not detected at laboratory's listed reporting limit

Bold indicates analyte detected at a concentration greater than the laboratory reporing limit

Yellow highlight indicates analyte exceeds MTCA cleanup level

Table 4 . Potential Applicable or Relevant and Appropriate Requirements (ARARs)

ARAR	Description	Applicability
Soil		
Model Toxics Control Act (WAC 173-340-740, -747)	MTCA regulates the investigation and cleanup of releases to the environment that may pose a threat to human health or the environment. Establishes cleanup levels for soil, including derivation of soil concentrations protective of groundwater.	MTCA cleanup levels are applicable to Site soil.
Groundwater		
Safe Drinking Water Act, Primary Drinking Water Regulations (40 Code of Federal Regulations [CFR] 141.50 and 141.61(a))	These regulations protect the quality of public drinking water supplies through regulation of chemical parameters and constituent concentrations as maximum concentration limits (MCLs).	MCLs are potentially relevant and appropriate where groundwater is a potential source of drinking water.
Model Toxics Control Act (WAC 173-340-720)	MTCA regulates the investigation and cleanup of releases to the environment that may pose a threat to human health or the environment. Establishes cleanup levels for groundwater.	MTCA cleanup levels are applicable to Site groundwater.
Surface Water		
Clean Water Act, Section 304, National Recommended Water Quality Criteria, EPA Office of Science and Technology (4304T, 2004).	There are no ambient water quality criteria for PCE for protection of freshwater organisms.	Surface water quality criteria are potentially relevant and appropriate to ambient surface water quality for point-source discharges to Horse Creek.
Clean Water Act, National Pollutant Discharge Elimination System (40 CFR Part 122) and Washington State National Pollutant Discharge Elimination System Permit Program (WAC 173-220).	The National Pollutant Discharge Elimination System (NPDES) program requires that permits be obtained for point-source discharges of pollutants to surface water. Under this regulation, a point-source discharge to a surface water body cannot cause an exceedance of water quality standards in the receiving water body outside the mixing zone.	Substantive regulatory requirements of the NPDES permit program are potentially applicable to the direct discharge of treated groundwater to a surface water body such as Horse Creek or Sammamish River.
Clean Water Act's National Toxics Rule (NTR) (40 CFR 131.36)	Provides values that have to be met for point-source discharges to surface water.	Potentially applicable to point-source discharges to Horse Creek should remedial activities cause release to surface water. If applicable, these values would have to be met at the mixing zone boundary established for the discharge.
Clean Water Act, General Pretreatment Regulations (40 CFR Part 403).	The regulations limit pollutants in wastewater discharges to sanitary sewer systems to protect publicly owned treatment works (POTWs) from accepting wastewater that would damage their system or cause them to exceed their NPDES permit discharge limits.	These regulations are potentially applicable to the discharge of treated groundwater to City of Bothell POTWs.
Washington State Water Quality Standards for Surface Waters (WAC 173-201A)	Washington State water quality standards protect freshwater aquatic life by specifying protection criteria by stretch of surface waters. WAC 173-201A provides limitations on other parameters such as turbidity, temperature, dissolved oxygen, and pH for protection of organisms. Tributaries of waters whose uses are designated salmon and trout spawning, core rearing and migration, or extraordinary primary contact recreation are protected at the same level as the waters themselves.	The substantive requirements of this regulation are potentially applicable for remedial actions affecting Horse Creek.
Washington Surface Water Quality Standards, Short-Term Modifications (WAC 173-201A-410)	Washington State provides for short-term modifications of standards for specific water bodies on a short-term basis when necessary to accommodate essential activities, respond to emergencies, or to otherwise protect the public interest.	These would be potentially applicable to remedial actions affecting Horse Creek.
Model Toxics Control Act (WAC 173-340-730)	MTCA regulates the investigation and cleanup of releases to the environment that may pose a threat to human health or the environment. Establishes cleanup levels for surface water.	MTCA cleanup levels may be applicable to the Site if remedial activities cause a release to surface water.
Air		
National Emission Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR Part 261)	Establishes specific emissions levels allowed for toxic air pollutants.	Applicable to treatment alternatives that may emit toxic pollutants to the air.
Washington Clean Air Act and Implementing Regulations (WAC 173-400; WAC 173-460; WAC 173-490)	WAC 173-400 requires air emissions at the Site boundary to fall below the acceptable source impact limit (ASIL). WAC 173-400 also requires control of fugitive dust emissions during construction and defines general emission discharge treatment requirements. WAC 173-460 requires systemic control of new sources emitting air pollutants. WAC 173-490 sets emission standards and source control for volatile organic compounds.	Applicable for air stripping/sparging remedial technology.
Model Toxics Control Act (WAC 173-340-750)	MTCA regulates the investigation and cleanup of releases to the environment that may pose a threat to human health or the environment. Establishes cleanup levels for air.	MTCA cleanup levels may be applicable to the Site if remedial activities cause a release to air.

Table 4 . Potential Applicable or Relevant and Appropriate Requirements (ARARs)

ARAR	Description	Applicability
Miscellaneous		
Protection of Wetlands, Executive Order 11990 (40 CFR Part 6, Appendix A)	This executive order mandates that response actions taken by federal agencies must be designed to avoid long- and short-term impacts to wetlands. If remediation activities are located near/in wetlands, the activities must be designed to avoid adverse impact to the wetlands wherever possible, including minimizing wetlands destruction and preserving wetland values.	This Act would be potentially applicable to remedial activities at the Site.
Endangered Species Act (50 CFR Parts 17, 402)	Section 7 of the Endangered Species Act (ESA) and 40 CFR Part 402 require that federal agencies consider the effects of their proposed actions on federal listed species. It requires consultation between the agency proposing the action and the U.S. Fish and Wildlife Service (USFWS) or National Oceanic and Atmospheric Administration (NOAA) Fisheries, as appropriate. Preparation of a biological assessment is conducted, addressing the potential effects to listed species in the area and methods to minimize those effects.	The ESA is potentially applicable to remedial actions at the Site because the USFWS has determined that federal threatened species (bald eagle and bull trout) may use the project area. Therefore, they could potentially be affected by these actions.
Native American Graves Protection and Repatriation Act (43 CFR Part 10)	Native American Graves Protection and Repatriation Act regulations protect Native American burials from desecration through the removal and trafficking of human remains and "cultural items," including funerary and sacred objects.	This Act is potentially applicable to remedial actions at the Site because it is possible that the disturbance of Native American materials could occur as a result of work in the stream bed or subsurface excavations elsewhere at the Site. Such materials are not known to be present at the Site, but could be inadvertently uncovered during soil or sediment removal.
National Historic Preservation Act (36 CFR Parts 60, 63, and 800)	National Historic Preservation Act (NHPA) regulations require federal agencies to consider the possible effects on historic sites or structures of actions proposed for federal funding or approval. Historic sites or structures as defined in the regulations are those on or eligible for the National Register of Historic Places, generally at least 50 years old.	This Act is potentially applicable to stream bed or other subsurface work at the Site. No such sites are known to be present in the area.
Washington Hazardous Waste Management Act (WAC 173-303)	Establishes standards for the generation, transport, treatment, storage, or disposal of designated dangerous waste in the state.	This regulation is potentially applicable to alternatives that would involve handling of contaminated media at the Site. The area of contamination policy allows contaminated media to be consolidated within the same area of a site without triggering Resource Conservation and Recovery Act or Washington dangerous waste regulations.
Department of Transportation of Hazardous Wastes (49 CFR 105 – 180)	Establishes specific U.S. Department of Transportation rules and technical guidelines for the off-site transport of hazardous materials.	Applicable to remedial activities that involve the off-site transportation of hazardous waste.
Washington Solid Waste Handling Standards (WAC 173-350)	Establishes standards for handling and disposal of solid non-hazardous waste in Washington.	These regulations are potentially applicable to solid nonhazardous wastes and are potentially relevant and appropriate to on-site remedial actions governing contaminated media management.
Washington Water Well Construction Act Regulations (WAC 173-160)	Provides requirements for water well construction.	These regulations are potentially applicable to the installation, operation, or closure of monitoring and treatment wells at the Site.

Table 5
Cleanup Alternatives Evaluation

	Exc & removal, in-situ chem fix, MNA, E&IC w/ mon	In-situ bio, in-situ chem fix, MNA, E&IC w/ mon	MNA, E&IC w/ mon
Threshold requirements			
Protect human health and the environment	This alternative would reduce COCs	This alternative would likely reduce COCs	Human health and the environment would still be protected
Comply with cleanup standards	Yes	Likely	No
Complies with applicable state and federal laws	All alternatives would comply with applicable state and federal laws		
Provide for compliance monitoring	Yes	Yes	Yes
Other requirements			
Use permanent solutions to maximum extent practicable	This alternative is the most permanent, as it includes source removal	Yes, if bioremediation is successful	The engineering and institutional controls would be permanent
Provide for a reasonable restoration time frame	This alternative has the shortest timeframe, as the source would be removed	Yes, if bioremediation is successful	No
Consider public concerns	All alternatives would Consider public concerns		

Table 6
Disproportionate Cost Analysis Evaluation Criteria
Score is Based on Scale of 1-5

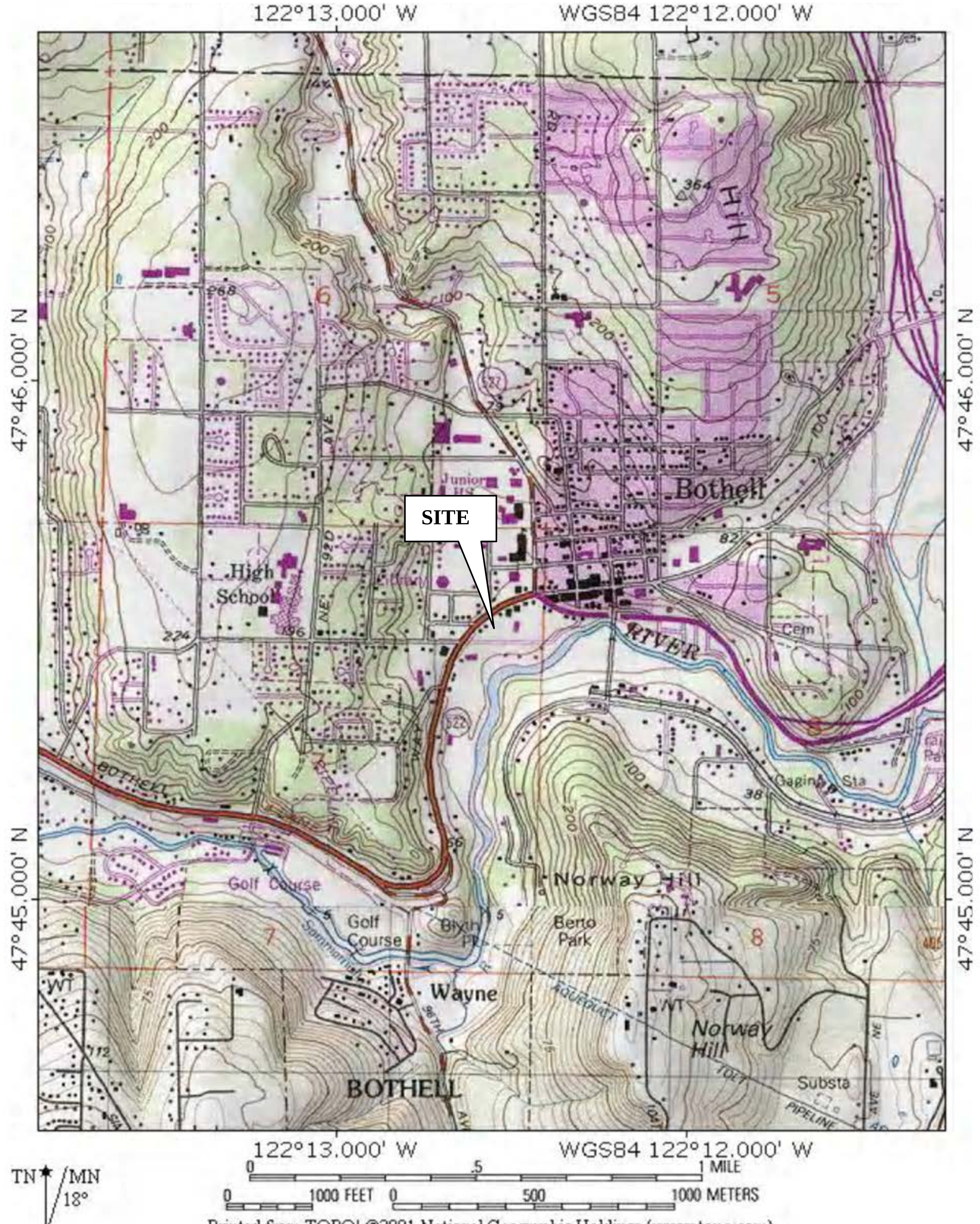
		Exc & removal, in-situ chem fix, MNA, E&IC w/ mon		In-situ bio, in-situ chem fix, MNA, E&IC w/ mon		MNA, E&IC w/ mon		No Action	
	weight	score	value	score	value	score	value	score	value
Overall protectiveness of human health & environment	30%	5	1.5	4	1.2	3	0.9	0	0
Permanent reduction of toxicity, mobility and volume	20%	5	1	4	0.8	3	0.6	0	0
Long term effectiveness	20%	5	1	3	0.6	2	0.4	0	0
Short term risks	10%	3	0.3	4	0.4	5	0.5	5	0.5
Implementability	10%	3	0.3	4	0.4	5	0.5	5	0.5
Community acceptance	10%	3	0.3	3	0.3	3	0.3	0	0
Total score			4.4		3.7		3.2		1

Table 7
Disproportionate Cost Analysis

	Exc & removal, in-situ chem fix, MNA, E&IC w/ mon	In-situ bio, in-situ chem fix, MNA, E&IC w/ mon	MNA, E&IC w/ mon	No Action
Disproportionate cost analysis				
Estimated cleanup cost ($ x 1000)	1619	1514	128	0
Net Benefit	4.40	3.70	3.20	1.00
Incremental benefit	0.70	0.50	2.20	0
Benefit : cost (cost-effectiveness)	0.0027	0.0024	0.02	
Incremental cost	105.62	1385.42	128.20	0
Incremental benefit : incremental cost	0.0066	0.0004	0.02	

Table 8
RI Summary

	Soil	**Ground Water**		**Sediment**	**Surface Water**	**Air**
COCs	**TPH-Gas, Oil**	**TPH-gas, Diesel, oil**	**Arsenic**	none	none	**TPH-Gas, benzene**
Primary sources	Historic Service Stations	Historic Service Stations	Unknown			Historic Service Stations
Primary release mechanisms	Release to soil	Release to soil	Unknown			Release to soil
Secondary sources	Ground water	Soil	Unknown			Soil
Secondary release mechanisms	Ground water to soil	Soil to ground water	Unknown			Soil to ground water
Pathways to the receptors	Direct contact, ingestion, inhalation	Direct contact, ingestion	Direct contact, ingestion			Inhalation
Receptors	Human, ecological	Human, ecological	Human, ecological			Building occupants
Cleanup levels	Method A	Method A	MCL			
Points of compliance	Standard	Standard	Standard			Indoor air
Notes	After interim actions, all soil on site meets cleanup standards except one small area under a roadway	Proposed remedy is institutional controls and ground water monitoring	Proposed remedy is institutional controls and ground water monitoring	No sediment impacts identified	No surface water impacts identified	No volatile contaminants remaining + no buildings present or planned in other impacted areas



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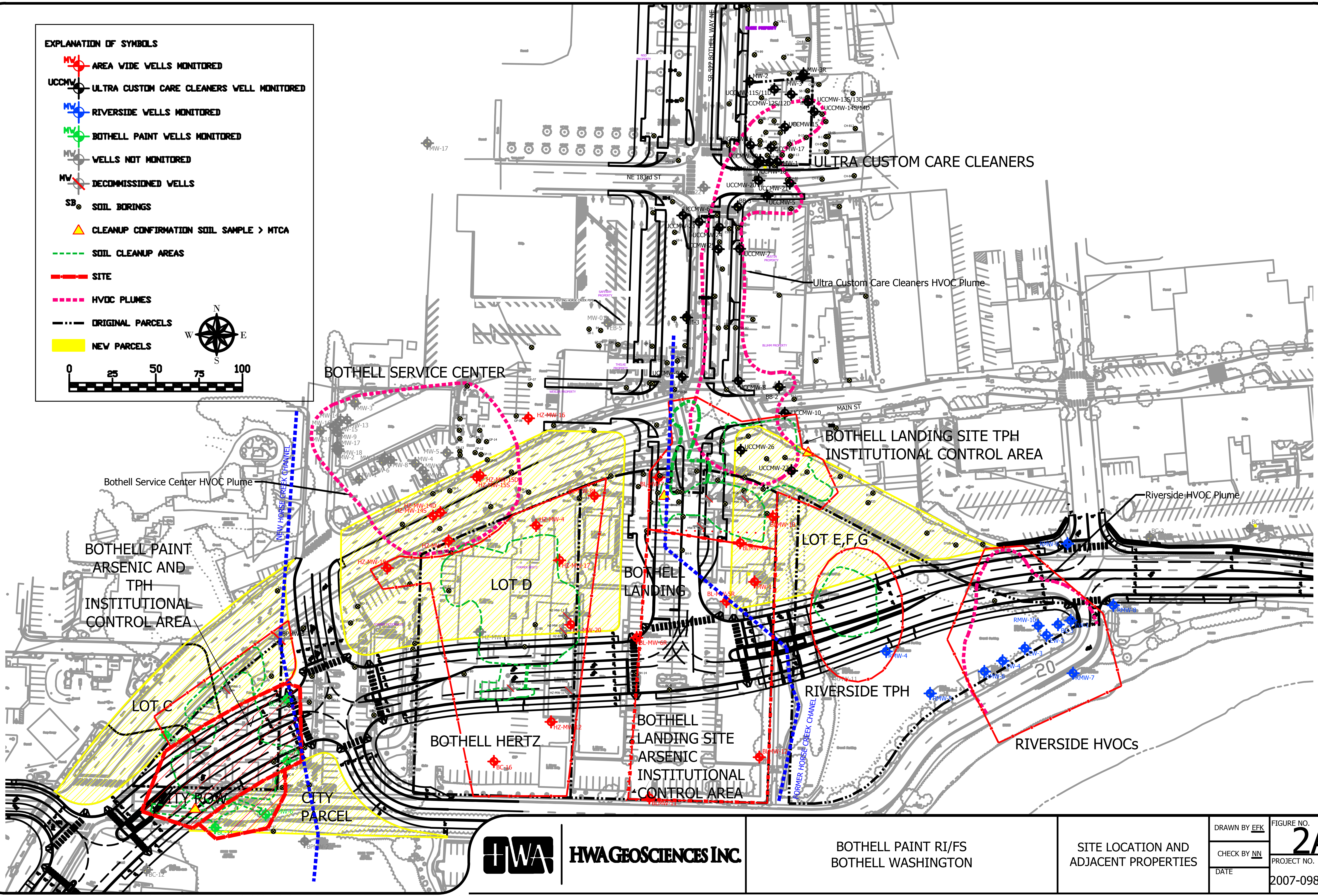
HWA GEOSCIENCES INC.

SITE VICINITY

BOTHELL PAINT RI/FS REPORT
BOTHELL, WASHINGTON

FIGURE NO.
1

PROJECT NO.
2007098-2021



HWA GEOSCIENCES INC.

BOTHELL PAINT RI/FS
BOTHELL WASHINGTON

SITE LOCATION AND
ADJACENT PROPERTIES

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CHECK BY NN
DATE

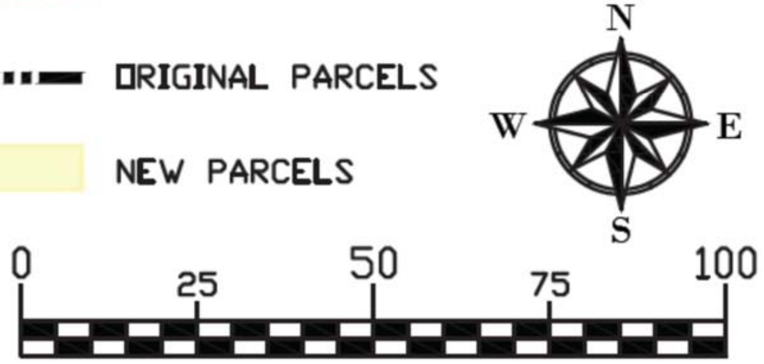
FIGURE NO.
2A

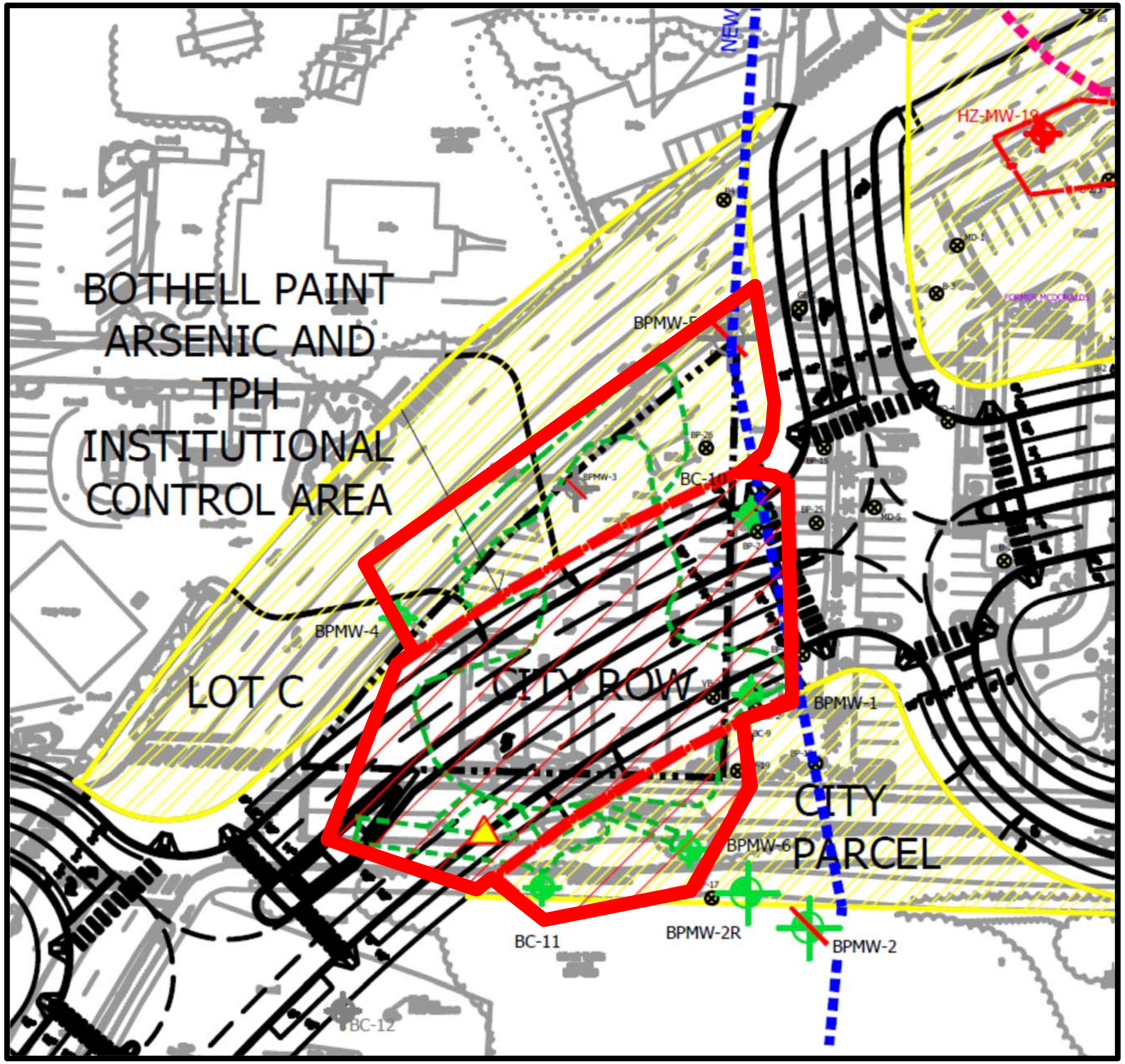
PROJECT NO.
2007-098 T2020

C:\USERS\COMPUTER\GOOGLE DRIVE\COMPANIES\CLIENTS\HWA GEOSCIENCES\05_04_2016\HWA 2007-098-21 T2020 (FIG2).DWG <11x17 all wells (2)> Plotted: 5/22/2015 9:11 AM

EXPLANATION OF SYMBOLS

- MW ⊕ AREA WIDE WELLS MONITORED
- UCCMW ⊕ ULTRA CUSTOM CARE CLEANERS WELL MONITORED
- MW ⊕ RIVERSIDE WELLS MONITORED
- MW ⊕ BOTHELL PAINT WELLS MONITORED
- MW ⊕ WELLS NOT MONITORED
- MW ⊘ DECOMMISSIONED WELLS
- SB ⊗ SOIL BORINGS
- △ CLEANUP CONFIRMATION SOIL SAMPLE > MTCA
- ▪▪▪▪▪ SOIL CLEANUP AREAS
- ▬ SITE
- ▪▪▪▪▪ HVOC PLUMES
- ▬ · · ▬ ORIGINAL PARCELS
- 🟨 NEW PARCELS





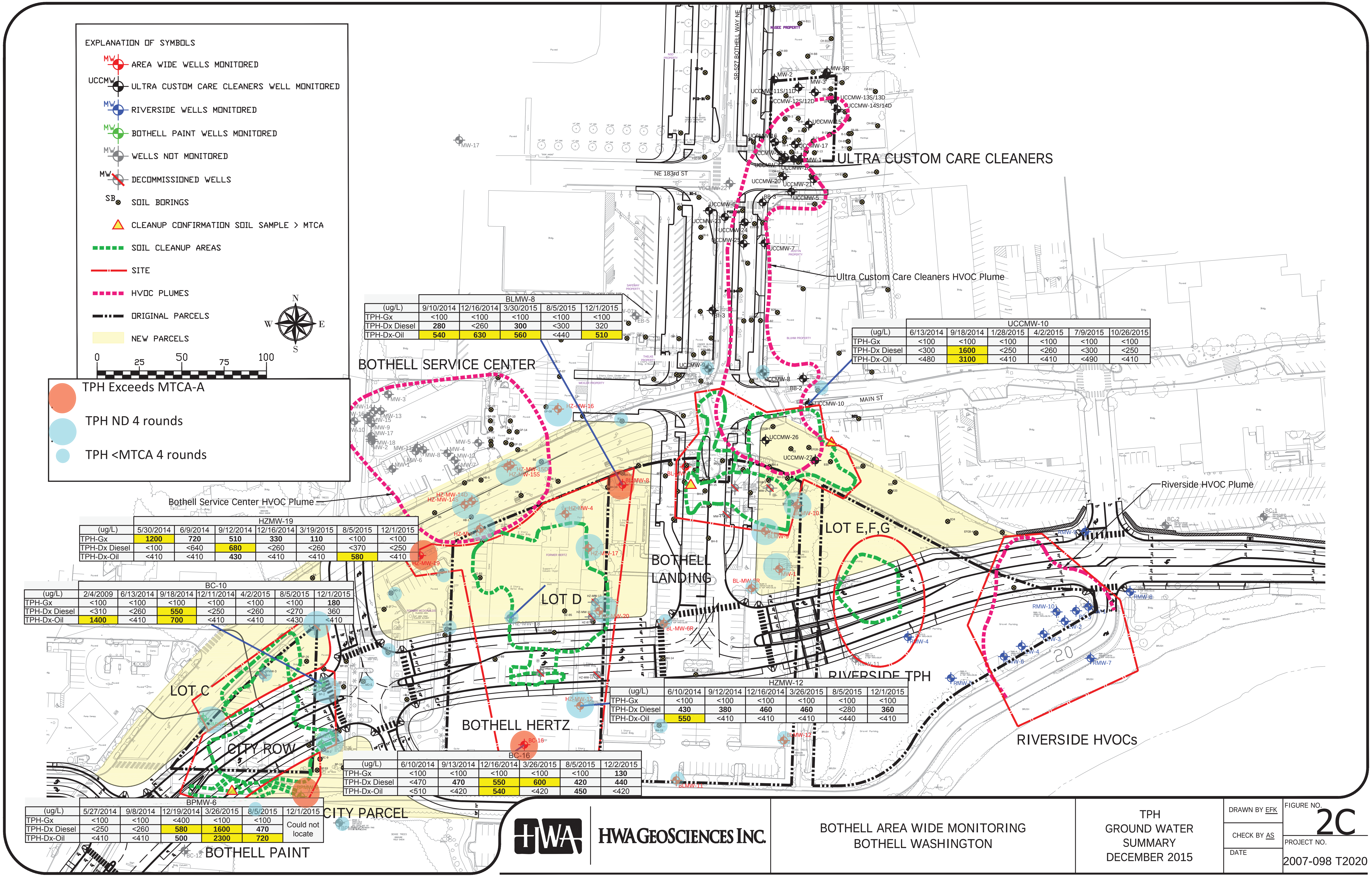
HWA GEOSCIENCES INC.

DETAIL OF SITE LOCATION

BOTHELL PAINT RI/FS
BOTHELL, WASHINGTON

FIGURE NO.
2B

PROJECT NO.
2007-098-T2020



(ug/L)	BLMW-8 9/10/2014	12/16/2014	3/30/2015	8/5/2015	12/1/2015
TPH-Gx	<100	<100	<100	<100	<100
TPH-Dx Diesel	**280**	<260	**300**	<300	320
TPH-Dx-Oil	**540**	**630**	**560**	<440	**510**

(ug/L)	UCCMW-10 6/13/2014	9/18/2014	1/28/2015	4/2/2015	7/9/2015	10/26/2015
TPH-Gx	<100	<100	<100	<100	<100	<100
TPH-Dx Diesel	<300	**1600**	<250	<260	<300	<250
TPH-Dx-Oil	<480	**3100**	<410	<410	<490	<410

(ug/L)	HZMW-19 5/30/2014	6/9/2014	9/12/2014	12/16/2014	3/19/2015	8/5/2015	12/1/2015
TPH-Gx	**1200**	**720**	**510**	**330**	**110**	<100	<100
TPH-Dx Diesel	<100	<640	**680**	<260	<260	<370	<250
TPH-Dx-Oil	<410	<410	**430**	<410	<410	**580**	<410

(ug/L)	BC-10 2/4/2009	6/13/2014	9/18/2014	12/11/2014	4/2/2015	8/5/2015	12/1/2015
TPH-Gx	<100	<100	<100	<100	<100	<100	**180**
TPH-Dx Diesel	<310	<260	**550**	<250	<260	<270	360
TPH-Dx-Oil	**1400**	<410	**700**	<410	<410	<430	<410

(ug/L)	HZMW-12 6/10/2014	9/12/2014	12/16/2014	3/26/2015	8/5/2015	12/1/2015
TPH-Gx	<100	<100	<100	<100	<100	<100
TPH-Dx Diesel	**430**	**380**	**460**	**460**	<280	**360**
TPH-Dx-Oil	**550**	<410	<410	<410	<440	<410

(ug/L)	BC-16 6/10/2014	9/13/2014	12/16/2014	3/26/2015	8/5/2015	12/2/2015
TPH-Gx	<100	<100	<100	<100	<100	**130**
TPH-Dx Diesel	<470	**470**	**550**	**600**	**420**	**440**
TPH-Dx-Oil	<510	<420	**540**	<420	**450**	<420

(ug/L)	BPMW-6 5/27/2014	9/8/2014	12/19/2014	3/26/2015	8/5/2015	12/1/2015
TPH-Gx	<100	<100	<400	<100	<100	Could not locate
TPH-Dx Diesel	<250	<260	**580**	**1600**	**470**	
TPH-Dx-Oil	<410	<410	**500**	**2300**	**720**	

HWA GEOSCIENCES INC.

BOTHELL AREA WIDE MONITORING
BOTHELL WASHINGTON

TPH
GROUND WATER
SUMMARY
DECEMBER 2015

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FIGURE NO.
2C
PROJECT NO.
2007-098 T2020

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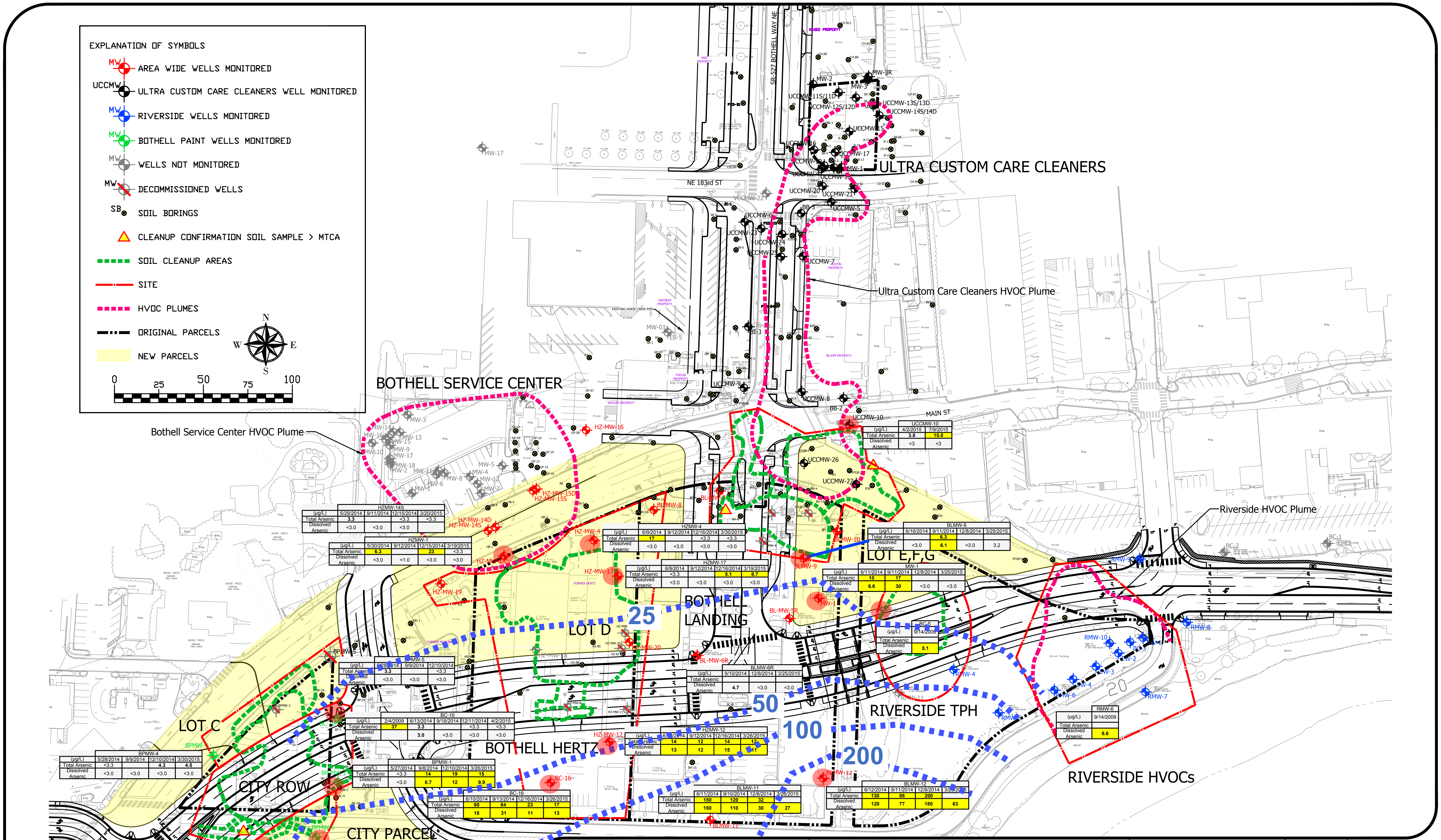

	UCCMW-10	
(µg/L)	4/2/2015	7/9/2015
Total Arsenic	**3.8**	**15.0**
Dissolved Arsenic	<3	<3

	HZMW-14S			
(µg/L)	5/29/2014	9/11/2014	12/15/2014	3/20/2015
Total Arsenic	**3.3**		<3.3	<3.3
Dissolved Arsenic	<3.0	<3.0	<3.0	

	HZMW-1			
(µg/L)	5/30/2014	9/12/2014	12/15/2014	3/19/2015
Total Arsenic	**6.3**		**23**	<3.3
Dissolved Arsenic	<3.0	<1.0	<3.0	<3.0

	HZMW-4			
(µg/L)	6/9/2014	9/12/2014	12/16/2014	3/30/2015
Total Arsenic	**17**		<3.3	<3.3
Dissolved Arsenic	<3.0	<3.0	<3.0	<3.0

	BLMW-9			
(µg/L)	6/16/2014	9/11/2014	12/8/2014	3/25/2015
Total Arsenic		**6.3**		
Dissolved Arsenic	<3.0	**6.1**	<3.0	3.2

	HZMW-17			
(µg/L)	6/9/2014	9/12/2014	12/16/2014	3/19/2015
Total Arsenic	<3.3		**5.1**	**8.7**
Dissolved Arsenic	<3.0	<3.0	<3.0	<3.0

	MW-1			
(µg/L)	6/11/2014	9/11/2014	12/8/2014	3/25/2015
Total Arsenic	**10**	**17**		
Dissolved Arsenic	**6.6**	**30**	<3.0	<3.0

	BC-5
(µg/L)	9/14/2009
Total Arsenic	
Dissolved Arsenic	**5.1**

	BPMW-5		
(µg/L)	5/28/2014	9/9/2014	12/10/2014
Total Arsenic	**3.3**		<3.3
Dissolved Arsenic	<3.0	<3.0	<3.0

	BLMW-6R		
(µg/L)	9/10/2014	12/8/2014	3/25/2015
Total Arsenic			
Dissolved Arsenic	**4.7**	<3.0	<3.0

	BC-10				
(µg/L)	2/4/2009	6/13/2014	9/18/2014	12/11/2014	4/2/2015
Total Arsenic	**37**	**3.3**		<3.3	<3.3
Dissolved Arsenic		**3.0**	<3.0	<3.0	<3.0

	HZMW-12			
(µg/L)	6/[illegible]/2014	9/12/2014	12/16/2014	3/26/2015
Total Arsenic	**14**	**12**	**14**	**12**
Dissolved Arsenic	**13**	**12**	**15**	**11**

	BPMW-4			
(µg/L)	5/28/2014	9/9/2014	12/10/2014	3/30/2015
Total Arsenic	<3.3		**4.3**	**4.5**
Dissolved Arsenic	<3.0	<3.0	<3.0	<3.0

	BPMW-1			
(µg/L)	5/27/2014	9/8/2014	12/10/2014	3/26/2015
Total Arsenic	<3.3	**14**	**19**	**15**
Dissolved Arsenic	<3.0	**8.7**	**12**	**9.9**

	BC-16			
(µg/L)	6/10/2014	9/13/2014	12/16/2014	3/26/2015
Total Arsenic	**60**	**64**	**23**	**17**
Dissolved Arsenic	**18**	**31**	**11**	**13**

	BLMW-11			
(µg/L)	6/11/2014	9/10/2014	12/8/2014	3/26/2015
Total Arsenic	**150**	**120**	**32**	
Dissolved Arsenic	**150**	**110**	**30**	**27**

	BLMW-12			
(µg/L)	6/12/2014	9/11/2014	12/8/2014	3/2[illegible]/2015
Total Arsenic	**130**	**88**	**200**	
Dissolved Arsenic	**120**	**77**	**180**	**63**

	RMW-6
(µg/L)	9/14/2009
Total Arsenic	
Dissolved Arsenic	**6.6**

	BC-11				
(µg/L)	12/30/2008	5/27/2014	9/11/2014	12/10/2014	3/26/2015
Total Arsenic	<3.3	**6.2**	**11**	**9**	**7.7**
Dissolved Arsenic		**5.1**	**9.7**	**8.9**	**6.3**

	BPMW-6			
(µg/L)	5/27/2014	9/8/2014	12/19/2014	3/26/2015
Total Arsenic	**3.3**	**39**	**64**	**52**
Dissolved Arsenic	**3.0**	**23**	**60**	**54**

HWA GEOSCIENCES INC.

BOTHELL AREA WIDE MONITORING
BOTHELL WASHINGTON

ARSENIC
GROUND WATER
SUMMARY
AUGUST 2015

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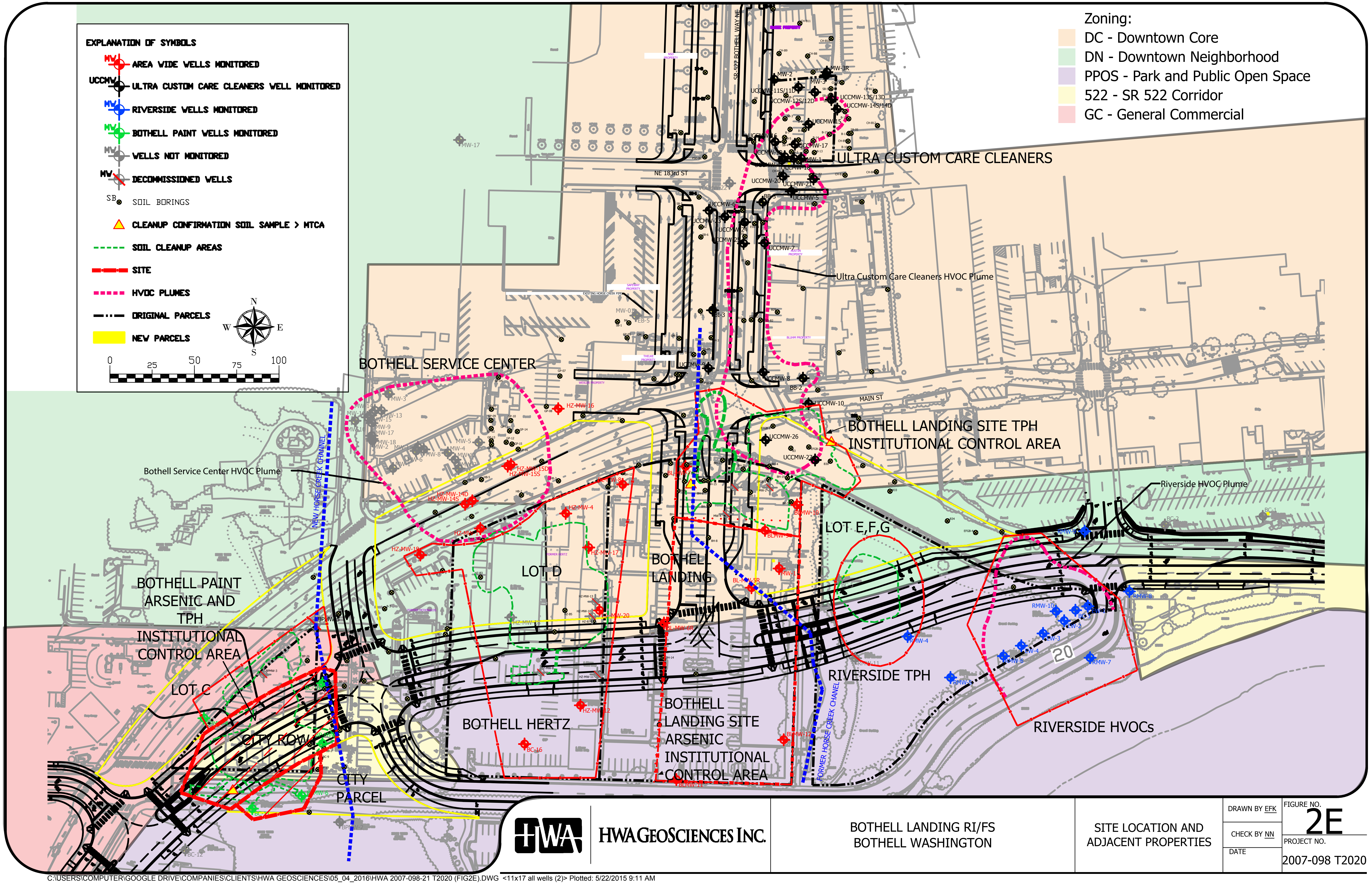
FIGURE NO.
2D
PROJECT NO.
2007-098 T1998

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD 2007-098\HWA 2007-098-21 T998 ARSENIC.DWG <Fig 1 11x17 all wells (2)> Plotted: 9/21/2015 4:36 PM



HWA GEOSCIENCES INC.

BOTHELL LANDING RI/FS
BOTHELL WASHINGTON

SITE LOCATION AND
ADJACENT PROPERTIES

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FIGURE NO.
2E

PROJECT NO.
2007-098 T2020

C:\USERS\COMPUTER\GOOGLE DRIVE\COMPANIES\CLIENTS\HWA GEOSCIENCES\05_04_2016\HWA 2007-098-21 T2020 (FIG2E).DWG <11x17 all wells (2)> Plotted: 5/22/2015 9:11 AM

Agreed Order No. 6296
Exhibit A

EXHIBIT A

Site Diagram

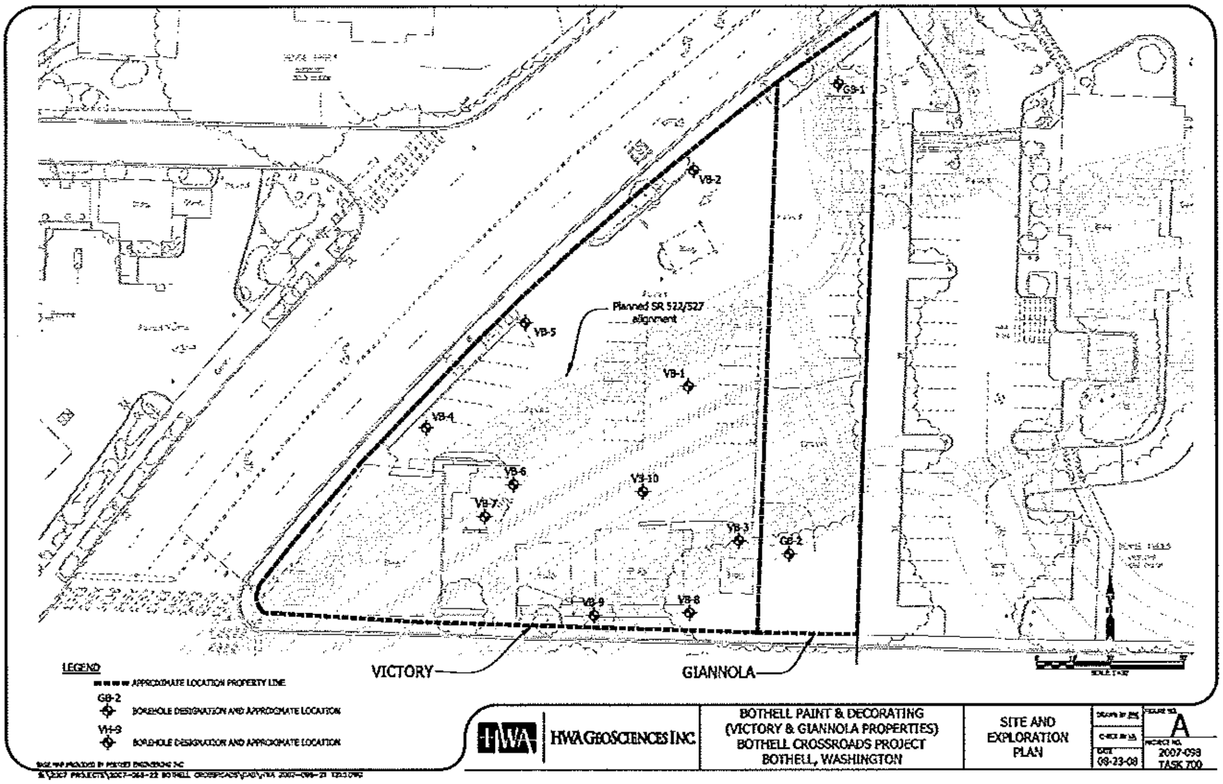


FIGURE 2F
SITE MAP AS DEPICTED IN
ORIGINAL AGREED ORDER

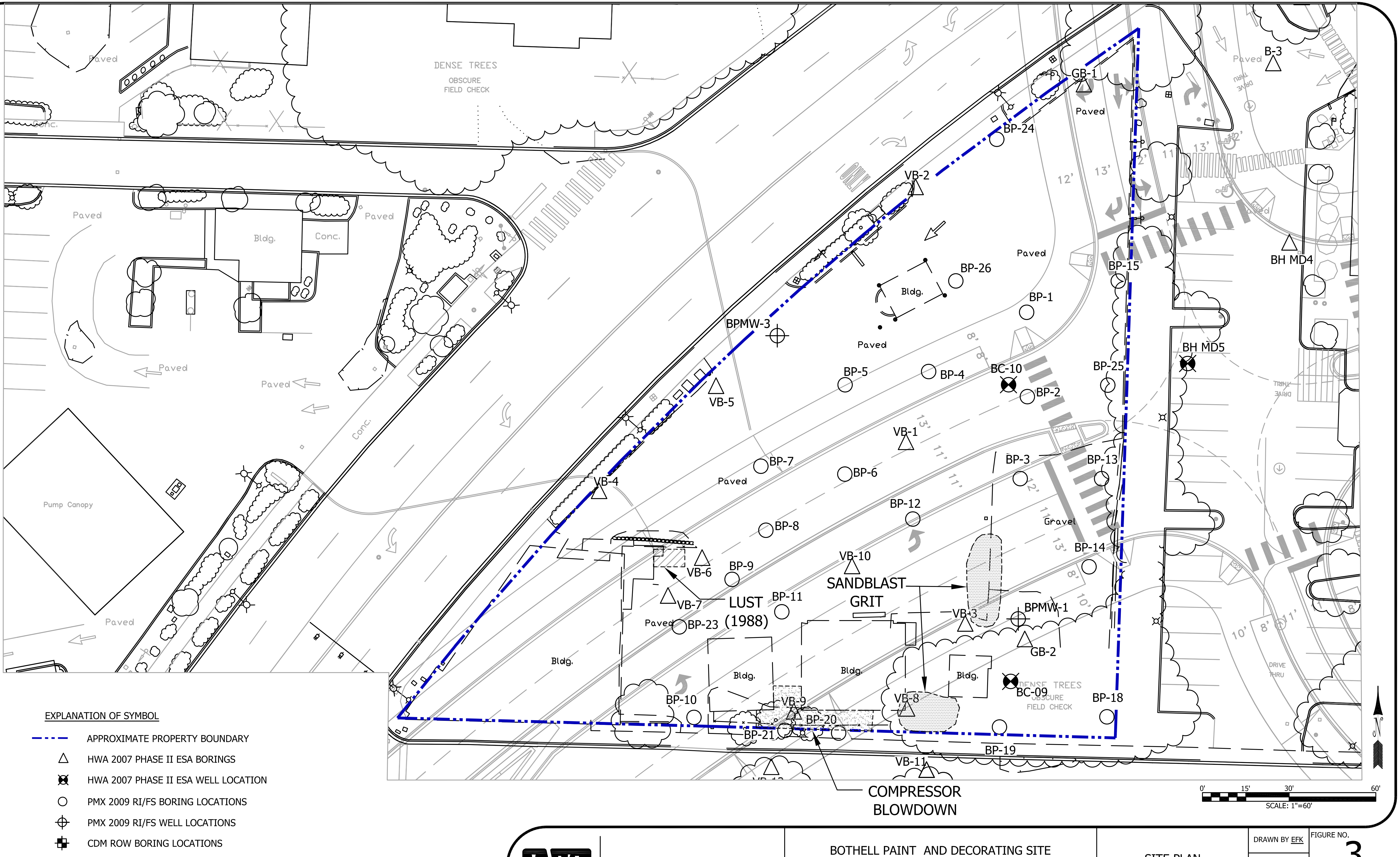
HWA GEOSCIENCES INC.

AERIAL PHOTOGRAPH - CURRENT ROADWAY

BOTHELL PAINT RI/FS
BOTHELL, WASHINGTON

FIGURE NO.
2G

PROJECT NO.
2007-098



BASE MAP PROVIDED BY PARAMETRIX

HWA GEOSCIENCES INC.

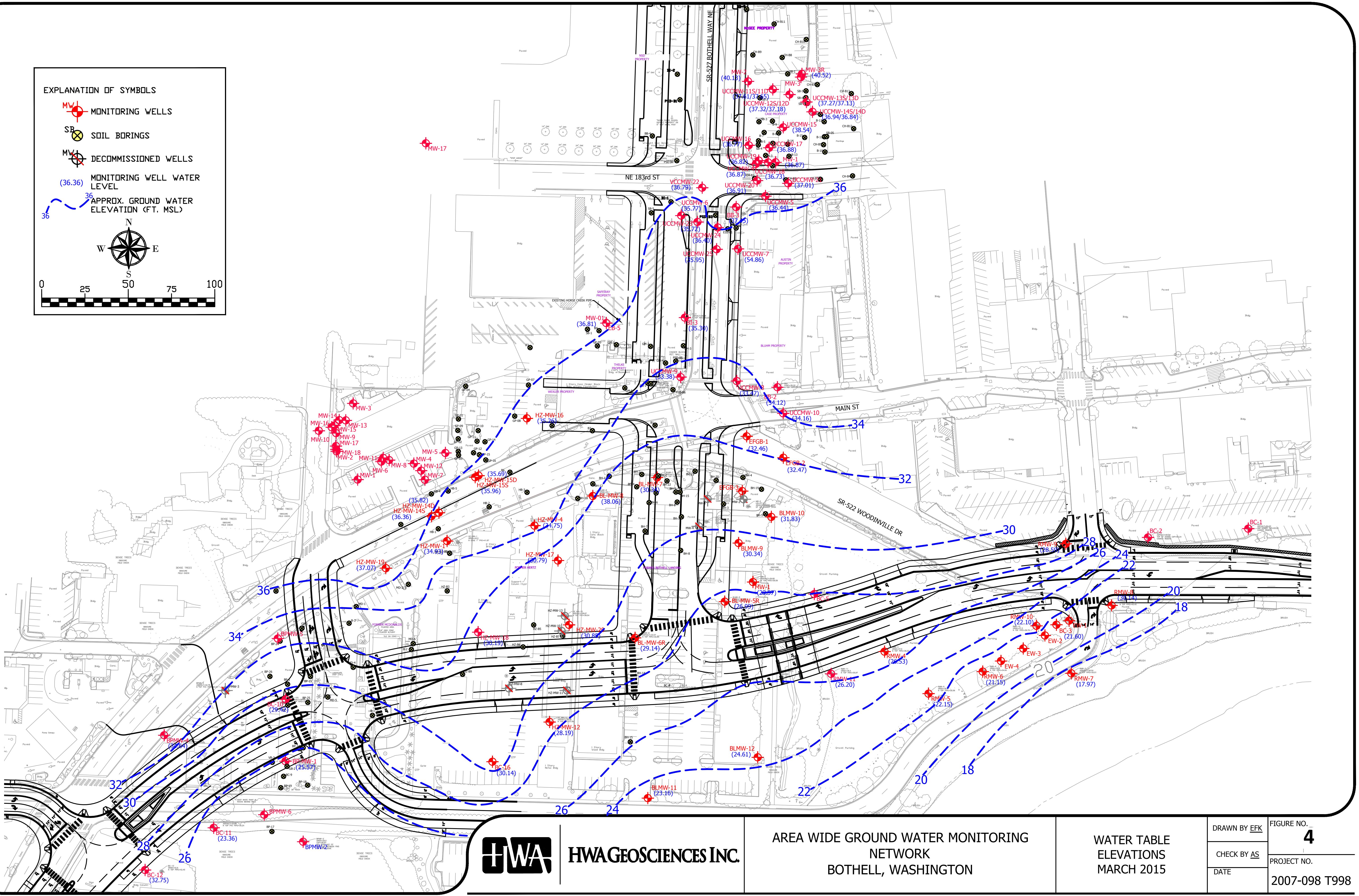
BOTHELL PAINT AND DECORATING SITE
INTERIM ACTION CLEANUP
BOTHELL, WASHINGTON

SITE PLAN
PRIOR TO CLEANUP

DRAWN BY EFK
CHECK BY NN
DATE
11.16.10

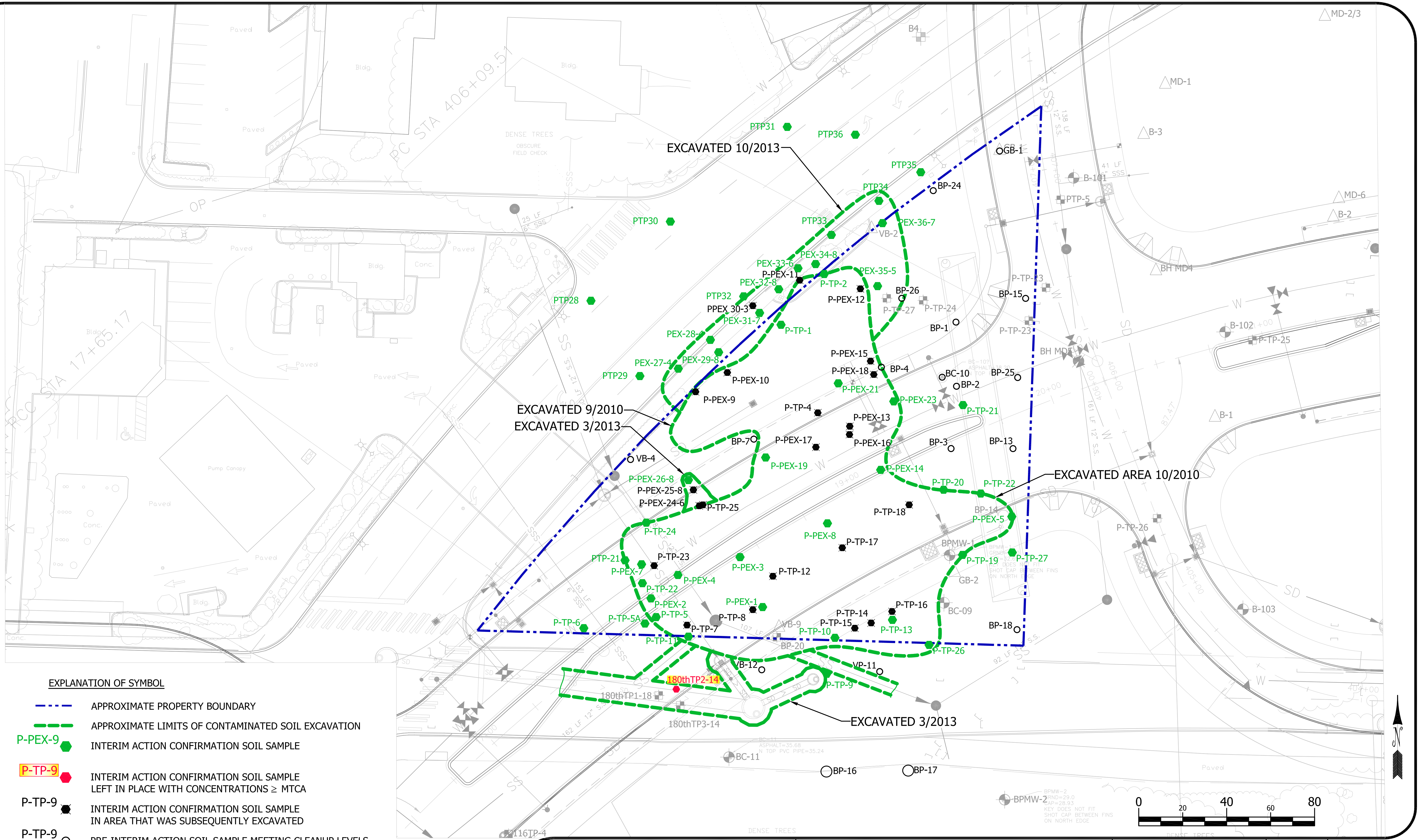
FIGURE NO.
3
PROJECT NO.
2007-098 T922

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T210.DWG <BOTHELL PAINT GPS F3> Plotted: 12/16/2010 9:16 AM



HWA GEOSCIENCES INC.	AREA WIDE GROUND WATER MONITORING NETWORK BOTHELL, WASHINGTON	WATER TABLE ELEVATIONS MARCH 2015	DRAWN BY EFK CHECK BY AS DATE	FIGURE NO. 4 PROJECT NO. 2007-098 T998

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD 2007-098\HWA 2007-098-21 T998 GW.DWG <H2O table elevations march 2015 (2)> Plotted: 6/11/2015 7:18 AM



EXPLANATION OF SYMBOL

-·-·-	APPROXIMATE PROPERTY BOUNDARY
— — —	APPROXIMATE LIMITS OF CONTAMINATED SOIL EXCAVATION
P-PEX-9 ⬢	INTERIM ACTION CONFIRMATION SOIL SAMPLE
P-TP-9 ⬢	INTERIM ACTION CONFIRMATION SOIL SAMPLE LEFT IN PLACE WITH CONCENTRATIONS ≥ MTCA
P-TP-9 ●	INTERIM ACTION CONFIRMATION SOIL SAMPLE IN AREA THAT WAS SUBSEQUENTLY EXCAVATED
P-TP-9 ○	PRE-INTERIM ACTION SOIL SAMPLE MEETING CLEANUP LEVELS
PTP-21 ▨	UTILITY TEST PIT SOIL SAMPLE MEETING CLEANUP LEVELS

BASE MAP PROVIDED BY PARAMETRIX

HWA GEOSCIENCES INC.

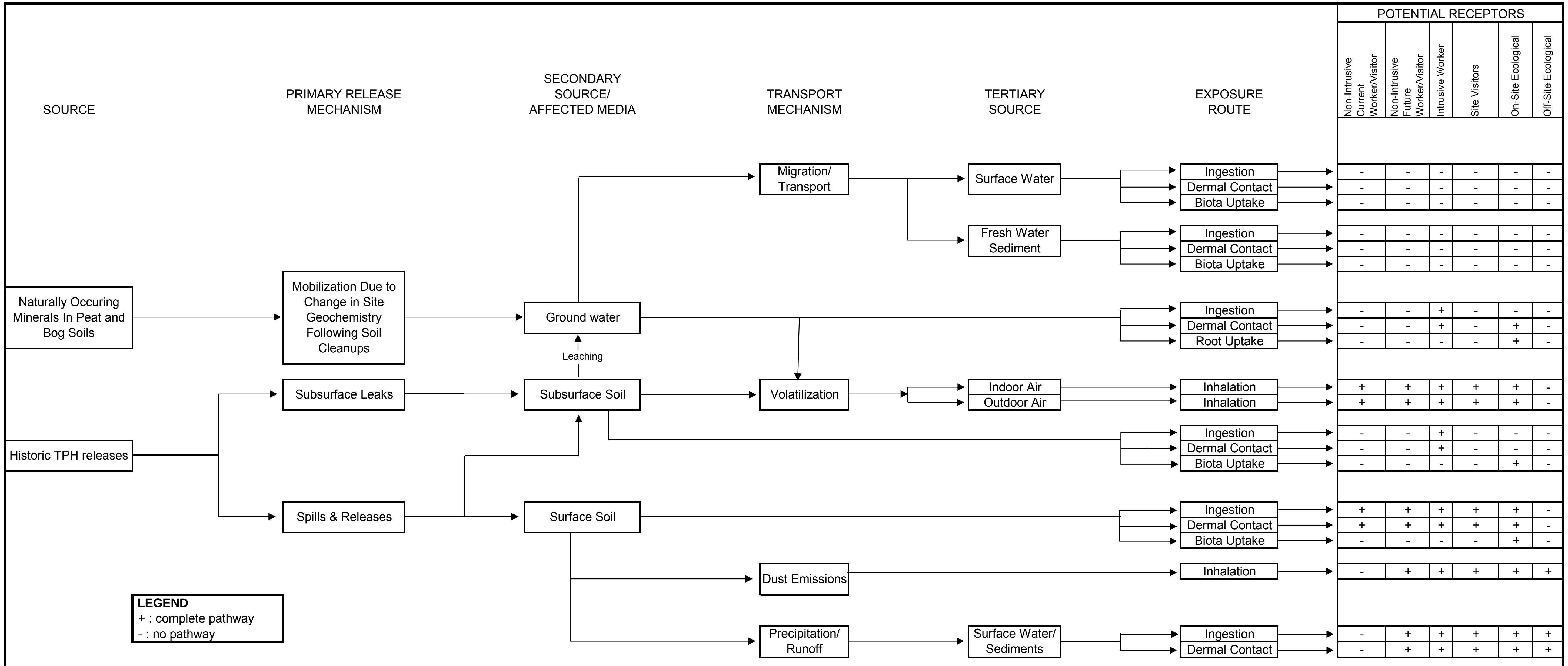
BOTHELL PAINT AND DECORATING SITE
INTERIM ACTION CLEANUP
BOTHELL, WASHINGTON

EXTENT OF INTERIM
ACTION SOIL CLEANUP

DRAWN BY EFK
CHECK BY AS
DATE
04.21.15

FIGURE NO.
5
PROJECT NO.
2007-098 T995

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T995A.DWG <BOTHELL PAINT GPS F5> Plotted: 4/21/2015 8:32 AM



Secondary Source / Transport	Tertiary Source	Exposure Route	Non-Intrusive Current Worker/Visitor	Non-Intrusive Future Worker/Visitor	Intrusive Worker	Site Visitors	On-Site Ecological	Off-Site Ecological
Migration/ Transport	Surface Water	Ingestion	-	-	-	-	-	-
		Dermal Contact	-	-	-	-	-	-
		Biota Uptake	-	-	-	-	-	-
	Fresh Water Sediment	Ingestion	-	-	-	-	-	-
		Dermal Contact	-	-	-	-	-	-
		Biota Uptake	-	-	-	-	-	-
Ground water		Ingestion	-	-	+	-	-	-
		Dermal Contact	-	-	+	-	+	-
		Root Uptake	-	-	-	-	+	-
Volatilization	Indoor Air	Inhalation	+	+	+	+	+	-
	Outdoor Air	Inhalation	+	+	+	+	+	-
Subsurface Soil		Ingestion	-	-	+	-	-	-
		Dermal Contact	-	-	+	-	-	-
		Biota Uptake	-	-	-	-	+	-
Surface Soil		Ingestion	+	+	+	+	+	-
		Dermal Contact	+	+	+	+	+	-
		Biota Uptake	-	-	-	-	+	-
Dust Emissions		Inhalation	-	+	+	+	+	+
Precipitation/ Runoff	Surface Water/ Sediments	Ingestion	-	+	+	+	+	+
		Dermal Contact	-	+	+	+	+	+

LEGEND
+ : complete pathway
- : no pathway

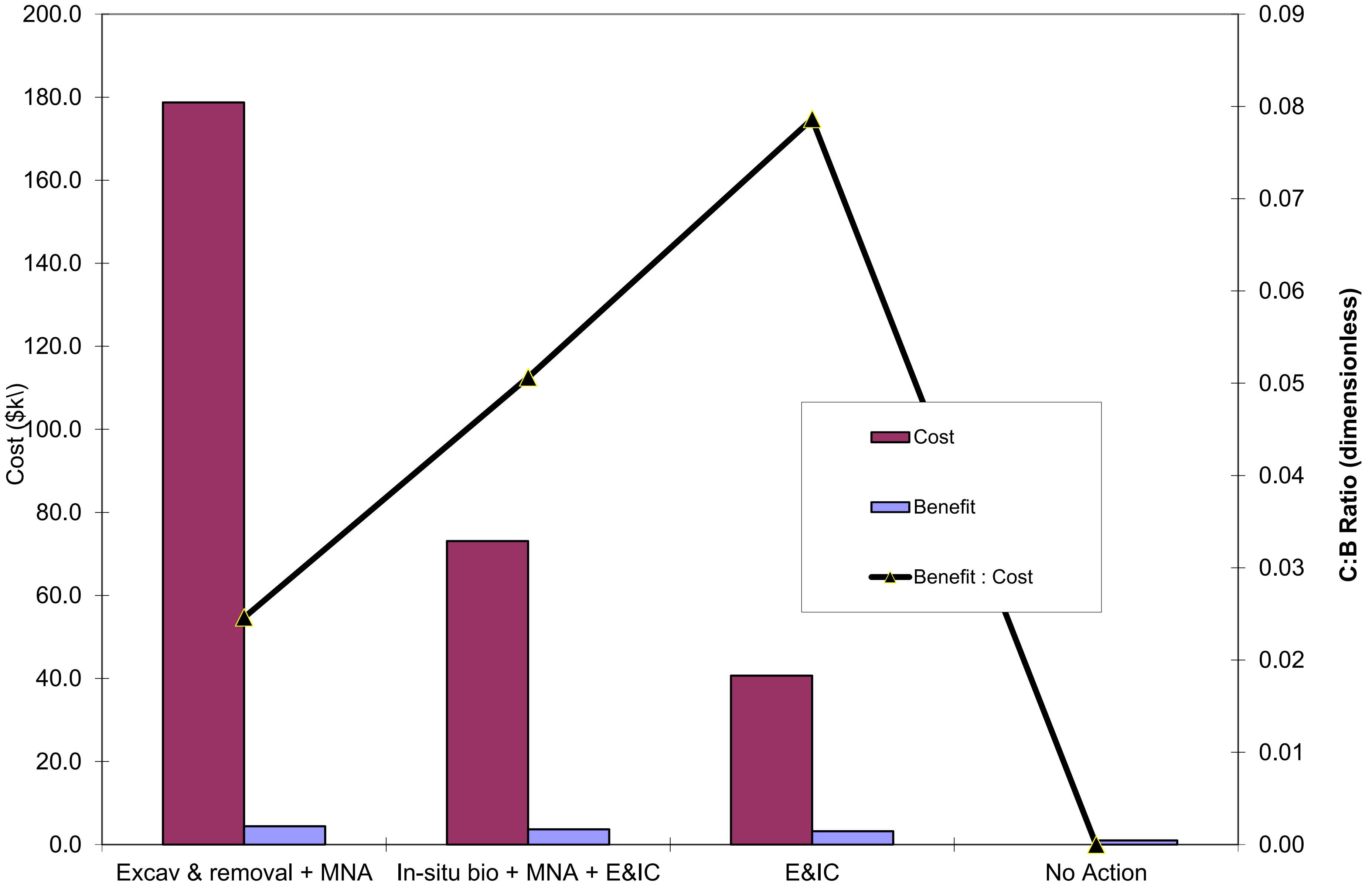
HWA GEOSCIENCES INC.

CONCEPTUAL SITE MODEL

BOTHELL PAINT AND DECORATING SITE
REMEDIAL INVESTIGATION / FEASIBILITY STUDY
BOTHELL, WASHINGTON

FIGURE NO.
6

PROJECT NO.
2007-098-2021



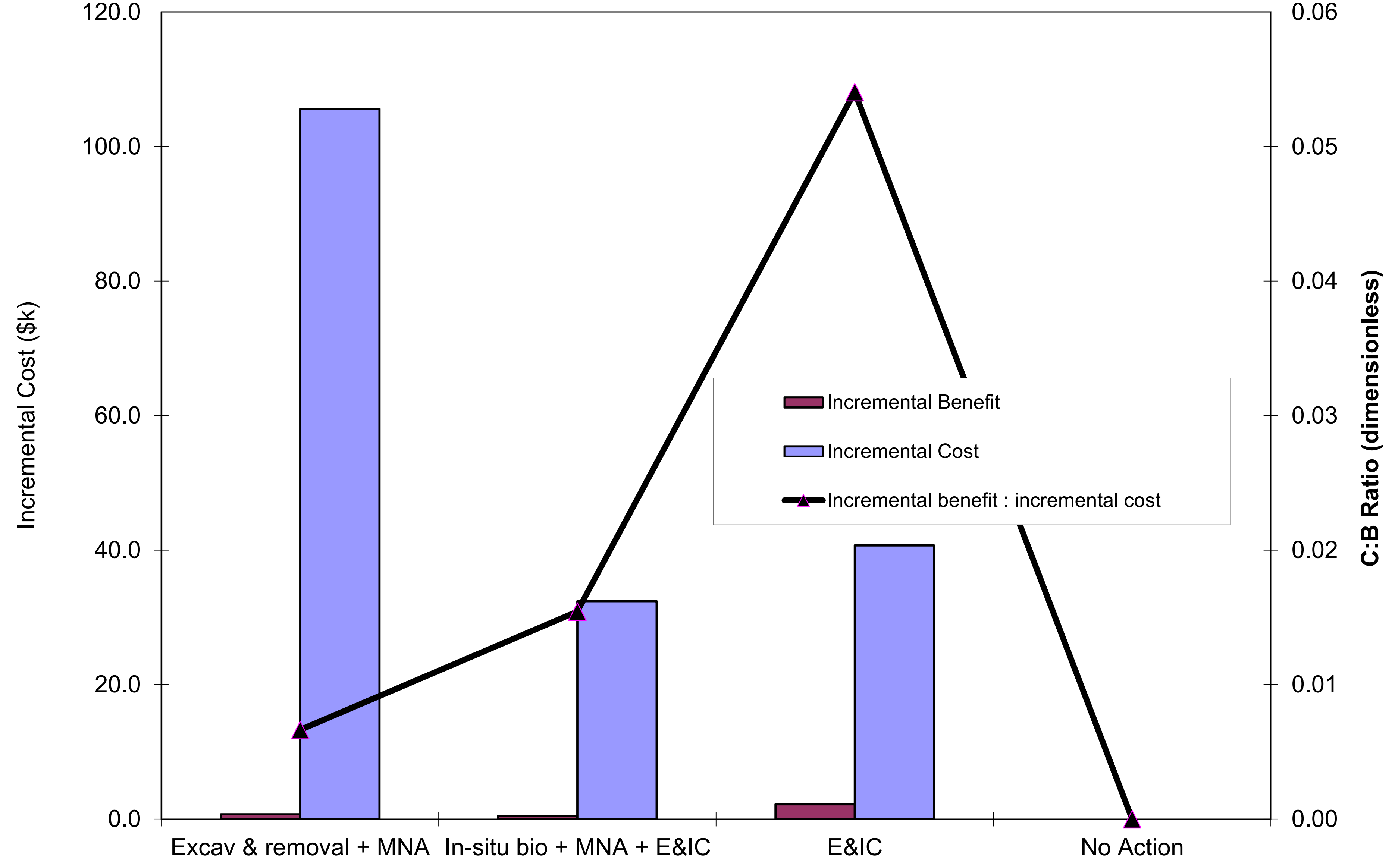
HWA GEOSCIENCES INC.

DCA - COST : BENEFIT

BOTHELL PAINT SITE
RI/FS
BOTHELL, WASHINGTON

FIGURE NO.
7

PROJECT NO.
2007 098 -



HWA GEOSCIENCES INC.

DCA - INCREMENTAL COST : INCREMENTAL BENEFIT

BOTHELL PAINT SITE
RI/FS
BOTHELL, WASHINGTON

FIGURE NO.
8

PROJECT NO.
2007 098 -

APPENDIX A

INTERIM ACTION WORK PLAN BOTHELL PAINT AND DECORATION SITE

REVISION NO. 2

(ON CD)

Interim Action Work Plan
Bothell Paint and Decorating Site
Revision No. 2

City of Bothell™

April 2010

Parametrix

Interim Action Work Plan
Bothell Paint and Decorating Site
Revision No. 2

Prepared for

City of Bothell
9654 NE 182nd Street
Bothell, WA 98011

Prepared by

Parametrix
411 108th Avenue NE, Suite 1800
Bellevue, WA 98004-5571
T. 425.458.6200 F. 425.458.6363
www.parametrix.com

April 2010 │ 555-1647-019 (02/0412)

CITATION

Parametrix. 2010. Interim Action Work Plan
Bothell Paint and Decorating Site
Revision No. 2. Prepared by Parametrix,
Bellevue, Washington. April 2010.

CERTIFICATION

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.

BLAINE T. HARDY
STATE OF WASHINGTON
44373
REGISTERED PROFESSIONAL ENGINEER

3/14/10

Prepared by Blaine Hardy, PE

Sandra Matthews

Checked by Sandra Matthews, LG, LHG

Approved by Ken Fellows, PE

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TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

FIGURES

TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

ARAR	applicable relevant and appropriate requirement
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CFR	Code of Federal Regulations
City	City of Bothell
COPC	contaminant of potential concern
cPAH	carcinogenic polyaromatic hydrocarbon
Ecology	Washington State Department of Ecology
HWA	HWA GeoSciences Inc
IAWP	Interim Action Work Plan
LUST	leaking underground storage tank
mg/kg	milligrams per kilogram
MRC™	Metals Remediation Compound
MTCA	Model Toxics Control Act
RAO	remedial action objective
RI/FS	remedial investigation/feasibility study
sf	square feet
Site	Bothell Paint and Decorating site
SR	State Route
SVOC	semivolatile organic compound
TPH	total petroleum hydrocarbons
UST	underground storage tank
WAC	Washington Administrative Code

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1. INTRODUCTION

This Interim Action Work Plan (IAWP) has been prepared for the Bothell Paint and Decorating site (Site) in Bothell, Washington (Figure 1-1). The IAWP is being conducted under Agreed Order DE 6296, as amended in April 2010, between the City of Bothell (City) and the Washington State Department of Ecology (Ecology). The purpose of the Agreed Order was to conduct a remedial investigation/feasibility study (RI/FS), submit a cleanup plan to address known contamination related to historical releases of hazardous substances, and implement interim action(s).

The City currently owns the Site, a portion of which will accommodate the realignment of State Route (SR) 522, which is scheduled for construction in summer 2010. The 0.79-acre property consisting of two parcels is located on the south side of existing SR 522, between SR 522 and 180th Street NE. Although currently vacant, recent property use was mixed commercial and retail. The interim action will be implemented during the construction window of the roadway realignment project. Remnant portions of the property will be redeveloped as part of the City's overall Downtown Revitalization Plan. In general, cleanup approaches discussed in this document will address anticipated future property uses as envisioned in the Downtown Revitalization Plan. Figure 1.1 from the Bothell Downtown Subarea Plan is provided in Appendix A for reference. The figure shows proposed future land uses in the vicinity of the Site.

1.1 PURPOSE

This IAWP was completed per the Agreed Order and Washington Administrative Code (WAC) 173-340-380, Model Toxics Control Act (MTCA) (Ecology 2007). Under WAC 173-340-430, an interim action is a remedial action that is technically necessary to reduce a threat to human health or the environment by eliminating or substantially reducing one or more pathways for exposure to a hazardous substance, that corrects a problem that may become substantially worse or cost substantially more to address if the remedial action is delayed, or that is needed to provide for completion of a site hazard assessment, RI/FS, or design of a cleanup action.

The purpose of the IAWP is to present a general conceptual-level description of an interim action for soil developed after the City submitted a draft RI/FS (Parametrix 2009). Any additional cleanup action that may be required at the Site will be addressed as an additional interim action and/or after the RI/FS is completed (see Section 2.2.3). The IAWP was developed using information obtained during Site investigations that began in 1988 and are ongoing. This IAWP includes the following:

- Applicable state and federal laws for the interim action.
- Remediation standards for each hazardous substance and for each medium of concern.
- A brief summary of the other cleanup alternatives evaluated in the draft RI/FS.
- A description of the proposed interim action and a summary of the rationale used for selecting the proposed alternative.
- A schedule for implementation of the interim action.

This IAWP also includes the Compliance Monitoring Plan (including a Sampling and Analysis Plan/Quality Assurance Project Plan) (Appendix B), which will be used during completion of the interim action at the Site. The Health and Safety Plan (submitted under separate cover) guidelines will also be followed.

2. SITE CONDITIONS

This section summarizes the Site history and the human health and environmental concerns.

2.1 SITE HISTORY

The Paint and Decorating site is located on the south side of SR 522, between downtown Bothell and the Sammamish River Slough (Figure 2-1), and comprises 0.79 acre. The property consists of two parcels: the Victory parcel (0.54 acre) and the Giannola parcel (0.25 acre). Historical operations on the Victory parcel included automobile repair and dealerships, retail paint and flooring, and sand blasting. Documented historical site use of the Giannola parcel is limited to residential usage and parking.

2.1.1 Victory Parcel

According to historical information and interviews, the Site has been developed since 1914. A leaking underground storage tank (LUST) removal was conducted in 1988. The tank containing gasoline and Stoddard solvent (petroleum distillates) was found to have released product to soil and groundwater.

A sand blasting contractor operated on this parcel for approximately 40 years. According to tenant information, sand blast grit and soil staining reportedly related to compressor blowdown have been observed to the west and south of the tenant space now occupied by McVay Welding. Sand blasting grit was reportedly removed, but stained soils were not assessed or removed.

Historical information indicates that one of the buildings was used as a garage and body shop, and that petroleum companies were listed as lessees of the property in the 1920s and 1930s.

Various Site soil and groundwater investigations have taken place since 1988. For a more detailed discussion of the Site history, physical characteristics, and previous investigations, see the draft RI/FS (Parametrix 2009).

2.1.2 Giannola Parcel

According to historical information and interviews, the subject property has been developed since at least 1919, and use was originally residential. In the 1960s, the residence was demolished and the property has been used for parking since that time.

2.2 HUMAN HEALTH AND ENVIRONMENTAL CONCERNS

The following sections include a discussion of the nature and extent of Site contamination to be addressed by the proposed interim action, a summary of the Site contaminants of potential concern (COPCs), and an assessment of risk.

2.2.1 Soil

This section summarizes the nature and extent of soil contaminated with COPCs that will be addressed by the proposed interim action.

2.2.1.1 Metals

Sampling for metals was conducted during the 2008 HWA GeoSciences Inc (HWA) investigation and RI. Specifically, samples were analyzed for arsenic, barium, cadmium, chromium, lead, selenium, silver, and mercury.

Elevated metals concentrations were observed from the center to over the southeastern portion of the Site to a depth of 4 to 5 feet. Based on the results of sampling during the 2008 HWA investigation (HWA 2008a, 2008b) and September 2009 RI/FS investigation, arsenic, cadmium, and lead above MTCA Method A cleanup levels remain in the soil. Barium, chromium, silver, lead, and mercury remain in the soil above ecological indicator concentrations.

2.2.1.2 Petroleum Hydrocarbons (including benzene, toluene, ethylbenzene, and xylenes [BTEX])

The LUST removal completed in 1988 removed an underground storage tank (UST) containing gasoline and Stoddard solvent (petroleum distillates) from the Site. Affected soil was left on the Site due to the proximity of the excavation to the building and a rock wall adjacent to the west and north sides of the UST excavation. A composite soil sample collected from the north and south sidewalls of the excavation contained 1,400 milligrams per kilogram (mg/kg) of gasoline-range petroleum hydrocarbons above MTCA Method A cleanup levels.

During the HWA Phase II investigation (HWA 2008b), motor oil concentrations next to the blowdown compressor pipe at VB-9 were 180,000 mg/kg at 0.5 foot and 29,000 mg/kg at 1.5 feet below ground surface (bgs). During the RI sampling, motor oil was detected in the two soil samples analyzed from borings BP-20 and BP-21 adjacent to VB-9, at concentrations less than MTCA Method A cleanup levels.

In RI boring BP-5, diesel-range hydrocarbon concentrations were detected at less than the MTCA Method A cleanup levels but greater than the ecological indicator at depths of 1 to 4 feet bgs. Benzene above the MTCA Method A cleanup levels was detected in BP-26 at a depth of 1 to 2 feet bgs. Motor oil hydrocarbons were detected in the shallow soil at the three new well locations (BPMW-1 through BPMW-3). All the soil samples (0.5 foot, 2 feet, and 5 feet) from BPMW-3 showed concentrations of motor oil hydrocarbons. The sample at 2 feet bgs exceeded Method A cleanup levels for motor oil.

2.2.1.3 Semivolatile Organic Compounds

Semivolatile organic compounds (SVOCs) were detected in the one soil sample analyzed at BP-26. Total carcinogenic polyaromatic hydrocarbons (cPAHs) were above the MTCA Method A cleanup levels. This sample was a shallow soil sample collected in an area of potential future redevelopment outside of the new road alignment. Further investigation is required to determine the possible source of the cPAHs.

2.2.2 Groundwater

This section summarizes the nature and extent of groundwater contaminated with COPCs that will be addressed by the proposed interim action.

2.2.2.1 Metals

Historical data from 2008 compiled by HWA showed MTCA Method A cleanup level exceedances of total arsenic in the groundwater at VB-11, BC-10, and BC-12; dissolved arsenic in the groundwater at VB-3 and VB-11; and total lead in groundwater at BC-10 and BC-12. A total of six groundwater samples collected during the RI were analyzed for metals; either total or dissolved arsenic was detected in all the samples at a concentration above MTCA Method A cleanup levels, except the samples from BPMW-2 and BC-11.

2.2.2.2 Petroleum Hydrocarbons (including BTEX)

Historical data from 2008 compiled by HWA showed MTCA Method A cleanup level exceedances of motor-oil-range petroleum hydrocarbons in BC-10. No other groundwater samples collected and analyzed for petroleum hydrocarbons had concentrations above the MTCA Method A cleanup levels. No groundwater samples collected during the RI had concentrations above the MTCA Method A cleanup levels.

2.2.3 Summary of Contaminants of Potential Concern

Based on the draft RI/FS, COPCs for soil at the Site to be addressed by the proposed interim action include:

- Metals (arsenic, barium, cadmium, chromium, lead, silver, and mercury)
- Total petroleum hydrocarbons (diesel- and motor oil-range)
- Aromatic hydrocarbons (benzene)

For groundwater, COPCs include:

- Metals (arsenic and lead)

Cleanup of arsenic in groundwater will be addressed in the RI/FS. To the extent arsenic in soil at the Site is contributing to area-wide arsenic in the groundwater, the interim action described in this IAWP is expected to improve overall groundwater quality.

2.2.4 Assessment of Risk

Complete exposure pathways developed under the draft RI/FS (Parametrix 2009) for the COPCs include the following:

- Current/future indoor retail worker:
    - Inhalation of vapors from the subsurface (groundwater and soil) in indoor air
    - Direct ingestion of contaminated groundwater used as drinking water
- Current/future construction/utility worker:
    - Incidental soil ingestion and dermal contact
    - Inhalation of dust from the subsurface soil in outdoor air
    - Inhalation of vapors or dermal contact with groundwater in a trench or excavation
- Current/future Site visitor or residence (adult and child):
    - Inhalation of dust from surface soil
- Ecological receptors:
    - Incidental soil ingestion and dermal contact
    - Inhalation of vapors from the subsurface soil in outdoor air or in a burrow
    - Inhalation of vapors from or dermal contact with groundwater in a burrow
    - Impacted groundwater to surface water

Exposure to contaminants could occur via the complete exposure pathways described above. Based on the nature of the Site and the extent of contamination, current risks appear limited. The likely greatest potential risk to human receptors is inhalation of contaminant vapors and dust in the workplace. Note, however, that only one of the occupied buildings on the Site is underlain (partially) by contaminated soil and groundwater with the potential to cause vapor intrusion. The second most likely exposure risk is to construction workers during soil-disturbing activities. Ecological receptors have limited risk of exposure because the majority of the Site contains buildings or pavement.

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3. APPLICABLE STATE AND FEDERAL LAWS

This section discusses the applicable state and federal laws for the Site including applicable or relevant and appropriate requirements (ARARs), cleanup standards, and remedial action objectives (RAOs).

3.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Cleanup actions under MTCA (WAC 173-340-710) require the identification of all ARARs. Potential ARARs were identified for each medium of concern in the draft RI/FS (Parametrix 2009). The applicable state and federal laws specific to the proposed interim action are shown in Table 3-1.

3.2 REMEDIATION LEVELS

Based on the COPCs developed in the draft RI/FS, a list of specific hazardous substances and their associated remediation levels was developed. Selected remediation levels are listed below and are also provided for each individual COPC in Table 3-2.

- MTCA Method A Soil Cleanup Levels for Unrestricted Land Use (WAC 173-340, Table 740-1)

MTCA Method A cleanup standards are appropriate for soil because they are protective of human health and groundwater. Terrestrial ecological receptors will be largely protected under the future property development scenario, which includes the placement of pavement, buildings, and associated hardscape over the majority of the IA footprint (refer to Figure 1-1 in Appendix A). The placement of these types of soil covers qualifies the IA area for an exclusion from a terrestrial ecological evaluation under WAC 173-340-7491(1)(b). It is acknowledged that an institutional control is required for this exclusion. Risks to terrestrial ecological receptors in areas to be landscaped in future will be evaluated following the IA using a terrestrial ecological evaluation performed as part of the ongoing RI.

Table 3-2 shows the remediation levels of the specific COPCs determined under the draft RI/FS (Parametrix 2009) for each hazardous substance of concern and each medium of concern. The values listed for each hazardous substance are the remediation levels relevant to the Site. Where N/A is listed, regulatory values typically exists; however, those values are not applicable to the Site.

3.3 REMEDIAL ACTION OBJECTIVES

The following RAOs have been established for remediation alternatives:

- Achieve the MTCA Method A soil cleanup standards for heavy oil-range total petroleum hydrocarbons (TPH), benzene, arsenic, cadmium, and lead.
- Reduce or eliminate human exposure through direct contact (incidental ingestion, skin contact, and inhalation of vapors) with contaminated soil and groundwater that exceed protective regulatory levels.
- Reduce or eliminate risks to ecological receptors from contaminated soil and groundwater.
- Use permanent solutions to the maximum extent practicable (which includes consideration of cost-effectiveness).

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4. REMEDIAL ALTERNATIVES SUMMARY

This section summarizes the remediation alternatives developed under the draft RI/FS (Parametrix 2009) in accordance with MTCA requirements and guidelines. These alternatives have been revised from what was presented in the draft RI/FS to reflect an interim action for soil only. The draft RI/FS is still undergoing Ecology review and comment. Although five alternatives were presented in the draft RI/FS, Alternatives 4 and 5 are the same if no groundwater remedy is considered. Therefore, only four alternatives are presented below.

4.1 REMEDIAL ALTERNATIVE DEVELOPMENT

Three remedial alternatives for metals and petroleum-contaminated soil remediation were developed that meet the RAOs and MTCA requirements. Alternatives are summarized below.

4.1.1 Alternative 1 – Chemical Oxidation, Electrokinetic Separation, and Low Permeability Cap

Alternative 1, involving chemical oxidation, electrokinetic separation, and low permeability cap, would consist of the following:

- Chemical oxidation would be used within the soil around monitoring well BPMW-3 at a depth of approximately 3 feet and an area with a radius of approximately 30 feet from the well up to the property line to remediate heavy oil-range TPH.
- Chemical oxidation would be used within the soil around historical boring VB-9 at a depth of approximately 4 feet and an area with a radius of approximately 25 feet from the boring to remediate heavy oil-range TPH.
- Electrokinetic separation would be used within the soil outside the SR 522 realignment footprint to a depth of approximately 4 feet and an area of approximately 1,200 square feet (sf) to remediate arsenic, cadmium, and lead. The liquid generated by electrokinetic separation would be treated via three ion exchange media vessels in series in a small treatment building.
- A low permeability cap (i.e., realignment of SR 522) with institutional controls would limit exposure to the majority of the metals-contaminated soil.

RegenOx™ by Regenesis is the product used as the basis for Alternative 1 for the remediation of the organic soil contamination.

Electrokinetic separation for the metals soil contamination would consist of installing specialized monitoring wells that would include either an anode or cathode and liquid removal assembly to extract the concentrated metals from the saturated subsurface for ex situ treatment and disposal. Ex situ treatment would consist of ion exchange media. The ion exchange media was chosen because it is the only single media that can remove arsenic, cadmium, and lead from a waste stream. The treated liquid would be recirculated back into the liquid removal assemblies to allow the removal of additional metals from the subsurface.

MRC™, also by Regenesis, is the product used as the basis for Alternative 1 for the remediation of the metals groundwater contamination. The product is injected into the subsurface via injection wells organized in a grid pattern.

Bench-scale treatability and pilot tests would be conducted to help refine the full-scale treatment approach for Alternative 1. Results of the treatability and pilot tests would be used to refine the full-scale treatment approach for both contaminated soil and groundwater.

The planned realignment of SR 522 would be maintained directly over the untreated soil contamination in order to eliminate exposure pathways associated with surface and subsurface soil. Groundwater monitoring would be conducted for four quarters after contaminated soil treatment and realignment of the roadway is complete to evaluate the effectiveness of the soil remedial action and to assess the need for groundwater remedial action. In order to adequately monitor the area, five downgradient wells would be installed and seven wells would be monitored for four successive quarters.

The capital costs for Alternative 1 total $2,806,000 and the operations and maintenance costs total $191,000 for a total alternative cost of $2,997,000.

4.1.2 Alternative 2 – Excavation and Off-Site Disposal

Alternative 2, involving excavation and off-site disposal, would consist of the following:

- Excavation of the soil around monitoring well BPMW-3 at a depth of approximately 3 feet and an area with a radius of approximately 30 feet from the well up to the property line to remove heavy oil-range TPH.
- Excavation of the soil to a depth of approximately 4 feet and an area of approximately 10,800 sf to remove heavy oil-range TPH, arsenic, cadmium, and lead in the southeastern portion of the Site.

Approximately 1,900 cubic yards or 3,000 tons of contaminated soil would be excavated with heavy equipment. The contaminated soil would be trucked to a permitted landfill for final disposal. Confirmation soil sampling would take place on the sidewalls and bottom of the excavations. The excavated areas would then be backfilled with clean material.

After excavation and backfill, the planned realignment of SR 522 would be constructed over the excavated area. Groundwater monitoring would be conducted for a minimum of four quarters after contaminated soil treatment and realignment of the roadway is complete to evaluate the effectiveness of the soil remedial action and to assess the need for groundwater remedial action. In order to adequately monitor the area, five downgradient wells would be installed and a total of seven wells would be monitored quarterly for 1 year.

The capital costs for Alternative 2 total $553,000 and the operations and maintenance costs total $49,000 for a total alternative cost of $602,000.

4.1.3 Alternative 3 – Limited Excavation, Off-Site Disposal, and Low Permeability Cap

Alternative 3, involving limited excavation, off-site disposal, and low permeability cap, would consist of the following:

- Excavation of the soil around monitoring well BPMW-3 at a depth of approximately 3 feet and an area with a radius of approximately 30 feet from the well up to the property line to remove heavy oil-range TPH.
- Excavation of the soil to a depth of approximately 4 feet and an area of approximately 2,200 sf to remove arsenic, cadmium, and lead in the southeastern portion of the site. A low permeability cap (i.e., realignment of SR 522) with institutional controls would limit exposure to the majority of the contaminated soil.

Approximately 330 cubic yards or 530 tons of contaminated soil would be excavated with heavy equipment. The contaminated soil would be trucked to a permitted landfill for final disposal. Confirmation soil sampling would take place on the sidewalls and bottom of the excavations. The excavated areas would then be backfilled with clean material.

After excavation and backfill, the planned realignment of SR 522 would be constructed over the excavated area. Groundwater monitoring would be conducted for a minimum of four quarters after contaminated soil treatment and realignment of the roadway is complete to evaluate the effectiveness of the soil remedial action and to assess the need for groundwater remedial action. In order to adequately monitor the area, five downgradient wells would be installed and a total of seven wells would be monitored quarterly.

The capital costs for Alternative 3 total $273,000 and the operations and maintenance costs total $119,000 for a total alternative cost of $392,000.

4.2 REMEDIAL ALTERNATIVES COMPARISON

The four alternatives were compared in accordance with MTCA WAC 173-340-430(7)(b)(ii) regarding the following criteria:

- Each of the alternatives would be protective of human health and the environment through a combination of physical barriers, contaminant destruction or removal, and compliance monitoring.
- Each of the alternatives were evaluated on the permanency of the remedial action to the maximum extent practicable.
- Each of the alternatives were evaluated on potential to meet anticipated cleanup levels at the point of compliance for known areas of contamination.
- Each of the alternatives would be designed and implemented to meet the requirements of the ARARs.
- Each of the alternatives would conduct health and safety protection monitoring during implementation to ensure that the safety of workers, surrounding populations, and the environment are protected. All alternatives would also provide performance and confirmation monitoring to confirm remediation standards have been attained and to monitor the long-term effectiveness of the interim action.

Table 4-1 summarizes the comparison of the alternatives. Effectiveness was evaluated in terms of protectiveness and ability to achieve the RAOs. The implementability of the alternatives depends on their technical feasibility, the availability of required resources, and administrative feasibility. Public concern reflects the anticipated level of adverse public reaction to each alternative. Costs were developed based on Engineer's estimates and experience from past similar projects. Additional details appear in the draft RI/FS.

5. PROPOSED INTERIM ACTION

Based on the analysis discussed above, Alternative 2, involving excavation and off-Site disposal is the proposed interim remedial action. Alternative 2 would consist of the following:

- Excavation of the soil around monitoring well BPMW-3 at a depth of approximately 3 feet and an area with a radius of approximately 30 feet from the well up to the property line to remove heavy oil-range TPH. BPMW-3 is located adjacent to the northern property line and additional contamination may be present underneath the existing roadway.
- Excavation of the soil to a depth of approximately 4 feet and an area of approximately 10,800 sf to remove heavy oil-range TPH, arsenic, cadmium, and lead in the southeastern portion of the Site.

Approximately 1,900 cubic yards or 3,000 tons of contaminated soil would be excavated with heavy equipment (see Figure 5-1). The contaminated soil would be trucked to a permitted landfill for final disposal. Confirmation soil sampling would take place on the sidewalls and bottom of the excavations. The excavated areas would then be backfilled with clean material.

After excavation and backfill, the planned realignment of SR 522 would be constructed over the IA area. Groundwater monitoring would be conducted for four quarters after contaminated soil treatment and realignment of the roadway is complete to evaluate the effectiveness of the soil remedial. In order to adequately monitor the area, five downgradient wells would be installed and a total of seven wells would be monitored quarterly for 1 year. The appropriateness of further groundwater monitoring for the IA will be evaluated following completion of the four rounds of quarterly monitoring.

This proposed IA for soil is protective of human health and the environment, attains federal and state requirements that are applicable or relevant and appropriate, complies with anticipated cleanup standards, meets the threshold criteria, provides a high likelihood of achieving the RAOs within a reasonable restoration time frame, and meets the additional performance criteria. Furthermore, the risks discussed in Section 2.2.4 are mitigated under the proposed interim action because the action either removes the contaminants to levels that are protective to receptors or the action places engineering and administrative controls to prevent exposure.

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6. SCHEDULE

The proposed action is planned to be implemented during the construction window of the realignment of SR 522. Construction activities for the realignment of SR 522 are anticipated to begin during the second quarter of 2010, including the excavation, removal and disposal of contaminated soil and backfill in the remediation areas. The environmental remediation activities will commence within 90 days of the start of construction.

Groundwater monitoring in the area of the excavation will be conducted for a minimum of one year after the completion of the SR 522 realignment to verify the soil contamination has been removed and remediation levels for Site contamination have been met.

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7. REFERENCES

Ecology (Washington State Department of Ecology). 2007. Model Toxics Control Act Cleanup Regulations. Washington Administrative Code (WAC) 173-340. November 2007.

HWA. 2008a. Phase II Environmental Site Assessment, Giannola Parcel/Parcel No. 9457200072, Bothell, Washington. Prepared for City of Bothell. April 30, 2008.

HWA. 2008b. Phase II Environmental Site Assessment, Victory Development Property Parcel No. 9457200081, Bothell, Washington. Prepared for City of Bothell. April 30, 2008.

Parametrix. 2009. Draft Bothell Paint and Decorating Remedial Investigation/Feasibility Study Revision No. 0. Prepared by Parametrix, Bellevue, Washington. November 2009.

FIGURES

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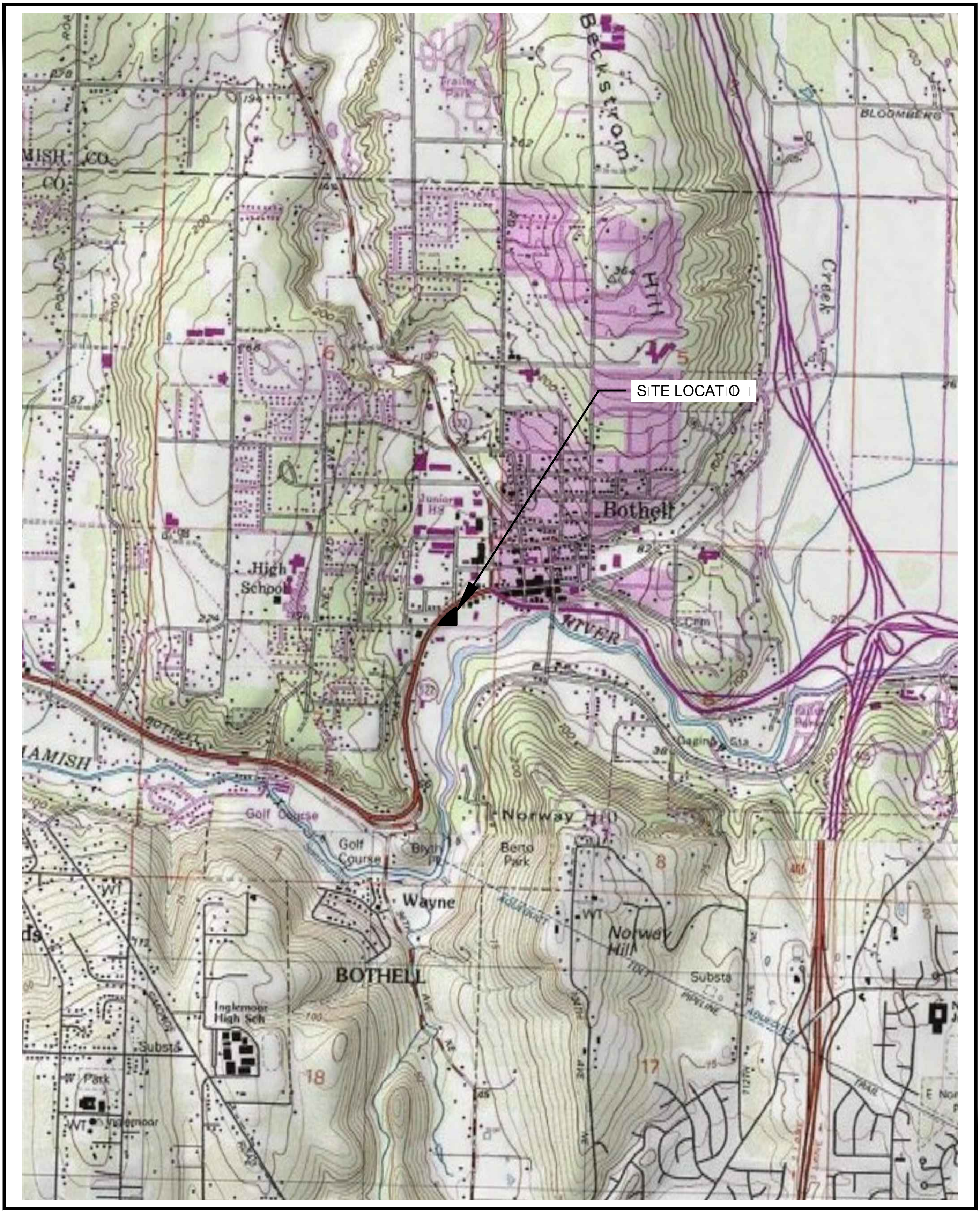

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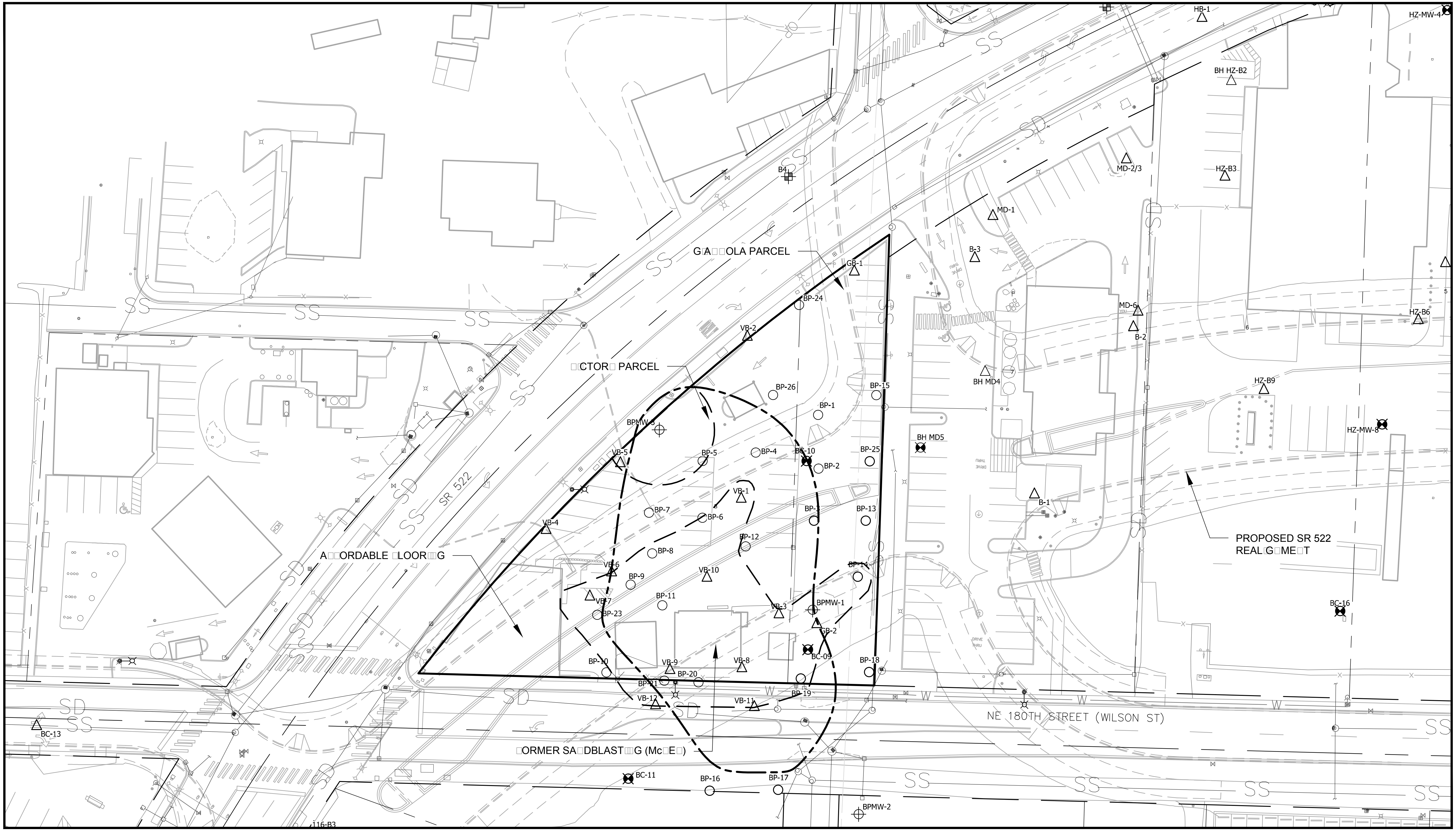
Figure 1-1
City of Bothell
Bothell Paint & Decorating Site
Site Vicinity



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- ⊗ HWA 2007 PHASE II ESA WELL LOCATIONS
- ○ PM□ 2009 R□/□S BORING LOCATIONS
- ⊕ PM□ 2009 R□/□S WELL LOCATIONS
- ⊞ CDM 2009 ROW BORING LOCATIONS
- — — APPROX LIMITS OF CONTAMINATED SOILS
- —— PROPERTY BOUNDARY
- —— PARCEL BOUNDARY
- — · — ESTIMATED AREA OF GROUNDWATER CONTAMINATED WITH ARSENIC ABOVE MTCA METHOD A CLEANUP LEVEL
- —— EXISTING BUILDING

Figure 2-1
City of Bothell
Bothell Paint & Decorating Site
Site Plan

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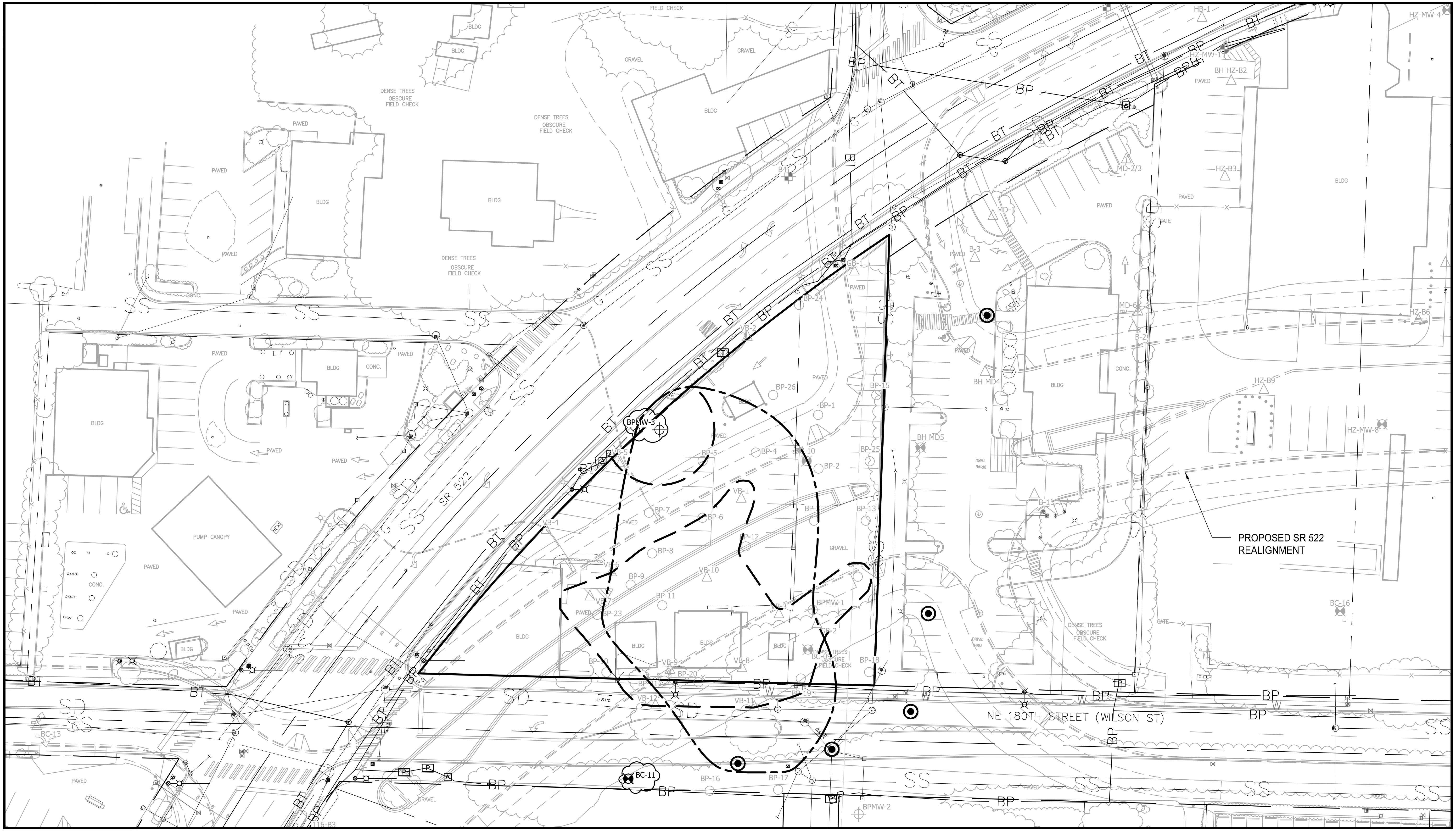

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- ◉ PROPOSED NEW MONITORING WELLS
- PROPERTY BOUNDARY
- ESTIMATED AREAS OF SOIL REMEDIATION (EXCAVATION)
- EXISTING MONITORING WELL TO BE USED FOR LONG TERM MONITORING
- ESTIMATED AREA OF GROUNDWATER CONTAMINATED WITH ARSENIC ABOVE MTCA METHOD A CLEANUP LEVEL

Figure 5-1
City of Bothell
Bothell Paint & Decorating Site
Proposed Interim Remedial Action

TABLES

Table 3-1. Applicable or Relevant and Appropriate Requirements (ARARs)

ARAR	Applicability
Soil	
Model Toxics Control Act (WAC 173-340-740, -747)	MTCA cleanup levels are applicable to Site soil.
Groundwater	
Model Toxics Control Act (WAC 173-340-720)	MTCA cleanup levels are applicable to Site groundwater.
Surface Water	
Model Toxics Control Act (WAC 173-340-730)	MTCA cleanup levels are applicable to the Site if remedial activities cause a release to surface water.
Air	
Washington Clean Air Act and Implementing Regulations (WAC 173-400; WAC 173-460; WAC 173-490)	Applicable for excavation activities.
Model Toxics Control Act (WAC 173-340-750)	MTCA cleanup levels are applicable to the Site if remedial activities cause a release to air.
Miscellaneous	
Protection of Wetlands, Executive Order 11990 (40 Code of Federal Regulations [CFR] Part 6, Appendix A)	This Act would be potentially applicable to remedial activities at the Site.
Native American Graves Protection and Repatriation Act (43 CFR Part 10)	This Act is applicable to remedial actions at the Site because it is possible that the disturbance of Native American materials could occur as a result of work in the subsurface excavations at the Site. Such materials are not known to be present at the Site, but could be inadvertently uncovered during soil removal.
National Historic Preservation Act (36 CFR Parts 60, 63, and 800)	This Act is applicable to subsurface work at the Site. No such sites are known to be present in the area.
Washington Hazardous Waste Management Act (WAC 173-303)	This regulation is applicable to handling of contaminated media at the Site. The contamination policy allows contaminated media to be consolidated within the same area of a site without triggering Resource Conservation and Recovery Act or Washington dangerous waste regulations.
Department of Transportation of Hazardous Wastes (49 CFR 105 – 180)	Applicable to remedial activities that involve the off-site transportation of hazardous waste.
Washington Solid Waste Handling Standards (WAC 173-350)	These regulations are applicable to solid nonhazardous wastes and are relevant and appropriate to on-site remedial actions governing contaminated media management.
Washington Water Well Construction Act Regulations (WAC 173-160)	These regulations are potentially applicable to the installation, operation, or closure of monitoring and treatment wells at the Site.

Table 3-2. Remediation Levels

	Medium of Concern Soil	
Hazardous Substance	**MTCA A (mg/kg)**	**Background Concentration[a] (mg/kg)**
Benzene	0.030	None
Diesel	2,000	None
Motor Oil	2,000	None
Arsenic	20	7.30
Tetrachloroethylene	0.05	Not Available
Barium	N/A	Not Available
Cadmium	2	0.77
Chromium	19	48.15
Lead	250	16.83
Silver	N/A	Not Available
Mercury	2	0.07

N/A – Not Applicable

[a] Ecology (Washington State Department of Ecology). 1994. Natural Background Soil Metals Concentrations in Washington State. Publication #94-115. October 1994.

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Table 4-1. Detailed Alternatives Analysis

Alternative	Description	Effectiveness	Implementability	Public Concern	Estimated Cost
1. Chemical Oxidation, Electrokinetic Separation, and Low Permeability Cap	Treat contamination adjacent to the proposed roadway in situ using soil chemical oxidation and electrokinetic separation. Use roadway as cap for remaining contamination. Monitor groundwater quarterly for 1 year.	Low to Medium	Low	Medium	$2,997,000
2. Excavation Off-site and Disposal	Excavate and remove contaminated soils. Monitor groundwater quarterly for 1 year.	High	Medium	Low	$602,000
3. Limited Excavation, Off-site Disposal, and Low Permeability Cap	Excavate and remove contaminated soils outside proposed roadway. Use roadway as cap for remaining contamination. Monitor groundwater quarterly for 1 year.	Medium	Medium	Low	$392,000

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APPENDIX A

Bothell Downtown Subarea Plan (Figure 1.1)

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C. The Envisioned Future Downtown

This section provides an overview of the desired physical outcomes intended to result from implementing the combined regulations and planned public actions contained in this Plan.

The Downtown Subarea is composed of a multitude of privately held properties and miles of public rights-of-way under public ownership. The overarching purpose of the Downtown Plan is to orchestrate investment in changes made to this multiplicity of properties to produce greater value than any separate development could achieve, by providing a common purpose that all investors can rely upon, contribute to, and derive value from. This section describes the common purpose to which all investments shall be directed: a vision of the future that is sufficiently specific to provide a common purpose, yet broad enough to respond to opportunities and to the changes in the marketplace that will inevitably arise.

Note: The specific outcomes described and illustrated in this section are not part of the formal regulating code, and new development proposals will not be required to mimic the specific designs presented in the illustrations.

Fig. 1.1 A vision of potential future development in downtown Bothell showing one scenario focusing on redevelopment in the core area

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APPENDIX B

Compliance Monitoring Plan

Parametrix ENGINEERING . PLANNING . ENVIRONMENTAL SCIENCES

4660 KITSAP WAY, SUITE A
BREMERTON, WA 98312-2357
T. 360.377.0014 F. 360.479.5961
www.parametrix.com

TECHNICAL MEMORANDUM

Date:	April 2, 2010
To:	City of Bothell Project File
From:	Scott Elkind
Subject:	Bothell Paint and Decorating Interim Action Compliance Monitoring Plan
cc:	Ken Fellow Steve Fuller Sandra Matthews
Project Number:	555-1647-019 (02/0412)
Project Name:	Bothell Paint IAWP

INTRODUCTION

In conjunction with the realignment of State Route (SR) 522 and the southward extension of SR 527, the City of Bothell (City) is redeveloping the City's downtown core, which includes the Bothell Paint and Decorating Site (Site). The Site is currently under Agreed Order (AO) No. 6296 with the Washington State Department of Ecology (Ecology) to perform a Remedial Investigation/Feasibility Study (RI/FS), implement interim cleanup action(s), and develop a cleanup action plan (CAP) that will address known contamination, related to historical releases of hazardous substances at the site. Excavation of contaminated soils is to take place in compliance with the AO as an Interim Action (IA) for the remediation of petroleum-hydrocarbon-contaminated soils and groundwater at the site. The IA will be implemented during the construction window of the roadway realignment project. Remnant portions of the property will be redeveloped as part of the City's overall Downtown Revitalization Plan. At the current time, the IA for the Site is planned to consist of the following:

- Source removal by excavation of contaminated soils.
- Quarterly groundwater monitoring.

This Compliance Monitoring Plan (CMP) has been prepared in accordance with Washington Administrative Code (WAC) 173-340-410, Compliance Monitoring Requirements. The CMP will be used to:

- Ensure contaminated soil exceeding appropriate cleanup standards is removed during the IA through sampling of the excavation sidewalls and bottom.
- Ensure IA activities are conducted in a safe manner.
- Confirm the effectiveness of the IA through groundwater monitoring following completion of the IA.

There are three types of compliance monitoring: protection, performance, and confirmational monitoring. A description of each is presented in the following sections.

PROTECTION MONITORING

The purpose of protection monitoring is to confirm that human health is adequately protected during construction. Health and safety protocols including monitoring requirements are specified in the site-specific health and safety plan (HASP). The HASP has been completed as a separate document.

PERFORMANCE MONITORING

The purpose of performance monitoring is to confirm that the IA has attained appropriate cleanup standards. For the Site, this will include the collection of soil samples from the sidewalls and bottom of the excavation to confirm complete removal of contaminated soil during the IA and collection of soil stockpile samples to help determine proper disposal and/or re-use options. Sample collection procedures, required chemical analyses, and other requirements for performance monitoring are presented in the Compliance Monitoring Quality Assurance Project Plan (CMQAPP) included as Attachment 1 to this technical memorandum. The CMQAPP includes the appropriate cleanup levels necessary to assess soil quality and evaluate the need for continued excavation to achieve the necessary cleanup goals.

CONFIRMATIONAL MONITORING

The purpose of confirmational monitoring is to confirm the effectiveness of the soil IA. This will be accomplished by conducting four quarters of groundwater monitoring following completion of the soil IA. Groundwater purging and sample collection procedures, required chemical analyses, and other requirements for confirmational monitoring are presented in the CMQAPP included as Attachment 1 to this technical memorandum.

ATTACHMENT 1

Compliance Monitoring Quality Assurance Project Plan

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Compliance Monitoring Quality Assurance Project Plan
Bothell Paint and Decorating Site
Revision No. 2

Prepared for

City of Bothell
9654 NE 182nd Street
Bothell, WA 98011

Prepared by

Parametrix
411 108th Avenue NE, Suite 1800
Bellevue, WA 98004-5571
T. 425.458.6200 F. 425.458.6363
www.parametrix.com

April 2010 │ 555-1647-019 (02/0412)

CITATION

Parametrix. 2010. Compliance Monitoring Quality Assurance
Project Plan
Bothell Paint and Decorating Site
Revision No. 2.
Prepared by Parametrix, Bellevue, Washington. April 2010.

CERTIFICATION

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned.

Prepared by Scott Elkind, PE

Sandra Matthews

Checked by Sandra Matthews, LG, LHG

Ken Fellows

Approved by Ken Fellows, PE

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

AO	Agreed Order
CFR	Code of Federal Regulations
City	City of Bothell
CLP	Contract Laboratory Program
COPCs	contaminants of potential concern
CMQAPP	Compliance Monitoring Quality Assurance Project Plan
cPAHs	Carcinogenic polycyclic aromatic hydrocarbons
cy	cubic yard
DQIs	data quality indicators
DQOs	Data Quality Objectives
Ecology	Washington State Department of Ecology
EDD	electronic data deliverable
EIM	Environmental Information Management
EPA	U.S. Environmental Protection Agency
gpm	gallon per minute
GPS	global positioning system
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HVOCs	halogenated volatile organic compounds
IA	interim action
IAWP	Interim Action Work Plan
ID	inside diameter
IDW	investigation derived waste
MS/MSD	matrix spike/matrix spike duplicate
MTCA	Model Toxics Contol Act
NTUs	nephelometric turbidity units
OD	outside diameter
ORP	oxidation-reduction potential
PID	photoionization detector
PQL	practical quantitation limit
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
RI/FS	Remedial Investigation/Feasibility Study

ACRONYMS AND ABBREVIATIONS (CONTINUED)

RPD	relative percent difference
Site	Bothell Paint and Decorating Site
SOPs	standard operating procedures
SR	State Route
WAC	Washington Administrative Code

1. INTRODUCTION

In conjunction with the realignment of State Route (SR) 522 and the southward extension of SR 527, the City of Bothell (City) is redeveloping the City's downtown core, which includes the Bothell Paint and Decorating Site (Site). The Site, located in Bothell, Washington, (Figure 1-1) is under an Agreed Order (AO) Number DE 6296 between the City and the Washington State Department of Ecology (Ecology) to conduct a remedial investigation/feasibility study (RI/FS), implement interim action(s), and submit a cleanup plan to address known soil contamination related to historical releases of hazardous substances at the Site.

This Compliance Monitoring Quality Assurance Project Plan (CMQAPP) is incorporated within the Interim Action Work Plan (IAWP) for the site, and has been prepared to fulfill the requirements of the Agreed Order per Washington Administrative Code (WAC) 173-340-410(1)(b), Performance Monitoring, and WAC 173-340-410(1)(c), Confirmational Monitoring. This CMQAPP describes the sample collection procedures, analysis, and defines the Data Quality Objectives (DQOs) and criteria for the project. Parametrix prepared this CMQAPP in accordance with the U.S. Environmental Protection Agency (EPA) and Ecology requirements contained in the following:

- EPA QA/R-5, EPA Requirements for Quality Assurance Project Plans, Final, March 2001
- EPA QA/G-5, EPA Guidance for Quality Assurance Project Plans, December 2002
- EPA QA/G-4, EPA Guidance on Systematic Planning Using the Data Quality Objectives Process, February 2006
- Ecology Model Toxics Control Act (Ecology 2007)

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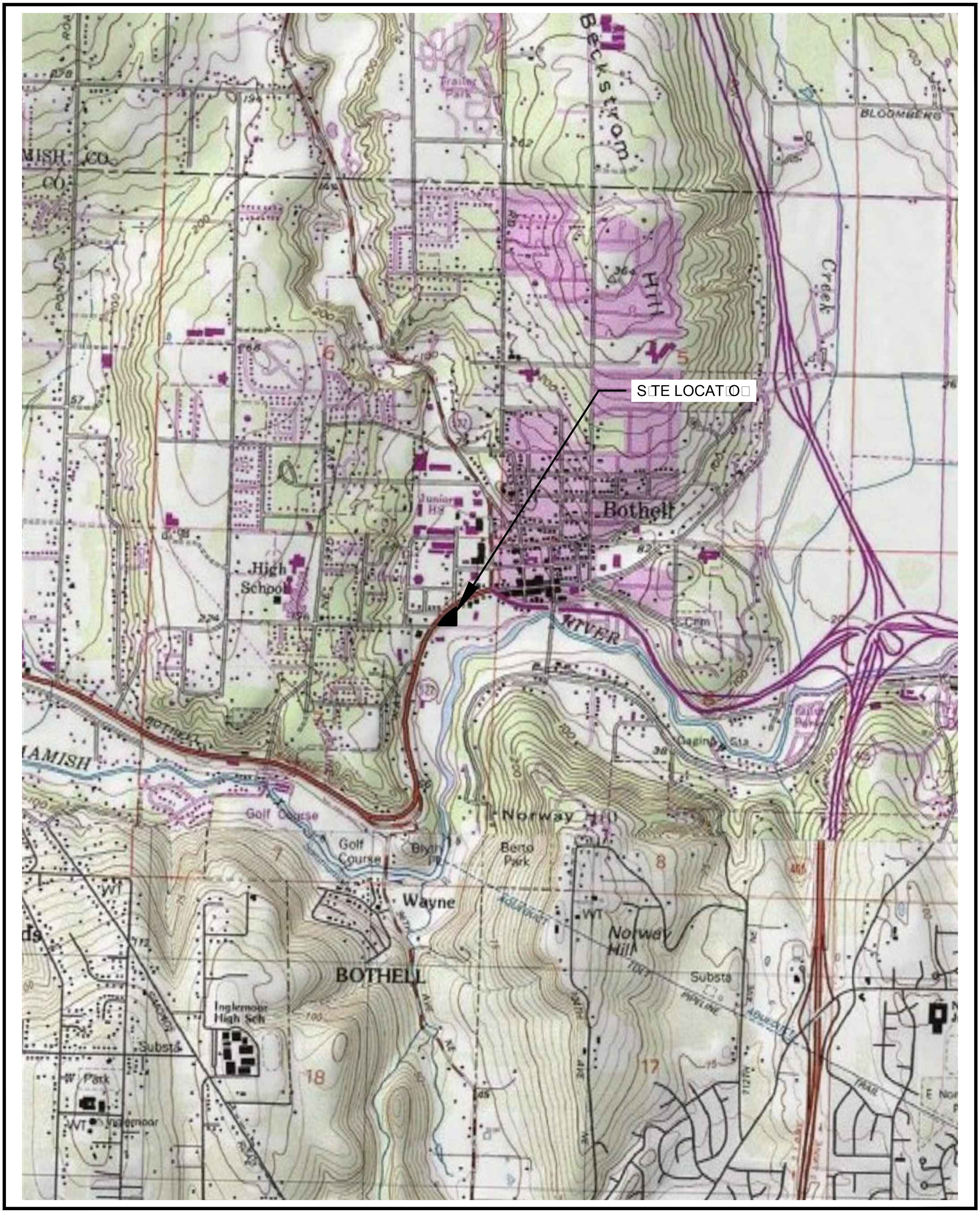

Parametrix DATE: Apr 01, 2010 FILE: BR16□7019P02T0□12□□-01-1 **Image Source: USGS Bothell Quadrangle 1981**

Figure 1-1
City of Bothell
Bothell Paint & Decorating Site
Site Vicinity

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2. PROJECT ORGANIZATION AND MANAGEMENT

2.1 PROJECT ORGANIZATION

Specific project roles and responsibilities for oversight and sampling are described in Table 2-1.

Table 2-1. Project Roles and Responsibilities

Personnel	Responsibilities
City of Bothell (Owner) Project Manager	Provides project and construction oversight and performs contract administration
Contractor	Implements cleanup/remedial actions and coordinates with environmental consultant for confirmational sampling during construction
Owner's Representative (Consultant Construction Manager or Environmental Consultant)	Coordinates with Contractor to obtain confirmational sampling during remedial construction; coordinates analytical laboratory testing of samples; prepares interim action reports.

2.2 PROBLEM DEFINITION/BACKGROUND

The Site is located on the south side of SR 522, between downtown Bothell and the Sammamish River (Figure 2-1) and is 0.79 acres. The property consists of two parcels: the Victory parcel (0.54 acre) and the Giannola parcel (0.25 acre). Historical operations on the Victory parcel included automobile repair and dealerships, retail paint and flooring, and sand blasting. Documented historical site use of the Giannola parcel is limited to residential usage and parking.

The Site was the subject of several environmental investigations beginning in 2008 which included:

- Phase I Environmental Site Assessment completed by HWA on the Victory parcel in February 2008.
- Phase II Environmental Site Assessment conducted by HWA on the Victory parcel in February 2008.
- Phase II Environmental Site Assessment conducted by HWA on the Giannola parcel in February 2008.
- Phase I Environmental Site Assessment completed by HWA on the Giannola parcel in March 2008.
- Remedial Investigation and Feasibility Study (RI/FS) performed by Parametrix in 2009 (Parametrix 2009).

Based on evaluation of analytical data from Site investigations, the primary contaminants of potential concern (COPCs) for soil include:

- Metals (arsenic, barium, cadmium, chromium, lead, silver, and mercury)
- Total petroleum hydrocarbons (diesel/heavy oil-range)
- Aromatic hydrocarbons (benzene)
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs)

For groundwater, COPCs include:

- Metals (arsenic, barium, cadmium, chromium, lead, silver, and mercury)
- Total petroleum hydrocarbons (diesel/heavy oil-range)
- Aromatic hydrocarbons (benzene)
- Halogenated volatile organic compounds (HVOCs)

To satisfy the AO requirements, an IAWP was developed for the implementation of an Interim Action (IA) which will be performed to remediate COPCs (except lead) which are present in soil and which are originating from on-site sources.

This CMQAPP describes sample collection procedures and quality assurance and control methods to ensure representative data is collected during the IA.

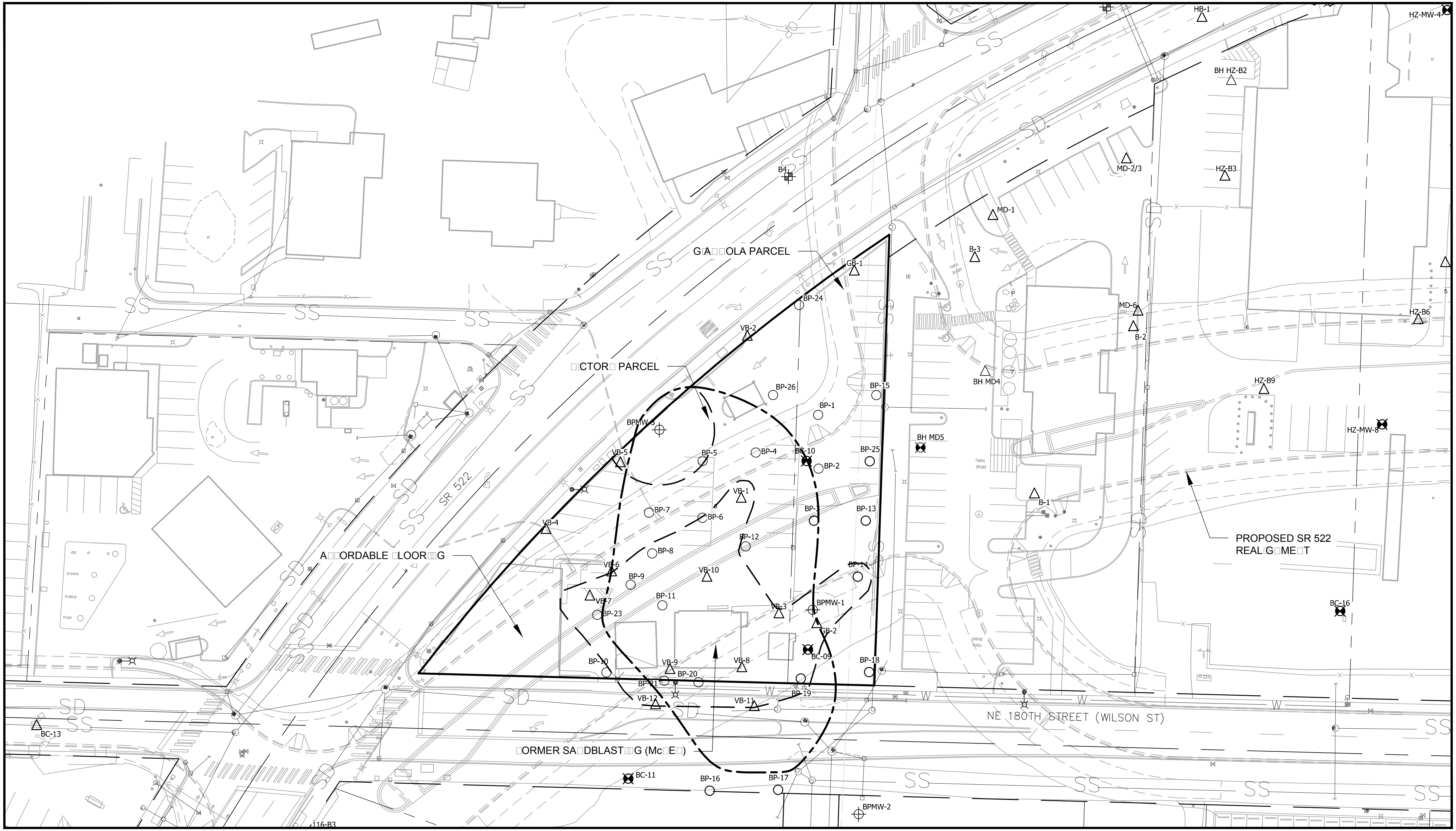
2.3 TASK DESCRIPTION

Based on the results of the RI/FS, the recommended alternative for soil cleanup was excavation and off-site disposal. At the current time, the IA is planned to consist of:

- Source removal by excavation in the area outlined in Figure 3-1.
- Quarterly groundwater monitoring to assess groundwater quality following the interim action.

In source excavations, performance monitoring samples will be collected at the bottom and sidewalls of excavations to confirm that the remediation levels have been met. Stockpiles will also be sampled to confirm and characterize contaminant levels for disposal purposes. Sample results will be compared to remediation levels provided in Section 3.

Confirmational monitoring will be completed by conducting four quarters of groundwater monitoring following completion of soil removal.



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- ⊗ HWA 2007 PHASE II ESA WELL LOCATIONS
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Figure 2-1
City of Bothell
Bothell Paint & Decorating Site
Site Plan

2.4 QUALITY OBJECTIVES AND CRITERIA

2.4.1 Data Quality Objectives

DQOs were developed according to EPA's DQOs Process (EPA 2006), to provide data of known and appropriate quality. The DQO process is a seven-step planning approach to develop sampling designs for data collection activities that support decision-making. It provides a systematic procedure for defining the criteria that a data collection design should satisfy. The DQOs for the project are shown in Table 2-2.

Table 2-2. Design Characterization Sampling DQOs

DQO	Description
State the Problem	Was the contaminated soil within the footprint of the remediation area removed?
Identify the Goal of the Study	Does contamination still exist at the selected locations? Are the contaminant levels above applicable cleanup levels? Is the collected chemical data adequate to identify and determine if contamination still exists?
Identify Information Inputs	Analytical results (what are the detected concentrations? are they above cleanup levels? was QA/QC criteria met?). Actual sample locations (correct location and depth?).
Define the Study Boundaries	The Paint and Decorating site and adjacent offsite areas containing monitoring wells.
Develop the Analytical Approach	Sampling and analysis strategies will be developed to support the decision making process. Analytical results will be used to determine the presence or absence of contamination. Results will be compared to Model Toxics Control Act (MTCA) Method A (residential) cleanup levels.
Specify Performance or Acceptance Criteria	Ensure through data review and validation that the analytical data for collected samples are within acceptable quality limits as defined by applicable EPA and Ecology data quality protocols.
Develop the Plan for Obtaining Data	Presented in this CMQAPP.

2.4.2 Data Quality Indicators

Data quality and usability are evaluated in terms of performance criteria. Performance and acceptance criteria are expressed in terms of data quality indicators (DQIs). The principal indicators of data quality are precision, accuracy, bias, sensitivity, completeness, comparability, and representativeness. Table 2-3 provides a description of project DQIs.

Table 2-3. General Description of DQIs

DQI	Description
Precision:	A measure of agreement among repeated measurements of the same property under identical conditions. Usually assessed as a relative percent difference (RPD) between duplicate measurements. RPD guidelines for laboratory duplicate analyses are contained in the standard operating procedures (SOPs) for each analytical method and will be obtained from the laboratory for validation purposes.
Accuracy:	A measure of the overall agreement of a measurement to a known value. Analytical accuracy is assessed as percent recovery from matrix spike or reference material measurements. Percent recovery guidelines are contained in laboratory SOPs for each analytical method.
Bias:	The systematic or persistent distortion of a measurement process that causes error in one direction. Usually assessed with reference material or matrix spike measurements. Bias as reported by the laboratory will be used to assess data validity.
Sensitivity:	The capability of a method or instrument to meet prescribed reporting limits. Assessed by comparison with risk-based reporting limits, method reporting limits, instrument reporting limits, or laboratory quantitation limits, as appropriate. In general, reporting limits for the analytical methods used will be at or below applicable criteria.
Completeness:	A measurement of the amount of valid data needed to be obtained for a task. Assessed by comparing the amount of valid results to the total results set. Project requirements for completeness are 90%.
Comparability:	A qualitative term that expresses the measure of confidence that one data set can be compared to another. Assessed by comparing sample collection and handling methods, sample preparation and analytical procedures, holding times, reporting units, and other QA protocols. To ensure comparability of data collected for the Bus Barn to previous data, standard collection and measurement techniques will be used.
Representativeness:	A qualitative term that expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variation at a sample point, or environmental condition. To ensure representativeness, the sampling design will incorporate sufficient samples so that contamination is detected, if present. Additionally, all sampling procedures detailed in this CMQAPP will be followed.

2.5 SPECIAL TRAINING AND CERTIFICATION

All personnel conducting sampling activities on the project site must be 40-hour Hazardous Waste Operation (HAZWOPER) trained per 29 Code of Federal Regulations (CFR) 1910.120 and be current with their annual 8-hour refresher course.

All personnel working at the project site will be briefed on potential site hazards, health and safety procedures, and sampling procedures. Following completion of this training, all personnel will be required to sign an acknowledgement form verifying that they have completed the task-specific training.

A Project Health and Safety Plan (HASP) has also been prepared for this project, as required by WAC 296-62-3010. The Contractor and Owner's Representative will prepare their own HASP to be consistent with the Project HASP.

2.6 SAMPLING DOCUMENTATION AND RECORDS

Sampling documentation will be accomplished according to the procedures provided in Table 2-4.

Table 2-4. Sampling and Sample Handling Records

Record	Use	Responsibility/Requirements
Field Notebook	Record significant events and observations.	Maintained by field sampler/geologist; must be bound; all entries must be factual, detailed, objective; entries must be signed and dated.
Sampling Field Data Sheet	Provide a record of each sample collected (Appendix A).	Completed, dated, and signed by sampler; maintained in project file.
Sample Label	Accompanies sample; contains specific sample identification information.	Completed and attached to sample container by sampler.
Chain-of-Custody Form	Documents chain-of-custody for sample handing (Appendix A).	Documented by sample number. Original accompanies sample. A copy is retained by QA Manager.
Chain-of-Custody Seal	Seals sample shipment container (e.g., cooler) to prevent tampering or sample transference. Individual samples do not require custody seals, unless they are to be archived, before going to the lab for possible analysis at a later date.	Completed, signed, and applied by sampler at time samples are transported.
Sampling and Analysis Request	Provides a record of each sample number, date of collection/transport, sample matrix, analytical parameters for which samples are to be analyzed.	Completed by sampler at time of sampling/transport; copies distributed to laboratory project file.

2.6.1 Field Logs and Forms

A bound field notebook will be maintained to provide daily records of significant events and observations that occur during field investigations. All entries are to be made in waterproof ink, signed, and dated. Pages of the field notebook are not to be removed, destroyed, or thrown away. Corrections will be made by drawing a single line through the original entry (so that the original entry can still be read) and writing the corrected entry alongside. The correction will be initialed and dated. Most corrected errors will require a footnote explaining the correction.

If an error made on a document is assigned to one person, that individual may make corrections simply by crossing out the error and entering the correct information. The erroneous information should not be obliterated. Any error discovered on a document should be corrected by the person who made the entry.

All field logs and forms will be retained in the project files.

2.6.2 Photographs

All photographs taken of field activities will be documented with the following information noted in the field notebook:

- Date, time, and location of photograph taken
- Description of photograph taken
- Reasons photograph was taken
- Viewing direction

Digital photographs will be reviewed in the field to assess quality and need to re-shoot the photograph.

2.7 REPORTING

Following completion of the confirmation sampling and analysis, the results will be included in an interim remedial action report. Reporting will include the following:

- Summary of field activities completed.
- Figures showing sampling locations.
- Summary of laboratory analytical results and a comparison to relevant regulatory criteria.
- Field log forms and sampling forms.
- Laboratory data sheets and the results of data review/validation.
- Recommendations for further sampling, such as groundwater monitoring, if needed.

Preliminary results will be communicated verbally as they become available.

3. SAMPLING PROCESS DESIGN

3.1 SAMPLING PROCESS DESIGN

A Site-specific sampling approach has been developed to provide performance and confirmational monitoring in support of the IA. The IA will target the area of significant petroleum contamination identified during the RI (Figure 3-1). The approach used for the IA will involve source removal by excavation, followed by four quarters of groundwater monitoring to assess short-term groundwater quality following source removal.

A summary of the sampling approach for the IA is provided in Table 3-1. Groundwater monitoring locations and required chemical analyses are presented in Table 3-2.

Table 3-1. Sampling Approach

		COPCs (Soil and Groundwater)	
Area	**No. Locations**	**Soil**	**Groundwater**
Pot Hole Samples	4	EPH/VPH, gasoline, diesel, and heavy oil	N/A
Interim Action Footprint - Excavation Sidewalls	13[a]	Diesel and heavy oil-range petroleum hydrocarbons, HVOCs[b], RCRA metals, cPAHs	N/A
Interim Action Footprint - Excavation Bottom	7[a]		
Contaminated Soil Stockpile (1,900 cy estimated)	10[c]	Diesel and heavy oil-range petroleum hydrocarbons, RCRA metals, cPAHs[d,]	N/A
Groundwater	7	N/A	Gasoline, BTEX, diesel and heavy oil-range petroleum hydrocarbons, RCRA metals[e], and HVOCs[f]

[a] Additional performance monitoring sampling may be required based on the results for the initial sampling round.

[b] Three bottom and two sidewall samples will be analyzed for HVOCs.

[c] The actual number of stockpile samples required for disposal may change based on the acceptance requirement of the proposed disposal facility.

[d] Additional analyses may be necessary based on disposal facility acceptance requirements.

[e] Groundwater will be analyzed for total and dissolved RCRA metals.

[f] For selected sampling locations only.

BTEX: Benzene, toluene, ethylbenzene, and xylenes.
cPAHs = carcinogenic polycyclic aromatic hydrocarbons.
EPH/VPH = extractable petroleum hydrocarbons/volatile petroleum hydrocarbons.
COPCs = contaminants of potential concern.
HVOCs = halogenated volatile organic compounds.
N/A = not applicable.
RCRA = Resource Conservation and Recovery Act list metals (As, Ba, Cd, Cr, Pb, Hg, Se, Ag).

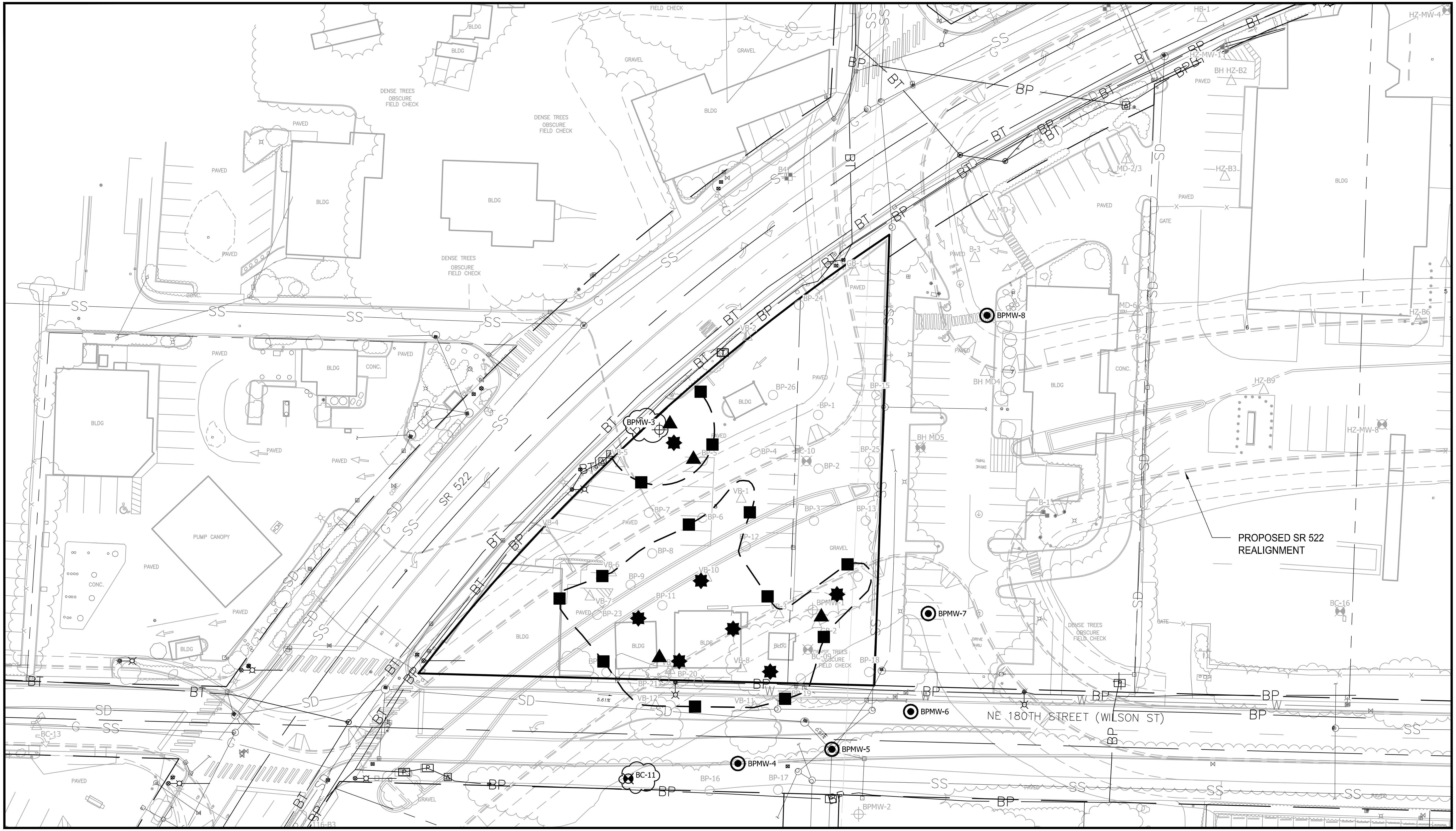
Table 3-2. Groundwater Monitoring Locations and Analysis

Well	Analytes	Analytical Method
BC-11	Gasoline-Range Petroleum Hydrocarbons	NWTPH-Gx
	BTEX	EPA Method 8021B
	Diesel/Heavy Oil-Range Petroleum Hydrocarbons	NWTPH-Dx
	Total/Dissolved RCRA Metals[a]	EPA Method 200.8/7470A
BPMW-3	Gasoline-Range Petroleum Hydrocarbons	NWTPH-Gx
	BTEX	EPA Method 8021B
	Diesel/Heavy Oil-Range Petroleum Hydrocarbons	NWTPH-Dx
	Total/Dissolved RCRA Metals[a]	EPA Method 200.8/7470A
	HVOCs	EPA Method 8260B
BPMW-4[b]	Gasoline-Range Petroleum Hydrocarbons	NWTPH-Gx
	BTEX	EPA Method 8021B
	Diesel/Heavy Oil-Range Petroleum Hydrocarbons	NWTPH-Dx
	Total/Dissolved RCRA Metals[a]	EPA Method 200.8/7470A
BPMW-5[b]	Gasoline-Range Petroleum Hydrocarbons	NWTPH-Gx
	BTEX	EPA Method 8021B
	Diesel/Heavy Oil-Range Petroleum Hydrocarbons	NWTPH-Dx
	Total/Dissolved RCRA Metals[a]	EPA Method 200.8/7470A
BPMW-6[b]	Gasoline-Range Petroleum Hydrocarbons	NWTPH-Gx
	BTEX	EPA Method 8021B
	Diesel/Heavy Oil-Range Petroleum Hydrocarbons	NWTPH-Dx
	Total/Dissolved RCRA Metals[a]	EPA Method 200.8/7470A
BPMW-7[b]	Gasoline-Range Petroleum Hydrocarbons	NWTPH-Gx
	BTEX	EPA Method 8021B
	Diesel/Heavy Oil-Range Petroleum Hydrocarbons	NWTPH-Dx
	Total/Dissolved RCRA Metals[a]	EPA Method 200.8/7470A
BPMW-8[b]	Gasoline-Range Petroleum Hydrocarbons	NWTPH-Gx
	BTEX	EPA Method 8021B
	Diesel/Heavy Oil-Range Petroleum Hydrocarbons	NWTPH-Dx
	Total/Dissolved RCRA Metals[a]	EPA Method 200.8/7470A

[a] MTCA metals includes arsenic, cadmium, chromium, lead, and mercury.

[b] New well to be installed.

BTEX = benzene, toluene, ethylbenzene, total xylenes
HVOCs = halogenated volatile organic compounds.
RCRA = Resource Conservation and Recovery Act list metals (As, Ba, Cd, Cr, Pb, Hg, Se, Ag).



Parametrix DATE: Apr 12, 2010 FILE: BR16□7019P02T0□12□□-0□-1

N

0 50

SCALE IN FEET

LEGEND

- ◉ PROPOSED NEW MONITORING WELLS
- ── PROPERTY BOUNDARY
- — — ESTIMATED AREAS OF SOIL REMEDIATION (AREA EXCAVATION)
- ☁ EXISTING MONITORING WELL TO BE USED FOR LONG TERM MONITORING
- ■ PROPOSED EXCAVATION SIDEWALL SAMPLE LOCATION
- ✸ PROPOSED EXCAVATION BOTTOM SAMPLE LOCATION
- ▲ PROPOSED EPH / VPH SAMPLE LOCATION

Figure 3-1
City of Bothell
Bothell Paint & Decorating Site
Proposed Interim Remedial Action
Sampling Locations

The objectives of the sampling are to confirm that all COPCs have met established remediation levels in soil, to confirm that all landfill disposal requirements are met for soil disposal, and to monitor groundwater conditions to determine the effectiveness of the remedial action. Details of the cleanup are provided in the following sections.

Flexibility will be incorporated into the field work so that modifications can be made in the field to refine the strategy. An example would be adjusting the location of samples based on field observations.

Descriptions of the specific sampling methods for the above activities are presented in Sections 3.2. In addition, all sampling will be conducted in accordance with standard operating procedures.

3.1.1 Excavation and Soil Removal

The concept for remediation of source soils within the contaminated area (Figure 3-1) is to remove them by excavation. The extent of the excavation will be determined in the field by real-time observation and field screening. Once the apparent limit of contaminated soil is reached, the bottom and sidewalls of the excavation will be sampled to confirm removal. Both clean and contaminated soils will be stockpiled separately and sampled. Based on the Phase II ESA and RI results, it is assumed that no clean soils are present and that no clean soil stockpile will be generated. Contaminated soils will be transported to a permitted landfill. The remaining excavation will be backfilled with clean pit run. Removal of all contaminated soils will require excavation dewatering. Contaminated groundwater removed during dewatering will be monitored and treated to meet permit effluent standards and will be disposed of into the City’s sanitary sewer system.

3.1.1.1 Contaminated Soil Removal

The following are the planned steps for contaminated soil removal:

- Prior to beginning excavation, collect soil samples for EPH/VPH analysis from pot holes excavated within in the contaminated soil footprint. Four soil samples for EPH/VPH analysis will be collected from the approximate locations shown on Figure 3-1. The samples will be analyzed on a two-day turnaround basis. A range of contaminated soils from moderately to highly contaminated will be targeted for sample collection. Field screening will be used to aid in sample selection. It is anticipated that the samples will be collected from an average of 2 feet bgs (average depth to groundwater). The results of the EPH/VPH analyses will be input into Ecology’s MTCATPH 11.1 spreadsheet model to determine TPH cleanup levels that are protective of direct contact and groundwater. All three samples will also be analyzed for gasoline, diesel, and heavy oil to provide additional information to be used in the evaluation. Protective concentrations derived using the model will be compared to the remediation levels established for the site. The results of the comparison will be reported in a brief technical memorandum that will be submitted to Ecology. At this time, an evaluation of the appropriateness of the remedial levels will be made in consultation with Ecology. Changes to the remedial levels will be established by agreement between the City and Ecology and will be implemented during the IA. The evaluation will be completed prior to the start of mass soil excavation activities on the Site.
- Excavate contaminated soils from the footprint shown on Figure 3-1. Field screen all excavated soils so that potentially clean and contaminated soils can be segregated and stockpiled separately. Conduct field screening using visual/olfactory methods and headspace measurements using a photoionization detector (PID). It is assumed that no clean soils are present and that no clean soil stockpile will be generated.

- Excavate contaminated soils to limits defined by confirmational sampling. Note that the contaminated soil footprint shown on Figure 3-1 is an estimate; the excavated footprint may change based on actual conditions encountered in the field. Determine the limits of the excavation using field screening and professional judgment. The proposed depth of excavation is 3 to 4 feet below ground surface.
- Conduct excavations during the dry summer months (May through September) so that the groundwater table is at the seasonal low. Plan excavations to occur as one of the initial steps in the grading phase of the SR 522 road realignment.
- Collect performance monitoring soil samples from the base and sidewalls of the excavations. A total of 13 confirmation soil samples will be collected and analyzed for diesel and heavy oil-range petroleum hydrocarbons, RCRA metals, cPAHs, and HVOCs at selected locations. Proposed confirmation sample locations are shown on Figure 3-1. Sample results will be compared to the remediation levels provided in Table 3-3 (as modified following the EPH/VPH evaluation if appropriate). A second round of performance monitoring sampling may be required if the results of the first round exceed remediation levels and additional excavation is completed.
- Stockpile "contaminated" soil on plastic sheeting. Cover un-worked stockpiles with sheeting at the end of each workday to prevent windblown dust migration and to prevent rainwater infiltration. It is anticipated that the contaminated soils will remain in the stockpile for less than 30 days.
- Collect soil samples from the contaminated stockpile. An estimated 1,900 cubic yards (cy) of contaminated soils will be stockpiled. Based on this estimate, a total of ten stockpile soil samples will be collected and analyzed for diesel and heavy oil-range petroleum hydrocarbons, MTCA metals, TCLP, and cPAHs. Sample numbers may be reduced based on Ecology guidelines if stockpile volumes are less than estimated. Dispose of contaminated soil at a permitted landfill. At the current planning level, it is assumed that no soil will require disposal as hazardous waste.
- Restore site by backfilling using the stockpiled clean soil and imported pit run. Backfill using lifts no greater than 12 inches loose thickness. Compact backfilled soil to a density of at least 90 percent of the maximum value as determined by the Modified Proctor test. Perform a minimum of five density tests for each material type to confirm compaction.

3.1.2 Groundwater Monitoring

At the conclusion of the IA, four quarters of groundwater monitoring will be conducted using the seven wells shown on Figure 3-1. Following these four events, the appropriateness of additional groundwater sampling events under the IA will be evaluated. Note that two of the wells currently exist and that five new wells will be installed following completion of road construction. Groundwater samples collected will be analyzed as shown in Table 3-2. Well installation and sampling shall be performed according to the procedures in Section 3.2.5.

3.1.3 Remediation Levels

As described in the draft RI/FS report (Parametrix 2009), the remediation levels listed in Table 3-3 are applicable under the IA.

Table 3-3. Remediation Levels

	Medium of Concern		
	Soil		Groundwater
Hazardous Substance	MTCA A [a] (mg/kg)	Background Concentration [b] (mg/kg)	MTCA A [c] (µg/L)
Benzene	0.030	NA-	5
Toluene	7	NA	1,000
Ethylbenzene	6	NA	700
Xylenes (total)	9	NA	1,000
Tetrachoroethylene	0.05	NA	5
Gasoline	30/100 [d]	NA	800/1,000 [e]
Diesel	2,000	NA	500
Heavy Oil	2,000	NA	500
Arsenic	20	7	5
Cadmium	2	1	5
Chromium	2,000 [g]	48	50
Lead	250	17	15
Mercury	2	0.07	2
Benzo(a)pyrene	0.1 [h]	NA	0.1[i]

NA = not available.

mg/kg = milligrams per kilogram.

µg/L = micrograms per liter.

[a] Model Toxics Control Act Method A Unrestricted Land Uses Table 740-1 (WAC 173-340-900).

[b] Puget Sound concentrations from Table 1: Statewide & Regional 90th Percentile Values from Natural Background Soil Metals Concentrations in Washington State, Ecology Publication #94-115, October 1994.

[c] Method A Cleanup levels for groundwater Table 720-1 (WAC 173-340-900).

[d] If benzene detected then 30 mg/kg, if no benzene then 100 mg/kg.

[e] If benzene detected then 800 µg/l, if no benzene then 1,000 µg/l.

[g] Chromium III concentration.

[h] Total using toxicity equivalency for all cPAHs.

3.2 SAMPLING METHODS AND PROCEDURES

Descriptions of the specific sampling and laboratory methods for the project are presented in this section. The methods described are intended to supplement the SOPs provided in Appendix B. Sampling field forms are provided in Appendix A.

3.2.1 General Sampling Procedures

Excavation sidewall and bottom soil samples will be collected with aid of the excavator or backhoe. Samples will be collected directly from the excavator or backhoe bucket. For excavation less than 4 feet deep, samples may be collected directly from the sidewalls and bottom using hand tools. Samples for non-volatiles analysis will be thoroughly homogenized before being placed in sample containers.

For soil stockpiles, one 5-point composite sample will be collected at a rate of approximately one sample per 150 to 200 cy. The actual rate of stockpile sampling may be revised based on the acceptance requirement of the proposed disposal facility. Each of the five sub-samples will be collected with stainless steel or disposable hand tools, placed in a stainless steel mixing bowl and composited. Sub-samples will be collected at least 6-inches below the surface of the stockpile.

All soil samples will be placed into the appropriate sample containers using dedicated, disposable stainless steel or polyethylene spoons. All sample containers will be provided by the analytical laboratory. Bowls used during sample collection will be dedicated, disposable, and constructed of stainless steel, polyethylene, or aluminum. Following sample collection, the location of all samples will be recorded using a handheld global positioning system (GPS) and sketched in the field logbook.

3.2.2 Summary of Sample Media, Numbers, and Analyses

Total numbers of samples to be collected are summarized by medium in Table 3-4. Numbers of samples include four consecutive quarters of groundwater monitoring.

Table 3-4. Summary of Sample Types, Analyses, and Number

Sample Medium	Analysis	No. Field Samples	No. Duplicate Samples	No. Trip Blanks	No. Rinsate Blanks	Total No.
Soil[a]	Diesel/Heavy Oil	32	2	-	-	31
	RCRA metals	29	2	-	-	31
	Gasoline	3	-	-	-	3
	cPAHs	29	1	-	-	30
	EPH/VPH	4	-	-	-	4
	HVOCs	5	1	-	-	6
Groundwater	Gasoline/BTEX	28	8	4	4	44
	Diesel/Heavy Oil	28	8	-	4	40
	RCRA metals[b]	28	8	-	4	40
	HVOCs	4	4	4	4	16

[a] Includes compliance monitoring samples and stockpile samples.

[b] Groundwater will be analyzed for total and dissolved RCRA metals.

cPAHs = carcinogenic polycyclic aromatic hydrocarbons.

HVOCs = halogenated volatile organic compounds.

RCRA = Resource Conservation and Recovery Act list metals (As, Ba, Cd, Cr, Pb, Hg, Se, Ag).

3.2.3 Sample Containers, Preservation, and Holding Times

The following Table 3-5 provides a summary of potential sample analyses and specifications for containers, preservation, and holding times.

Table 3-5. Sample Containers, Preservation, and Holding Times

Analysis	Method	Matrix	Container	Preservation	Holding Time
Gasoline-Range Petroleum Hydrocarbons/BTEX	NWTPH-Gx/8021B	Soil	2 – pre-weighed 40 mL vials (5 grams of sample per vial)	Cool to 4°C	48 hrs
		Groundwater	2 – 40 mL vials[a], zero headspace	HCL < pH 2 Cool to 4°C	14 days
Diesel and Heavy Oil-Range Petroleum Hydrocarbons	NWTPH-Dx	Soil	1 – 4 oz cwm	Cool to 4°C	14 days
		Groundwater	2 – 500 mL amber	HCL < pH 2 Cool to 4°C	14 days
HVOCs	8260B	Soil	2 – pre-weighed 40 mL vials w/ stir-bar (5 grams of sample per vial)	Cool to 4°C	48 hrs
		Groundwater	3 – 40 mL vials[a], zero headspace	HCL < pH 2 Cool to 4°C	14 days
EPH	WDOE EPH	Soil	1 – 4 oz cwm	Cool to 4°C	14 days
VPH	WDOE VPH	Soil	2 – pre-weighed 40 mL vials w/ stir-bar (5 grams of sample per vial)	Cool to 4°C	48 hrs
RCRA Metals	6010B/7470A	Soil	1 – 4 oz cwm	Cool to 4°C	6 months
	200.8/7470A	Groundwater[b]	1 – 500 mL HDPE Dissolved samples field filtered through 0.45 µm filter	HNO3 < pH 2 Cool to 4°C	6 months
cPAHs	8270C	Soil	1 – 4 oz cwm	Cool to 4°C	14 days

[a] Teflon-lined silicon septum cap

[b] Groundwater will be analyzed for total and dissolved metals.

cPAHs = carcinogenic polycyclic aromatic hydrocarbons
cwm = clear, wide-mouth jar.
HCl = hydrochloric acid.
HDPE = high-density polyethylene.
HNO_3 = nitric acid.
HVOCs = volatile organic compounds.
mL = milliliter.
MTCA = Model Toxics Control Act
Oz = ounce.
RCRA = Resource Conservation and Recovery Act list metals (As, Ba, Cd, Cr, Pb, Hg, Se, Ag).
µm = micron
WDOE = Washington Department of Ecology

3.2.4 Field Screening

During excavation, periodic screening of the excavation sidewalls and will be conducted using a PID and visual/olfactory methods. Each periodic sample will be placed in a re-sealable plastic bag for headspace screening using the PID. The headspace sample will be allowed to heat in the sun for approximately 10 minutes and will then be shaken vigorously. A headspace vapor measurement will be then be collected and recorded on the field sampling form. During sampling, observations will also be made for signs of contamination such as odors, staining, or sheen on saturated samples from below the water table. Such observations will also be recorded on the field sampling form. Field screening information will be used to aid in the determination of the excavation limits.

3.2.5 Monitoring Well Installation, Development, and Sampling

Monitoring wells will be installed by a licensed driller according to applicable Ecology regulations (Chapter 173-160 WAC). The monitoring wells will be constructed using 2-inch inside diameter (ID) polyvinyl chloride (PVC) casings fitted with 10-foot screens (with 0.01-inch or 0.02-inch slots). Well screens will be completed between the depths of 5 and 15 feet bgs. Completed well monuments will be flush-mounted; a 2-foot square concrete pad will be constructed around the monument as a surface seal.

Completed monitoring wells will be allowed to set for at least 24 hours before development to allow grout or bentonite chip seals to set. Development will be achieved by over-pumping at a flow rate of up to 1 gallon per minute (gpm) using an 5/8-inch outside diameter (OD) inertial lift pump fitted with a surge block. New polyethylene tubing shall be used for developing each well.

Water quality parameters (specific conductance, pH, temperature, and turbidity) will be measured during development. Development will be continued until the parameters stabilize as determined by the lack of appreciable change in measurement over several 3-minute monitoring periods or if a turbidity reading of 10 nephelometric turbidity units (NTUs) or less is attained. The 10 NTU criterion is based on EPA sampling guidelines.

Groundwater sampling will be conducted no earlier than 24 hours following development to allow undisturbed water to enter the well column. Groundwater will be collected using a decontaminated, positive-displacement down-hole pump. New, disposable polyethylene tubing will be used at each sample location. For samples collected near the groundwater table, the sample pump will be lowered to 2-feet below the water surface.

Groundwater will be purged and sampled from the wells using low flow techniques. The measured purging and sampling flow rate shall be 0.5 liters per minute or less. Water quality parameters will be measured during sampling; purging shall be considered complete when the criteria shown in Table 3-6 are met over at least three 3-minute monitoring periods.

Table 3-6. Purging Stabilization Criteria

Parameter	Stabilization Criteria
pH	+\- 0.1 unit
Specific conductance	+\- 3%
Oxidation-reduction potential (ORP)	+\- 10 millivolts
Turbidity	+\- 10% (when greater that 10 NTUs)
Dissolved Oxygen	+\- 0.3 milligrams per liter

Filtered samples will be collected using a 0.45 micron filter placed in line with the sample tubing.

New well locations will be surveyed with an accuracy of +/- 1 foot horizontally and +/- 0.01 foot vertically.

3.2.6 Decontamination Procedures

Decontamination of all non-disposable tools and equipment will be conducted prior to each sampling event and between each sampling location in accordance with the standard operating procedures. The following steps will be taken during decontamination of sampling equipment used during field investigations:

- Scrub with non-phosphate detergent (i.e., Alconox or similar)
- Rinse with tap water

- Rinse thoroughly with deionized water
- Allow to air dry and place in a new plastic bag for storage

For decontamination of larger tools and equipment, such as push-probe rods, a high-pressure, hot water washer or similar device will be used. Loose soil materials will be removed from equipment using a "dry" decontamination technique consisting of the removal of loose soil using a shovel or brush.

3.2.7 Investigation-Derived Waste

Investigation derived waste (IDW) from sampling activities will be containerized onsite in 55-gallon drums and staged onsite. A single composite sample from both water and soil will be collected for waste characterization. Disposal options for the IDW will be based on the analytical results of the IDW samples. Disposal shall be managed by the Owner's representative using a licensed waste disposal contractor.

All drums will be labeled indicating date filled, content, location, company, and a unique identification number. All drums and containers will be tracked on a waste-tracking log.

All disposable sampling materials and personal protective equipment, such as disposable coveralls, gloves, and paper towels used in sample processing will be placed inside polyethylene bags or other appropriate containers. Disposable materials will be placed in a normal refuse container and disposed of as normal solid waste in accordance with standard operating procedures for IDW.

3.3 SAMPLE HANDLING AND CUSTODY

The following sections describe sample handling and custody procedures.

3.3.1 Sample Identification and Labeling

Prior to the field investigation, each sample location will be assigned a unique code. Each sample collected at that location will be pre-assigned an identification code using the sampling site followed by other specific information describing the sample. The sample numbering protocol is shown in Table 3-7.

Table 3-7. Sample Numbering Protocol

Site	BP = Bothell Paint
Matrix	SO = Soil GW = Groundwater TB = Trip blank water
Sampling Station	BPSW01 = Bothell Paint Sidewall Station 01 BPBT02 = Bothell Paint Bottom Station 02 BPMW09 = Bothell Paint Monitoring Well 09 BPSP04 = Bothell Paint Stockpile Station 04
Sample Type/Sample Depth	0000 = Field sample collected at the surface 0000 = Trip blank water provided by the laboratory 1010 = Field duplicate collected at a depth of 1.0 feet 4115 = Rinsate sample.

Example:
BP-SO-SW01-0120 = Soil sample collected from the excavation sidewall station 01 at a depth of 12.0 feet.

3.3.2 Sample Storage, Packaging, and Transportation

Samples will be placed in a cooler following collection and chilled to approximately 4ºC. Following completion of each days sampling, all samples will be transported and/or shipped to the analytical laboratory, as appropriate. Samples which are routinely delivered to the laboratory on the same day as collection may not have sufficient time to chill to 4ºC.

3.3.3 Sample Custody

The chain-of-custody procedures used for this project provide an accurate written or computerized record that can be used to trace the possession of each sample from the time each is collected until the completion of all required analyses. A sample is in custody if it is in any of the following places:

- In someone's physical possession
- In someone's view
- In a secured container
- In a designated secure area

The following information will be provided on the chain-of-custody form:

- Sample identification numbers
- Matrix type for each sample
- Analytical methods to be performed for each sample
- Number of containers for each sample
- Sampling date and time for each sample
- Names of all sampling personnel
- Signature and dates indicating the transfer of sample custody

All samples will be maintained in custody until formally transferred to the laboratory under a written chain-of-custody. Samples will be kept in sight of the sampling crew or in a secure, locked vehicle at all times. Samples that leave the custody of field personnel will be sealed by placing a signed and dated Custody Seal across the seam of the shipping container.

3.4 ANALYTICAL METHODS

All samples will be submitted to a commercial analytical laboratory certified by Ecology to perform the required analyses. Analytical methods are listed in Table 3-5. Laboratory reporting limits will be verified prior to analyses to ensure that, at a minimum, reporting limits for each analyte are equal to or lower than MTCA Method A cleanup levels for soil and groundwater. Matrix interferences may make it impossible to achieve the desired reporting limits and associated quality control (QC) criteria. In such instances, the laboratory shall report the reason for noncompliance with QC criteria or elevated detection limits.

3.5 QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance (QA)/QC checks consist of measurements performed in the field and laboratory. The analytical methods referenced in Section 3.4 specify routine methods required to evaluate data precision and accuracy, and determine whether the data are within acceptable limits.

3.5.1 Field Methods

Guidelines for minimum samples for field QA/QC sampling are summarized in Table 3-8.

Table 3-8. Guidelines for Minimum QA/QC Samples for Field Sampling

	Field		
Media	**Field Duplicate**	**Trip Blank**	**Equipment Blank**
Soil and Groundwater	1 in 20	1 per cooler containing water HVOCs and/or gasoline-range petroleum hydrocarbons/BTEX samples	1 in 20 per equipment type, if reusable equipment is utilized

3.5.1.1 Field Duplicates

A minimum of one blind field duplicate will be analyzed per 20 samples. Field duplicates will be collected following field samples. Soil duplicates samples for non-volatiles analysis will be homogenized and split. Duplicate samples will be coded so the laboratory cannot discern which samples are field duplicates.

3.5.1.2 Trip Blanks

A trip blank shall accompany each cooler containing groundwater samples for gasoline-range petroleum hydrocarbons and/or HVOCs analysis. The trip blank shall be obtained from the laboratory or will be made by filling the appropriate sample containers with certified analyte-free deionized water. Trip blanks will be analyzed for gasoline-range petroleum hydrocarbons and/or HVOCs with the field samples.

3.5.1.3 Equipment/Rinsate Blanks

One equipment blank will be collected per 20 samples collected with non-disposable sampling equipment. Equipment blanks will be collected by capturing deionized water rinsed over (or through) sampling equipment after decontamination. Equipment blanks will be analyzed for the same constituents as the field samples.

3.5.2 Laboratory Methods and Quality Control

Specific procedures and frequencies for laboratory QA procedures and QC analyses are detailed in the laboratory’s QA Plan and SOPs for each method. QC analyses will be performed by the laboratory according to their Ecology-approved SOPs.

Accuracy and precision are determined through QC parameters such as surrogate recoveries, matrix spikes, QC check samples, and blind field duplicates. A blind field duplicate sample will be analyzed as a QC sample for verification of precision and accuracy. If results of the blind field duplicate are outside the control limits, corrective action and/or data qualification will be determined after review by the Data QA Manager or his/her designee. Blind field duplication can be of poor quality because of sample heterogeneity. Therefore, the Data QA Manager will determine corrective action. Field QC sample requirements are listed in Table 3-8.

All analyses performed for this project must reference QC results to enable reviewers to validate (or determine the quality of) the data. Sample analysis data, when reported by the laboratory, will include QC results. All data will be checked for internal consistency, transmittal errors, laboratory protocols, and for complete adherence to the QC elements.

3.5.3 Laboratory Instruments

All instruments and equipment used during analysis will be operated, calibrated, and maintained according to manufacturer's guidelines and recommendations, and in accordance with procedures in the analytical method cited, as documented in the laboratory QA plan. Properly trained personnel will operate, calibrate, and maintain laboratory instruments. Calibration blanks and check standards will be analyzed daily for each parameter to verify instrument performance and calibration before beginning sample analysis.

Where applicable, all calibration procedures will meet or exceed regulatory guidelines. The Data QA Manager must approve any variations from these procedures before beginning sample analysis.

After the instruments are calibrated and standardized within acceptable limits, precision and accuracy will be evaluated by analyzing a QC check sample for each analysis performed that day. Acceptable performance of the QC check sample verifies the instrument performance on a daily basis. Analysis of a QC check standard is also required. QC check samples containing all analytes of interest will be either purchased commercially or prepared from pure standard materials independently from calibration standards. The QC check samples will be analyzed and evaluated according to the EPA method criteria.

Instrument performance check standards and calibration blank results will be recorded in a laboratory instrument logbook that will also contain evaluation parameters, benchmark criteria, and maintenance information. If the instrument logbook does not provide maintenance information, a separate maintenance logbook will be maintained for the instrument.

3.6 FIELD INSTRUMENT/EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE

The types of field instruments and equipment that are anticipated to be used during sampling include, but are not limited to:

- PIDs
- Personal air monitors, as needed
- GPS

Equipment maintenance will be performed according to manufacturers' specifications by Parametrix or as directed by Parametrix. The frequency of inspection, testing, and maintenance will be established, based on operation procedures and manufacturers' specifications. Field personnel will be responsible for inspection, testing, and maintenance of field equipment. A hard copy of procedures and manufacturer's specifications will be provided to all field personnel working with the equipment. All equipment will be inspected and tested prior to use.

The results of inspection and testing, as well as any problems encountered and corrective actions, will be documented in the activity field notebook. The equipment serial number and date of activity will be included in notebooks so that a complete record is maintained. If problems are encountered, they will be reported to the Manager.

3.7 INSPECTION/ACCEPTANCE OF SUPPLIES AND CONSUMABLES

Field supplies such as sample containers and trip/rinsate blank water shall be obtained from reputable suppliers and shall be certified analyte-free. Records of certification shall be kept by the laboratory (for laboratory-supplied supplies) or by the Owner's representative in the project file. Sampling spoons and bowls shall be food-grade and shall be purchased new.

3.8 NON-DIRECT MEASUREMENTS

The need for non-direct measurements is not anticipated for the Site Investigation. However, if the need does arise during task execution, the previously collected data will be evaluated to assess consistency with project DQOs and DQIs. Data from non-direct sources will be evaluated by the Data QA Manager prior to the data being used in analyses or in data reports.

3.9 DATA MANAGEMENT

The objectives of data management are to assure that large volumes of information and data are technically complete, accessible, and efficiently handled.

3.9.1 Field Data

The original hard (paper) copies of all field notes and laboratory reports will be stored in the project file. Photocopies of these documents should be prepared for working copies as needed.

Field data should be recorded in bound notebooks or individual sampling sheets. The field team members should review the field data for completeness prior to placing it in the files.

3.9.2 Laboratory Data

The laboratory data reports will be archived in the project files. The electronic data will be incorporated into Excel spreadsheets and archived on electronic media and placed in the project file.

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4. ASSESSMENT AND OVERSIGHT

This section describes activities to be conducted to assess the effectiveness of project implementation and associated QA/QC activities. The purpose of the assessment is to ensure that the CMQAPP is properly implemented.

4.1 ASSESSMENTS AND RESPONSE ACTIONS

A performance and system audit may be conducted at anytime. Audits will consist of direct observation of work being performed and inspection of field and laboratory equipment. The performance and system audits will also review the sample custody procedures in the field and laboratory.

If implemented, internal audits of both the field and laboratory activities will be conducted by the Data QA Manager. Audits will be unannounced to assure a true representation of the technical and QA procedures employed.

Checklists for both field and laboratory audits will be based on National Enforcement Investigation Center (EPA 1984) Audit Checklists. The audits will be performed by persons having no direct responsibilities for the activities being performed.

The auditor or designee will prepare an audit report that includes findings, non-conformances, observations, and recommended corrective action, and a schedule for completion of such action.

For each identified nonconformance, a corrective action report will be issued as part of the audit report to notify the individual responsible for implementing the recommended corrective action and its schedule for completion. If a field corrective action is required, the Manager will be notified. If a laboratory corrective action is required, the Data QA Manager will be notified.

The audit will be distributed to the Manager.

Corrective actions may be needed for two categories of nonconformance:

- Deviations from the methods or QA requirements established in the CMQAPP.
- Equipment or analytical malfunctions.

During field operations and sampling procedures, the Field Sampler will be responsible for taking and reporting required corrective action. A description of any such action taken will be entered in the field notebook. If field conditions are such that conformance with the CMQAPP is not possible, the Manager will be consulted immediately. Any corrective action or field condition resulting in a major revision of the CMQAPP will be communicated to the Manager for review and concurrence.

During laboratory analysis, the Laboratory QA Manager will be responsible for taking required corrective actions in response to equipment malfunctions. If an analysis does not meet data quality goals outlined in the CMQAPP, corrective action will follow the guidelines in SW-846 (EPA 1986). If analytical conditions do not conform to this CMQAPP, the Data QA Manager will be notified as soon as possible so that additional corrective actions can be taken.

Corrective Action Reports will document response to any reported non-conformances. These reports may be generated from internal or external audits or from informal reviews of project activities. Corrective Action Reports will be reviewed for appropriateness of recommendations and actions by the Data QA Manager for QA matters, and the Task Manager for matters of technical approach.

4.2 REPORTS TO MANAGEMENT

The Data QA Manager will be responsible for data quality assessments and associated QA Reports. All reports will be submitted to the Manager for review. Final task or investigative reports will contain a separate QA section summarizing data quality information.

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5. DATA VERIFICATION AND VALIDATION

Data verification is confirmation by examination and provision of objective evidence that specified requirements have been fulfilled. Validation is confirmation by examination and provision of objective evidence that the particular requirement for a specific intended use have been fulfilled. Techniques for data verification and validation will be in accordance with the Guidance on Environmental Data Validation and Verification (EPA 2001b).

5.1 DATA REVIEW, VERIFICATION, AND VALIDATION

All data packages provided by the laboratory must provide a summary of quality control results adequate to enable reviewers to validate or determine the quality of the data. The Data QA Manager is responsible for conducting checks for internal consistency, transmittal errors, and for adherence to the quality control elements specified in the CMQAPP.

Field measurements (pH, specific conductance, temperature) will be verified and checked through review of instrument calibration, measurement, and recording procedures.

A verification level validation will be performed on all field documentation and analytical data reports. The data validation process will be used to verify the data quality. The following QC elements will be reviewed, as appropriate:

- Trip blank and rinsate blank results.
- Analytical holding times.
- Preparation blank contamination.
- Check standard precision.
- Analytical accuracy (blank and matrix spike recoveries and laboratory control sample recoveries).
- Analytical precision (comparison of replicate sample results, expressed as relative percent difference [RPD]).
- Each data package will be assessed to determine whether the required documentation is of known and verifiable quality. This includes the following items:
    - Field chain-of-custody record is present, complete and signed.
    - Certified analytical report.
    - QA/QC sample results.

Data will be qualified using guidance provided in the Contract Laboratory Program (CLP) functional guidelines for assessing data (EPA 1994a, 1994b).

The Data QA Manager will prepare a quality assurance memorandum for each site describing the results of the data validation and describing any qualifiers that are added to the data.

5.2 VERIFICATION AND VALIDATION METHODS

The Data QA Manager will review the following:

- Chain-of-custody documentation
- Holding times

- Equipment/trip blank results
- Field Duplicate results
- Method blank results

A limited review (minimum 10 percent) of the following laboratory QC data results will be conducted:

- Laboratory matrix spike/matrix spike duplicate (MS/MSD) and/or matrix duplicate results
- Laboratory surrogate recoveries
- Laboratory check samples

If, based on this limited review the QC data results indicate potential data quality problems, further evaluations will be conducted.

5.2.1 Precision

Precision measures the mutual agreement among individual measurements of the same property, usually under prescribed similar conditions. QA/QC sample types that measure precision include field duplicates, MSD, and matrix duplicates. The estimate of precision of duplicate measurements is expressed as a RPD (Relative Percent Difference), which is calculated:

$$RPD = \frac{D_1 - D_2}{(D_1 + D_2) \div 2} \; x \; 100$$

Where D1 = First sample value

D2 = Second sample value.

The RPDs will be routinely calculated and compared with DQOs.

5.2.2 Accuracy

Accuracy is assessed using the results of standard reference material, linear check samples, and MS analyses. It is normally expressed as a percent recovery, which is calculated:

$$\text{Percent Recovery} = \frac{\text{(Total Analyte Found - Analyte Originally Present) x 100}}{\text{Analyte Added}}$$

The percent recovery will be routinely calculated and checked against DQOs.

5.2.3 Bias

Bias is the systematic or persistent distortion of a measurement process that causes errors in one direction. Bias will be assessed with field duplicate and laboratory matrix spike samples, similar to that described for accuracy. Bias measurements are usually carried out with a minimum frequency of 1 in 20, or one per batch of samples analyzed, under the same sampling episode.

5.2.4 Sensitivity

Sensitivity expresses the capability of a method or instrument for meeting prescribed measurement reporting limits. Sensitivity will be assessed by comparing data reporting limits with applicable cleanup criteria and analytical or instrument method reporting limits.

5.2.5 Completeness

The amount of valid data produced will be compared with the total analyses performed to assess the percent of completeness. Completeness will be routinely calculated and compared with the DQOs.

5.2.6 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. Sample data will be comparable with other measurement data for similar samples and sample conditions. Comparability of the data will be maintained by using consistent methods and units.

5.2.7 Representativeness

Sample locations and sampling procedures will have been chosen to maximize representativeness. A qualitative assessment (based on professional experience and judgment) will be made of sample data representativeness based on review of sampling records and QA audit of field activities.

5.3 RECONCILIATION AND USER REQUIREMENTS

The Data QA Manager will prepare a technical memorandum for each data package describing the results of the data review and describing any qualifiers that were added to the data. The technical memorandum will also summarize the laboratory's QC criteria and will include recommendations on whether additional actions such as re-sampling are necessary. Technical memoranda will be submitted with the FS report.

5.4 DATA REPORTING

All laboratory data packages will contain the following information:

- Cover letter
- Chain-of-custody forms
- Summary of sample results
- Summary of QC results
- Ecology Environmental Information Management (EIM) electronic data deliverable (EDD)

The minimum information to be presented for each sample for each parameter or parameters group:

Client sample number and laboratory sample number

- Sample matrix
- Date of analysis
- Dilution factors (as reflected by practical quantitation limits (PQL)
- Analytical method
- Detection/quantitation limits
- Definitions of any data qualifiers used

Additionally, sample weights/volumes used in sample preparation/analysis and identification of analytical instrument will not be reported but will be kept in laboratory records for future reference.

The minimum QC summary information to be presented for each sample for each parameters or parameter group will include:

- Surrogate standard recovery results
- Matrix QC results (matrix spike/matrix spike duplicate, duplicate)
- Method blank results

EIM EDDs will be in accordance with the most recent version of the results spreadsheet submittal capable of being quickly uploaded into the Ecology EIM database.

6. SCHEDULE

An estimated project schedule is provided below in Table 6-1. Note that the Contractor's schedule may vary as they will be working on multiple sites within the project vicinity.

Table 6-1. Schedule

Work Element	Commence/Implement By
Interim Action (Soil Excavation)	August 1, 2010
Install New Monitoring Wells	September 1, 2010
1st Quarter Groundwater Sampling	September 30, 2010
2nd Quarter Groundwater Sampling	December 31, 2010
3rd Quarter Groundwater Sampling	March 30, 2011
4th Quarter Groundwater Sampling	June 30, 2011
Draft Interim Action Memorandum	August 15, 2011

Note: Groundwater monitoring memoranda will be submitted 6 weeks following completion of each groundwater monitoring event.

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7. REFERENCES

CDM. 2009. Draft Phase II Environmental Site Assessment, City of Bothell Crossroads Redevelopment Project, Bothell, Washington. Prepared for King County Solid Waste Division. June 26, 2009.

EPA. 1984. NEIC procedures manual for the evidence audit of enforcement investigations by contractor evidence audit teams. Technical Report EPA-330/9-81-003-R. U.S. Environmental Protection Agency, Washington, D.C.

EPA. 1986. Test methods for evaluating solid waste (SW-846), 3rd edition. U.S. Environmental Protection Agency, Washington, D.C. November, as updated.

EPA. 1994a. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. Office of Emergency and Remedial Response. USEPA, Washington, D.C.

EPA. 1994b. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. Office of Emergency and Remedial Response. USEPA, Washington, D.C.

EPA. 2001a. EPA Requirements for Quality Assurance Project Plans. EPA QA/R-5, EPA/240/B-01/003, March 2001.

EPA. 2001b. Guidance on Environmental Data Validation and Verification. EPA QA/G-8.

EPA. 2002. Guidance for Quality Assurance Project Plans. EPA QA/G-5. EPA/240/R-02/009, December 2002.

EPA. 2004. Contract Laboratory Program (CLP) Guidance for Field Samplers. Appendix B. EPA/540/R-00003. August 2004.

EPA. 2006. Guidance on Systematic Planning Using the Data Quality Objectives Process. EPA QA/G-4. February 2006.

HWA. 2008a. Phase I Environmental Site Assessment, Victory Development Property, 18004 Bothell Way NE, Bothell, Washington. Prepared for City of Bothell. April 24, 2008.

HWA. 2008b. Phase I Environmental Site Assessment, Giannola Parcel / Parcel No. 9457200072, 18004 Bothell Way NE, Bothell, Washington. Prepared for City of Bothell. April 25, 2008.

HWA. 2008c. Phase II Environmental Site Assessment, Giannola Parcel / Parcel No. 9457200072, Bothell, Washington. Prepared for City of Bothell. April 30, 2008.

HWA. 2008d. Phase II Environmental Site Assessment, Victory Development Property Parcel No. 9457200081, Bothell, Washington. Prepared for City of Bothell. April 30, 2008.

Parametrix. 2009. Bothell Paint and Decorating, Remedial Investigation/Feasibility Study, Revision 1. Prepared for City of Bothell. December 2009.

Washington State Department of Ecology (Ecology). 2007. Model Toxics Control Act Cleanup Regulations. Washington Administrative Code (WAC) 173-340. November 2007.

APPENDIX B

ECOLOGY LETTER, JUNE 28, 2011 – SUMMARY OF CLEANUP STATUS FOR BOTHELL PAINT & DECORATING SITE (AGREED ORDER NO. 6296)

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • 3190 160th Ave SE • Bellevue, WA 98008-5452 • 425-649-7000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

June 28, 2011

Ms. Nduta Mbuthia
Project Engineer
City of Bothell Public Works
9654 NE 182nd Street
Bothell, WA 98011

Re: Summary of cleanup status for Bothell Paint & Decorating site (Agreed Order No. 6296)

Dear Ms. Mbuthia:

In a letter dated May 12, 2011, the City of Bothell notified Ecology that due to permitting issues, the Crossroads Project is anticipated to be delayed to Fall of this year.

Consequently, interim remedial actions and Remedial Investigation/Feasibility Study (RI/FS) activities for this site will be similarly delayed.

Given this delay and continuing appraisal of the work needed to complete the RI/FS and Draft Cleanup Action Plan (DCAP), I summarize the project status for this site given various submissions by the City since 2009 under the Agreed Order.

Following the summary, I flag some expectations for completion of the MTCA requirements for the RI/FS and DCAP.

Project Status

Project Deliverable*	Submissions	Status	Comments
1. Draft RI/FS Work Plan	February 26, 2009 (HWA Geosciences, Inc.)	Superseded	
	March 24, 2009 (HWA Geosciences, Inc.)	Superseded	
	April 27, 2009 (HWA Geosciences, Inc.)	Superseded	
	June 18, 2009 (HWA Geosciences, Inc.)	Superseded	
	July 8, 2009 (HWA Geosciences, Inc. & Parametrix)	Superseded	
	August 26, 2009 Amendment to Remedial Investigation and feasibility Study Work Plan (Parametrix)	Superseded	
	New draft of Work Plan	Expected	Includes area wide groundwater investigation to delineate and characterize plumes.
2. Final RI/FS Work Plan	To be submitted	Ongoing	Expanded scope of work including area wide groundwater investigations and monitoring; City has stated RI/FS environmental assessment activities anticipated July/August 2011.
6. Interim Actions	Feb. 18, 2010 Draft Interim Action Cleanup Plan revision No. 1 (Parametrix)	Superseded	
	Apr. 2, 2010 Draft Interim Action Cleanup Plan revision No. 2 (Parametrix)	Final	More soil contamination north of parcel will be excavated during SR522 realignment (delayed). Part of City's Crossroads Phase II (August to December 2010) in draft RI work plan or City's Phase III Haz Mat Specs (construction plans)
7. Draft Interim Action Report	January 14, 2011 Documentation of Interim Action at Former Bothell Paint and Decorating Site (HWA Geosciences, Inc.)	Under review by Ecology	
	Interim Action or "Soil cleanup" report	To be submitted	More soil contamination will be excavated during SR522 realignment (delayed).
8. Final Interim Action Report		To be submitted	Follows soil cleanup work done under Crossroads Phase III (delayed).
9. One year quarterly groundwater monitoring	Proposed as part of Phased RI activities (Phase 4)	To be carried out	Expanded SOW to investigate area solvent and TPH/VOC plumes.
10. Draft Final RI/FS Report	December 2009 Bothell Paint and Decorating Remedial Investigation/Feasibility Study Revision No. 1 (Parametrix)	January 12, 2010 site recommendation and RI/FS review (Ecology letter)	Preferred alternative conducted as interim action in 2010; other data gaps noted include groundwater characterization

Project Deliverable*	**Submissions**	**Status**	**Comments**
	Subsequent version(s)	To be submitted	To include all RI work (IA and phased)
11. Final RI/FS Report		To be submitted	
12. DCAP	December 2009 Bothell Paint and Decorating Draft Cleanup Action Plan Revision No. 1 (Parametrix)	January 12, 2010 site recommendation and RI/FS review (Ecology letter)	Preferred alternative conducted as interim action in 2010; RI/FS must be completed to update and revise the DCAP.
		To be submitted	

* Numbering scheme from Agreed Order and Amendment

1. Data gaps in soil and groundwater contamination must be addressed in the final RI/FS Work Plan. This would include systematic assessment of other areas of contamination or suspected contamination at the site, commingled contaminated groundwater and soil areas, and other contaminants of concern identified in previous investigations, including the Phase I and 2 work, 2010 interim remedial action, and older environmental site investigations.

2. Bothell Paint and Decorating should also have a groundwater investigation for contaminants unique to the property as well as contamination shared geographically among other sites. The work plans may reference or be written so as to complement the Bothell Landing groundwater Work Plan as needed. As you may know, Ecology has indicated that a comprehensive groundwater investigation is needed and to initiate the work, the nearby Bothell Landing site's work plan will reflect this wider scope.

3. The RI/FS must define what the site boundaries are. Site boundaries are defined by the location where contaminants are located; not by property boundaries. This has not been established yet given ongoing data gaps in soil and groundwater at the site. Additional soil excavation work north of the property line before or during SR 522 realignment is expected to yield additional information while serving the purpose of interim remediation. Pre-characterization in the form of potholing (see attached Sheet 1 of Bothell Phase III Hazmat plans) is anticipated based on previous work, although Ecology has expressed in the past that characterization or delineation should strive for complete characterization using soil borings and well construction/installation including well logging, rather than limiting the work plan to chasing the contamination based on potholing and excavation soil confirmation results.

4. Incorporate in the final RI/FS Work Plan the appropriate potholing locations found in the attached Phase III hazmat work plan. Please provide a justification for this sampling and relevance to the cleanup, especially for the locations situated along the utility lines/utility trenches and roadway. Please specify the anticipated number of potholes, anticipate depth and number of samples, analytical suite and other relevant information in the work plan. Please mark clearly what sample locations will be assigned only for this site or justify present scope.

5. Remedial action grant funding will still be apportioned to each site, chiefly based on well or soil sample location and geographic position with respect to plume(s) that

have impacted the site. There may be cases where the apportioning of costs may appear artificial, however, this is acceptable as long as it is tracked properly and not duplicated in the site invoices.

6. The practical objective is to delineate and characterize the chlorinated solvent and TPH plumes in the area (or any other contaminant of concern in groundwater). For this to occur, the groundwater investigation must be designed so as to fully delineate the contaminants' lateral and vertical extents, their behavior over time (seasonal fluctuations), fate and transport behavior, and the risks posed.

7. Nearby sites such as Bothell Service Center (Simon and Sons Dry Cleaning), Haynes Union Service/Unocal, Former Mobil Oil gas station have not been clearly assigned as part of the scope of work of the formal sites. Clear and organized site classification and work planning is needed if contamination from the formal MTCA sites extends and/or has commingled to these sites. Ecology is available to discuss these issues.

8. The Unocal former gas station (Haynes Union Service, Unocal SS 5905, Bothell Chevron Extra Mile) is another upgradient site (in addition to Bothell Service Center and former Mobil Oil gas station northeast and north of the property, respectively) whose contamination may have impacted the Paint & Decorating site. This was identified in the 2008 Phase I (Victory parcel) and subsequent reports. A better understanding of the plumes that may have migrated and commingled on the site will be achieved if the area wide groundwater investigation network is sufficiently designed.

9. At the same time, more localized detections of contaminants like VOCs in groundwater within the original property boundaries will need to be characterized systematically. Although previous investigations may have identified such contaminants, they have never been delineated and characterized over a minimum of four quarters. Although interim soil actions may be expected to diminish possible future or ongoing impacts to water quality, the groundwater monitoring is still needed for confirmation monitoring purposes as well as for site characterization.

10. Alternatively, due to the commingled plumes apparent from data collected so far, the existing sites can be grouped into one larger site. Please contact Ecology as soon as possible if you would like to pursue this administrative path.

11. Gasoline range petroleum hydrocarbons initially detected in soil at the vicinity of the former LUST (removed in 1988) near VB-6 does not appear to have been adequately characterized or remediated. Same observation applies for area south of this location, near P-TP-5-1 in the interim cleanup action report. Groundwater likewise does not appear to have been adequately analyzed for this contaminant in the 2009 RI report.

12. The January 14, 2011 HWA report "Documentation of Interim Action at Former Bothell Paint and Decorating Site, Bothell, Washington" proposes site-wide compliance of soil cleanup using the statistical method. Given the interim nature of

this remedial action and the fact that the characterization of the nature and extent of contaminants has not been completed, Ecology considers this to be a premature proposition. Cleanup levels, contaminants of concern, and compliance should follow the process outlined in MTCA and should first be organized and systematically treated in the final RI/FS. Demonstrating cleanup compliance for soil using the statistical method can be proposed in the final RI/FS if it is believed to be defensible and in compliance with MTCA. However, the extent of contamination should be sufficiently known.

13. Appendix F, Site 97 Statistical Analysis of Arsenic Concentrations in Site Soils Following Interim Action Cleanup, was not able to determine if a lognormal sample population distribution existed in its data set. The guidance states that a decision on the appropriate distribution of the data (lognormal, normal, or neither) must be made before proceeding with analysis of the site. Furthermore, page 26 of the guidance states that the regulation requires that all concentrations below the detection limit be assigned a value equal to one-half of the detection limit being used. Measurements above the method detection limit, but below the PQL shall be assigned a value equal to the method detection limit. Instead HWA assigned randomly generated proxy values between zero and the PQL, and then calculated the UCL statistic. The Ecology guidance mentions other approaches such as nonparametric tests if the distribution is not lognormal. Supplement S-6 also provides methods for analyzing censored data. Why were these procedural steps not followed? Given these concerns, Ecology recommends that an analysis of compliance for the interim action be postponed until the completion of the RI/FS where cleanup levels and attendant risks are evaluated for the whole site.

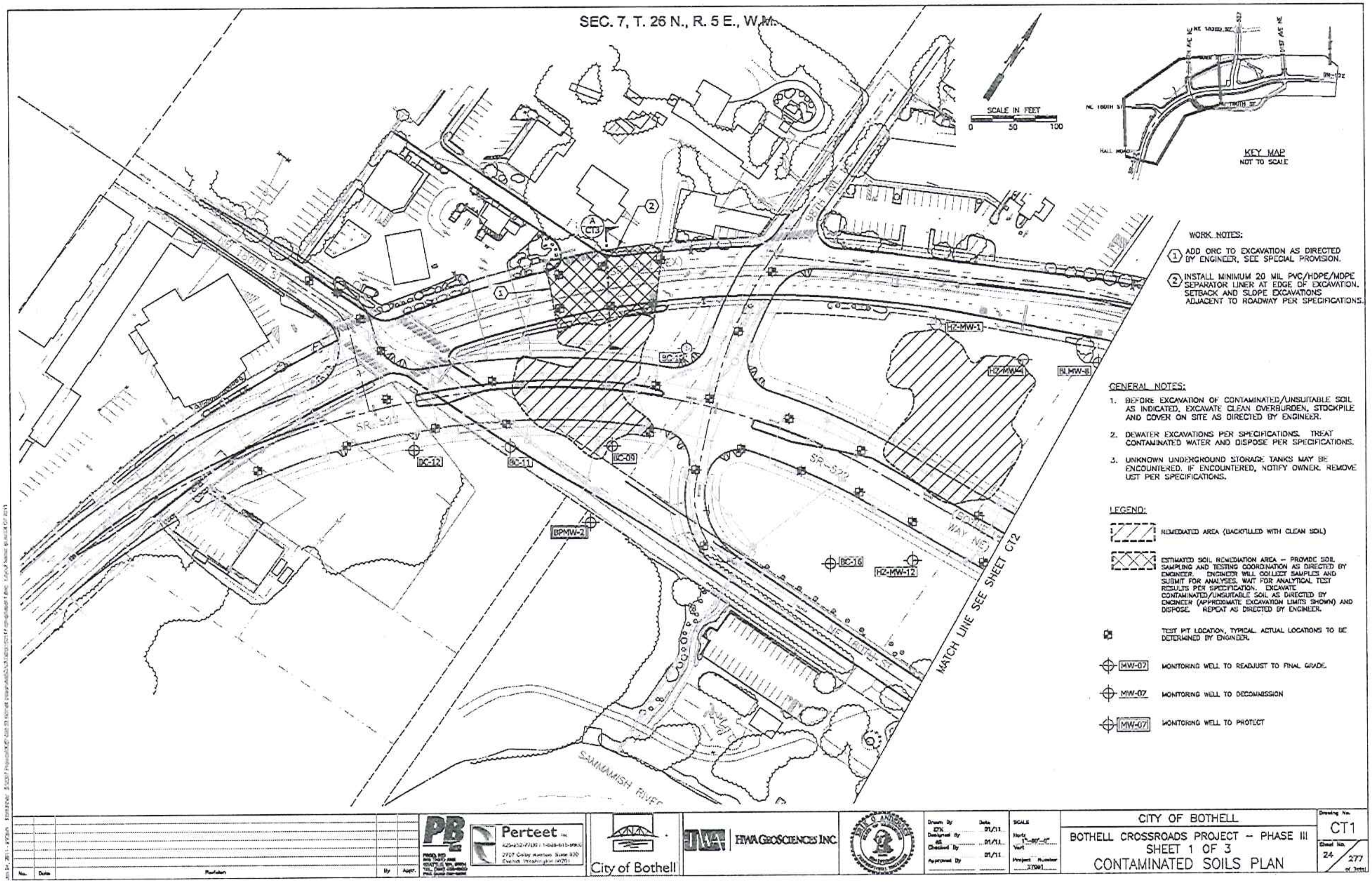
Please get back to me if there is anything incorrect or omitted in this project status table.

Ecology appreciates your initiative in conducting remedial action under an Agreed Order. If you have any questions you may reach me at 425-648-7094.

Sincerely,

Jerome B. Cruz
Hydrogeologist 4
NWRO - Toxic Cleanup Program

jc/kh



WORK NOTES:

① ADD ORC TO EXCAVATION AS DIRECTED BY ENGINEER. SEE SPECIAL PROVISION.

② INSTALL MINIMUM 20 MIL PVC/HDPE/MDPE SEPARATOR LINER AT EDGE OF EXCAVATION. SETBACK AND SLOPE EXCAVATIONS ADJACENT TO ROADWAY PER SPECIFICATIONS.

GENERAL NOTES:

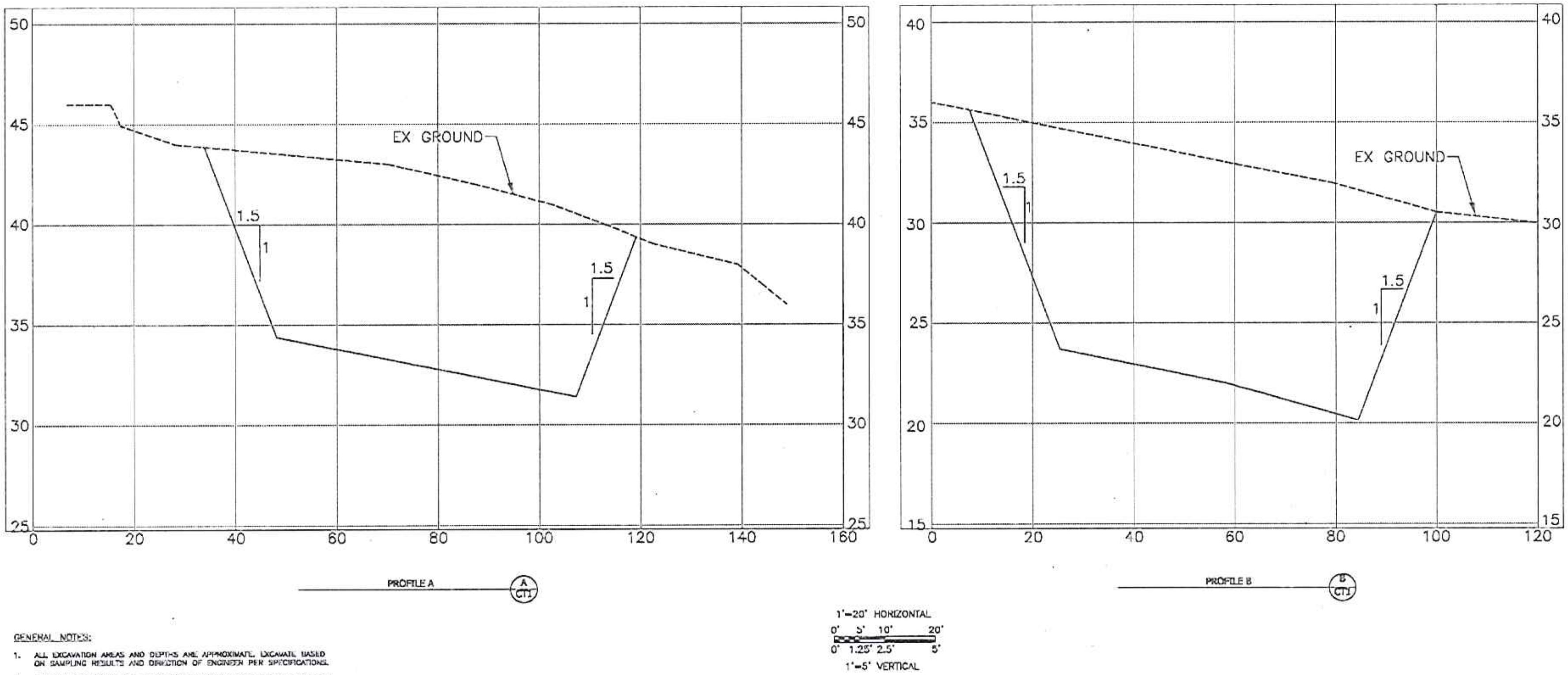
1. BEFORE EXCAVATION OF CONTAMINATED/UNSUITABLE SOIL AS INDICATED, EXCAVATE CLEAN OVERBURDEN, STOCKPILE AND COVER ON SITE AS DIRECTED BY ENGINEER.
2. DEWATER EXCAVATIONS PER SPECIFICATIONS. TREAT CONTAMINATED WATER AND DISPOSE PER SPECIFICATIONS.
3. UNKNOWN UNDERGROUND STORAGE TANKS MAY BE ENCOUNTERED. IF ENCOUNTERED, NOTIFY OWNER. REMOVE UST PER SPECIFICATIONS.

LEGEND:

▨	REMEDIATED AREA (BACKFILLED WITH CLEAN SOIL)
☒	ESTIMATED SOIL REMEDIATION AREA – PROVIDE SOIL SAMPLING AND TESTING COORDINATION AS DIRECTED BY ENGINEER. ENGINEER WILL COLLECT SAMPLES AND SUBMIT FOR ANALYSES. WAIT FOR ANALYTICAL TEST RESULTS PER SPECIFICATION. EXCAVATE CONTAMINATED/UNSUITABLE SOIL AS DIRECTED BY ENGINEER (APPROXIMATE EXCAVATION LIMITS SHOWN) AND DISPOSE. REPEAT AS DIRECTED BY ENGINEER.
▣	TEST PIT LOCATION, TYPICAL. ACTUAL LOCATIONS TO BE DETERMINED BY ENGINEER.
⊕ MW-07 (boxed)	MONITORING WELL TO READJUST TO FINAL GRADE.
⊕ MW-07	MONITORING WELL TO DECOMMISSION
⊕ MW-07 (double box)	MONITORING WELL TO PROTECT

Drawn By EFK	Date 01/11	SCALE Horiz 1"=50'-0"	CITY OF BOTHELL
Designed By AS	01/11	Vert	BOTHELL CROSSROADS PROJECT – PHASE III
Checked By	01/11	Project Number 37091	SHEET 1 OF 3
Approved By			CONTAMINATED SOILS PLAN

Drawing No. CT1
Sheet No. 24 / 277 of Total



GENERAL NOTES:

1. ALL EXCAVATION AREAS AND DEPTHS ARE APPROXIMATE. EXCAVATE BASED ON SAMPLING RESULTS AND DIRECTION OF ENGINEER PER SPECIFICATIONS.
2. BACKFILL EXCAVATION PER SPECIFICATIONS OR AS DIRECTED BY ENGINEER.
3. LAYBACK EXCAVATION SIDE SLOPES TO STABLE CONDITION, AND TO MEET SAFETY REQUIREMENTS.
4. SEE SITE PREPARATION PLANS FOR UTILITIES TO ABANDON AND REMAIN.
5. WHERE EXCAVATION IS ADJACENT TO ACTIVE ROADWAY, MEET SETBACK AND SLOPE REQUIREMENTS PER SPECIFICATIONS.
6. DEWATERING MAY BE REQUIRED IN SOME AREAS. SEE SPECIFICATIONS FOR REQUIREMENTS.
7. ALL EXISTING UTILITIES TO REMAIN "IN SERVICE" DURING EXCAVATION SHALL BE PROTECTED AND SUPPORTED AS NECESSARY TO PREVENT DAMAGE.

No.	Date	Revision	By	Appr.

PB

Perteet Inc.
425-252-7700 | 1-800-615-9900
2707 Colby Avenue, Suite 900
Everett, Washington 98201

City of Bothell

HWA GEOSCIENCES INC.

Drawn By EPK Date 01/11
Designed By JC 01/11
Checked By MX 01/11
Approved By

SCALE
Horiz As Noted
Vert
Project Number 27001

CITY OF BOTHELL
BOTHELL CROSSROADS PROJECT – PHASE III
SHEET 3 OF 3
CONTAMINATED SOILS SECTIONS

Drawing No. CT3
Sheet No. 26 of Total 277

APPENDIX C

ECOLOGY LETTER, JULY 30, 2012 – SUMMARY OF SITE ISSUES AND NEXT STEPS FOR BOTHELL PAINT & DECORATING, FORMER HERTZ AND LANDING SITES

1889

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

July 30, 2012

Mr. Shawn Pourazari
Project Engineer (PLP Technical Contact)
City of Bothell
Public Works Department
18305 101st Avenue NE
Bothell, WA 98011

Re: Summary of Site Issues and Next Steps for Bothell Paint & Decorating, Former Hertz and Landing Sites

Dear Mr. Pourazari:

This letter addresses standing issues with the RI/FI and interim actions for these sites in response to Bothell's response letter dated July 5, 2011, on site status. It provides a summary of standing regulatory and technical concerns about the sites and provides next steps and expectations on these issues.

Please note that this letter does not address issues with the Bothell Riverside site as well as the proposed Ultra Custom Cleaner (Case property) site. These sites are being managed by Ecology's site manager, Sunny Becker.

Ecology appreciates your initiative in conducting remedial action under MTCA Agreed Orders. If you have any questions, you may contact me at (425) 648-7094.

Sincerely,

Jerome B. Cruz
Site Manager
Toxic Cleanup Program

Enclosures

cc: Steven Morikawa, City of Bothell Capital Program Manager
Robert Warren, P.Hg., MBA, Toxics Cleanup Section Manager, Ecology
Ching-Pi Wang, Uplands Unit Supervisor, Ecology

BOTHELL PAINT & DECORATING (Agreed Order No. DE 6296)

SUMMARY OF CONCERNS

- Although historical TPH data is limited to one exceedance in a well and to field documentation of free product in excavation groundwater and in recovery well (1988), Ecology does not consider screening level geoprobe groundwater samples from 2008 and 2009 sufficient to demonstrate that petroleum hydrocarbons and their compounds are not contaminants of concern at the site. Ecology prefers data taken over 4 quarters from a revised network (provided in Attachment A of this letter) rather than the screening level direct probe results from past limited investigations. 80% of this network is estimated to already contain wells agreed upon for the area wide network. The rest of these monitoring wells will resolve concerns and satisfy the RI/FS.

- Monitoring well network needs to establish if off-property impacts exist from Unocal (Haynes site) to the west, and possible HVOC and TPH impacts from Bothell Service center from the north and northwest. Monitoring must also address historical TPH impacts and confirmed metals contamination (confirmation and compliance monitoring).

- Ecology will agree to separate monitoring program from area-wide study unless preliminary data show solvent plume is bigger than thought or commingled.

- 2nd amendment to RI/FS Work Plan must be submitted to finalize RI/FS work plan. This was promised in the City of Bothell's July 5, 2011, letter (page 4, item b).

- The arsenic memo by HWA does not provide convincing arguments that the arsenic in groundwater in the area (background) is naturally high. Exceedances correlate with sandblast material and petroleum hydrocarbon-impacted areas found at the site. Much of the arsenic data points used in the memorandum to demonstrate a high background were below cleanup levels, and little if any data points were from areas not impacted by contamination.

- Metal exceedances may be expected to decrease following the interim soil remediation. Therefore, the local (Paint & Decorating) monitoring wells in Attachment A may be used in conjunction with the other property wells to demonstrate compliance.

- If metals do not disappear from the site, remediation of metals should be part of the cleanup action plan.

- **Other areas of potential soil contamination.** Gasoline range petroleum hydrocarbons initially detected in soil at the vicinity of the former LUST (removed in 1988) near VB-6 does not appear to have been adequately characterized or remediated. Same observation applies for area south of this location, near P-TP-5-1 in the interim cleanup action report (Oil = 720 ppm, Gasoline = 480 ppm. MTCA Method A = 100 ppm for gasoline. It would appear that the result for P-TP-5-3 shows that it was over excavated (is this the case?). Are the limits delineated here (near P-TP-24 and P-TP-25 because sampling stopped at the rock wall and former building slab? Note that the July 5, 2011, letter from the City of Bothell (page 5, letter d) states that in the interim cleanup report, some samples were mislocated and that samples will be collected during Phase III potholing. Can the potholing results help confirm compliance in this area?

  If the City no longer wishes to address this concern, we can either assume contamination remains and put this in an environmental covenant or revisit this issue in the final RI/FS report when it is submitted.

- The 2009 RI/FS report by Parametrix documents SVOC (cPAH) exceedance in soil in BP-26. It concludes that further investigation is required to determine the possible source of the cPAHs. Ecology agrees with this conclusion. This also has yet to be addressed in detail in the remedial investigation.
- Soil exceedances from recent utility line potholing still needs to be reported. An entry in a progress report will be acceptable, aside from final RI/FS report.
- Ecology cannot conclude at this time that Bothell's statistical approach to demonstrating soil compliance for arsenic is sufficient for the following reasons:
  - Bothell's approach does not step through the Ecology statistical guidance especially with regard to using censored data. Although Ecology may approve alternate statistical procedures, Bothell has not provided sufficient justification for choosing an alternative approach different from what is provided in the Ecology Statistical Guidance for Ecology Site Managers (August 1992 92-54 and Supplement S-6). The dataset contains more than 50% censored values at multiple detection limits. If we follow the procedure for calculation of an upper 95% confidence limit (UCL) on the site mean, (Case 3 – More than 50% of the data are censored values, see page 8 Supplement S-6), it recommends using the maximum value in the data set as the upper 95% confidence limit. See also WAC173-340-740(7)(f)(iv). The largest value in this case would be 21 ppm, above the cleanup level.
  - Samples at or above cleanup levels may be indicative of hot spots. P-TP-19-7 and P-TP-25-6 are located at the northwest limits of the excavation (see attached Figure 6), very close to the edges of SR522 where contamination remains (P-PEX-9, P-PEX-10, and P-PEX-12), Soil arsenic contamination may extend west of the area in question. Two samples west of the area (VB-4 and BP-7) are not sufficient to delimit the contamination because VB-4 was not analyzed for soil arsenic and BP-7, although nondetect for arsenic, were taken at the surface (0 to 0.5 feet) and not at comparable depths for P-TP-19-7 and P-TP-25-6 (4-7 feet).
  - Therefore, Ecology reiterates its recommendation to postpone evaluations on soil compliance based on a statistical analysis until the interim action soil remediation and RI/FS is complete and cleanup levels and risks are evaluated. If Bothell wishes to pursue its alternative statistical approach , the evaluation will be forwarded to Ecology Headquarters for review.
- Bothell has also requested Ecology's concurrence on the sufficiency of cleanup levels in their report "Documentation of Interim Action at Bothell Paint & Decorating" (HWA, January 2011).
  - Ecology concurs with the calculations, except for gasoline. Ecology will use most stringent cleanup level (30 ppm, from Method A calculation for gasoline where soil was found to contain benzene).

NEXT STEPS:

- Meet as soon as possible to:
  - Clarify monitoring network and concerns. **Attachment A.1 is the map of existing and proposed monitoring wells. Attachment A.2 contains the table of screen depths and rationale for each well.** This network is largely derived

(estimated at 80%) from the recently negotiated well network for the area-wide groundwater investigation bundled in the Bothell Landing RI/FS work plan. It establishes Ecology's groundwater monitoring network for the Paint & Decorating site and if implemented, will address remaining concerns about groundwater characterization at the site. The concerns that will be addressed include compliance monitoring of historical groundwater impacts, positive identification of off property plumes that encroached or commingled with groundwater contamination at the site, and post interim action compliance monitoring. The network will be sampled for a minimum of four quarters as required in the RI work plans.

- Request 2nd amendment to RI/FS Work Plan as promised by the City of Bothell. This amendment will include potholing plans and revised monitoring network in the form of a technical memorandum.
- Establish with City of Bothell that if they address Ecology concerns, there is a high potential that this site can be split off from the rest, possibly no longer needing a cleanup order or action (unless groundwater metals are problematic or offsite TPH or HVOCs exist and are persistent).
- Ask if Bothell will take more representative groundwater arsenic samples from background wells to demonstrate what natural background really is in the area (without influence compromised water quality and redox conditions from contaminated areas).

BOTHELL FORMER HERTZ (Agreed Order No. DE 8375)

SUMMARY OF CONCERNS:

- Final revision to RI/FS Work Plan to be submitted as agreed upon in our meeting last March 12, 2012.
- Work Plan must contain two conceptual hydrostratigraphic cross sections along groundwater flow paths from to guide locations of new monitoring wells.
- Work plan must contain locations for two shallow and two deep wells across the street from Bothell Service Center and Schuck's sites. This in order to investigate off-property migrations in 2nd water bearing zone (approx. 25-40 feet below ground surface). Added as part of Phase 1 activities
- Install other wells (H & I) afterwards after evaluating results from Phase 1.
- City indicated in June meeting that it will request CDM (King County Brownfields Grant) to do final revisions to work plan, and well installation (not HWA). It is unclear how this will be implemented according to Ecology's expectations.

NEXT STEPS:

- Request final revisions to RI/FS work plan or timetable for submission of work plan.
- **Implement groundwater monitoring program according to attached network of wells (Attachments A.1 and A.2).**

BOTHELL LANDING (Agreed Order No. DE 6294)

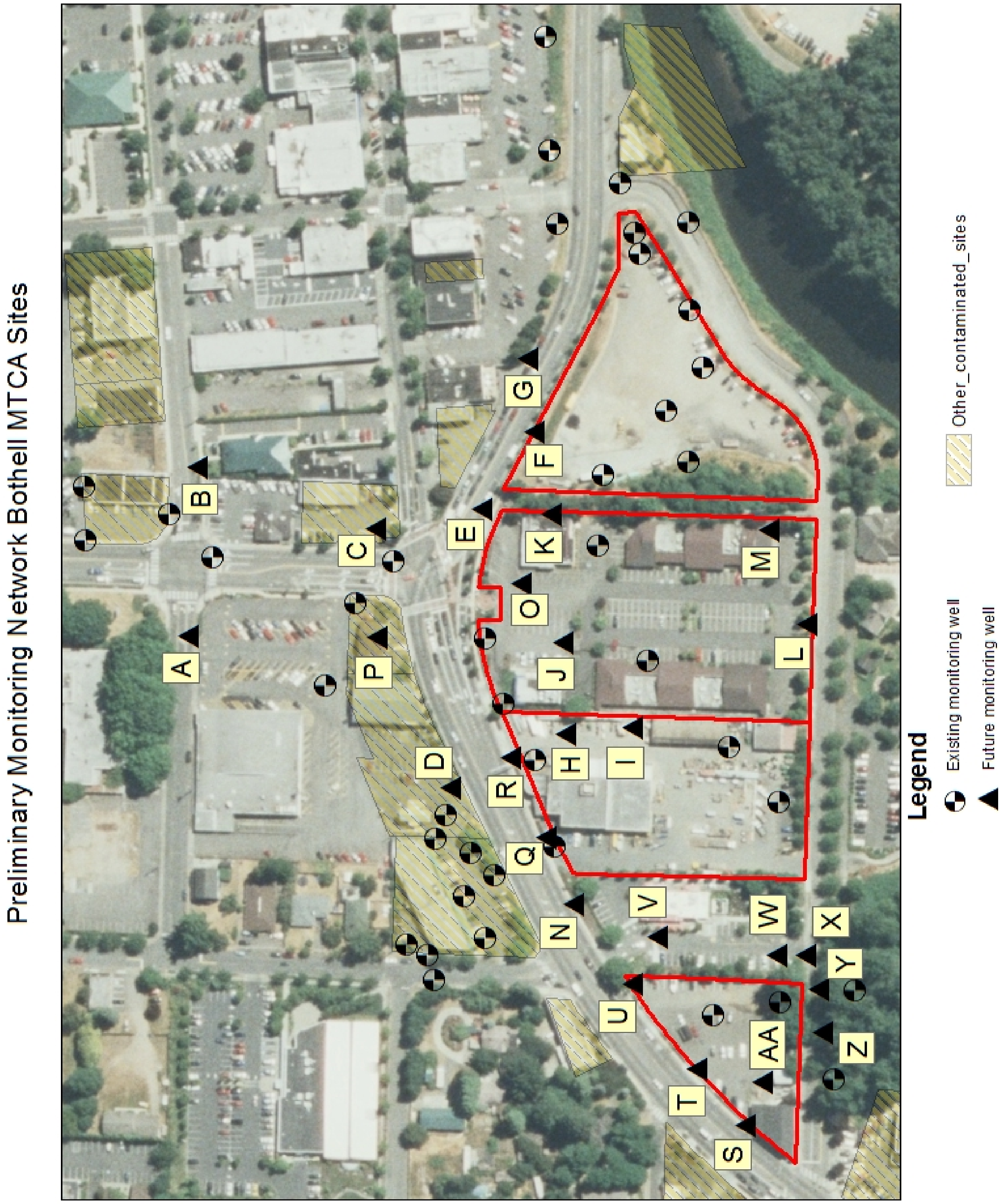
SUMMARY OF CONCERNS:

- Clarify monitoring network and concerns. **Ecology is providing the attached map of existing and proposed monitoring wells and a table of screen depths and rationale for each well (Attachment A-1).** The network will be sampled for a minimum of four quarters as required in the RI work plans and will address concerns that must be met in order to satisfy the RI/FS.
- See expectations in Ecology's letter "Final Bothell Landing RI/FS Work Plan Submittal and Notice to Proceed with Phase 1 RI/FS Work" dated December 16, 2011, for other concerns.
-

NEXT STEPS:

- **Implement groundwater monitoring program according to attached network of wells (Attachments A.1 and A.2).**
- Proceed with RI/FS Work Plan

Attachment A.1 Monitoring Well network



Attachment A.2

Description and Rationale for Wells to be Installed

Well	Screened Depth (feet)*	Rationale	Analytical	ECOLOGY COMMENTS
A	15-25	Define edges of plume near Case property	HVOCs	
B	15-25			
C	15-25	Define edges of plume downgradient of Case property Also check for TPH detected at Speedy Auto Glass	HVOCs TPH VOCs SVOCs, Metals	Location should be downgradient of Speedy Auto LUST near sidewalk. Unknown nature of LUSTshould require broader analytical suite
D	10-20	Define edges / relationship of both plumes. Also check for TPH, detected at Schucks and Grease Monkey, at low concentrations	HVOCs TPH	Location should be in area of known impacts, which from archival review appears to be in the recovery trench area at south portion of property.
E	10-20	Delineate HVOCs migrating along roadway – may include completions within utility trenches, after roadway is vacated Also check for TPH from Bothell Landing and detected in roadway by CDM	HVOCs TPH Metals (As, Cd, Cr, Pb)	This does not include any additional wells that might be installed to supplement the solvent source investigation or expedited remedial action to address plume discharge into the river.
F	10-20			
G	10-20			
H	5-20 30-50	Delineate edge of BSC plume Delineate vertical extent of solvent plume Confirm TPH cleanup in ground water at Hertz	HVOCs TPH As	Shallow and deep wells to assess vertical extent of solvent plume(s)
I	5-20			Two existing wells at south half should also be sampled and analyzed similarly.
J	5-20	Delineate edge of plume(s) Confirm TPH cleanup in ground water at Bothell Landing	HVOCs TPH Metals (As, Cd, Cr, Pb)	
K	5-20			
L	10-20	Delineate downgradient edge of plume(s) – if HVOCs > cleanup levels, will need to monitor further downgradient	HVOCs	
M	10-20 30-50			
N	10-20 30-50	Delineate edge of BSC plume	HVOCs	
O	5-20	Confirm TPH cleanup in ground water at Bothell Landing	HVOCs TPH Metals (As, Cd, Cr, Pb)	
P	5-20	Check for TPH detected at Grease Monkey within footprint of former gas station building	HVOCs TPH Metals (As, Cd, Cr, Pb)	
Q	5-20 30-50	Investigate off-property migrations of contaminants in shallow and deeper confined aquifers at the Former Hertz property	HVOCs TPH Metals (As, Cd, Cr, Pb)	Dissolved HVOC plume and possible DNAPL migration from BSC site. TPH and associated impacts from Schucks site.
R	5-20 30-50	Investigate off-property migrations of contaminants in shallow and deeper confined	HVOCs TPH Metals (As,	Dissolved HVOC plume and possible DNAPL from BSC

Well	Screened Depth (feet)*	Rationale	Analytical	ECOLOGY COMMENTS
		aquifers at the Former Hertz property	Cd, Cr, Pb)	site. TPH and associated impacts from Schucks site.
S	5-20	Investigate off-property migrations of contaminants from Bothell Chevron (Haynes Union 76) site	TPH, VOCs As	• Groundwater monitoring at the Paint & Decorating site may be a separate program from the other sites to the E/NE, unless subsequent monitoring shows that the plumes are larger than expected or that commingled plumes overlap on this property, or if the decision is made to make the sampling program part of the area-wide study for logistical or economic purposes. • Existing wells also to be sampled for agreed upon contaminants. From document review, these would be TPH, Metals (As, Cd, Cr, Pb). • Wells V, W, X were suggested in DCAP rev. 1 (Parametrix 2009) apparently as downgradient confirmation wells from IA excavation areas.
T	3-18	Investigate off-property migrations of contaminants from Bothell Chevron (Haynes Union 76) site. Confirm TPH cleanup.	TPH, VOCs, SVOCs, As	
U	5-20	Investigate off-property migrations of contaminants from MPI Insurance (Mobil Station) and BSC	TPH, VOCs, As	
V	5-20	Confirm Metals and TPH cleanup in ground water	VOCs, SVOCs, TPH	
W	3-13	Confirm Metals and TPH cleanup in ground water	TPH, VOCs Metals (As, Cd, Cr, Pb)	
X	2-12	Confirm Metals and TPH cleanup in ground water	TPH, VOCs Metals (As, Cd, Cr, Pb)	
Y	2-12	Confirm Metals and TPH cleanup in ground water Investigate off-property migrations of contaminants from Bothell Chevron (Haynes Union 76) site and 116th Group	TPH, VOCs Metals (As, Cd, Cr, Pb)	
Z	2-12	Confirm Metals and TPH cleanup in ground water Investigate off-property migrations of contaminants from Bothell Chevron (Haynes Union 76) site and 116th Group	TPH, VOCs Metals (As, Cd, Cr, Pb)	
AA	5-20	Confirm Metals and TPH cleanup in ground water Investigate off-property migrations of contaminants from Bothell Chevron (Haynes Union 76) site	TPH, VOCs Metals (As, Cd, Cr, Pb)	

TPH = TPH-Gx/BTEX, TPH-Dx, TPH-Oil

APPENDIX D
BORING LOGS
(ON CD)

RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N-VALUE

COHESIONLESS SOILS			COHESIVE SOILS		
Density	N (blows/ft)	Approximate Relative Density(%)	Consistency	N (blows/ft)	Approximate Undrained Shear Strength (psf)
Very Loose	0 to 4	0 - 15	Very Soft	0 to 2	<250
Loose	4 to 10	15 - 35	Soft	2 to 4	250 - 500
Medium Dense	10 to 30	35 - 65	Medium Stiff	4 to 8	500 - 1000
Dense	30 to 50	65 - 85	Stiff	8 to 15	1000 - 2000
Very Dense	over 50	85 - 100	Very Stiff	15 to 30	2000 - 4000
			Hard	over 30	>4000

USCS SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP DESCRIPTIONS	
Coarse Grained Soils More than 50% Retained on No. 200 Sieve Size	Gravel and Gravelly Soils More than 50% of Coarse Fraction Retained on No. 4 Sieve	Clean Gravel (little or no fines)	GW	Well-graded GRAVEL
			GP	Poorly-graded GRAVEL
		Gravel with Fines (appreciable amount of fines)	GM	Silty GRAVEL
			GC	Clayey GRAVEL
	Sand and Sandy Soils 50% or More of Coarse Fraction Passing No. 4 Sieve	Clean Sand (little or no fines)	SW	Well-graded SAND
			SP	Poorly-graded SAND
		Sand with Fines (appreciable amount of fines)	SM	Silty SAND
			SC	Clayey SAND
Fine Grained Soils 50% or More Passing No. 200 Sieve Size	Silt and Clay	Liquid Limit Less than 50%	ML	SILT
			CL	Lean CLAY
			OL	Organic SILT/Organic CLAY
	Silt and Clay	Liquid Limit 50% or More	MH	Elastic SILT
			CH	Fat CLAY
			OH	Organic SILT/Organic CLAY
Highly Organic Soils			PT	PEAT

TEST SYMBOLS

%F	Percent Fines
AL	Atterberg Limits: PL = Plastic Limit LL = Liquid Limit
CBR	California Bearing Ratio
CN	Consolidation
DD	Dry Density (pcf)
DS	Direct Shear
GS	Grain Size Distribution
K	Permeability
MD	Moisture/Density Relationship (Proctor)
MR	Resilient Modulus
PID	Photoionization Device Reading
PP	Pocket Penetrometer Approx. Compressive Strength (tsf)
SG	Specific Gravity
TC	Triaxial Compression
TV	Torvane Approx. Shear Strength (tsf)
UC	Unconfined Compression

SAMPLE TYPE SYMBOLS

☒	2.0" OD Split Spoon (SPT) (140 lb. hammer with 30 in. drop)
I	Shelby Tube
▣	3-1/4" OD Split Spoon with Brass Rings
○	Small Bag Sample
▚	Large Bag (Bulk) Sample
▮	Core Run
⧄	Non-standard Penetration Test (3.0" OD split spoon)

GROUNDWATER SYMBOLS

▽	Groundwater Level (measured at time of drilling)
▼	Groundwater Level (measured in well or open hole after water level stabilized)

COMPONENT DEFINITIONS

COMPONENT	SIZE RANGE
Boulders	Larger than 12 in
Cobbles	3 in to 12 in
Gravel	3 in to No 4 (4.5mm)
Coarse gravel	3 in to 3/4 in
Fine gravel	3/4 in to No 4 (4.5mm)
Sand	No. 4 (4.5 mm) to No. 200 (0.074 mm)
Coarse sand	No. 4 (4.5 mm) to No. 10 (2.0 mm)
Medium sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Smaller than No. 200 (0.074mm)

COMPONENT PROPORTIONS

PROPORTION RANGE	DESCRIPTIVE TERMS
< 5%	Clean
5 - 12%	Slightly (Clayey, Silty, Sandy)
12 - 30%	Clayey, Silty, Sandy, Gravelly
30 - 50%	Very (Clayey, Silty, Sandy, Gravelly)
Components are arranged in order of increasing quantities.	

NOTES: Soil classifications presented on exploration logs are based on visual and laboratory observation. Soil descriptions are presented in the following general order:

Density/consistency, color, modifier (if any) GROUP NAME, additions to group name (if any), moisture content. Proportion, gradation, and angularity of constituents, additional comments. (GEOLOGIC INTERPRETATION)

Please refer to the discussion in the report text as well as the exploration logs for a more complete description of subsurface conditions.

MOISTURE CONTENT

DRY	Absence of moisture, dusty, dry to the touch.
MOIST	Damp but no visible water.
WET	Visible free water, usually soil is below water table.

HWA
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Bothell Paint and Decorating
Bothell, Washington

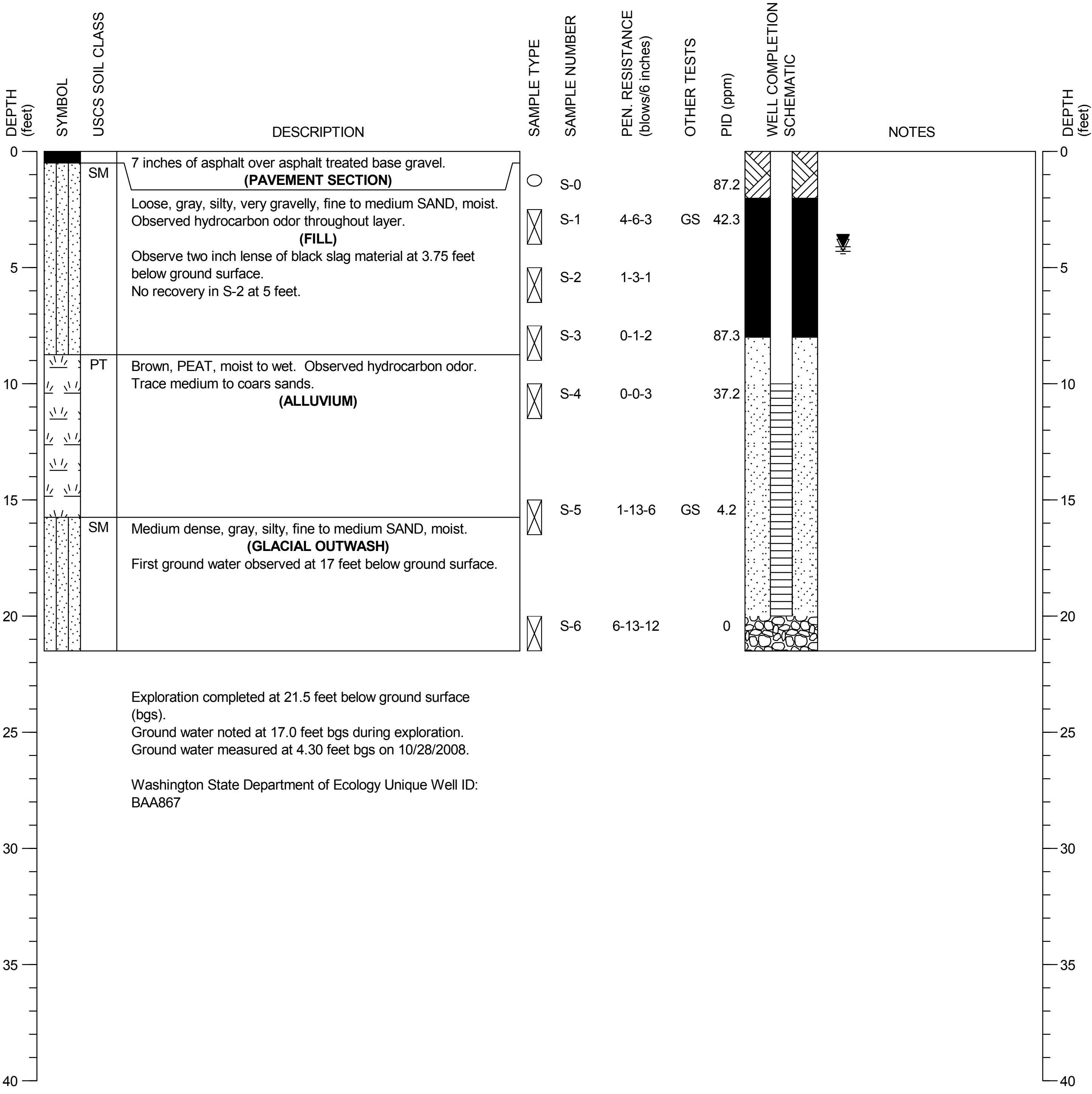
LEGEND OF TERMS AND SYMBOLS USED ON EXPLORATION LOGS

PROJECT NO.: 2007-098 T540 FIGURE: A-1

DRILLING COMPANY: Gregory Drilling Inc.
DRILLING METHOD: Hollow-Stem Auger, Truck mounted CME 85
SAMPLING METHOD: SPT with Autohammer
LOCATION:

SURFACE ELEVATION: 38.00 ± feet
CASING ELEVATION ± feet

DATE STARTED: 10/28/2008
DATE COMPLETED: 10/28/2008
LOGGED BY: J. Speck



USCS SOIL CLASS	DESCRIPTION
SM	7 inches of asphalt over asphalt treated base gravel. **(PAVEMENT SECTION)** Loose, gray, silty, very gravelly, fine to medium SAND, moist. Observed hydrocarbon odor throughout layer. **(FILL)** Observe two inch lense of black slag material at 3.75 feet below ground surface. No recovery in S-2 at 5 feet.
PT	Brown, PEAT, moist to wet. Observed hydrocarbon odor. Trace medium to coars sands. **(ALLUVIUM)**
SM	Medium dense, gray, silty, fine to medium SAND, moist. **(GLACIAL OUTWASH)** First ground water observed at 17 feet below ground surface.

SAMPLE TYPE	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)
○	S-0			87.2
☒	S-1	4-6-3	GS	42.3
☒	S-2	1-3-1		
☒	S-3	0-1-2		87.3
☒	S-4	0-0-3		37.2
☒	S-5	1-13-6	GS	4.2
☒	S-6	6-13-12		0

Exploration completed at 21.5 feet below ground surface (bgs).
Ground water noted at 17.0 feet bgs during exploration.
Ground water measured at 4.30 feet bgs on 10/28/2008.

Washington State Department of Ecology Unique Well ID: BAA867

NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

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Bothell Paint and Decorating
Bothell, Washington

MONITORING WELL:
BC-10

PAGE: 1 of 1

PROJECT NO.: 2007-098 T540 FIGURE: A-2

DRILLING COMPANY: Cascade Drilling, Inc.
DRILLING METHOD: Hollow Stem Auger, track-mounted, Modified CME-55
SAMPLING METHOD: SPT w/rods and down-hole hammer
LOCATION:

SURFACE ELEVATION: 35.00 ± feet
CASING ELEVATION ± feet

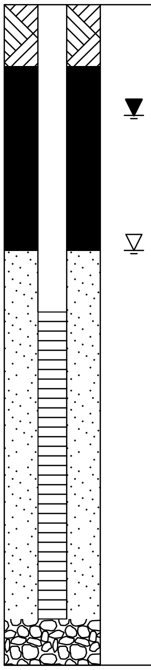
DATE STARTED: 6/25/2008
DATE COMPLETED: 6/25/2008
LOGGED BY: J. Speck/B. Blanchette

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION
0	SM	ASPHALT - HMA 4 inches thick in 2 inch lifts. **(PAVEMENT SECTION)**
	SP SM	Loose, yellow brown, silty, gravelly, fine to medium SAND, moist. Some construction debris (asphalt, concrete pipe fragments). **(FILL)** Hand dug exploration to depth of 5 feet. Sample S-1 at 2.5 feet taken from cuttings.
5	ML	Loose, olive brown, gravelly, slightly silty poorly graded SAND, moist.
	SM	Hard, gray, gravelly, sandy SILT, moist.
10		Loose, light gray to gray, slightly gravelly to gravelly, very silty SAND, wet. **(FILL/ALLUVIUM)**
15		Some organic material, wood, noted from 15.0 to 15.5 feet.
	PT	Stiff, dark brown, PEAT, moist to wet, with wood fragments. **(ALLUVIUM)**
	SP SM	Loose, gray, medium to coarse SAND, with interbeds of peat, moist.
20		Loose, gray, silty medium SAND, wet.
	SM	Loose, brown, gravelly, silty SAND, wet.
	PT	Stiff, dark brown, sandy, PEAT, moist.

Exploration completed at 21.5 feet below ground surface (bgs).
Ground water noted at 8 feet bgs during exploration.
Ground water measured at 3.6 feet bgs on 6/27/2008.

SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)
S-1		GS	0.4
S-2	23-18-50		0.3
S-3	8-5-3	GS	0.4
S-4	1-1-1		0.4
S-5	3-3-5		0.4
S-6B S-6A	4-5-5		0.4
S-7	3-3-5		0.3
S-8	7-5-4		0.3

WELL COMPLETION SCHEMATIC



NOTES

NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

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Bothell Paint and Decorating
Bothell, Washington

MONITORING WELL:
BC-11

PAGE: 1 of 1

PROJECT NO.: 2007-098 T540 FIGURE: A-3

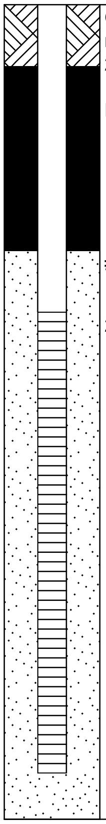
MWELL 2007-098-PAINT.GPJ 4/7/15

DRILLING COMPANY: Cascade Drilling, Inc.
DRILLING METHOD: CME 55 Limited-access 8-inch HSA
SAMPLING METHOD: D&M Split Spoon with 140 lb hammer
LOCATION: Bothell Paint property, southeast corner

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 9/2/2009
DATE COMPLETED: 9/2/2009
LOGGED BY: V. Atkins

USCS SOIL CLASS	DESCRIPTION	SAMPLE TYPE	PEN. RESISTANCE (blows/6 inches)	PID (ppm)	NOTES
SM	Dark brown silty SAND with gravel, trace debris (FILL), dry to moist.	°		0	Cement surface seal and flush mount monument 2-inch Sch. 40 PVC casing
	Grading yellow-brown silty fine SAND.	°		0	Hydrated bentonite seal ▼
	Medium dense brown to red-brown silty SAND, trace gravel and debris, moist.	■	7/9/9	0	
SM	Grading gray medium silty SAND (ALLUVIUM), moist.				#2/12 filter sand ▽
	Loose gray-brown SILT and SAND, moist to wet.	■	1/3/4	0	2-inch Sch. 40 PVC 10-slot screen
PT	Soft dark red-brown fibrous PEAT, moist.				
	Medium stiff dark red-brown fibrous PEAT with gray medium sand seams, moist to wet.	■	3/3/3	0.5	
	Medium stiff dark red-brown fibrous PEAT, moist to wet.	■	4/5/5	0.3	
		■	3/3/4	-	
CL	Soft olive silty CLAY, moist.				



Boring completed to 26.5 feet bgs.
Ground water encountered at 15 feet bgs.
Boring completed as monitoring well.

NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

Bothell Paint and Decorating
Bothell, Washington

MONITORING WELL:
BPMW-1

PAGE: 1 of 1

PROJECT NO.: 2007-098 T540 FIGURE: A-4

DRILLING COMPANY: Cascade Drilling, Inc.
DRILLING METHOD: CME 55 Limited-access 8-inch HSA
SAMPLING METHOD: D&M Split Spoon with 140 lb hammer
LOCATION: Bothell Paint property, south of NE 180th Street

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 9/2/2009
DATE COMPLETED: 9/2/2009
LOGGED BY: V. Atkins

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	PEN. RESISTANCE (blows/6 inches)	PID (ppm)
0		Brown silty TOPSOIL with roots and organic matter, dry.		
	SM	Loose red-brown silty SAND with roots (FILL), dry grading moist.		-
				-
5	SM	Gray medium coarse silty SAND, moist.	3/4/5	0.5
	PT	Medium stiff dark red-brown organic SILT, moist		
		Medium stiff dark red-brown organic SILT and PEAT with wood fragments and sandy seams, moist.	7/10/12	0.2
10		Dark red-brown fibrous PEAT. Slight organic odor.	14/15/17	0
	SM	Medium dense dark brown silty SAND, trace gravel, moist.		
	PT	Medium stiff dark red-brown sandy SILT grading fibrous PEAT, moist. Slight organic odor.	9/9/17	0.2
15		Medium stiff dark red-brown fibrous PEAT with silty sand layer, moist to wet.	12/12/15	0
			7/7/9	0
20			5/5/6	0
	OL	Soft olive brown organic SILT and CLAY with peat fragments, moist, low to medium placticity.		
			3/4/4	0
25			4/4/5	0
			5/5/5	0
30		As above, decreasing organics.	5/5/6	0
	CL	Soft olive brown grading gray silty CLAY, moist to wet.	3/4/4	0
35			3/3/3	0
	SM	Dense gray SILT and silty SAND, wet, heaving.	17/50-6"	-
40				

NOTES:
- Cement surface seal and flush mount monument
- 2-inch Sch. 40 PVC casing
- Hydrated bentonite seal
- #2/12 filter sand
- 2-inch Sch. 40 PVC 10-slot screen

NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

Bothell Paint and Decorating
Bothell, Washington

MONITORING WELL:
BPMW-2

PAGE: 1 of 2

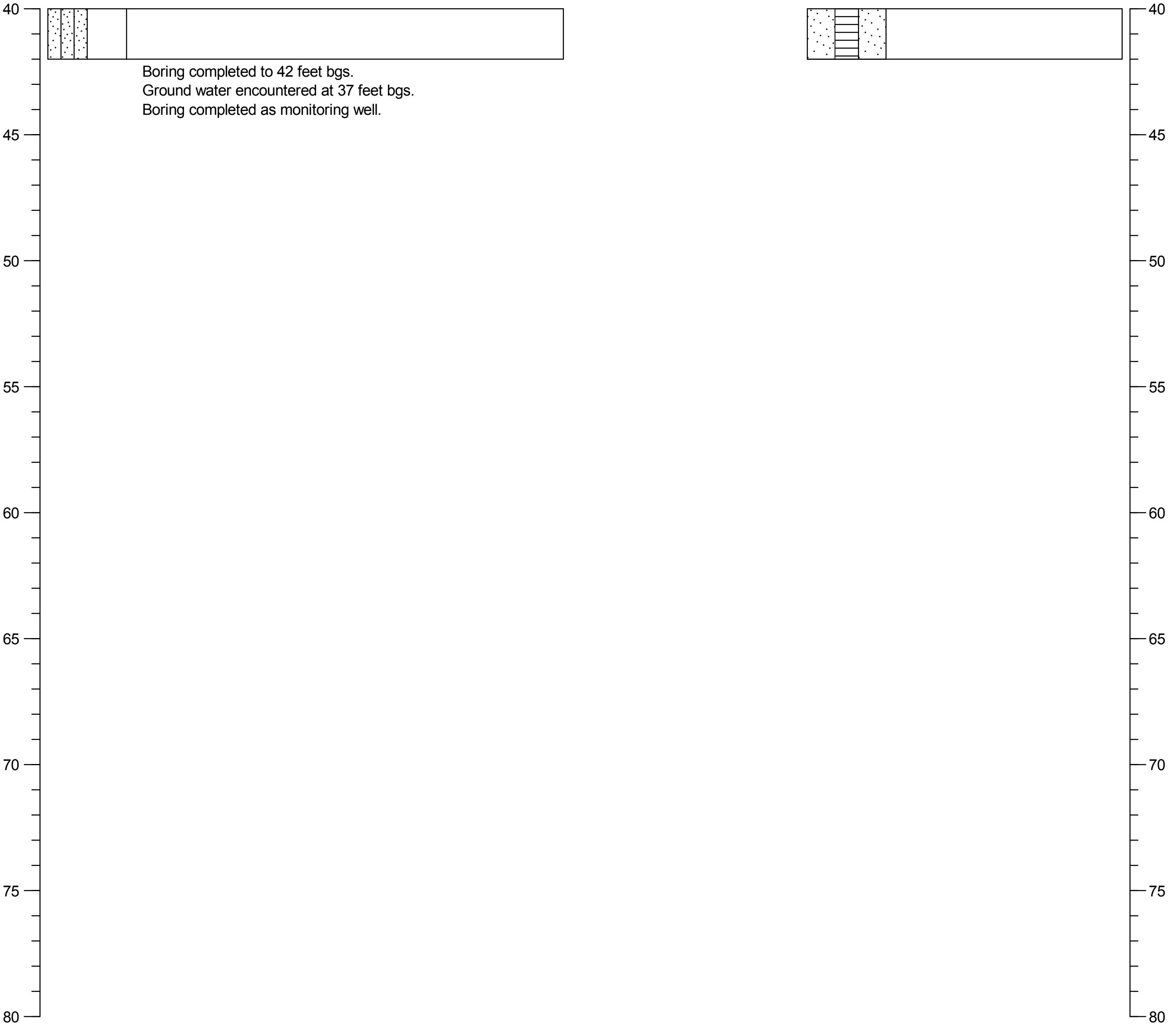
PROJECT NO.: 2007-098 T540 FIGURE: A-5

DRILLING COMPANY: Cascade Drilling, Inc.
DRILLING METHOD: CME 55 Limited-access 8-inch HSA
SAMPLING METHOD: D&M Split Spoon with 140 lb hammer
LOCATION: Bothell Paint property, south of NE 180th Street

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 9/2/2009
DATE COMPLETED: 9/2/2009
LOGGED BY: V. Atkins

DEPTH (feet)	SYMBOL	USCS SOIL CLASS	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)	WELL COMPLETION SCHEMATIC	NOTES	DEPTH (feet)



Boring completed to 42 feet bgs.
Ground water encountered at 37 feet bgs.
Boring completed as monitoring well.

NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

Bothell Paint and Decorating
Bothell, Washington

MONITORING WELL:
BPMW-2

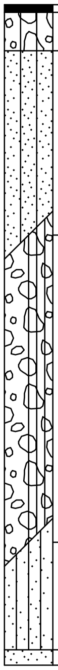
PAGE: 2 of 2

PROJECT NO.: 2007-098 T540 FIGURE: A-5

DRILLING COMPANY: Cascade Drilling, Inc.
DRILLING METHOD: CME 75 Truck-mounted 8-inch HSA
SAMPLING METHOD: D&M Split Spoon with 300 lb hammer
LOCATION: Bothell Paint property, north boundary

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

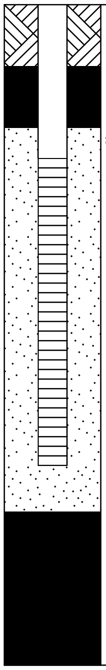
DATE STARTED: 9/8/2009
DATE COMPLETED: 9/8/2009
LOGGED BY: V. Atkins



USCS SOIL CLASS	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)
GM	ASPHALT	●				0
	Red-brown silty SAND and angular GRAVEL (FILL), dry.					
SM	Dark gray SAND and SILT with gravel (FILL), dry grading moist.	●				4
	Loose red-brown grading dark brown silty SAND with gravel, trace construction debris (brick, wood), moist grading wet.	■		2/2/2		1.5
GP GM	No recovery, wet.	■		10/11/10		-
	Medium dense red-brown silty SAND and GRAVEL, wet.	■		10/12/12		-
	Medium stiff gray fine silty SAND with silt interbeds, wet to moist.	■		5/6/7		-
SP	Medium dense gray medium SAND, trace silt, moist to wet.					

Boring completed to 21.5 feet bgs.
Ground water encountered at 5 feet bgs.
Boring completed as monitoring well.

WELL COMPLETION SCHEMATIC



NOTES

- Cement surface seal and flush mount monument
- 2-inch Sch. 40 PVC casing
- Hydrated bentonite seal
- #2/12 filter sand
- 2-inch Sch. 40 PVC 10-slot screen
- Hydrated bentonite backfill

NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

Bothell Paint and Decorating
Bothell, Washington

MONITORING WELL:
BPMW-3

PAGE: 1 of 1

PROJECT NO.: 2007-098 T540 FIGURE: A-6

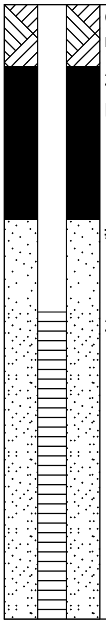
DRILLING COMPANY: Environmental Drilling Inc.
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Stainless steel split spoon
LOCATION:

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 1/7/2014
DATE COMPLETED: 1/7/2014
LOGGED BY: N.Nielsen

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)	NOTES	DEPTH (feet)
0	GP	Loose, well graded brown gravelly silty SAND fill, moist						Cement surface seal and flush mount monument	0
								2-inch Sch. 40 PVC casing Hydrated bentonite chips	
			☒	1	4-5-4		0		
5	SP	Medium dense gray-brown fine poorly graded SAND, slightly silty, slightly gravelly, moist							5
								#10/20 silica sand filter	
			☒	2	4-5-8		0		
10								2-inch Sch. 40 PVC 10-slot screen	10
			☒	3	3-5-12		0		
15								∇	15
		Grades to wet	☒	4	11-24-33		0		
20		Boring completed to 20 feet bgs Ground water encountered at 15 feet bgs Boring completed as monitoring well WA DOE well tag BHZ 096							20
25									25
30									30
35									35
40									40

WELL COMPLETION SCHEMATIC



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

Bothell Paint and Decorating
Bothell, Washington

MONITORING WELL:
BPMW-4

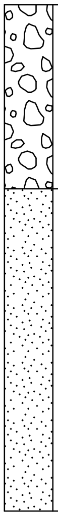
PAGE: 1 of 1

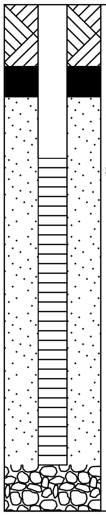
PROJECT NO.: 2007-098 T540 FIGURE: A-7

DRILLING COMPANY: Environmental Drilling Inc.
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Stainless steel split spoon
LOCATION:

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 1/7/2014
DATE COMPLETED: 1/7/2014
LOGGED BY: N.Nielsen





DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)	NOTES	DEPTH (feet)
0	GP	Very loose, well graded brown gravelly silty SAND fill, moist						Cement surface seal and flush mount monument	0
								Hydrated bentonite seal	
								2-inch Sch. 40 PVC casing	
5		Soil stained dark brown	☒	1	3-2-1		0	#10/20 silica sand filter	5
	SP	Dense to medium dense gray-brown fine poorly graded SAND, slightly silty, slightly gravelly, moist Grades to wet						∇	
10			☒	2	15-16-15		0	2-inch Sch. 40 PVC 10-slot screen	10
15			☒	3	11-11-18		0	Sloughed sand	15
20									20
25									25
30									30
35									35
40									40

Boring completed to 16.5 feet bgs
Ground water encountered at 7 feet bgs
Boring completed as monitoring well
WA DOE well tag BHZ 097

NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

Bothell Paint and Decorating
Bothell, Washington

MONITORING WELL:
BPMW-5

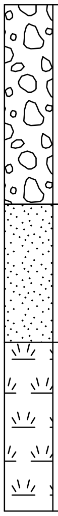
PAGE: 1 of 1

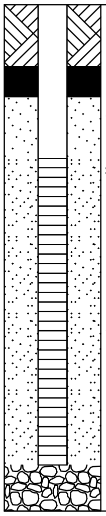
PROJECT NO.: 2007-098 T540 FIGURE: A-8

DRILLING COMPANY: Environmental Drilling Inc.
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Stainless steel split spoon
LOCATION:

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 1/7/2014
DATE COMPLETED: 1/7/2014
LOGGED BY: N.Nielsen





DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)	NOTES	DEPTH (feet)
0	GP	Dense, well graded brown gravelly silty SAND fill, moist						Cement surface seal and flush mount monument	0
								Hydrated bentonite seal	
								2-inch Sch. 40 PVC casing	
5			☒	1	17-21-22		0	#10/20 silica sand filter	5
	SP	Medium dense gray-brown fine poorly graded SAND, slightly silty, slightly gravelly, moist							
								∇	
10		Grades to wet	☒	2	7-9-10		0	2-inch Sch. 40 PVC 10-slot screen	10
	PT	Loose dark brown PEAT, wet							
15			☒	3	1-3-4		0	Sloughed sand	15
		Boring completed to 16.5 feet bgs Ground water encountered at 9 feet bgs Boring completed as monitoring well WA DOE well tag BHZ 098							
20									20
25									25
30									30
35									35
40									40

NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

Bothell Paint and Decorating
Bothell, Washington

MONITORING WELL:
BPMW-6

PAGE: 1 of 1

PROJECT NO.: 2007-098 T540 FIGURE: A-9

APPENDIX E

HISTORICAL SOIL AND GROUND WATER DATA AND GRADIENT MAPS

(ON CD)

Table 3-1. Summary of Soil Analytical Results

PARAMETERS	Units	Analytical Method	MTCA A	MTCA B soil to gw	Ecological Indicator Conc.	Sample No.:	BP-1 0'-0.5'	BP-2 0-0.5	BP-3 0-0.5	BP-4 0-0.5	BP-5 0-0.5	BP-5 2-3	BP-5 4-5	BP-5 10	BP-6 0-1	BP-7 0-0.5
						Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5	10	2-3	4-5	10	0-1	0-0.5
						Background	9/2/2009	9/2/2009	9/2/2009	9/2/2009	9/2/2009	9/2/2009	9/2/2009	9/2/2009	9/2/2009	9/2/2009
PETROLEUM HYDROCARBONS																
Diesel	mg/kg	NWTPH-Dx	2,000		200		- -	- -	- -	- -	- -	- -	**900**	31 U	- -	- -
Motor Oil	mg/kg	NWTPH-Dx	2,000				- -	- -	- -	- -	- -	- -	1,700	63 U	- -	- -
Gasoline	mg/kg	NWTPH-Gx	30/100*G		100		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzene	µg/kg	SW8021B	30	4.483			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Toluene	µg/kg	SW8021B	7,000				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
m,p-Xylene	µg/kg	SW8021B	9,000*XY				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
METALS																
Arsenic	mg/kg	SW6010B-Total	20	2.803	7	7.30	5.3 U	5.3 U	6.2	5.4 U	**7.3**	**11**	- -	- -	**12**	5.2 U
Cadmium	mg/kg	SW6010B-Total	2	0.69	4	0.77	0.53 U	0.53 U	0.54 U	0.54 U	0.54 U	0.57 U	- -	- -	0.53 U	0.52 U
Chromium	mg/kg	SW6010B-Total	2,000*CR		42	48.15	33	28	29	31	37	35	- -	- -	**47**	14
Lead	mg/kg	SW6010B-Total	250	250	50	16.83	5.3 U	5.3 U	35	26	48	49	- -	- -	30	13
Mercury	mg/kg	SW7471A-Total	2	2.088	0.1	0.07	0.021 U	0.021 U	0.087	0.044	0.047	0.05	- -	- -	0.03	0.021
METALS (TCLP Extract-wet)																
Arsenic	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Cadmium	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Chromium	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Lead	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VOLATILE ORGANICS																
All Analytes	µg/kg	SW8260B					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
SEMIVOLATILE ORGANICS																
1-Methylnaphthalene	µg/kg	SW8270D SIM	5,000*NA				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
2-Methylnaphthalene	µg/kg	SW8270D SIM	5,000*NA				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Acenaphthene	µg/kg	SW8270D SIM			20,000		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Acenaphthylene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Anthracene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(a)anthracene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(a)pyrene	µg/kg	SW8270D SIM			12,000		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(b)fluoranthene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(g,h,i)perylene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(k)fluoranthene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Chrysene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Dibenz(a,h)anthracene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Fluoranthene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Fluorene	µg/kg	SW8270D SIM			30,000		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Indeno(1,2,3-cd)pyrene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Naphthalene	µg/kg	SW8270D SIM	5,000*NA				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Phenanthrene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Pyrene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total cPAHs Using Tox. Equiv.	µg/kg	Calculated	100				- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

(Table Continues)

Table 3-1. Summary of Soil Analytical Results

PARAMETERS	Units	Analytical Method	MTCA A	MTCA B soil to gw	Ecological Indicator Conc.	Sample No.:	BP-8 0-0.5	BP-8 2-3	BP-9 0-0.5	BP-9 2-3	BP-10 0-0.5	BP-11 0-0.5	BP-11 2-3	BP-11 4-5	BP-12 0-0.5
						Depth (ft):	0-0.5	2-3	0-0.5	2-3	0-0.5	0-0.5	2-3	4-5	0-0.5
						Background	9/2/2009	9/2/2009	9/2/2009	9/2/2009	9/2/2009	9/2/2009	9/2/2009	9/2/2009	9/2/2009
PETROLEUM HYDROCARBONS															
Diesel	mg/kg	NWTPH-Dx	2,000		200		- -	- -	- -	- -	- -	- -	- -	28 U	- -
Motor Oil	mg/kg	NWTPH-Dx	2,000				- -	- -	- -	- -	- -	- -	- -	56 U	- -
Gasoline	mg/kg	NWTPH-Gx	30/100*G		100		- -	- -	- -	- -	- -	- -	- -	1.4 U	- -
Benzene	µg/kg	SW8021B	30	4.483			- -	- -	- -	- -	- -	- -	- -	20 U	- -
Toluene	µg/kg	SW8021B	7,000				- -	- -	- -	- -	- -	- -	- -	28 U	- -
m,p-Xylene	µg/kg	SW8021B	9,000*XY				- -	- -	- -	- -	- -	- -	- -	28 U	- -
METALS															
Arsenic	mg/kg	SW6010B-Total	20	2.803	7	7.30	**50**	**10**	**130**	**11**	5.1 U	**210**	**390**	6.1	**11**
Cadmium	mg/kg	SW6010B-Total	2	0.69	4	0.77	0.54 U	0.6 U	3.9	0.54 U	0.51 U	**4.5**	3.5	0.56 U	0.53 U
Chromium	mg/kg	SW6010B-Total	2,000*CR		42	48.15	33	38	**57**	**46**	8.2	**75**	**48**	26	24
Lead	mg/kg	SW6010B-Total	250	250	50	16.83	**91**	**82**	**350**	18	7.3	**570**	**300**	5.6 U	20
Mercury	mg/kg	SW7471A-Total	2	2.088	0.1	0.07	0.095	0.063	0.051	0.032	0.02 U	0.066	0.073	0.022 UJH	0.023
METALS (TCLP Extract-wet)															
Arsenic	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	0.40 U	0.96	- -	- -
Cadmium	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	0.045	0.13	- -	- -
Chromium	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	0.022	0.020 U	- -	- -
Lead	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	0.70	0.32	- -	- -
VOLATILE ORGANICS															
All Analytes	µg/kg	SW8260B					- -	- -	- -	- -	- -	- -	- -	- -	- -
SEMIVOLATILE ORGANICS															
1-Methylnaphthalene	µg/kg	SW8270D SIM	5,000*NA				- -	- -	- -	- -	- -	- -	- -	- -	- -
2-Methylnaphthalene	µg/kg	SW8270D SIM	5,000*NA				- -	- -	- -	- -	- -	- -	- -	- -	- -
Acenaphthene	µg/kg	SW8270D SIM			20,000		- -	- -	- -	- -	- -	- -	- -	- -	- -
Acenaphthylene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Anthracene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(a)anthracene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(a)pyrene	µg/kg	SW8270D SIM			12,000		- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(b)fluoranthene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(g,h,i)perylene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(k)fluoranthene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Chrysene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Dibenz(a,h)anthracene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Fluoranthene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Fluorene	µg/kg	SW8270D SIM			30,000		- -	- -	- -	- -	- -	- -	- -	- -	- -
Indeno(1,2,3-cd)pyrene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Naphthalene	µg/kg	SW8270D SIM	5,000*NA				- -	- -	- -	- -	- -	- -	- -	- -	- -
Phenanthrene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Pyrene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Total cPAHs Using Tox. Equiv.	µg/kg	Calculated	100				- -	- -	- -	- -	- -	- -	- -	- -	- -

(Table Continues)

Table 3-1. Summary of Soil Analytical Results

PARAMETERS	Units	Analytical Method	MTCA A	MTCA B soil to gw	Ecological Indicator Conc.	Sample No.:	BP-13 0-0.5	BP-14 0-0.5	BP-15-0-0.5	BP-16-0-0.5	BP-17-0-0.5	BP-18-0-1	BP-19-0-1	BP-20-0-1	DUP-0904
						Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-1	0-1	0-1	(BP-20-0-1)
						Background	9/2/2009	9/2/2009	9/3/2009	9/4/2009	9/4/2009	9/4/2009	9/4/2009	9/4/2009	9/4/2009
PETROLEUM HYDROCARBONS															
Diesel	mg/kg	NWTPH-Dx	2,000		200		- -	- -	- -	- -	- -	- -	- -	140 U	37 UJH
Motor Oil	mg/kg	NWTPH-Dx	2,000				- -	- -	- -	- -	- -	- -	- -	440	570 JH
Gasoline	mg/kg	NWTPH-Gx	30/100*G		100		- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzene	µg/kg	SW8021B	30	4.483			- -	- -	- -	- -	- -	- -	- -	- -	- -
Toluene	µg/kg	SW8021B	7,000				- -	- -	- -	- -	- -	- -	- -	- -	- -
m,p-Xylene	µg/kg	SW8021B	9,000*XY				- -	- -	- -	- -	- -	- -	- -	- -	- -
METALS															
Arsenic	mg/kg	SW6010B-Total	20	2.803	7	7.30	5.5 U	**16**	5.5 U	**9.8**	5.4 U	5.4 U	6	**27**	**37**
Cadmium	mg/kg	SW6010B-Total	2	0.69	4	0.77	1.1	3.9	0.55 U	0.54 U	0.54 U	1.1	2.6	**4.4**	**6.1**
Chromium	mg/kg	SW6010B-Total	2,000*CR		42	48.15	34	**200**	20	26	23	**43**	**50**	**66**	**91**
Lead	mg/kg	SW6010B-Total	250	250	50	16.83	**100**	**130**	5.5 U	35	11	**78**	**180**	**270**	**410**
Mercury	mg/kg	SW7471A-Total	2	2.088	0.1	0.07	**0.13**	**0.23**	0.022 U	0.053	0.034	**0.12**	**0.27**	**0.53**	**0.49**
METALS (TCLP Extract-wet)															
Arsenic	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -	- -
Cadmium	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -	- -
Chromium	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -	- -
Lead	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -	- -
VOLATILE ORGANICS															
All Analytes	µg/kg	SW8260B					- -	- -	- -	- -	- -	- -	- -	- -	- -
SEMIVOLATILE ORGANICS															
1-Methylnaphthalene	µg/kg	SW8270D SIM	5,000*NA				- -	- -	- -	- -	- -	- -	- -	- -	- -
2-Methylnaphthalene	µg/kg	SW8270D SIM	5,000*NA				- -	- -	- -	- -	- -	- -	- -	- -	- -
Acenaphthene	µg/kg	SW8270D SIM			20,000		- -	- -	- -	- -	- -	- -	- -	- -	- -
Acenaphthylene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Anthracene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(a)anthracene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(a)pyrene	µg/kg	SW8270D SIM			12,000		- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(b)fluoranthene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(g,h,i)perylene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(k)fluoranthene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Chrysene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Dibenz(a,h)anthracene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Fluoranthene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Fluorene	µg/kg	SW8270D SIM			30,000		- -	- -	- -	- -	- -	- -	- -	- -	- -
Indeno(1,2,3-cd)pyrene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Naphthalene	µg/kg	SW8270D SIM	5,000*NA				- -	- -	- -	- -	- -	- -	- -	- -	- -
Phenanthrene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Pyrene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -	- -
Total cPAHs Using Tox. Equiv.	µg/kg	Calculated	100				- -	- -	- -	- -	- -	- -	- -	- -	- -

(Table Continues)

Table 3-1. Summary of Soil Analytical Results

					Ecological	Sample No.:	**BP-21-0-1**	**BP-23 0-5**	**BP-23 2-3**	**BP-23 4-5**	**BP-24-8**	**BP-25-0-0.5**	**BP-25-5.5**	**BP-26**	**BPMW-1-0.5**
		Analytical		**MTCA B**	**Indicator**	**Depth (ft):**	**0-1**	**0-5**	**2-3**	**4-5**	**8**	**0-0.5**	**5.5**	**1-2**	**0.5**
PARAMETERS	**Units**	**Method**	**MTCA A**	**soil to gw**	**Conc.**	**Background**	**9/4/2009**	**9/2/2009**	**9/2/2009**	**9/2/2009**	**9/2/2009**	**9/3/2009**	**9/3/2009**	**9/2/2009**	**9/2/2009**
PETROLEUM HYDROCARBONS															
Diesel	mg/kg	NWTPH-Dx	2,000		200		27 U	- -	- -	28 U	33 U	- -	29 U	- -	140 U
Motor Oil	mg/kg	NWTPH-Dx	2,000				220	- -	- -	56 U	67 U	- -	110	- -	790
Gasoline	mg/kg	NWTPH-Gx	30/100*G		100		- -	- -	- -	1.3 U	- -	- -	- -	1.8 U	- -
Benzene	µg/kg	SW8021B	30	4.483			- -	- -	- -	20 U	- -	- -	- -	67	- -
Toluene	µg/kg	SW8021B	7,000				- -	- -	- -	27 U	- -	- -	- -	36 U	- -
m,p-Xylene	µg/kg	SW8021B	9,000*XY				- -	- -	- -	27 U	- -	- -	- -	36 U	- -
METALS															
Arsenic	mg/kg	SW6010B-Total	20	2.803	7	7.30	**7.7**	**58**	**31**	5.6 U	- -	5.4 U	- -	5.5 U	**14**
Cadmium	mg/kg	SW6010B-Total	2	0.69	4	0.77	2.1	1.3	0.55 U	0.56 U	- -	0.54 U	- -	0.55 U	2.7
Chromium	mg/kg	SW6010B-Total	2,000*CR		42	48.15	**63**	31	32	22	- -	32	- -	28	**53**
Lead	mg/kg	SW6010B-Total	250	250	50	16.83	**190**	**150**	**410**	5.6 U	- -	5.4 U	- -	35	**140**
Mercury	mg/kg	SW7471A-Total	2	2.088	0.1	0.07	**0.45**	0.085	0.038	0.023 JH	- -	0.022 U	- -	0.035	**0.2**
METALS (TCLP Extract-wet)															
Arsenic	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -	- -
Cadmium	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -	- -
Chromium	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -	- -
Lead	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -	- -
VOLATILE ORGANICS															
All Analytes	µg/kg	SW8260B					- -	- -	- -	- -	- -	- -	- -	ND	- -
SEMIVOLATILE ORGANICS															
1-Methylnaphthalene	µg/kg	SW8270D SIM	5,000*NA				- -	- -	- -	- -	- -	- -	- -	900	- -
2-Methylnaphthalene	µg/kg	SW8270D SIM	5,000*NA				- -	- -	- -	- -	- -	- -	- -	950	- -
Acenaphthene	µg/kg	SW8270D SIM			20,000		- -	- -	- -	- -	- -	- -	- -	150	- -
Acenaphthylene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	32	- -
Anthracene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	90	- -
Benzo(a)anthracene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	260	- -
Benzo(a)pyrene	µg/kg	SW8270D SIM			12,000		- -	- -	- -	- -	- -	- -	- -	190	- -
Benzo(b)fluoranthene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	120	- -
Benzo(g,h,i)perylene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	82	- -
Benzo(k)fluoranthene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	85	- -
Chrysene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	400	- -
Dibenz(a,h)anthracene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	26	- -
Fluoranthene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	440	- -
Fluorene	µg/kg	SW8270D SIM			30,000		- -	- -	- -	- -	- -	- -	- -	180	- -
Indeno(1,2,3-cd)pyrene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	53	- -
Naphthalene	µg/kg	SW8270D SIM	5,000*NA				- -	- -	- -	- -	- -	- -	- -	120	- -
Phenanthrene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	440	- -
Pyrene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	590	- -
Total cPAHs Using Tox. Equiv.	µg/kg	Calculated	100				- -	- -	- -	- -	- -	- -	- -	248	- -

(Table Continues)

Table 3-1. Summary of Soil Analytical Results

PARAMETERS	Units	Analytical Method	MTCA A	MTCA B soil to gw	Ecological Indicator Conc.	Sample No.:	BPMW-1-1.5	BPMW-1-5	BPMW-2-0.5	BPMW-2-1.5	BPMW-2-5	BPMW-3 0.5'	BPMW-3 2'	BPMW-3 5'
						Depth (ft):	1.5	5	0.5	1.5	5	0.5	2	5
						Background	9/2/2009	9/2/2009	9/2/2009	9/2/2009	9/2/2009	9/8/2009	9/8/2009	9/8/2009
PETROLEUM HYDROCARBONS														
Diesel	mg/kg	NWTPH-Dx	2,000		200		- -	- -	29 U	- -	- -	140 U	**300 J**	33 U
Motor Oil	mg/kg	NWTPH-Dx	2,000				- -	- -	310	- -	- -	1,400	3,800	170
Gasoline	mg/kg	NWTPH-Gx	30/100*G		100		3.3 J	- -	- -	1.5 U	- -	2 U	1.6 U	2.4 U
Benzene	µg/kg	SW8021B	30	4.483			20 U	- -	- -	20 U	- -	20 U	20 U	20 U
Toluene	µg/kg	SW8021B	7,000				33 U	- -	- -	30 U	- -	41 U	33	48 U
m,p-Xylene	µg/kg	SW8021B	9,000*XY				33 U	- -	- -	30 U	- -	41 U	40	48 U
METALS														
Arsenic	mg/kg	SW6010B-Total	20	2.803	7	7.30	- -	**11**	6.7	- -	**9.3**	5.7 U	**7.3**	**11**
Cadmium	mg/kg	SW6010B-Total	2	0.69	4	0.77	- -	1.4	0.71	- -	0.81 U	0.57 U	0.57 U	0.66 U
Chromium	mg/kg	SW6010B-Total	2,000*CR		42	48.15	- -	38	41	- -	33	13	**48**	30
Lead	mg/kg	SW6010B-Total	250	250	50	16.83	- -	**94**	33	- -	27	5.7 U	**73**	40
Mercury	mg/kg	SW7471A-Total	2	2.088	0.1	0.07	- -	**0.15**	0.044	- -	0.046	0.023 U	0.052	0.051
METALS (TCLP Extract-wet)														
Arsenic	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -
Cadmium	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -
Chromium	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -
Lead	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -
VOLATILE ORGANICS														
All Analytes	µg/kg	SW8260B					- -	- -	- -	- -	- -	ND	ND	ND
SEMIVOLATILE ORGANICS														
1-Methylnaphthalene	µg/kg	SW8270D SIM	5,000*NA				- -	- -	- -	- -	- -	- -	- -	- -
2-Methylnaphthalene	µg/kg	SW8270D SIM	5,000*NA				- -	- -	- -	- -	- -	- -	- -	- -
Acenaphthene	µg/kg	SW8270D SIM			20,000		- -	- -	- -	- -	- -	- -	- -	- -
Acenaphthylene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -
Anthracene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -
Benzo(a)anthracene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -
Benzo(a)pyrene	µg/kg	SW8270D SIM			12,000		- -	- -	- -	- -	- -	- -	- -	- -
Benzo(b)fluoranthene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -
Benzo(g,h,i)perylene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -
Benzo(k)fluoranthene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -
Chrysene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -
Dibenz(a,h)anthracene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -
Fluoranthene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -
Fluorene	µg/kg	SW8270D SIM			30,000		- -	- -	- -	- -	- -	- -	- -	- -
Indeno(1,2,3-cd)pyrene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -
Naphthalene	µg/kg	SW8270D SIM	5,000*NA				- -	- -	- -	- -	- -	- -	- -	- -
Phenanthrene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -
Pyrene	µg/kg	SW8270D SIM					- -	- -	- -	- -	- -	- -	- -	- -
Total cPAHs Using Tox. Equiv.	µg/kg	Calculated	100				- -	- -	- -	- -	- -	- -	- -	- -

NOTES:

- - - = Not analyzed or not collected
- *CR = Chromium Standards based on Chromium III
- *G = 100 if no benzene and TEX < 1% gas; 30 for other mixtures
- *NA = Includes Naphthalene, 1-Methylnaphthalene, and 2-Methylnaphthalene
- *XY = Applies to the sum of all xylenes
- ND = Non-detect

J/JH = Estimated value
UJ/UJH= Estimated non-detect
▨ Shaded values exceed MTCA

UNITS:
ft = feet
mg/kg = milligram/kilogram
mg/L = milligram/liter
µg/kg = microgram/kilogram

Bold values exceed Ecological Indicator Concentration

SOURCES: Background: 90th percentile Puget Sound (Ecology's Publication #94-115; 10/1994)
Model Toxics Control Act (MTCA) from WA Administrative Code 173-340-900
MTCA Method A Soil Cleanup Levels for Unrestricted Land Use: Table 740-1
MTCA Method B soil to groundwater: site-specific calculated
Ecological Indicator Concentrations: Table 749-3

Table 3-2. Summary of Groundwater Analytical Results

PARAMETERS	Units	Analytical Method	MTCA A	Sample No.	BC-10-12	BC-10-12-2	BC-11-12	BP-23-15	BP-25-10	BPMW-1-10	BPMW-2-6	BPMW-3-10
				Depth (ft):	12	12	12	15	10	10	6	10
				Date:	9/18/2009	9/18/2009	9/18/2009	9/2/2009	9/3/2009	9/18/2009	9/18/2009	9/18/2009
FIELD DATA												
Conductivity	mmhos/cm				0.332	- -	0.221	- -	- -	0.443	0.379	0.380
pH	std units				7.36	- -	7.05	- -	- -	7.57	7.91	6.70
Temperature	Celsius				16.6	- -	78.8	- -	- -	13.8	13.7	22.5
Dissolved Oxygen	mg/L				2.63	- -	2.91	- -	- -	2.97	2.96	3.91
PETROLEUM HYDROCARBONS												
Gasoline Range Hydrocarbons	mg/L	NWTPH-Gx	0.8/1*G		0.100 U	0.100 U	0.100 U	0.100 U	- -	0.100 U	0.320	0.100 U
TOTAL METALS												
Arsenic	mg/L	200.8/6020-Total	0.005		0.0051	0.0067	0.0033 U	- -	- -	0.0051	0.0039	0.01
Chromium	mg/L	200.8/6020-Total			0.027	0.034	0.0067 U	- -	- -	0.0067 U	0.0091	0.061
Lead	mg/L	200.8/6020-Total	0.015		0.0079	0.0093	0.0011 U	- -	- -	0.0011 U	0.0017	0.0074
DISSOLVED METALS												
Arsenic	mg/L	200.8/6020-Diss	0.005		0.003 U	0.003 U	0.003 U	0.0085	- -	0.005	0.0036	0.0054
VOLATILE ORGANICS												
All Analytes	µg/L	SW8260			ND	ND	- -	ND	ND	ND	- -	ND

NOTES:
- - = Not analyzed or not collected
ND = Non-detect
U = Not detected above the given practical quantitation limit
*G = 1 if no benzene ; 0.8 if benzene
Shaded values exceed MTCA

SOURCES:
Model Toxics Control Act (MTCA) from WA Administrative Code 173-340-900
MTCA Method A Soil Cleanup Levels for Ground Water: Table 720-1

UNITS:
ft = foot
mmhos/cm = millimhos/centimeter
mg/L = milligrams/liter
µg/L = micrograms/liter

Table 3-3. Summary of Historical Soil Analytical Results

PARAMETERS	Units	Analytical Method	MTCA A	MTCA B soil to gw	Ecological Indicator Conc.	Sample No.:	BC-10-1	BC-11-5	GB-2-1	GB-2-4	VB-1-4	VB-3-1	VB-5-1	VB-6-1	VB-7-1
						Depth (ft):	1	5	1	4	4	1	1	1	1
						Background	10/28/2008	06/25/2008	2/13/2008	2/13/2008	2/13/2008	2/13/2008	2/14/2008	2/14/2008	2/14/2008
PETROLEUM HYDROCARBONS															
Diesel	mg/kg	NWTPH-Dx	2,000		200		27 U	28 U	28 U	- -	**210**	28 U	130	**230**	120
Motor Oil	mg/kg	NWTPH-Dx	2,000				81	55 U	1,300	- -	1,200	180	1,300	1,000	1,300
Gasoline	mg/kg	NWTPH-Gx	30/100*G		100		4.8 U	- -	3.9 U	- -	- -	- -	6.6 U	3.2 U	3.2 U
Toluene	µg/kg	SW8021B	7,000				48 U	- -	- -	- -	- -	- -	- -	- -	- -
Toluene	µg/kg	SW8260B	7,000				- -	- -	2.6	- -	- -	- -	1.1	6.2	2.7
m,p-Xylene	µg/kg	SW8021B	9,000*XY				48 U	- -	- -	- -	- -	- -	- -	- -	- -
m,p-Xylene	µg/kg	SW8260B	9,000*XY				- -	- -	2.3 U	- -	- -	- -	2.3 U	1.4	1.2 U
METALS															
Arsenic	mg/kg	SW6010B-Total	20	2.803	7	7.30	- -	11 U	11 U	11 U	**42**	**14**	- -	- -	- -
Barium	mg/kg	SW6010B			102		- -	- -	170	47	79	89	- -	- -	- -
Cadmium	mg/kg	SW6010B-Total	2	0.69	4	0.77	- -	0.55 U	3.8	0.56 U	0.59 U	1.5	- -	- -	- -
Chromium	mg/kg	SW6010B-Total	2,000*CR		42	48.15	- -	12	**86**	26	37	**60**	- -	- -	- -
Lead	mg/kg	SW6010B-Total	250	250	50	16.83	- -	5.5 U	**350**	**52**	**98**	**100**	- -	- -	- -
Silver	mg/kg	SW6010B			2		- -	- -	0.57 U	0.56 U	0.59 U	0.56 U	- -	- -	- -
Mercury	mg/kg	SW7471A-Total	2	2.088	0.1	0.07	- -	- -	**0.38**	0.28 U	0.29 U	**0.34**	- -	- -	- -
METALS (TCLP Extract-wet)															
Arsenic	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -	- -
Barium	mg/L	SW6010B					- -	- -	- -	- -	- -	- -	- -	- -	- -
Cadmium	mg/L	SW6010B-Total					- -	- -	- -	- -	- -	- -	- -	- -	- -
VOLATILE ORGANICS															
1,2,4-Trimethylbenzene	µg/kg	SW8260					- -	- -	1.1 U	- -	- -	- -	6.7	22	0.6 U
2-Butanone	µg/kg	SW8260B					- -	- -	5.7 U	- -	- -	- -	7.9	5.8	6.2
Acetone	µg/kg	SW8260B					- -	- -	53	- -	- -	- -	57	46	34
cis-1,2-Dichloroethene	µg/kg	SW8260B					- -	- -	1.1 U	- -	- -	- -	1.1 U	0.6 U	0.6 U
Isopropylbenzene	µg/kg	SW8260					- -	- -	1.1 U	- -	- -	- -	1.2	1.6	0.73
Methylene Chloride	µg/kg	SW8260B	20				- -	- -	14	- -	- -	- -	13	3 U	3 U
Naphthalene	µg/kg	SW8260	500				- -	- -	1.1 U	- -	- -	- -	140	15	5.1
n-Butylbenzene	µg/kg	SW8260					- -	- -	1.1 U	- -	- -	- -	1.8	3.4	1.9
n-Propylbenzene	µg/kg	SW8260					- -	- -	1.1 U	- -	- -	- -	1.1 U	1.8	1.3
p-Isopropyltoluene	µg/kg	SW8260					- -	- -	1.1 U	- -	- -	- -	1.3	3.5	0.6 U
sec-Butylbenzene	µg/kg	SW8260					- -	- -	1.1 U	- -	- -	- -	1.1 U	2	1.4
tert-Butylbenzene	µg/kg	SW8260					- -	- -	1.1 U	- -	- -	- -	1.1 U	0.87	0.6 U
Tetrachloroethene	µg/kg	SW8260B	50				- -	- -	1.1 U	- -	- -	- -	1.1 U	0.6 U	0.6 U
Trichloroethene	µg/kg	SW8260B	30				- -	- -	1.1 U	- -	- -	- -	1.1 U	0.6 U	0.6 U

(Table continues)

Table 3-3. Summary of Historical Soil Analytical Results

PARAMETERS	Units	Analytical Method	MTCA A	MTCA B soil to gw	Ecological Indicator Conc.	Sample No.:	VB-8-0.25	VB-8-2	VB-9-0.5	VB-9-1.5	VB-10-1	VB-11-8	VB-12-8
						Depth (ft):	0.25	2	0.5	1.5	1	8	8
						Background	2/14/2008	2/14/2008	2/14/2008	2/14/2008	2/14/2008	4/3/2008	4/3/2008
PETROLEUM HYDROCARBONS													
Diesel	mg/kg	NWTPH-Dx	2,000		200		130	- -	4,900 U	1,800 U	28 U	28 U	28 U
Motor Oil	mg/kg	NWTPH-Dx	2,000				840	- -	180,000	29,000	160	490	260
Gasoline	mg/kg	NWTPH-Gx	30/100*G		100		- -	- -	- -	- -		8.9	5.4 U
Toluene	µg/kg	SW8021B	7,000				- -	- -	- -	- -	- -	- -	- -
Toluene	µg/kg	SW8260B	7,000				- -	- -	- -	- -	- -	- -	- -
m,p-Xylene	µg/kg	SW8021B	9,000*XY				- -	- -	- -	- -	- -	- -	- -
m,p-Xylene	µg/kg	SW8260B	9,000*XY				- -	- -	- -	- -	- -	- -	- -
METALS													
Arsenic	mg/kg	SW6010B-Total	20	2.803	7	7.30	**32**	**18**	**13**	**190**	**120**	11 U	11 U
Barium	mg/kg	SW6010B			102		**3,400**	**190**	100	92	**130**	39	45
Cadmium	mg/kg	SW6010B-Total	2	0.69	4	0.77	**160**	**8.6**	**4.5**	2.9	**4.8**	0.56 U	0.56 U
Chromium	mg/kg	SW6010B-Total	2,000*CR		42	48.15	**1,100**	**71**	**71**	**60**	**60**	25	32
Lead	mg/kg	SW6010B-Total	250	250	50	16.83	**2,100**	**210**	**76**	**240**	**350**	5.6 U	5.6 U
Silver	mg/kg	SW6010B			2		**2.4**	0.56 U	0.66 U	0.58 U	0.55 U	0.56 U	0.56 U
Mercury	mg/kg	SW7471A-Total	2	2.088	0.1	0.07	**0.56**	0.28 U	0.33 U	**0.33**	0.27 U	**0.29**	0.28 U
METALS (TCLP Extract-wet)													
Arsenic	mg/L	SW6010B-Total					- -	- -	- -	0.46	- -	- -	- -
Barium	mg/L	SW6010B					3.8	- -	- -	- -	- -	- -	- -
Cadmium	mg/L	SW6010B-Total					3.3	- -	- -	- -	- -	- -	- -
VOLATILE ORGANICS													
1,2,4-Trimethylbenzene	µg/kg	SW8260					- -	- -	- -	- -	- -	- -	- -
2-Butanone	µg/kg	SW8260B					- -	- -	- -	- -	- -	- -	- -
Acetone	µg/kg	SW8260B					- -	- -	- -	- -	- -	- -	- -
cis-1,2-Dichloroethene	µg/kg	SW8260B					- -	- -	- -	- -	- -	- -	- -
Isopropylbenzene	µg/kg	SW8260					- -	- -	- -	- -	- -	- -	- -
Methylene Chloride	µg/kg	SW8260B	20				- -	- -	- -	- -	- -	- -	- -
Naphthalene	µg/kg	SW8260	500				- -	- -	- -	- -	- -	- -	- -
n-Butylbenzene	µg/kg	SW8260					- -	- -	- -	- -	- -	- -	- -
n-Propylbenzene	µg/kg	SW8260					- -	- -	- -	- -	- -	- -	- -
p-Isopropyltoluene	µg/kg	SW8260					- -	- -	- -	- -	- -	- -	- -
sec-Butylbenzene	µg/kg	SW8260					- -	- -	- -	- -	- -	- -	- -
tert-Butylbenzene	µg/kg	SW8260					- -	- -	- -	- -	- -	- -	- -
Tetrachloroethene	µg/kg	SW8260B	50				- -	- -	- -	- -	- -	- -	- -
Trichloroethene	µg/kg	SW8260B	30				- -	- -	- -	- -	- -	- -	- -

NOTES:
- - = Not analyzed or not collected
*CR = Chromium Standards based on Chromium III
*G = 100 if no benzene and TEX < 1% gas; 30 for other mixtures
*XY = Applies to the sum of all xylenes
U = Not detected above the given practical quantitation limit
▨ Shaded values exceed MTCA
Bold Bold values exceed Ecological Indicator Concentration

UNITS:
ft = feet
mg/kg = milligram/kilogram
mg/L = milligram/liter
µg/kg = microgram/kilogram

SOURCES: Background: 90th percentile Puget Sound (Ecology's Publication #94-115; 10/1994)
Model Toxics Control Act (MTCA) from WA Administrative Code 173-340-900
MTCA Method A Soil Cleanup Levels for Unrestricted Land Use: Table 740-1
MTCA Method B soil to groundwater: site-specific calculated
Ecological Indicator Concentrations: Table 749-3

Table 3-4. Summary of Historical Groundwater Analytical Results

PARAMETERS	Units	Analytical Method	Sample No.: MTCA A	B4-W 4/2/2009	BC-10 2/4/2009	BC-11 12/30/2008	BC-12 2/4/2009	GB-1-W 2/13/2008	GB-2-W 2/13/2008	VB-2-W 2/13/2008	VB-3-W 2/14/2008	VB-4-W 2/14/2008	VB-5-W 2/14/2008	VB-6-W 2/14/2008
PETROLEUM HYDROCARBONS														
Motor Oil	mg/L	NWTPH-Dx	0.5	- -	1.4	0.40 U	0.41 U	- -	0.46 U	0.43 U	- -	0.45 U	0.41 U	0.42 U
Gasoline Range Hydrocarbons	mg/L	NWTPH-Gx	0.8/1*G	- -	0.10 U	0.10 U	0.10 U	0.100 U	0.110	0.100 U	- -	0.100 U	0.400 U	0.100 U
Benzene	µg/L	SW8260	5	- -	0.20 U	0.20 U	0.20 U	0.2 U	1.4	0.2 U	- -	0.2 U	0.2 U	0.2 U
Toluene	µg/L	SW8260	1,000	- -	1.0 U	1.0 U	1.0 U	0.86	9.9	0.63	- -	0.58	0.41	0.43
Ethylbenzene	µg/L	SW8260	700	- -	0.20 U	0.20 U	0.20 U	0.2 U	1.7	0.2 U	- -	0.2 U	0.2 U	0.2 U
m,p-Xylene	µg/L	SW8260	1,000*XY	- -	- -	- -	- -	0.93	7.5	0.52	- -	0.45	0.4 U	0.4 U
o-Xylene	µg/L	SW8260	1,000*XY	- -	- -	- -	- -	0.46	3.9	0.28	- -	0.21	0.2 U	0.2 U
Total Xylenes	µg/L	SW8260	1,000*XY	- -	0.40 U	0.40 U	0.40 U	- -	- -	- -	- -	- -	- -	- -
TOTAL METALS														
Arsenic	mg/L	SW7060	0.005	- -	0.037	0.0033	0.011	- -	- -	- -	- -	- -	- -	- -
Barium	mg/L	SW6010		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Chromium	mg/L	SW6010		- -	0.230	0.011 U	0.036	- -	- -	- -	- -	- -	- -	- -
Lead	mg/L	SW7421	0.015	- -	0.078	0.0011 U	0.160	- -	- -	- -	- -	- -	- -	- -
Selenium	mg/L	SW6010		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Silver	mg/L	SW6010		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
DISSOLVED METALS														
Arsenic	mg/L	SW7060	0.005	- -	- -	- -	- -	- -	0.005	- -	0.35	- -	- -	- -
Barium	mg/L	SW6010		- -	- -	- -	- -	- -	0.044	- -	0.13	- -	- -	- -
VOLATILE ORGANICS														
1,2,4-Trimethylbenzene	µg/L	SW8260		- -	- -	- -	- -	0.47	2.4	0.41	- -	0.22	0.2 U	0.2 U
1,3,5-Trimethylbenzene	µg/L	SW8260		- -	- -	- -	- -	0.2 U	0.61	0.2 U	- -	0.2 U	0.2 U	0.2 U
Acetone	µg/L	SW8260		- -	- -	- -	- -	5 U	5.3	5 U	- -	5 U	5 U	5 U
Chloroethane	µg/L	SW8260		1.0 U	- -	- -	- -	1 U	1 U	1 U	- -	1 U	1 U	1 U
Chloromethane	µg/L	SW8260		1.0 U	- -	- -	- -	1 U	1 U	1 U	- -	1 U	1 U	1 U
cis-1,2-Dichloroethene	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.53	- -	0.2 U	0.2 U	0.2 U
Naphthalene	µg/L	SW8260	160	- -	- -	- -	- -	1 U	1 U	1 U	- -	1 U	5	1.1
p-Isopropyltoluene	µg/L	SW8260		- -	- -	- -	- -	0.2 U	0.2 U	0.4	- -	0.2 U	0.2 U	0.2 U
tert-Butylbenzene	µg/L	SW8260		- -	- -	- -	- -	0.2 U	0.2 U	0.2 U	- -	0.2 U	0.2 U	0.2 U
trans-1,3-Dichloropropene	µg/L	SW8260		0.20 U	- -	- -	- -	0.2 U	0.2 U	0.2 U	- -	0.2 U	0.2 U	0.2 U
Vinyl Chloride	µg/L	SW8260	0.2	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	- -	0.2 U	0.2 U	0.2 U

(Table continues)

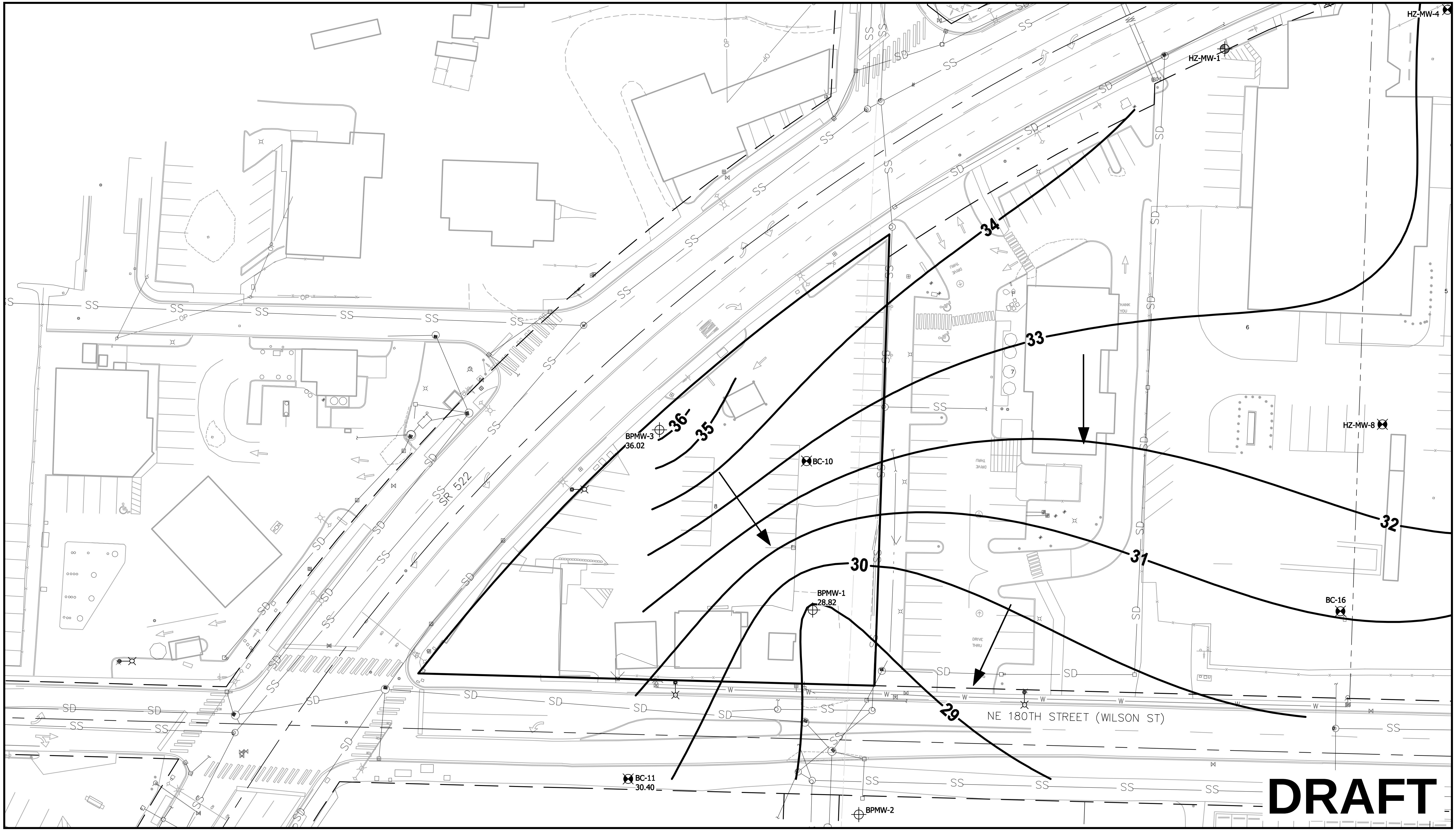
Table 3-4. Summary of Historical Groundwater Analytical Results

PARAMETERS	Units	Analytical Method	Sample No.: MTCA A	VB-7-W 2/14/2008	VB-7-W2 2/14/2008	VB-WD 2/14/2008	VB-10-W 2/14/2008	VB-11-W 4/3/2008	VB-12-W 4/3/2008
PETROLEUM HYDROCARBONS									
Motor Oil	mg/L	NWTPH-Dx	0.5	0.41 U	- -	0.4 U	- -	0.4 U	0.35 U
Gasoline Range Hydrocarbons	mg/L	NWTPH-Gx	0.8/1*G	0.100 U	- -	0.100 U	- -	0.100 U	0.100 U
Benzene	µg/L	SW8260	5	0.2 U	0.2 U	0.2 U	- -	- -	- -
Toluene	µg/L	SW8260	1,000	0.2 U	0.2 U	0.2 U	- -	- -	- -
Ethylbenzene	µg/L	SW8260	700	0.2 U	0.2 U	0.2 U	- -	- -	- -
m,p-Xylene	µg/L	SW8260	1,000*XY	0.4 U	0.4 U	0.4 U	- -	- -	- -
o-Xylene	µg/L	SW8260	1,000*XY	0.2 U	0.2 U	0.2 U	- -	- -	- -
Total Xylenes	µg/L	SW8260	1,000*XY	- -	- -	- -	- -	- -	- -
TOTAL METALS									
Arsenic	mg/L	SW7060	0.005	- -	- -	- -	- -	0.023	0.0046
Barium	mg/L	SW6010		- -	- -	- -	- -	0.044	0.028 U
Chromium	mg/L	SW6010		- -	- -	- -	- -	0.011 U	0.011 U
Lead	mg/L	SW7421	0.015	- -	- -	- -	- -	0.0011 U	0.0011 U
Selenium	mg/L	SW6010		- -	- -	- -	- -	0.0056 U	0.0056 U
Silver	mg/L	SW6010		- -	- -	- -	- -	0.011 U	0.011 U
DISSOLVED METALS									
Arsenic	mg/L	SW7060	0.005	- -	- -	- -	0.003 U	0.02	0.0041
Barium	mg/L	SW6010		- -	- -	- -	0.05	0.039	0.025 U
VOLATILE ORGANICS									
1,2,4-Trimethylbenzene	µg/L	SW8260		0.2 U	0.2 U	0.2 U	- -	- -	- -
1,3,5-Trimethylbenzene	µg/L	SW8260		0.2 U	0.2 U	0.2 U	- -	- -	- -
Acetone	µg/L	SW8260		5 U	5 U	5 U	- -	- -	- -
Chloroethane	µg/L	SW8260		1 U	1 U	1 U	- -	- -	- -
Chloromethane	µg/L	SW8260		1 U	1 U	1 U	- -	- -	- -
cis-1,2-Dichloroethene	µg/L	SW8260		0.2 U	0.2 U	0.2 U	- -	- -	- -
Naphthalene	µg/L	SW8260	160	1 U	1 U	1 U	- -	- -	- -
p-Isopropyltoluene	µg/L	SW8260		0.2 U	0.2 U	0.2 U	- -	- -	- -
tert-Butylbenzene	µg/L	SW8260		0.2 U	0.2 U	0.2 U	- -	- -	- -
trans-1,3-Dichloropropene	µg/L	SW8260		0.2 U	0.2 U	0.2 U	- -	- -	- -
Vinyl Chloride	µg/L	SW8260	0.2	0.2 U	0.2 U	0.2 U	- -	- -	- -

NOTES:
- - = Not analyzed or not collected
*G = 1 if no benzene ; 0.8 if benzene
*XY = Applies to the sum of all xylenes
U = Not detected above the given practical quantitation limit
Shaded values exceed MTCA A

UNITS:
mg/L = milligrams/liter
µg/L = micrograms/liter

SOURCES:
Model Toxics Control Act (MTCA) from WA Administrative Code 173-340-900
MTCA Method A Soil Cleanup Levels for Ground Water: Table 720-1



Parametrix DATE: Dec 08, 2009 FILE: BR1647019P02T0410_F-02-2

N

0 50

SCALE IN FEET

LEGEND

⊠ HWA 2007 PHASE II ESA WELL LOCATIONS

⊕ PMX 2009 RI/FS WELL LOCATIONS

— SITE BOUNDARY

27.06 GROUNDWATER TABLE ELEVATION MEASURED AT WELL ON 09/24/09

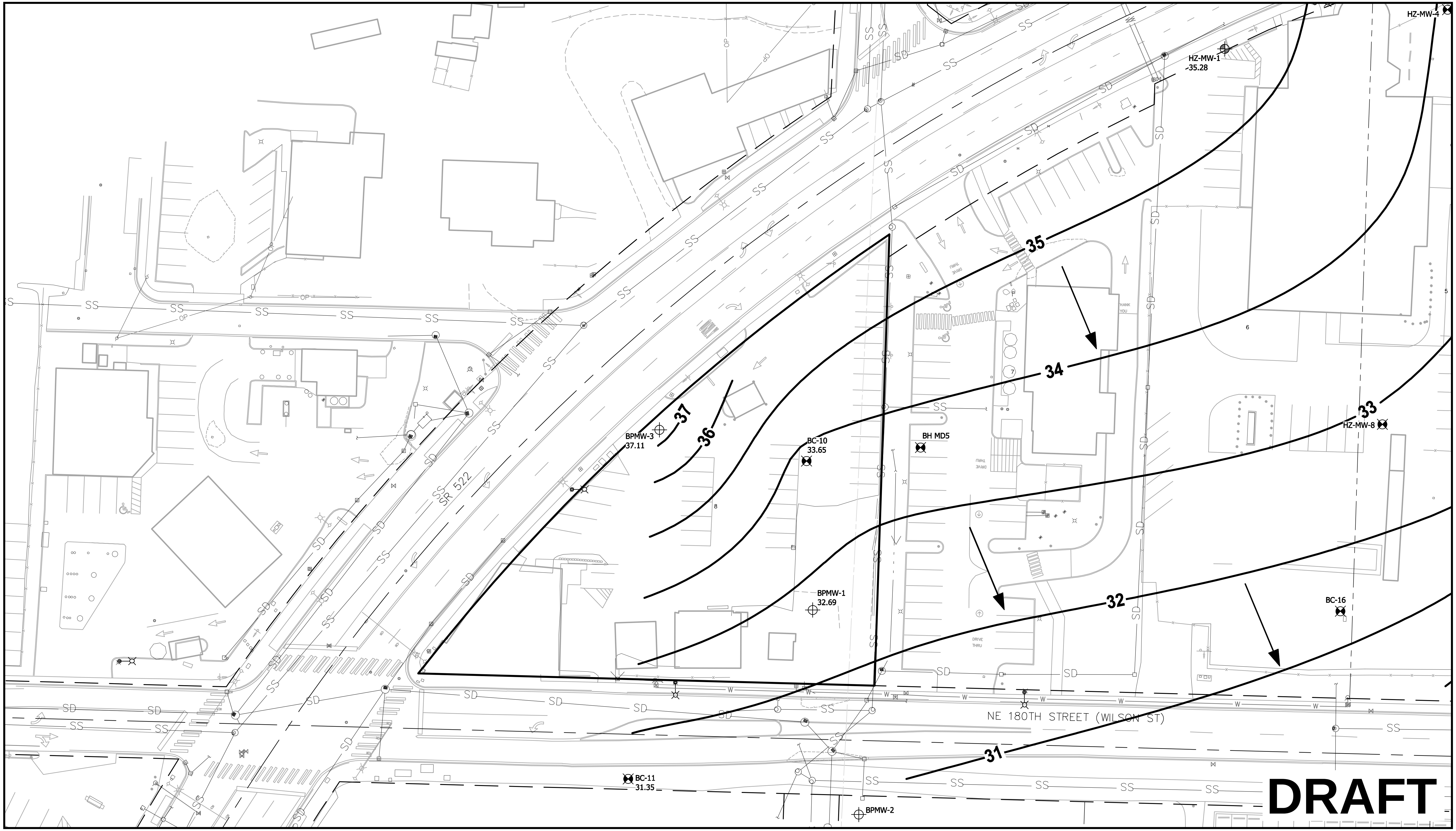
—29— INFERRED POTENTIOMETRIC SURFACE ELEVATION CONTOUR

← GROUNDWATER FLOW DIRECTION

NOTE:

CONTOUR DATUM: NAVD 88

Figure 2-2
City of Bothell
Bothell Paint & Decorating Site
September 2009 Potentiometric Surface



Parametrix DATE: Dec 08, 2009 FILE: BR1647019P02T0410_F-02-3

N

0 50

SCALE IN FEET

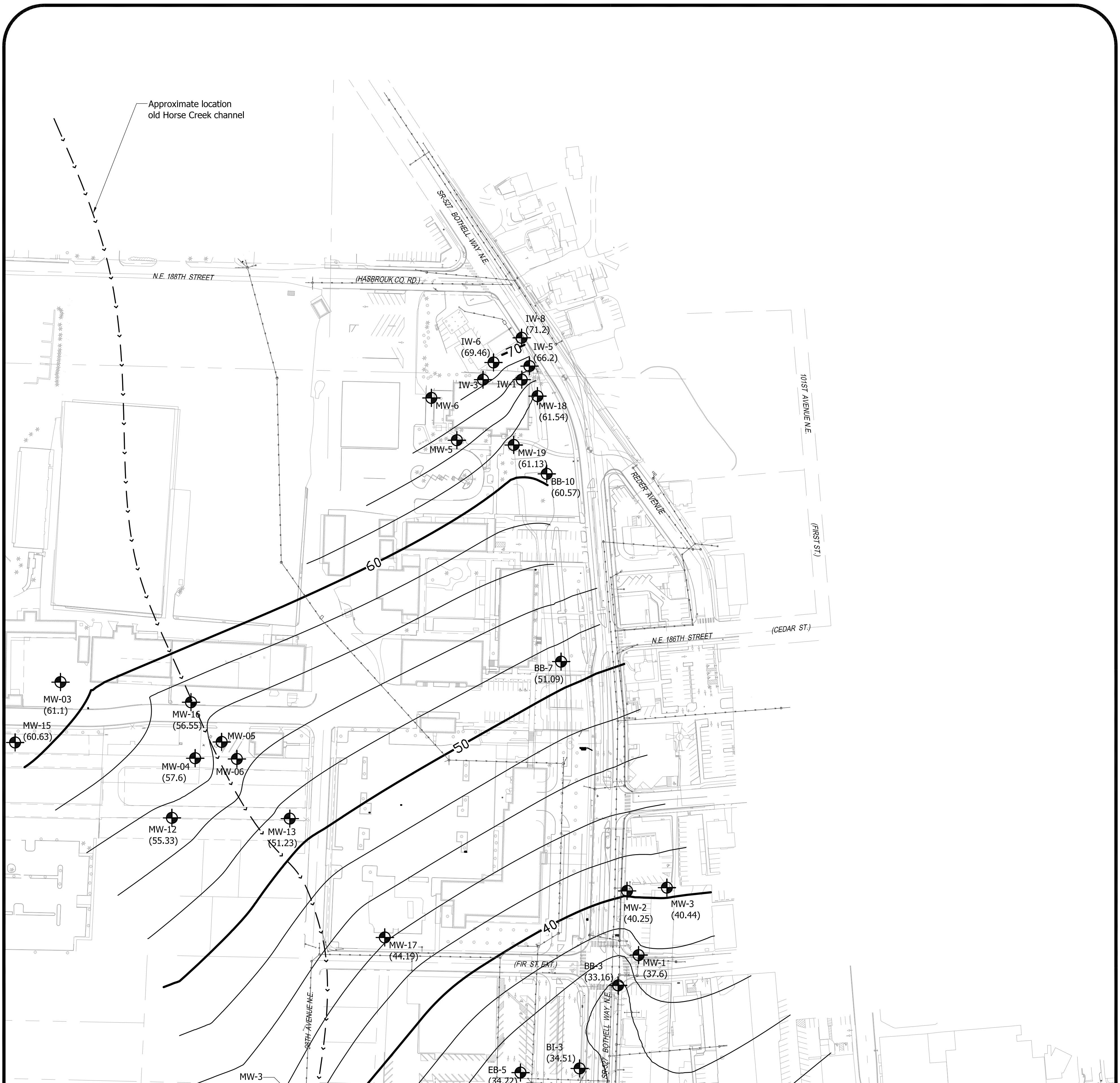
LEGEND

⊠	HWA 2007 PHASE II ESA WELL LOCATIONS	27.06	GROUNDWATER TABLE ELEVATION MEASURED AT WELL ON 11/06/09
⊕	PMX 2009 RI/FS WELL LOCATIONS	—29—	INFERRED POTENTIOMETRIC SURFACE ELEVATION CONTOUR
—	SITE BOUNDARY	←	GROUNDWATER FLOW DIRECTION

NOTE:

CONTOUR DATUM: NAVD 88

Figure 2-3
City of Bothell
Bothell Paint & Decorating Site
November 2009 Potentiometric Surface



BASE MAP PROVIDED BY:

HWA GEOSCIENCES INC.

Area-Wide Gradient Study
Bothell, Washington

Ground Water Gradient
August 29-31, 2012

DRAWN BY EFK	FIGURE # 1
CHECK BY VA	PROJECT # 2012-098 950
DATE: 09.07.12	

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T950.DWG <GW AUGUST 29-31-12> Plotted: 9/26/2012 3:12 PM

APPENDIX F
CLEANUP LEVEL DETERMINATION
(HWA, 2010)
(ON CD)

HWA GEOSCIENCES INC.
Geotechnical & Pavement Engineering • Hydrogeology • Geoenvironmental • Planning & Permitting • Inspection & Testing

November 4, 2010
HWA Project No. 2007 098-922

City of Bothell
9654 NE 182nd St.
Bothell, Washington 98021

Attention: Nduta Mbuthia, Project Engineer, Public Works Capital Projects

Subject: **CLEANUP LEVEL DETERMINATION**
Bothell Paint and Decorating Site
Interim Action Cleanup
Bothell, Washington

Dear Ms. Mbuthia:

This letter describes HWA GeoSciences Inc. (HWA's) determination of risk-based soil cleanup levels at the Bothell Paint and Decorating Site, per the Interim Action Work Plan dated April 2010.

1.0 Introduction

The City of Bothell conducted an interim action cleanup at the Bothell Paint and Decorating Site in August and September 2010, consisting of excavation and off site treatment/disposal of metals and petroleum contaminated soils.

In order to establish soil cleanup levels, selected soil samples were collected and analyzed for petroleum hydrocarbon fractionation (VPH/EPH) and other target compounds (BTEX, cPAHs, EDB, EDC, MTBE). The results of the VPH/EPH analyses were then input into Ecology's MTCATPH11.1 spreadsheet model to determine TPH cleanup levels that are protective of direct contact and ground water, per the Ecology approved Interim Action Work Plan. Information regarding the use of petroleum hydrocarbon fractionation data and Ecology's MTCAPH11.1 model to calculate the risk at a petroleum contaminated site is presented in *Workbook Tools for Calculating Soil and Ground Water Cleanup Levels under the Model Toxics Control Act Cleanup Regulation User's Guide* (Ecology Publication No. 01-09-073).

2.0 Method B Soil Cleanup Levels

MTCA Method B cleanup levels are the universal cleanup levels that typically employ a risk-based approach as outlined in WAC 173-340-708. Cleanup levels for a particular

21312 30th Drive SE
Suite 110
Bothell, WA 98021.7010

Tel: 425.774.0106
Fax: 425.774.2714
www.hwageo.com

site are determined after evaluating appropriate exposure pathway endpoints (e.g., direct contact, drinking water, nonpotable ground water, surface water, soil, wildlife, etc.) based on site use, contaminant distribution, etc. The actual clean up *standard* is then based on the calculated cleanup levels, measured at the point of compliance.

HWA evaluated Bothell Paint site soils with respect to Method B cleanup levels for TPH. Under MTCA, once the source of contamination is removed, risk-based Method B (residential exposure scenario) TPH cleanup levels can be established. Method B cleanup levels must be protective for all exposure pathways, including direct contact with soil, leaching to ground water, and volatilization to air. Per the approved work plan, exposure pathways evaluated include:

- Direct human contact
- Protection of ground water

The vapor/odor pathway was not evaluated at this site, per the Ecology approved Interim Action Work Plan due to the non-volatile nature of the heavy hydrocarbons encountered and the absence of buildings over affected areas. The ground water to surface water pathway was also not evaluated, as the site remedial investigation indicated contaminated ground water was not migrating off site towards the Sammamish River.

Soil and ground water pathways (listed above) are discussed in the following sections.

Calculation of Method B cleanup levels is based on petroleum hydrocarbon fractionation analytical methods, collectively referred to as method E-TPH, that include Ecology methods VPH/EPH for volatile and extractable petroleum hydrocarbon fractions, BTEX, gasoline additives (MTBE, EDB, and EDC), and polynuclear aromatic hydrocarbons (PAHs).

Compounds composed of carbon and hydrogen are divided into two classes: aromatic compounds, which contain benzene rings or similar rings of atoms, and aliphatic compounds, which do not contain aromatic rings. The VPH/EPH method uses a fractionation approach to evaluate complex petroleum mixtures typically found in petroleum fuels and lubricants. The VPH/EPH approach divides petroleum into 12 compound groups (7 aliphatic and 5 aromatic) based on equivalent carbon (EC) number, which relates to the boiling point of a hydrocarbon compound. Hydrocarbons in the same EC group are assumed to have similar chemical, physical, and toxicological properties for the purposes of establishing cleanup levels. Each compound group is treated as if it was an individual chemical. Risks posed by site soils are calculated for each compound group and then summed across compound groups. Predicted ground water concentrations caused by leaching from the current soil concentrations are also estimated for each compound group and then summed across compound groups to produce a total ground water concentration.

2.1 Direct Contact Pathway

In the MTCA Method B risk analysis, the human health risk level for individual carcinogens may not exceed one-in-a-million ($1x10^{-6}$). If more than one type of hazardous substance is present, the total excess carcinogenic risk level at the site may not exceed 1 in 100,000 ($1x10^{-5}$). Cleanup levels protective of direct contact with soil for individual noncarcinogenic compounds are calculated in terms of hazard quotient (HQ), and for two or more compounds having similar toxic response by a hazard index (HI) that is the sum of individual hazard quotients. A HQ or HI less than 1.0 indicates an acceptable noncarcinogenic risk under MTCA Method B. Adverse effects resulting from exposure to two or more hazardous or carcinogenic compounds are assumed to be additive.

HWA used Ecology's MTCATPH11.1 electronic spreadsheet model (available at http://www.ecy.wa.gov/programs/tcp/tools/toolmain.html) to calculate the Method B cleanup levels protective of direct contact with soil. Table 1 summarizes the calculated Method B cleanup levels protective of the direct contact pathway; Appendix A contains the MTCATPH11.1 spreadsheet summary printouts. Per Ecology guidance (Publication No. 01-09-073 cited above), concentrations of TPH compounds not detected at the laboratory's practical quantitation limit (PQL) were entered into MTCATPH11.1 as the laboratory's method detection limit (MDL) – a value typically 5 or more times less than the practical quantitation limit.

2.2 Protection of Ground Water

Protection of ground water was evaluated for two pathways:

- Leaching from soil to ground water
- Residual soil saturation (the TPH concentration in soil at which a non aqueous phase liquid (NAPL) will form)

2.2.1 Leaching from soil to ground water

Soil cleanup levels protective of ground water may be calculated by several methods:

- Partitioning models
- Leaching tests
- Alternative fate & transport models
- Empirical demonstration

The Method B analyses used to calculate risk-based soil cleanup levels at the Bothell Paint site included evaluation of the soil-to-ground water pathway using Ecology's partitioning models (WAC 173-340-747) for two scenarios: potable ground water and the default MTCA Method A ground water cleanup level as the protective concentrations.

Table 1 summarizes the calculated Method B soil cleanup levels protective of direct contact and ground water; Appendix A contains the MTCATPH11.1 spreadsheet summary printouts.

Table 1
Summary of Method B Soil TPH Risk Calculations
Bothell Paint Site

Release area	Former UST	Compressor blowdown	Fill soils		
TPH Type	Mineral spirits	Lube oil	Diesel and lube oil range hydrocarbons		
Sample	P-TP-23-2	P-TP-13-3	P-TP-1-3	P-TP-4-3	P-TP-18-2
Calculated Method B TPH cleanup level for direct contact (mg/Kg)	581	39,709	1,153	999	1,505
Most stringent soil risk criterion for direct contact	cPAHs mixture	Hazard Index	cPAHs mixture	cPAHs mixture	cPAHs mixture
Method B soil TPH concentration protective of ground water (mg/Kg)	100% NAPL[1]	100% NAPL	100% NAPL	100% NAPL	100% NAPL
Most stringent soil risk criterion for protection of ground water	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture
Method A soil cleanup levels (mg/Kg)	30[2] (G) 2000 (D) 2000 (O) 5 (Naphthalenes)[3] 0.10 (cPAHs TEC)[4]	2000 (D) 2000 (O) 5 (Naphthalenes) 0.10 (cPAHs TEC)			
Maximum value detected on site after cleanup[5]	<20 (G) 37 (D) 690 (O) 0.04 (Naphthalenes) 0.016 (cPAHs TEC)				
Cleanup levels met?	Method A Yes Method B Yes[6] TCs[7] Yes	Method A Yes Method B Yes TCs Yes	Method A Yes Method B Yes TCs Yes	Method A Yes Method B Yes TCs Yes	Method A Yes Method B Yes TCs Yes

Notes:

1 - 100% NAPL means soil containing free product would not produce a TPH concentration ≥800 µg/L in ground water
2 - Cleanup level for gasoline mixtures with benzene
3 - Sum of Napthalene + 1-Methylnaphthalene + 2-Methylnaphthalene
4 - Toxic Equivalent Concentration of carcinogenic polynuclear aromatic hydrocarbons (cPAHs) per WAC 173-340-708(e)
5 - Exclusive of SR522 sidewall, which is not accessible for cleanup due to the active roadway, but will be cleaned up in 2011 after the roadway is vacated
6 - EPH/VPH values were based on NWTPH-G and NWTPH-D results due to lab QC issues, (see discussion below and Appendix A)
7 - TCs: Cleanup levels for all target compounds (PAHs, EDB, EDC, MTBE, benzene, naphthalenes) were met as indicated by laboratory analysis for the individual compounds

2.2.2. Residual soil saturation

Evaluation of residual saturation concentrations is also required. Residual saturation refers to the soil concentration at which a nonaqueous phase liquid (a.k.a., NAPL or "free product") may form on or in soil or ground water. Residual saturation may be evaluated under MTCA using default screening values or an empirical demonstration. Criteria for an empirical demonstration include:

- NAPL has not formed in soil or ground water at the site
- NAPL will not form in the future, i.e., sufficient time has elapsed for migration of hazardous substances from soil into ground water to occur and that the characteristics of the site (e.g., depth to ground water and infiltration) are representative of future site conditions.

Both of these criteria are met at the site, as no NAPL has been observed in soil or ground water, and the impacted soils have likely been in place for at least 10 years prior to removal from the site.

3.0 Discussion

It is possible to extrapolate the results of the risk calculation to estimate a Method B soil "cleanup level" for total TPH concentrations at the site based on the most stringent pathway. This requires the assumption that the hydrocarbon fractions in the soil sample represents the distribution of hydrocarbon fractions in all residual petroleum hydrocarbons at the site. In general, this assumption is valid for sites where the residual hydrocarbons derive from a single source, or single type of fuel, which appears to be the case at each of the three source areas at this site, based on analytical results. Using this assumption, HWA extrapolated the risk results to indicate an appropriate Method B soil cleanup level for each of the three known release areas at the site, as summarized in Table 1.

HWA evaluated the potential risk to human health and the environment based on TPH concentrations in soil. Based on the Method B evaluation, site confirmation soil samples exclusive of the State Route 522 sidewall (which is not accessible for cleanup due to the active roadway, but will be cleaned up in 2011 after the roadway is vacated) met the Method B, residential exposure scenario TPH cleanup levels for direct contact (i.e., HI less than 1, individual compound carcinogen risk less than 1E-6, and total carcinogen risk less than 1E-5), and protection of ground water (leaching as predicted by partitioning models and empirical demonstration of residual saturation).

Soil sample P-TP-23-2 collected in the area of the former underground storage tank contained 280 mg/Kg of primarily lube oil range TPH (considerably below the 2,000 mg/Kg Method A cleanup level), as well as cPAHs (also below Method A and B cleanup

levels). No benzene, EDB, or EDC were detected above laboratory reporting limits. The EPH/VPH sample analysis, however, did not detect any aliphatic and aromatic TPH across the entire TPH range, suggesting sample non-heterogeneity or laboratory QC issues. This sample was split and sent to two subcontracted laboratories by the initial laboratory, which likely impacted sample integrity. Subsequent samples were not handled in this manner. The MTCATPH11.1 model was therefore populated with EPH/VPH values proportional to the sample's detected TPH concentrations in the gasoline, diesel and oil ranges.

4.0 Summary

Confirmation soil samples in all accessible cleanup areas (with the exception of soil remaining under the active SR 522 roadway, which will be cleaned up in 2011) met all applicable cleanup levels, including:

- Method A soil cleanup levels for TPH and all individual target compounds
- Method B soil cleanup levels for all individual target compounds
- Method B TPH soil cleanup levels protective of 1) direct contact, and 2) protection of ground water, calculated per Ecology's MTCATPH11.1 spreadsheet model based on the most stringent pathways

Residual soil at the site in all accessible areas (except under the SR 522 roadway) has been remediated to MTCA Method A or B cleanup levels, and therefore poses no risk to direct-contact exposure under a residential scenario, or to ground water by leaching.

* * *

We appreciate the opportunity to provide our services on this project. Please feel free to call us if you have any questions or need more information.

Sincerely,
HWA GeoSciences Inc.

Hydrogeologist
170
Arnon Sugar

11-4-10

Geologist
Hydrogeologist
327
NORMAN C. NIELSEN

11/4/10

Arnie Sugar, LG, LHG	Norm Nielsen, LG, LHG, PMP
President	Senior Hydrogeologist

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/11/10
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-1-3

Notes for Data Entry
Set Default Hydrogeology
Clear All Soil Concentration Data Entry Cells
Restore All Soil Concentration Data cleared previously

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	0.0603	0.01%
AL_EC >6-8	0.0404	0.00%
AL_EC >8-10	6.1	0.69%
AL_EC >10-12	46	5.23%
AL_EC >12-16	150	17.05%
AL_EC >16-21	56	6.36%
AL_EC >21-34	280	31.82%
AR_EC >8-10	6	0.69%
AR_EC >10-12	8	0.90%
AR_EC >12-16	36	4.09%
AR_EC >16-21	49.6867	5.65%
AR_EC >21-34	239.9993	27.28%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0	0.00%
Naphthalene	0.21	0.02%
1-Methyl Naphthalene	0.81	0.09%
2-Methyl Naphthalene	0.56	0.06%
n-Hexane	0.0603	0.01%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.069	0.01%
Benzo(b)fluoranthene	0.048	0.01%
Benzo(k)fluoranthene	0.000308	0.00%
Benzo(a)pyrene	0.066	0.01%
Chrysene	0.13	0.01%
Dibenz(a,h)anthracene	0.000342	0.00%
Indeno(1,2,3-cd)pyrene	0.000373	0.00%
Sum	879.831	100.00%

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	800	ug/L

REMARK:
Bothell Paint site pot hole sample
MTCA Method A cleanup level = 800 mg/Kg because benzene was detected in ground water in onsite monitoring wells

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/11/2010
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-1-3
Measured Soil TPH Concentration, mg/kg: **879.831**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	1,153	7.63E-07	2.76E-01	Pass
	Method C	40,129	1.89E-07	2.19E-02	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	100% NAPL	8.69E-10	2.35E-01	Pass
	Target TPH GW Conc. @ 800 ug/L	100% NAPL	NA	NA	Pass

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	1,153.11	40,129.24
Most Stringent Criterion	Risk of cPAHs mixture= 1E-6	HI =1

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	*NO*	3.19E+03	2.77E-06	1.00E+00	YES	4.01E+04	8.64E-06	1.00E+00
Total Risk=1E-5	*NO*	1.15E+04	1.00E-05	3.61E+00	*NO*	4.64E+04	1.00E-05	1.16E+00
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	YES	1.15E+03	1.00E-06	3.61E-01				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	NA
Protective Ground Water Concentration, ug/L	NA
Protective Soil Concentration, mg/kg	**Soil-to-Ground Water is not a critical pathway!**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	9.25E+01	8.60E-10	2.69E-01	100% NAPL
Total Risk = 1E-5	YES	9.25E+01	8.60E-10	2.69E-01	100% NAPL
Total Risk = 1E-6	YES	9.25E+01	8.60E-10	2.69E-01	100% NAPL
Risk of cPAHs mixture= 1E-5	YES	9.25E+01	8.60E-10	2.69E-01	100% NAPL
Benzene MCL = 5 ug/L	NA	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 78000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	9.25E+01	8.60E-10	2.69E-01	**100% NAPL**

Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Main Data Entry Form and Calculation Summary

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/12/10
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-4-3

Notes for Data Entry | **Set Default Hydrogeology**
Clear All Soil Concentration Data Entry Cells
Restore All Soil Concentration Data cleared previously

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	0.0480	0.02%
AL_EC >6-8	0.0404	0.02%
AL_EC >8-10	0.0512	0.03%
AL_EC >10-12	4.2	2.16%
AL_EC >12-16	13	6.68%
AL_EC >16-21	14	7.19%
AL_EC >21-34	100	51.35%
AR_EC >8-10	0	0.02%
AR_EC >10-12	1	0.32%
AR_EC >12-16	4.4	2.26%
AR_EC >16-21	10.9237	5.61%
AR_EC >21-34	46.9993	24.13%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0	0.00%
Naphthalene	0.032	0.02%
1-Methyl Naphthalene	0.11	0.06%
2-Methyl Naphthalene	0.14	0.07%
n-Hexane	0.0603	0.03%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.017	0.01%
Benzo(b)fluoranthene	0.011	0.01%
Benzo(k)fluoranthene	0.000308	0.00%
Benzo(a)pyrene	0.017	0.01%
Chrysene	0.031	0.02%
Dibenz(a,h)anthracene	0.000342	0.00%
Indeno(1,2,3-cd)pyrene	0.000373	0.00%
Sum	194.7407	100.00%

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	800	ug/L

REMARK:
Bothell Paint site pot hole sample
MTCA Method A cleanup level = 800 mg/Kg because benzene was detected in ground water in onsite monitoring wells

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/12/2010
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-4-3
Measured Soil TPH Concentration, mg/kg: **194.741**

1. Summary of Calculation Results

Exposure Pathway	**Method/Goal**	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	999	1.95E-07	4.10E-02	Pass
	Method C	40,228	4.84E-08	3.32E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	100% NAPL	1.17E-09	8.55E-02	Pass
	Target TPH GW Conc. @ 800 ug/L	100% NAPL	NA	NA	Pass

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	**Method C: Industrial Land Use**
Protective Soil Concentration, TPH mg/kg	**998.85**	**40,227.71**
Most Stringent Criterion	**Risk of cPAHs mixture= 1E-6**	**Total Risk=1E-5**

Soil Criteria	**Protective Soil Concentration @Method B**				**Protective Soil Concentration @Method C**			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	*NO*	4.75E+03	4.76E-06	1.00E+00	*NO*	5.87E+04	1.46E-05	1.00E+00
Total Risk=1E-5	*NO*	9.99E+03	1.00E-05	2.10E+00	YES	4.02E+04	1.00E-05	6.86E-01
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	YES	9.99E+02	1.00E-06	2.10E-01				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**NA**
Protective Ground Water Concentration, ug/L	**NA**
Protective Soil Concentration, mg/kg	**Soil-to-Ground Water is not a critical pathway!**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	3.07E+01	1.15E-09	1.40E-01	100% NAPL
Total Risk = 1E-5	YES	3.07E+01	1.15E-09	1.40E-01	100% NAPL
Total Risk = 1E-6	YES	3.07E+01	1.15E-09	1.40E-01	100% NAPL
Risk of cPAHs mixture= 1E-5	YES	3.07E+01	1.15E-09	1.40E-01	100% NAPL
Benzene MCL = 5 ug/L	NA	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 77000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	3.07E+01	1.15E-09	1.40E-01	**100% NAPL**

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/12/10
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-13-3

Notes for Data Entry | Set Default Hydrogeology
Clear All Soil Concentration Data Entry Cells
Restore All Soil Concentration Data cleared previously

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	0.0480	0.00%
AL_EC >6-8	0.0404	0.00%
AL_EC >8-10	0.0512	0.00%
AL_EC >10-12	0.491	0.02%
AL_EC >12-16	0.3525	0.02%
AL_EC >16-21	35	1.66%
AL_EC >21-34	2000	94.68%
AR_EC >8-10	0	0.00%
AR_EC >10-12	1	0.03%
AR_EC >12-16	0.6281	0.03%
AR_EC >16-21	0.0092	0.00%
AR_EC >21-34	74.9993	3.55%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0	0.00%
Naphthalene	0.000159	0.00%
1-Methyl Naphthalene	0.000151	0.00%
2-Methyl Naphthalene	0.000307	0.00%
n-Hexane	0.0603	0.00%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.000338	0.00%
Benzo(b)fluoranthene	0.00039	0.00%
Benzo(k)fluoranthene	0.000308	0.00%
Benzo(a)pyrene	0.000261	0.00%
Chrysene	0.0079	0.00%
Dibenz(a,h)anthracene	0.000342	0.00%
Indeno(1,2,3-cd)pyrene	0.000373	0.00%
Sum	2112.349311	100.00%

REMARK:
Bothell Paint site pot hole sample
MTCA Method A cleanup level = 800 mg/Kg because benzene was detected in ground water in onsite monitoring wells

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	800	ug/L

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/12/2010
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-13-3
Measured Soil TPH Concentration, mg/kg: **2,112.349**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc RISK @	With Measured Soil Conc HI @	Does Measured Soil Conc Pass or Fail?
Protection of Soil Direct Contact: Human Health	Method B	39,709	4.97E-09	5.32E-02	Pass
	Method C	478,924	1.23E-09	4.41E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	100% NAPL	3.25E-12	6.91E-03	Pass
	Target TPH GW Conc. @ 800 ug/L	100% NAPL	NA	NA	Pass

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

Warning! Check Residual Saturation (WAC340-747(10)).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	**39,708.79**	**478,924.20**
Most Stringent Criterion	**HI =1**	**HI =1**

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	YES	3.97E+04	9.34E-08	1.00E+00	YES	4.79E+05	2.80E-07	1.00E+00
Total Risk=1E-5	*NO*	4.25E+06	1.00E-05	1.07E+02	*NO*	1.71E+07	1.00E-05	3.58E+01
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	*NO*	4.25E+05	1.00E-06	1.07E+01				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**NA**
Protective Ground Water Concentration, ug/L	**NA**
Protective Soil Concentration, mg/kg	**Soil-to-Ground Water is not a critical pathway!**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	1.78E+00	3.26E-12	7.56E-03	100% NAPL
Total Risk = 1E-5	YES	1.78E+00	3.26E-12	7.56E-03	100% NAPL
Total Risk = 1E-6	YES	1.78E+00	3.26E-12	7.56E-03	100% NAPL
Risk of cPAHs mixture= 1E-5	YES	1.78E+00	3.26E-12	7.56E-03	100% NAPL
Benzene MCL = 5 ug/L	NA	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 69000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	1.78E+00	3.26E-12	7.56E-03	**100% NAPL**

Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Main Data Entry Form and Calculation Summary

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/12/10
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-18-2

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	0.0480	0.01%
AL_EC >6-8	0.0404	0.01%
AL_EC >8-10	2.8	0.58%
AL_EC >10-12	14	2.88%
AL_EC >12-16	41	8.43%
AL_EC >16-21	22	4.52%
AL_EC >21-34	250	51.37%
AR_EC >8-10	0	0.01%
AR_EC >10-12	2	0.50%
AR_EC >12-16	12	2.47%
AR_EC >16-21	21.8860	4.50%
AR_EC >21-34	119.9785	24.65%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0	0.00%
Naphthalene	0.065	0.01%
1-Methyl Naphthalene	0.073	0.02%
2-Methyl Naphthalene	0.088	0.02%
n-Hexane	0.0603	0.01%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.024	0.00%
Benzo(b)fluoranthene	0.016	0.00%
Benzo(k)fluoranthene	0.01	0.00%
Benzo(a)pyrene	0.026	0.01%
Chrysene	0.038	0.01%
Dibenz(a,h)anthracene	0.0095	0.00%
Indeno(1,2,3-cd)pyrene	0.012	0.00%
Sum	486.6421	100.00%

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	800	ug/L

Notes for Data Entry **Set Default Hydrogeology**

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

REMARK:
Bothell Paint site pot hole sample
MTCA Method A cleanup level = 800 mg/Kg because benzene was detected in ground water in onsite monitoring wells

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/12/2010
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-18-2
Measured Soil TPH Concentration, mg/kg: **486.642**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	1,505	3.23E-07	1.08E-01	Pass
	Method C	55,972	8.03E-08	8.69E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	100% NAPL	7.02E-10	1.00E-01	Pass
	Target TPH GW Conc. @ 800 ug/L	100% NAPL	NA	NA	Pass

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	**Method C: Industrial Land Use**
Protective Soil Concentration, TPH mg/kg	**1,504.65**	**55,972.28**
Most Stringent Criterion	**Risk of cPAHs mixture= 1E-6**	**HI =1**

Soil Criteria	**Protective Soil Concentration @Method B**				**Protective Soil Concentration @Method C**			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	*NO*	4.50E+03	2.99E-06	1.00E+00	YES	5.60E+04	9.24E-06	1.00E+00
Total Risk=1E-5	*NO*	1.50E+04	1.00E-05	3.34E+00	*NO*	6.06E+04	1.00E-05	1.08E+00
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	YES	1.50E+03	1.00E-06	3.34E-01				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**NA**
Protective Ground Water Concentration, ug/L	**NA**
Protective Soil Concentration, mg/kg	**Soil-to-Ground Water is not a critical pathway!**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	3.15E+01	6.95E-10	1.24E-01	100% NAPL
Total Risk = 1E-5	YES	3.15E+01	6.95E-10	1.24E-01	100% NAPL
Total Risk = 1E-6	YES	3.15E+01	6.95E-10	1.24E-01	100% NAPL
Risk of cPAHs mixture= 1E-5	YES	3.15E+01	6.95E-10	1.24E-01	100% NAPL
Benzene MCL = 5 ug/L	NA	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 77000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	3.15E+01	6.95E-10	1.24E-01	**100% NAPL**

Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Main Data Entry Form and Calculation Summary

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/14/10
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-23-2

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	1.6	0.58%
AL_EC >6-8	1.6	0.58%
AL_EC >8-10	1.6	0.58%
AL_EC >10-12	0.736	0.27%
AL_EC >12-16	10.35	3.73%
AL_EC >16-21	10.35	3.73%
AL_EC >21-34	218.5	78.69%
AR_EC >8-10	2	0.72%
AR_EC >10-12	0.92	0.33%
AR_EC >12-16	9.89	3.56%
AR_EC >16-21	9.89	3.56%
AR_EC >21-34	9.89	3.56%
Benzene	0.0000011	0.00%
Toluene	0.00265	0.00%
Ethylbenzene	0.00055	0.00%
Total Xylenes	0.00105	0.00%
Naphthalene	0.00355	0.00%
1-Methyl Naphthalene	0.0185	0.01%
2-Methyl Naphthalene	0.038	0.01%
n-Hexane	0.1	0.04%
MTBE	0.0000011	0.00%
Ethylene Dibromide (EDB)	0.0000011	0.00%
1,2 Dichloroethane (EDC)	0.0000011	0.00%
Benzo(a)anthracene	0.028	0.01%
Benzo(b)fluoranthene	0.032	0.01%
Benzo(k)fluoranthene	0.024	0.01%
Benzo(a)pyrene	0.037	0.01%
Chrysene	0.031	0.01%
Dibenz(a,h)anthracene	0.0096	0.00%
Indeno(1,2,3-cd)pyrene	0.029	0.01%
Sum	277.6809044	100.00%

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	800	ug/L

Notes for Data Entry **Set Default Hydrogeology**

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

REMARK:
This is test 4 using MTCATPH11.1 for a synthetic TPH that is:
3.05% gasoline
14.58% diesel
82.25% oil (primarily EC 21-34 aliphatics)
and useing OnSite Environmental's reported PAH results (Method 8270D/SIM) which were the only VPH/EPH-related detects in the original analyses.

Also, entered benzene, MTBE, EDB, and EDC at 0.001 x MDL

Original NWTPH-Gx/Dx analysis was:
3.08% gasoline
14.66% diesel (assuming diesel was present at the PQL of 41 mg/kg)
82.26% oil

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/14/2010
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-23-2
Measured Soil TPH Concentration, mg/kg: **277.681**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	581	4.78E-07	2.43E-02	Pass
	Method C	23,386	1.19E-07	1.96E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	100% NAPL	3.45E-07	1.17E-01	Pass
	Target TPH GW Conc. @ 800 ug/L	100% NAPL	NA	NA	Pass

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	**580.75**	**23,385.60**
Most Stringent Criterion	**Risk of cPAHs mixture= 1E-6**	**Total Risk=1E-5**

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	*NO*	1.14E+04	1.96E-05	1.00E+00	*NO*	1.42E+05	6.06E-05	1.00E+00
Total Risk=1E-5	*NO*	5.81E+03	1.00E-05	5.09E-01	YES	2.34E+04	1.00E-05	1.65E-01
Risk of Benzene= 1E-6	*NO*	4.58E+09	7.90E+00	4.02E+05	NA			
Risk of cPAHs mixture= 1E-6	YES	5.81E+02	1.00E-06	5.09E-02				
EDB	*NO*	2.74E+06	4.73E-03	2.40E+02				
EDC	*NO*	2.56E+09	4.41E+00	2.25E+05				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**NA**
Protective Ground Water Concentration, ug/L	**NA**
Protective Soil Concentration, mg/kg	**Soil-to-Ground Water is not a critical pathway!**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	1.43E+02	2.18E-06	1.91E-01	100% NAPL
Total Risk = 1E-5	YES	1.43E+02	2.18E-06	1.91E-01	100% NAPL
Total Risk = 1E-6	YES	1.17E+02	1.00E-06	1.66E-01	1.24E+03
Risk of cPAHs mixture= 1E-5	YES	1.43E+02	2.18E-06	1.91E-01	100% NAPL
Benzene MCL = 5 ug/L	YES	1.43E+02	2.18E-06	1.91E-01	100% NAPL
MTBE = 20 ug/L	YES	1.43E+02	2.18E-06	1.91E-01	100% NAPL

Note: 100% NAPL is 70000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	1.43E+02	2.18E-06	1.91E-01	**100% NAPL**

APPENDIX G

Memorandum, Response to Statistical Methods Proposal: Bothell Paint and Decorating, To: Jerome Cruz, Senior Hydrogeologist, Uplands Unit, Toxics Cleanup Program Northwest Regional Office, From: Arthur Buchan, Toxicologist, Information & Policy Section, Toxics Cleanup Program, Date: December 29, 2015

DEPARTMENT OF
ECOLOGY
State of Washington

Memorandum

Response to Statistical Methods Proposal: Bothell Paint and Decorating

To: Jerome Cruz, Senior Hydrogeologist
Uplands Unit
Toxics Cleanup Program
Northwest Regional Office

From: Arthur Buchan, Toxicologist
Information & Policy Section
Toxics Cleanup Program

AB
12-29-15

Date: December 29, 2015

Summary of Issue

The Policy and Technical Support Unit was asked to review a proposed Statistical Analysis [As] (Appendix G) from HWA Project No. 2007-098-2021(Bothell Paint and Decorating) and provide a response (with discussion) verifying whether the submitted document meets the intent and requirements of the Washington State Department of Ecology (Ecology), Model Toxics Control Act (MTCA) Compliance Monitoring Procedures (WAC 173-340-740(7) (d) (i through vi)). The document that was reviewed was "*Appendix G, Arsenic Statistical Analysis, From: Bothell Paint and Decorating Site*" (HWA GeoSciences Inc., 2015).

Response

It is recommended that the statistical procedures proposed in the document do not meet the requirements of WAC 173-340-740(7) (d) (i through vi) for the following reason(s):

- "HWA employed the statistical technique of proxy or substitution, assigning proxy values to the non-detect data of either 1) values spaced evenly from zero to the PQL, or 2) values randomly distributed from zero to the PQL (Wendelberger and Campbell, 1994). HWA generated random numbers between 0.0 and 16 mg/kg (the maximum PQL for the dataset) using Excel's Data Analysis Tool."
    a. It is recommended that substitution at ½ the DL is used for censored values. However, in the document: *Statistical Guidance for Ecology Site Managers*

(Ecology, 1992), it states that "If more than 50% of the values are non-detects (Case 3), the data cannot be analyzed regardless of the number of detection limits. The *Statistical Guidance for Ecology Site Managers* Supplement S-6 recommends using the maximum value in the data set in place of the upper 95% confidence limit. For other options, see pp. 8-9 of Supplement S-6." This is consistent with the regulatory language [WAC 173-340-740(7) (f) (iv)]. It appears that approximately 90% of the values are censored, so either the maximum value, or other options listed in the document would be appropriate.

Available Options that are Recommended

The recommended available options for calculation of a 95% UCL with a high percentage of censored values are:

- Use the maximum value in the data set in place of the upper 95% confidence limit. The resulting value is 25 mg/kg [As].
- Substitute the censored values with the corresponding PQL (substitution at 1x the detection limit). The resulting value (based on a Z statistic) is 13.6 mg/kg [As] (Appendix A).
- Substitute the censored values using Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs for a 95% KM (Percentile Bootstrap) UCL of 12.1 mg/kg [As] as described in the *Sediment Cleanup Users Manual II* (Ecology, 2015) (Appendix A).

Discussion

To avoid the need for these alternative statistical methods, it is recommended for future site work that a lower detection limit is obtained to achieve more uncensored data. In addition, "J" flagged results should also be reported as uncensored.

Summary

It is recommended that the HWA technique of generated random numbers between 0.0 and the maximum PQL for the dataset using Excel's Data Analysis Tool is not considered an "alternate statistical procedure for handling nondetected values or values below the practical quantitation limit" until it can be further verified that it should be considered appropriate. Other statistical techniques (as described above) are available for consideration.

Please contact me if you have any questions or concerns.

References

Ecology. (1992). *Washington State Department of Ecology Toxics Cleanup Program: Statistical Guidance for Ecology Site Managers.* Olympia, WA: Washington State Department of Ecology. Publication No. 92-54.

Ecology. (2007). *Model Toxics Control Act Statute and Regulation.* Olympia, WA: Washington State Department of Ecology. Publication No. 94-06.

Ecology. (2015). *Sediment Cleanup Users Manual II: Guidance for Implementing the Cleanup Provisions of the Sediment Management Standard, Chapter 173-204 WAC.* Olympia, WA: Washington State Department of Ecology. Publication No. 12-09-057.

HWA GeoSciences LLC. (2015). *Memorandum to file: Appendix G: Arsenic Statistical Analysis (on CD).* HWA Project No. 2007-098-20.

Appendix A

MTCAStat and ProUCL Output

Compliance calculations

Bothell Paint [As] (Censored Values at x1 the DL)

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```
        Number of samples                        Uncensored values
               Uncensored       43                            Mean        12.79
                 Censored                             Lognormal mean      12.77
     Detection limit or PQL                                Std. devn. 3.02280187
     Method detection limit                                   Median         12
                    TOTAL       43                              Min.        8.5
                                                                Max.         25

Lognormal distribution?                  Normal distribution?
r-squared is:                  0.800     r-squared is:              0.701
Recommendations:
Reject lognormal distribution.
W value is 0.8192.  This is less than the tabled value of 0.943
Reject normal distribution.
W value is 0.7241.  This is less than the tabled value of 0.943

                    UCL (based on Z-statistic) is 13.551
```

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```
UCL Statistics for Data Sets with Non-Detects

User Selected Options
Date/Time of Computation        9/24/2015 6:51
From File                     WorkSheet.xls
Full Precision                OFF
Confidence Coefficient                    95%
Number of Bootstrap Operations           2000

Arsenic

General Statistics
Total Number of Observations                          43 Number of Distinct Observations                       10
Number of Detects                                      5 Number of Non-Detects                                 38
Number of Distinct Detects                             5 Number of Distinct Non-Detects                         7
Minimum Detect                                        14 Minimum Non-Detect                                   8.5
Maximum Detect                                        25 Maximum Non-Detect                                    16
Variance Detects                                    18.7 Percent Non-Detects                               88.37%
Mean Detects                                        19.2 SD Detects                                         4.324
Median Detects                                        20 CV Detects                                         0.225
Skewness Detects                                   0.145 Kurtosis Detects                                  -0.927
Mean of Logged Detects                             2.934 SD of Logged Detects                               0.229

Normal GOF Test on Detects Only
Shapiro Wilk Test Statistic                         0.97 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value                     0.762 Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic                          0.173 Lilliefors GOF Test
5% Lilliefors Critical Value                       0.396 Detected Data appear Normal at 5% Significance Level
Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs
Mean                                               9.751 Standard Error of Mean                             0.628
SD                                                 3.678    95% KM (BCA) UCL                                12.51
95% KM (t) UCL                                     10.81 95% KM (Percentile Bootstrap) UCL                  12.14
```

```
  95% KM (z) UCL                                          10.78   95% KM Bootstrap t UCL                          10.24
90% KM Chebyshev UCL                                      11.63 95% KM Chebyshev UCL                              12.49
97.5% KM Chebyshev UCL                                    13.67 99% KM Chebyshev UCL                                 16

Gamma GOF Tests on Detected Observations Only
A-D Test Statistic                                        0.232 Anderson-Darling GOF Test
5% A-D Critical Value                                     0.679 Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic                                        0.206 Kolmogrov-Smirnoff GOF
5% K-S Critical Value                                     0.357 Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only
k hat (MLE)                                               24.26 k star (bias corrected MLE)                       9.836
Theta hat (MLE)                                           0.792 Theta star (bias corrected MLE)                   1.952
nu hat (MLE)                                              242.6 nu star (bias corrected)                          98.36
MLE Mean (bias corrected)                                  19.2 MLE Sd (bias corrected)                           6.122

Gamma Kaplan-Meier (KM) Statistics
k hat (KM)                                                 7.03 nu hat (KM)                                       604.6
Approximate Chi Square Value (604.60, α)                  548.6 Adjusted Chi Square Value (604.60, β)             546.7
  95% Gamma Approximate KM-UCL (use when n>=50)           10.75   95% Gamma Adjusted KM-UCL (use when n<50)       10.78

Gamma ROS Statistics using Imputed  Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates
Minimum                                                    0.01 Mean                                              3.875
Maximum                                                      25 Median                                             0.01
SD                                                        6.469 CV                                                1.669
k hat (MLE)                                               0.228 k star (bias corrected MLE)                       0.228
Theta hat (MLE)                                           16.99 Theta star (bias corrected MLE)                   17.02
nu hat (MLE)                                              19.62 nu star (bias corrected)                          19.58
MLE Mean (bias corrected)                                 3.875 MLE Sd (bias corrected)                            8.12
```

		Adjusted Level of Significance (β)	0.0444
Approximate Chi Square Value (19.58, α)	10.54	Adjusted Chi Square Value (19.58, β)	10.31
95% Gamma Approximate UCL (use when n>=50)	7.196	95% Gamma Adjusted UCL (use when n<50)	7.357
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.967	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.206	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.396	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	7.385	Mean in Log Scale	1.812
SD in Original Scale	5.131	SD in Log Scale	0.601
95% t UCL (assumes normality of ROS data)	8.701	95% Percentile Bootstrap UCL	8.663
95% BCA Bootstrap UCL	9.055	95% Bootstrap t UCL	9.053
95% H-UCL (Log ROS)	8.818		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	2.233	95% H-UCL (KM -Log)	10.37
KM SD (logged)	0.264	95% Critical H Value (KM-Log)	1.746
KM Standard Error of Mean (logged)	0.0452		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.513	Mean in Log Scale	1.915
SD in Original Scale	4.543	SD in Log Scale	0.397
95% t UCL (Assumes normality)	8.678	95% H-Stat UCL	8.214
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			

95% KM (t) UCL	10.81	95% KM (Percentile Bootstrap) UCL	12.14

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

APPENDIX H

DOCUMENTATION OF INTERIM ACTION AT BOTHELL PAINT AND DECORATING SITE
BOTHELL, WASHINGTION (HWA, 2011)

(ON CD)

DOCUMENTATION OF INTERIM ACTION AT FORMER BOTHELL PAINT AND DECORATING SITE
BOTHELL, WASHINGTON

Prepared for
City of Bothell

January 14, 2011

HWA GEOSCIENCES INC.

- *Geotechnical Engineering*
- *Hydrogeology*
- *Geoenvironmental Services*
- *Inspection & Testing*

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES (FOLLOWING TEXT)

APPENDICES

DOCUMENTATION OF INTERIM ACTION AT
FORMER BOTHELL PAINT AND DECORATING SITE
BOTHELL, WASHINGTON

1.0 INTRODUCTION

This report documents the results of the interim action soil cleanup conducted in August and September 2010 for the City of Bothell (City) at the former Bothell Paint and Decorating Site (Site) (Figure 1). The City currently owns the Site, most of which will accommodate the realignment of State Route (SR) 522, which is currently under construction (Bothell Crossroads Project). Figure 2 depicts the future alignment of SR 522 through the Site and adjacent properties.

The interim action cleanup was performed in compliance with the terms and conditions of Amendment No. 1 to Agreed Order Number DE 6296 as amended on June 9, 2010 between the Washington Department of Ecology (Ecology) and the City. The interim action cleanup reported herein is not complete, because contaminated soil known to be present under the active SR 522 roadway was left in place in the northern extent of the Site due to inaccessibility. Since the roadway is still operational, these measures were also taken to protect the structural integrity of the existing roadway and related sidewalks and utilities. To prevent re-contamination, the contaminated soils left in place were isolated from the clean fill in the remediation area/s by applying Oxygen Release Compound® (ORC) and installing a barrier of polyethylene sheeting. Remaining soils under the existing roadway will be addressed under a subsequent construction phase, i.e. during Crossroads Phase III which is scheduled to commence in the summer of 2011. After the new SR 522 roadway is constructed and the old roadway is vacated, the areas that are currently inaccessible will be addressed and a Draft Interim Action Cleanup Report will be submitted to Ecology, within 60 days of completing all of the interim actions, pursuant to Exhibit C of the Agreed Order. Tasks performed to date to fulfill the Agreed Order include:

1. Preparation and submittal to Ecology of the *Remedial Investigation and Feasibility Study Work Plan* (HWA, 2009a)
2. Remedial investigation (RI) activities in 2009
3. Initiation of a feasibility study (FS) in 2009
4. Preparation and submittal to Ecology of the *Bothell Paint and Decorating Remedial Investigation/Feasibility Study,* which has not been finalized or approved pending completion of interim actions and monitoring (Parametrix, 2009)

5. Preparation and submittal to Ecology of an *Interim Action Work Plan* (Parametrix, 2010)
6. Completion of the first phase of interim action soil cleanup, described herein

Remaining tasks to fulfill terms and conditions of the Agreed Order include preparation of an RI, FS, RI/FS report and draft cleanup action plan (DCAP) that addresses contaminated soil and ground water remaining at the Site following interim remedial actions.

SITE LOCATION AND DESCRIPTION

The City owns the 0.79-acre Site located at 18004 and 18005 Bothell Way NE (King County Tax Parcel Nos. 945720-0081 and 945720-0072). Ecology's Facility Site ID is # 93536765. The latitude of the site is 47.75885 and the longitude is -122.21012.

The City acquired two parcels comprising the Site from Victory Development LLC, and from Leonard P. Giannola in 2008 (Ecology, 2010). Recent property use was mixed commercial and retail. The Site is being redeveloped as part of the City's overall Downtown Revitalization Plan and will mostly accommodate the new SR 522 roadway.

1.1 AUTHORIZATION / SCOPE OF WORK

HWA GeoSciences' (HWA) work for this project was authorized under an On-Call Hazardous Materials Services Consultant Agreement with the City dated April 2010. HWA's scope of work for this portion of the project included:

- Perform environmental assessments, prepare technical documentation and develop remedial designs for cleanup of contaminated downtown properties.
- Provide permitting support
- Provide contract bid phase services
- Assist in coordinating with State and Federal environmental regulatory agencies.
- Conduct cleanup monitoring, confirmation sampling, backfill & compaction monitoring during construction
- Prepare this Interim Action Soil Cleanup Report

1.2 OBJECTIVES

The objective of the interim action soil cleanup was to reduce the threat to the environment and human health posed by petroleum and metals impacted soil at the Site to the maximum extent possible consistent with the requirements of Washington's Model Toxics Control Act (MTCA) cleanup regulations (Chapter 173-340 WAC).

1.3 HISTORIC PROPERTY USE AND PREVIOUS SITE ASSESSMENTS

Details of historic property use and the several site assessments performed to date at the Site can be found in HWA (2008a, b, c, d), HWA (2009b), and Parametrix (2009). The following is a summary of those assessments.

A former tenant conducted sandblasting operations in the southern portion of the Site (Figure 3) resulting in shallow soils containing metals and petroleum hydrocarbons in concentrations exceeding MTCA cleanup levels cited in Chapter 173-340 WAC. Heavy metals in soils were from surficial deposition of sandblast grit and paint residue. Shallow petroleum soil impacts were from an air compressor blowdown pipe discharging to the ground surface. One soil sample contained cadmium exceeding Washington State Dangerous Waste requirements (Chapter 173-303 WAC) (Ecology, 2010). Ground water samples collected in this area had lead and arsenic concentrations exceeding MTCA cleanup levels (HWA, 2008c, d).

A 1,000-gallon underground storage tank (UST) was removed in the western area of the Site in 1988 (Figure 3). A hole in the UST was observed at the time of removal. Petroleum liquid (free product) was reported in the excavation on the surface of ground water. A soil sample collected from the sidewall of the excavation during tank removal contained petroleum hydrocarbons above MTCA cleanup levels (HWA, 2008a). Further environmental investigations were conducted by HWA (2008c, d) and Parametrix (2009) at the property. During those investigations, low concentrations (below MTCA cleanup levels) of volatile organic compounds were detected in ground water adjacent to the former leaking UST.

1.5 CURRENT AND PLANNED SITE USE

Recent property use was mixed commercial and retail, including a floor covering and home fixtures retailer, preserved fruit distributor, pottery distributor, welding shop, and espresso kiosk. The Site will be redeveloped as part of the City's overall Downtown Revitalization Plan, and will mostly accommodate the new SR 522 roadway and related utilities and infrastructure. Future use of remnant portions of the Site not under the new roadway is expected to be mixed use (possibly retail, parking, and/or park amenities) under the City's Downtown Revitalization Plan (Parametrix, 2010).

2.0 ENVIRONMENTAL SETTING

2.1 PHYSICAL CONDITIONS / TOPOGRAPHY

The property and surrounding land is generally flat lying at an elevation of approximately 30 feet above mean sea level and slopes gently to the south/southeast towards the Sammamish River. A small retaining wall at the west-central portion of the site was removed, and the land filled and graded to accommodate the new roadway after the interim action soil cleanup described herein.

2.2 GEOLOGY

Site soils typically consist of silty sand fill over alluvial soil consisting of interbedded silt and peat. Interbedded alluvial sand and silt occurs below the peat. Much of the fill material is likely dredged spoils placed on the property from realignment of the Sammamish River in the 1960s (HWA, 2008d). Peat or silt beds with high organic content up to 13 feet thick are present within the alluvial soil, generally at depths greater than 7 feet below ground surface (bgs). These compressible, organic-rich beds appear to underlie much of the Site.

2.4 HYDROGEOLOGY

Ground water generally occurs between approximately 2 and 9.5 feet bgs, with confined artesian (flowing) conditions observed in one area, at the southwest portion of the site. Based on water level surveys of the area, ground water flow is to the east-southeast, toward the Sammamish River located approximately 300 feet to the southeast. The measured ground water gradient, i, ranged from 0.035 to 0.06 feet per foot. The estimated hydraulic conductivity, K, for the water-bearing zone ranged from 6.8×10^{-4} to 1.1×10^{-3} feet per minute (0.98 to 1.58 feet per day) based on slug testing (Parametrix, 2009). Assuming an effective porosity, n_e, of 0.2 for the aquifer materials at the site, ground water flow velocities in the water-bearing zone, based on the relationship $V = Ki / n_e$ are estimated to range from:

0.98 ft/d x 0.03536 / 0.2 = 0.17 feet/day = 63 feet/year to
1.58 ft/d x 0.0576 / 0.2 = 0.45 feet/day = 166 feet/year.

3.0 NATURE AND EXTENT OF CONTAMINATION

3.1 CHEMICALS OF POTENTIAL CONCERN

Based on the draft *Remedial Investigation/Feasibility Study* (Parametrix, 2009), chemicals of potential concern (COPCs) present in Site soils included arsenic, cadmium, and lead; diesel- and motor oil-range petroleum hydrocarbons; and benzene. For ground water, arsenic was the only COPCs listed in the RI/FS.

The *Interim Action Work Plan* (Parametrix, 2010) included barium, chromium, silver, and mercury as additional soil COPCs. For ground water, the *Interim Action Work Plan* included lead as an additional COPC.

Because barium, chromium, silver, or mercury were never detected in Site soil and lead was never detected in Site ground water at concentrations exceeding MTCA Method A or B cleanup levels during the RI or interim action cleanup they should be dropped as COPCs during future RI activities. Total petroleum hydrocarbons in the gasoline range, however, should be added to the soil COPC list, as it was detected in soils during the interim action cleanup. Similarly, benzene and total petroleum hydrocarbons (gasoline-, diesel-, and motor oil-range) should be added to the ground water COPC list because of their presence in Site soils.

Based on this information, soil COPCs for future site RI activities should include:

- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- Benzene
- Arsenic, cadmium, and lead

Ground water COPCs for future site RI activities should include:

- Total petroleum hydrocarbons (gasoline-, diesel-, and motor oil-range)
- Benzene
- Arsenic

3.2 EXTENT OF CONTAMINATION

Sandblasting operations in the southern portion of the Site resulted in shallow soils containing metals concentrations exceeding MTCA cleanup levels. Ground water samples collected in this area had lead and arsenic concentrations exceeding MTCA cleanup levels (HWA, 2008c, d). Discharge of compressor blowdown oil to the ground surface resulted in shallow soils containing petroleum hydrocarbons exceeding MTCA cleanup levels.

The leaking 1,000-gallon UST in the western area of the Site resulted in total petroleum hydrocarbon (TPH) concentrations above MTCA soil cleanup levels. Concentrations below MTCA cleanup levels of volatile organic compounds were detected in ground water adjacent to the former leaking UST (Ecology, 2010).

3.2 CLEANUP STANDARDS

Remediation levels proposed in the *Interim Action Work Plan* (Parametrix, 2010) include:

- MTCA Method A Soil Cleanup Levels for Unrestricted Land Use (WAC 173-340, Table 740-1).
- MTCA Method B TPH Soil Cleanup Levels for direct contact and protection of ground water

An evaluation of Method B risk-based TPH soil cleanup levels for the Site was specified in Section 3.1.1.1 of the *Compliance Monitoring Quality Assurance Project Plan* (CMQAPP) appendix of the *Interim Action Work Plan* (Parametrix, 2010). The CMQAPP called for characterization of TPH-impacted soil via analysis of petroleum hydrocarbon fractionation and other target compounds in order to evaluate whether the standard MTCA Method A soil cleanup levels were appropriate for the Site compared to MTCA Method B risk-based soil TPH cleanup levels. The results of the petroleum hydrocarbon fractionation analyses (NWVPH/NWEPH analysis) were to be input into Ecology's MTCATPH11.1 spreadsheet model to determine TPH soil cleanup levels protective of human health via direct contact and via leaching to a source of potable ground water. HWA's evaluation of MTCA Method B risk-based cleanup levels for TPH-impacted soil at the site is presented in Appendix A of this report. Table 1 summarizes the results of the analysis. The calculated Method B cleanup levels for diesel and lube oil range petroleum hydrocarbons at the Site range between approximately 1,000 to 1,500 milligrams per kilogram (mg/kg) depending on the mixture of hydrocarbon fractions and specific compounds, particularly carcinogenic polynuclear aromatic hydrocarbons (cPAHs). The MTCA Method A cleanup level for diesel and oil range petroleum hydrocarbons is 2,000 mg/kg. The calculated Method B soil cleanup level for gasoline range petroleum hydrocarbons at the Site is 581 mg/kg; compared to the MTCA Method A cleanup level of 100 mg/kg for soil having no benzene present and the total of ethylbenzene, toluene, and xylenes is less than one percent of the gasoline mixture. The MTCA Method cleanup level for gasoline range petroleum hydrocarbons is 30 mg/kg for all other mixtures.

The resulting soil remediation levels used (i.e., the more stringent of Method A or B) are extremely conservative, as most of the site will be covered by a five lane roadway, eliminating the direct contact pathway, and reducing ground water recharge by precipitation. These remediation levels meet all the requirements of WAC 173-340-720 through 173-340-760 and should be considered the Site cleanup levels.

3.4 REMEDIAL ACTION OBJECTIVES

The following remedial action objectives were established for the interim action cleanup (Parametrix, 2009):

- Achieve the MTCA Method A soil cleanup levels for TPH, benzene, arsenic, cadmium, and lead.
- Reduce or eliminate human exposure through direct contact (incidental soil ingestion, skin contact with soil, and inhalation of vapors) with contaminated soils that exceed protective regulatory levels.
- Reduce or eliminate risks to ecological receptors from contaminated soil.
- Use permanent solutions to the maximum extent practicable (which includes consideration of cost-effectiveness).

4.0 INTERIM ACTION SOIL CLEANUP

The interim action for contaminated soil at the Site included excavation and off-site disposal of all accessible impacted soils. The following sections describe the cleanup.

The City engaged a construction contractor, Hos Brothers Construction (Contractor) of Woodinville, Washington to perform the interim action soil cleanup in August through October of 2010; HWA personnel monitored the cleanup activities and sampled soil to confirm successful cleanup. Prior to site cleanup, the Contractor demolished all the building slabs and parking lots and cleared and grubbed the Site in preparation for the soil cleanup and subsequent construction of the SR 522 realignment.

4.1 PRE-CLEANUP CHARACTERIZATION

Prior to large scale excavation activities at the Site, HWA personnel conducted test pit characterization (i.e., “pot holing”) to delineate clean overburden soils at the Site, and to assess the lateral and vertical extent of TPH and metals impacted soils with respect to previous investigations.

HWA’s test pit characterization activities included collecting samples of TPH-impacted soil for analysis of petroleum hydrocarbon fractionation and other target compounds in order to calculate MTCA Method B risk-based soil cleanup levels for protection of human health and potable ground water. The results of the of the Method B risk analysis are presented in Appendix A and summarized in Table 1.

Twenty seven test pits were excavated between August 25th and 27th 2010 using a rubber-tired backhoe operated by the Contractor; Figure 4 shows test pit locations. Test pits were excavated to a maximum depth of 8 feet bgs. HWA personnel collected a total of 42 representative soil samples at various depths within the test pits for chemical analysis. An additional 6 soil samples were collected in some of the deeper test pits but were put on hold at the laboratory in the event that analysis of shallower test pit soils indicated that analysis of deeper soil was not warranted. OnSite Environmental Inc. of Redmond, Washington, an Ecology accredited laboratory, performed the soil analyses; laboratory reports are presented in Appendix B. Appendix C presents a project quality assurance audit including verification of the analytical data; the audit found that with minor exceptions, all reported data should be considered valid as qualified and acceptable for further use.

4.2 SOIL EXCAVATION

The Contractor excavated contaminated soil at the Site between September 9 and October 11, 2010. HWA personnel directed the cleanup based upon prior sampling, as well as field screening information such as soil color, odor, and photoionization detector readings. When the screening information indicated clean soil, HWA collected confirmation samples for laboratory analysis to document that the soils left in place met the Site cleanup levels. Where confirmation sample results exceeded cleanup levels, the Contractor and HWA performed additional excavation and sampling until the cleanup goals were achieved.

Soil excavation generally proceeded from south to north. Contaminated soil was excavated generally down to the contact with a peat horizon underlying the site (Photo 1 in Appendix D), which was found to meet the cleanup levels. The approximate limits of soil excavation are shown on Figure 4. The final excavation was approximately 150 by 180 feet in its maximum width and length. The depth of the excavation ranged from approximately 4 to 11 feet bgs.

Along the northern property boundary, contaminated soil was left in place adjacent to SR 522 to protect the structural integrity of the active roadway and associated sidewalk and underground utilities (Photo 3 in Appendix D). Soils excavated in the northern portion of the Site contained sections of cut logs, broken concrete, and small quantities of metal and glass debris from about 2 to 10 feet bgs and lying immediately above the peat horizon (Photos 3 through 5 in Appendix D). The Contractor segregated and stockpiled the broken concrete for recycling (after HWA testing confirmed it was not contaminated) and transported the other debris with contaminated soil to the CEMEX USA (formerly Rinker) Inert Materials Landfill facility in Everett, Washington for thermal desorption treatment followed by permitted landfill disposal. Contaminated soils that could not be treated by thermal desorption were transported to alternate licensed disposal facilities.

A total of 7,083.05 tons of soil were excavated and transported to the CEMEX facility. Assuming a bulk density of 1.6 tons per bank cubic yard, the volume of soil excavated and transported to CEMEX was approximately 4,427 cubic yards. A copy of the CEMEX Release of Liability/Certificate of Disposal for the soil is presented in Appendix E.

A total of 56.22 tons of metals-impacted soil presumed to be sandblast grit was disposed of at the Allied Waste Services / Regional Disposal Company RCRA Subtitle D landfill in Klickitat County, Washington. These soils were located in the vicinity of one sample found to contain cadmium exceeding Washington State Dangerous Waste requirements, and were visually segregated and stockpiled for testing. The additional testing determined the soil did not classify as Dangerous Waste (Table 2). The Certificate of Disposal for this soil is presented in Appendix E.

4.3 CONFIRMATION SAMPLING

A total of 22 excavation sidewall and 10 excavation bottom samples were collected to confirm soil cleanup (Table 2). Figure 4 depicts confirmation sample locations. Laboratory certificates are included in Appendix B. Sixteen pre-excavation test pit samples collected at the extents of the excavation, and in some cases beyond, are included in Table 2 as confirmation samples because the soils represented by those samples did not contain chemicals of potential concern at concentrations exceeding site cleanup levels. Other than the soils left under the active SR 522 roadway (to be cleaned up in a future phase), the interim action cleanup achieved the site cleanup levels.

Confirmation samples included contaminated soil left in place along SR 522. As discussed in Section 5.2 above, contaminated soil along SR 522 was left in place to protect the structural integrity of the road and associated sidewalk and underground utilities. These soils will be cleaned up in a future phase of the interim action, planned for summer of 2011, after the new SR 522 roadway is constructed and the old roadway is vacated.

Of the 49 confirmation samples collected (not including the soils left under the active SR 522 roadway to be cleaned up in a future phase), all but one did not contain any COPCs above the established cleanup levels. One sidewall location in the northwestern portion of the Site represented by sample P-PEX-19 had an arsenic concentration of 21 mg/kg and its duplicate sample had an arsenic concentration of 25 mg/kg; both concentrations slightly exceeded the MTCA Method A cleanup level of 20 mg/kg.

Site-wide compliance with the MTCA cleanup level is established based on the 95 percent upper confidence limit (UCL) of the mean of all confirmation soil sample concentrations. In addition, the following criteria must also be met:

- Data must be normally or lognormally distributed
- No single value can be greater than twice the cleanup level
- No more than 10 percent of samples can exceed the cleanup level

Per the *Statistical Guidance for Ecology Site Managers* (Ecology, 1992), and using Ecology’s Microsoft Excel-based workbook for calculating compliance statistics, SITE97.XLT (Ecology, 1997), HWA established that the above listed criteria were met, and calculated that the mean arsenic concentration (at a 95 percent UCL) of the confirmation samples was approximately 12 mg/kg, i.e., less than the MTCA Method A soil cleanup level of 20 mg/kg. The SITE97 statistical analysis is presented in Appendix F.

4.4 GROUND WATER MANAGEMENT

Minor ground water seepage was present at approximately 8 to 10 feet below original grade at the Site (Photo 5 in Appendix D). Ground water flow into the excavation was managed by creating sumps and ponding the water behind soil berms. Accumulated water was removed with a gasoline powered ‘trash’ pump for temporary storage and settling in an on-site 20,000 gallon storage tank. This dewatering effluent was stored, tested, and discharged by the Contractor under a King County Industrial Waste Division temporary dewatering discharge permit to sanitary sewer, for treatment at King County's wastewater treatment plant.

4.5 ORC PLACEMENT

To facilitate bioremediation following soil removal, the Contractor applied 750 pounds of Oxygen Release Compound® (ORC) along excavation sidewalls where TPH contaminated soil was left in place. The ORC was prepared by mixing the powdered compound with water in an excavator bucket to form a slurry (Photo 6 in Appendix D). The Contractor applied ORC along the northern northwest sidewall along SR 522 at the elevation of ground water seeps (Photo 7). HWA estimates that the ORC will slowly release dissolved oxygen to ground water for approximately a year following cleanup thus encouraging destruction of residual hydrocarbons in soil and ground water by naturally-occurring aerobic bacteria in the soil; which, in addition to the polyethylene sheeting barrier will reduce the possibility of re-contamination of clean fill south of the impacted soils.

The polyethylene sheeting was placed on this excavation sidewall prior to backfilling to 1) reduce the possibility of re-contamination of clean fill south of the impacted soils, and 2) provide a marker for the planned second phase of soil cleanup in 2011.

4.6 WELL DECOMMISSIONING AND EXTENSION

Prior to cleanup actions at the Site, Slead Construction Inc, a Washington State licensed well drilling contractor under subcontract to the Contractor, decommissioned ground water monitoring well BPMW-3 in accordance with WAC 173-160-381. This well was decommissioned because of its location within the cleanup excavation.

The riser pipes of monitoring wells MW-1 and BC-10, both located just outside the footprint of the new roadway, were extended to accommodate the higher grade of the Site after placement of a soil preload (see Section 5.7). After removing the well monuments, the riser pipes were extended by attaching a length of bell-ended 2-inch schedule 40 PVC pipe to the top of the existing well riser pipes. The pipes were joined using stainless steel pop rivets.

4.7 SITE RESTORATION

After excavation of contaminated soil and receipt of confirmation sample analytical results, the Contractor backfilled and compacted the excavation with clean imported structural fill soils meeting the requirements of Select Borrow, per WSDOT Standard Specification 2-03.3(14)K. The imported select borrow was obtained from CEMEX, who mined the sandy soils from a quarry in Granite Falls, Washington (i.e., native quarry materials not excavated or reused from another developed property).

The select borrow and native soils were compacted to Method B of WSDOT Standard Specification 2-03.3(14)C, i.e., 90 percent of maximum dry density as determined using test method ASTM D 1557 (Modified Proctor) below two feet bgs, and 95 percent of maximum dry density for the upper two feet.

The backfilling occurred in stages as portions of the Site were confirmed to have been cleaned up. The excavation was generally backfilled from the south to north as contaminated soil was removed from the Site.

The Contractor placed additional clean imported soils to approximately 15 feet above original grade to preload the site prior to constructing the SR 522 realignment. The purpose of the preload was to consolidate compressible peat soils prior to construction of the roadway.

5.0 REFERENCES

HWA GeoSciences, 2008a, *Phase I Environmental Site Assessment, Victory Development Property, 18004 Bothell Way NE, Bothell, Washington*. Prepared for City of Bothell, April 24, 2008.

HWA GeoSciences, 2008b, *Phase I Environmental Site Assessment, Giannola Parcel / Parcel No. 9457200072, 18004 Bothell Way NE, Bothell, Washington*. Prepared for City of Bothell, April 25, 2008.

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Washington Department of Ecology, 1997, *SITE97.XLT Workbook for Calculating Compliance Statistics* (www.ecy.wa.gov/programs/tcp/tools/toolmain.html).

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6.0 LIMITATIONS

The conclusions expressed by HWA are based solely on material referenced in this report. Observations were made under the conditions stated. Within the limitations of scope, schedule and budget, HWA attempted to execute these services in accordance with generally accepted professional principles and practices in the area at the time the report was prepared. No warranty, expressed or implied, is made. Experience has shown that subsurface soil and ground water conditions can vary significantly over small distances. It is always possible that contamination may exist in areas that were not sampled. HWA's findings and conclusions must not be considered as scientific or engineering certainties, but rather as our professional opinion concerning the significance of the limited data gathered and interpreted during the course of the assessment.

This study and report have been prepared on behalf of City of Bothell, for the specific application to the subject property. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

* * *

We appreciate the opportunity to provide professional services on this project. Please feel free to call us if you have any questions or need more information.

Sincerely,

HWA GEOSCIENCES INC.

State of Washington Licensed Geologist
Geologist Hydrogeologist 327
NORMAN C. NIELSEN
1/14/11

Norm Nielsen, LG, LHG
Senior Hydrogeologist

State of Washington Licensed Geologist
Hydrogeologist 170
Arnon Sugar
1-14-11

Arnie Sugar, LG, LHG
President

Table 1
Summary of Site-Specific MTCA Method B Soil TPH Cleanup Levels
Bothell Paint and Decorating Site

Release area	**Former UST**	**Compressor blowdown**	**Fill soils**		
TPH Type	**Mineral spirits**	**Lube oil**	**Diesel and lube oil range hydrocarbons**		
Sample	**P-TP-23-2**	**P-TP-13-3**	**P-TP-1-3**	**P-TP-4-3**	**P-TP-18-2**
Calculated Method B TPH cleanup level for direct contact (mg/Kg)	581	39,709	1,153	999	1,505
Most stringent soil risk criterion for direct contact	cPAHs mixture	Hazard Index	cPAHs mixture	cPAHs mixture	cPAHs mixture
Method B soil TPH concentration protective of ground water (mg/Kg)	100% NAPL[1]	100% NAPL	100% NAPL	100% NAPL	100% NAPL
Most stringent soil risk criterion for protection of ground water	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture
Method A soil cleanup levels (mg/Kg)	30[2] (G) 2000 (D) 2000 (O) 5 (Naphthalenes)[3] 0.10 (cPAHs TEC)[4]	2000 (D) 2000 (O) 5 (Naphthalenes) 0.10 (cPAHs TEC)			

Notes:

1 - 100% NAPL means soil containing free product would not produce a TPH concentration ≥800 µg/L in ground water

2 - Cleanup level for gasoline mixtures with benzene

3 - Sum of Napthalene + 1-Methylnaphthalene + 2-Methylnaphthalene

4 - Toxic Equivalent Concentration of carcinogenic polynuclear aromatic hydrocarbons (cPAHs) per WAC 173-340-708(e)

TABLE 2
SOIL CLEANUP ANALYTICAL RESULTS
BOTHELL PAINT AND DECORATING SITE
(all results in milligrams per kilogram (mg/kg))

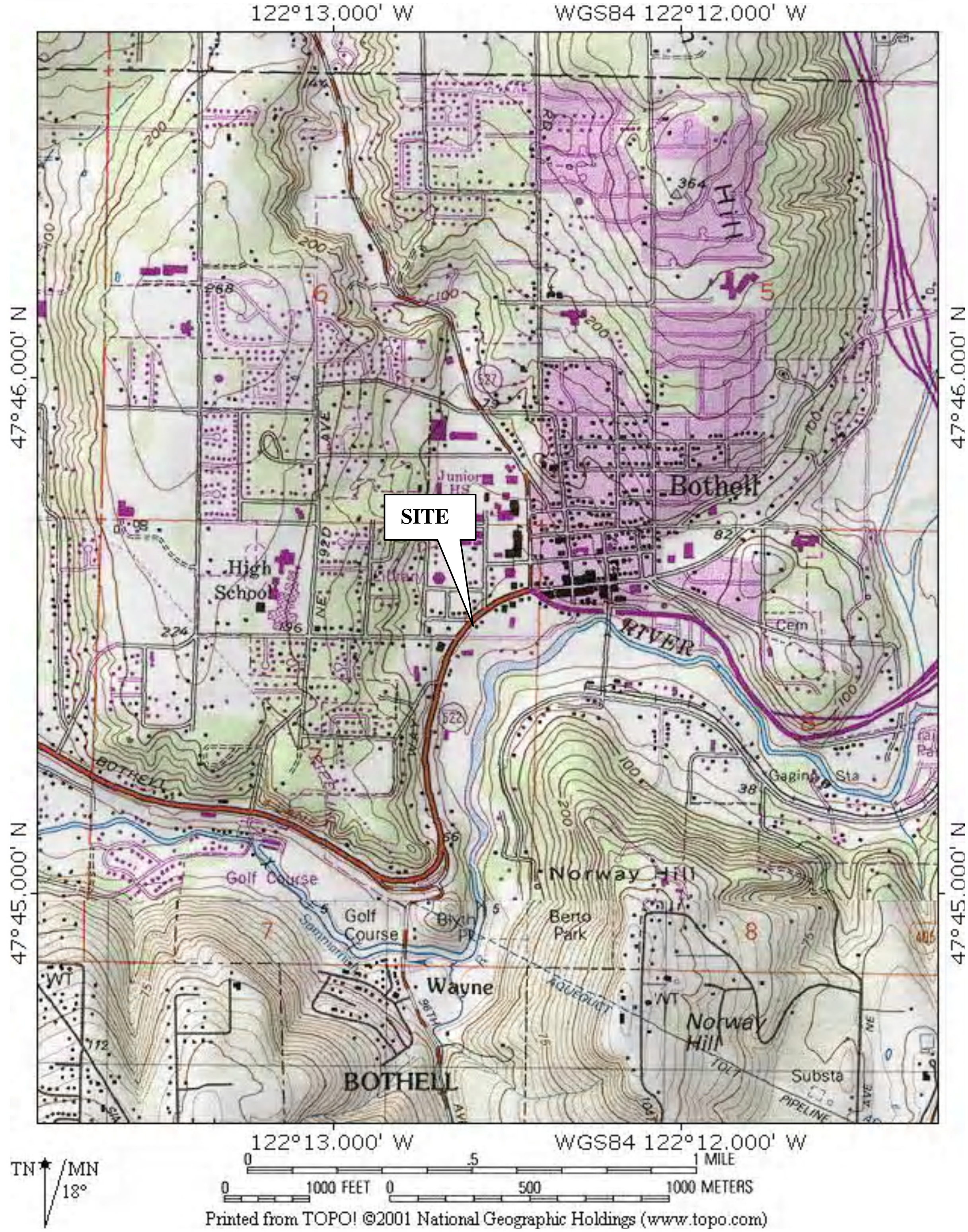
		Confirmation Sample[1]															
Sample Location	**Sample Depth ft bgs**	**Sidewall**	**Bottom**	**Diesel**	**Oil**	**Gasoline**	**Arsenic**	**Barium**	**Cadmium**	**Chromium**	**Lead**	**Mercury**	**Selenium**	**Silver**	**Total Naphthalenes[2]**	**cPAHs TEC[3]**	**Notes**
P-TP-1-3	3			**280**	**950**	<5.8	**34**	**74**	<0.58	**29**	**130**	<0.29	<12	<0.58	**1.58**	**0.079**	Excavated as of 9/3
P-TP-1-6	6	X		<39	**100**		<16	**100**	<0.78	**67**	<7.8	<0.39	<16	<0.78			
P-TP-2-2	2			**810**	**3700**												Excavated as of 9/3
P-TP-2-6	6	X		**37**	**180**										0.000	0.000	
P-TP-3-3	3			**74**	**600**												Excavated as of 9/3
P-TP-3-7	7			<35	**290**												Excavated as of 9/3
P-TP-4-3	3			**200**	**650**	<5.3	**21**	**81**	<0.58	**41**	**77**	<0.29	<12	<0.58	**0.282**	**0.020**	Excavated as of 9/1
P-TP-4-6	6			**430**	**1700**		**28**	**92**	<0.58	**31**	**140**	<0.29	<12	<0.58			Excavated as of 9/3
P-TP-5-1	1			<140	**720**	**480**											Excavated as of 9/1
P-TP-5-3	3	X		<63	**170**	<20							<11	<0.55	0.000	0.000	
P-TP-6-1	1	X		<37	<74	<9.4											
P-TP-7-2	2			<28	<55	<4.4	<11	**53**	<0.55	**27**	<5.5	<0.28	<11	<0.55			Excavated as of 9/1
P-TP-7-5	5			<140	**490**	<53	<14	**380**	**2.0**	**100**	**250**	<1.4	<55	<2.8			Excavated as of 9/1
P-TP-8-3	3			<27	**96**		<11	33	<0.55	**22**	<5.5	<0.27	<11	<0.55			Excavated as of 9/1
P-TP-8-6	6			<230	**1500**		**27**	**140**	<1.9	**58**	**92**	<0.95	<38	<1.9			Excavated as of 9/1
P-TP-9-5	5		X	<27	<55		<11	**26**	<0.55	**19**	**7.5**	<0.27	<11	<0.55	0.000	0.000	
P-TP-9-8	8																Sample put on hold at lab at HWA's request
P-TP-10-6	6	X		<29	<57		<11	**41**	<0.57	**23**	**12**	<0.29	<11	<0.57	0.000	0.000	
P-TP-11-5	5		X	<26	<53		<11	**34**	<0.53	**18**	**6.3**	<0.26	<11	<0.53	**0.0089**	**0.001**	
P-TP-11-7	7																
P-TP-12-2	2			<28	<55												Excavated as of 9/1
P-TP-12-4	4			<29	<59	<5.9	<12	**73**	<0.59	**30**	<5.9	<0.29	<12	<0.59			
P-TP-12-6	6			<75	**160**		<15	**82**	<1.5	**19**	**16**	<0.75	<30	<1.5			
P-TP-13-1	1																Excavated as of 9/1, sample put on hold at lab
P-TP-13-3	3			<320	**2900**	<5.9	<12	**56**	<0.59	**29**	**13**	<0.30	<12	<0.59	0.000	**0.001**	Excavated as of 9/1
P-TP-13-7	7		X	<29	<58	<5.9	<12	**61**	<0.58	**34**	**12**	<0.29	<12	<0.58	0.000	0.000	
P-TP-14-1	1			<28	<55		**32**	**470**	**12**	**170**	**860**	**0.66**	<11	<0.53			Excavated as of 9/1 - stockpile on site
P-TP-15-1	1						**21**	**860**	**41**	**280**	**770**	**0.48**	<10	<0.52			Excavated as of 9/1 - stockpile on site
P-TP-16-1	1						<11	**720**	**26**	**300**	**1600**	**5.1**	<11	<0.55			Excavated as of 9/1 - stockpile on site
P-TP-17-2	2					<5.5	<11	**49**	<0.55	**25**	**15**	<0.28	<11	<0.55			Excavated as of 9/1
P-TP-17-7	7			<34	<68												Excavated as of 9/3
P-TP-18-2	2			**210**	**1100**										**0.226**	**0.034**	Excavated as of 9/3
P-TP-18-7	7			**180**	**740**		**71**	**110**	<0.68	**36**	**150**	<0.34	<14	<0.68			Excavated as of 9/3
P-TP-19-3	3			<45	**220**												
P-TP-19-7	7	X		<69	**330**		**16**	**130**	<0.98	**64**	**190**	<0.49	<20	<0.98			
P-TP-20-4	4	X		<40	**230**										0.000	0.000	
P-TP-20-6	6																Sample put on hold at lab at HWA's request
P-TP-21-3	3		X	<27	<55		<11	**39**	<0.55	**23**	<5.5	<0.27	<11	<0.55			
P-TP-21-7	7																Sample put on hold at lab at HWA's request
P-TP-22-3	3	X		<71	**400**	<20	<13	**91**	<1.3	**32**	**81**	<0.64	<25	<1.3			
P-TP-23-2	2			<41	**230**	**8.6**	<11	**68**	<0.53	**37**	<5.3	<0.27	<11	<0.53	**0.113**	**0.050**	Excavated as of 9/1
P-TP-23-4	4			<120	**370**	<44	**27**	**190**	<1.2	**27**	**130**	<1.2	<47	<2.4			Excavated as of 9/1
P-TP-24-4	4	X		<30	<59	<5.7	<12	**120**	**0.74**	**33**	**150**	<0.30	<12	<0.59	0.000	**0.016**	West sidewall, former UST
P-TP-25-4	4			**260**	**560**	<6.5	**62**	**83**	<0.59	**35**	**87**	<0.30	<12	<0.59	**0.209**	**0.019**	North sidewall, former UST, excavated as of 9/1
P-TP-25-6	6	X		<ND	**130**	**80**	**20**	**97**	<0.88	**27**	**79**	<0.44	<18	<0.88			
P-TP-26-5	5	X		<26	<53		<11	**39**	<0.53	**22**	**18**	<0.26	<11	<0.53			
P-TP-26-7	7																Sample put on hold at lab at HWA's request
P-TP-27-4	4		X	<29	**180**		<12	**25**	<0.59	**19**	<5.9	<0.29	<12	<0.59			
P-PEX-1-7	7		X	<240	**690**		<8.5	**72**	<1.7	**13**	<34	<1.7	<68	<3.4	0.000	0.000	Over excavation at TP-8
P-PEX-2-6	6	X		<170	**620**		<8.6	**63**	<1.7	**11**	<34	<1.7	<69	<3.4	0.000	0.000	Over excavation at TP-7
P-PEX-3-4	4		X	<28	<57		**14**	**57**	<0.57	**29**	**15**	<0.28	<11	<0.57	0.000	0.000	Confirmation sample north of steel building location
P-PEX-4-6	3	X		<53	**130**	<16	<11	**5.6**	<1.1	**19**	**15**	<0.53	<21	<1.1	0.000	0.000	
P-PEX-5-3	3	X		<28	<55		**<11**	**40**	<0.55	**64**	**11**	0.28			0.000	**0.008**	East sidewall, near BP-MW-1
P-PEX-6-3	3			<250	**1600**	**7.4**	**27**	**64**	**0.68**	**35**	**120**	<0.31	<12	<0.62	0.000	**0.001**	West sidewall, All BETX = ND, excavated 9/3
P-PEX-7-3	3	X					<12								0.000	0.000	Over excavation of P-PEX-6-3
P-PEX-8-8	8		X				<12										Over excavation of TP-17 location
P-PEX-9-3	3	X		<300	**2500**												West sidewall, max extent
P-PEX-10-3	3	X		**1300**	**3100**												25' west of BPMW-3 - soils left in place under road
P-PEX-11-3	3	X		**<30**	**120**										**0.040**	**0.033**	25' east of BPMW-3 - soils left in place under road
P-PEX-12-3	3	X		**300**	**1700**												East sidewall, max extent
P-PEX-13-7	7						**93**										Between TP-4 and VB-1

TABLE 2
SOIL CLEANUP ANALYTICAL RESULTS
BOTHELL PAINT AND DECORATING SITE
(all results in milligrams per kilogram (mg/kg))

		Confirmation Sample[1]															
Sample Location	Sample Depth ft bgs	Sidewall	Bottom	Diesel	Oil	Gasoline	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Total Naphthalenes[2]	cPAHs TEC[3]	Notes
P-PEX-14-3	3	X		<30	**260**		<11										East sidewall, near former catch basin
P-PEX-15-3	3			**210**	**2700**		**21**										
P-PEX-16-10	10			<58	**210**		**47**	**590**	**2.5**	**49**	**410**	**1.2**	<23	<1.2	0.000	**0.150**	Bottom sample in wood waste area
P-PEX-17-7	7			**490**	**970**		**62**	**70**	**1.4**	**46**	**160**	<0.29	<12	<0.58	**0.663**	**0.020**	Sidewall sample to west of wood waste area
P-PEX-18-9	9			<44	**270**		<17	**110**	<0.87	37	**80**	<0.44	<17	<0.87	0.000	**0.570**	Bottom sample on east side of wood waste area
P-PEX-19-7	7	X		<28	**110**		**21**	**62**	<0.57	35	**46**	<0.28	<11	<0.57	**0.092**	**0.030**	Sidewall sample on west side of wood waste area
P-PEX-21-11	11		X	<31	<62		<12	**32**	<0.62	20	<6.2	<0.31	<12	<0.62	0.000	**0.010**	Bottom sample in wood waste area
P-PEX-23-5	5	X		68	**410**		<12	**52**	<0.58	26	**26**	<0.29	<12	<0.58	**0.063**	**0.030**	Sidewall sample on east side of wood waste area
CONC-1,2,3,4 Comp.	NA			<27	<54		**11**	**69**	<0.54	**20**	**21**	<0.27	<11	<0.54			Composite of 3 concrete stockpile samples
	MTCA Method A Cleanup Level[4]			2000		100/30[5]	20	NA	2	2000/19[6]	250	2	NA	NA	5	0.100	
	MTCA Method B Cleanup Level[7]			999		581	24	16,000	80	120,000	NA	24	400	400			
	Background[8]			NA		NA	7	255	1	48	24	0.07	0.78	0.61	NA	NA	

Notes:

< - Not detected at laboratory's reporting limit
Blank - Sample was not analyzed for this constituent
NA - Not applicable
Bold - Analyte Detected
Bold/Highlighted - Analyte detected above MTCA Method A soil cleanup level
▨ - Sample in area that was subsequently excavated
1 - Confirmation that soil remaining in place meets MTCA cleanup levels or was left in place at the limits of excavation adjacent to SR 522
2 - Sum of Napthalene + 1-Methylnaphthalene + 2-Methylnaphthalene
3 - Toxic Equivalent Concentration of carcinogenic polynuclear aromatic hydrocarbons (cPAHs) per WAC 173-340-708(e)
4 - Washington Model Toxics Control Act Method A (Table 740-1) soil cleanup levels for unrestricted land use
5 - The MTCA Method A soil cleanup level is 100 mg/kg for gasoline mixtures without benzene and if the total of ethylbenzene, toluene, plus xylenes is less than 1% of the gasoline mixture. The soil cleanup level for all other gasoline mixtures is 30 mg/kg
6 - The MTCA Method A soil cleanup level for trivalent chromium is 2,000 mg/kg. Geochemical conditions on site would not cause oxidation to hexavalent chromium having a cleanup level of 19 mg/kg
7 - Method B TPH cleanup levels are site specific values calculated using MTCATPH1.1. Method B cleanup levels for metals are from Ecology's CLARC (Cleanup Level & Risk Calculations) database for non-carcinogens
8 - Background metals concentrations per *Natural Background Soil Metals Concentrations in Washington State* (Ecology, 1994) for the Puget Sound area



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HWA GEOSCIENCES INC.

SITE VICINITY

BOTHELL PAINT & DECORATING SITE
INTERIM ACTION CLEANUP
BOTHELL, WASHINGTON

FIGURE NO.
1

PROJECT NO.
2007-098-922

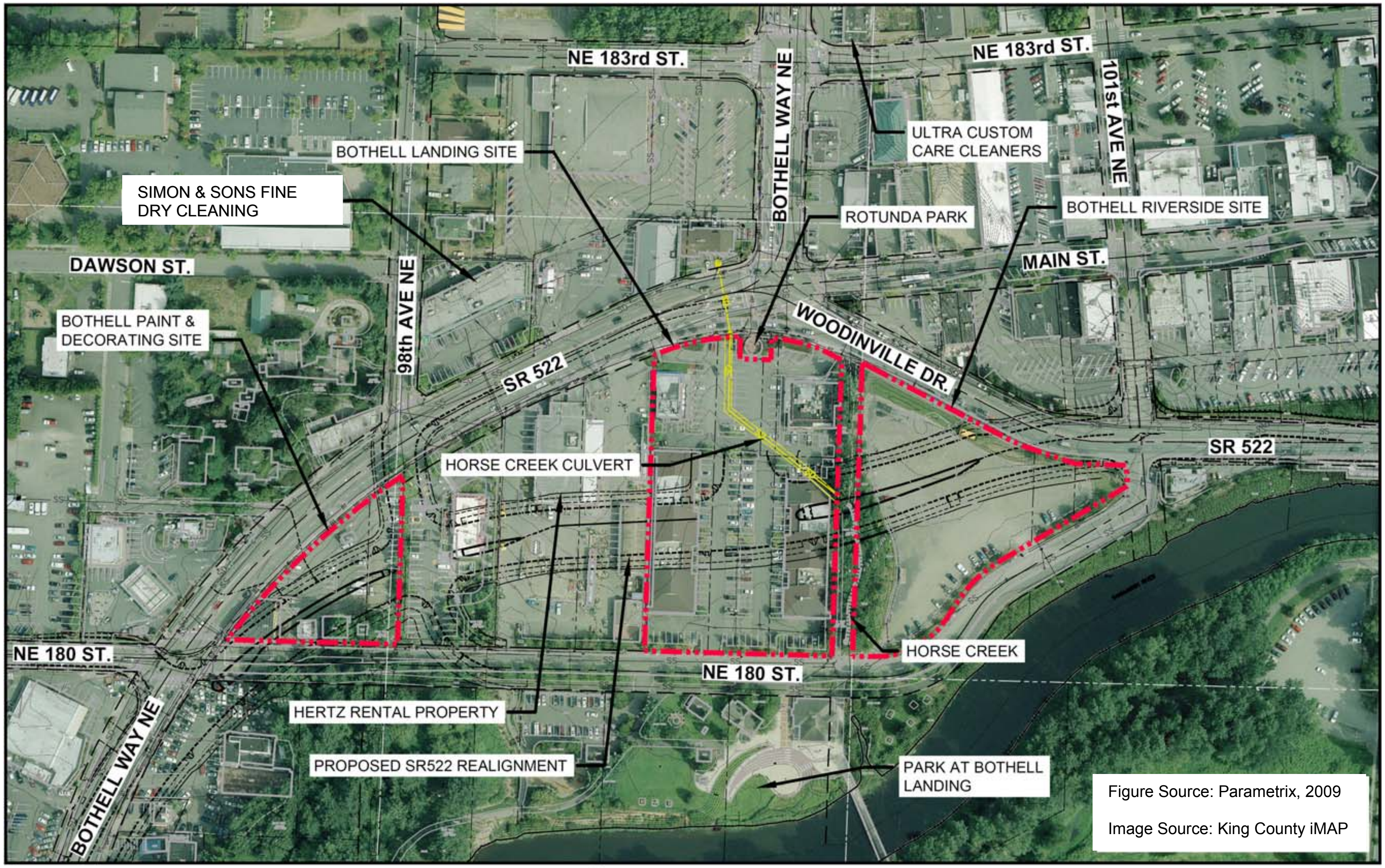


Figure Source: Parametrix, 2009

Image Source: King County iMAP

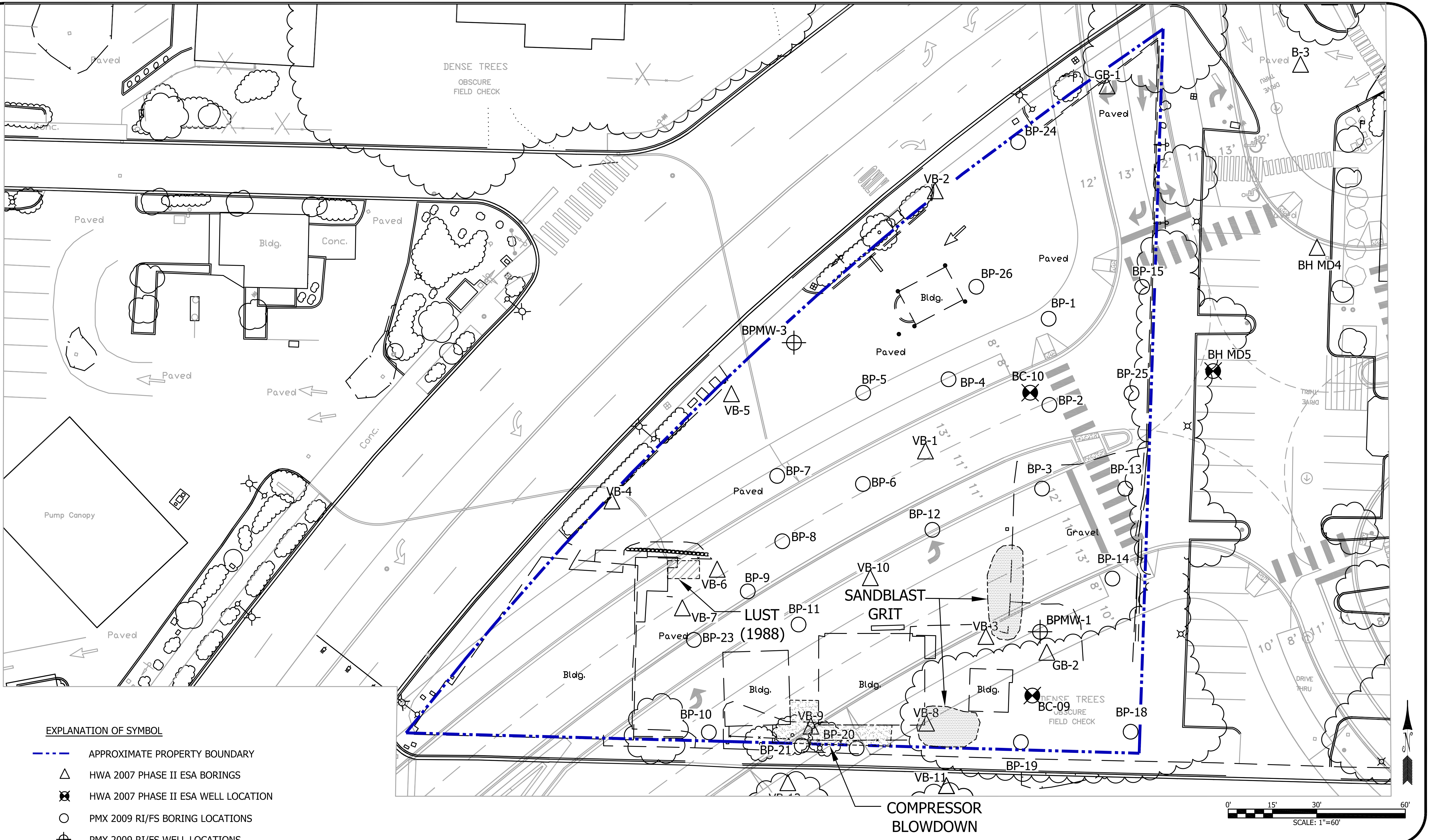
HWA GEOSCIENCES INC.

SITE LOCATION & ADJACENT PROPERTIES

BOTHELL PAINT & DECORATING SITE
INTERIM ACTION CLEANUP
BOTHELL, WASHINGTON

FIGURE NO.
2

PROJECT NO.
2007-098-922



EXPLANATION OF SYMBOL

-·-·-	APPROXIMATE PROPERTY BOUNDARY
△	HWA 2007 PHASE II ESA BORINGS
⊗	HWA 2007 PHASE II ESA WELL LOCATION
○	PMX 2009 RI/FS BORING LOCATIONS
⊕	PMX 2009 RI/FS WELL LOCATIONS
⊞	CDM ROW BORING LOCATIONS

BASE MAP PROVIDED BY PARAMETRIX

HWA GEOSCIENCES INC.

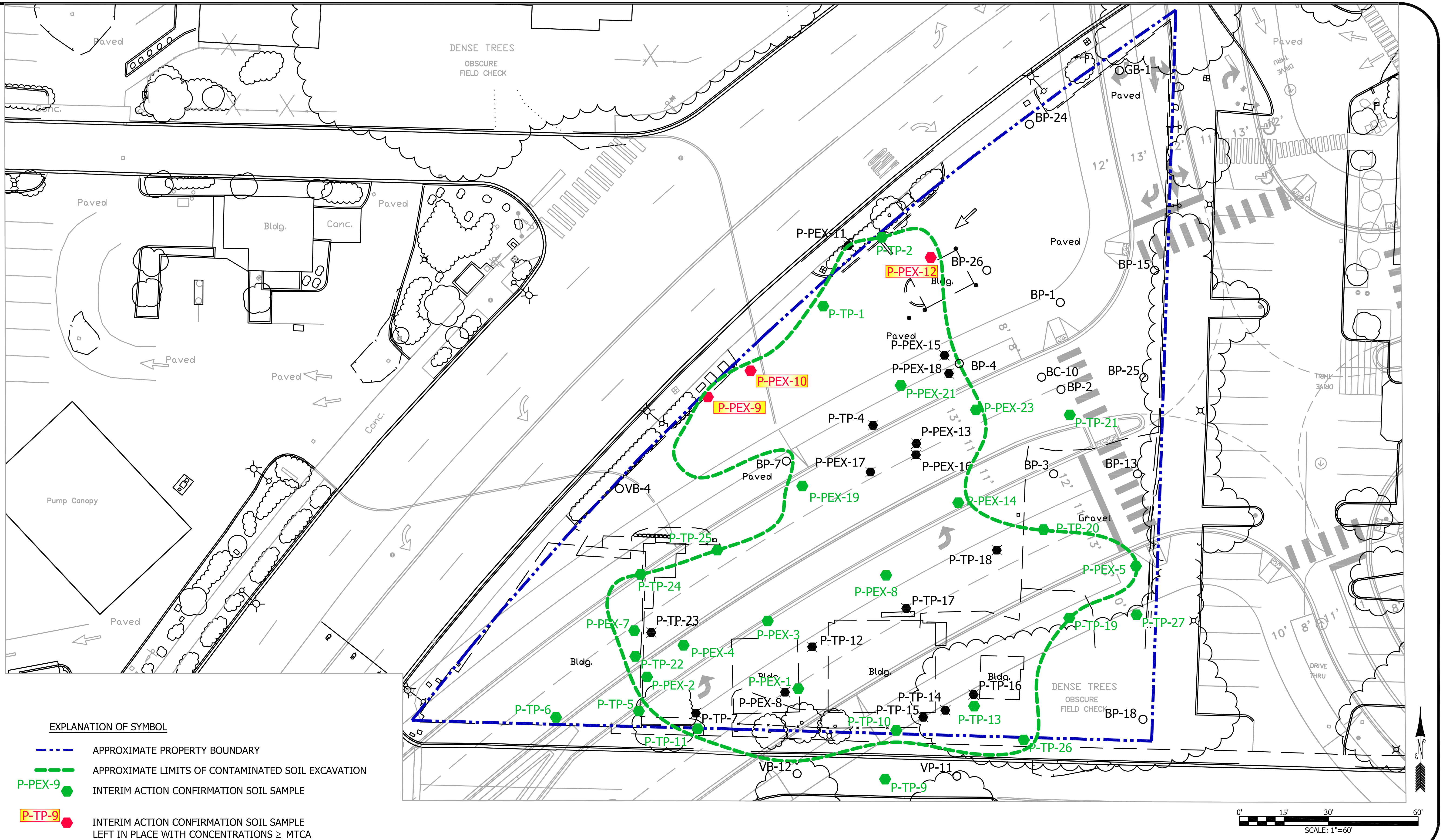
BOTHELL PAINT AND DECORATING SITE
INTERIM ACTION CLEANUP
BOTHELL, WASHINGTON

SITE PLAN
PRIOR TO CLEANUP

DRAWN BY EFK
CHECK BY NN
DATE
11.16.10

FIGURE NO.
3
PROJECT NO.
2007-098 T922

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T210.DWG <BOTHELL PAINT GPS F3> Plotted: 12/16/2010 9:16 AM



EXPLANATION OF SYMBOL

— · · —	APPROXIMATE PROPERTY BOUNDARY
— — —	APPROXIMATE LIMITS OF CONTAMINATED SOIL EXCAVATION
P-PEX-9 ⬢	INTERIM ACTION CONFIRMATION SOIL SAMPLE
P-TP-9 ⬢	INTERIM ACTION CONFIRMATION SOIL SAMPLE LEFT IN PLACE WITH CONCENTRATIONS ≥ MTCA
P-TP-9 ⬢	INTERIM ACTION CONFIRMATION SOIL SAMPLE IN AREA THAT WAS SUBSEQUENTLY EXCAVATED
P-TP-9 ○	PRE-INTERIM ACTION SOIL SAMPLE MEETING MTCA CLEANUP LEVELS

BASE MAP PROVIDED BY PARAMETRIX

HWA GEOSCIENCES INC.

BOTHELL PAINT AND DECORATING SITE
INTERIM ACTION CLEANUP
BOTHELL, WASHINGTON

EXTENT OF INTERIM
ACTION SOIL CLEANUP

DRAWN BY EFK
CHECK BY NN
DATE
11.16.10

FIGURE NO.
4

PROJECT NO.
2007-098 T922

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T210.DWG <BOTHELL PAINT GPS F4> Plotted: 12/20/2010 1:04 PM

APPENDIX A

DETERMINATION OF RISK-BASED CLEANUP LEVELS FOR THE SITE

HWA GEOSCIENCES INC.
Geotechnical & Pavement Engineering • Hydrogeology • Geoenvironmental • Planning & Permitting • Inspection & Testing

November 4, 2010
HWA Project No. 2007 098-922

City of Bothell
9654 NE 182nd St.
Bothell, Washington 98021

Attention: Nduta Mbuthia, Project Engineer, Public Works Capital Projects

Subject: **CLEANUP LEVEL DETERMINATION**
Bothell Paint and Decorating Site
Interim Action Cleanup
Bothell, Washington

Dear Ms. Mbuthia:

This letter describes HWA GeoSciences Inc. (HWA's) determination of risk-based soil cleanup levels at the Bothell Paint and Decorating Site, per the Interim Action Work Plan dated April 2010.

1.0 Introduction

The City of Bothell conducted an interim action cleanup at the Bothell Paint and Decorating Site in August and September 2010, consisting of excavation and off site treatment/disposal of metals and petroleum contaminated soils.

In order to establish soil cleanup levels, selected soil samples were collected and analyzed for petroleum hydrocarbon fractionation (VPH/EPH) and other target compounds (BTEX, cPAHs, EDB, EDC, MTBE). The results of the VPH/EPH analyses were then input into Ecology's MTCATPH11.1 spreadsheet model to determine TPH cleanup levels that are protective of direct contact and ground water, per the Ecology approved Interim Action Work Plan. Information regarding the use of petroleum hydrocarbon fractionation data and Ecology's MTCAPH11.1 model to calculate the risk at a petroleum contaminated site is presented in *Workbook Tools for Calculating Soil and Ground Water Cleanup Levels under the Model Toxics Control Act Cleanup Regulation User's Guide* (Ecology Publication No. 01-09-073).

2.0 Method B Soil Cleanup Levels

MTCA Method B cleanup levels are the universal cleanup levels that typically employ a risk-based approach as outlined in WAC 173-340-708. Cleanup levels for a particular

21312 30th Drive SE
Suite 110
Bothell, WA 98021.7010

Tel: 425.774.0106
Fax: 425.774.2714
www.hwageo.com

site are determined after evaluating appropriate exposure pathway endpoints (e.g., direct contact, drinking water, nonpotable ground water, surface water, soil, wildlife, etc.) based on site use, contaminant distribution, etc. The actual clean up *standard* is then based on the calculated cleanup levels, measured at the point of compliance.

HWA evaluated Bothell Paint site soils with respect to Method B cleanup levels for TPH. Under MTCA, once the source of contamination is removed, risk-based Method B (residential exposure scenario) TPH cleanup levels can be established. Method B cleanup levels must be protective for all exposure pathways, including direct contact with soil, leaching to ground water, and volatilization to air. Per the approved work plan, exposure pathways evaluated include:

- Direct human contact
- Protection of ground water

The vapor/odor pathway was not evaluated at this site, per the Ecology approved Interim Action Work Plan due to the non-volatile nature of the heavy hydrocarbons encountered and the absence of buildings over affected areas. The ground water to surface water pathway was also not evaluated, as the site remedial investigation indicated contaminated ground water was not migrating off site towards the Sammamish River.

Soil and ground water pathways (listed above) are discussed in the following sections.

Calculation of Method B cleanup levels is based on petroleum hydrocarbon fractionation analytical methods, collectively referred to as method E-TPH, that include Ecology methods VPH/EPH for volatile and extractable petroleum hydrocarbon fractions, BTEX, gasoline additives (MTBE, EDB, and EDC), and polynuclear aromatic hydrocarbons (PAHs).

Compounds composed of carbon and hydrogen are divided into two classes: aromatic compounds, which contain benzene rings or similar rings of atoms, and aliphatic compounds, which do not contain aromatic rings. The VPH/EPH method uses a fractionation approach to evaluate complex petroleum mixtures typically found in petroleum fuels and lubricants. The VPH/EPH approach divides petroleum into 12 compound groups (7 aliphatic and 5 aromatic) based on equivalent carbon (EC) number, which relates to the boiling point of a hydrocarbon compound. Hydrocarbons in the same EC group are assumed to have similar chemical, physical, and toxicological properties for the purposes of establishing cleanup levels. Each compound group is treated as if it was an individual chemical. Risks posed by site soils are calculated for each compound group and then summed across compound groups. Predicted ground water concentrations caused by leaching from the current soil concentrations are also estimated for each compound group and then summed across compound groups to produce a total ground water concentration.

2.1 Direct Contact Pathway

In the MTCA Method B risk analysis, the human health risk level for individual carcinogens may not exceed one-in-a-million ($1x10^{-6}$). If more than one type of hazardous substance is present, the total excess carcinogenic risk level at the site may not exceed 1 in 100,000 ($1x10^{-5}$). Cleanup levels protective of direct contact with soil for individual noncarcinogenic compounds are calculated in terms of hazard quotient (HQ), and for two or more compounds having similar toxic response by a hazard index (HI) that is the sum of individual hazard quotients. A HQ or HI less than 1.0 indicates an acceptable noncarcinogenic risk under MTCA Method B. Adverse effects resulting from exposure to two or more hazardous or carcinogenic compounds are assumed to be additive.

HWA used Ecology's MTCATPH11.1 electronic spreadsheet model (available at http://www.ecy.wa.gov/programs/tcp/tools/toolmain.html) to calculate the Method B cleanup levels protective of direct contact with soil. Table 1 summarizes the calculated Method B cleanup levels protective of the direct contact pathway; Appendix A contains the MTCATPH11.1 spreadsheet summary printouts. Per Ecology guidance (Publication No. 01-09-073 cited above), concentrations of TPH compounds not detected at the laboratory's practical quantitation limit (PQL) were entered into MTCATPH11.1 as the laboratory's method detection limit (MDL) – a value typically 5 or more times less than the practical quantitation limit.

2.2 Protection of Ground Water

Protection of ground water was evaluated for two pathways:

- Leaching from soil to ground water
- Residual soil saturation (the TPH concentration in soil at which a non aqueous phase liquid (NAPL) will form)

2.2.1 Leaching from soil to ground water

Soil cleanup levels protective of ground water may be calculated by several methods:

- Partitioning models
- Leaching tests
- Alternative fate & transport models
- Empirical demonstration

The Method B analyses used to calculate risk-based soil cleanup levels at the Bothell Paint site included evaluation of the soil-to-ground water pathway using Ecology's partitioning models (WAC 173-340-747) for two scenarios: potable ground water and the default MTCA Method A ground water cleanup level as the protective concentrations.

Table 1 summarizes the calculated Method B soil cleanup levels protective of direct contact and ground water; Appendix A contains the MTCATPH11.1 spreadsheet summary printouts.

Table 1
Summary of Method B Soil TPH Risk Calculations
Bothell Paint Site

Release area	Former UST	Compressor blowdown	Fill soils		
TPH Type	Mineral spirits	Lube oil	Diesel and lube oil range hydrocarbons		
Sample	P-TP-23-2	P-TP-13-3	P-TP-1-3	P-TP-4-3	P-TP-18-2
Calculated Method B TPH cleanup level for direct contact (mg/Kg)	581	39,709	1,153	999	1,505
Most stringent soil risk criterion for direct contact	cPAHs mixture	Hazard Index	cPAHs mixture	cPAHs mixture	cPAHs mixture
Method B soil TPH concentration protective of ground water (mg/Kg)	100% NAPL[1]	100% NAPL	100% NAPL	100% NAPL	100% NAPL
Most stringent soil risk criterion for protection of ground water	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture
Method A soil cleanup levels (mg/Kg)	30[2] (G) 2000 (D) 2000 (O) 5 (Naphthalenes)[3] 0.10 (cPAHs TEC)[4]	2000 (D) 2000 (O) 5 (Naphthalenes) 0.10 (cPAHs TEC)			
Maximum value detected on site after cleanup[5]	<20 (G) 37 (D) 690 (O) 0.04 (Naphthalenes) 0.016 (cPAHs TEC)				
Cleanup levels met?	Method A Yes Method B Yes[6] TCs[7] Yes	Method A Yes Method B Yes TCs Yes	Method A Yes Method B Yes TCs Yes	Method A Yes Method B Yes TCs Yes	Method A Yes Method B Yes TCs Yes

Notes:

1 - 100% NAPL means soil containing free product would not produce a TPH concentration ≥800 µg/L in ground water

2 - Cleanup level for gasoline mixtures with benzene

3 - Sum of Napthalene + 1-Methylnaphthalene + 2-Methylnaphthalene

4 - Toxic Equivalent Concentration of carcinogenic polynuclear aromatic hydrocarbons (cPAHs) per WAC 173-340-708(e)

5 - Exclusive of SR522 sidewall, which is not accessible for cleanup due to the active roadway, but will be cleaned up in 2011 after the roadway is vacated

6 - EPH/VPH values were based on NWTPH-G and NWTPH-D results due to lab QC issues, (see discussion below and Appendix A)

7 - TCs: Cleanup levels for all target compounds (PAHs, EDB, EDC, MTBE, benzene, naphthalenes) were met as indicated by laboratory analysis for the individual compounds

2.2.2. Residual soil saturation

Evaluation of residual saturation concentrations is also required. Residual saturation refers to the soil concentration at which a nonaqueous phase liquid (a.k.a., NAPL or "free product") may form on or in soil or ground water. Residual saturation may be evaluated under MTCA using default screening values or an empirical demonstration. Criteria for an empirical demonstration include:

- NAPL has not formed in soil or ground water at the site
- NAPL will not form in the future, i.e., sufficient time has elapsed for migration of hazardous substances from soil into ground water to occur and that the characteristics of the site (e.g., depth to ground water and infiltration) are representative of future site conditions.

Both of these criteria are met at the site, as no NAPL has been observed in soil or ground water, and the impacted soils have likely been in place for at least 10 years prior to removal from the site.

3.0 Discussion

It is possible to extrapolate the results of the risk calculation to estimate a Method B soil "cleanup level" for total TPH concentrations at the site based on the most stringent pathway. This requires the assumption that the hydrocarbon fractions in the soil sample represents the distribution of hydrocarbon fractions in all residual petroleum hydrocarbons at the site. In general, this assumption is valid for sites where the residual hydrocarbons derive from a single source, or single type of fuel, which appears to be the case at each of the three source areas at this site, based on analytical results. Using this assumption, HWA extrapolated the risk results to indicate an appropriate Method B soil cleanup level for each of the three known release areas at the site, as summarized in Table 1.

HWA evaluated the potential risk to human health and the environment based on TPH concentrations in soil. Based on the Method B evaluation, site confirmation soil samples exclusive of the State Route 522 sidewall (which is not accessible for cleanup due to the active roadway, but will be cleaned up in 2011 after the roadway is vacated) met the Method B, residential exposure scenario TPH cleanup levels for direct contact (i.e., HI less than 1, individual compound carcinogen risk less than 1E-6, and total carcinogen risk less than 1E-5), and protection of ground water (leaching as predicted by partitioning models and empirical demonstration of residual saturation).

Soil sample P-TP-23-2 collected in the area of the former underground storage tank contained 280 mg/Kg of primarily lube oil range TPH (considerably below the 2,000 mg/Kg Method A cleanup level), as well as cPAHs (also below Method A and B cleanup

levels). No benzene, EDB, or EDC were detected above laboratory reporting limits. The EPH/VPH sample analysis, however, did not detect any aliphatic and aromatic TPH across the entire TPH range, suggesting sample non-heterogeneity or laboratory QC issues. This sample was split and sent to two subcontracted laboratories by the initial laboratory, which likely impacted sample integrity. Subsequent samples were not handled in this manner. The MTCATPH11.1 model was therefore populated with EPH/VPH values proportional to the sample's detected TPH concentrations in the gasoline, diesel and oil ranges.

4.0 Summary

Confirmation soil samples in all accessible cleanup areas (with the exception of soil remaining under the active SR 522 roadway, which will be cleaned up in 2011) met all applicable cleanup levels, including:

- Method A soil cleanup levels for TPH and all individual target compounds
- Method B soil cleanup levels for all individual target compounds
- Method B TPH soil cleanup levels protective of 1) direct contact, and 2) protection of ground water, calculated per Ecology's MTCATPH11.1 spreadsheet model based on the most stringent pathways

Residual soil at the site in all accessible areas (except under the SR 522 roadway) has been remediated to MTCA Method A or B cleanup levels, and therefore poses no risk to direct-contact exposure under a residential scenario, or to ground water by leaching.

We appreciate the opportunity to provide our services on this project. Please feel free to call us if you have any questions or need more information.

Sincerely,
HWA GEOSCIENCES INC.

Hydrogeologist 170
Arnon Sugar
11-4-10

Hydrogeologist 327
NORMAN C. NIELSEN
11/4/10

Arnie Sugar, LG, LHG
President

Norm Nielsen, LG, LHG, PMP
Senior Hydrogeologist

APPENDIX A

MTCATPH11.1 METHOD B SPREADSHEET PRINTOUTS

Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Main Data Entry Form and Calculation Summary

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/11/10
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-1-3

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	0.0603	0.01%
AL_EC >6-8	0.0404	0.00%
AL_EC >8-10	6.1	0.69%
AL_EC >10-12	46	5.23%
AL_EC >12-16	150	17.05%
AL_EC >16-21	56	6.36%
AL_EC >21-34	280	31.82%
AR_EC >8-10	6	0.69%
AR_EC >10-12	8	0.90%
AR_EC >12-16	36	4.09%
AR_EC >16-21	49.6867	5.65%
AR_EC >21-34	239.9993	27.28%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0	0.00%
Naphthalene	0.21	0.02%
1-Methyl Naphthalene	0.81	0.09%
2-Methyl Naphthalene	0.56	0.06%
n-Hexane	0.0603	0.01%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.069	0.01%
Benzo(b)fluoranthene	0.048	0.01%
Benzo(k)fluoranthene	0.000308	0.00%
Benzo(a)pyrene	0.066	0.01%
Chrysene	0.13	0.01%
Dibenz(a,h)anthracene	0.000342	0.00%
Indeno(1,2,3-cd)pyrene	0.000373	0.00%
Sum	879.831	100.00%

Notes for Data Entry **Set Default Hydrogeology**

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

REMARK:
Bothell Paint site pot hole sample
MTCA Method A cleanup level = 800 mg/Kg because benzene was detected in ground water in onsite monitoring wells

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	800	ug/L

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/11/2010
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-1-3
Measured Soil TPH Concentration, mg/kg: **879.831**

1. Summary of Calculation Results

Exposure Pathway	**Method/Goal**	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	1,153	7.63E-07	2.76E-01	Pass
	Method C	40,129	1.89E-07	2.19E-02	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	100% NAPL	8.69E-10	2.35E-01	Pass
	Target TPH GW Conc. @ 800 ug/L	100% NAPL	NA	NA	Pass

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	**Method C: Industrial Land Use**
Protective Soil Concentration, TPH mg/kg	**1,153.11**	**40,129.24**
Most Stringent Criterion	**Risk of cPAHs mixture= 1E-6**	**HI =1**

Soil Criteria	**Protective Soil Concentration @Method B**				**Protective Soil Concentration @Method C**			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	*NO*	3.19E+03	2.77E-06	1.00E+00	YES	4.01E+04	8.64E-06	1.00E+00
Total Risk=1E-5	*NO*	1.15E+04	1.00E-05	3.61E+00	*NO*	4.64E+04	1.00E-05	1.16E+00
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	YES	1.15E+03	1.00E-06	3.61E-01				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**NA**
Protective Ground Water Concentration, ug/L	**NA**
Protective Soil Concentration, mg/kg	**Soil-to-Ground Water is not a critical pathway!**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	9.25E+01	8.60E-10	2.69E-01	100% NAPL
Total Risk = 1E-5	YES	9.25E+01	8.60E-10	2.69E-01	100% NAPL
Total Risk = 1E-6	YES	9.25E+01	8.60E-10	2.69E-01	100% NAPL
Risk of cPAHs mixture= 1E-5	YES	9.25E+01	8.60E-10	2.69E-01	100% NAPL
Benzene MCL = 5 ug/L	NA	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 78000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	9.25E+01	8.60E-10	2.69E-01	**100% NAPL**

Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Main Data Entry Form and Calculation Summary

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/12/10
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-4-3

Notes for Data Entry | **Set Default Hydrogeology**

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	0.0480	0.02%
AL_EC >6-8	0.0404	0.02%
AL_EC >8-10	0.0512	0.03%
AL_EC >10-12	4.2	2.16%
AL_EC >12-16	13	6.68%
AL_EC >16-21	14	7.19%
AL_EC >21-34	100	51.35%
AR_EC >8-10	0	0.02%
AR_EC >10-12	1	0.32%
AR_EC >12-16	4.4	2.26%
AR_EC >16-21	10.9237	5.61%
AR_EC >21-34	46.9993	24.13%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0	0.00%
Naphthalene	0.032	0.02%
1-Methyl Naphthalene	0.11	0.06%
2-Methyl Naphthalene	0.14	0.07%
n-Hexane	0.0603	0.03%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.017	0.01%
Benzo(b)fluoranthene	0.011	0.01%
Benzo(k)fluoranthene	0.000308	0.00%
Benzo(a)pyrene	0.017	0.01%
Chrysene	0.031	0.02%
Dibenz(a,h)anthracene	0.000342	0.00%
Indeno(1,2,3-cd)pyrene	0.000373	0.00%
Sum	194.7407	100.00%

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here: 800 ug/L

REMARK:
Bothell Paint site pot hole sample
MTCA Method A cleanup level = 800 mg/Kg because benzene was detected in ground water in onsite monitoring wells

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/12/2010
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-4-3
Measured Soil TPH Concentration, mg/kg: **194.741**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	999	1.95E-07	4.10E-02	Pass
	Method C	40,228	4.84E-08	3.32E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	100% NAPL	1.17E-09	8.55E-02	Pass
	Target TPH GW Conc. @ 800 ug/L	100% NAPL	NA	NA	Pass

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	**Method C: Industrial Land Use**
Protective Soil Concentration, TPH mg/kg	**998.85**	**40,227.71**
Most Stringent Criterion	**Risk of cPAHs mixture= 1E-6**	**Total Risk=1E-5**

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	*NO*	4.75E+03	4.76E-06	1.00E+00	*NO*	5.87E+04	1.46E-05	1.00E+00
Total Risk=1E-5	*NO*	9.99E+03	1.00E-05	2.10E+00	YES	4.02E+04	1.00E-05	6.86E-01
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	YES	9.99E+02	1.00E-06	2.10E-01				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**NA**
Protective Ground Water Concentration, ug/L	**NA**
Protective Soil Concentration, mg/kg	**Soil-to-Ground Water is not a critical pathway!**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	3.07E+01	1.15E-09	1.40E-01	100% NAPL
Total Risk = 1E-5	YES	3.07E+01	1.15E-09	1.40E-01	100% NAPL
Total Risk = 1E-6	YES	3.07E+01	1.15E-09	1.40E-01	100% NAPL
Risk of cPAHs mixture= 1E-5	YES	3.07E+01	1.15E-09	1.40E-01	100% NAPL
Benzene MCL = 5 ug/L	NA	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 77000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	3.07E+01	1.15E-09	1.40E-01	**100% NAPL**

Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Main Data Entry Form and Calculation Summary

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/12/10
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-13-3

Notes for Data Entry
Set Default Hydrogeology
Clear All Soil Concentration Data Entry Cells
Restore All Soil Concentration Data cleared previously

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	0.0480	0.00%
AL_EC >6-8	0.0404	0.00%
AL_EC >8-10	0.0512	0.00%
AL_EC >10-12	0.491	0.02%
AL_EC >12-16	0.3525	0.02%
AL_EC >16-21	35	1.66%
AL_EC >21-34	2000	94.68%
AR_EC >8-10	0	0.00%
AR_EC >10-12	1	0.03%
AR_EC >12-16	0.6281	0.03%
AR_EC >16-21	0.0092	0.00%
AR_EC >21-34	74.9993	3.55%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0	0.00%
Naphthalene	0.000159	0.00%
1-Methyl Naphthalene	0.000151	0.00%
2-Methyl Naphthalene	0.000307	0.00%
n-Hexane	0.0603	0.00%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.000338	0.00%
Benzo(b)fluoranthene	0.00039	0.00%
Benzo(k)fluoranthene	0.000308	0.00%
Benzo(a)pyrene	0.000261	0.00%
Chrysene	0.0079	0.00%
Dibenz(a,h)anthracene	0.000342	0.00%
Indeno(1,2,3-cd)pyrene	0.000373	0.00%
Sum	2112.349311	100.00%

REMARK:
Bothell Paint site pot hole sample
MTCA Method A cleanup level = 800 mg/Kg because benzene was detected in ground water in onsite monitoring wells

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	800	ug/L

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/12/2010
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-13-3
Measured Soil TPH Concentration, mg/kg: **2,112.349**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	39,709	4.97E-09	5.32E-02	Pass
	Method C	478,924	1.23E-09	4.41E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	100% NAPL	3.25E-12	6.91E-03	Pass
	Target TPH GW Conc. @ 800 ug/L	100% NAPL	NA	NA	Pass

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

Warning! Check Residual Saturation (WAC340-747(10)).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	**39,708.79**	**478,924.20**
Most Stringent Criterion	**HI =1**	**HI =1**

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	YES	3.97E+04	9.34E-08	1.00E+00	YES	4.79E+05	2.80E-07	1.00E+00
Total Risk=1E-5	*NO*	4.25E+06	1.00E-05	1.07E+02	*NO*	1.71E+07	1.00E-05	3.58E+01
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	*NO*	4.25E+05	1.00E-06	1.07E+01				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**NA**
Protective Ground Water Concentration, ug/L	**NA**
Protective Soil Concentration, mg/kg	**Soil-to-Ground Water is not a critical pathway!**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	1.78E+00	3.26E-12	7.56E-03	100% NAPL
Total Risk = 1E-5	YES	1.78E+00	3.26E-12	7.56E-03	100% NAPL
Total Risk = 1E-6	YES	1.78E+00	3.26E-12	7.56E-03	100% NAPL
Risk of cPAHs mixture= 1E-5	YES	1.78E+00	3.26E-12	7.56E-03	100% NAPL
Benzene MCL = 5 ug/L	NA	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 69000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	1.78E+00	3.26E-12	7.56E-03	**100% NAPL**

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/12/10

Site Name: Bothell Crossroads, Bothell Paint Site

Sample Name: P-TP-18-2

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	0.0480	0.01%
AL_EC >6-8	0.0404	0.01%
AL_EC >8-10	2.8	0.58%
AL_EC >10-12	14	2.88%
AL_EC >12-16	41	8.43%
AL_EC >16-21	22	4.52%
AL_EC >21-34	250	51.37%
AR_EC >8-10	0	0.01%
AR_EC >10-12	2	0.50%
AR_EC >12-16	12	2.47%
AR_EC >16-21	21.8860	4.50%
AR_EC >21-34	119.9785	24.65%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0	0.00%
Naphthalene	0.065	0.01%
1-Methyl Naphthalene	0.073	0.02%
2-Methyl Naphthalene	0.088	0.02%
n-Hexane	0.0603	0.01%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.024	0.00%
Benzo(b)fluoranthene	0.016	0.00%
Benzo(k)fluoranthene	0.01	0.00%
Benzo(a)pyrene	0.026	0.01%
Chrysene	0.038	0.01%
Dibenz(a,h)anthracene	0.0095	0.00%
Indeno(1,2,3-cd)pyrene	0.012	0.00%
Sum	486.6421	100.00%

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	800	ug/L

Notes for Data Entry **Set Default Hydrogeology**

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

REMARK:
Bothell Paint site pot hole sample
MTCA Method A cleanup level = 800 mg/Kg because benzene was detected in ground water in onsite monitoring wells

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/12/2010
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-18-2
Measured Soil TPH Concentration, mg/kg: **486.642**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	1,505	3.23E-07	1.08E-01	Pass
	Method C	55,972	8.03E-08	8.69E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	100% NAPL	7.02E-10	1.00E-01	Pass
	Target TPH GW Conc. @ 800 ug/L	100% NAPL	NA	NA	Pass

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	**1,504.65**	**55,972.28**
Most Stringent Criterion	**Risk of cPAHs mixture= 1E-6**	**HI =1**

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	*NO*	4.50E+03	2.99E-06	1.00E+00	YES	5.60E+04	9.24E-06	1.00E+00
Total Risk=1E-5	*NO*	1.50E+04	1.00E-05	3.34E+00	*NO*	6.06E+04	1.00E-05	1.08E+00
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	YES	1.50E+03	1.00E-06	3.34E-01				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**NA**
Protective Ground Water Concentration, ug/L	**NA**
Protective Soil Concentration, mg/kg	**Soil-to-Ground Water is not a critical pathway!**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	3.15E+01	6.95E-10	1.24E-01	100% NAPL
Total Risk = 1E-5	YES	3.15E+01	6.95E-10	1.24E-01	100% NAPL
Total Risk = 1E-6	YES	3.15E+01	6.95E-10	1.24E-01	100% NAPL
Risk of cPAHs mixture= 1E-5	YES	3.15E+01	6.95E-10	1.24E-01	100% NAPL
Benzene MCL = 5 ug/L	NA	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 77000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	3.15E+01	6.95E-10	1.24E-01	**100% NAPL**

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/14/10
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-23-2

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	1.6	0.58%
AL_EC >6-8	1.6	0.58%
AL_EC >8-10	1.6	0.58%
AL_EC >10-12	0.736	0.27%
AL_EC >12-16	10.35	3.73%
AL_EC >16-21	10.35	3.73%
AL_EC >21-34	218.5	78.69%
AR_EC >8-10	2	0.72%
AR_EC >10-12	0.92	0.33%
AR_EC >12-16	9.89	3.56%
AR_EC >16-21	9.89	3.56%
AR_EC >21-34	9.89	3.56%
Benzene	0.0000011	0.00%
Toluene	0.00265	0.00%
Ethylbenzene	0.00055	0.00%
Total Xylenes	0.00105	0.00%
Naphthalene	0.00355	0.00%
1-Methyl Naphthalene	0.0185	0.01%
2-Methyl Naphthalene	0.038	0.01%
n-Hexane	0.1	0.04%
MTBE	0.0000011	0.00%
Ethylene Dibromide (EDB)	0.0000011	0.00%
1,2 Dichloroethane (EDC)	0.0000011	0.00%
Benzo(a)anthracene	0.028	0.01%
Benzo(b)fluoranthene	0.032	0.01%
Benzo(k)fluoranthene	0.024	0.01%
Benzo(a)pyrene	0.037	0.01%
Chrysene	0.031	0.01%
Dibenz(a,h)anthracene	0.0096	0.00%
Indeno(1,2,3-cd)pyrene	0.029	0.01%
Sum	277.6809044	100.00%

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here: 800 ug/L

Notes for Data Entry **Set Default Hydrogeology**

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

REMARK:
This is test 4 using MTCATPH11.1 for a synthetic TPH that is:
3.05% gasoline
14.58% diesel
82.25% oil (primarily EC 21-34 aliphatics)
and useing OnSite Environmental's reported PAH results (Method 8270D/SIM) which were the only VPH/EPH-related detects in the original analyses.

Also, entered benzene, MTBE, EDB, and EDC at 0.001 x MDL

Original NWTPH-Gx/Dx analysis was:
3.08% gasoline
14.66% diesel (assuming diesel was present at the PQL of 41 mg/kg)
82.26% oil

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/14/2010
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-23-2
Measured Soil TPH Concentration, mg/kg: **277.681**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	581	4.78E-07	2.43E-02	Pass
	Method C	23,386	1.19E-07	1.96E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	100% NAPL	3.45E-07	1.17E-01	Pass
	Target TPH GW Conc. @ 800 ug/L	100% NAPL	NA	NA	Pass

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	**580.75**	**23,385.60**
Most Stringent Criterion	**Risk of cPAHs mixture= 1E-6**	**Total Risk=1E-5**

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	*NO*	1.14E+04	1.96E-05	1.00E+00	*NO*	1.42E+05	6.06E-05	1.00E+00
Total Risk=1E-5	*NO*	5.81E+03	1.00E-05	5.09E-01	YES	2.34E+04	1.00E-05	1.65E-01
Risk of Benzene= 1E-6	*NO*	4.58E+09	7.90E+00	4.02E+05	NA			
Risk of cPAHs mixture= 1E-6	YES	5.81E+02	1.00E-06	5.09E-02				
EDB	*NO*	2.74E+06	4.73E-03	2.40E+02				
EDC	*NO*	2.56E+09	4.41E+00	2.25E+05				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**NA**
Protective Ground Water Concentration, ug/L	**NA**
Protective Soil Concentration, mg/kg	**Soil-to-Ground Water is not a critical pathway!**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	1.43E+02	2.18E-06	1.91E-01	100% NAPL
Total Risk = 1E-5	YES	1.43E+02	2.18E-06	1.91E-01	100% NAPL
Total Risk = 1E-6	YES	1.17E+02	1.00E-06	1.66E-01	1.24E+03
Risk of cPAHs mixture= 1E-5	YES	1.43E+02	2.18E-06	1.91E-01	100% NAPL
Benzene MCL = 5 ug/L	YES	1.43E+02	2.18E-06	1.91E-01	100% NAPL
MTBE = 20 ug/L	YES	1.43E+02	2.18E-06	1.91E-01	100% NAPL

Note: 100% NAPL is 70000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	1.43E+02	2.18E-06	1.91E-01	**100% NAPL**

APPENDIX B

LABORATORY CERTIFICATES OF ANALYSIS

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 1, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1008-195

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 26, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

Case Narrative

Samples were collected on August 25, 2010 and received by the laboratory on August 26, 2010. They were maintained at the laboratory at a temperature of 2^oC to 6^oC.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx Analysis

Per EPA Method 5035A, some samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7^oC and -20^oC until extraction or analysis. The other samples were received by the laboratory in pre-weighed 40 mL VOA vials, preserved with either Methanol or Sodium Bisulfate.

The chromatogram for sample P-TP-5-1 is similar to mineral spirits.

Volatiles EPA 8260B Analysis

Per EPA Method 5035A, some samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7^oC and -20^oC until extraction or analysis. The other samples were received by the laboratory in pre-weighed 40 mL VOA vials, preserved with either Methanol or Sodium Bisulfate.

The final internal standard did not pass for sample P-TP-5-3 due to matrix effects. The sample was re-run with similar results. All results from Bromobenzene onward, including PQLs, should be considered estimates.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-1-3**					
Laboratory ID:	08-195-01					
Diesel Range Organics	**280**	29	NWTPH-Dx	8-27-10	8-27-10	N
Lube Oil	**950**	58	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*108*	*50-150*				
Client ID:	**P-TP-1-6**					
Laboratory ID:	08-195-02					
Diesel Range Organics	**ND**	39	NWTPH-Dx	8-27-10	8-27-10	
Lube Oil	**100**	78	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				
Client ID:	**P-TP-2-2**					
Laboratory ID:	08-195-03					
Diesel Range Organics	**810**	140	NWTPH-Dx	8-27-10	8-27-10	N
Lube Oil	**3700**	280	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				
Client ID:	**P-TP-3-3**					
Laboratory ID:	08-195-05					
Diesel Range Organics	**74**	29	NWTPH-Dx	8-27-10	8-27-10	N
Lube Oil	**600**	59	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				
Client ID:	**P-TP-4-3**					
Laboratory ID:	08-195-07					
Diesel Range Organics	**200**	29	NWTPH-Dx	8-27-10	8-27-10	N
Lube Oil	**650**	58	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				
Client ID:	**P-TP-5-1**					
Laboratory ID:	08-195-09					
Diesel Range Organics	**ND**	140	NWTPH-Dx	8-27-10	8-27-10	U1
Lube Oil	**720**	61	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-5-3**					
Laboratory ID:	08-195-10					
Diesel Range Organics	**ND**	63	NWTPH-Dx	8-27-10	8-27-10	
Lube Oil	**170**	130	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				
Client ID:	**P-TP-6-1**					
Laboratory ID:	08-195-11					
Diesel Range Organics	**ND**	37	NWTPH-Dx	8-27-10	8-27-10	
Lube Oil Range Organics	**ND**	74	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*102*	*50-150*				
Client ID:	**P-TP-7-2**					
Laboratory ID:	08-195-12					
Diesel Range Organics	**ND**	28	NWTPH-Dx	8-27-10	8-27-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*103*	*50-150*				
Client ID:	**P-TP-7-5**					
Laboratory ID:	08-195-13					
Diesel Range Organics	**ND**	140	NWTPH-Dx	8-27-10	8-27-10	
Lube Oil	**490**	280	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				
Client ID:	**P-TP-8-3**					
Laboratory ID:	08-195-14					
Diesel Range Organics	**ND**	27	NWTPH-Dx	8-27-10	8-27-10	
Lube Oil	**96**	55	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*108*	*50-150*				
Client ID:	**P-TP-8-6**					
Laboratory ID:	08-195-15					
Diesel Range Organics	**ND**	230	NWTPH-Dx	8-27-10	8-27-10	U1
Lube Oil	**1500**	190	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*98*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0827S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-27-10	8-27-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				

Analyte	**Result**		**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE								
Laboratory ID:	08-199-01							
	ORIG	DUP						
Diesel Fuel #2	**94.9**	**81.1**				16	NA	
Lube Oil	**188**	**170**				10	NA	
Surrogate:								
o-Terphenyl			*93*	*98*	*50-150*			
Laboratory ID:	08-195-12							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*103*	*88*	*50-150*			

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-2-6**					
Laboratory ID:	08-195-04					
Diesel Fuel #2	**37**	34	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil	**180**	67	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*109*	*50-150*				
Client ID:	**P-TP-3-7**					
Laboratory ID:	08-195-06					
Diesel Range Organics	**ND**	35	NWTPH-Dx	8-31-10	9-1-10	U1
Lube Oil	**290**	66	NWTPH-Dx	8-31-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*114*	*50-150*				
Client ID:	**P-TP-4-6**					
Laboratory ID:	08-195-08					
Diesel Fuel #2	**430**	29	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil	**1700**	58	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*119*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0831S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*116*	*50-150*				

Analyte	Result		Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE							
Laboratory ID:	08-187-09						
	ORIG	DUP					
Diesel Range Organics	**ND**	**ND**			NA	NA	U1
Lube Oil	**260**	**178**			37	NA	
Surrogate:							
o-Terphenyl			*104* *96*	*50-150*			

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-1-3**					
Laboratory ID:	08-195-01					
Gasoline	**ND**	5.8	NWTPH-Gx	8-26-10	8-26-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*55-127*				
Client ID:	**P-TP-4-3**					
Laboratory ID:	08-195-07					
Gasoline	**ND**	5.3	NWTPH-Gx	8-26-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*55-127*				
Client ID:	**P-TP-5-1**					
Laboratory ID:	08-195-09					
Gasoline	**480**	7.0	NWTPH-Gx	8-26-10	8-27-10	Z
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*84*	*55-127*				
Client ID:	**P-TP-5-3**					
Laboratory ID:	08-195-10					
Gasoline	**ND**	20	NWTPH-Gx	8-26-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*61*	*55-127*				
Client ID:	**P-TP-6-1**					
Laboratory ID:	08-195-11					
Gasoline	**ND**	9.4	NWTPH-Gx	8-26-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*80*	*55-127*				
Client ID:	**P-TP-7-2**					
Laboratory ID:	08-195-12					
Gasoline	**ND**	4.4	NWTPH-Gx	8-26-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*81*	*55-127*				
Client ID:	**P-TP-7-5**					
Laboratory ID:	08-195-13					
Gasoline	**ND**	53	NWTPH-Gx	8-26-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*79*	*55-127*				

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

NWTPH-Gx
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0826S2					
Gasoline	**ND**	5.0	NWTPH-Gx	8-26-10	8-26-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*82*	*55-127*				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	08-159-02										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*89*	*86*	*55-127*			

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	08-195-01					
Client ID:	**P-TP-1-3**					
Arsenic	**34**	12	6010B	8-30-10	8-30-10	
Barium	**74**	2.9	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.58	6010B	8-30-10	8-30-10	
Chromium	**29**	0.58	6010B	8-30-10	8-30-10	
Lead	**130**	5.8	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.29	7471A	8-26-10	8-26-10	
Selenium	**ND**	12	6010B	8-30-10	8-30-10	
Silver	**ND**	0.58	6010B	8-30-10	8-30-10	
Lab ID:	08-195-02					
Client ID:	**P-TP-1-6**					
Arsenic	**ND**	16	6010B	8-30-10	8-30-10	
Barium	**100**	3.9	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.78	6010B	8-30-10	8-30-10	
Chromium	**67**	0.78	6010B	8-30-10	8-30-10	
Lead	**ND**	7.8	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.39	7471A	8-26-10	8-26-10	
Selenium	**ND**	16	6010B	8-30-10	8-30-10	
Silver	**ND**	0.78	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-195-07					
Client ID:	**P-TP-4-3**					
Arsenic	**21**	12	6010B	8-30-10	8-30-10	
Barium	**81**	2.9	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.58	6010B	8-30-10	8-30-10	
Chromium	**41**	0.58	6010B	8-30-10	8-30-10	
Lead	**77**	5.8	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.29	7471A	8-26-10	8-26-10	
Selenium	**ND**	12	6010B	8-30-10	8-30-10	
Silver	**ND**	0.58	6010B	8-30-10	8-30-10	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-195-12					
Client ID:	**P-TP-7-2**					
Arsenic	**ND**	11	6010B	8-30-10	8-30-10	
Barium	**53**	2.8	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.55	6010B	8-30-10	8-30-10	
Chromium	**27**	0.55	6010B	8-30-10	8-30-10	
Lead	**ND**	5.5	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.28	7471A	8-26-10	8-26-10	
Selenium	**ND**	11	6010B	8-30-10	8-30-10	
Silver	**ND**	0.55	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-195-13					
Client ID:	**P-TP-7-5**					
Arsenic	**ND**	14	6020	8-30-10	8-30-10	
Barium	**380**	14	6010B	8-30-10	8-30-10	
Cadmium	**2.0**	1.4	6020	8-30-10	8-30-10	
Chromium	**100**	2.8	6010B	8-30-10	8-30-10	
Lead	**250**	28	6010B	8-30-10	8-30-10	
Mercury	**ND**	1.4	7471A	8-26-10	8-26-10	
Selenium	**ND**	55	6010B	8-30-10	8-30-10	
Silver	**ND**	2.8	6010B	8-30-10	8-30-10	

Lab ID:	08-195-14					
Client ID:	**P-TP-8-3**					
Arsenic	**ND**	11	6010B	8-30-10	8-30-10	
Barium	**33**	2.7	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.55	6010B	8-30-10	8-30-10	
Chromium	**22**	0.55	6010B	8-30-10	8-30-10	
Lead	**ND**	5.5	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.27	7471A	8-26-10	8-26-10	
Selenium	**ND**	11	6010B	8-30-10	8-30-10	
Silver	**ND**	0.55	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-195-15					
Client ID:	**P-TP-8-6**					
Arsenic	**27**	19	6010B	8-30-10	8-30-10	
Barium	**140**	9.5	6010B	8-30-10	8-30-10	
Cadmium	**ND**	1.9	6010B	8-30-10	8-30-10	
Chromium	**58**	1.9	6010B	8-30-10	8-30-10	
Lead	**92**	19	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.95	7471A	8-26-10	8-26-10	
Selenium	**ND**	38	6010B	8-30-10	8-30-10	
Silver	**ND**	1.9	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0830S5

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-26-10
Date Analyzed:	8-26-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0826S2

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-195-12

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**48.1**	**44.4**	8	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**24.2**	**21.3**	13	0.50	
Lead	**ND**	**ND**	NA	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 8-26-10
Date Analyzed: 8-26-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-176-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-195-12

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**95.6**	96	**95.8**	96	0	
Barium	100	**142**	94	**142**	94	0	
Cadmium	50	**44.0**	88	**43.5**	87	1	
Chromium	100	**110**	86	**110**	86	1	
Lead	250	**232**	93	**219**	88	6	
Selenium	100	**98.2**	98	**97.6**	98	1	
Silver	25	**21.4**	86	**21.2**	85	1	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted: 8-26-10
Date Analyzed: 8-26-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-176-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.50	**0.493**	99	**0.488**	98	1	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	08-195-08					
Client ID:	**P-TP-4-6**					
Arsenic	**28**	12	6010B	8-31-10	8-31-10	
Barium	**92**	2.9	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.58	6010B	8-31-10	8-31-10	
Chromium	**31**	0.58	6010B	8-31-10	8-31-10	
Lead	**140**	5.8	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.29	7471A	9-1-10	9-1-10	
Selenium	**ND**	12	6010B	8-31-10	8-31-10	
Silver	**ND**	0.58	6010B	8-31-10	8-31-10	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0831S3

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	5.0
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-1-10
Date Analyzed:	9-1-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0901S4

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 8-31-10
Date Analyzed: 8-31-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-217-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**31.9**	**31.9**	NA	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**17.3**	**18.7**	8	0.50	
Lead	**5.95**	**5.40**	10	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-1-10
Date Analyzed: 9-1-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-191-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 8-31-10
Date Analyzed: 8-31-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-217-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**99.2**	99	**97.3**	97	2	
Barium	100	**129**	97	**132**	100	2	
Cadmium	50	**48.0**	96	**46.9**	94	2	
Chromium	100	**116**	99	**114**	97	2	
Lead	250	**245**	96	**242**	94	2	
Selenium	100	**100**	100	**99.4**	99	1	
Silver	25	**23.6**	94	**23.0**	92	3	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted:	9-1-10
Date Analyzed:	9-1-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-191-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.50	**0.457**	91	**0.461**	92	1	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B
page 1 of 2

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-195-09
Client ID:	**P-TP-5-1**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.00087
Chloromethane	ND		0.0044
Vinyl Chloride	ND		0.00087
Bromomethane	ND		0.00087
Chloroethane	ND		0.0044
Trichlorofluoromethane	ND		0.00087
1,1-Dichloroethene	ND		0.00087
Acetone	0.073		0.0087
Iodomethane	ND		0.0044
Carbon Disulfide	0.0012		0.00087
Methylene Chloride	ND		0.0044
(trans) 1,2-Dichloroethene	ND		0.00087
Methyl t-Butyl Ether	ND		0.00087
1,1-Dichloroethane	ND		0.00087
Vinyl Acetate	ND		0.0044
2,2-Dichloropropane	ND		0.00087
(cis) 1,2-Dichloroethene	ND		0.00087
2-Butanone	ND		0.0044
Bromochloromethane	ND		0.00087
Chloroform	ND		0.00087
1,1,1-Trichloroethane	ND		0.00087
Carbon Tetrachloride	ND		0.00087
1,1-Dichloropropene	ND		0.00087
Benzene	ND		0.00087
1,2-Dichloroethane	ND		0.00087
Trichloroethene	ND		0.00087
1,2-Dichloropropane	ND		0.00087
Dibromomethane	ND		0.00087
Bromodichloromethane	ND		0.00087
2-Chloroethyl Vinyl Ether	ND		0.0044
(cis) 1,3-Dichloropropene	ND		0.00087
Methyl Isobutyl Ketone	ND		0.0044
Toluene	ND		0.0044
(trans) 1,3-Dichloropropene	ND		0.00087

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B
page 2 of 2

Lab ID:	08-195-09
Client ID:	**P-TP-5-1**

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.00087
Tetrachloroethene	ND		0.00087
1,3-Dichloropropane	ND		0.00087
2-Hexanone	ND		0.0044
Dibromochloromethane	ND		0.00087
1,2-Dibromoethane	ND		0.00087
Chlorobenzene	ND		0.00087
1,1,1,2-Tetrachloroethane	ND		0.00087
Ethylbenzene	ND		0.00087
m,p-Xylene	ND		0.0017
o-Xylene	ND		0.00087
Styrene	ND		0.00087
Bromoform	ND		0.00087
Isopropylbenzene	ND		0.00087
Bromobenzene	ND		0.00087
1,1,2,2-Tetrachloroethane	ND	U1	0.0087
1,2,3-Trichloropropane	ND		0.00087
n-Propylbenzene	ND		0.00087
2-Chlorotoluene	ND		0.00087
4-Chlorotoluene	ND		0.00087
1,3,5-Trimethylbenzene	ND		0.00087
tert-Butylbenzene	ND		0.00087
1,2,4-Trimethylbenzene	0.00093		0.00087
sec-Butylbenzene	0.0030		0.00087
1,3-Dichlorobenzene	ND		0.00087
p-Isopropyltoluene	ND		0.00087
1,4-Dichlorobenzene	ND		0.00087
1,2-Dichlorobenzene	ND		0.00087
n-Butylbenzene	0.0014		0.00087
1,2-Dibromo-3-chloropropane	ND		0.0044
1,2,4-Trichlorobenzene	ND		0.00087
Hexachlorobutadiene	ND		0.0044
Naphthalene	ND		0.00087
1,2,3-Trichlorobenzene	ND		0.00087

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	84	66-128
Toluene-d8	94	68-126
4-Bromofluorobenzene	94	53-134

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B
page 1 of 2

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-195-10
Client ID:	**P-TP-5-3**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0036
Chloromethane	ND		0.018
Vinyl Chloride	ND		0.0036
Bromomethane	ND		0.0036
Chloroethane	ND		0.018
Trichlorofluoromethane	ND		0.0036
1,1-Dichloroethene	ND		0.0036
Acetone	0.73		0.036
Iodomethane	ND		0.018
Carbon Disulfide	ND		0.0036
Methylene Chloride	ND		0.018
(trans) 1,2-Dichloroethene	ND		0.0036
Methyl t-Butyl Ether	ND		0.0036
1,1-Dichloroethane	ND		0.0036
Vinyl Acetate	ND		0.018
2,2-Dichloropropane	ND		0.0036
(cis) 1,2-Dichloroethene	ND		0.0036
2-Butanone	0.14		0.018
Bromochloromethane	ND		0.0036
Chloroform	ND		0.0036
1,1,1-Trichloroethane	ND		0.0036
Carbon Tetrachloride	ND		0.0036
1,1-Dichloropropene	ND		0.0036
Benzene	ND		0.0036
1,2-Dichloroethane	ND		0.0036
Trichloroethene	ND		0.0036
1,2-Dichloropropane	ND		0.0036
Dibromomethane	ND		0.0036
Bromodichloromethane	ND		0.0036
2-Chloroethyl Vinyl Ether	ND		0.018
(cis) 1,3-Dichloropropene	ND		0.0036
Methyl Isobutyl Ketone	ND		0.018
Toluene	ND		0.018
(trans) 1,3-Dichloropropene	ND		0.0036

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B
page 2 of 2

Lab ID: 08-195-10
Client ID: P-TP-5-3

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0036
Tetrachloroethene	ND		0.0036
1,3-Dichloropropane	ND		0.0036
2-Hexanone	ND		0.018
Dibromochloromethane	ND		0.0036
1,2-Dibromoethane	ND		0.0036
Chlorobenzene	ND		0.0036
1,1,1,2-Tetrachloroethane	ND		0.0036
Ethylbenzene	ND		0.0036
m,p-Xylene	ND		0.0071
o-Xylene	ND		0.0036
Styrene	ND		0.0036
Bromoform	ND		0.0036
Isopropylbenzene	ND		0.0036
Bromobenzene	ND		0.0036
1,1,2,2-Tetrachloroethane	ND		0.0036
1,2,3-Trichloropropane	ND		0.0036
n-Propylbenzene	ND		0.0036
2-Chlorotoluene	ND		0.0036
4-Chlorotoluene	ND		0.0036
1,3,5-Trimethylbenzene	ND		0.0036
tert-Butylbenzene	ND		0.0036
1,2,4-Trimethylbenzene	ND		0.0036
sec-Butylbenzene	ND		0.0036
1,3-Dichlorobenzene	ND		0.0036
p-Isopropyltoluene	ND		0.0036
1,4-Dichlorobenzene	ND		0.0036
1,2-Dichlorobenzene	ND		0.0036
n-Butylbenzene	ND		0.0036
1,2-Dibromo-3-chloropropane	ND		0.018
1,2,4-Trichlorobenzene	ND		0.0036
Hexachlorobutadiene	ND		0.018
Naphthalene	ND		0.0036
1,2,3-Trichlorobenzene	ND		0.0036

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	89	66-128
Toluene-d8	94	68-126
4-Bromofluorobenzene	78	53-134

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B
page 1 of 2

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-195-11
Client ID:	**P-TP-6-1**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0012
Chloromethane	ND		0.0062
Vinyl Chloride	ND		0.0012
Bromomethane	ND		0.0012
Chloroethane	ND		0.0062
Trichlorofluoromethane	ND		0.0012
1,1-Dichloroethene	ND		0.0012
Acetone	0.10		0.012
Iodomethane	ND		0.0062
Carbon Disulfide	0.0024		0.0012
Methylene Chloride	ND		0.0062
(trans) 1,2-Dichloroethene	ND		0.0012
Methyl t-Butyl Ether	ND		0.0012
1,1-Dichloroethane	ND		0.0012
Vinyl Acetate	ND		0.0062
2,2-Dichloropropane	ND		0.0012
(cis) 1,2-Dichloroethene	ND		0.0012
2-Butanone	0.022		0.0062
Bromochloromethane	ND		0.0012
Chloroform	ND		0.0012
1,1,1-Trichloroethane	ND		0.0012
Carbon Tetrachloride	ND		0.0012
1,1-Dichloropropene	ND		0.0012
Benzene	ND		0.0012
1,2-Dichloroethane	ND		0.0012
Trichloroethene	ND		0.0012
1,2-Dichloropropane	ND		0.0012
Dibromomethane	ND		0.0012
Bromodichloromethane	ND		0.0012
2-Chloroethyl Vinyl Ether	ND		0.0062
(cis) 1,3-Dichloropropene	ND		0.0012
Methyl Isobutyl Ketone	ND		0.0062
Toluene	ND		0.0062
(trans) 1,3-Dichloropropene	ND		0.0012

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B

page 2 of 2

Lab ID:	08-195-11
Client ID:	**P-TP-6-1**

Compound	**Results**	**Flags**	**PQL**
1,1,2-Trichloroethane	ND		0.0012
Tetrachloroethene	ND		0.0012
1,3-Dichloropropane	ND		0.0012
2-Hexanone	ND		0.0062
Dibromochloromethane	ND		0.0012
1,2-Dibromoethane	ND		0.0012
Chlorobenzene	ND		0.0012
1,1,1,2-Tetrachloroethane	ND		0.0012
Ethylbenzene	ND		0.0012
m,p-Xylene	ND		0.0025
o-Xylene	ND		0.0012
Styrene	ND		0.0012
Bromoform	ND		0.0012
Isopropylbenzene	ND		0.0012
Bromobenzene	ND		0.0012
1,1,2,2-Tetrachloroethane	ND		0.0012
1,2,3-Trichloropropane	ND		0.0012
n-Propylbenzene	ND		0.0012
2-Chlorotoluene	ND		0.0012
4-Chlorotoluene	ND		0.0012
1,3,5-Trimethylbenzene	ND		0.0012
tert-Butylbenzene	ND		0.0012
1,2,4-Trimethylbenzene	ND		0.0012
sec-Butylbenzene	ND		0.0012
1,3-Dichlorobenzene	ND		0.0012
p-Isopropyltoluene	ND		0.0012
1,4-Dichlorobenzene	ND		0.0012
1,2-Dichlorobenzene	ND		0.0012
n-Butylbenzene	ND		0.0012
1,2-Dibromo-3-chloropropane	ND		0.0062
1,2,4-Trichlorobenzene	ND		0.0012
Hexachlorobutadiene	ND		0.0062
Naphthalene	ND		0.0012
1,2,3-Trichlorobenzene	ND		0.0012

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	89	66-128
Toluene-d8	94	68-126
4-Bromofluorobenzene	88	53-134

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 1 of 2

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0830S1

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0010
Chloromethane	ND		0.0050
Vinyl Chloride	ND		0.0010
Bromomethane	ND		0.0010
Chloroethane	ND		0.0050
Trichlorofluoromethane	ND		0.0010
1,1-Dichloroethene	ND		0.0010
Acetone	ND		0.010
Iodomethane	ND		0.0050
Carbon Disulfide	ND		0.0010
Methylene Chloride	ND		0.0050
(trans) 1,2-Dichloroethene	ND		0.0010
Methyl t-Butyl Ether	ND		0.0010
1,1-Dichloroethane	ND		0.0010
Vinyl Acetate	ND		0.0050
2,2-Dichloropropane	ND		0.0010
(cis) 1,2-Dichloroethene	ND		0.0010
2-Butanone	ND		0.0050
Bromochloromethane	ND		0.0010
Chloroform	ND		0.0010
1,1,1-Trichloroethane	ND		0.0010
Carbon Tetrachloride	ND		0.0010
1,1-Dichloropropene	ND		0.0010
Benzene	ND		0.0010
1,2-Dichloroethane	ND		0.0010
Trichloroethene	ND		0.0010
1,2-Dichloropropane	ND		0.0010
Dibromomethane	ND		0.0010
Bromodichloromethane	ND		0.0010
2-Chloroethyl Vinyl Ether	ND		0.0050
(cis) 1,3-Dichloropropene	ND		0.0010
Methyl Isobutyl Ketone	ND		0.0050
Toluene	ND		0.0050
(trans) 1,3-Dichloropropene	ND		0.0010

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 2 of 2

Lab ID: MB0830S1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0010
Tetrachloroethene	ND		0.0010
1,3-Dichloropropane	ND		0.0010
2-Hexanone	ND		0.0050
Dibromochloromethane	ND		0.0010
1,2-Dibromoethane	ND		0.0010
Chlorobenzene	ND		0.0010
1,1,1,2-Tetrachloroethane	ND		0.0010
Ethylbenzene	ND		0.0010
m,p-Xylene	ND		0.0020
o-Xylene	ND		0.0010
Styrene	ND		0.0010
Bromoform	ND		0.0010
Isopropylbenzene	ND		0.0010
Bromobenzene	ND		0.0010
1,1,2,2-Tetrachloroethane	ND		0.0010
1,2,3-Trichloropropane	ND		0.0010
n-Propylbenzene	ND		0.0010
2-Chlorotoluene	ND		0.0010
4-Chlorotoluene	ND		0.0010
1,3,5-Trimethylbenzene	ND		0.0010
tert-Butylbenzene	ND		0.0010
1,2,4-Trimethylbenzene	ND		0.0010
sec-Butylbenzene	ND		0.0010
1,3-Dichlorobenzene	ND		0.0010
p-Isopropyltoluene	ND		0.0010
1,4-Dichlorobenzene	ND		0.0010
1,2-Dichlorobenzene	ND		0.0010
n-Butylbenzene	ND		0.0010
1,2-Dibromo-3-chloropropane	ND		0.0050
1,2,4-Trichlorobenzene	ND		0.0010
Hexachlorobutadiene	ND		0.0050
Naphthalene	ND		0.0010
1,2,3-Trichlorobenzene	ND		0.0010

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	90	66-128
Toluene-d8	97	68-126
4-Bromofluorobenzene	98	53-134

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0830S1

Compound	**Spike Amount**	**SB**	**Percent Recovery**	**SBD**	**Percent Recovery**	**Recovery Limits**	**Flags**
1,1-Dichloroethene	0.0500	0.0443	89	0.0464	93	70-130	
Benzene	0.0500	0.0417	83	0.0436	87	70-121	
Trichloroethene	0.0500	0.0416	83	0.0430	86	70-124	
Toluene	0.0500	0.0414	83	0.0430	86	70-123	
Chlorobenzene	0.0500	0.0448	90	0.0464	93	71-119	

	RPD	**RPD Limit**	**Flags**
1,1-Dichloroethene	5	14	
Benzene	4	10	
Trichloroethene	3	12	
Toluene	4	12	
Chlorobenzene	3	9	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

% MOISTURE

Date Analyzed: 8-27&31-10

Client ID	Lab ID	% Moisture
P-TP-1-3	08-195-01	14
P-TP-1-6	08-195-02	36
P-TP-2-2	08-195-03	9
P-TP-2-6	08-195-04	26
P-TP-3-3	08-195-05	15
P-TP-3-7	08-195-06	24
P-TP-4-3	08-195-07	14
P-TP-4-6	08-195-08	14
P-TP-5-1	08-195-09	17
P-TP-5-3	08-195-10	60
P-TP-6-1	08-195-11	33
P-TP-7-2	08-195-12	9
P-TP-7-5	08-195-13	82
P-TP-8-3	08-195-14	9
P-TP-8-6	08-195-15	74

OnSite
Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z - The sample chromatogram is similar to mineral spirits

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

08-195

DATE: 8/28/10
PAGE: 1 of 1

PROJECT NAME: Bothell Crossroads #: 2007-098
SITE CODE: Bothell Point
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: PHONE:

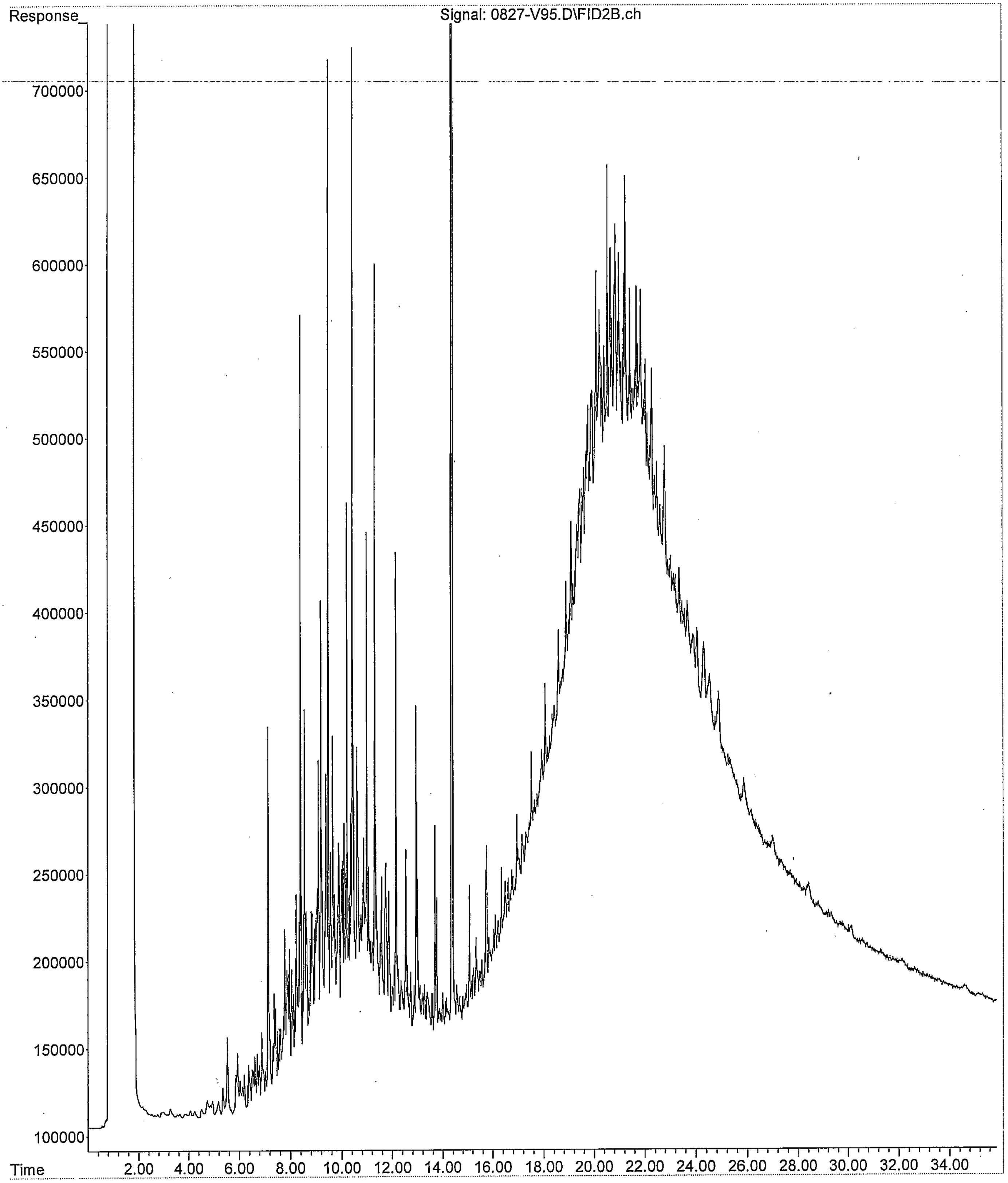
Rush TAT - 2 day TAT
(EPH, VPH - Std. TAT)

						ANALYSIS REQUESTED															
HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	RCRA Metals	EPH/VPH (HOLD)	VOCs 8260	cPAHs									% MOISTURE	REMARKS
P-TP-1-3	8/25/10	1020	S	1	6	/	X	/	/											/	
P-TP-1-6	↓	1030	↓	2	5	/		/												↓	
P-TP-2-2		1400		3	5	/															
P-TP-2-6		1130		4	5	⊗														⊗	
P-TP-3-3		1200		5	5	/														/	
P-TP-3-7		1215		6	5	⊗														⊗	
P-TP-4-3		1230		7	7	/	X	/	/											/	
P-TP-4-6		1245		8	5	⊗		⊗												⊗	
P-TP-5-1		1310		9	5	/	X			/										/	⊗ Added 8/30/10 DB 5:22 pm - 1 day TAT-
P-TP-5-3		1315		10	5	/	/			/										↓	
P-TP-6-1		1330		11	3	/	/			/											
P-TP-7-2		1355		12	5	/	/	/													
P-TP-7-5		1400		13	5	/	/	/													
P-TP-8-3		1445		14	5	/		/													
P-TP-8-6	↓	1500	↓	15	5	/		/												↓	

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fisk		HWA GeoSciences	8/26/10	10:10am	
Received by:	Young Dong		Speedy	8/26/10	10:10am	
Relinquished by:	Young Dong		Speedy	8/26/10	10:54am	
Received by:	Mom Vun		OSE	8/26/10	1054	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

```
File        :C:\msdchem\2\DATA\V100827.SEC\0827-V95.D
Operator    :
Acquired    : 28 Aug 2010  15:32     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-01
Misc Info   :
Vial Number: 95
```



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File        :C:\msdchem\2\DATA\V100827.SEC\0827-V84.D
Operator    :
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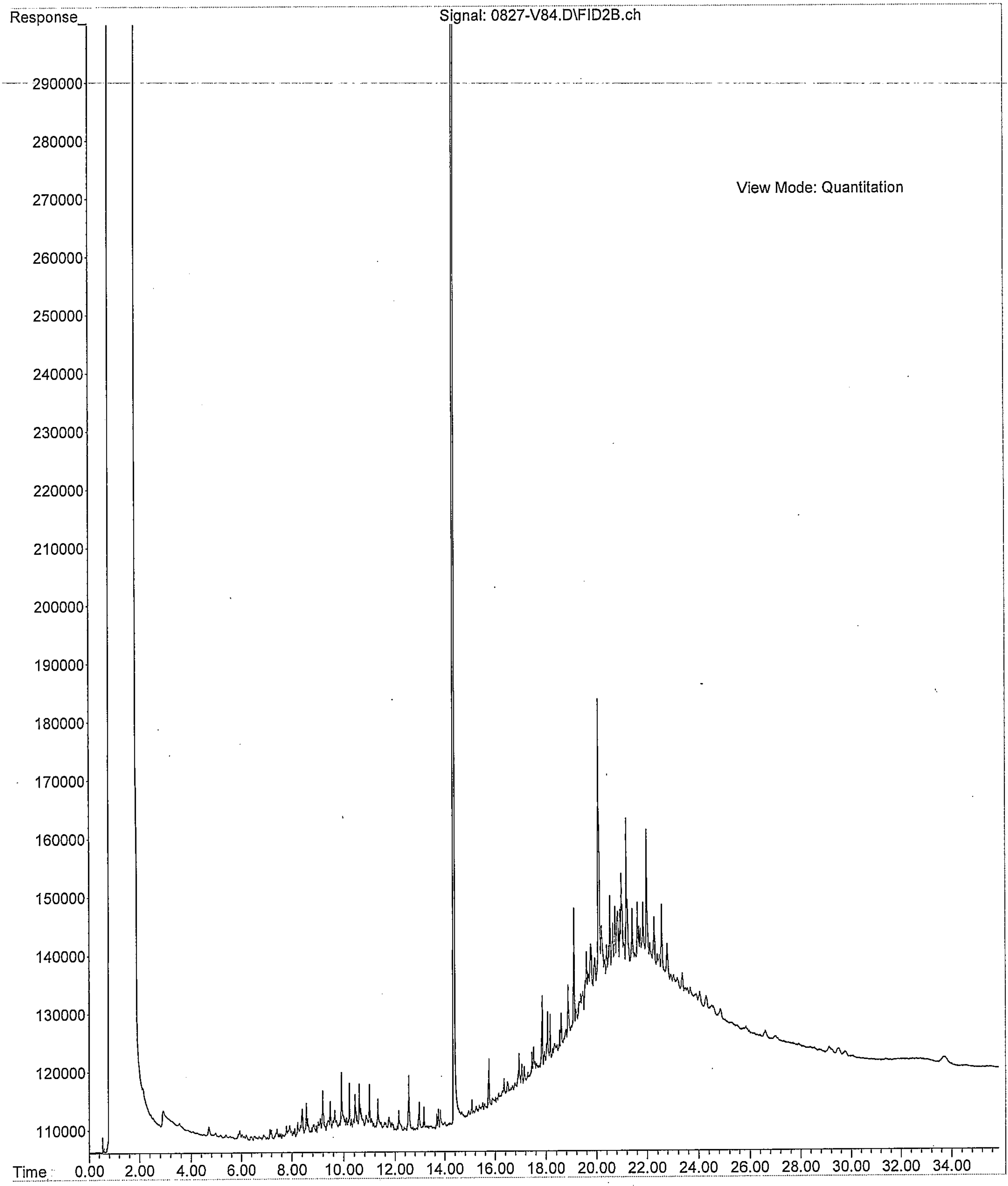
Instrument  :   VIGO
Sample Name: 08-195-02
Misc Info   :
Vial Number: 84
```



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Operator    :
Acquired    : 28 Aug 2010  14:52     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-03 5X
Misc Info   :
Vial Number: 44
```

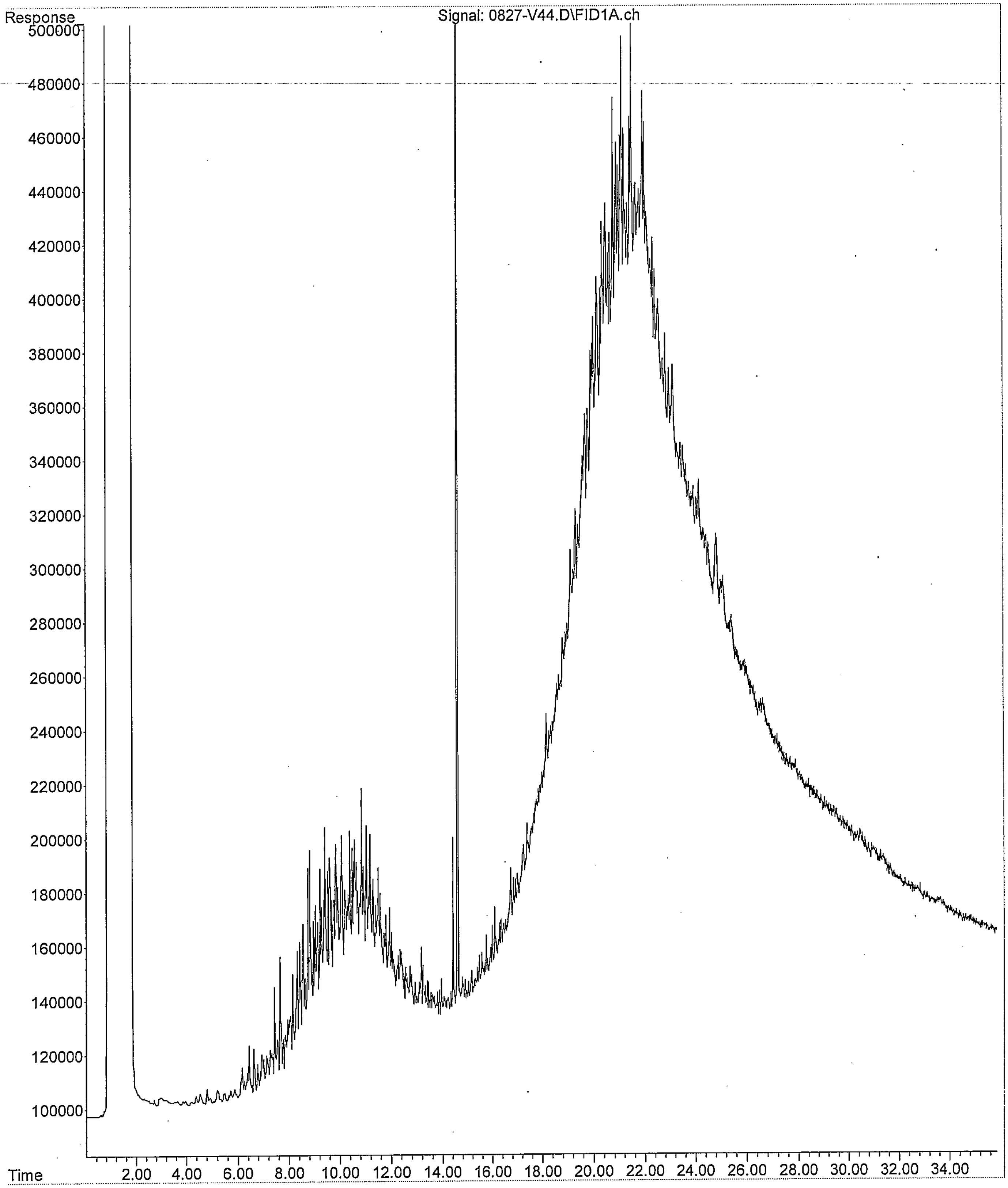

```
File        :C:\msdchem\2\DATA\V100831.SEC\0831-V82.D
Operator    :
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Instrument  :   VIGO
Sample Name: 08-195-04
Misc Info   :
Vial Number: 82
```
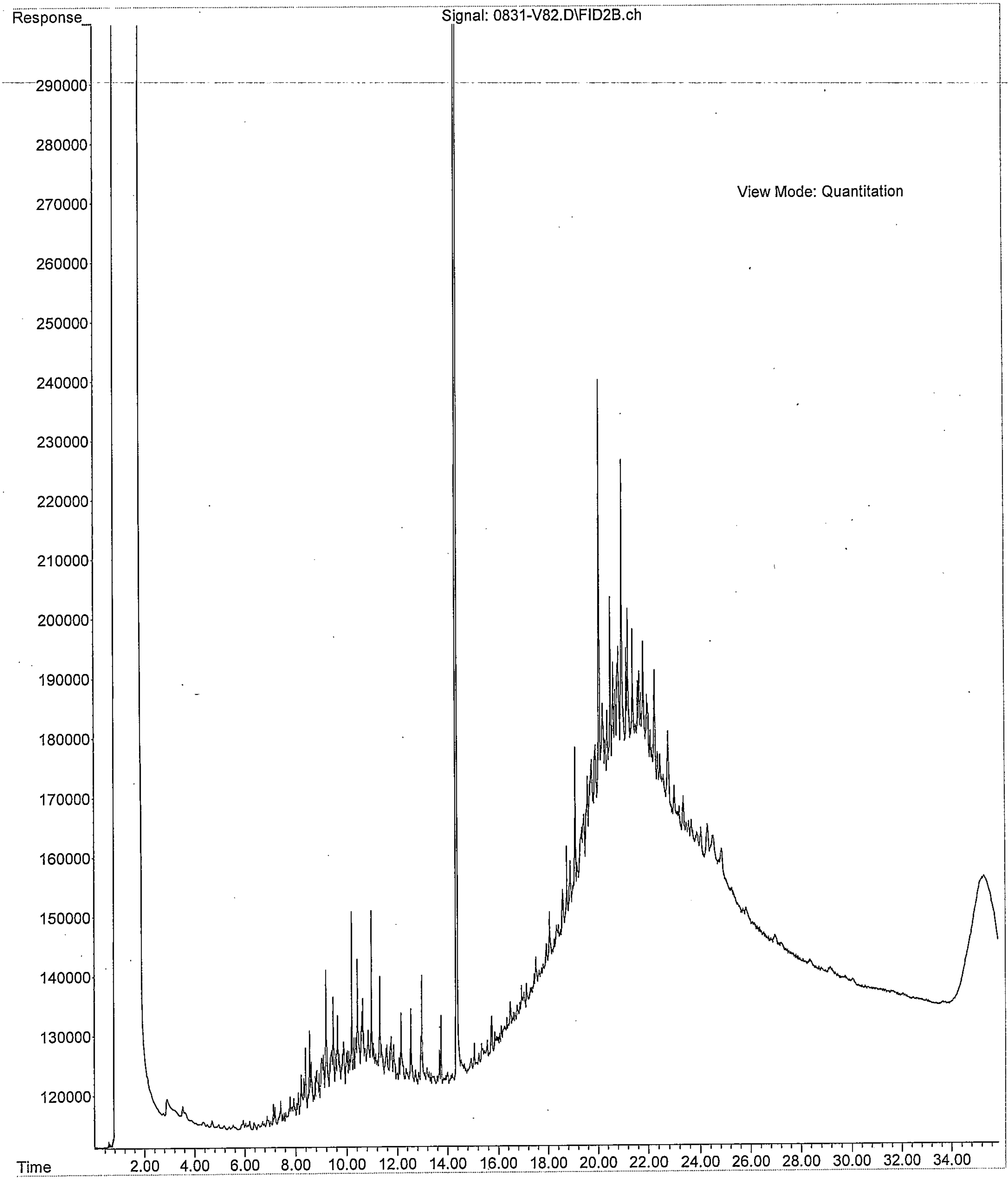
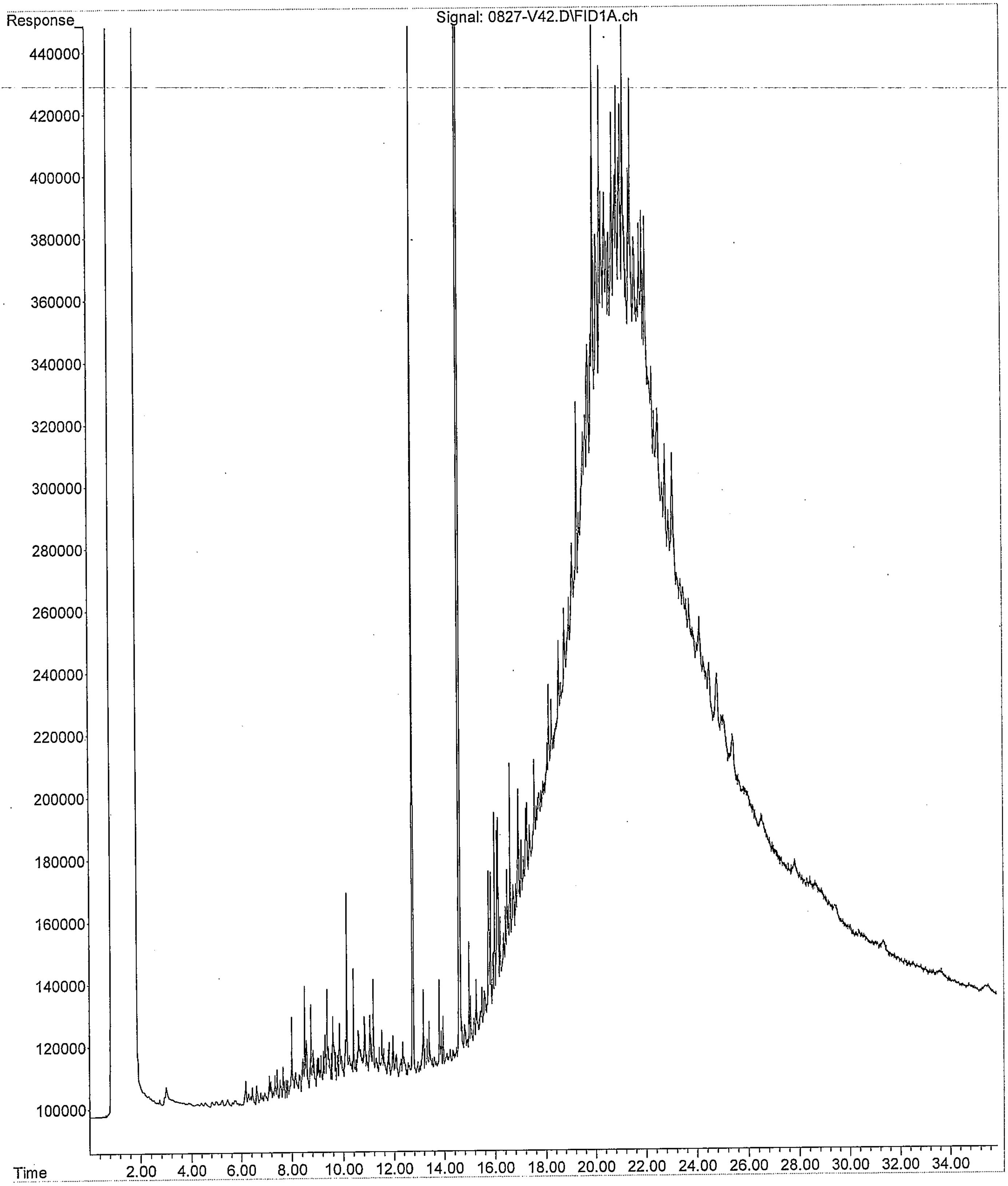
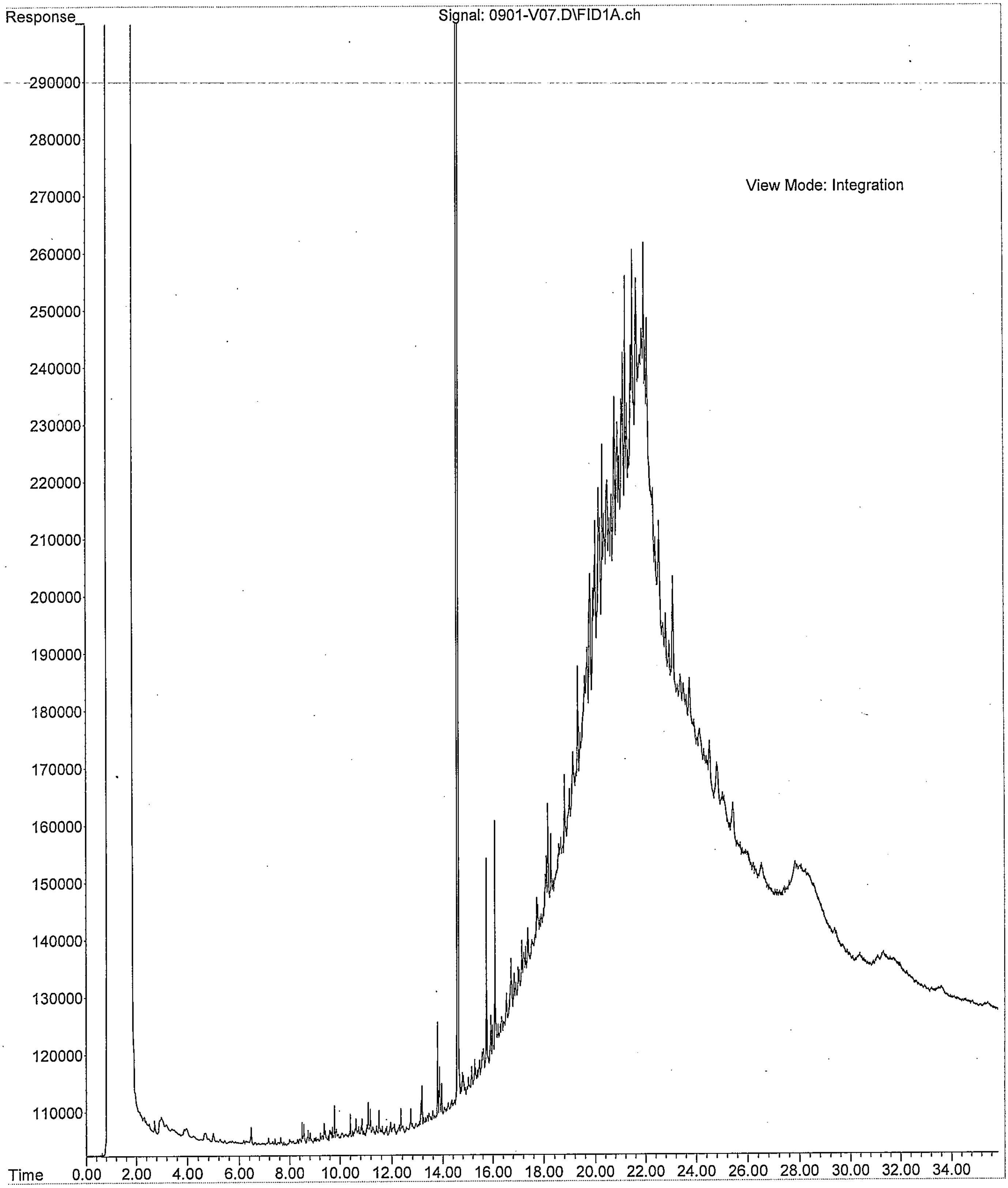



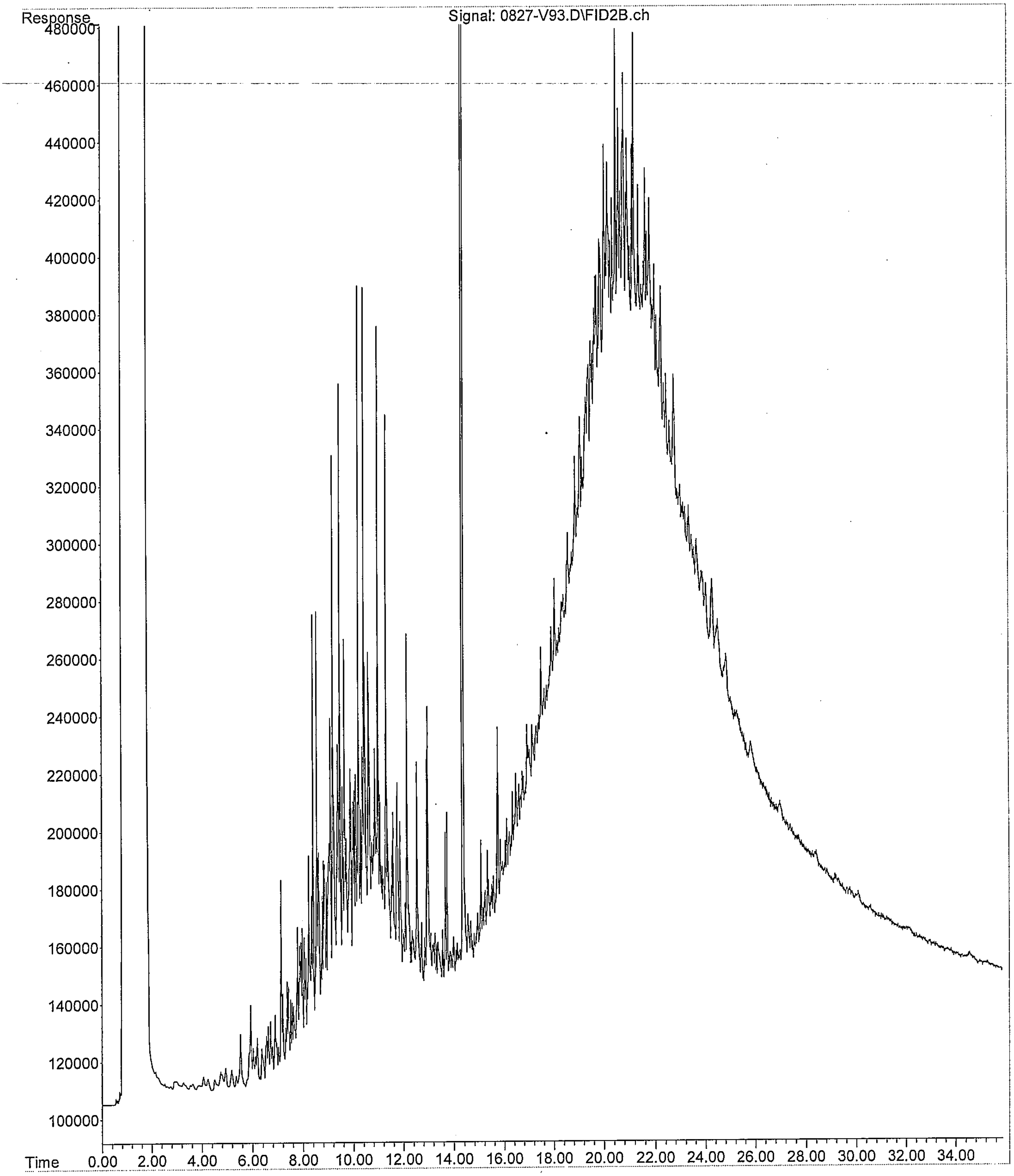
File :C:\msdchem\2\DATA\V100827\0827-V42.D
Operator :
Acquired : 28 Aug 2010 13:32 using AcqMethod V100820F.M
Instrument : VIGO
Sample Name: 08-195-05
Misc Info :
Vial Number: 42



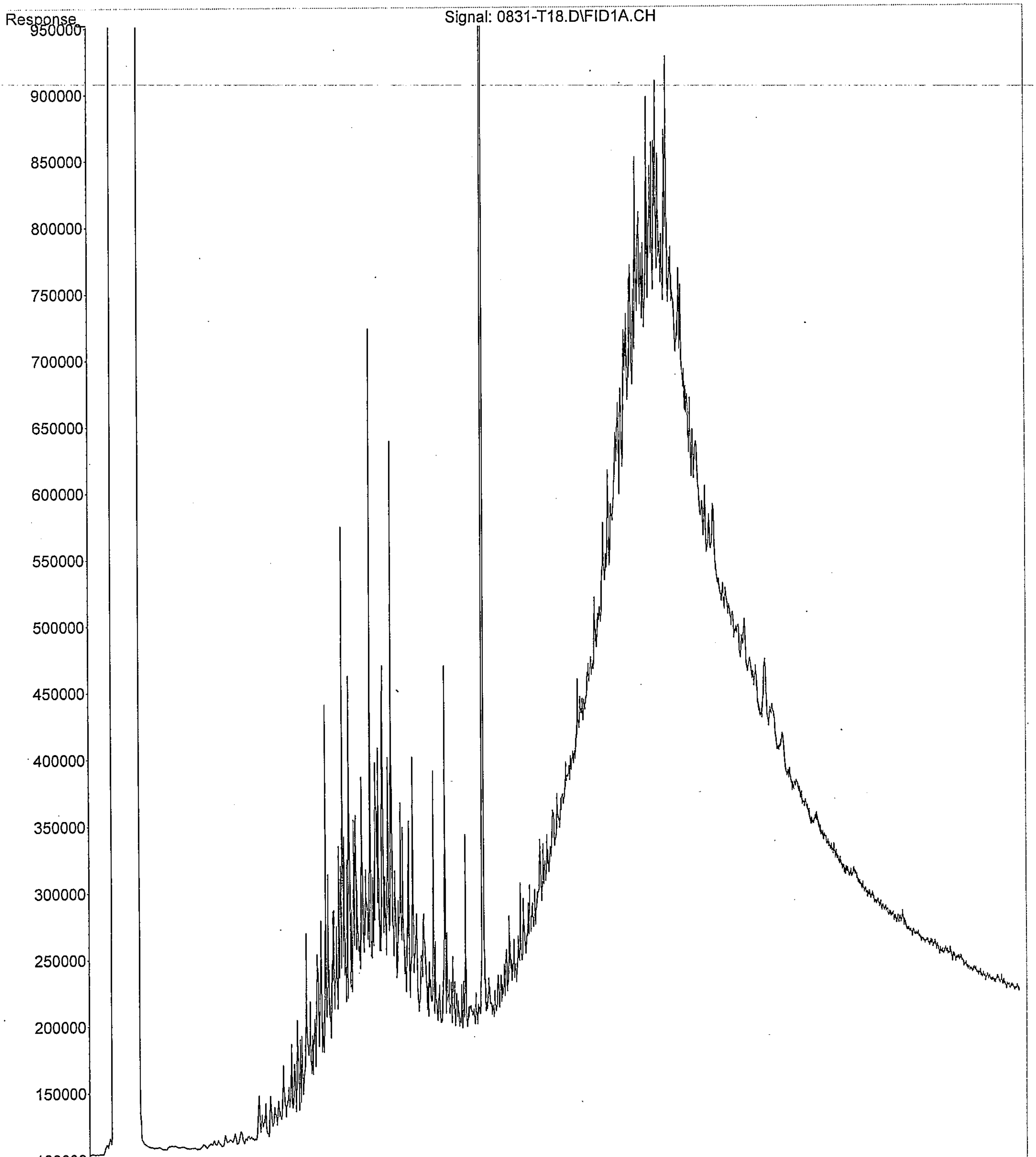
```
File        :C:\msdchem\2\DATA\V100901\0901-V07.D
Operator    :
Acquired    :  1 Sep 2010  14:28     using AcqMethod V100820F.M
Instrument  :    VIGO
Sample Name: 08-195-06 RC
Misc Info   :
Vial Number: 7
```



```
File        :C:\msdchem\2\DATA\V100827.SEC\0827-V93.D
Operator    :
Acquired    : 28 Aug 2010   14:12      using AcqMethod V100820F.M
Instrument  :    VIGO
Sample Name: 08-195-07
Misc Info   :
Vial Number: 93
```



```
File        :C:\msdchem\1\DATA\T100831\0831-T18.D
Operator    : ZT
Acquired    : 31 Aug 2010  22:03     using AcqMethod T100818F.M
Instrument :   Teri
Sample Name: 08-195-08
Misc Info   :
Vial Number: 18
```



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File        :C:\msdchem\2\DATA\V100827\0827-V40.D
Operator    :
Acquired    : 28 Aug 2010  12:12     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-09
Misc Info   :
Vial Number: 40
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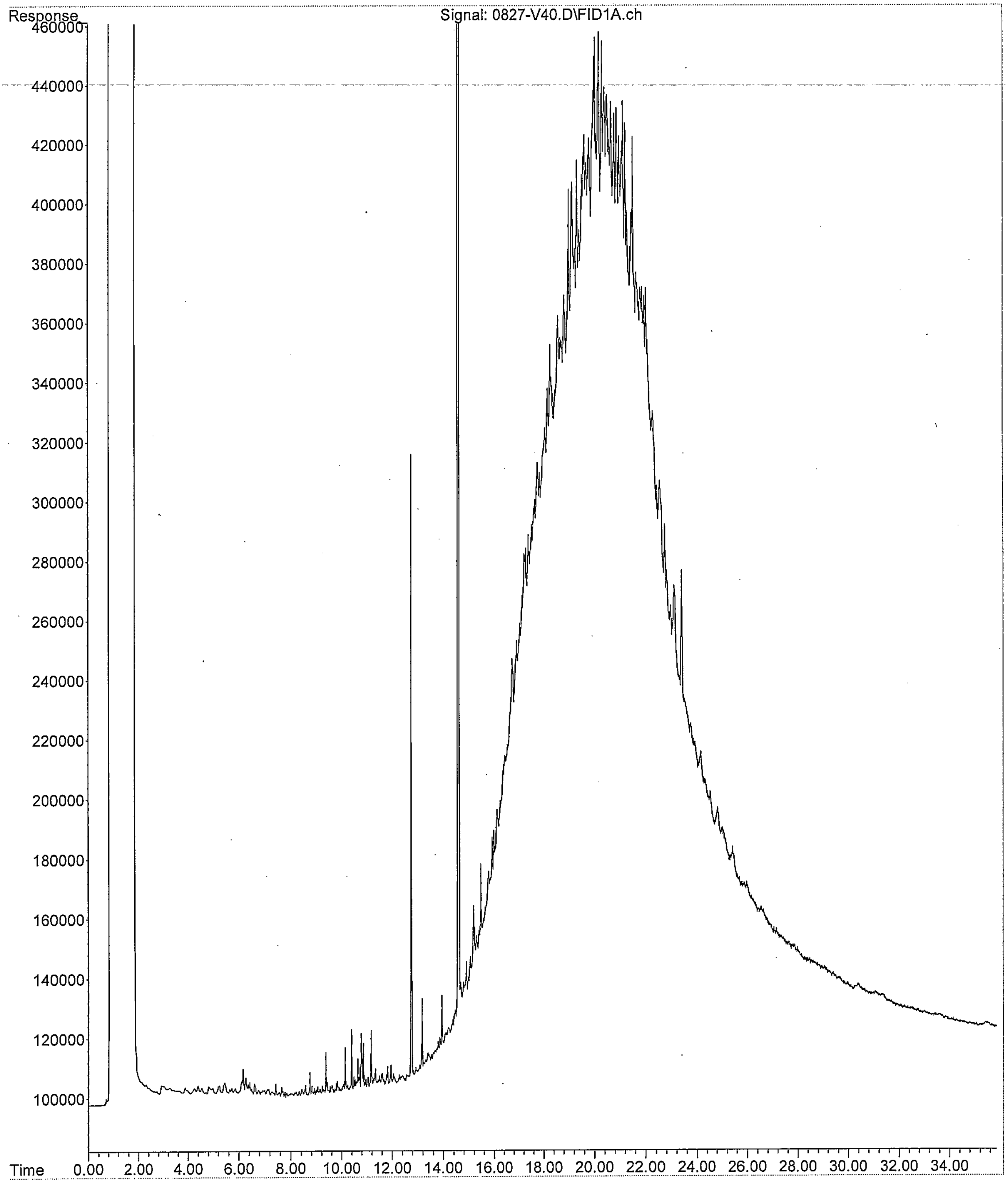

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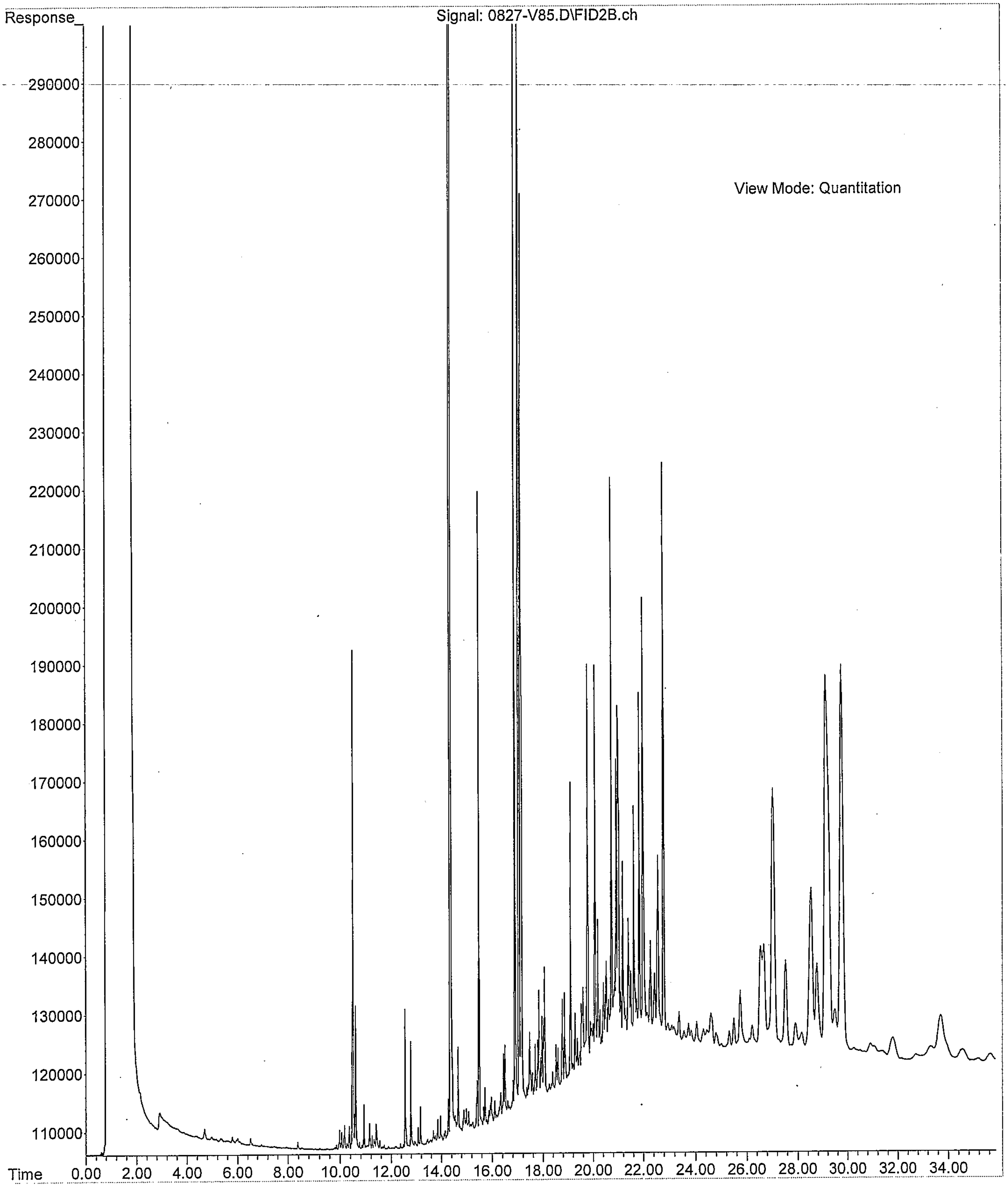
Operator    :
Acquired    : 28 Aug 2010   8:52     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-10
Misc Info   :
Vial Number: 85
```



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Operator    :
Acquired    : 28 Aug 2010   9:32     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-11
Misc Info   :
Vial Number: 86
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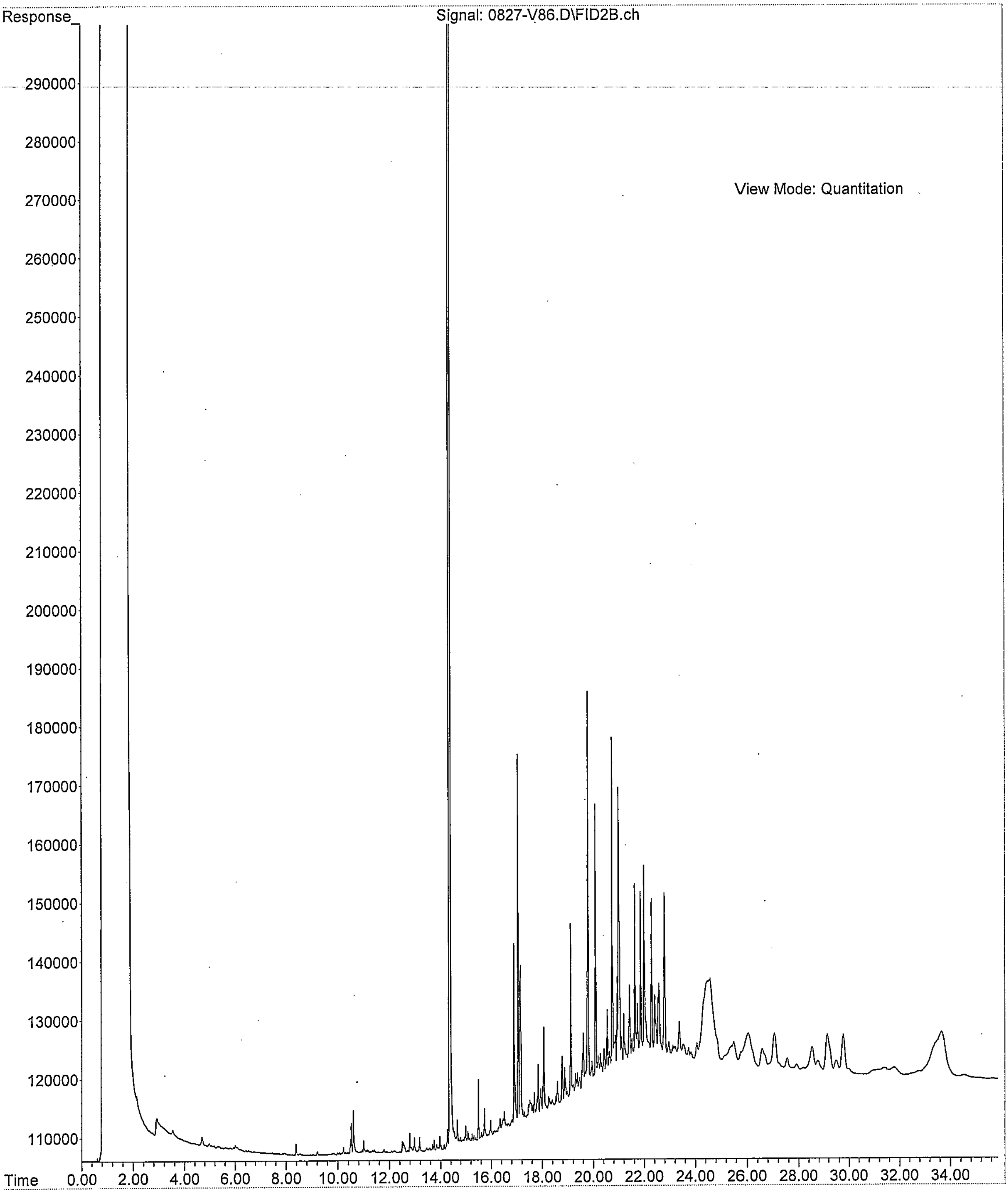
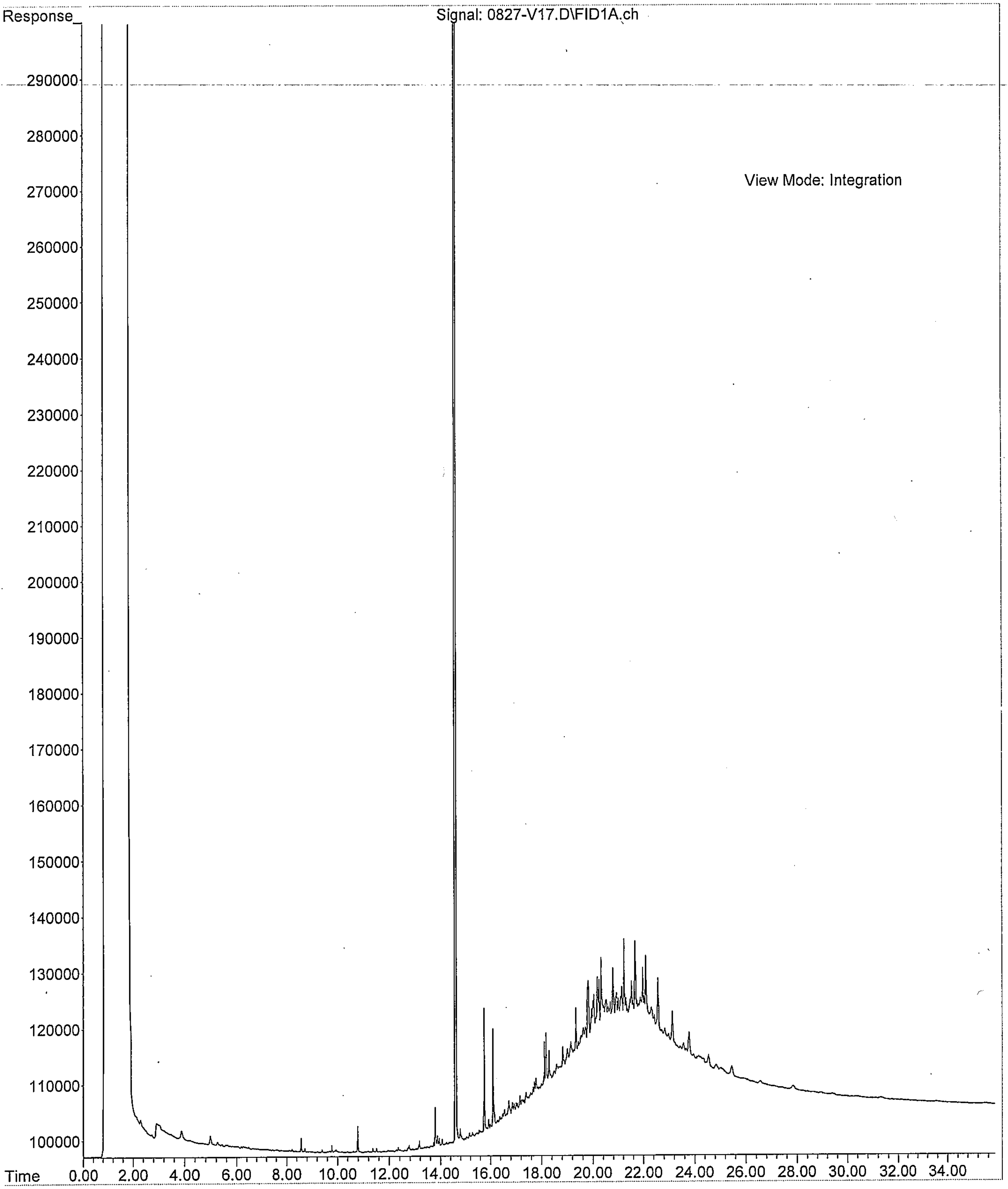
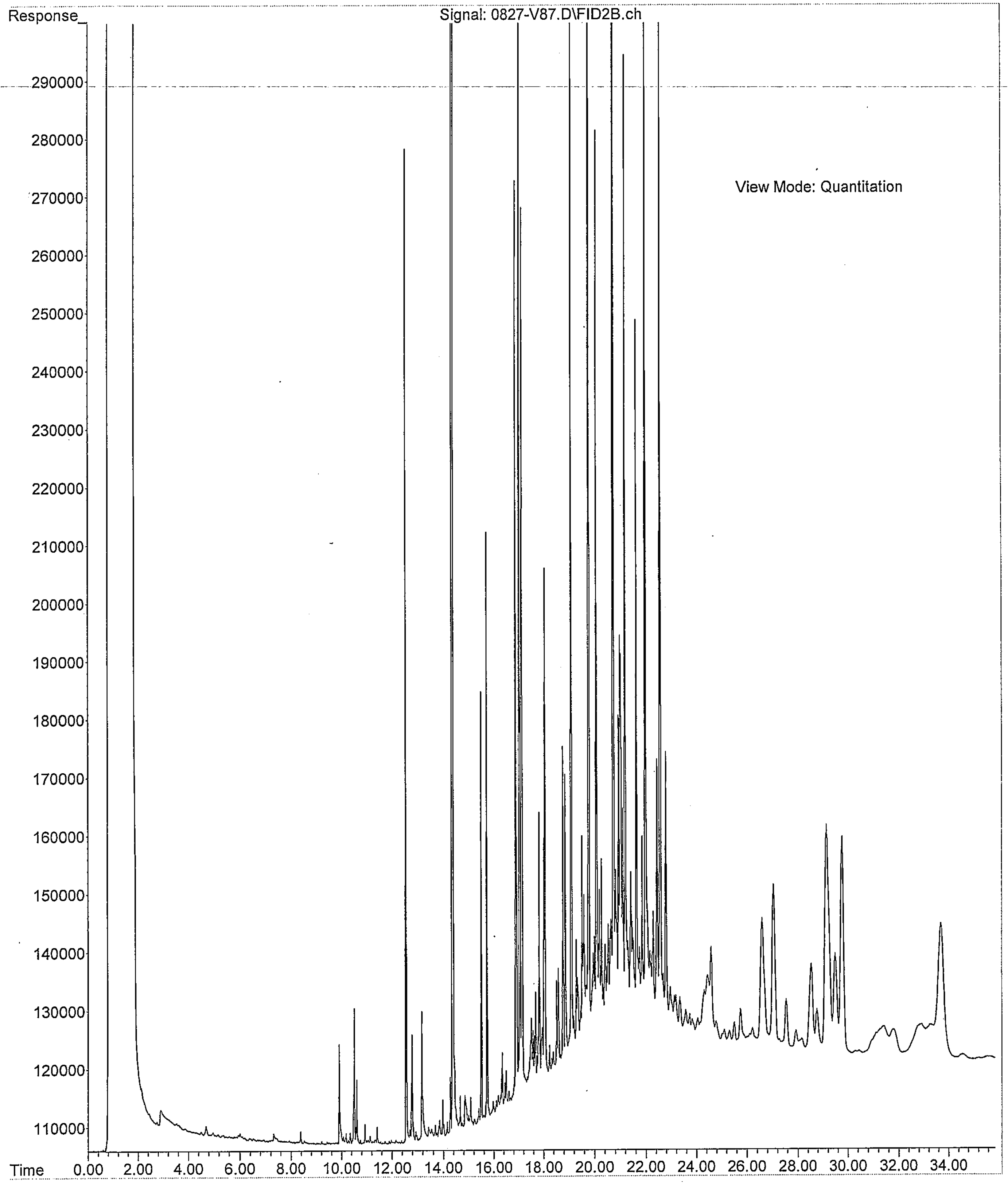


```
File        :C:\msdchem\2\DATA\V100827\0827-V17.D
Operator    :
Acquired    : 27 Aug 2010  20:55     using AcqMethod V100820F.M
Instrument  :    VIGO
Sample Name: 08-195-12
Misc Info   :
Vial Number: 17
```



File :C:\msdchem\2\DATA\V100827.SEC\0827-V87.D
Operator :
Acquired : 28 Aug 2010 10:12 using AcqMethod V100820F.M
Instrument : VIGO
Sample Name: 08-195-13
Misc Info :
Vial Number: 87



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Operator    :
Acquired    : 28 Aug 2010  10:52     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-14
Misc Info   :
Vial Number: 88
```

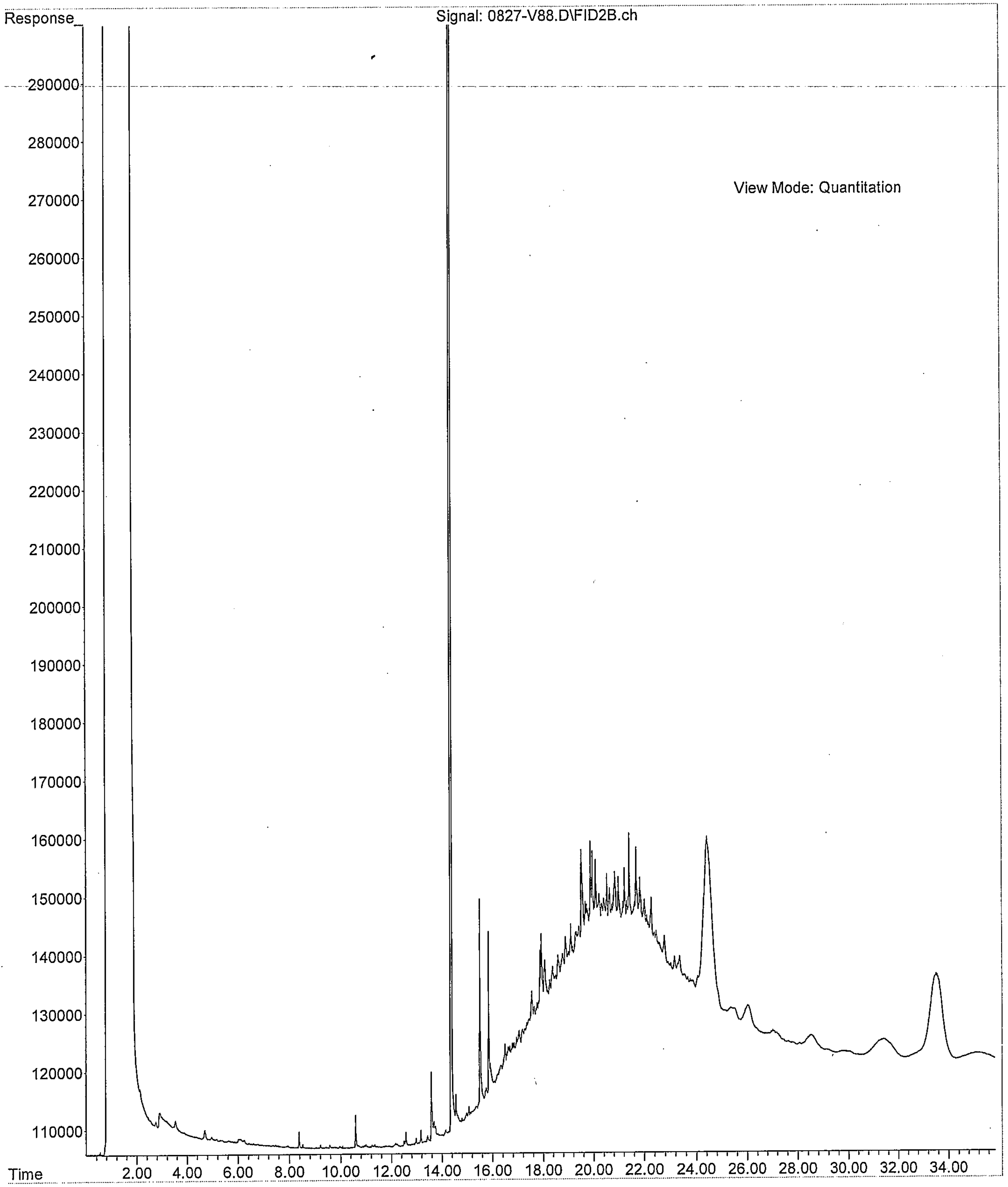

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Operator     :
Acquired     : 28 Aug 2010  10:52     using AcqMethod V100820F.M
Instrument   :   VIGO
Sample Name: 08-195-15
Misc Info    :
Vial Number: 38
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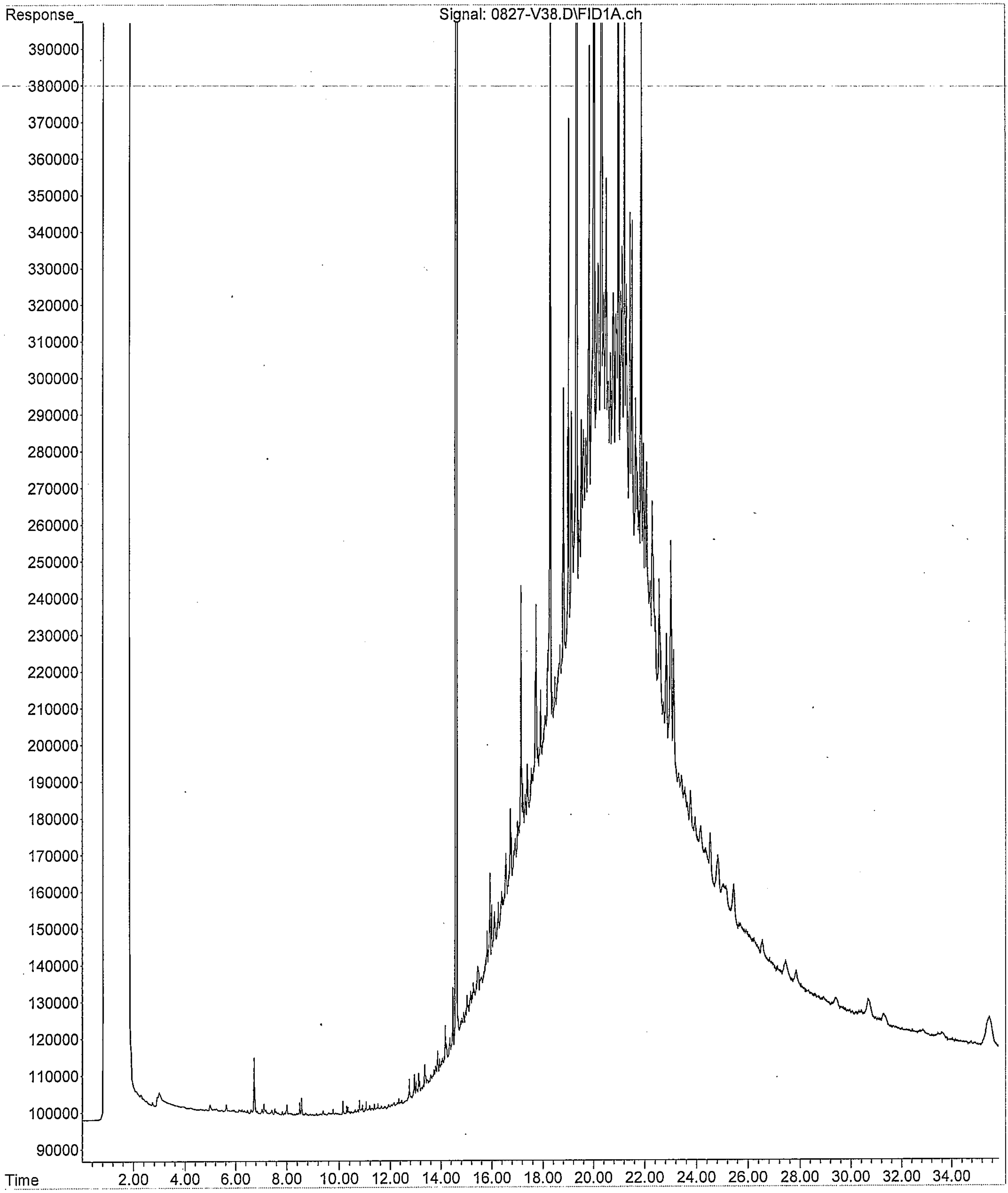
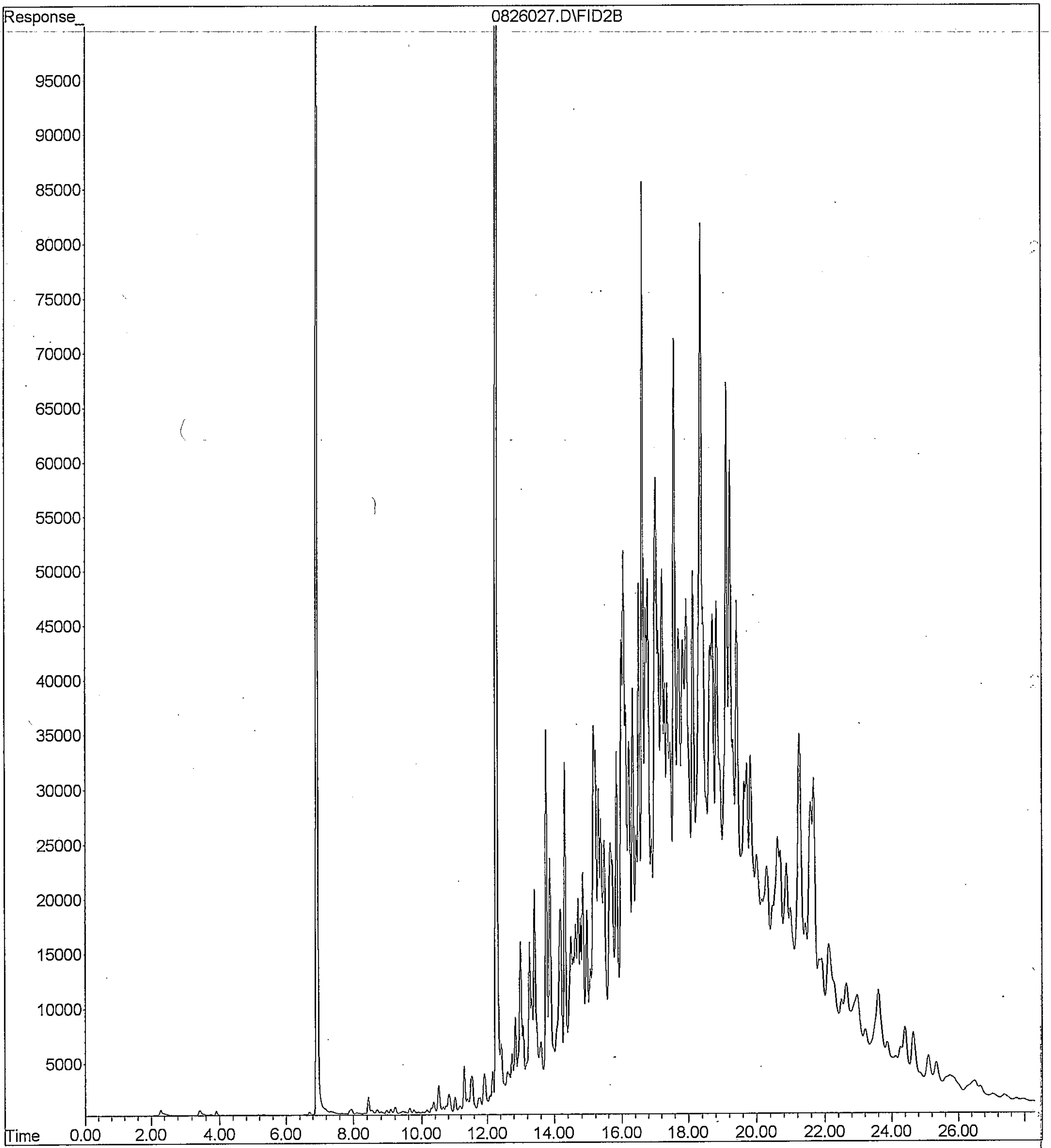
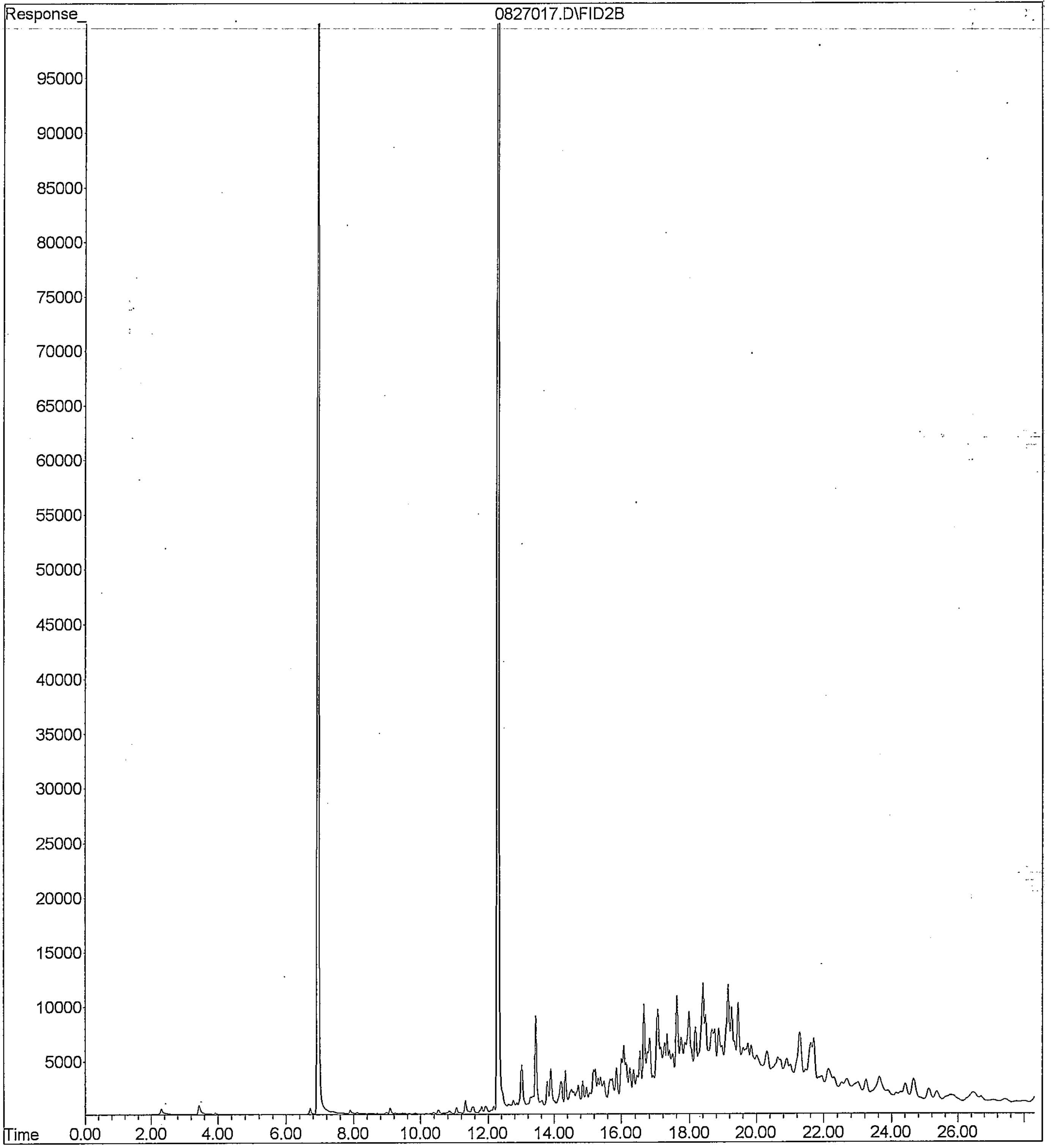


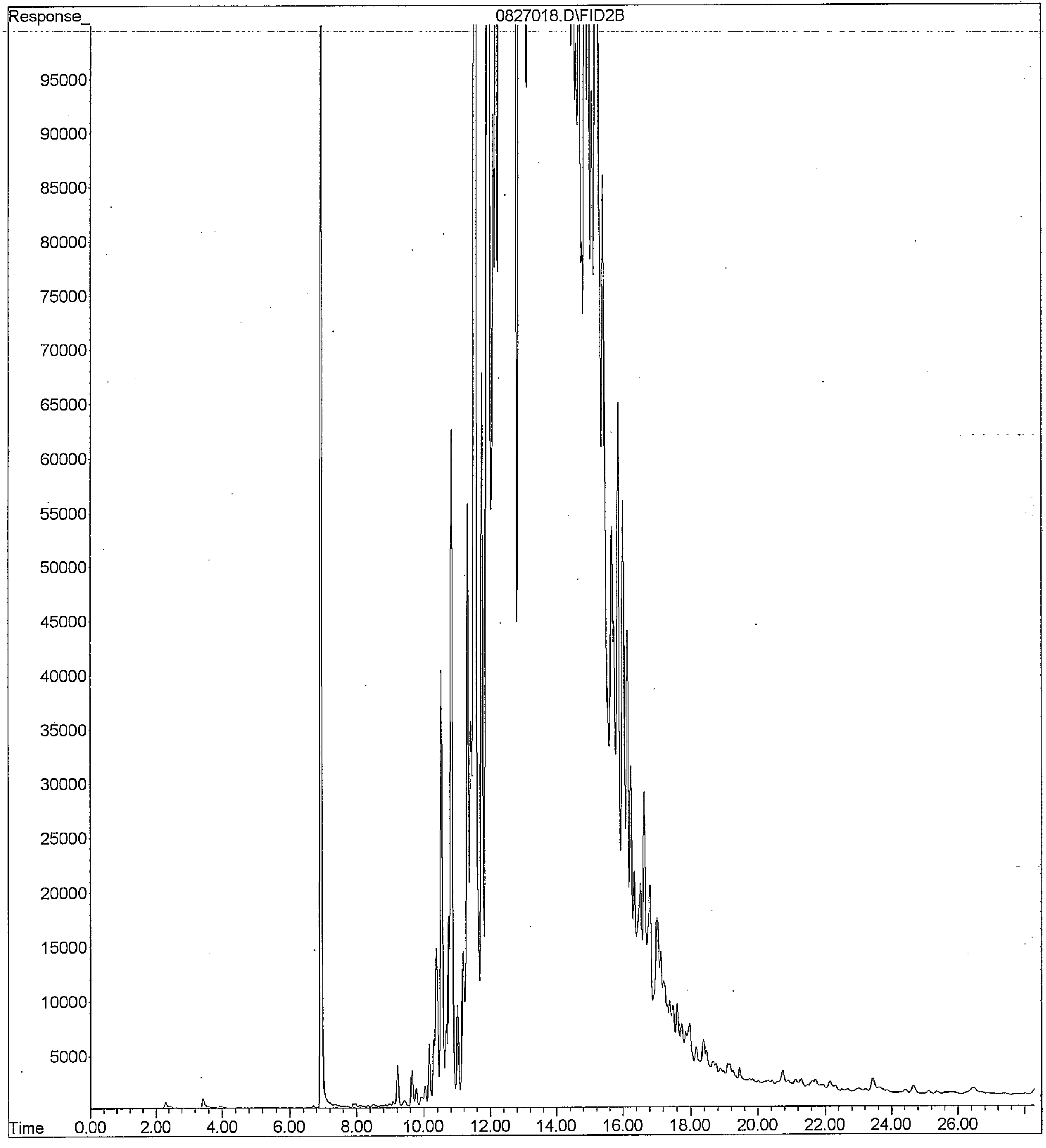
```
File        : X:\BTEX\DARYL\DATA\D100826\0826027.D
Operator    :
Acquired    : 27 Aug 2010   2:26     using AcqMethod 100816B.M
Instrument  :    Daryl
Sample Name: 08-195-01s
Misc Info  : V2-24-02
Vial Number: 27
```



```
File        : X:\BTEX\DARYL\DATA\D100827\0827017.D
Operator    :
Acquired    : 27 Aug 2010  21:56     using AcqMethod 100816B.M
Instrument  :  Daryl
Sample Name: 08-195-07s
Misc Info   : V2-24-02
Vial Number: 17
```



File   : X:\BTEX\DARYL\DATA\D100827\0827018.D
Operator   :
Acquired   : 27 Aug 2010   22:30   using AcqMethod 100816B.M
Instrument :   Daryl
Sample Name: 08-195-09s
Misc Info   : V2-24-02
Vial Number: 18



OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1008-195B

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 26, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

Case Narrative

Samples were collected on August 25, 2010 and received by the laboratory on August 26, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

PAHs EPA 8270D/SIM Analysis

Samples P-TP-2-6 and P-TP-5-3 were extracted and analyzed 9 days out of holding time.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-1-3**					
Laboratory ID:	08-195-01					
Naphthalene	**0.21**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
2-Methylnaphthalene	**0.81**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
1-Methylnaphthalene	**0.56**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthylene	**ND**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthene	**0.13**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Fluorene	**0.14**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Phenanthrene	**0.33**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Anthracene	**0.060**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Fluoranthene	**0.12**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Pyrene	**0.23**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]anthracene	**0.069**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Chrysene	**0.13**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[b]fluoranthene	**0.048**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[k]fluoranthene	**ND**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]pyrene	**0.066**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Dibenz[a,h]anthracene	**ND**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[g,h,i]perylene	**0.064**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*88*	*52 - 118*				
Terphenyl-d14	*79*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-4-3**					
Laboratory ID:	08-195-07					
Naphthalene	**0.032**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
2-Methylnaphthalene	**0.14**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
1-Methylnaphthalene	**0.11**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthylene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthene	**0.039**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Fluorene	**0.027**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Phenanthrene	**0.058**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Anthracene	**0.011**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Fluoranthene	**0.037**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Pyrene	**0.057**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]anthracene	**0.017**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Chrysene	**0.031**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[b]fluoranthene	**0.011**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[k]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]pyrene	**0.017**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Dibenz[a,h]anthracene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[g,h,i]perylene	**0.015**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*60*	*45 - 101*				
Pyrene-d10	*65*	*52 - 118*				
Terphenyl-d14	*41*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0907S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*85*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*87*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-038-01										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0726**	**0.0707**	0.0833	0.0833	ND	87	85	31 - 115	3	19	
Acenaphthylene	**0.0664**	**0.0631**	0.0833	0.0833	ND	80	76	40 - 134	5	22	
Acenaphthene	**0.0743**	**0.0715**	0.0833	0.0833	ND	89	86	48 - 118	4	17	
Fluorene	**0.0761**	**0.0730**	0.0833	0.0833	ND	91	88	54 - 122	4	16	
Phenanthrene	**0.0743**	**0.0711**	0.0833	0.0833	ND	89	85	46 - 123	4	19	
Anthracene	**0.0646**	**0.0645**	0.0833	0.0833	ND	78	77	53 - 123	0	27	
Fluoranthene	**0.0704**	**0.0683**	0.0833	0.0833	ND	85	82	47 - 132	3	26	
Pyrene	**0.0783**	**0.0742**	0.0833	0.0833	ND	94	89	41 - 137	5	25	
Benzo[a]anthracene	**0.0688**	**0.0672**	0.0833	0.0833	ND	83	81	43 - 132	2	26	
Chrysene	**0.0677**	**0.0673**	0.0833	0.0833	ND	81	81	46 - 126	1	24	
Benzo[b]fluoranthene	**0.0626**	**0.0634**	0.0833	0.0833	ND	75	76	44 - 134	1	24	
Benzo[k]fluoranthene	**0.0555**	**0.0595**	0.0833	0.0833	ND	67	71	45 - 132	7	20	
Benzo[a]pyrene	**0.0724**	**0.0721**	0.0833	0.0833	ND	87	87	36 - 136	0	23	
Indeno(1,2,3-c,d)pyrene	**0.0792**	**0.0783**	0.0833	0.0833	ND	95	94	40 - 136	1	16	
Dibenz[a,h]anthracene	**0.0821**	**0.0804**	0.0833	0.0833	ND	99	97	40 - 142	2	13	
Benzo[g,h,i]perylene	**0.0806**	**0.0779**	0.0833	0.0833	ND	97	94	37 - 137	3	18	
Surrogate:											
2-Fluorobiphenyl						*80*	*79*	*45 - 101*			
Pyrene-d10						*87*	*84*	*52 - 118*			
Terphenyl-d14						*77*	*82*	*41 - 106*			

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-2-6**					
Laboratory ID:	08-195-04					
Naphthalene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
2-Methylnaphthalene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
1-Methylnaphthalene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthylene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Fluorene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Phenanthrene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Anthracene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Fluoranthene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Pyrene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]anthracene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Chrysene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[b]fluoranthene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[k]fluoranthene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]pyrene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Dibenz[a,h]anthracene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[g,h,i]perylene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*67*	*45 - 101*				
Pyrene-d10	*86*	*52 - 118*				
Terphenyl-d14	*94*	*41 - 106*				

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-5-3**					
Laboratory ID:	08-195-10					
Naphthalene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
2-Methylnaphthalene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
1-Methylnaphthalene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthylene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Fluorene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Phenanthrene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Anthracene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Fluoranthene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Pyrene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]anthracene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Chrysene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[b]fluoranthene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[k]fluoranthene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]pyrene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Dibenz[a,h]anthracene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[g,h,i]perylene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*65*	*45 - 101*				
Pyrene-d10	*65*	*52 - 118*				
Terphenyl-d14	*64*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0917S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*83*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*90*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0917S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0659**	**0.0813**	0.0833	0.0833	79	98	33 - 105	21	30	
Acenaphthylene	**0.0647**	**0.0714**	0.0833	0.0833	78	86	51 - 110	10	22	
Acenaphthene	**0.0687**	**0.0804**	0.0833	0.0833	82	97	51 - 105	16	20	
Fluorene	**0.0709**	**0.0803**	0.0833	0.0833	85	96	61 - 107	12	17	
Phenanthrene	**0.0722**	**0.0791**	0.0833	0.0833	87	95	61 - 106	9	12	
Anthracene	**0.0628**	**0.0683**	0.0833	0.0833	75	82	59 - 106	8	12	
Fluoranthene	**0.0712**	**0.0772**	0.0833	0.0833	85	93	66 - 116	8	12	
Pyrene	**0.0746**	**0.0840**	0.0833	0.0833	90	101	67 - 118	12	14	
Benzo[a]anthracene	**0.0673**	**0.0727**	0.0833	0.0833	81	87	60 - 114	8	11	
Chrysene	**0.0738**	**0.0800**	0.0833	0.0833	89	96	64 - 112	8	12	
Benzo[b]fluoranthene	**0.0754**	**0.0812**	0.0833	0.0833	91	97	61 - 123	7	14	
Benzo[k]fluoranthene	**0.0715**	**0.0808**	0.0833	0.0833	86	97	50 - 124	12	17	
Benzo[a]pyrene	**0.0720**	**0.0776**	0.0833	0.0833	86	93	50 - 114	7	17	
Indeno(1,2,3-c,d)pyrene	**0.0900**	**0.0825**	0.0833	0.0833	108	99	56 - 122	9	16	
Dibenz[a,h]anthracene	**0.0914**	**0.0828**	0.0833	0.0833	110	99	57 - 124	10	16	
Benzo[g,h,i]perylene	**0.0841**	**0.0832**	0.0833	0.0833	101	100	56 - 121	1	15	
Surrogate:										
2-Fluorobiphenyl					*72*	*84*	*45 - 101*			
Pyrene-d10					*80*	*88*	*52 - 118*			
Terphenyl-d14					*92*	*94*	*41 - 106*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

08-195

DATE: 8/25/10
PAGE: 1 of 1

PROJECT NAME: Bothell Crossroads #: 2007-098
SITE CODE: Bothell Point
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: PHONE:

Rush TAT - 2 day TAT
(EPH, VPH - Std. TAT)

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	RCRA Metals	EPH/VPH (HOLD)	VOCs 8260	PAHs	% MOISTURE	REMARKS
P-TP-1-3	8/25/10	1020	S	1	6	/	X	/	⊛		⊛	/	
P-TP-1-6	↓	1030	↓	2	5	/		/				↓	
P-TP-2-2		1400		3	5	/							
P-TP-2-6		1130		4	5	⊗					O	⊗	
P-TP-3-3		1200		5	5	/						/	
P-TP-3-7		1215		6	5	⊗						⊗	
P-TP-4-3		1230		7	7	/	X	/	⊛		⊛	/	
P-TP-4-6		1245		8	5	⊗		⊗				⊗	
P-TP-5-1		1310		9	5	/	X			/		/	⊗ Added 8/30/10 DB 5:22 pm - 1 day TAT.
P-TP-5-3		1315		10	5	/	/			/	O	↓	
P-TP-6-1		1330		11	5	/	/			/			
P-TP-7-2		1355		12	5	/	/	/					
P-TP-7-5		1400		13	5	/	/	/					⊛ Added 9/2/10 RE STA
P-TP-8-3		1445		14	5	/		/					
P-TP-8-6	↓	1500	↓	15	5	/		/				↓	
													O Added 9/15/10. DB (STA)

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fisk		HWA GeoSciences	8/26/10	10:10am	
Received by:	Young Dong		Speedy	8/26/10	10:10am	
Relinquished by:	Young Dong		Speedy	8/26/10	10:54am	
Received by:	Mom Voun		OSE	8/26/10	1054	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

Analytical Resources, Incorporated
Analytical Chemists and Consultants

22 September 2010

David Baumeister
OnSite Environmental, Inc.
14648 NE 95th
Redmond, WA 98052

RE: Client Project: 2007-098
ARI Job No: RL77

Dear David:

Please find enclosed the chain-of-custody (COC) record and the final results for the samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted two soil samples on September 3, 2010. The samples were analyzed for EPH as requested.

There were no anomalies associated with these analyses.

An electronic copy of these reports will remain on file at ARI. Should you have any questions, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
markh@arilabs.com

Enclosures

cc: file RL77

MDH/esj

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Subcontract Laboratory: Analytical Resources, Inc.
Attention: Mark Harris
4611 S 134th Pl, Ste. 100 Tukwila, WA 98168
Phone Number: (206) 695-6200
Date/Time: ______

Turnaround Request:
1 Day 2 Day 3 Day [✓ Standard]
Other: ______

Laboratory Reference #: 08-195
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098
Project Name: ______

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
1	P-TP-1-3	8/25/10		S	1	EPH
7	P-TP-4-3	⊥		⊥	⊥	⊥

Signature	Company	Date	Time
Relinquished by:	OnSite Env	9/3/10	1010
Received by: Van	Speedy	9/3/10	1010
Relinquished by: Van	Speedy	9/3/10	1546
Received by:	ARI	9/3/10	1540
Relinquished by:			
Received by:			

Comments/Special Instructions

EIM

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: OnSite

Project Name:

COC No(s): [✓ NA]

Delivered by: Fed-Ex UPS [✓ Courier] Hand Delivered Other:

Assigned ARI Job No: RL77

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES [✓ NO]

Were custody papers included with the cooler? [✓ YES] NO

Were custody papers properly filled out (ink, signed, etc.) [✓ YES] NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 7.6

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90941619

Cooler Accepted by: JM Date: 9/3/10 Time: 1545

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES [✓ NO]

What kind of packing material was used? ... Bubble Wrap [✓ Wet Ice] Gel Packs [✓ Baggies] Foam Block Paper Other:

Was sufficient ice used (if appropriate)? NA YES [✓ NO]

Were all bottles sealed in individual plastic bags? YES [✓ NO]

Did all bottles arrive in good condition (unbroken)? [✓ YES] NO

Were all bottle labels complete and legible? [✓ YES] NO

Did the number of containers listed on COC match with the number of containers received? [✓ YES] NO

Did all bottle labels and tags agree with custody papers? [✓ YES] NO

Were all bottles used correct for the requested analyses? [✓ YES] NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... [✓ NA] YES NO

Were all VOC vials free of air bubbles? [✓ NA] YES NO

Was sufficient amount of sample sent in each bottle? [✓ YES] NO

Date VOC Trip Blank was made at ARI [✓ NA]

Was Sample Split by ARI : [✓ NA] YES Date/Time: Equipment: Split by:

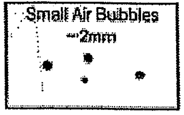
Samples Logged by: JM Date: 9/3/10 Time: 1730

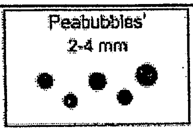
***** Notify Project Manager of discrepancies or concerns *****

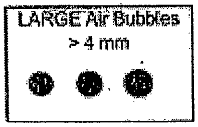
Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:







Small → "sm"	
Peabubbles → "pb"	
Large → "lg"	
Headspace → "hs"	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 7/10/2009

Inorganic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Duplicate RPD is not within established control limits
B	Reported value is less than the CRDL but ≥ the Reporting Limit
N	Matrix Spike recovery not within established control limits
NA	Not Applicable, analyte not spiked
H	The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
L	Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Flagged value is not within established control limits
B	Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
J	Estimated concentration when the value is less than ARI's established reporting limits
D	The spiked compound was not detected due to sample extract dilution
E	Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).
S	Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

Data Reporting Qualifiers

Effective 7/10/2009

NA	The flagged analyte was not analyzed for
NR	Spiked compound recovery is not reported due to chromatographic interference
NS	The flagged analyte was not spiked into the sample
M	Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
M2	The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
Y	The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
C	The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
P	The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

Geotechnical Data

A	The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
F	Samples were frozen prior to particle size determination
SM	Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
SS	Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
W	Weight of sample in some pipette aliquots was below the level required for accurate weighting

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: MB-090810
METHOD BLANK

Lab Sample ID: MB-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted: 09/08/10
Percent Moisture: NA

Sample Amount: 10.0 g-as-rec
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/22/10 00:08
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 05:32
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	2,000	< 2,000 U
C10-C12 Aliphatics	2,000	< 2,000 U
C12-C16 Aliphatics	2,000	< 2,000 U
C16-C21 Aliphatics	2,000	< 2,000 U
C21-C34 Aliphatics	2,000	< 2,000 U
C8-C10 Aromatics	2,000	< 2,000 U
C10-C12 Aromatics	2,000	< 2,000 U
C12-C16 Aromatics	2,000	< 2,000 U
C16-C21 Aromatics	2,000	< 2,000 U
C21-C34 Aromatics	2,000	< 2,000 U

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	73.8%
Aromatic	o-Terphenyl	76.2%

RL77 00006

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-1-3
SAMPLE

Lab Sample ID: RL77A
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/25/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 16.0%

Sample Amount: 8.64 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 20:20
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 01:49
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Range	**RL**	**Result**
C8-C10 Aliphatics	**2,300**	**6,100**
C10-C12 Aliphatics	**2,300**	**46,000**
C12-C16 Aliphatics	**2,300**	**150,000**
C16-C21 Aliphatics	**2,300**	**56,000**
C21-C34 Aliphatics	**2,300**	**280,000**
C8-C10 Aromatics	2,300	< 2,300 U
C10-C12 Aromatics	**2,300**	**8,100**
C12-C16 Aromatics	**2,300**	**36,000**
C16-C21 Aromatics	**2,300**	**50,000**
C21-C34 Aromatics	**2,300**	**240,000**

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	68.0%
Aromatic	o-Terphenyl	73.8%

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-4-3
SAMPLE

Lab Sample ID: RL77B
LIMS ID: 10-22351
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/25/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 15.6%

Sample Amount: 8.70 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 21:10
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 02:39
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	2,300	< 2,300 U
C10-C12 Aliphatics	**2,300**	**4,200**
C12-C16 Aliphatics	**2,300**	**13,000**
C16-C21 Aliphatics	**2,300**	**14,000**
C21-C34 Aliphatics	**2,300**	**100,000**
C8-C10 Aromatics	2,300	< 2,300 U
C10-C12 Aromatics	2,300	< 2,300 U
C12-C16 Aromatics	**2,300**	**4,400**
C16-C21 Aromatics	**2,300**	**11,000**
C21-C34 Aromatics	**2,300**	**47,000**

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	69.6%
Aromatic	o-Terphenyl	79.3%

FORM I

RL77: 00008

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: LCS-090810
LCS/LCSD

Lab Sample ID: LCS-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 09/08/10

Sample Amount LCS: 10.0 g-as-rec
LCSD: 10.0 g-as-rec
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL

Aliphatic
Date Analyzed LCS: 09/21/10 23:17
LCSD: 09/21/10 23:43
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Aromatic
Date Analyzed LCS: 09/22/10 04:43
LCSD: 09/22/10 05:08
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Range	**LCS**	**Spike Added-LCS**	**LCS Recovery**	**LCSD**	**Spike Added-LCSD**	**LCSD Recovery**	**RPD**
C8-C10 Aliphatics	11000	15000	73.3%	11600	15000	77.3%	5.3%
C10-C12 Aliphatics	9100	15000	60.7%	9500	15000	63.3%	4.3%
C12-C16 Aliphatics	14000	15000	93.3%	14400	15000	96.0%	2.8%
C16-C21 Aliphatics	14000	15000	93.3%	13800	15000	92.0%	1.4%
C10-C12 Aromatics	10300	15000	68.7%	10400	15000	69.3%	1.0%
C12-C16 Aromatics	12500	15000	83.3%	12900	15000	86.0%	3.1%
C16-C21 Aromatics	27100	30000	90.3%	29100	30000	97.0%	7.1%
C21-C34 Aromatics	26500	30000	88.3%	29000	30000	96.7%	9.0%

EPH Surrogate Recovery

		LCS	**LCSD**
Aliphatic	1-Chlorooctadecane	73.6%	74.5%
Aromatic	o-Terphenyl	75.6%	79.2%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

RL77: 00009

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009044
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-195 / Proj #2207-098
CLIENT SAMPLE ID: 8/25/2010 P-TP-1-3
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C6-C8 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aromatics	NWVPH	**6.1**	5.0	1	MG/KG	9/7/2010	DLC
Total Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aromatics	NWVPH	**6.1**	5.0	1	MG/KG	9/7/2010	DLC
Hexane	NWVPH	ND	0.30	1	MG/KG	9/7/2010	DLC

* Note: Hexane reporting limit raised due to low sample weight.

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052		DATE:	9/8/2010
			ALS JOB#:	1009044
			DATE RECEIVED:	9/3/2010
			WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-195 / Proj #2207-098
CLIENT SAMPLE ID: 8/25/2010 P-TP-4-3
ALS SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C6-C8 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Hexane	NWVPH	ND	0.20	1	MG/KG	9/7/2010	DLC

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMT.
** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE: 9/8/2010
ALS JOB#: 1009044
DATE RECEIVED: 9/3/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-195 / Proj #2207-098

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
1009044-01	NWVPH	TFT - Aliphatic	83%
1009044-01	NWVPH	TFT - Aromatic	85%
1009044-01	NWVPH	TFT - Hexane	91%
1009044-02	NWVPH	TFT - Aliphatic	85%
1009044-02	NWVPH	TFT - Aromatic	88%
1009044-02	NWVPH	TFT - Hexane	93%

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE: 9/8/2010
ALS JOB#: 1009044
DATE RECEIVED: 9/3/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-195 / Proj #2207-098

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MBLK-972010	Soil	NWVPH	C5-C6 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C6-C8 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C8-C10 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C8-C10 Aromatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Total Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Total Aromatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Hexane	ND(<0.20)	MG/KG

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009044
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-195 / Proj #2207-098

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
R70417	Soil	NWVPH	C5-C6 Aliphatics	100	96%	99%	3
R70417	Soil	NWVPH	>C6-C8 Aliphatics	100	101%	111%	9
R70417	Soil	NWVPH	>C8-C10 Aliphatics	100	103%	107%	4
R70417	Soil	NWVPH	>C8-C10 Aromatics	100	102%	108%	6
R70417	Soil	NWVPH	Hexane	100	102%	101%	1

APPROVED BY:

1009044

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Page 1 of 1

Laboratory Reference #: 08-145

Project Manager: David Baumeister

email: dbaumeister@onsite-env.com

Project Number: 2007-098

Project Name:

Subcontract Laboratory:

Contact Person:

Address:

Phone Number:

Date/Time:

Turnaround Request:

1 Day 2 Day 3 Day [✓ Standard]

Other:

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
1	1	P-TP-1-3	8/25		S	1	VPH
2	7	P-TP-4-3	8/25		S	1	VPH

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	OnSite Env	9/3/10	1315	
Received by:	SP-007	9-3-10	321	
Relinquished by:				
Received by: Shawn Robinson	ALS	9/3/10	4:15	
Relinquished by:				
Received by:				

Analytical Resources, Incorporated
Analytical Chemists and Consultants

22 September 2010

David Baumeister
OnSite Environmental, Inc.
14648 NE 95th
Redmond, WA 98052

RE: Client Project: 2007-098
ARI Job No: RL77

Dear David:

Please find enclosed the chain-of-custody (COC) record and the final results for the samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted five soil samples on September 3, 2010. The samples were analyzed for EPH as requested.

There were no anomalies associated with these analyses.

An electronic copy of these reports will remain on file at ARI. Should you have any questions, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
markh@arilabs.com

Enclosures

cc: file RL77

MDH/esj

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Subcontract Laboratory: Analytical Resources, Inc.
Attention: Mark Harris
4611 S 134th Pl, Ste. 100 Tukwila, WA 98168
Phone Number: (206) 695-6200
Date/Time:

Turnaround Request:
1 Day 2 Day 3 Day [✓ Standard]
Other:

Laboratory Reference #: 08-195
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098
Project Name:

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
1	P-TP-1-3	8/25/10		S	1	EPH
7	P-TP-4-3	L		L	L	L

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	OnSite Env	9/3/10	1010	EIM
Received by: Van	Speedy	9/3/10	1010	
Relinquished by: Van	Speedy	9/3/10	1546	
Received by:	ARI	9/3/10	1540	
Relinquished by:				
Received by:				

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Subcontract Laboratory: Analytical Resources, Inc.
Attention: Mark Harris
4611 S 134th Pl, Ste. 100 Tukwila, WA 98168
Phone Number: (206) 695-6200
Date/Time: ____________

Turnaround Request:
1 Day 2 Day 3 Day
[✓ Standard]
Other: ____________

Laboratory Reference #: 08-217
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098
Project Name: ____________

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
9	P-TP-13-3	8/26/10		S	1	EPH
16	P-TP-18-2	↓		↓	↓	↓

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:		OnSite Env	9/3/10	1010	EIM
Received by:	Van	Speedy	9/3/10	1010	
Relinquished by:	Van	Speedy	9/3/10	1540	
Received by:		ARI	9/3/10	1540	
Relinquished by:					
Received by:					

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Subcontract Laboratory: Analytical Resources, Inc.
Attention: Mark Harris
4611 S 134th Pl, Ste. 100 Tukwila, WA 98168
Phone Number: (206) 695-6200
Date/Time: ____________

Turnaround Request:
1 Day 2 Day 3 Day [✓ Standard]
Other: ____________

Laboratory Reference #: 08-221
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098
Project Name: ____________

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
2	P-TP-23-2	8/27/10		S	1	EPH

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:		OnSite Env	9/3/10	1000	EIM
Received by:	Van	Speedy	9/3/10	1010	
Relinquished by:	Van	Speedy	9/3/10	1540	
Received by:		ARI	9/3/10	1540	
Relinquished by:					
Received by:					

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: OnSite
COC No(s): ______ [✓ NA]
Assigned ARI Job No: RL77
Project Name: ______
Delivered by: Fed-Ex UPS [✓ Courier] Hand Delivered Other: ______
Tracking No: ______ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES [✓ NO]
Were custody papers included with the cooler? .... [✓ YES] NO
Were custody papers properly filled out (ink, signed, etc.) .... [✓ YES] NO
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)........ 7.6 ____ ____ ____
If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90941619
Cooler Accepted by: JM Date: 9/3/10 Time: 1545

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? .... YES [✓ NO]
What kind of packing material was used? ... Bubble Wrap [✓ Wet Ice] Gel Packs [✓ Baggies] Foam Block Paper Other: ______
Was sufficient ice used (if appropriate)? .... NA YES [✓ NO]
Were all bottles sealed in individual plastic bags? .... YES [✓ NO]
Did all bottles arrive in good condition (unbroken)? .... [✓ YES] NO
Were all bottle labels complete and legible? .... [✓ YES] NO
Did the number of containers listed on COC match with the number of containers received? .... [✓ YES] NO
Did all bottle labels and tags agree with custody papers? .... [✓ YES] NO
Were all bottles used correct for the requested analyses? .... [✓ YES] NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... [✓ NA] YES NO
Were all VOC vials free of air bubbles? .... [✓ NA] YES NO
Was sufficient amount of sample sent in each bottle? .... [✓ YES] NO
Date VOC Trip Blank was made at ARI.................................... [✓ NA] ______
Was Sample Split by ARI : [✓ NA] YES Date/Time: ______ Equipment: ______ Split by: ______

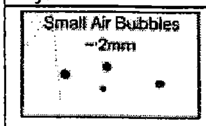
Samples Logged by: JM Date: 9/3/10 Time: 1730

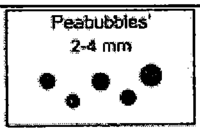
***** Notify Project Manager of discrepancies or concerns *****

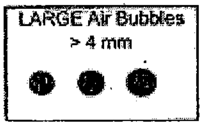
Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:







Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 7/10/2009

Inorganic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Duplicate RPD is not within established control limits
B	Reported value is less than the CRDL but ≥ the Reporting Limit
N	Matrix Spike recovery not within established control limits
NA	Not Applicable, analyte not spiked
H	The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
L	Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Flagged value is not within established control limits
B	Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
J	Estimated concentration when the value is less than ARI's established reporting limits
D	The spiked compound was not detected due to sample extract dilution
E	Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).
S	Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

Data Reporting Qualifiers

Effective 7/10/2009

NA	The flagged analyte was not analyzed for
NR	Spiked compound recovery is not reported due to chromatographic interference
NS	The flagged analyte was not spiked into the sample
M	Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
M2	The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
Y	The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
C	The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
P	The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

Geotechnical Data

A	The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
F	Samples were frozen prior to particle size determination
SM	Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
SS	Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
W	Weight of sample in some pipette aliquots was below the level required for accurate weighting

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: MB-090810
METHOD BLANK

Lab Sample ID: MB-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted: 09/08/10
Percent Moisture: NA

Sample Amount: 10.0 g-as-rec
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/22/10 00:08
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 05:32
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	**RL**	**Result**
C8-C10 Aliphatics	2,000	< 2,000 U
C10-C12 Aliphatics	2,000	< 2,000 U
C12-C16 Aliphatics	2,000	< 2,000 U
C16-C21 Aliphatics	2,000	< 2,000 U
C21-C34 Aliphatics	2,000	< 2,000 U
C8-C10 Aromatics	2,000	< 2,000 U
C10-C12 Aromatics	2,000	< 2,000 U
C12-C16 Aromatics	2,000	< 2,000 U
C16-C21 Aromatics	2,000	< 2,000 U
C21-C34 Aromatics	2,000	< 2,000 U

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	73.8%
Aromatic	o-Terphenyl	76.2%

FORM I

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-1-3
SAMPLE

Lab Sample ID: RL77A
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/25/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 16.0%

Sample Amount: 8.64 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 20:20
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 01:49
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	**2,300**	**6,100**
C10-C12 Aliphatics	**2,300**	**46,000**
C12-C16 Aliphatics	**2,300**	**150,000**
C16-C21 Aliphatics	**2,300**	**56,000**
C21-C34 Aliphatics	**2,300**	**280,000**
C8-C10 Aromatics	2,300	< 2,300 U
C10-C12 Aromatics	**2,300**	**8,100**
C12-C16 Aromatics	**2,300**	**36,000**
C16-C21 Aromatics	**2,300**	**50,000**
C21-C34 Aromatics	**2,300**	**240,000**

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	68.0%
Aromatic	o-Terphenyl	73.8%

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-4-3
SAMPLE

Lab Sample ID: RL77B
LIMS ID: 10-22351
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/25/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 15.6%

Sample Amount: 8.70 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 21:10
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 02:39
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	2,300	< 2,300 U
C10-C12 Aliphatics	**2,300**	**4,200**
C12-C16 Aliphatics	**2,300**	**13,000**
C16-C21 Aliphatics	**2,300**	**14,000**
C21-C34 Aliphatics	**2,300**	**100,000**
C8-C10 Aromatics	2,300	< 2,300 U
C10-C12 Aromatics	2,300	< 2,300 U
C12-C16 Aromatics	**2,300**	**4,400**
C16-C21 Aromatics	**2,300**	**11,000**
C21-C34 Aromatics	**2,300**	**47,000**

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	69.6%
Aromatic	o-Terphenyl	79.3%

FORM I

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-13-3
SAMPLE

Lab Sample ID: RL77C
LIMS ID: 10-22352
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/26/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 17.1%

Sample Amount: 8.70 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 21:35
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 03:04
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	2,300	< 2,300 U
C10-C12 Aliphatics	2,300	< 2,300 U
C12-C16 Aliphatics	2,300	< 2,300 U
C16-C21 Aliphatics	**2,300**	**35,000**
C21-C34 Aliphatics	**2,300**	**2,000,000**
C8-C10 Aromatics	2,300	< 2,300 U
C10-C12 Aromatics	2,300	< 2,300 U
C12-C16 Aromatics	2,300	< 2,300 U
C16-C21 Aromatics	2,300	< 2,300 U
C21-C34 Aromatics	**2,300**	**75,000**

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	68.5%
Aromatic	o-Terphenyl	78.4%

FORM I

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-18-2
SAMPLE

Lab Sample ID: RL77D
LIMS ID: 10-22353
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/26/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 11.7%

Sample Amount: 8.89 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 22:01
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 03:29
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	**2,200**	**2,800**
C10-C12 Aliphatics	**2,200**	**14,000**
C12-C16 Aliphatics	**2,200**	**41,000**
C16-C21 Aliphatics	**2,200**	**22,000**
C21-C34 Aliphatics	**2,200**	**250,000**
C8-C10 Aromatics	2,200	< 2,200 U
C10-C12 Aromatics	**2,200**	**2,500**
C12-C16 Aromatics	**2,200**	**12,000**
C16-C21 Aromatics	**2,200**	**22,000**
C21-C34 Aromatics	**2,200**	**120,000**

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	70.6%
Aromatic	o-Terphenyl	76.0%

FORM I

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-23-2
SAMPLE

Lab Sample ID: RL77E
LIMS ID: 10-22354
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/27/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 13.6%

Sample Amount: 8.80 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 22:52
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 04:18
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	2,300	< 2,300 U
C10-C12 Aliphatics	2,300	< 2,300 U
C12-C16 Aliphatics	2,300	< 2,300 U
C16-C21 Aliphatics	2,300	< 2,300 U
C21-C34 Aliphatics	2,300	< 2,300 U
C8-C10 Aromatics	2,300	< 2,300 U
C10-C12 Aromatics	2,300	< 2,300 U
C12-C16 Aromatics	2,300	< 2,300 U
C16-C21 Aromatics	2,300	< 2,300 U
C21-C34 Aromatics	2,300	< 2,300 U

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	73.7%
Aromatic	o-Terphenyl	67.2%

FORM I

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: LCS-090810
LCS/LCSD

Lab Sample ID: LCS-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 09/08/10

Sample Amount LCS: 10.0 g-as-rec
LCSD: 10.0 g-as-rec
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL

Aliphatic
Date Analyzed LCS: 09/21/10 23:17
LCSD: 09/21/10 23:43
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Aromatic
Date Analyzed LCS: 09/22/10 04:43
LCSD: 09/22/10 05:08
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
C8-C10 Aliphatics	11000	15000	73.3%	11600	15000	77.3%	5.3%
C10-C12 Aliphatics	9100	15000	60.7%	9500	15000	63.3%	4.3%
C12-C16 Aliphatics	14000	15000	93.3%	14400	15000	96.0%	2.8%
C16-C21 Aliphatics	14000	15000	93.3%	13800	15000	92.0%	1.4%
C10-C12 Aromatics	10300	15000	68.7%	10400	15000	69.3%	1.0%
C12-C16 Aromatics	12500	15000	83.3%	12900	15000	86.0%	3.1%
C16-C21 Aromatics	27100	30000	90.3%	29100	30000	97.0%	7.1%
C21-C34 Aromatics	26500	30000	88.3%	29000	30000	96.7%	9.0%

EPH Surrogate Recovery

		LCS	LCSD
Aliphatic	1-Chlorooctadecane	73.6%	74.5%
Aromatic	o-Terphenyl	75.6%	79.2%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

FORM III

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 1, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1008-217

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 27, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

Case Narrative

Samples were collected on August 26, 2010 and received by the laboratory on August 27, 2010. They were maintained at the laboratory at a temperature of 2^{o}C to 6^{o}C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7^{o}C and -20^{o}C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-9-5**					
Laboratory ID:	08-217-01					
Diesel Range Organics	**ND**	27	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*119*	*50-150*				
Client ID:	**TP-10-6**					
Laboratory ID:	08-217-03					
Diesel Range Organics	**ND**	29	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*107*	*50-150*				
Client ID:	**TP-11-5**					
Laboratory ID:	08-217-04					
Diesel Range Organics	**ND**	26	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	53	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*119*	*50-150*				
Client ID:	**P-TP-12-4**					
Laboratory ID:	08-217-06					
Diesel Range Organics	**ND**	29	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*103*	*50-150*				
Client ID:	**P-TP-12-6**					
Laboratory ID:	08-217-07					
Diesel Range Organics	**ND**	75	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**160**	150	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				
Client ID:	**P-TP-13-3**					
Laboratory ID:	08-217-09					
Diesel Range Organics	**ND**	320	NWTPH-Dx	8-30-10	8-30-10	U1
Lube Oil	**2900**	59	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-13-7**					
Laboratory ID:	08-217-10					
Diesel Range Organics	**ND**	29	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*106*	*50-150*				
Client ID:	**P-TP-12-2**					
Laboratory ID:	08-217-14					
Diesel Range Organics	**ND**	28	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*115*	*50-150*				
Client ID:	**P-TP-17-7**					
Laboratory ID:	08-217-15					
Diesel Range Organics	**ND**	34	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	68	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*110*	*50-150*				
Client ID:	**P-TP-18-2**					
Laboratory ID:	08-217-16					
Diesel Fuel #2	**210**	29	NWTPH-Dx	8-30-10	8-30-10	N
Lube Oil	**1100**	57	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*116*	*50-150*				
Client ID:	**P-TP-18-7**					
Laboratory ID:	08-217-17					
Diesel Fuel #2	**180**	34	NWTPH-Dx	8-30-10	8-31-10	N
Lube Oil	**740**	68	NWTPH-Dx	8-30-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*124*	*50-150*				
Client ID:	**P-TP-19-3**					
Laboratory ID:	08-217-18					
Diesel Range Organics	**ND**	45	NWTPH-Dx	8-30-10	8-30-10	U1
Lube Oil	**220**	58	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*116*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-19-7**					
Laboratory ID:	08-217-19					
Diesel Range Organics	**ND**	69	NWTPH-Dx	8-30-10	8-30-10	U1
Lube Oil	**330**	98	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				
Client ID:	**P-TP-20-4**					
Laboratory ID:	08-217-20					
Diesel Range Organics	**ND**	40	NWTPH-Dx	8-30-10	8-30-10	U1
Lube Oil	**230**	54	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*117*	*50-150*				
Client ID:	**P-TP-21-3**					
Laboratory ID:	08-217-22					
Diesel Range Organics	**ND**	27	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0830S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*117*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-217-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*119*	*108*	*50-150*			
Laboratory ID:	08-217-03							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*107*	*110*	*50-150*			

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-12-4**					
Laboratory ID:	08-217-06					
Gasoline	**ND**	5.9	NWTPH-Gx	8-28-10	8-28-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*55-127*				
Client ID:	**P-TP-13-3**					
Laboratory ID:	08-217-09					
Gasoline	**ND**	5.9	NWTPH-Gx	8-28-10	8-28-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*55-127*				
Client ID:	**P-TP-13-7**					
Laboratory ID:	08-217-10					
Gasoline	**ND**	5.9	NWTPH-Gx	8-28-10	8-28-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*55-127*				
Client ID:	**P-TP-17-2**					
Laboratory ID:	08-217-14					
Gasoline	**ND**	5.5	NWTPH-Gx	8-28-10	8-28-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*55-127*				

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

NWTPH-Gx
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0828S2					
Gasoline	**ND**	5.0	NWTPH-Gx	8-28-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*55-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-198-03										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*85*	*83*	*55-127*			

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix:	Soil
Units:	mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-217-01					
Client ID:	**TP-9-5**					
Arsenic	**ND**	11	6010B	8-31-10	8-31-10	
Barium	**26**	2.7	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.55	6010B	8-31-10	8-31-10	
Chromium	**19**	0.55	6010B	8-31-10	8-31-10	
Lead	**7.5**	5.5	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.27	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-31-10	8-31-10	
Silver	**ND**	0.55	6010B	8-31-10	8-31-10	
Lab ID:	08-217-03					
Client ID:	**TP-10-6**					
Arsenic	**ND**	11	6010B	8-31-10	8-31-10	
Barium	**41**	2.9	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.57	6010B	8-31-10	8-31-10	
Chromium	**23**	0.57	6010B	8-31-10	8-31-10	
Lead	**12**	5.7	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.29	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-31-10	8-31-10	
Silver	**ND**	0.57	6010B	8-31-10	8-31-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	08-217-04					
Client ID:	**TP-11-5**					
Arsenic	**ND**	11	6010B	8-31-10	8-31-10	
Barium	**34**	2.6	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.53	6010B	8-31-10	8-31-10	
Chromium	**18**	0.53	6010B	8-31-10	8-31-10	
Lead	**6.3**	5.3	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.26	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-31-10	8-31-10	
Silver	**ND**	0.53	6010B	8-31-10	8-31-10	
Lab ID:	08-217-06					
Client ID:	**P-TP-12-4**					
Arsenic	**ND**	12	6010B	8-31-10	8-31-10	
Barium	**73**	2.9	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.59	6010B	8-31-10	8-31-10	
Chromium	**30**	0.59	6010B	8-31-10	8-31-10	
Lead	**ND**	5.9	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.29	7471A	8-30-10	8-30-10	
Selenium	**ND**	12	6010B	8-31-10	8-31-10	
Silver	**ND**	0.59	6010B	8-31-10	8-31-10	

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-217-07					
Client ID:	**P-TP-12-6**					
Arsenic	**ND**	15	6010B	8-31-10	8-31-10	
Barium	**82**	7.5	6010B	8-31-10	8-31-10	
Cadmium	**ND**	1.5	6010B	8-31-10	8-31-10	
Chromium	**19**	1.5	6010B	8-31-10	8-31-10	
Lead	**16**	15	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.75	7471A	8-30-10	8-30-10	
Selenium	**ND**	30	6010B	8-31-10	8-31-10	
Silver	**ND**	1.5	6010B	8-31-10	8-31-10	

Lab ID:	08-217-09					
Client ID:	**P-TP-13-3**					
Arsenic	**ND**	12	6010B	8-31-10	8-31-10	
Barium	**56**	3.0	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.59	6010B	8-31-10	8-31-10	
Chromium	**29**	0.59	6010B	8-31-10	8-31-10	
Lead	**13**	5.9	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.30	7471A	8-30-10	8-30-10	
Selenium	**ND**	12	6010B	8-31-10	8-31-10	
Silver	**ND**	0.59	6010B	8-31-10	8-31-10	

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	08-217-10					
Client ID:	**P-TP-13-7**					
Arsenic	**ND**	12	6010B	8-31-10	8-31-10	
Barium	**61**	2.9	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.58	6010B	8-31-10	8-31-10	
Chromium	**34**	0.58	6010B	8-31-10	8-31-10	
Lead	**12**	5.8	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.29	7471A	8-30-10	8-30-10	
Selenium	**ND**	12	6010B	8-31-10	8-31-10	
Silver	**ND**	0.58	6010B	8-31-10	8-31-10	
Lab ID:	08-217-11					
Client ID:	**P-TP-14-1**					
Arsenic	**32**	11	6010B	8-31-10	8-31-10	
Barium	**470**	13	6010B	8-31-10	8-31-10	
Cadmium	**12**	0.53	6010B	8-31-10	8-31-10	
Chromium	**170**	0.53	6010B	8-31-10	8-31-10	
Lead	**860**	5.3	6010B	8-31-10	8-31-10	
Mercury	**0.66**	0.26	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-31-10	8-31-10	
Silver	**ND**	0.53	6010B	8-31-10	8-31-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-217-12					
Client ID:	**P-TP-15-1**					
Arsenic	**21**	10	6010B	8-31-10	8-31-10	
Barium	**860**	13	6010B	8-31-10	8-31-10	
Cadmium	**41**	0.52	6010B	8-31-10	8-31-10	
Chromium	**280**	0.52	6010B	8-31-10	8-31-10	
Lead	**770**	5.2	6010B	8-31-10	8-31-10	
Mercury	**0.48**	0.26	7471A	8-30-10	8-30-10	
Selenium	**ND**	10	6010B	8-31-10	8-31-10	
Silver	**ND**	0.52	6010B	8-31-10	8-31-10	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-217-13					
Client ID:	**P-TP-16-1**					
Arsenic	**ND**	11	6010B	8-31-10	8-31-10	
Barium	**720**	14	6010B	8-31-10	8-31-10	
Cadmium	**26**	0.55	6010B	8-31-10	8-31-10	
Chromium	**300**	0.55	6010B	8-31-10	8-31-10	
Lead	**1600**	5.5	6010B	8-31-10	8-31-10	
Mercury	**5.1**	1.4	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-31-10	8-31-10	
Silver	**ND**	0.55	6010B	8-31-10	8-31-10	

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-217-14					
Client ID:	**P-TP-17-2**					
Arsenic	**ND**	11	6010B	8-31-10	8-31-10	
Barium	**49**	2.8	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.55	6010B	8-31-10	8-31-10	
Chromium	**25**	0.55	6010B	8-31-10	8-31-10	
Lead	**15**	5.5	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.28	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-31-10	8-31-10	
Silver	**ND**	0.55	6010B	8-31-10	8-31-10	

Lab ID:	08-217-17					
Client ID:	**P-TP-18-7**					
Arsenic	**71**	14	6010B	8-31-10	8-31-10	
Barium	**110**	3.4	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.68	6010B	8-31-10	8-31-10	
Chromium	**36**	0.68	6010B	8-31-10	8-31-10	
Lead	**150**	6.8	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.34	7471A	8-30-10	8-30-10	
Selenium	**ND**	14	6010B	8-31-10	8-31-10	
Silver	**ND**	0.68	6010B	8-31-10	8-31-10	

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-217-19					
Client ID:	**P-TP-19-7**					
Arsenic	**16**	9.8	6010B	8-31-10	8-31-10	
Barium	**130**	4.9	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.98	6010B	8-31-10	8-31-10	
Chromium	**64**	0.98	6010B	8-31-10	8-31-10	
Lead	**190**	9.8	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.49	7471A	8-30-10	8-30-10	
Selenium	**ND**	20	6010B	8-31-10	8-31-10	
Silver	**ND**	0.98	6010B	8-31-10	8-31-10	
Lab ID:	08-217-22					
Client ID:	**P-TP-21-3**					
Arsenic	**ND**	11	6010B	8-31-10	8-31-10	
Barium	**39**	2.7	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.55	6010B	8-31-10	8-31-10	
Chromium	**23**	0.55	6010B	8-31-10	8-31-10	
Lead	**ND**	5.5	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.27	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-31-10	8-31-10	
Silver	**ND**	0.55	6010B	8-31-10	8-31-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0831S3

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	5.0
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0830S1

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-217-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**31.9**	**31.9**	NA	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**17.3**	**18.7**	8	0.50	
Lead	**5.95**	**5.40**	10	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-203-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 8-31-10
Date Analyzed: 8-31-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-217-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**99.2**	99	**97.3**	97	2	
Barium	100	**129**	97	**132**	100	2	
Cadmium	50	**48.0**	96	**46.9**	94	2	
Chromium	100	**116**	99	**114**	97	2	
Lead	250	**245**	96	**242**	94	2	
Selenium	100	**100**	100	**99.4**	99	1	
Silver	25	**23.6**	94	**23.0**	92	3	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-203-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.50	**0.495**	99	**0.509**	102	3	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

% MOISTURE

Date Analyzed: 8-30&31-2010

Client ID	Lab ID	% Moisture
P-TP-9-5	08-217-01	9
P-TP-10-6	08-217-03	13
P-TP-11-5	08-217-04	5
P-TP-12-4	08-217-06	15
P-TP-12-6	08-217-07	67
P-TP-13-3	08-217-09	15
P-TP-13-7	08-217-10	14
P-TP-14-1	08-217-11	5
P-TP-15-1	08-217-12	4
P-TP-16-1	08-217-13	9
P-TP-12-2	08-217-14	10
P-TP-12-7	08-217-15	26
P-TP-18-2	08-217-16	12
P-TP-18-7	08-217-17	27
P-TP-19-3	08-217-18	14
P-TP-19-7	08-217-19	49
P-TP-20-4	08-217-20	7
P-TP-21-3	08-217-22	9

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

DATE: 8/26/10
PAGE: 1 of 2

08-217

RUSH: 2 day TAT!

PROJECT NAME: Bothell Xroads #: 2007-098
SITE CODE: Bothell Point
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE: Va G
HWA CONTACT: Atkins PHONE:

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	VOCs 8260	EPH/VPH (HOLD)	cPAH	RCRA Metals	% MOISTURE	REMARKS
P-TP-9-5	8/26/10	900	S	1	5	X					X	X	
P-TP-9-8		910		2									
P-TP-10-6		930		3		X					X	X	
P-TP-11-5		945		4		X					X	X	
P-TP-11-7		955		5									
P-TP-12-4		1130		6	7	X	X				X	X	
P-TP-12-6		1145		7	5	X					X	X	
P-TP-13-1		1240		8	2								
P-TP-13-3		1245		9	7	X	X		X		X	X	
P-TP-13-7		1230		10	5	X	X				X	X	
P-TP-14-1		1240		11	2						X	X	
P-TP-15-1		1245		12	2						X	X	
P-TP-16-1		1250		13	2						X	X	
P-TP-17-~~3~~2		1300		14	~~3~~ 7	X	X		X		X	X	
P-TP-17-7		1315		15	5	X						X	
P-TP-18-2		1330		16	7	X						X	
P-TP-18-7		1340		17	5	X					X	X	
P-TP-19-3		1345		18	5	X						X	
P-TP-19-7	1400	~~1355~~		19	5	X					X	X	
P-TP-20-4		1405		20	5	X						X	

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fisk	CFisk	HWA GeoSciences	8/27/10	11:20am	
Received by:	Van	Van Vorchett	Speedy	8/27/10	11:20	
Relinquished by:	Van	Van	Speedy	8/27/10	12:40	
Received by:	M Youn		OSE	8/27/10	1240	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

DATE: 8/26/10
PAGE: 2 of 2

PROJECT NAME: Bothell Crossroads #: 2007-091
SITE CODE: Bothell Paint
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: PHONE:

08-217

RUSH - 2 day TAT!

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	VOC's 8260	CPH/VPH (HOLD)	cPAH	RCRA Metals								% MOISTURE		REMARKS
P-TP-20-6	8/26/10	1415	S	21	5																
P-TP-21-3	↓	1430	↓	22	5	X					X								X		
P-TP-21-7	↓	1440	↓	23	5																

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fask		HWA GeoSciences	8/27	11:20am	
Received by:	Van	Van Hochott	Speedy	8/27	11:20	
Relinquished by:	Van	Van	Speedy	8/27/10	12:40	
Received by:	MVOUN		OSE	8/27/10	1240	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1008-217B

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 27, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

Case Narrative

Samples were collected on August 26, 2010 and received by the laboratory on August 27, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

PAHs EPA 8270D/SIM Analysis

Samples TP-9-5, TP-10-6, TP-11-5, TP-13-7, and TP-20-4 were extracted and analyzed out of holding time.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-13-3**					
Laboratory ID:	08-217-09					
Naphthalene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
2-Methylnaphthalene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
1-Methylnaphthalene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthylene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Fluorene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Phenanthrene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Anthracene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Pyrene	**0.0092**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]anthracene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Chrysene	**0.0079**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[b]fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[k]fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]pyrene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Dibenz[a,h]anthracene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[g,h,i]perylene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*85*	*45 - 101*				
Pyrene-d10	*99*	*52 - 118*				
Terphenyl-d14	*88*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-18-2**					
Laboratory ID:	08-217-16					
Naphthalene	**0.065**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
2-Methylnaphthalene	**0.088**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
1-Methylnaphthalene	**0.073**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Acenaphthene	**0.061**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Fluorene	**0.075**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Phenanthrene	**0.21**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Anthracene	**0.030**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Fluoranthene	**0.086**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Pyrene	**0.087**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Benzo[a]anthracene	**0.024**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Chrysene	**0.038**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Benzo[b]fluoranthene	**0.016**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Benzo[k]fluoranthene	**0.010**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Benzo[a]pyrene	**0.026**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Indeno(1,2,3-c,d)pyrene	**0.012**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Dibenz[a,h]anthracene	**0.0095**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Benzo[g,h,i]perylene	**0.033**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*59*	*45 - 101*				
Pyrene-d10	*61*	*52 - 118*				
Terphenyl-d14	*46*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0907S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*85*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*87*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-038-01										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0726**	**0.0707**	0.0833	0.0833	ND	87	85	31 - 115	3	19	
Acenaphthylene	**0.0664**	**0.0631**	0.0833	0.0833	ND	80	76	40 - 134	5	22	
Acenaphthene	**0.0743**	**0.0715**	0.0833	0.0833	ND	89	86	48 - 118	4	17	
Fluorene	**0.0761**	**0.0730**	0.0833	0.0833	ND	91	88	54 - 122	4	16	
Phenanthrene	**0.0743**	**0.0711**	0.0833	0.0833	ND	89	85	46 - 123	4	19	
Anthracene	**0.0646**	**0.0645**	0.0833	0.0833	ND	78	77	53 - 123	0	27	
Fluoranthene	**0.0704**	**0.0683**	0.0833	0.0833	ND	85	82	47 - 132	3	26	
Pyrene	**0.0783**	**0.0742**	0.0833	0.0833	ND	94	89	41 - 137	5	25	
Benzo[a]anthracene	**0.0688**	**0.0672**	0.0833	0.0833	ND	83	81	43 - 132	2	26	
Chrysene	**0.0677**	**0.0673**	0.0833	0.0833	ND	81	81	46 - 126	1	24	
Benzo[b]fluoranthene	**0.0626**	**0.0634**	0.0833	0.0833	ND	75	76	44 - 134	1	24	
Benzo[k]fluoranthene	**0.0555**	**0.0595**	0.0833	0.0833	ND	67	71	45 - 132	7	20	
Benzo[a]pyrene	**0.0724**	**0.0721**	0.0833	0.0833	ND	87	87	36 - 136	0	23	
Indeno(1,2,3-c,d)pyrene	**0.0792**	**0.0783**	0.0833	0.0833	ND	95	94	40 - 136	1	16	
Dibenz[a,h]anthracene	**0.0821**	**0.0804**	0.0833	0.0833	ND	99	97	40 - 142	2	13	
Benzo[g,h,i]perylene	**0.0806**	**0.0779**	0.0833	0.0833	ND	97	94	37 - 137	3	18	
Surrogate:											
2-Fluorobiphenyl						*80*	*79*	*45 - 101*			
Pyrene-d10						*87*	*84*	*52 - 118*			
Terphenyl-d14						*77*	*82*	*41 - 106*			

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-9-5**					
Laboratory ID:	08-217-01					
Naphthalene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
2-Methylnaphthalene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
1-Methylnaphthalene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthylene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Fluorene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Phenanthrene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Anthracene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Pyrene	**0.0076**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]anthracene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Chrysene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[b]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[k]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]pyrene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Dibenz[a,h]anthracene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[g,h,i]perylene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*76*	*45 - 101*				
Pyrene-d10	*88*	*52 - 118*				
Terphenyl-d14	*94*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-10-6**					
Laboratory ID:	08-217-03					
Naphthalene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
2-Methylnaphthalene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
1-Methylnaphthalene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Fluorene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Phenanthrene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Anthracene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Pyrene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]anthracene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Chrysene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[b]fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[k]fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]pyrene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Dibenz[a,h]anthracene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[g,h,i]perylene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*67*	*45 - 101*				
Pyrene-d10	*73*	*52 - 118*				
Terphenyl-d14	*71*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**TP-11-5**					
Laboratory ID:	08-217-04					
Naphthalene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
2-Methylnaphthalene	**0.0089**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
1-Methylnaphthalene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthylene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Fluorene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Phenanthrene	**0.016**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Anthracene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Fluoranthene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Pyrene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]anthracene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Chrysene	**0.010**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[b]fluoranthene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[k]fluoranthene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]pyrene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Dibenz[a,h]anthracene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[g,h,i]perylene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*79*	*45 - 101*				
Pyrene-d10	*87*	*52 - 118*				
Terphenyl-d14	*84*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-13-7**					
Laboratory ID:	08-217-10					
Naphthalene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
2-Methylnaphthalene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
1-Methylnaphthalene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthylene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Fluorene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Phenanthrene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Anthracene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Fluoranthene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Pyrene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]anthracene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Chrysene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[b]fluoranthene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[k]fluoranthene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]pyrene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Dibenz[a,h]anthracene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[g,h,i]perylene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*70*	*45 - 101*				
Pyrene-d10	*79*	*52 - 118*				
Terphenyl-d14	*92*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**P-TP-20-4**					
Laboratory ID:	08-217-20					
Naphthalene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
2-Methylnaphthalene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
1-Methylnaphthalene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthylene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Fluorene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Phenanthrene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Anthracene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Fluoranthene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Pyrene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]anthracene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Chrysene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[b]fluoranthene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[k]fluoranthene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]pyrene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Dibenz[a,h]anthracene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[g,h,i]perylene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*63*	*45 - 101*				
Pyrene-d10	*71*	*52 - 118*				
Terphenyl-d14	*78*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0917S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*83*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*90*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0917S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0659**	**0.0813**	0.0833	0.0833	79	98	33 - 105	21	30	
Acenaphthylene	**0.0647**	**0.0714**	0.0833	0.0833	78	86	51 - 110	10	22	
Acenaphthene	**0.0687**	**0.0804**	0.0833	0.0833	82	97	51 - 105	16	20	
Fluorene	**0.0709**	**0.0803**	0.0833	0.0833	85	96	61 - 107	12	17	
Phenanthrene	**0.0722**	**0.0791**	0.0833	0.0833	87	95	61 - 106	9	12	
Anthracene	**0.0628**	**0.0683**	0.0833	0.0833	75	82	59 - 106	8	12	
Fluoranthene	**0.0712**	**0.0772**	0.0833	0.0833	85	93	66 - 116	8	12	
Pyrene	**0.0746**	**0.0840**	0.0833	0.0833	90	101	67 - 118	12	14	
Benzo[a]anthracene	**0.0673**	**0.0727**	0.0833	0.0833	81	87	60 - 114	8	11	
Chrysene	**0.0738**	**0.0800**	0.0833	0.0833	89	96	64 - 112	8	12	
Benzo[b]fluoranthene	**0.0754**	**0.0812**	0.0833	0.0833	91	97	61 - 123	7	14	
Benzo[k]fluoranthene	**0.0715**	**0.0808**	0.0833	0.0833	86	97	50 - 124	12	17	
Benzo[a]pyrene	**0.0720**	**0.0776**	0.0833	0.0833	86	93	50 - 114	7	17	
Indeno(1,2,3-c,d)pyrene	**0.0900**	**0.0825**	0.0833	0.0833	108	99	56 - 122	9	16	
Dibenz[a,h]anthracene	**0.0914**	**0.0828**	0.0833	0.0833	110	99	57 - 124	10	16	
Benzo[g,h,i]perylene	**0.0841**	**0.0832**	0.0833	0.0833	101	100	56 - 121	1	15	
Surrogate:										
2-Fluorobiphenyl					*72*	*84*	*45 - 101*			
Pyrene-d10					*80*	*88*	*52 - 118*			
Terphenyl-d14					*92*	*94*	*41 - 106*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

DATE: 8/26/10
PAGE: 1 of 2

08-217

RUSH: 2 day TAT!

PROJECT NAME: Bothell Xroads #: 2007-098
SITE CODE: Bothell Point
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE: Va At
HWA CONTACT: Atkins PHONE:

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	VOA 8260	EPH/VPH (HOLD)	PAHs'	RCRA Metals								% MOISTURE		REMARKS
P-TP-9-5	8/26/10	900	S	1	5	X				O	X								X		
P-TP-9-8		910		2																	
P-TP-10-6		930		3		X				O	X								X		⊗ Added 9/2/10
P-TP-11-5		945		4		X				O	X								X		~~BC~~ STA
P-TP-11-7		955		5																	
P-TP-12-4		1130		6	7	X	X				X								X		O Added 9/15/10. DB
P-TP-12-6		1145		7	5	X					X								X		(STA)
P-TP-13-1		1240		8	2																
P-TP-13-3		1245		9	7	X	X		⊗	⊗	X								X		
P-TP-13-7		1230		10	5	X	X			O	X								X		
P-TP-14-1		1240		11	2						X								X		
P-TP-15-1		1245		12	2						X								X		
P-TP-16-1		1250		13	2						X								X		
P-TP-17-~~2~~		1300		14	~~3~~ 7	X	X		X		X								X		
P-TP-17-7		1315		15	5	X													X		
P-TP-18-2		1330		16	7	X			⊗	⊗									X		
P-TP-18-7		1340		17	5	X					X								X		
P-TP-19-3		1345		18	5	X													X		
P-TP-19-~~7~~	1400	~~1350~~		19	5	X					X								X		
P-TP-20-4		1405	↓	20	5	X				O									X		

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fisk	CFisk	HWA GeoSciences	8/27/10	11:20am	
Received by:	Van	Van Vorchett	Speedy	8/27/10	11:20	
Relinquished by:	Van	Van	Speedy	8/27/10	12:40	
Received by:	M Voun		OSE	8/27/10	1240	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

DATE: 8/26/10
PAGE: 2 of 2

08-217

RUSH-2 day TAT!

PROJECT NAME: Bothell Crossroads #: 2007-098
SITE CODE: Bothell Paint
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: PHONE:

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	VOC's 8260	EPH/VPH (HOLD)	cPAH	RCRA Metals	% MOISTURE	REMARKS
P-TP-20-6	8/26/10	1415	S	21	5								
P-TP-21-3	↓	1430	↓	22	5	X					X	X	
P-TP-21-7	↓	1440	↓	23	5								

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fask	CFask	HWA GeoSciences	8/27	11:20am	
Received by:	Van	Van Hochott	Speedy	8/27	11:20	
Relinquished by:	Van	Van	Speedy	8/27/10	12:40	
Received by:	MVOUN		OSE	8/27/10	1240	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

Analytical Resources, Incorporated
Analytical Chemists and Consultants

22 September 2010

David Baumeister
OnSite Environmental, Inc.
14648 NE 95th
Redmond, WA 98052

RE: Client Project: 2007-098
ARI Job No: RO04

Dear David:

Please find enclosed the chain-of-custody (COC) record and the final results for the samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted two soil samples on September 3, 2010. The samples were analyzed for EPH as requested.

There were no anomalies associated with these analyses.

An electronic copy of these reports will remain on file at ARI. Should you have any questions, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
markh@arilabs.com

Enclosures

cc: file RO04

MDH/esj

R0Ø4 10-22352

10-22353

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Subcontract Laboratory: Analytical Resources, Inc.
Attention: Mark Harris
4611 S 134th Pl, Ste. 100 Tukwila, WA 98168
Phone Number: (206) 695-6200
Date/Time:

Turnaround Request:
1 Day 2 Day 3 Day [✓ Standard]
Other:

Laboratory Reference #: 08-217
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098
Project Name:

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
9	P-TP-13-3	8/26/10		S	1	EPH
16	P-TP-18-2	↓		↓	↓	↓

	Signature	Company	Date	Time
Relinquished by:		OnSite En	9/3/10	1000
Received by:	Van	Speedy	9/3/10	1010
Relinquished by:	Van	Speedy	9/3/10	1540
Received by:		ARI	9/3/10	1540
Relinquished by:				
Received by:				

Comments/Special Instructions

EIM

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: OnSite

COC No(s): ______ [✓ NA]

Assigned ARI Job No: RL77

Project Name: ______

Delivered by: Fed-Ex UPS [✓ Courier] Hand Delivered Other: ______

Tracking No: ______ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES [✓ NO]

Were custody papers included with the cooler? .... [✓ YES] NO

Were custody papers properly filled out (ink, signed, etc.) .... [✓ YES] NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)........ 7.6 ____ ____ ____

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90941619

Cooler Accepted by: JM Date: 9/3/10 Time: 1545

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? .... YES [✓ NO]

What kind of packing material was used? ... Bubble Wrap [✓ Wet Ice] Gel Packs [✓ Baggies] Foam Block Paper Other: ______

Was sufficient ice used (if appropriate)? .... NA YES [✓ NO]

Were all bottles sealed in individual plastic bags? .... YES [✓ NO]

Did all bottles arrive in good condition (unbroken)? .... [✓ YES] NO

Were all bottle labels complete and legible? .... [✓ YES] NO

Did the number of containers listed on COC match with the number of containers received? .... [✓ YES] NO

Did all bottle labels and tags agree with custody papers? .... [✓ YES] NO

Were all bottles used correct for the requested analyses? .... [✓ YES] NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... [✓ NA] YES NO

Were all VOC vials free of air bubbles? .... [✓ NA] YES NO

Was sufficient amount of sample sent in each bottle? .... [✓ YES] NO

Date VOC Trip Blank was made at ARI........ [✓ NA] ______

Was Sample Split by ARI : [✓ NA] YES Date/Time: ______ Equipment: ______ Split by: ______

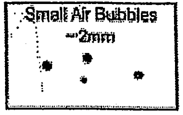
Samples Logged by: JM Date: 9/3/10 Time: 1730

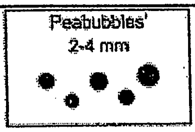
***** Notify Project Manager of discrepancies or concerns *****

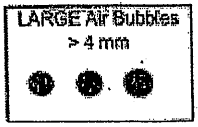
Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:







Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: MB-090810
METHOD BLANK

Lab Sample ID: MB-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted: 09/08/10
Percent Moisture: NA

Sample Amount: 10.0 g-as-rec
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/22/10 00:08
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 05:32
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Range	**RL**	**Result**
C8-C10 Aliphatics	2,000	< 2,000 U
C10-C12 Aliphatics	2,000	< 2,000 U
C12-C16 Aliphatics	2,000	< 2,000 U
C16-C21 Aliphatics	2,000	< 2,000 U
C21-C34 Aliphatics	2,000	< 2,000 U
C8-C10 Aromatics	2,000	< 2,000 U
C10-C12 Aromatics	2,000	< 2,000 U
C12-C16 Aromatics	2,000	< 2,000 U
C16-C21 Aromatics	2,000	< 2,000 U
C21-C34 Aromatics	2,000	< 2,000 U

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	73.8%
Aromatic	o-Terphenyl	76.2%

FORM I

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-13-3
SAMPLE

Lab Sample ID: RO04C
LIMS ID: 10-22352
Matrix: Soil
Data Release Authorized:
Reported: 09/23/10

QC Report No: RO04-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/26/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 17.1%

Sample Amount: 8.70 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 21:35
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 03:04
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	2,300	< 2,300 U
C10-C12 Aliphatics	2,300	< 2,300 U
C12-C16 Aliphatics	2,300	< 2,300 U
C16-C21 Aliphatics	**2,300**	**35,000**
C21-C34 Aliphatics	**2,300**	**2,000,000**
C8-C10 Aromatics	2,300	< 2,300 U
C10-C12 Aromatics	2,300	< 2,300 U
C12-C16 Aromatics	2,300	< 2,300 U
C16-C21 Aromatics	2,300	< 2,300 U
C21-C34 Aromatics	**2,300**	**75,000**

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	68.5%
Aromatic	o-Terphenyl	78.4%

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-18-2
SAMPLE

Lab Sample ID: RO04D
LIMS ID: 10-22353
Matrix: Soil
Data Release Authorized:
Reported: 09/23/10

QC Report No: RO04-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/26/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 11.7%

Sample Amount: 8.89 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 22:01
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 03:29
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	**2,200**	**2,800**
C10-C12 Aliphatics	**2,200**	**14,000**
C12-C16 Aliphatics	**2,200**	**41,000**
C16-C21 Aliphatics	**2,200**	**22,000**
C21-C34 Aliphatics	**2,200**	**250,000**
C8-C10 Aromatics	2,200	< 2,200 U
C10-C12 Aromatics	**2,200**	**2,500**
C12-C16 Aromatics	**2,200**	**12,000**
C16-C21 Aromatics	**2,200**	**22,000**
C21-C34 Aromatics	**2,200**	**120,000**

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	70.6%
Aromatic	o-Terphenyl	76.0%

FORM I

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: LCS-090810
LCS/LCSD

Lab Sample ID: LCS-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 09/08/10

Sample Amount LCS: 10.0 g-as-rec
LCSD: 10.0 g-as-rec
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL

Aliphatic
Date Analyzed LCS: 09/21/10 23:17
LCSD: 09/21/10 23:43
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Aromatic
Date Analyzed LCS: 09/22/10 04:43
LCSD: 09/22/10 05:08
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Range	**LCS**	**Spike Added-LCS**	**LCS Recovery**	**LCSD**	**Spike Added-LCSD**	**LCSD Recovery**	**RPD**
C8-C10 Aliphatics	11000	15000	73.3%	11600	15000	77.3%	5.3%
C10-C12 Aliphatics	9100	15000	60.7%	9500	15000	63.3%	4.3%
C12-C16 Aliphatics	14000	15000	93.3%	14400	15000	96.0%	2.8%
C16-C21 Aliphatics	14000	15000	93.3%	13800	15000	92.0%	1.4%
C10-C12 Aromatics	10300	15000	68.7%	10400	15000	69.3%	1.0%
C12-C16 Aromatics	12500	15000	83.3%	12900	15000	86.0%	3.1%
C16-C21 Aromatics	27100	30000	90.3%	29100	30000	97.0%	7.1%
C21-C34 Aromatics	26500	30000	88.3%	29000	30000	96.7%	9.0%

EPH Surrogate Recovery

		LCS	**LCSD**
Aliphatic	1-Chlorooctadecane	73.6%	74.5%
Aromatic	o-Terphenyl	75.6%	79.2%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

FORM III

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009042
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-217 / Proj #2007-098
CLIENT SAMPLE ID: 8/26/2010 P-TP-13-3
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C6-C8 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Hexane	NWVPH	ND	0.20	1	MG/KG	9/7/2010	DLC

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009042
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-217 / Proj #2007-098
CLIENT SAMPLE ID: 8/26/2010 P-TP-18-2
ALS SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C6-C8 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Hexane	NWVPH	ND	0.20	1	MG/KG	9/7/2010	DLC

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMT.
** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE:	9/8/2010
ALS JOB#:	1009042
DATE RECEIVED:	9/3/2010
WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-217 / Proj #2007-098

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
1009042-01	NWVPH	TFT - Aliphatic	81%
1009042-01	NWVPH	TFT - Aromatic	82%
1009042-01	NWVPH	TFT - Hexane	86%
1009042-02	NWVPH	TFT - Aliphatic	92%
1009042-02	NWVPH	TFT - Aromatic	92%
1009042-02	NWVPH	TFT - Hexane	96%

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009042
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-217 / Proj #2007-098

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MBLK-972010	Soil	NWVPH	C5-C6 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C6-C8 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C8-C10 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C8-C10 Aromatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Total Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Total Aromatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Hexane	ND(<0.20)	MG/KG

APPROVED BY:

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE: 9/8/2010
ALS JOB#: 1009042
DATE RECEIVED: 9/3/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-217 / Proj #2007-098

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
R70417	Soil	NWVPH	C5-C6 Aliphatics	100	96%	99%	3
R70417	Soil	NWVPH	>C6-C8 Aliphatics	100	101%	111%	9
R70417	Soil	NWVPH	>C8-C10 Aliphatics	100	103%	107%	4
R70417	Soil	NWVPH	>C8-C10 Aromatics	100	102%	108%	6
R70417	Soil	NWVPH	Hexane	100	102%	101%	1

APPROVED BY:

1009042

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Subcontract Laboratory:
Contact Person:
Address:
Phone Number:
Date/Time:

Turnaround Request:
1 Day 2 Day 3 Day [✓ Standard]
Other:

Laboratory Reference #: 08-217
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098
Project Name:

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
1	9	P-TP-13-3	8/26		S	1	VPH
2	16	P-TP-18-2	⊥		⊥	⊥	⊥

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:		OnSite Env	9/3/10	1315	
Received by:		Speedy	9-3-10	321	
Relinquished by:					
Received by:	Shawn Robinson	ALS	9/3/10	4:15	
Relinquished by:					
Received by:					

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 1, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1008-221

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 27, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

Case Narrative

Samples were collected on August 27, 2010 and received by the laboratory on August 27, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Volatiles EPA 8260B Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

One of the internal standards did not pass for samples P-TP-22-3, P-TP-23-4 and P-TP-25-6 due to matrix effects. The samples was re-run with similar results. All results from Bromobenzene onward, including PQLs, should be considered estimates.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Total Metals EPA 6010B/7471A Analysis

Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-22-3**					
Laboratory ID:	08-221-01					
Diesel Range Organics	**ND**	71	NWTPH-Dx	8-31-10	8-31-10	U1
Lube Oil	**400**	130	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				
Client ID:	**P-TP-23-2**					
Laboratory ID:	08-221-02					
Diesel Range Organics	**ND**	41	NWTPH-Dx	8-31-10	8-31-10	U1
Lube Oil	**230**	53	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**P-TP-23-4**					
Laboratory ID:	08-221-03					
Diesel Range Organics	**ND**	120	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil Range Organics	**370**	240	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*98*	*50-150*				
Client ID:	**P-TP-24-4**					
Laboratory ID:	08-221-04					
Diesel Range Organics	**ND**	30	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**P-TP-25-4**					
Laboratory ID:	08-221-05					
Diesel Fuel #2	**260**	30	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil	**560**	59	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-25-6**					
Laboratory ID:	08-221-06					
Diesel Range Organics	**ND**	44	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil	**130**	88	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*109*	*50-150*				
Client ID:	**P-TP-26-5**					
Laboratory ID:	08-221-07					
Diesel Range Organics	**ND**	26	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil Range Organics	**ND**	53	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*106*	*50-150*				
Client ID:	**P-TP-27-4**					
Laboratory ID:	08-221-09					
Diesel Range Organics	**ND**	29	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil	**180**	59	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0831S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*107*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-221-09							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**153**	**80.2**				62	NA	
Surrogate:								
o-Terphenyl			*94*	*105*	*50-150*			

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**P-TP-22-3**					
Laboratory ID:	08-221-01					
Gasoline	**ND**	20	NWTPH-Gx	8-28-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*82*	*55-127*				
Client ID:	**P-TP-23-2**					
Laboratory ID:	08-221-02					
Gasoline	**8.6**	7.8	NWTPH-Gx	8-28-10	8-28-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*79*	*55-127*				
Client ID:	**P-TP-23-4**					
Laboratory ID:	08-221-03					
Gasoline	**ND**	44	NWTPH-Gx	8-28-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*77*	*55-127*				
Client ID:	**P-TP-24-4**					
Laboratory ID:	08-221-04					
Gasoline	**ND**	5.7	NWTPH-Gx	8-28-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*55-127*				
Client ID:	**P-TP-25-4**					
Laboratory ID:	08-221-05					
Gasoline	**ND**	6.5	NWTPH-Gx	8-28-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*55-127*				
Client ID:	**P-TP-25-6**					
Laboratory ID:	08-221-06					
Gasoline	**80**	25	NWTPH-Gx	8-28-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*72*	*55-127*				

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

NWTPH-Gx
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0828S2					
Gasoline	**ND**	5.0	NWTPH-Gx	8-28-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*55-127*				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	08-198-03										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*85*	*83*	*55-127*			

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-221-01
Client ID:	**P-TP-22-3**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0032
Chloromethane	ND		0.016
Vinyl Chloride	ND		0.0032
Bromomethane	ND		0.0032
Chloroethane	ND		0.016
Trichlorofluoromethane	ND		0.0032
1,1-Dichloroethene	ND		0.0032
Acetone	0.97	E	0.032
Iodomethane	ND		0.016
Carbon Disulfide	0.0099		0.0032
Methylene Chloride	ND		0.016
(trans) 1,2-Dichloroethene	ND		0.0032
Methyl t-Butyl Ether	ND		0.0032
1,1-Dichloroethane	ND		0.0032
Vinyl Acetate	ND		0.016
2,2-Dichloropropane	ND		0.0032
(cis) 1,2-Dichloroethene	ND		0.0032
2-Butanone	0.22		0.016
Bromochloromethane	ND		0.0032
Chloroform	ND		0.0032
1,1,1-Trichloroethane	ND		0.0032
Carbon Tetrachloride	ND		0.0032
1,1-Dichloropropene	ND		0.0032
Benzene	ND		0.0032
1,2-Dichloroethane	ND		0.0032
Trichloroethene	ND		0.0032
1,2-Dichloropropane	ND		0.0032
Dibromomethane	ND		0.0032
Bromodichloromethane	ND		0.0032
2-Chloroethyl Vinyl Ether	ND		0.016
(cis) 1,3-Dichloropropene	ND		0.0032
Methyl Isobutyl Ketone	ND		0.016
Toluene	ND		0.016
(trans) 1,3-Dichloropropene	ND		0.0032

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID:	08-221-01
Client ID:	**P-TP-22-3**

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0032
Tetrachloroethene	ND		0.0032
1,3-Dichloropropane	ND		0.0032
2-Hexanone	ND		0.016
Dibromochloromethane	ND		0.0032
1,2-Dibromoethane	ND		0.0032
Chlorobenzene	ND		0.0032
1,1,1,2-Tetrachloroethane	ND		0.0032
Ethylbenzene	ND		0.0032
m,p-Xylene	ND		0.0064
o-Xylene	ND		0.0032
Styrene	ND		0.0032
Bromoform	ND		0.0032
Isopropylbenzene	ND		0.0032
Bromobenzene	ND		0.0032
1,1,2,2-Tetrachloroethane	ND		0.0032
1,2,3-Trichloropropane	ND		0.0032
n-Propylbenzene	ND		0.0032
2-Chlorotoluene	ND		0.0032
4-Chlorotoluene	ND		0.0032
1,3,5-Trimethylbenzene	ND		0.0032
tert-Butylbenzene	ND		0.0032
1,2,4-Trimethylbenzene	0.0059		0.0032
sec-Butylbenzene	ND		0.0032
1,3-Dichlorobenzene	ND		0.0032
p-Isopropyltoluene	ND		0.0032
1,4-Dichlorobenzene	ND		0.0032
1,2-Dichlorobenzene	ND		0.0032
n-Butylbenzene	ND		0.0032
1,2-Dibromo-3-chloropropane	ND		0.016
1,2,4-Trichlorobenzene	ND		0.0032
Hexachlorobutadiene	ND		0.016
Naphthalene	ND		0.0032
1,2,3-Trichlorobenzene	ND		0.0032

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	92	66-128
Toluene-d8	93	68-126
4-Bromofluorobenzene	76	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-221-02
Client ID:	**P-TP-23-2**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0011
Chloromethane	ND		0.0053
Vinyl Chloride	ND		0.0011
Bromomethane	ND		0.0011
Chloroethane	ND		0.0053
Trichlorofluoromethane	ND		0.0011
1,1-Dichloroethene	ND		0.0011
Acetone	0.081		0.011
Iodomethane	ND		0.0053
Carbon Disulfide	ND		0.0011
Methylene Chloride	ND		0.0053
(trans) 1,2-Dichloroethene	ND		0.0011
Methyl t-Butyl Ether	ND		0.0011
1,1-Dichloroethane	ND		0.0011
Vinyl Acetate	ND		0.0053
2,2-Dichloropropane	ND		0.0011
(cis) 1,2-Dichloroethene	ND		0.0011
2-Butanone	ND		0.0053
Bromochloromethane	ND		0.0011
Chloroform	ND		0.0011
1,1,1-Trichloroethane	ND		0.0011
Carbon Tetrachloride	ND		0.0011
1,1-Dichloropropene	ND		0.0011
Benzene	ND		0.0011
1,2-Dichloroethane	ND		0.0011
Trichloroethene	ND		0.0011
1,2-Dichloropropane	ND		0.0011
Dibromomethane	ND		0.0011
Bromodichloromethane	ND		0.0011
2-Chloroethyl Vinyl Ether	ND		0.0053
(cis) 1,3-Dichloropropene	ND		0.0011
Methyl Isobutyl Ketone	ND		0.0053
Toluene	ND		0.0053
(trans) 1,3-Dichloropropene	ND		0.0011

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 08-221-02
Client ID: P-TP-23-2

Compound	**Results**	**Flags**	**PQL**
1,1,2-Trichloroethane	ND		0.0011
Tetrachloroethene	ND		0.0011
1,3-Dichloropropane	ND		0.0011
2-Hexanone	ND		0.0053
Dibromochloromethane	ND		0.0011
1,2-Dibromoethane	ND		0.0011
Chlorobenzene	ND		0.0011
1,1,1,2-Tetrachloroethane	ND		0.0011
Ethylbenzene	ND		0.0011
m,p-Xylene	ND		0.0021
o-Xylene	ND		0.0011
Styrene	ND		0.0011
Bromoform	ND		0.0011
Isopropylbenzene	ND		0.0011
Bromobenzene	ND		0.0011
1,1,2,2-Tetrachloroethane	ND		0.0011
1,2,3-Trichloropropane	ND		0.0011
n-Propylbenzene	0.0021		0.0011
2-Chlorotoluene	ND		0.0011
4-Chlorotoluene	ND		0.0011
1,3,5-Trimethylbenzene	ND		0.0011
tert-Butylbenzene	ND		0.0011
1,2,4-Trimethylbenzene	0.0019		0.0011
sec-Butylbenzene	0.0017		0.0011
1,3-Dichlorobenzene	ND		0.0011
p-Isopropyltoluene	ND		0.0011
1,4-Dichlorobenzene	ND		0.0011
1,2-Dichlorobenzene	ND		0.0011
n-Butylbenzene	0.0022		0.0011
1,2-Dibromo-3-chloropropane	ND		0.0053
1,2,4-Trichlorobenzene	ND		0.0011
Hexachlorobutadiene	ND		0.0053
Naphthalene	ND		0.0011
1,2,3-Trichlorobenzene	ND		0.0011

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	84	66-128
Toluene-d8	95	68-126
4-Bromofluorobenzene	92	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-221-03
Client ID:	**P-TP-23-4**

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0089
Chloromethane	ND		0.045
Vinyl Chloride	ND		0.0089
Bromomethane	ND		0.0089
Chloroethane	ND		0.045
Trichlorofluoromethane	ND		0.0089
1,1-Dichloroethene	ND		0.0089
Acetone	3.3	E	0.089
Iodomethane	ND		0.045
Carbon Disulfide	0.095		0.0089
Methylene Chloride	ND		0.045
(trans) 1,2-Dichloroethene	ND		0.0089
Methyl t-Butyl Ether	ND		0.0089
1,1-Dichloroethane	ND		0.0089
Vinyl Acetate	ND		0.045
2,2-Dichloropropane	ND		0.0089
(cis) 1,2-Dichloroethene	ND		0.0089
2-Butanone	0.73		0.045
Bromochloromethane	ND		0.0089
Chloroform	ND		0.0089
1,1,1-Trichloroethane	ND		0.0089
Carbon Tetrachloride	ND		0.0089
1,1-Dichloropropene	ND		0.0089
Benzene	ND		0.0089
1,2-Dichloroethane	ND		0.0089
Trichloroethene	ND		0.0089
1,2-Dichloropropane	ND		0.0089
Dibromomethane	ND		0.0089
Bromodichloromethane	ND		0.0089
2-Chloroethyl Vinyl Ether	ND		0.045
(cis) 1,3-Dichloropropene	ND		0.0089
Methyl Isobutyl Ketone	ND		0.045
Toluene	ND		0.045
(trans) 1,3-Dichloropropene	ND		0.0089

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID:	08-221-03
Client ID:	**P-TP-23-4**

Compound	**Results**	**Flags**	**PQL**
1,1,2-Trichloroethane	ND		0.0089
Tetrachloroethene	ND		0.0089
1,3-Dichloropropane	ND		0.0089
2-Hexanone	ND		0.045
Dibromochloromethane	ND		0.0089
1,2-Dibromoethane	ND		0.0089
Chlorobenzene	ND		0.0089
1,1,1,2-Tetrachloroethane	ND		0.0089
Ethylbenzene	ND		0.0089
m,p-Xylene	ND		0.018
o-Xylene	ND		0.0089
Styrene	ND		0.0089
Bromoform	ND		0.0089
Isopropylbenzene	0.014		0.0089
Bromobenzene	ND		0.0089
1,1,2,2-Tetrachloroethane	ND		0.0089
1,2,3-Trichloropropane	ND		0.0089
n-Propylbenzene	0.055		0.0089
2-Chlorotoluene	ND		0.0089
4-Chlorotoluene	ND		0.0089
1,3,5-Trimethylbenzene	0.0094		0.0089
tert-Butylbenzene	ND		0.0089
1,2,4-Trimethylbenzene	0.022		0.0089
sec-Butylbenzene	0.030		0.0089
1,3-Dichlorobenzene	ND		0.0089
p-Isopropyltoluene	ND		0.0089
1,4-Dichlorobenzene	ND		0.0089
1,2-Dichlorobenzene	ND		0.0089
n-Butylbenzene	0.033		0.0089
1,2-Dibromo-3-chloropropane	ND		0.045
1,2,4-Trichlorobenzene	ND		0.0089
Hexachlorobutadiene	ND		0.045
Naphthalene	ND		0.0089
1,2,3-Trichlorobenzene	ND		0.0089

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	92	66-128
Toluene-d8	97	68-126
4-Bromofluorobenzene	79	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B

Page 1 of 2

Date Extracted:	8-25-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-221-04
Client ID:	**P-TP-24-4**

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0011
Chloromethane	ND		0.0055
Vinyl Chloride	ND		0.0011
Bromomethane	ND		0.0011
Chloroethane	ND		0.0055
Trichlorofluoromethane	ND		0.0011
1,1-Dichloroethene	ND		0.0011
Acetone	0.12		0.0055
Iodomethane	ND		0.0055
Carbon Disulfide	ND		0.0011
Methylene Chloride	ND		0.0055
(trans) 1,2-Dichloroethene	ND		0.0011
Methyl t-Butyl Ether	ND		0.0011
1,1-Dichloroethane	ND		0.0011
Vinyl Acetate	ND		0.0055
2,2-Dichloropropane	ND		0.0011
(cis) 1,2-Dichloroethene	ND		0.0011
2-Butanone	0.026		0.0055
Bromochloromethane	ND		0.0011
Chloroform	ND		0.0011
1,1,1-Trichloroethane	ND		0.0011
Carbon Tetrachloride	ND		0.0011
1,1-Dichloropropene	ND		0.0011
Benzene	ND		0.0011
1,2-Dichloroethane	ND		0.0011
Trichloroethene	ND		0.0011
1,2-Dichloropropane	ND		0.0011
Dibromomethane	ND		0.0011
Bromodichloromethane	ND		0.0011
2-Chloroethyl Vinyl Ether	ND		0.0055
(cis) 1,3-Dichloropropene	ND		0.0011
Methyl Isobutyl Ketone	ND		0.0055
Toluene	ND		0.0055
(trans) 1,3-Dichloropropene	ND		0.0011

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 08-221-04
Client ID: P-TP-24-4

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0011
Tetrachloroethene	ND		0.0011
1,3-Dichloropropane	ND		0.0011
2-Hexanone	ND		0.0055
Dibromochloromethane	ND		0.0011
1,2-Dibromoethane	ND		0.0011
Chlorobenzene	ND		0.0011
1,1,1,2-Tetrachloroethane	ND		0.0011
Ethylbenzene	ND		0.0011
m,p-Xylene	ND		0.0022
o-Xylene	ND		0.0011
Styrene	ND		0.0011
Bromoform	ND		0.0011
Isopropylbenzene	ND		0.0011
Bromobenzene	ND		0.0011
1,1,2,2-Tetrachloroethane	ND		0.0011
1,2,3-Trichloropropane	ND		0.0011
n-Propylbenzene	ND		0.0011
2-Chlorotoluene	ND		0.0011
4-Chlorotoluene	ND		0.0011
1,3,5-Trimethylbenzene	ND		0.0011
tert-Butylbenzene	ND		0.0011
1,2,4-Trimethylbenzene	ND		0.0011
sec-Butylbenzene	ND		0.0011
1,3-Dichlorobenzene	ND		0.0011
p-Isopropyltoluene	ND		0.0011
1,4-Dichlorobenzene	ND		0.0011
1,2-Dichlorobenzene	ND		0.0011
n-Butylbenzene	ND		0.0011
1,2-Dibromo-3-chloropropane	ND		0.0055
1,2,4-Trichlorobenzene	ND		0.0011
Hexachlorobutadiene	ND		0.0055
Naphthalene	ND		0.0011
1,2,3-Trichlorobenzene	ND		0.0011

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	84	66-128
Toluene-d8	97	68-126
4-Bromofluorobenzene	95	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B

Page 1 of 2

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-221-05
Client ID:	**P-TP-25-4**

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0011
Chloromethane	ND		0.0054
Vinyl Chloride	ND		0.0011
Bromomethane	ND		0.0011
Chloroethane	ND		0.0054
Trichlorofluoromethane	ND		0.0011
1,1-Dichloroethene	ND		0.0011
Acetone	0.045		0.011
Iodomethane	ND		0.0054
Carbon Disulfide	ND		0.0011
Methylene Chloride	ND		0.0054
(trans) 1,2-Dichloroethene	ND		0.0011
Methyl t-Butyl Ether	ND		0.0011
1,1-Dichloroethane	ND		0.0011
Vinyl Acetate	ND		0.0054
2,2-Dichloropropane	ND		0.0011
(cis) 1,2-Dichloroethene	ND		0.0011
2-Butanone	0.0074		0.0054
Bromochloromethane	ND		0.0011
Chloroform	ND		0.0011
1,1,1-Trichloroethane	ND		0.0011
Carbon Tetrachloride	ND		0.0011
1,1-Dichloropropene	ND		0.0011
Benzene	ND		0.0011
1,2-Dichloroethane	ND		0.0011
Trichloroethene	ND		0.0011
1,2-Dichloropropane	ND		0.0011
Dibromomethane	ND		0.0011
Bromodichloromethane	ND		0.0011
2-Chloroethyl Vinyl Ether	ND		0.0054
(cis) 1,3-Dichloropropene	ND		0.0011
Methyl Isobutyl Ketone	ND		0.0054
Toluene	ND		0.0054
(trans) 1,3-Dichloropropene	ND		0.0011

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B

Page 2 of 2

Lab ID: 08-221-05
Client ID: **P-TP-25-4**

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0011
Tetrachloroethene	ND		0.0011
1,3-Dichloropropane	ND		0.0011
2-Hexanone	ND		0.0054
Dibromochloromethane	ND		0.0011
1,2-Dibromoethane	ND		0.0011
Chlorobenzene	ND		0.0011
1,1,1,2-Tetrachloroethane	ND		0.0011
Ethylbenzene	ND		0.0011
m,p-Xylene	ND		0.0021
o-Xylene	0.0022		0.0011
Styrene	ND		0.0011
Bromoform	ND		0.0011
Isopropylbenzene	0.0097		0.0011
Bromobenzene	ND		0.0011
1,1,2,2-Tetrachloroethane	ND		0.0011
1,2,3-Trichloropropane	ND		0.0011
n-Propylbenzene	0.0044		0.0011
2-Chlorotoluene	ND		0.0011
4-Chlorotoluene	ND		0.0011
1,3,5-Trimethylbenzene	0.0039		0.0011
tert-Butylbenzene	0.0045		0.0011
1,2,4-Trimethylbenzene	0.012		0.0011
sec-Butylbenzene	0.011		0.0011
1,3-Dichlorobenzene	ND		0.0011
p-Isopropyltoluene	0.0042		0.0011
1,4-Dichlorobenzene	ND		0.0011
1,2-Dichlorobenzene	ND		0.0011
n-Butylbenzene	0.0090		0.0011
1,2-Dibromo-3-chloropropane	ND		0.0054
1,2,4-Trichlorobenzene	ND		0.0011
Hexachlorobutadiene	ND		0.0054
Naphthalene	0.0071		0.0011
1,2,3-Trichlorobenzene	ND		0.0011

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	86	66-128
Toluene-d8	88	68-126
4-Bromofluorobenzene	84	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-221-06
Client ID:	**P-TP-25-6**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0025
Chloromethane	ND		0.013
Vinyl Chloride	ND		0.0025
Bromomethane	ND		0.0025
Chloroethane	ND		0.013
Trichlorofluoromethane	ND		0.0025
1,1-Dichloroethene	ND		0.0025
Acetone	0.61		0.025
Iodomethane	ND		0.013
Carbon Disulfide	0.0042		0.0025
Methylene Chloride	ND		0.013
(trans) 1,2-Dichloroethene	ND		0.0025
Methyl t-Butyl Ether	ND		0.0025
1,1-Dichloroethane	ND		0.0025
Vinyl Acetate	ND		0.013
2,2-Dichloropropane	ND		0.0025
(cis) 1,2-Dichloroethene	ND		0.0025
2-Butanone	0.14		0.013
Bromochloromethane	ND		0.0025
Chloroform	ND		0.0025
1,1,1-Trichloroethane	ND		0.0025
Carbon Tetrachloride	ND		0.0025
1,1-Dichloropropene	ND		0.0025
Benzene	ND		0.0025
1,2-Dichloroethane	ND		0.0025
Trichloroethene	ND		0.0025
1,2-Dichloropropane	ND		0.0025
Dibromomethane	ND		0.0025
Bromodichloromethane	ND		0.0025
2-Chloroethyl Vinyl Ether	ND		0.013
(cis) 1,3-Dichloropropene	ND		0.0025
Methyl Isobutyl Ketone	ND		0.013
Toluene	ND		0.013
(trans) 1,3-Dichloropropene	ND		0.0025

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 08-221-06
Client ID: **P-TP-25-6**

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0025
Tetrachloroethene	ND		0.0025
1,3-Dichloropropane	ND		0.0025
2-Hexanone	ND		0.013
Dibromochloromethane	ND		0.0025
1,2-Dibromoethane	ND		0.0025
Chlorobenzene	ND		0.0025
1,1,1,2-Tetrachloroethane	ND		0.0025
Ethylbenzene	ND		0.0025
m,p-Xylene	0.0079		0.0050
o-Xylene	ND		0.0025
Styrene	ND		0.0025
Bromoform	ND		0.0025
Isopropylbenzene	0.012		0.0025
Bromobenzene	ND		0.0025
1,1,2,2-Tetrachloroethane	ND		0.0025
1,2,3-Trichloropropane	ND		0.0025
n-Propylbenzene	0.055		0.0025
2-Chlorotoluene	ND		0.0025
4-Chlorotoluene	ND		0.0025
1,3,5-Trimethylbenzene	0.026		0.0025
tert-Butylbenzene	0.0040		0.0025
1,2,4-Trimethylbenzene	0.093		0.0025
sec-Butylbenzene	0.018		0.0025
1,3-Dichlorobenzene	ND		0.0025
p-Isopropyltoluene	0.010		0.0025
1,4-Dichlorobenzene	ND		0.0025
1,2-Dichlorobenzene	ND		0.0025
n-Butylbenzene	0.021		0.0025
1,2-Dibromo-3-chloropropane	ND		0.013
1,2,4-Trichlorobenzene	ND		0.0025
Hexachlorobutadiene	ND		0.013
Naphthalene	ND		0.0025
1,2,3-Trichlorobenzene	ND		0.0025

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	89	66-128
Toluene-d8	96	68-126
4-Bromofluorobenzene	77	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0830S1

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0010
Chloromethane	ND		0.0050
Vinyl Chloride	ND		0.0010
Bromomethane	ND		0.0010
Chloroethane	ND		0.0050
Trichlorofluoromethane	ND		0.0010
1,1-Dichloroethene	ND		0.0010
Acetone	ND		0.010
Iodomethane	ND		0.0050
Carbon Disulfide	ND		0.0010
Methylene Chloride	ND		0.0050
(trans) 1,2-Dichloroethene	ND		0.0010
Methyl t-Butyl Ether	ND		0.0010
1,1-Dichloroethane	ND		0.0010
Vinyl Acetate	ND		0.0050
2,2-Dichloropropane	ND		0.0010
(cis) 1,2-Dichloroethene	ND		0.0010
2-Butanone	ND		0.0050
Bromochloromethane	ND		0.0010
Chloroform	ND		0.0010
1,1,1-Trichloroethane	ND		0.0010
Carbon Tetrachloride	ND		0.0010
1,1-Dichloropropene	ND		0.0010
Benzene	ND		0.0010
1,2-Dichloroethane	ND		0.0010
Trichloroethene	ND		0.0010
1,2-Dichloropropane	ND		0.0010
Dibromomethane	ND		0.0010
Bromodichloromethane	ND		0.0010
2-Chloroethyl Vinyl Ether	ND		0.0050
(cis) 1,3-Dichloropropene	ND		0.0010
Methyl Isobutyl Ketone	ND		0.0050
Toluene	ND		0.0050
(trans) 1,3-Dichloropropene	ND		0.0010

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB0830S1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0010
Tetrachloroethene	ND		0.0010
1,3-Dichloropropane	ND		0.0010
2-Hexanone	ND		0.0050
Dibromochloromethane	ND		0.0010
1,2-Dibromoethane	ND		0.0010
Chlorobenzene	ND		0.0010
1,1,1,2-Tetrachloroethane	ND		0.0010
Ethylbenzene	ND		0.0010
m,p-Xylene	ND		0.0020
o-Xylene	ND		0.0010
Styrene	ND		0.0010
Bromoform	ND		0.0010
Isopropylbenzene	ND		0.0010
Bromobenzene	ND		0.0010
1,1,2,2-Tetrachloroethane	ND		0.0010
1,2,3-Trichloropropane	ND		0.0010
n-Propylbenzene	ND		0.0010
2-Chlorotoluene	ND		0.0010
4-Chlorotoluene	ND		0.0010
1,3,5-Trimethylbenzene	ND		0.0010
tert-Butylbenzene	ND		0.0010
1,2,4-Trimethylbenzene	ND		0.0010
sec-Butylbenzene	ND		0.0010
1,3-Dichlorobenzene	ND		0.0010
p-Isopropyltoluene	ND		0.0010
1,4-Dichlorobenzene	ND		0.0010
1,2-Dichlorobenzene	ND		0.0010
n-Butylbenzene	ND		0.0010
1,2-Dibromo-3-chloropropane	ND		0.0050
1,2,4-Trichlorobenzene	ND		0.0010
Hexachlorobutadiene	ND		0.0050
Naphthalene	ND		0.0010
1,2,3-Trichlorobenzene	ND		0.0010

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	90	66-128
Toluene-d8	97	68-126
4-Bromofluorobenzene	98	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Date Extracted: 8-31-10
Date Analyzed: 8-31-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0831S1

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0010
Chloromethane	ND		0.0050
Vinyl Chloride	ND		0.0010
Bromomethane	ND		0.0010
Chloroethane	ND		0.0050
Trichlorofluoromethane	ND		0.0010
1,1-Dichloroethene	ND		0.0010
Acetone	ND		0.010
Iodomethane	ND		0.0050
Carbon Disulfide	ND		0.0010
Methylene Chloride	ND		0.0050
(trans) 1,2-Dichloroethene	ND		0.0010
Methyl t-Butyl Ether	ND		0.0010
1,1-Dichloroethane	ND		0.0010
Vinyl Acetate	ND		0.0050
2,2-Dichloropropane	ND		0.0010
(cis) 1,2-Dichloroethene	ND		0.0010
2-Butanone	ND		0.0050
Bromochloromethane	ND		0.0010
Chloroform	ND		0.0010
1,1,1-Trichloroethane	ND		0.0010
Carbon Tetrachloride	ND		0.0010
1,1-Dichloropropene	ND		0.0010
Benzene	ND		0.0010
1,2-Dichloroethane	ND		0.0010
Trichloroethene	ND		0.0010
1,2-Dichloropropane	ND		0.0010
Dibromomethane	ND		0.0010
Bromodichloromethane	ND		0.0010
2-Chloroethyl Vinyl Ether	ND		0.0050
(cis) 1,3-Dichloropropene	ND		0.0010
Methyl Isobutyl Ketone	ND		0.0050
Toluene	ND		0.0050
(trans) 1,3-Dichloropropene	ND		0.0010

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB0831S1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0010
Tetrachloroethene	ND		0.0010
1,3-Dichloropropane	ND		0.0010
2-Hexanone	ND		0.0050
Dibromochloromethane	ND		0.0010
1,2-Dibromoethane	ND		0.0010
Chlorobenzene	ND		0.0010
1,1,1,2-Tetrachloroethane	ND		0.0010
Ethylbenzene	ND		0.0010
m,p-Xylene	ND		0.0020
o-Xylene	ND		0.0010
Styrene	ND		0.0010
Bromoform	ND		0.0010
Isopropylbenzene	ND		0.0010
Bromobenzene	ND		0.0010
1,1,2,2-Tetrachloroethane	ND		0.0010
1,2,3-Trichloropropane	ND		0.0010
n-Propylbenzene	ND		0.0010
2-Chlorotoluene	ND		0.0010
4-Chlorotoluene	ND		0.0010
1,3,5-Trimethylbenzene	ND		0.0010
tert-Butylbenzene	ND		0.0010
1,2,4-Trimethylbenzene	ND		0.0010
sec-Butylbenzene	ND		0.0010
1,3-Dichlorobenzene	ND		0.0010
p-Isopropyltoluene	ND		0.0010
1,4-Dichlorobenzene	ND		0.0010
1,2-Dichlorobenzene	ND		0.0010
n-Butylbenzene	ND		0.0010
1,2-Dibromo-3-chloropropane	ND		0.0050
1,2,4-Trichlorobenzene	ND		0.0010
Hexachlorobutadiene	ND		0.0050
Naphthalene	ND		0.0010
1,2,3-Trichlorobenzene	ND		0.0010

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	89	66-128
Toluene-d8	97	68-126
4-Bromofluorobenzene	95	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0830S1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	0.0500	0.0443	89	0.0464	93	70-130	
Benzene	0.0500	0.0417	83	0.0436	87	70-121	
Trichloroethene	0.0500	0.0416	83	0.0430	86	70-124	
Toluene	0.0500	0.0414	83	0.0430	86	70-123	
Chlorobenzene	0.0500	0.0448	90	0.0464	93	71-119	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	5	14	
Benzene	4	10	
Trichloroethene	3	12	
Toluene	4	12	
Chlorobenzene	3	9	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 8-31-10
Date Analyzed: 8-31-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0831S1

Compound	**Spike Amount**	**SB**	**Percent Recovery**	**SBD**	**Percent Recovery**	**Recovery Limits**	**Flags**
1,1-Dichloroethene	0.0500	0.0475	95	0.0498	100	70-130	
Benzene	0.0500	0.0424	85	0.0443	89	70-121	
Trichloroethene	0.0500	0.0415	83	0.0436	87	70-124	
Toluene	0.0500	0.0431	86	0.0449	90	70-123	
Chlorobenzene	0.0500	0.0454	91	0.0467	93	71-119	

	RPD	**RPD Limit**	**Flags**
1,1-Dichloroethene	5	14	
Benzene	4	10	
Trichloroethene	5	12	
Toluene	4	12	
Chlorobenzene	3	9	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-221-01					
Client ID:	**P-TP-22-3**					
Arsenic	**ND**	13	6010B	8-30-10	8-30-10	
Barium	**91**	6.4	6010B	8-30-10	8-30-10	
Cadmium	**ND**	1.3	6010B	8-30-10	8-30-10	
Chromium	**32**	1.3	6010B	8-30-10	8-30-10	
Lead	**81**	13	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.64	7471A	8-30-10	8-30-10	
Selenium	**ND**	25	6010B	8-30-10	8-30-10	
Silver	**ND**	1.3	6010B	8-30-10	8-30-10	
Lab ID:	08-221-02					
Client ID:	**P-TP-23-2**					
Arsenic	**ND**	11	6010B	8-30-10	8-30-10	
Barium	**68**	2.7	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.53	6010B	8-30-10	8-30-10	
Chromium	**37**	0.53	6010B	8-30-10	8-30-10	
Lead	**ND**	5.3	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.27	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-30-10	8-30-10	
Silver	**ND**	0.53	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	08-221-03					
Client ID:	**P-TP-23-4**					
Arsenic	**27**	24	6010B	8-30-10	8-30-10	
Barium	**190**	12	6010B	8-30-10	8-30-10	
Cadmium	**ND**	1.2	6020	8-30-10	8-30-10	
Chromium	**27**	2.4	6010B	8-30-10	8-30-10	
Lead	**130**	24	6010B	8-30-10	8-30-10	
Mercury	**ND**	1.2	7471A	8-30-10	8-30-10	
Selenium	**ND**	47	6010B	8-30-10	8-30-10	
Silver	**ND**	2.4	6010B	8-30-10	8-30-10	

Lab ID:	08-221-04					
Client ID:	**P-TP-24-4**					
Arsenic	**ND**	12	6010B	8-30-10	8-30-10	
Barium	**120**	3.0	6010B	8-30-10	8-30-10	
Cadmium	**0.74**	0.59	6010B	8-30-10	8-30-10	
Chromium	**33**	0.59	6010B	8-30-10	8-30-10	
Lead	**150**	5.9	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.30	7471A	8-30-10	8-30-10	
Selenium	**ND**	12	6010B	8-30-10	8-30-10	
Silver	**ND**	0.59	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-221-05					
Client ID:	**P-TP-25-4**					
Arsenic	**62**	12	6010B	8-30-10	8-30-10	
Barium	**83**	3.0	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.59	6010B	8-30-10	8-30-10	
Chromium	**35**	0.59	6010B	8-30-10	8-30-10	
Lead	**87**	5.9	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.30	7471A	8-30-10	8-30-10	
Selenium	**ND**	12	6010B	8-30-10	8-30-10	
Silver	**ND**	0.59	6010B	8-30-10	8-30-10	

Lab ID:	08-221-06					
Client ID:	**P-TP-25-6**					
Arsenic	**20**	18	6010B	8-30-10	8-30-10	
Barium	**97**	4.4	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.88	6010B	8-30-10	8-30-10	
Chromium	**27**	0.88	6010B	8-30-10	8-30-10	
Lead	**79**	8.8	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.44	7471A	8-30-10	8-30-10	
Selenium	**ND**	18	6010B	8-30-10	8-30-10	
Silver	**ND**	0.88	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-221-07					
Client ID:	**P-TP-26-5**					
Arsenic	**ND**	11	6010B	8-30-10	8-30-10	
Barium	**39**	2.6	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.53	6010B	8-30-10	8-30-10	
Chromium	**22**	0.53	6010B	8-30-10	8-30-10	
Lead	**18**	5.3	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.26	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-30-10	8-30-10	
Silver	**ND**	0.53	6010B	8-30-10	8-30-10	
Lab ID:	08-221-09					
Client ID:	**P-TP-27-4**					
Arsenic	**ND**	12	6010B	8-30-10	8-30-10	
Barium	**25**	2.9	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.59	6010B	8-30-10	8-30-10	
Chromium	**19**	0.59	6010B	8-30-10	8-30-10	
Lead	**ND**	5.9	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.29	7471A	8-30-10	8-30-10	
Selenium	**ND**	12	6010B	8-30-10	8-30-10	
Silver	**ND**	0.59	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0830S5

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	5.0
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0830S3

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-195-12

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	5.0	
Barium	**48.1**	**44.4**	8	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**24.2**	**21.3**	13	0.50	
Lead	**ND**	**ND**	NA	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-202-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**8.58**	**9.88**	14	0.25	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-195-12

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**95.6**	96	**95.8**	96	0	
Barium	100	**142**	94	**142**	94	0	
Cadmium	50	**43.3**	87	**43.3**	87	0	
Chromium	100	**110**	86	**110**	86	1	
Lead	250	**217**	87	**219**	88	1	
Selenium	100	**98.2**	98	**97.6**	98	1	
Silver	25	**21.4**	86	**21.2**	85	1	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-202-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.50	**8.62**	8	**9.2**	124	7	A

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

% MOISTURE

Date Analyzed: 8-30-10

Client ID	Lab ID	% Moisture
P-TP-22-3	08-221-01	61
P-TP-23-2	08-221-02	6
P-TP-23-4	08-221-03	79
P-TP-24-4	08-221-04	15
P-TP-25-4	08-221-05	16
P-TP-25-6	08-221-06	43
P-TP-26-5	08-221-07	5
P-TP-27-4	08-221-09	15

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

08-221
DATE: 8/27/10
PAGE: 1 of

PROJECT NAME: Bothell Crossroads #: 2007-099
SITE CODE: Bothell Paint
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE: Ca Q
HWA CONTACT: PHONE:

RUSH: 2 DAY TAT!

ANALYSIS REQUESTED

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	VOC's 8260	RCRA METALS	% MOISTURE	REMARKS
P-TP-22-3	8/27/10	730	S	1	5	X	X	X	X	X	
P-TP-23-2		820		2		X	X	X	X		
P-TP-23-4		835		3		X	X	X	X		
P-TP-24-4		845		4		X	X	X	X		
P-TP-25-4		910		5		X	X	X	X		
P-TP-25-6		915		6		X	X	X	X		
P-TP-26-5		1040		7		X			X		
P-TP-26-7		1100		8							
P-TP-27-~~3~~4		1115		9	~~4~~ 2	X			X	X	

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fisk		HWA GeoSciences	8/27/10	1:48pm	
Received by:	Michael Daugherty		Speedy	8-27-10	1:48pm	
Relinquished by:	Michael Daugherty		Speedy	8-27-10	1420	
Received by:		Blair Goodrow	OS Hefter	8/27/10	1420	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1008-221B

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 27, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

Case Narrative

Samples were collected on August 27, 2010 and received by the laboratory on August 27, 2010. They were maintained at the laboratory at a temperature of 2^oC to 6^oC.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-23-2**					
Laboratory ID:	08-221-02					
Naphthalene	**ND**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
2-Methylnaphthalene	**0.076**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
1-Methylnaphthalene	**0.037**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthylene	**ND**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthene	**ND**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Fluorene	**0.0081**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Phenanthrene	**0.033**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Anthracene	**0.0085**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Fluoranthene	**0.060**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Pyrene	**0.055**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]anthracene	**0.028**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Chrysene	**0.031**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[b]fluoranthene	**0.032**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[k]fluoranthene	**0.024**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]pyrene	**0.037**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Indeno(1,2,3-c,d)pyrene	**0.029**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Dibenz[a,h]anthracene	**0.0096**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[g,h,i]perylene	**0.033**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*79*	*45 - 101*				
Pyrene-d10	*94*	*52 - 118*				
Terphenyl-d14	*75*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0907S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*85*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*87*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-038-01										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0726**	**0.0707**	0.0833	0.0833	ND	87	85	31 - 115	3	19	
Acenaphthylene	**0.0664**	**0.0631**	0.0833	0.0833	ND	80	76	40 - 134	5	22	
Acenaphthene	**0.0743**	**0.0715**	0.0833	0.0833	ND	89	86	48 - 118	4	17	
Fluorene	**0.0761**	**0.0730**	0.0833	0.0833	ND	91	88	54 - 122	4	16	
Phenanthrene	**0.0743**	**0.0711**	0.0833	0.0833	ND	89	85	46 - 123	4	19	
Anthracene	**0.0646**	**0.0645**	0.0833	0.0833	ND	78	77	53 - 123	0	27	
Fluoranthene	**0.0704**	**0.0683**	0.0833	0.0833	ND	85	82	47 - 132	3	26	
Pyrene	**0.0783**	**0.0742**	0.0833	0.0833	ND	94	89	41 - 137	5	25	
Benzo[a]anthracene	**0.0688**	**0.0672**	0.0833	0.0833	ND	83	81	43 - 132	2	26	
Chrysene	**0.0677**	**0.0673**	0.0833	0.0833	ND	81	81	46 - 126	1	24	
Benzo[b]fluoranthene	**0.0626**	**0.0634**	0.0833	0.0833	ND	75	76	44 - 134	1	24	
Benzo[k]fluoranthene	**0.0555**	**0.0595**	0.0833	0.0833	ND	67	71	45 - 132	7	20	
Benzo[a]pyrene	**0.0724**	**0.0721**	0.0833	0.0833	ND	87	87	36 - 136	0	23	
Indeno(1,2,3-c,d)pyrene	**0.0792**	**0.0783**	0.0833	0.0833	ND	95	94	40 - 136	1	16	
Dibenz[a,h]anthracene	**0.0821**	**0.0804**	0.0833	0.0833	ND	99	97	40 - 142	2	13	
Benzo[g,h,i]perylene	**0.0806**	**0.0779**	0.0833	0.0833	ND	97	94	37 - 137	3	18	
Surrogate:											
2-Fluorobiphenyl						*80*	*79*	*45 - 101*			
Pyrene-d10						*87*	*84*	*52 - 118*			
Terphenyl-d14						*77*	*82*	*41 - 106*			

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-24-4**					
Laboratory ID:	08-221-04					
Naphthalene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
2-Methylnaphthalene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
1-Methylnaphthalene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthylene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Fluorene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Phenanthrene	**0.015**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Anthracene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Fluoranthene	**0.024**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Pyrene	**0.021**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]anthracene	**0.010**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Chrysene	**0.014**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[b]fluoranthene	**0.012**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[k]fluoranthene	**0.0094**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]pyrene	**0.012**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Indeno(1,2,3-c,d)pyrene	**0.0079**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Dibenz[a,h]anthracene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[g,h,i]perylene	**0.0099**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*70*	*45 - 101*				
Pyrene-d10	*78*	*52 - 118*				
Terphenyl-d14	*98*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-25-4**					
Laboratory ID:	08-221-05					
Naphthalene	**0.013**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
2-Methylnaphthalene	**0.076**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
1-Methylnaphthalene	**0.12**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthylene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthene	**0.031**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Fluorene	**0.028**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Phenanthrene	**0.074**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Anthracene	**0.015**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Fluoranthene	**0.026**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Pyrene	**0.042**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]anthracene	**0.020**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Chrysene	**0.032**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[b]fluoranthene	**0.015**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[k]fluoranthene	**0.0098**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]pyrene	**0.014**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Dibenz[a,h]anthracene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[g,h,i]perylene	**0.012**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*80*	*45 - 101*				
Pyrene-d10	*90*	*52 - 118*				
Terphenyl-d14	*96*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0917S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*83*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*90*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0917S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0659**	**0.0813**	0.0833	0.0833	79	98	33 - 105	21	30	
Acenaphthylene	**0.0647**	**0.0714**	0.0833	0.0833	78	86	51 - 110	10	22	
Acenaphthene	**0.0687**	**0.0804**	0.0833	0.0833	82	97	51 - 105	16	20	
Fluorene	**0.0709**	**0.0803**	0.0833	0.0833	85	96	61 - 107	12	17	
Phenanthrene	**0.0722**	**0.0791**	0.0833	0.0833	87	95	61 - 106	9	12	
Anthracene	**0.0628**	**0.0683**	0.0833	0.0833	75	82	59 - 106	8	12	
Fluoranthene	**0.0712**	**0.0772**	0.0833	0.0833	85	93	66 - 116	8	12	
Pyrene	**0.0746**	**0.0840**	0.0833	0.0833	90	101	67 - 118	12	14	
Benzo[a]anthracene	**0.0673**	**0.0727**	0.0833	0.0833	81	87	60 - 114	8	11	
Chrysene	**0.0738**	**0.0800**	0.0833	0.0833	89	96	64 - 112	8	12	
Benzo[b]fluoranthene	**0.0754**	**0.0812**	0.0833	0.0833	91	97	61 - 123	7	14	
Benzo[k]fluoranthene	**0.0715**	**0.0808**	0.0833	0.0833	86	97	50 - 124	12	17	
Benzo[a]pyrene	**0.0720**	**0.0776**	0.0833	0.0833	86	93	50 - 114	7	17	
Indeno(1,2,3-c,d)pyrene	**0.0900**	**0.0825**	0.0833	0.0833	108	99	56 - 122	9	16	
Dibenz[a,h]anthracene	**0.0914**	**0.0828**	0.0833	0.0833	110	99	57 - 124	10	16	
Benzo[g,h,i]perylene	**0.0841**	**0.0832**	0.0833	0.0833	101	100	56 - 121	1	15	
Surrogate:										
2-Fluorobiphenyl					*72*	*84*	*45 - 101*			
Pyrene-d10					*80*	*88*	*52 - 118*			
Terphenyl-d14					*92*	*94*	*41 - 106*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

08-221
DATE: 8/27/10
PAGE: 1 of

PROJECT NAME: Bothell Crossroads #: 2007-092
SITE CODE: Bothell Paint
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: PHONE:

RUSH: 2 DAY TAT!

						ANALYSIS REQUESTED								
HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	VOC's 8260	RCRA METALS	EPH	VPH	PAHs	% MOISTURE	REMARKS
P-TP-22-3	8/27/10	730	S	1	5	X	X	X	X				X	
P-TP-23-2		820		2		X	X	X	X	Ⓧ	Ⓧ	Ⓧ		Ⓧ Added 9/2/10
P-TP-23-4		835		3		X	X	X	X					~~[illegible]~~ STA
P-TP-24-4		845		4		X	X	X	X			○		
P-TP-25-4		910		5		X	X	X	X			○		○ Added 9/15/10. DR (STA)
P-TP-25-6		915		6		X	X	X	X					
P-TP-26-5		1040		7		X			X					
P-TP-2~~6~~-~~7~~		1100		8										
P-TP-27-~~8~~4 03		110		9	03 ~~4~~ 2	X			X				X	

PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fisk		HWA GeoSciences	8/27/10	1:48pm	
Received by:	Michael Daugherty		Speedy	8-27-10	1:48pm	
Relinquished by:	Michael Daugherty		Speedy	8-27-10	1420	
Received by:		Blair Goodrow	OS Xeta	8/27/10	1420	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

Analytical Resources, Incorporated
Analytical Chemists and Consultants

22 September 2010

David Baumeister
OnSite Environmental, Inc.
14648 NE 95th
Redmond, WA 98052

RE: Client Project: 2007-098
ARI Job No: RO05

Dear David:

Please find enclosed the chain-of-custody (COC) record and the final results for the sample from the project referenced above. Analytical Resources, Inc. (ARI) accepted one soil sample on September 3, 2010. The sample was analyzed for EPH as requested.

There were no anomalies associated with these analyses.

An electronic copy of these reports will remain on file at ARI. Should you have any questions, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
markh@arilabs.com

Enclosures

cc: file RO05

MDH/esj

R005   10-22354

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Subcontract Laboratory: Analytical Resources, Inc.
Attention: Mark Harris
4611 S 134th Pl, Ste. 100   Tukwila, WA 98168
Phone Number: (206) 695-6200
Date/Time: ____________

Turnaround Request:
1 Day   2 Day   3 Day
[✓ Standard]
Other: ____________

Laboratory Reference #: 08-221
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098
Project Name: ____________

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
2	P-TP-23-2	8/27/10		S	1	EPH

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:		OnSite Env	9/3/10	1010	EIM
Received by:	Van	Speedy	9/3/10	1010	
Relinquished by:	Van	Speedy	9/3/10	1540	
Received by:		ARI	9/3/10	1540	
Relinquished by:					
Received by:					

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: OnSite

COC No(s): [✓ NA]

Assigned ARI Job No: RL77

Project Name:

Delivered by: Fed-Ex UPS [✓ Courier] Hand Delivered Other:

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES [✓ NO]

Were custody papers included with the cooler? [✓ YES] NO

Were custody papers properly filled out (ink, signed, etc.) [✓ YES] NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 7.6

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90941619

Cooler Accepted by: JM Date: 9/3/10 Time: 1545

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES [✓ NO]

What kind of packing material was used? ... Bubble Wrap [✓ Wet Ice] Gel Packs [✓ Baggies] Foam Block Paper Other:

Was sufficient ice used (if appropriate)? NA YES [✓ NO]

Were all bottles sealed in individual plastic bags? YES [✓ NO]

Did all bottles arrive in good condition (unbroken)? [✓ YES] NO

Were all bottle labels complete and legible? [✓ YES] NO

Did the number of containers listed on COC match with the number of containers received? [✓ YES] NO

Did all bottle labels and tags agree with custody papers? [✓ YES] NO

Were all bottles used correct for the requested analyses? [✓ YES] NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... [✓ NA] YES NO

Were all VOC vials free of air bubbles? [✓ NA] YES NO

Was sufficient amount of sample sent in each bottle? [✓ YES] NO

Date VOC Trip Blank was made at ARI [✓ NA]

Was Sample Split by ARI : [✓ NA] YES Date/Time: Equipment: Split by:

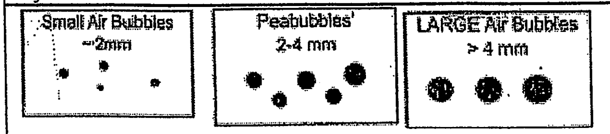
Samples Logged by: JM Date: 9/3/10 Time: 1730

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: MB-090810
METHOD BLANK

Lab Sample ID: MB-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted: 09/08/10
Percent Moisture: NA

Sample Amount: 10.0 g-as-rec
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/22/10 00:08
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 05:32
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Range	**RL**	**Result**
C8-C10 Aliphatics	2,000	< 2,000 U
C10-C12 Aliphatics	2,000	< 2,000 U
C12-C16 Aliphatics	2,000	< 2,000 U
C16-C21 Aliphatics	2,000	< 2,000 U
C21-C34 Aliphatics	2,000	< 2,000 U
C8-C10 Aromatics	2,000	< 2,000 U
C10-C12 Aromatics	2,000	< 2,000 U
C12-C16 Aromatics	2,000	< 2,000 U
C16-C21 Aromatics	2,000	< 2,000 U
C21-C34 Aromatics	2,000	< 2,000 U

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	73.8%
Aromatic	o-Terphenyl	76.2%

FORM I

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-23-2
SAMPLE

Lab Sample ID: RO05E
LIMS ID: 10-22354
Matrix: Soil
Data Release Authorized:
Reported: 09/23/10

QC Report No: RO05-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/27/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 13.6%

Sample Amount: 8.80 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 22:52
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 04:18
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Range	**RL**	**Result**
C8-C10 Aliphatics	2,300	< 2,300 U
C10-C12 Aliphatics	2,300	< 2,300 U
C12-C16 Aliphatics	2,300	< 2,300 U
C16-C21 Aliphatics	2,300	< 2,300 U
C21-C34 Aliphatics	2,300	< 2,300 U
C8-C10 Aromatics	2,300	< 2,300 U
C10-C12 Aromatics	2,300	< 2,300 U
C12-C16 Aromatics	2,300	< 2,300 U
C16-C21 Aromatics	2,300	< 2,300 U
C21-C34 Aromatics	2,300	< 2,300 U

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	73.7%
Aromatic	o-Terphenyl	67.2%

FORM I

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: LCS-090810
LCS/LCSD

Lab Sample ID: LCS-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 09/08/10

Sample Amount LCS: 10.0 g-as-rec
LCSD: 10.0 g-as-rec
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL

Aliphatic
Date Analyzed LCS: 09/21/10 23:17
LCSD: 09/21/10 23:43
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Aromatic
Date Analyzed LCS: 09/22/10 04:43
LCSD: 09/22/10 05:08
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Range	**LCS**	**Spike Added-LCS**	**LCS Recovery**	**LCSD**	**Spike Added-LCSD**	**LCSD Recovery**	**RPD**
C8-C10 Aliphatics	11000	15000	73.3%	11600	15000	77.3%	5.3%
C10-C12 Aliphatics	9100	15000	60.7%	9500	15000	63.3%	4.3%
C12-C16 Aliphatics	14000	15000	93.3%	14400	15000	96.0%	2.8%
C16-C21 Aliphatics	14000	15000	93.3%	13800	15000	92.0%	1.4%
C10-C12 Aromatics	10300	15000	68.7%	10400	15000	69.3%	1.0%
C12-C16 Aromatics	12500	15000	83.3%	12900	15000	86.0%	3.1%
C16-C21 Aromatics	27100	30000	90.3%	29100	30000	97.0%	7.1%
C21-C34 Aromatics	26500	30000	88.3%	29000	30000	96.7%	9.0%

EPH Surrogate Recovery

		LCS	**LCSD**
Aliphatic	1-Chlorooctadecane	73.6%	74.5%
Aromatic	o-Terphenyl	75.6%	79.2%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

FORM III

CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE: 9/8/2010
ALS JOB#: 1009043
DATE RECEIVED: 9/3/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-221 / Proj #2007-098
CLIENT SAMPLE ID: 8/27/2010 P-TP-23-2
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C6-C8 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Hexane	NWVPH	ND	0.20	1	MG/KG	9/7/2010	DLC

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009043
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-221 / Proj #2007-098

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
1009043-01	NWVPH	TFT - Aliphatic	89%
1009043-01	NWVPH	TFT - Aromatic	88%
1009043-01	NWVPH	TFT - Hexane	92%

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009043
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-221 / Proj #2007-098

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MBLK-972010	Soil	NWVPH	C5-C6 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C6-C8 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C8-C10 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C8-C10 Aromatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Total Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Total Aromatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Hexane	ND(<0.20)	MG/KG

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009043
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-221 / Proj #2007-098

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
R70417	Soil	NWVPH	C5-C6 Aliphatics	100	96%	99%	3
R70417	Soil	NWVPH	>C6-C8 Aliphatics	100	101%	111%	9
R70417	Soil	NWVPH	>C8-C10 Aliphatics	100	103%	107%	4
R70417	Soil	NWVPH	>C8-C10 Aromatics	100	102%	108%	6
R70417	Soil	NWVPH	Hexane	100	102%	101%	1

APPROVED BY:

1009043

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Page 1 of 1

Subcontract Laboratory:
Contact Person:
Address:
Phone Number:
Date/Time:

Turnaround Request:
1 Day 2 Day 3 Day
[✓ Standard]
Other:

Laboratory Reference #: 08-221
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098
Project Name:

1

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
2	P-TP-23-2	8/27		S	1	VPH

	Signature	Company	Date	Time
Relinquished by:		OnSite En	9/3/10	1315
Received by:		#Speedy	9/3/10	321
Relinquished by:				
Received by:	Shawn Robinson	ALS	9/3/10	4:15
Relinquished by:				
Received by:				

Comments/Special Instructions:

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 2, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1008-240

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 31, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

Case Narrative

Samples were collected on August 31, 2010 and received by the laboratory on August 31, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010B/6020/7471A Analysis

The duplicate RPD for Barium is outside control limits due to sample inhomogeniety. The samples were re-extracted and re-analyzed with similar results.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-1-7**					
Laboratory ID:	08-240-01					
Diesel Range Organics	**ND**	240	NWTPH-Dx	9-1-10	9-1-10	U1
Lube Oil Range Organics	**690**	340	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*80*	*50-150*				
Client ID:	**P-PEX-2-6**					
Laboratory ID:	08-240-02					
Diesel Range Organics	**ND**	170	NWTPH-Dx	9-1-10	9-1-10	
Lube Oil Range Organics	**620**	340	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0901S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-1-10	9-1-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*125*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-237-05							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*109*	*101*	*50-150*			

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

TOTAL METALS
EPA 6010B/6020/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-240-01					
Client ID:	**P-PEX-1-7**					
Arsenic	**ND**	8.5	6020	8-31-10	9-1-10	
Barium	**72**	17	6010B	8-31-10	8-31-10	
Cadmium	**ND**	1.7	6020	8-31-10	9-1-10	
Chromium	**13**	3.4	6010B	8-31-10	8-31-10	
Lead	**ND**	34	6010B	8-31-10	8-31-10	
Mercury	**ND**	1.7	7471A	9-1-10	9-1-10	
Selenium	**ND**	68	6010B	8-31-10	8-31-10	
Silver	**ND**	3.4	6010B	8-31-10	8-31-10	
Lab ID:	08-240-02					
Client ID:	**P-PEX-2-6**					
Arsenic	**ND**	8.6	6020	8-31-10	9-1-10	
Barium	**63**	17	6010B	8-31-10	8-31-10	
Cadmium	**ND**	1.7	6020	8-31-10	9-1-10	
Chromium	**11**	3.4	6010B	8-31-10	8-31-10	
Lead	**ND**	34	6010B	8-31-10	8-31-10	
Mercury	**ND**	1.7	7471A	9-1-10	9-1-10	
Selenium	**ND**	69	6010B	8-31-10	8-31-10	
Silver	**ND**	3.4	6010B	8-31-10	8-31-10	

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0831S5

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

TOTAL MERCURY
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-1-10
Date Analyzed:	9-1-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0901S4

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

TOTAL METALS
EPA 6020
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-1-10
Date Analyzed:	9-1-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0831S5

Analyte	Method	Result	PQL
Arsenic	6020	**ND**	1.3
Cadmium	6020	**ND**	0.25

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 8-31-10
Date Analyzed: 8-31-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-175-19

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**21.7**	**16.5**	27	2.5	K
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**6.83**	**5.69**	18	0.50	
Lead	**ND**	**ND**	NA	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

TOTAL MERCURY
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted:	9-1-10
Date Analyzed:	9-1-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-191-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 8-31-10
Date Analyzed: 8-31-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-175-19

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**92.5**	92	**91.1**	91	2	
Barium	100	**113**	91	**117**	96	4	
Cadmium	50	**45.1**	90	**45.0**	90	0	
Chromium	100	**101**	94	**101**	94	0	
Lead	250	**235**	94	**233**	93	1	
Selenium	100	**94.8**	95	**94.0**	94	1	
Silver	25	**19.5**	78	**23.3**	93	18	

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

TOTAL MERCURY
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted:	9-1-10
Date Analyzed:	9-1-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-191-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.50	**0.457**	91	**0.461**	92	1	

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

% MOISTURE

Date Analyzed: 8-31-10

Client ID	Lab ID	% Moisture
P-PEX-1-7	08-240-01	85
P-PEX-2-6	08-240-02	85

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

DATE: 8/31/10
PAGE: 1 of 1

08-240

PROJECT NAME: Bothell Paint #: 2007098
SITE CODE:
SAMPLERS NAME: P. Pearson PHONE: 206 · 794 3113
SAMPLERS SIGNATURE:
HWA CONTACT: Vance Atkins PHONE: 206 794 3128

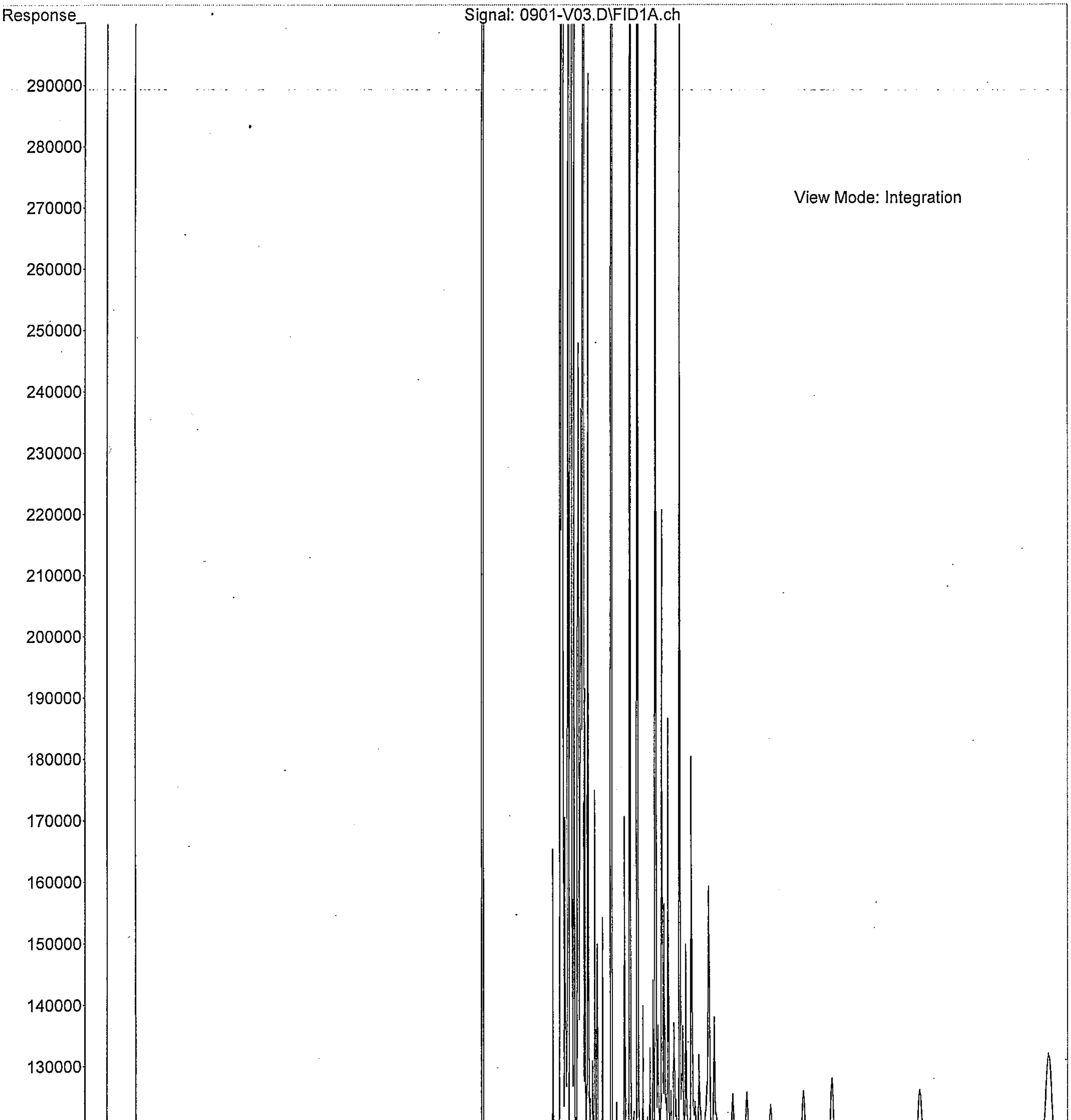
24-hour TAT

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH-Dx	RCRA-8												%moisture		REMARKS
P-PEX-1-7	8/31/10	12:10	S	1	2	X	X												X		
P-PEX-2-6	8/31/10	12:15	S	2	2	X	X												✓		

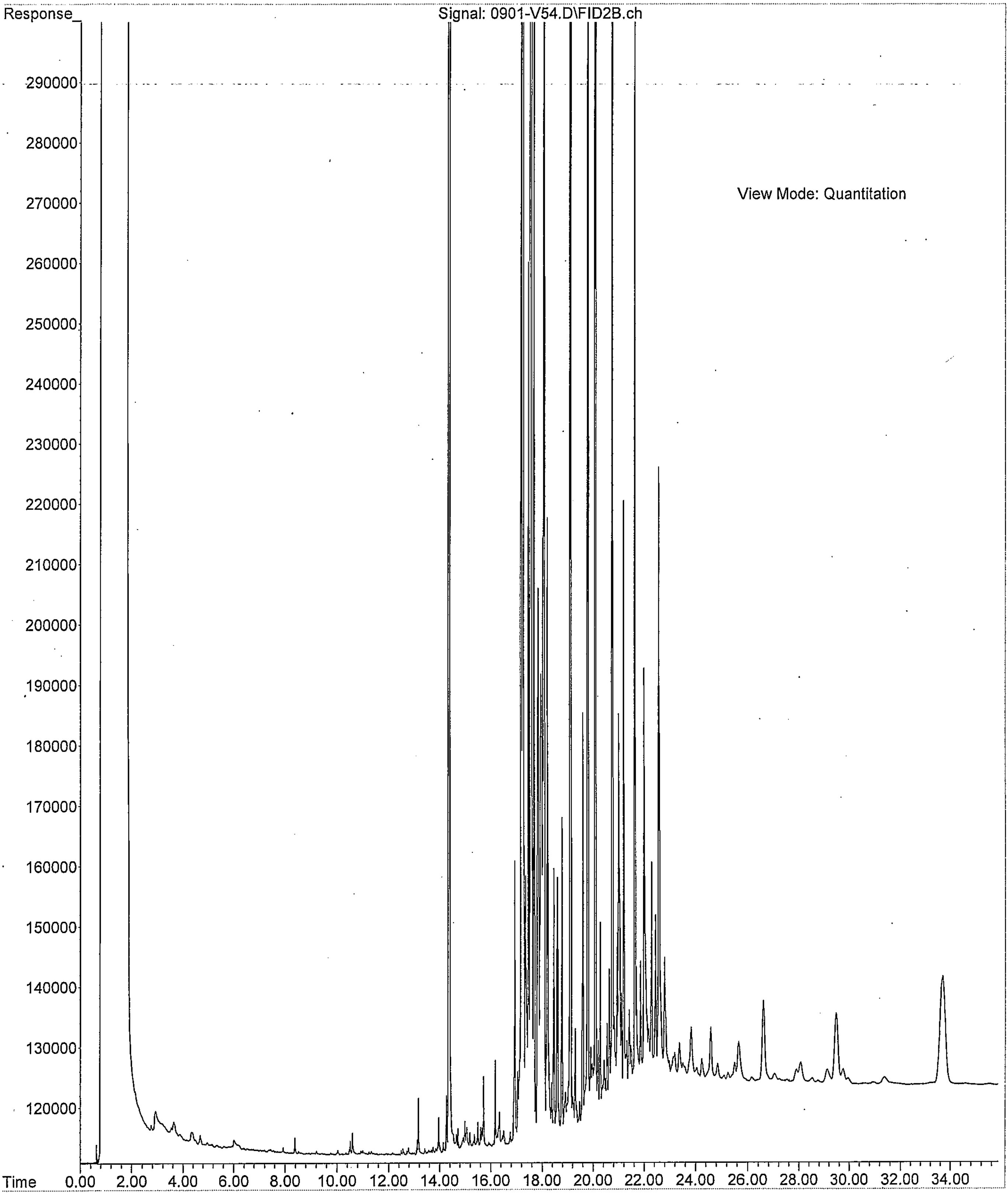
	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Pete Pearson		HWA	8/31/10	12:37	
Received by:	M. VOUN		OSE	8/31/10	1237	
Relinquished by:						
Received by:						

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

```
File        :C:\msdchem\2\DATA\V100901\0901-V03.D
Operator    :
Acquired    :  1 Sep 2010  11:45     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-240-01
Misc Info   :
Vial Number: 3
```



```
File        :C:\msdchem\2\DATA\V100901.SEC\0901-V54.D
Operator    :
Acquired    :  1 Sep 2010  12:25     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-240-02
Misc Info   :
Vial Number: 54
```



OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re:	Analytical Data for Project 2007-098
Laboratory Reference No. 1008-240B

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 31, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 23, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240B
Project: 2007-098

Case Narrative

Samples were collected on August 31, 2010 and received by the laboratory on August 31, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

PAHs EPA 8270D/SIM Analysis

The samples were extracted and analyzed out of holding time.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**P-PEX-1-7**					
Laboratory ID:	08-240-01					
Naphthalene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
2-Methylnaphthalene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
1-Methylnaphthalene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthylene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Fluorene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Phenanthrene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Anthracene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Fluoranthene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Pyrene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]anthracene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Chrysene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[b]fluoranthene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[k]fluoranthene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]pyrene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Dibenz[a,h]anthracene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[g,h,i]perylene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*62*	*45 - 101*				
Pyrene-d10	*67*	*52 - 118*				
Terphenyl-d14	*79*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**P-PEX-2-6**					
Laboratory ID:	08-240-02					
Naphthalene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
2-Methylnaphthalene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
1-Methylnaphthalene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthylene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Fluorene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Phenanthrene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Anthracene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Fluoranthene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Pyrene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]anthracene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Chrysene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[b]fluoranthene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[k]fluoranthene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]pyrene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Dibenz[a,h]anthracene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[g,h,i]perylene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*50*	*45 - 101*				
Pyrene-d10	*53*	*52 - 118*				
Terphenyl-d14	*57*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0917S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*83*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*90*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0917S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0659**	**0.0813**	0.0833	0.0833	79	98	33 - 105	21	30	
Acenaphthylene	**0.0647**	**0.0714**	0.0833	0.0833	78	86	51 - 110	10	22	
Acenaphthene	**0.0687**	**0.0804**	0.0833	0.0833	82	97	51 - 105	16	20	
Fluorene	**0.0709**	**0.0803**	0.0833	0.0833	85	96	61 - 107	12	17	
Phenanthrene	**0.0722**	**0.0791**	0.0833	0.0833	87	95	61 - 106	9	12	
Anthracene	**0.0628**	**0.0683**	0.0833	0.0833	75	82	59 - 106	8	12	
Fluoranthene	**0.0712**	**0.0772**	0.0833	0.0833	85	93	66 - 116	8	12	
Pyrene	**0.0746**	**0.0840**	0.0833	0.0833	90	101	67 - 118	12	14	
Benzo[a]anthracene	**0.0673**	**0.0727**	0.0833	0.0833	81	87	60 - 114	8	11	
Chrysene	**0.0738**	**0.0800**	0.0833	0.0833	89	96	64 - 112	8	12	
Benzo[b]fluoranthene	**0.0754**	**0.0812**	0.0833	0.0833	91	97	61 - 123	7	14	
Benzo[k]fluoranthene	**0.0715**	**0.0808**	0.0833	0.0833	86	97	50 - 124	12	17	
Benzo[a]pyrene	**0.0720**	**0.0776**	0.0833	0.0833	86	93	50 - 114	7	17	
Indeno(1,2,3-c,d)pyrene	**0.0900**	**0.0825**	0.0833	0.0833	108	99	56 - 122	9	16	
Dibenz[a,h]anthracene	**0.0914**	**0.0828**	0.0833	0.0833	110	99	57 - 124	10	16	
Benzo[g,h,i]perylene	**0.0841**	**0.0832**	0.0833	0.0833	101	100	56 - 121	1	15	
Surrogate:										
2-Fluorobiphenyl					*72*	*84*	*45 - 101*			
Pyrene-d10					*80*	*88*	*52 - 118*			
Terphenyl-d14					*92*	*94*	*41 - 106*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

DATE: 8/31/10
PAGE: 1 of 1

08-240

24-hour TAT

PROJECT NAME: Bothell Pant #: 2007098
SITE CODE:
SAMPLERS NAME: P. Pearson PHONE: 206·794 3113
SAMPLERS SIGNATURE:
HWA CONTACT: Vance Atkins PHONE: 206 794 312X

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH - Dx	RCRA - 8	PAHs	% moisture	REMARKS
P-PEX-1-7	8/31/10	12:10	S	1	2	X	X	⊗	X	
P-PEX-2-6	8/31/10	12:15	S	2	2	X	X	⊗	↓	

⊗ Added 9/15/10 DR (STA)

PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Pete Pearson		HWA	8/31/10	12:37	
Received by:	M.VOUN		OSE	8/31/10	1237	
Relinquished by:						
Received by:						

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 3, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-010

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 1, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

Case Narrative

Samples were collected on September 1, 2010 and received by the laboratory on September 1, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-3-4**					
Laboratory ID:	09-010-04					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-1-10	9-1-10	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*114*	*50-150*				
Client ID:	**P-PEX-4-6**					
Laboratory ID:	09-010-05					
Diesel Range Organics	**ND**	53	NWTPH-Dx	9-1-10	9-1-10	
Lube Oil	**130**	110	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*108*	*50-150*				

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0901S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-1-10	9-1-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*132*	*50-150*				

Analyte	Result		Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE							
Laboratory ID:	09-011-01						
	ORIG	DUP					
Diesel Range Organics	**ND**	**ND**			NA	NA	
Lube Oil Range Organics	**ND**	**ND**			NA	NA	
Surrogate:							
o-Terphenyl			*125 115*	*50-150*			

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-4-6**					
Laboratory ID:	09-010-05					
Gasoline	**ND**	16	NWTPH-Gx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*122*	*55-127*				

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

NWTPH-Gx
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0901S3					
Gasoline	**ND**	5.0	NWTPH-Gx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*55-127*				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	09-011-01										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*103*	*100*	*55-127*			

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-010-04					
Client ID:	**P-PEX-3-4**					
Arsenic	**14**	11	6010B	9-2-10	9-2-10	
Barium	**57**	2.8	6010B	9-2-10	9-2-10	
Cadmium	**ND**	0.57	6010B	9-2-10	9-2-10	
Chromium	**29**	0.57	6010B	9-2-10	9-2-10	
Lead	**15**	5.7	6010B	9-2-10	9-2-10	
Mercury	**ND**	0.28	7471A	9-1-10	9-1-10	
Selenium	**ND**	11	6010B	9-2-10	9-2-10	
Silver	**ND**	0.57	6010B	9-2-10	9-2-10	
Lab ID:	09-010-05					
Client ID:	**P-PEX-4-6**					
Arsenic	**ND**	11	6010B	9-2-10	9-2-10	
Barium	**56**	5.3	6010B	9-2-10	9-2-10	
Cadmium	**ND**	1.1	6010B	9-2-10	9-2-10	
Chromium	**19**	1.1	6010B	9-2-10	9-2-10	
Lead	**15**	11	6010B	9-2-10	9-2-10	
Mercury	**ND**	0.53	7471A	9-1-10	9-1-10	
Selenium	**ND**	21	6010B	9-2-10	9-2-10	
Silver	**ND**	1.1	6010B	9-2-10	9-2-10	

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-1&2-10
Date Analyzed:	9-1&2-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0901S5&MB0902S1

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	5.0
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-1&2-10
Date Analyzed: 9-1&2-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-011-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	5	
Barium	**38.3**	**35.9**	6	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**23.9**	**24.4**	2	0.50	
Lead	**ND**	**ND**	NA	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-1&2-10
Date Analyzed: 9-1&2-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-011-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**88.5**	88	**91.3**	91	3	
Barium	100	**129**	91	**126**	88	3	
Cadmium	50	**44.5**	89	**44.4**	89	0	
Chromium	100	**113**	89	**112**	88	1	
Lead	250	**226**	90	**229**	92	1	
Mercury	0.50	**0.495**	99	**0.485**	97	2	
Selenium	100	**89.7**	90	**91.3**	91	2	
Silver	25	**20.7**	83	**21.6**	86	4	

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TCLP METALS
EPA 1311/6010B/7470A

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-010-01					
Client ID:	**P-SP-1**					
Arsenic	**ND**	0.40	6010B	9-3-10	9-3-10	
Barium	**1.4**	0.20	6010B	9-3-10	9-3-10	
Cadmium	**0.17**	0.020	6010B	9-3-10	9-3-10	
Chromium	**0.035**	0.020	6010B	9-3-10	9-3-10	
Lead	**0.50**	0.20	6010B	9-3-10	9-3-10	
Mercury	**ND**	0.0050	7470A	9-3-10	9-3-10	
Selenium	**ND**	0.40	6010B	9-3-10	9-3-10	
Silver	**ND**	0.020	6010B	9-3-10	9-3-10	
Lab ID:	09-010-02					
Client ID:	**P-SP-2**					
Arsenic	**ND**	0.40	6010B	9-3-10	9-3-10	
Barium	**1.9**	0.20	6010B	9-3-10	9-3-10	
Cadmium	**0.13**	0.020	6010B	9-3-10	9-3-10	
Chromium	**0.038**	0.020	6010B	9-3-10	9-3-10	
Lead	**1.1**	0.20	6010B	9-3-10	9-3-10	
Mercury	**ND**	0.0050	7470A	9-3-10	9-3-10	
Selenium	**ND**	0.40	6010B	9-3-10	9-3-10	
Silver	**ND**	0.020	6010B	9-3-10	9-3-10	

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TCLP METALS
EPA 1311/6010B/7470A

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	09-010-03					
Client ID:	**P-SP-3**					
Arsenic	**ND**	0.40	6010B	9-3-10	9-3-10	
Barium	**1.5**	0.20	6010B	9-3-10	9-3-10	
Cadmium	**0.041**	0.020	6010B	9-3-10	9-3-10	
Chromium	**ND**	0.020	6010B	9-3-10	9-3-10	
Lead	**0.58**	0.20	6010B	9-3-10	9-3-10	
Mercury	**ND**	0.0050	7470A	9-3-10	9-3-10	
Selenium	**ND**	0.40	6010B	9-3-10	9-3-10	
Silver	**ND**	0.020	6010B	9-3-10	9-3-10	

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TCLP METALS
EPA 1311/6010B/7470A
METHOD BLANK QUALITY CONTROL

Date Prepared: 9-2-10
Date Extracted: 9-3-10
Date Analyzed: 9-3-10

Matrix: TCLP Extract
Units: mg/L (ppm)

Lab ID: MB0903T1&MB0903T2

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	0.40
Barium	6010B	**ND**	0.20
Cadmium	6010B	**ND**	0.020
Chromium	6010B	**ND**	0.020
Lead	6010B	**ND**	0.20
Mercury	7470A	**ND**	0.0050
Selenium	6010B	**ND**	0.40
Silver	6010B	**ND**	0.020

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TCLP METALS
EPA 1311/6010B/7470A
DUPLICATE QUALITY CONTROL

Date Prepared: 9-2-10
Date Extracted: 9-3-10
Date Analyzed: 9-3-10

Matrix: TCLP Extract
Units: mg/L (ppm)

Lab ID: 09-010-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	0.40	
Barium	**1.43**	**1.43**	0	0.20	
Cadmium	**0.172**	**0.172**	0	0.020	
Chromium	**0.0350**	**0.0282**	22	0.020	C
Lead	**0.504**	**0.534**	6	0.20	
Mercury	**ND**	**ND**	NA	0.0050	
Selenium	**ND**	**ND**	NA	0.40	
Silver	**ND**	**ND**	NA	0.020	

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TCLP METALS
EPA 1311/6010B/7470A
MS/MSD QUALITY CONTROL

Date Prepared:	9-2-10
Date Extracted:	9-3-10
Date Analyzed:	9-3-10
Matrix:	TCLP Extract
Units:	mg/L (ppm)
Lab ID:	09-010-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	4.0	**3.74**	93	**3.77**	94	1	
Barium	4.0	**4.94**	88	**5.02**	90	2	
Cadmium	2.0	**1.95**	89	**1.98**	90	1	
Chromium	4.0	**3.62**	90	**3.63**	90	0	
Lead	10	**9.30**	88	**9.46**	90	2	
Mercury	0.050	**0.0457**	91	**0.0469**	94	3	
Selenium	4.0	**4.03**	101	**4.16**	104	3	
Silver	1.0	**0.924**	92	**0.936**	94	1	

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

% MOISTURE

Date Analyzed: 9-1-10

Client ID	Lab ID	% Moisture
P-PEX-3-4	09-010-04	12
P-PEX-4-6	09-010-05	52

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

09-010

DATE: 9/1/10
PAGE: 1 of 1

PROJECT NAME: Bothell #: 2002-098
SITE CODE: Paint
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: PHONE:

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	RCRA Metals	TCLP RCRA Metals		% Moisture	REMARKS
P-SP-1	9/1/10	805	S	1	1				X			48 Hr TAT
P-SP-2		810		2	1				X			
P-SP-3		815		3	1				X			
P-PSA-3-4		1215		4	2	X		X			X	24 Hr TAT
P-PSA-4-6		1230		5	2	X	X	X			X	

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	James Atkins		HWA	9/1/10	1300	
Received by:	Michael Daugherty		Speedy	9-1-10	1400	
Relinquished by:	Michael Daugherty		Speedy	9-1-10	1418	
Received by:	Blair Goodrow		OnSite Env.	9/1/10	1418	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 20, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-010B

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 1, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010B
Project: 2007-098

Case Narrative

Samples were collected on September 1, 2010 and received by the laboratory on September 1, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-3-4**					
Laboratory ID:	09-010-04					
Naphthalene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*70*	*45 - 101*				
Pyrene-d10	*81*	*52 - 118*				
Terphenyl-d14	*78*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-4-6**					
Laboratory ID:	09-010-05					
Naphthalene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*79*	*45 - 101*				
Pyrene-d10	*87*	*52 - 118*				
Terphenyl-d14	*85*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0915S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*97*	*52 - 118*				
Terphenyl-d14	*86*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0915S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0737**	**0.0800**	0.0833	0.0833	88	96	33 - 105	8	30	
Acenaphthylene	**0.0866**	**0.0889**	0.0833	0.0833	104	107	51 - 110	3	22	
Acenaphthene	**0.0802**	**0.0822**	0.0833	0.0833	96	99	51 - 105	2	20	
Fluorene	**0.0827**	**0.0823**	0.0833	0.0833	99	99	61 - 107	0	17	
Phenanthrene	**0.0810**	**0.0815**	0.0833	0.0833	97	98	61 - 106	1	12	
Anthracene	**0.0762**	**0.0764**	0.0833	0.0833	91	92	59 - 106	0	12	
Fluoranthene	**0.0816**	**0.0823**	0.0833	0.0833	98	99	66 - 116	1	12	
Pyrene	**0.0848**	**0.0855**	0.0833	0.0833	102	103	67 - 118	1	14	
Benzo[a]anthracene	**0.0776**	**0.0773**	0.0833	0.0833	93	93	60 - 114	0	11	
Chrysene	**0.0803**	**0.0810**	0.0833	0.0833	96	97	64 - 112	1	12	
Benzo[b]fluoranthene	**0.0820**	**0.0792**	0.0833	0.0833	98	95	61 - 123	3	14	
Benzo[k]fluoranthene	**0.0810**	**0.0816**	0.0833	0.0833	97	98	50 - 124	1	17	
Benzo[a]pyrene	**0.0784**	**0.0782**	0.0833	0.0833	94	94	50 - 114	0	17	
Indeno(1,2,3-c,d)pyrene	**0.0874**	**0.0903**	0.0833	0.0833	105	108	56 - 122	3	16	
Dibenz[a,h]anthracene	**0.0859**	**0.0894**	0.0833	0.0833	103	107	57 - 124	4	16	
Benzo[g,h,i]perylene	**0.0841**	**0.0851**	0.0833	0.0833	101	102	56 - 121	1	15	
Surrogate:										
2-Fluorobiphenyl					*86*	*91*	*45 - 101*			
Pyrene-d10					*100*	*99*	*52 - 118*			
Terphenyl-d14					*88*	*90*	*41 - 106*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

09-010

DATE: 9/1/10
PAGE: 1 of 1

PROJECT NAME: Bothell #: 2002-098
SITE CODE: Paint
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: PHONE:

						ANALYSIS REQUESTED						
HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	RCRA Metals	TCLP RCRA Metals	PAHs	% Moisture	REMARKS
P-SP-1	9/1/10	805	S	1	1				X			48 Hr TAT
P-SP-2	↓	810	↓	2	1				X			
P-SP-3	↓	815	↓	3	1				X			
P-PSx-3-4	↓	1215	↓	4	2	X		X		○	X	24 Hr TAT
P-PSx-4-6	↓	1230	↓	5	2	X	X	X		○	X	

○ Added 9/15/10. DB (STA)

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	James Atkins		HWA	9/1/10	1300	
Received by:	Michael Daugherty		Speedy	9-1-10	1400	
Relinquished by:	Michael Daugherty		Speedy	9-1-10	1418	
Received by:	Blair Goodrow		OnSite Env.	9/1/10	1418	

DISTRIBUTION: ~~WHITE~~ - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 2, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-016

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on Septemebr 1, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

Case Narrative

Samples were collected on September 1, 2010 and received by the laboratory on September 1, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-6.3**					
Laboratory ID:	09-016-02					
Benzene	**ND**	0.020	EPA 8021	9-1-10	9-1-10	
Toluene	**ND**	0.063	EPA 8021	9-1-10	9-1-10	
Ethyl Benzene	**ND**	0.063	EPA 8021	9-1-10	9-1-10	
m,p-Xylene	**ND**	0.063	EPA 8021	9-1-10	9-1-10	
o-Xylene	**ND**	0.063	EPA 8021	9-1-10	9-1-10	
Gasoline	**7.4**	6.3	NWTPH-Gx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*55-127*				
Client ID:	**P-PEX-Dup**					
Laboratory ID:	09-016-03					
Benzene	**ND**	0.020	EPA 8021	9-1-10	9-1-10	
Toluene	**ND**	0.057	EPA 8021	9-1-10	9-1-10	
Ethyl Benzene	**ND**	0.057	EPA 8021	9-1-10	9-1-10	
m,p-Xylene	**ND**	0.057	EPA 8021	9-1-10	9-1-10	
o-Xylene	**ND**	0.057	EPA 8021	9-1-10	9-1-10	
Gasoline	**7.2**	5.7	NWTPH-Gx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*55-127*				

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0901S2					
Benzene	**ND**	0.020	EPA 8021	9-1-10	9-1-10	
Toluene	**ND**	0.050	EPA 8021	9-1-10	9-1-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-1-10	9-1-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-1-10	9-1-10	
o-Xylene	**ND**	0.050	EPA 8021	9-1-10	9-1-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*55-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-237-18										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*98*	*97*	*55-127*			
SPIKE BLANKS											
Laboratory ID:	SB0901S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.03**	**1.04**	1.00	1.00		**103**	**104**	75-113	1	9	
Toluene	**0.989**	**1.01**	1.00	1.00		**99**	**101**	75-116	2	10	
Ethyl Benzene	**0.997**	**1.02**	1.00	1.00		**100**	**102**	82-117	2	10	
m,p-Xylene	**1.01**	**1.03**	1.00	1.00		**101**	**103**	81-122	2	10	
o-Xylene	**1.01**	**1.03**	1.00	1.00		**101**	**103**	83-118	2	10	
Surrogate:											
Fluorobenzene						*98*	*98*	*55-127*			

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-5-3**					
Laboratory ID:	09-016-01					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-1-10	9-1-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*122*	*50-150*				
Client ID:	**P-PEX-6-3**					
Laboratory ID:	09-016-02					
Diesel Range Organics	**ND**	250	NWTPH-Dx	9-1-10	9-1-10	U1
Lube Oil	**1600**	62	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*105*	*50-150*				
Client ID:	**P-PEX-Dup**					
Laboratory ID:	09-016-03					
Diesel Range Organics	**ND**	240	NWTPH-Dx	9-1-10	9-1-10	U1
Lube Oil	**1500**	58	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*130*	*50-150*				

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0901S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-1-10	9-1-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*132*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-011-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*125*	*115*	*50-150*			

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	09-016-01					
Client ID:	**P-PEX-5-3**					
Arsenic	**ND**	11	6010B	9-2-10	9-2-10	
Barium	**40**	2.8	6010B	9-2-10	9-2-10	
Cadmium	**ND**	0.55	6010B	9-2-10	9-2-10	
Chromium	**64**	0.55	6010B	9-2-10	9-2-10	
Lead	**11**	5.5	6010B	9-2-10	9-2-10	
Mercury	**ND**	0.28	7471A	9-1-10	9-1-10	
Selenium	**ND**	11	6010B	9-2-10	9-2-10	
Silver	**ND**	0.55	6010B	9-2-10	9-2-10	
Lab ID:	09-016-02					
Client ID:	**P-PEX-6-3**					
Arsenic	**27**	12	6010B	9-2-10	9-2-10	
Barium	**64**	3.1	6010B	9-2-10	9-2-10	
Cadmium	**0.68**	0.62	6010B	9-2-10	9-2-10	
Chromium	**35**	0.62	6010B	9-2-10	9-2-10	
Lead	**120**	6.2	6010B	9-2-10	9-2-10	
Mercury	**ND**	0.31	7471A	9-1-10	9-1-10	
Selenium	**ND**	12	6010B	9-2-10	9-2-10	
Silver	**ND**	0.62	6010B	9-2-10	9-2-10	

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-016-03					
Client ID:	**P-PEX-Dup**					
Arsenic	**28**	12	6010B	9-2-10	9-2-10	
Barium	**63**	2.9	6010B	9-2-10	9-2-10	
Cadmium	**1.0**	0.58	6010B	9-2-10	9-2-10	
Chromium	**41**	0.58	6010B	9-2-10	9-2-10	
Lead	**140**	5.8	6010B	9-2-10	9-2-10	
Mercury	**ND**	0.29	7471A	9-1-10	9-1-10	
Selenium	**ND**	12	6010B	9-2-10	9-2-10	
Silver	**ND**	0.58	6010B	9-2-10	9-2-10	

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-1&2-10
Date Analyzed:	9-1&2-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0901S5&MB0902S1

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted:	9-1&2-10
Date Analyzed:	9-1&2-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-011-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**38.3**	**35.9**	6	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**23.9**	**24.4**	2	0.50	
Lead	**ND**	**ND**	NA	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-1&2-10
Date Analyzed: 9-1&2-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-011-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**88.5**	88	**91.3**	91	3	
Barium	100	**129**	91	**126**	88	3	
Cadmium	50	**44.5**	89	**44.4**	89	0	
Chromium	100	**113**	89	**112**	88	1	
Lead	250	**226**	90	**229**	92	1	
Mercury	0.50	**0.495**	99	**0.485**	97	2	
Selenium	100	**89.7**	90	**91.3**	91	2	
Silver	25	**20.7**	83	**21.6**	86	4	

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

% MOISTURE

Date Analyzed: 9-1-10

Client ID	Lab ID	% Moisture
P-PEX-5-3	09-016-01	9
P-PEX-6-3	09-016-02	19
P-PEX-DUP	09-016-03	14

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Company: Hwa
Project Number: Bothell Paint
Project Name:
Project Manager: Atkins
Sampled by: Atkins

Turnaround Request (in working days)

(Check One) NO

☒ Same Day ~~☒~~ 1 Day
☐ 2 Day ☐ 3 Day
☐ Standard (7 working days) (TPH analysis 5 working days)
☐ ________ (other)

Laboratory Number: 09-016

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664							% Moisture
1	P-PEX-5-3	9/1/10	1345	S	2			X								X									X
2	P-PEX-6-3	/	1350	|	2		X	X								X									↓
3	P-PEX-Dup	/	1330	|	2		X	X								X									↓

	Signature	Company	Date	Time
Relinquished by		Hwa	9/1/10	1540
Received by		OSE	9/1/10	1540
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Client Copy

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14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 20, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-016B

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 1, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-016B
Project: 2007-098

Case Narrative

Samples were collected on September 1, 2010 and received by the laboratory on September 1, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-016B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-5-3**					
Laboratory ID:	09-016-01					
Naphthalene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**0.013**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**0.012**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**0.0079**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**0.0079**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**0.0073**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*75*	*45 - 101*				
Pyrene-d10	*85*	*52 - 118*				
Terphenyl-d14	*84*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-016B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-6-3**					
Laboratory ID:	09-016-02					
Naphthalene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**0.0093**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**0.0086**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**0.010**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*79*	*45 - 101*				
Pyrene-d10	*84*	*52 - 118*				
Terphenyl-d14	*72*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-016B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0915S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*97*	*52 - 118*				
Terphenyl-d14	*86*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-016B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0915S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0737**	**0.0800**	0.0833	0.0833	88	96	33 - 105	8	30	
Acenaphthylene	**0.0866**	**0.0889**	0.0833	0.0833	104	107	51 - 110	3	22	
Acenaphthene	**0.0802**	**0.0822**	0.0833	0.0833	96	99	51 - 105	2	20	
Fluorene	**0.0827**	**0.0823**	0.0833	0.0833	99	99	61 - 107	0	17	
Phenanthrene	**0.0810**	**0.0815**	0.0833	0.0833	97	98	61 - 106	1	12	
Anthracene	**0.0762**	**0.0764**	0.0833	0.0833	91	92	59 - 106	0	12	
Fluoranthene	**0.0816**	**0.0823**	0.0833	0.0833	98	99	66 - 116	1	12	
Pyrene	**0.0848**	**0.0855**	0.0833	0.0833	102	103	67 - 118	1	14	
Benzo[a]anthracene	**0.0776**	**0.0773**	0.0833	0.0833	93	93	60 - 114	0	11	
Chrysene	**0.0803**	**0.0810**	0.0833	0.0833	96	97	64 - 112	1	12	
Benzo[b]fluoranthene	**0.0820**	**0.0792**	0.0833	0.0833	98	95	61 - 123	3	14	
Benzo[k]fluoranthene	**0.0810**	**0.0816**	0.0833	0.0833	97	98	50 - 124	1	17	
Benzo[a]pyrene	**0.0784**	**0.0782**	0.0833	0.0833	94	94	50 - 114	0	17	
Indeno(1,2,3-c,d)pyrene	**0.0874**	**0.0903**	0.0833	0.0833	105	108	56 - 122	3	16	
Dibenz[a,h]anthracene	**0.0859**	**0.0894**	0.0833	0.0833	103	107	57 - 124	4	16	
Benzo[g,h,i]perylene	**0.0841**	**0.0851**	0.0833	0.0833	101	102	56 - 121	1	15	
Surrogate:										
2-Fluorobiphenyl					*86*	*91*	*45 - 101*			
Pyrene-d10					*100*	*99*	*52 - 118*			
Terphenyl-d14					*88*	*90*	*41 - 106*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 1

Company: Hwa
Project Number: Bothell Paint
Project Name:
Project Manager: Atkins
Sampled by: Atkins

Turnaround Request (in working days)
(Check One) NO
☒ Same Day ☒ 1 Day
☐ 2 Day ☐ 3 Day
☐ Standard (7 working days)
(TPH analysis 5 working days)
☐ ______ (other)

Laboratory Number: 09-016

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664							% Moisture
1	P-Pex-5-3	9/1/10	1345	S	2			X				O				X									X
2	P-Pex-6-3	/	1350	|	2		X	X				O				X									↓
3	P-Pex-Dup	/	1330	|	2		X	X								X									↓

	Signature	Company	Date	Time
Relinquished by		Hwa	9/1/10	1540
Received by		OSE	9/1/10	1540
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
O Added 9/15/10. DB (STA)

Chromatograms with final report ☐

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Chain of Custody

Page 1 of 1

Company: Hwa
Project Number: Bothell Paint
Project Name:
Project Manager: Atkins
Sampled by: Atkins

Turnaround Request (in working days)
(Check One)
☒ Same Day NO ~~☒~~ 1 Day
☐ 2 Day ☐ 3 Day
☐ Standard (7 working days) (TPH analysis 5 working days)
☐ ____________ (other)

Laboratory Number: 09-016

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664							% Moisture
1	P-PEX-5-3	9/1/10	1345	S	12			X				○				X									X
2	P-PEX-6-3	/	1350	|	2		X	X				○				X									↓
3	P-PEX-Dup	/	1330	|	2		X	X								X									↓

	Signature	Company	Date	Time
Relinquished by		Hwa	9/1/10	1540
Received by		OSE	9/1/10	1540
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
○ Added 9/15/10. DB (STA)

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Client Copy

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Environmental Inc.
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September 7, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-039

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 3, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 7, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039
Project: 2007-098

Case Narrative

Samples were collected on September 3, 2010 and received by the laboratory on September 3, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 7, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-9-3**					
Laboratory ID:	09-039-02					
Diesel Range Organics	**ND**	300	NWTPH-Dx	9-3-10	9-3-10	U1
Lube Oil	**2500**	270	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*128*	*50-150*				
Client ID:	**P-PEX-10-3**					
Laboratory ID:	09-039-03					
Diesel Fuel #2	**1300**	130	NWTPH-Dx	9-3-10	9-3-10	N
Lube Oil	**3100**	270	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*136*	*50-150*				
Client ID:	**P-PEX-11-3**					
Laboratory ID:	09-039-04					
Diesel Range Organics	**ND**	30	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil	**120**	60	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				
Client ID:	**P-PEX-12-3**					
Laboratory ID:	09-039-05					
Diesel Fuel #2	**300**	140	NWTPH-Dx	9-3-10	9-3-10	N
Lube Oil	**1700**	280	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*118*	*50-150*				
Client ID:	**P-PEX-14-3**					
Laboratory ID:	09-039-08					
Diesel Range Organics	**ND**	30	NWTPH-Dx	9-3-10	9-3-10	U1
Lube Oil	**260**	56	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				
Client ID:	**P-PEX-Dup-090310**					
Laboratory ID:	09-039-09					
Diesel Range Organics	**ND**	210	NWTPH-Dx	9-3-10	9-3-10	U1
Lube Oil	**2100**	270	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*120*	*50-150*				
Client ID:	**P-PEX-15-3**					
Laboratory ID:	09-039-10					
Diesel Fuel #2	**210**	140	NWTPH-Dx	9-3-10	9-3-10	N
Lube Oil	**2700**	280	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*129*	*50-150*				

Date of Report: September 7, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0903S3					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				

Analyte	**Result**		**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE								
Laboratory ID:	09-039-04							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**99.3**	**85.1**				15	NA	
Surrogate:								
o-Terphenyl			*91*	*104*	*50-150*			

Date of Report: September 7, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039
Project: 2007-098

TOTAL ARSENIC
EPA 6010B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-039-01					
Client ID:	**P-PEX-7-3**					
Arsenic	**ND**	12	6010B	9-3-10	9-7-10	
Lab ID:	09-039-06					
Client ID:	**P-PEX-8-8**					
Arsenic	**ND**	12	6010B	9-3-10	9-7-10	
Lab ID:	09-039-07					
Client ID:	**P-PEX-13-7**					
Arsenic	**93**	12	6010B	9-3-10	9-7-10	
Lab ID:	09-039-08					
Client ID:	**P-PEX-14-3**					
Arsenic	**ND**	11	6010B	9-3-10	9-7-10	
Lab ID:	09-039-10					
Client ID:	**P-PEX-15-3**					
Arsenic	**21**	11	6010B	9-3-10	9-7-10	

Date of Report: September 7, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039
Project: 2007-098

TOTAL ARSENIC
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-3-10
Date Analyzed:	9-7-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0903S4

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10

TOTAL ARSENIC
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted:	9-3-10
Date Analyzed:	9-7-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-039-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	

Date of Report: September 7, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039
Project: 2007-098

TOTAL ARSENIC
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted:	9-3-10
Date Analyzed:	9-7-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-039-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**94.0**	94	**96.7**	97	3	

Date of Report: September 7, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039
Project: 2007-098

% MOISTURE

Date Analyzed: 9-3-10

Client ID	Lab ID	% Moisture
P-PEX-7-3	09-039-01	13
P-PEX-9-3	09-039-02	8
P-PEX-10-3	09-039-03	6
P-PEX-11-3	09-039-04	17
P-PEX-12-3	09-039-05	11
P-PEX-8-8	09-039-06	17
P-PEX-13-7	09-039-07	15
P-PEX-14-3	09-039-08	10
P-PEX-Dup-090310	09-039-09	8
P-PEX-15-3	09-039-10	10

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 1

Company: HWA
Project Number: 2002-098
Project Name: [illegible] Point
Project Manager: Atkins
Sampled by: Sams.

Turnaround Request (in working days)
(Check One)
☐ Same Day NO ☐ 1 Day
☒ 2 Day ☐ 3 Day
☐ Standard (7 working days)
(TPH analysis 5 working days)
☐ ______ (other)

Laboratory Number: 09-039

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	ARSENIC						% Moisture
1	P-PEX-7-3	9/3/10	820	S	1														X						X
2	P-PEX-9-3	↓	900	↓	↓			X																	↓
3	P-PEX-10-3	↓	905	↓	↓			X																	↓
4	P-PEX-11-3	↓	910	↓	↓			X																	↓
5	P-PEX-12-3	↓	915	↓	↓			X																	↓
6	P-PEX-8-8	↓	845	↓	↓														X						↓
7	P-PEX-13-7	↓	1100	↓	↓														X						↓
8	P-PEX-14-3	↓	1115	↓	↓			X											X						↓
9	P-PEX-Dup-090310	↓	1200	↓	↓			X											X						↓
10	P-PEX-15-3	9/3/10	1120	S	1			ⓧ											ⓧ						

	Signature	Company	Date	Time
Relinquished by		HWA	9/3/10	1150
Received by		OSE	9/3/10	1150
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
ⓧ Added 9/3/10 SBO

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Client Copy

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 20, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-039B

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 3, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 20, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039B
Project: 2007-098

Case Narrative

Samples were collected on September 3, 2010 and received by the laboratory on September 3, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 20, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-7-3**					
Laboratory ID:	09-039-01					
Naphthalene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*65*	*45 - 101*				
Pyrene-d10	*85*	*52 - 118*				
Terphenyl-d14	*81*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-11-3**					
Laboratory ID:	09-039-04					
Naphthalene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**0.023**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**0.017**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**0.039**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**0.0080**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**0.048**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**0.063**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**0.022**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**0.029**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**0.020**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**0.017**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**0.025**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**0.018**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**0.025**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*76*	*45 - 101*				
Pyrene-d10	*85*	*52 - 118*				
Terphenyl-d14	*82*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-8-8**					
Laboratory ID:	09-039-06					
Naphthalene	**0.013**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*82*	*45 - 101*				
Pyrene-d10	*85*	*52 - 118*				
Terphenyl-d14	*85*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-14-3**					
Laboratory ID:	09-039-08					
Naphthalene	**0.0098**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**ND**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**ND**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**0.012**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**ND**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**0.025**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**0.028**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**0.011**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**0.020**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**0.015**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**0.011**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**0.015**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**0.014**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**0.019**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*74*	*45 - 101*				
Pyrene-d10	*84*	*52 - 118*				
Terphenyl-d14	*82*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0915S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*97*	*52 - 118*				
Terphenyl-d14	*86*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0915S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0737**	**0.0800**	0.0833	0.0833	88	96	33 - 105	8	30	
Acenaphthylene	**0.0866**	**0.0889**	0.0833	0.0833	104	107	51 - 110	3	22	
Acenaphthene	**0.0802**	**0.0822**	0.0833	0.0833	96	99	51 - 105	2	20	
Fluorene	**0.0827**	**0.0823**	0.0833	0.0833	99	99	61 - 107	0	17	
Phenanthrene	**0.0810**	**0.0815**	0.0833	0.0833	97	98	61 - 106	1	12	
Anthracene	**0.0762**	**0.0764**	0.0833	0.0833	91	92	59 - 106	0	12	
Fluoranthene	**0.0816**	**0.0823**	0.0833	0.0833	98	99	66 - 116	1	12	
Pyrene	**0.0848**	**0.0855**	0.0833	0.0833	102	103	67 - 118	1	14	
Benzo[a]anthracene	**0.0776**	**0.0773**	0.0833	0.0833	93	93	60 - 114	0	11	
Chrysene	**0.0803**	**0.0810**	0.0833	0.0833	96	97	64 - 112	1	12	
Benzo[b]fluoranthene	**0.0820**	**0.0792**	0.0833	0.0833	98	95	61 - 123	3	14	
Benzo[k]fluoranthene	**0.0810**	**0.0816**	0.0833	0.0833	97	98	50 - 124	1	17	
Benzo[a]pyrene	**0.0784**	**0.0782**	0.0833	0.0833	94	94	50 - 114	0	17	
Indeno(1,2,3-c,d)pyrene	**0.0874**	**0.0903**	0.0833	0.0833	105	108	56 - 122	3	16	
Dibenz[a,h]anthracene	**0.0859**	**0.0894**	0.0833	0.0833	103	107	57 - 124	4	16	
Benzo[g,h,i]perylene	**0.0841**	**0.0851**	0.0833	0.0833	101	102	56 - 121	1	15	
Surrogate:										
2-Fluorobiphenyl					*86*	*91*	*45 - 101*			
Pyrene-d10					*100*	*99*	*52 - 118*			
Terphenyl-d14					*88*	*90*	*41 - 106*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
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Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Company: HWA
Project Number: 2007-098
Project Name: [illegible] Paint
Project Manager: Atkins
Sampled by: Same

Turnaround Request (in working days)
(Check One)
☐ Same Day
~~☐ 1 Day~~ NO
☒ 2 Day
☐ 3 Day
☐ Standard (7 working days) (TPH analysis 5 working days)
☐ ________ (other)

Laboratory Number: 09-039

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	ARSENIC						% Moisture
1	P-PEX-7-3	9/3/10	820	S	1							○							X						X
2	P-PEX-9-3	↓	900	↓	↓			X																	↓
3	P-PEX-10-3	↓	905	↓	↓			X																	↓
4	P-PEX-11-3	↓	910	↓	↓			X				○													↓
5	P-PEX-12-3	↓	915	↓	↓			X																	↓
6	P-PEX-8-8	↓	845	↓	↓							○							X						↓
7	P-PEX-13-7	↓	1100	↓	↓														X						↓
8	P-PEX-14-3	↓	1115	↓	↓			X				○							X						↓
9	P-PEX-Dup-090310	↓	1200	↓	↓			X											X						↓
10	P-PEX-15-3	9/3/10	1120	S	1			⊗											⊗						

	Signature	Company	Date	Time
Relinquished by		HWA	9/3/10	11:50
Received by		OSE	9/3/10	1150
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
⊗ Added 9/3/10 BQ
○ Added 9/15/10. DB (STA)

Chromatograms with final report ☐

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September 10, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-075

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 8, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

Case Narrative

Samples were collected on September 8, 2010 and received by the laboratory on September 8, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

PAHs EPA 8270D/SIM Analysis

Sample MS/MSD pair had several recoveries fall outside of control limits believed to be caused by sample matrix. The SB/SBD pair extracted with this batch had all parameters in control, no further action was deemed necessary.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-16-10**					
Laboratory ID:	09-075-01					
Diesel Range Organics	**ND**	58	NWTPH-Dx	9-9-10	9-9-10	
Lube Oil	**210**	120	NWTPH-Dx	9-9-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				
Client ID:	**P-PEX-17-7**					
Laboratory ID:	09-075-02					
Diesel Fuel #2	**490**	29	NWTPH-Dx	9-9-10	9-9-10	
Lube Oil	**970**	58	NWTPH-Dx	9-9-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*100*	*50-150*				
Client ID:	**P-PEX-18-9**					
Laboratory ID:	09-075-03					
Diesel Range Organics	**ND**	44	NWTPH-Dx	9-9-10	9-9-10	
Lube Oil	**270**	87	NWTPH-Dx	9-9-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*107*	*50-150*				

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0909S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-9-10	9-9-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-9-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-075-03							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**153**	**123**				22	NA	
Surrogate:								
o-Terphenyl			*107*	*97*	*50-150*			

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-075-01					
Client ID:	**P-PEX-16-10**					
Arsenic	**47**	23	6010B	9-9-10	9-10-10	
Barium	**590**	58	6010B	9-9-10	9-10-10	
Cadmium	**2.5**	1.2	6010B	9-9-10	9-10-10	
Chromium	**49**	1.2	6010B	9-9-10	9-10-10	
Lead	**410**	12	6010B	9-9-10	9-10-10	
Mercury	**1.2**	0.58	7471A	9-9-10	9-9-10	
Selenium	**ND**	23	6010B	9-9-10	9-10-10	
Silver	**ND**	1.2	6010B	9-9-10	9-10-10	
Lab ID:	09-075-02					
Client ID:	**P-PEX-17-7**					
Arsenic	**62**	12	6010B	9-9-10	9-10-10	
Barium	**70**	2.9	6010B	9-9-10	9-10-10	
Cadmium	**1.4**	0.58	6010B	9-9-10	9-10-10	
Chromium	**46**	0.58	6010B	9-9-10	9-10-10	
Lead	**160**	5.8	6010B	9-9-10	9-10-10	
Mercury	**ND**	0.29	7471A	9-9-10	9-9-10	
Selenium	**ND**	12	6010B	9-9-10	9-10-10	
Silver	**ND**	0.58	6010B	9-9-10	9-10-10	

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	09-075-03					
Client ID:	**P-PEX-18-9**					
Arsenic	**ND**	17	6010B	9-9-10	9-10-10	
Barium	**110**	4.4	6010B	9-9-10	9-10-10	
Cadmium	**ND**	0.87	6010B	9-9-10	9-10-10	
Chromium	**37**	0.87	6010B	9-9-10	9-10-10	
Lead	**80**	8.7	6010B	9-9-10	9-10-10	
Mercury	**ND**	0.44	7471A	9-9-10	9-9-10	
Selenium	**ND**	17	6010B	9-9-10	9-10-10	
Silver	**ND**	0.87	6010B	9-9-10	9-10-10	

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-9-10
Date Analyzed:	9-9&10-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0909S1&MB0909S2

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-9-10
Date Analyzed: 9-9&10-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-074-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**36.5**	**38.4**	5	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**23.8**	**24.4**	3	0.50	
Lead	**16.5**	**11.4**	37	5.0	C
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-9-10
Date Analyzed: 9-9&10-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-074-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**94.2**	94	**95.1**	95	1	
Barium	100	**134**	97	**133**	96	1	
Cadmium	50	**46.4**	93	**45.8**	92	1	
Chromium	100	**118**	94	**118**	95	0	
Lead	250	**231**	86	**235**	87	2	
Mercury	0.50	**0.504**	101	**0.502**	100	0	
Selenium	100	**95.2**	95	**95.2**	95	0	
Silver	25	**21.7**	87	**21.8**	87	0	

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-16-10**					
Laboratory ID:	09-075-01					
Naphthalene	**ND**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
2-Methylnaphthalene	**ND**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
1-Methylnaphthalene	**ND**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Acenaphthylene	**ND**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Acenaphthene	**ND**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Fluorene	**ND**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Phenanthrene	**0.060**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Anthracene	**ND**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Fluoranthene	**0.19**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Pyrene	**0.22**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[a]anthracene	**0.063**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Chrysene	**0.10**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[b]fluoranthene	**0.086**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[k]fluoranthene	**0.082**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[a]pyrene	**0.11**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Indeno(1,2,3-c,d)pyrene	**0.088**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Dibenz[a,h]anthracene	**0.021**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[g,h,i]perylene	**0.10**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*63*	*45 - 101*				
Pyrene-d10	*84*	*52 - 118*				
Terphenyl-d14	*80*	*41 - 106*				

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-17-7**					
Laboratory ID:	09-075-02					
Naphthalene	**0.043**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
2-Methylnaphthalene	**0.28**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
1-Methylnaphthalene	**0.34**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Acenaphthylene	**0.011**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Acenaphthene	**0.056**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Fluorene	**0.049**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Phenanthrene	**0.11**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Anthracene	**0.016**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Fluoranthene	**0.035**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Pyrene	**0.048**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Benzo[a]anthracene	**0.016**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Chrysene	**0.032**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Benzo[b]fluoranthene	**0.014**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Benzo[k]fluoranthene	**0.0094**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Benzo[a]pyrene	**0.017**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Indeno(1,2,3-c,d)pyrene	**0.0093**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Dibenz[a,h]anthracene	**ND**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Benzo[g,h,i]perylene	**0.017**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*75*	*45 - 101*				
Pyrene-d10	*78*	*52 - 118*				
Terphenyl-d14	*79*	*41 - 106*				

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-18-9**					
Laboratory ID:	09-075-03					
Naphthalene	**ND**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
2-Methylnaphthalene	**ND**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
1-Methylnaphthalene	**ND**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Acenaphthylene	**0.035**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Acenaphthene	**ND**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Fluorene	**ND**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Phenanthrene	**0.14**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Anthracene	**0.024**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Fluoranthene	**0.70**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Pyrene	**0.76**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[a]anthracene	**0.15**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Chrysene	**0.42**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[b]fluoranthene	**0.36**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[k]fluoranthene	**0.36**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[a]pyrene	**0.43**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Indeno(1,2,3-c,d)pyrene	**0.41**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Dibenz[a,h]anthracene	**0.10**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[g,h,i]perylene	**0.47**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*75*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*85*	*41 - 106*				

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0909S2					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*76*	*45 - 101*				
Pyrene-d10	*79*	*52 - 118*				
Terphenyl-d14	*94*	*41 - 106*				

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-074-02										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0886**	**0.108**	0.0833	0.0833	0.0284	72	96	31 - 115	20	19	L
Acenaphthylene	**0.0643**	**0.0658**	0.0833	0.0833	ND	77	79	40 - 134	2	22	
Acenaphthene	**0.0795**	**0.0822**	0.0833	0.0833	0.00902	85	88	48 - 118	3	17	
Fluorene	**0.0688**	**0.0642**	0.0833	0.0833	0.00814	73	67	54 - 122	7	16	
Phenanthrene	**0.0920**	**0.0961**	0.0833	0.0833	0.0274	78	82	46 - 123	4	19	
Anthracene	**0.0712**	**0.0623**	0.0833	0.0833	0.0107	73	62	53 - 123	13	27	
Fluoranthene	**0.0915**	**0.0786**	0.0833	0.0833	0.0154	91	76	47 - 132	15	26	
Pyrene	**0.0966**	**0.0893**	0.0833	0.0833	0.0177	95	86	41 - 137	8	25	
Benzo[a]anthracene	**0.0671**	**0.0612**	0.0833	0.0833	ND	81	73	43 - 132	9	26	
Chrysene	**0.0656**	**0.0640**	0.0833	0.0833	ND	79	77	46 - 126	2	24	
Benzo[b]fluoranthene	**0.0612**	**0.0525**	0.0833	0.0833	ND	73	63	44 - 134	15	24	
Benzo[k]fluoranthene	**0.0666**	**0.0476**	0.0833	0.0833	ND	80	57	45 - 132	33	20	L
Benzo[a]pyrene	**0.0700**	**0.0609**	0.0833	0.0833	ND	84	73	36 - 136	14	23	
Indeno(1,2,3-c,d)pyrene	**0.0844**	**0.0618**	0.0833	0.0833	ND	101	74	40 - 136	31	16	L
Dibenz[a,h]anthracene	**0.0865**	**0.0646**	0.0833	0.0833	ND	104	78	40 - 142	29	13	L
Benzo[g,h,i]perylene	**0.0809**	**0.0715**	0.0833	0.0833	0.00900	86	75	37 - 137	12	18	
Surrogate:											
2-Fluorobiphenyl						*76*	*81*	*45 - 101*			
Pyrene-d10						*88*	*85*	*52 - 118*			
Terphenyl-d14						*93*	*73*	*41 - 106*			

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0909S2									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0755**	**0.0787**	0.0833	0.0833	91	94	33 - 105	4	30	
Acenaphthylene	**0.0801**	**0.0754**	0.0833	0.0833	96	91	51 - 110	6	22	
Acenaphthene	**0.0762**	**0.0785**	0.0833	0.0833	91	94	51 - 105	3	20	
Fluorene	**0.0695**	**0.0766**	0.0833	0.0833	83	92	61 - 107	10	17	
Phenanthrene	**0.0718**	**0.0742**	0.0833	0.0833	86	89	61 - 106	3	12	
Anthracene	**0.0691**	**0.0701**	0.0833	0.0833	83	84	59 - 106	1	12	
Fluoranthene	**0.0708**	**0.0709**	0.0833	0.0833	85	85	66 - 116	0	12	
Pyrene	**0.0787**	**0.0756**	0.0833	0.0833	94	91	67 - 118	4	14	
Benzo[a]anthracene	**0.0677**	**0.0710**	0.0833	0.0833	81	85	60 - 114	5	11	
Chrysene	**0.0623**	**0.0649**	0.0833	0.0833	75	78	64 - 112	4	12	
Benzo[b]fluoranthene	**0.0623**	**0.0660**	0.0833	0.0833	75	79	61 - 123	6	14	
Benzo[k]fluoranthene	**0.0641**	**0.0716**	0.0833	0.0833	77	86	50 - 124	11	17	
Benzo[a]pyrene	**0.0728**	**0.0731**	0.0833	0.0833	87	88	50 - 114	0	17	
Indeno(1,2,3-c,d)pyrene	**0.106**	**0.107**	0.0833	0.0833	127	128	56 - 130	1	16	
Dibenz[a,h]anthracene	**0.111**	**0.112**	0.0833	0.0833	133	134	57 - 134	1	16	
Benzo[g,h,i]perylene	**0.101**	**0.0982**	0.0833	0.0833	121	118	56 - 121	3	15	
Surrogate:										
2-Fluorobiphenyl					*88*	*83*	*45 - 101*			
Pyrene-d10					*83*	*78*	*52 - 118*			
Terphenyl-d14					*97*	*95*	*41 - 106*			

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

% MOISTURE

Date Analyzed: 9-9-10

Client ID	Lab ID	% Moisture
P-PEX-16-10	09-075-01	57
P-PEX-17-7	09-075-02	14
P-PEX-18-9	09-075-03	43

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

09-075

DATE: 9/8/10
PAGE: 1 of 1

PROJECT NAME: Bothell Crossroads Paint #: 2007-98
SITE CODE:
SAMPLERS NAME: Norm Nielsen PHONE: 206-450-0552
SAMPLERS SIGNATURE: Norm Niel
HWA CONTACT: Vance Atkins PHONE: 425-774-0106

ANALYSIS REQUESTED

24-hour TAT

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-DX	RCR8-8 metals		% moisture	REMARKS
P-PEX-16-10	9/8/10	13:40	soil	1	4	X	X		X	
P-PEX-17-7	↓	14:00	soil	2	4	X	X		X	
P-PEX-18-9		14:15	soil	3	4	X	X		X	

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Pete Pevan		HWA	9/8/10	3:45	
Received by:	Van	Van	Speedy	9/8/10	3:45	
Relinquished by:						
Received by:		Blair Goodrow	OnSite Env	9/8/10	1008	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 15, 2010

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-922
Laboratory Reference No. 1009-108

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on September 13, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

Case Narrative

Samples were collected on September 13, 2010 and received by the laboratory on September 13, 2010. They were maintained at the laboratory at a temperature of 2^{o}C to 6^{o}C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Halogenated Volatiles EPA 8260B Analysis

Method 5035 VOA vials containing stir bars were not provided for samples P-PEX-19-7, P-PEX-21-11, P-PEX-22-10, and P-PEX-23-5. The samples were therefore extracted from 4-ounce jars and analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-19-7**					
Laboratory ID:	09-108-01					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-13-10	9-13-10	
Lube Oil	**110**	57	NWTPH-Dx	9-13-10	9-13-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				
Client ID:	**P-PEX-20-8**					
Laboratory ID:	09-108-02					
Diesel Range Organics	**110**	28	NWTPH-Dx	9-13-10	9-13-10	
Lube Oil	**320**	57	NWTPH-Dx	9-13-10	9-13-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*115*	*50-150*				
Client ID:	**P-PEX-21-11**					
Laboratory ID:	09-108-03					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-13-10	9-13-10	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	9-13-10	9-13-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*99*	*50-150*				
Client ID:	**P-PEX-22-10**					
Laboratory ID:	09-108-04					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-13-10	9-13-10	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	9-13-10	9-13-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*113*	*50-150*				
Client ID:	**P-PEX-23-5**					
Laboratory ID:	09-108-05					
Diesel Range Organics	**68**	29	NWTPH-Dx	9-13-10	9-13-10	
Lube Oil	**410**	58	NWTPH-Dx	9-13-10	9-13-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*119*	*50-150*				

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0913S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-13-10	9-13-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-13-10	9-13-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*103*	*50-150*				

Analyte	**Result**		**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE								
Laboratory ID:	09-085-10							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**841**	**805**				4	NA	
Surrogate:								
o-Terphenyl			*121*	*129*	*50-150*			

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B
page 1 of 2

Date Extracted: 9-13-10
Date Analyzed: 9-13-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-108-01
Client ID: **P-PEX-19-7**

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0011
Chloromethane	ND		0.0057
Vinyl Chloride	ND		0.0011
Bromomethane	ND		0.0011
Chloroethane	ND		0.0057
Trichlorofluoromethane	ND		0.0011
1,1-Dichloroethene	ND		0.0011
Iodomethane	ND		0.0057
Methylene Chloride	ND		0.0057
(trans) 1,2-Dichloroethene	ND		0.0011
1,1-Dichloroethane	ND		0.0011
2,2-Dichloropropane	ND		0.0011
(cis) 1,2-Dichloroethene	ND		0.0011
Bromochloromethane	ND		0.0011
Chloroform	ND		0.0011
1,1,1-Trichloroethane	ND		0.0011
Carbon Tetrachloride	ND		0.0011
1,1-Dichloropropene	ND		0.0011
1,2-Dichloroethane	ND		0.0011
Trichloroethene	ND		0.0011
1,2-Dichloropropane	ND		0.0011
Dibromomethane	ND		0.0011
Bromodichloromethane	ND		0.0011
2-Chloroethyl Vinyl Ether	ND		0.0057
(cis) 1,3-Dichloropropene	ND		0.0011
(trans) 1,3-Dichloropropene	ND		0.0011

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B
page 2 of 2

Lab ID: 09-108-01
Client ID: P-PEX-19-7

Compound	**Results**	**Flags**	**PQL**
1,1,2-Trichloroethane	ND		0.0011
Tetrachloroethene	ND		0.0011
1,3-Dichloropropane	ND		0.0011
Dibromochloromethane	ND		0.0011
1,2-Dibromoethane	ND		0.0011
Chlorobenzene	ND		0.0011
1,1,1,2-Tetrachloroethane	ND		0.0011
Bromoform	ND		0.0011
Bromobenzene	ND		0.0011
1,1,2,2-Tetrachloroethane	ND		0.0011
1,2,3-Trichloropropane	ND		0.0011
2-Chlorotoluene	ND		0.0011
4-Chlorotoluene	ND		0.0011
1,3-Dichlorobenzene	ND		0.0011
1,4-Dichlorobenzene	ND		0.0011
1,2-Dichlorobenzene	ND		0.0011
1,2-Dibromo-3-chloropropane	ND		0.0057
1,2,4-Trichlorobenzene	ND		0.0011
Hexachlorobutadiene	ND		0.0057
1,2,3-Trichlorobenzene	ND		0.0011

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	90	66-128
Toluene-d8	104	68-126
4-Bromofluorobenzene	82	53-134

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B
page 1 of 2

Date Extracted:	9-13-10
Date Analyzed:	9-13-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-108-03
Client ID:	**P-PEX-21-11**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0012
Chloromethane	ND		0.0062
Vinyl Chloride	ND		0.0012
Bromomethane	ND		0.0012
Chloroethane	ND		0.0062
Trichlorofluoromethane	ND		0.0012
1,1-Dichloroethene	ND		0.0012
Iodomethane	ND		0.0062
Methylene Chloride	ND		0.0062
(trans) 1,2-Dichloroethene	ND		0.0012
1,1-Dichloroethane	ND		0.0012
2,2-Dichloropropane	ND		0.0012
(cis) 1,2-Dichloroethene	ND		0.0012
Bromochloromethane	ND		0.0012
Chloroform	ND		0.0012
1,1,1-Trichloroethane	ND		0.0012
Carbon Tetrachloride	ND		0.0012
1,1-Dichloropropene	ND		0.0012
1,2-Dichloroethane	ND		0.0012
Trichloroethene	ND		0.0012
1,2-Dichloropropane	ND		0.0012
Dibromomethane	ND		0.0012
Bromodichloromethane	ND		0.0012
2-Chloroethyl Vinyl Ether	ND		0.0062
(cis) 1,3-Dichloropropene	ND		0.0012
(trans) 1,3-Dichloropropene	ND		0.0012

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B

page 2 of 2

Lab ID: 09-108-03
Client ID: P-PEX-21-11

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0012
Tetrachloroethene	ND		0.0012
1,3-Dichloropropane	ND		0.0012
Dibromochloromethane	ND		0.0012
1,2-Dibromoethane	ND		0.0012
Chlorobenzene	ND		0.0012
1,1,1,2-Tetrachloroethane	ND		0.0012
Bromoform	ND		0.0012
Bromobenzene	ND		0.0012
1,1,2,2-Tetrachloroethane	ND		0.0012
1,2,3-Trichloropropane	ND		0.0012
2-Chlorotoluene	ND		0.0012
4-Chlorotoluene	ND		0.0012
1,3-Dichlorobenzene	ND		0.0012
1,4-Dichlorobenzene	ND		0.0012
1,2-Dichlorobenzene	ND		0.0012
1,2-Dibromo-3-chloropropane	ND		0.0062
1,2,4-Trichlorobenzene	ND		0.0012
Hexachlorobutadiene	ND		0.0062
1,2,3-Trichlorobenzene	ND		0.0012

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	82	66-128
Toluene-d8	99	68-126
4-Bromofluorobenzene	78	53-134

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B
page 1 of 2

Date Extracted:	9-13-10
Date Analyzed:	9-13-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-108-04
Client ID:	**P-PEX-22-10**

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0012
Chloromethane	ND		0.0062
Vinyl Chloride	ND		0.0012
Bromomethane	ND		0.0012
Chloroethane	ND		0.0062
Trichlorofluoromethane	ND		0.0012
1,1-Dichloroethene	ND		0.0012
Iodomethane	ND		0.0062
Methylene Chloride	ND		0.0062
(trans) 1,2-Dichloroethene	ND		0.0012
1,1-Dichloroethane	ND		0.0012
2,2-Dichloropropane	ND		0.0012
(cis) 1,2-Dichloroethene	ND		0.0012
Bromochloromethane	ND		0.0012
Chloroform	ND		0.0012
1,1,1-Trichloroethane	ND		0.0012
Carbon Tetrachloride	ND		0.0012
1,1-Dichloropropene	ND		0.0012
1,2-Dichloroethane	ND		0.0012
Trichloroethene	ND		0.0012
1,2-Dichloropropane	ND		0.0012
Dibromomethane	ND		0.0012
Bromodichloromethane	ND		0.0012
2-Chloroethyl Vinyl Ether	ND		0.0062
(cis) 1,3-Dichloropropene	ND		0.0012
(trans) 1,3-Dichloropropene	ND		0.0012

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B

page 2 of 2

Lab ID: 09-108-04
Client ID: **P-PEX-22-10**

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0012
Tetrachloroethene	ND		0.0012
1,3-Dichloropropane	ND		0.0012
Dibromochloromethane	ND		0.0012
1,2-Dibromoethane	ND		0.0012
Chlorobenzene	ND		0.0012
1,1,1,2-Tetrachloroethane	ND		0.0012
Bromoform	ND		0.0012
Bromobenzene	ND		0.0012
1,1,2,2-Tetrachloroethane	ND		0.0012
1,2,3-Trichloropropane	ND		0.0012
2-Chlorotoluene	ND		0.0012
4-Chlorotoluene	ND		0.0012
1,3-Dichlorobenzene	ND		0.0012
1,4-Dichlorobenzene	ND		0.0012
1,2-Dichlorobenzene	ND		0.0012
1,2-Dibromo-3-chloropropane	ND		0.0062
1,2,4-Trichlorobenzene	ND		0.0012
Hexachlorobutadiene	ND		0.0062
1,2,3-Trichlorobenzene	ND		0.0012

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	83	66-128
Toluene-d8	100	68-126
4-Bromofluorobenzene	81	53-134

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B

page 1 of 2

Date Extracted:	9-13-10
Date Analyzed:	9-13-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-108-05
Client ID:	**P-PEX-23-5**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0012
Chloromethane	ND		0.0058
Vinyl Chloride	ND		0.0012
Bromomethane	ND		0.0012
Chloroethane	ND		0.0058
Trichlorofluoromethane	ND		0.0012
1,1-Dichloroethene	ND		0.0012
Iodomethane	ND		0.0058
Methylene Chloride	ND		0.0058
(trans) 1,2-Dichloroethene	ND		0.0012
1,1-Dichloroethane	ND		0.0012
2,2-Dichloropropane	ND		0.0012
(cis) 1,2-Dichloroethene	ND		0.0012
Bromochloromethane	ND		0.0012
Chloroform	ND		0.0012
1,1,1-Trichloroethane	ND		0.0012
Carbon Tetrachloride	ND		0.0012
1,1-Dichloropropene	ND		0.0012
1,2-Dichloroethane	ND		0.0012
Trichloroethene	ND		0.0012
1,2-Dichloropropane	ND		0.0012
Dibromomethane	ND		0.0012
Bromodichloromethane	ND		0.0012
2-Chloroethyl Vinyl Ether	ND		0.0058
(cis) 1,3-Dichloropropene	ND		0.0012
(trans) 1,3-Dichloropropene	ND		0.0012

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B

page 2 of 2

Lab ID: 09-108-05
Client ID: P-PEX-23-5

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0012
Tetrachloroethene	ND		0.0012
1,3-Dichloropropane	ND		0.0012
Dibromochloromethane	ND		0.0012
1,2-Dibromoethane	ND		0.0012
Chlorobenzene	ND		0.0012
1,1,1,2-Tetrachloroethane	ND		0.0012
Bromoform	ND		0.0012
Bromobenzene	ND		0.0012
1,1,2,2-Tetrachloroethane	ND		0.0012
1,2,3-Trichloropropane	ND		0.0012
2-Chlorotoluene	ND		0.0012
4-Chlorotoluene	ND		0.0012
1,3-Dichlorobenzene	ND		0.0012
1,4-Dichlorobenzene	ND		0.0012
1,2-Dichlorobenzene	ND		0.0012
1,2-Dibromo-3-chloropropane	ND		0.0058
1,2,4-Trichlorobenzene	ND		0.0012
Hexachlorobutadiene	ND		0.0058
1,2,3-Trichlorobenzene	ND		0.0012

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	79	66-128
Toluene-d8	97	68-126
4-Bromofluorobenzene	76	53-134

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 1 of 2

Date Extracted:	9-13-10
Date Analyzed:	9-13-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0913S1

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0010
Chloromethane	ND		0.0050
Vinyl Chloride	ND		0.0010
Bromomethane	ND		0.0010
Chloroethane	ND		0.0050
Trichlorofluoromethane	ND		0.0010
1,1-Dichloroethene	ND		0.0010
Iodomethane	ND		0.0050
Methylene Chloride	ND		0.0050
(trans) 1,2-Dichloroethene	ND		0.0010
1,1-Dichloroethane	ND		0.0010
2,2-Dichloropropane	ND		0.0010
(cis) 1,2-Dichloroethene	ND		0.0010
Bromochloromethane	ND		0.0010
Chloroform	ND		0.0010
1,1,1-Trichloroethane	ND		0.0010
Carbon Tetrachloride	ND		0.0010
1,1-Dichloropropene	ND		0.0010
1,2-Dichloroethane	ND		0.0010
Trichloroethene	ND		0.0010
1,2-Dichloropropane	ND		0.0010
Dibromomethane	ND		0.0010
Bromodichloromethane	ND		0.0010
2-Chloroethyl Vinyl Ether	ND		0.0050
(cis) 1,3-Dichloropropene	ND		0.0010
(trans) 1,3-Dichloropropene	ND		0.0010

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 2 of 2

Lab ID: MB0913S1

Compound	**Results**	**Flags**	**PQL**
1,1,2-Trichloroethane	ND		0.0010
Tetrachloroethene	ND		0.0010
1,3-Dichloropropane	ND		0.0010
Dibromochloromethane	ND		0.0010
1,2-Dibromoethane	ND		0.0010
Chlorobenzene	ND		0.0010
1,1,1,2-Tetrachloroethane	ND		0.0010
Bromoform	ND		0.0010
Bromobenzene	ND		0.0010
1,1,2,2-Tetrachloroethane	ND		0.0010
1,2,3-Trichloropropane	ND		0.0010
2-Chlorotoluene	ND		0.0010
4-Chlorotoluene	ND		0.0010
1,3-Dichlorobenzene	ND		0.0010
1,4-Dichlorobenzene	ND		0.0010
1,2-Dichlorobenzene	ND		0.0010
1,2-Dibromo-3-chloropropane	ND		0.0050
1,2,4-Trichlorobenzene	ND		0.0010
Hexachlorobutadiene	ND		0.0050
1,2,3-Trichlorobenzene	ND		0.0010

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	87	66-128
Toluene-d8	101	68-126
4-Bromofluorobenzene	88	53-134

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B
MS/MSD QUALITY CONTROL

Date Extracted: 9-13-10
Date Analyzed: 9-13-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-106-04

Compound	Sample Amount	Spike Amount	MS	Percent Recovery	MSD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	ND	1.02/0.969	1.01	99	0.920	95	70-130	
Benzene	ND	1.02/0.969	0.941	92	0.870	90	70-130	
Trichloroethene	ND	1.02/0.969	1.04	102	0.975	101	70-130	
Toluene	ND	1.02/0.969	1.01	99	0.946	98	70-126	
Chlorobenzene	ND	1.02/0.969	1.01	99	0.982	101	70-130	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	4	14	
Benzene	2	14	
Trichloroethene	1	18	
Toluene	1	20	
Chlorobenzene	2	15	

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-19-7**					
Laboratory ID:	09-108-01					
Naphthalene	**0.0080**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
2-Methylnaphthalene	**0.027**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
1-Methylnaphthalene	**0.057**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthene	**0.020**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Fluorene	**0.023**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Phenanthrene	**0.076**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Anthracene	**0.012**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Fluoranthene	**0.049**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Pyrene	**0.064**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]anthracene	**0.020**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Chrysene	**0.042**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[b]fluoranthene	**0.016**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[k]fluoranthene	**0.011**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]pyrene	**0.019**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Indeno(1,2,3-c,d)pyrene	**0.011**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Dibenz[a,h]anthracene	**ND**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[g,h,i]perylene	**0.017**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*75*	*45 - 101*				
Pyrene-d10	*81*	*52 - 118*				
Terphenyl-d14	*71*	*41 - 106*				

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

PAHs by EPA 8270D/SIM (with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-20-8**					
Laboratory ID:	09-108-02					
Naphthalene	**ND**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
2-Methylnaphthalene	**0.016**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
1-Methylnaphthalene	**0.038**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthene	**0.016**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Fluorene	**0.018**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Phenanthrene	**0.062**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Anthracene	**0.010**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Fluoranthene	**0.061**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Pyrene	**0.075**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]anthracene	**0.037**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Chrysene	**0.047**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[b]fluoranthene	**0.029**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[k]fluoranthene	**0.028**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]pyrene	**0.042**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Indeno(1,2,3-c,d)pyrene	**0.024**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Dibenz[a,h]anthracene	**0.0086**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[g,h,i]perylene	**0.030**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*85*	*45 - 101*				
Pyrene-d10	*93*	*52 - 118*				
Terphenyl-d14	*92*	*41 - 106*				

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-21-11**					
Laboratory ID:	09-108-03					
Naphthalene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
2-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
1-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthylene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Fluorene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Phenanthrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Anthracene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Pyrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]anthracene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Chrysene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[b]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[k]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]pyrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Dibenz[a,h]anthracene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[g,h,i]perylene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*87*	*45 - 101*				
Pyrene-d10	*93*	*52 - 118*				
Terphenyl-d14	*86*	*41 - 106*				

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-22-10**					
Laboratory ID:	09-108-04					
Naphthalene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
2-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
1-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthylene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Fluorene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Phenanthrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Anthracene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Pyrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]anthracene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Chrysene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[b]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[k]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]pyrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Dibenz[a,h]anthracene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[g,h,i]perylene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*92*	*52 - 118*				
Terphenyl-d14	*86*	*41 - 106*				

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-23-5**					
Laboratory ID:	09-108-05					
Naphthalene	**0.029**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
2-Methylnaphthalene	**0.016**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
1-Methylnaphthalene	**0.018**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthylene	**ND**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthene	**0.061**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Fluorene	**0.048**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Phenanthrene	**0.12**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Anthracene	**0.016**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Fluoranthene	**0.070**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Pyrene	**0.067**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]anthracene	**0.022**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Chrysene	**0.034**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[b]fluoranthene	**0.019**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[k]fluoranthene	**0.014**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]pyrene	**0.022**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Indeno(1,2,3-c,d)pyrene	**0.013**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Dibenz[a,h]anthracene	**ND**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[g,h,i]perylene	**0.022**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*74*	*45 - 101*				
Pyrene-d10	*81*	*52 - 118*				
Terphenyl-d14	*77*	*41 - 106*				

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0914S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*95*	*45 - 101*				
Pyrene-d10	*106*	*52 - 118*				
Terphenyl-d14	*92*	*41 - 106*				

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-108-03										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0671**	**0.0714**	0.0833	0.0833	ND	81	86	31 - 115	6	19	
Acenaphthylene	**0.0735**	**0.0760**	0.0833	0.0833	ND	88	91	40 - 134	3	22	
Acenaphthene	**0.0742**	**0.0767**	0.0833	0.0833	ND	89	92	48 - 118	3	17	
Fluorene	**0.0763**	**0.0801**	0.0833	0.0833	ND	92	96	54 - 122	5	16	
Phenanthrene	**0.0738**	**0.0777**	0.0833	0.0833	ND	89	93	46 - 123	5	19	
Anthracene	**0.0708**	**0.0741**	0.0833	0.0833	ND	85	89	53 - 123	5	27	
Fluoranthene	**0.0741**	**0.0776**	0.0833	0.0833	ND	89	93	47 - 132	5	26	
Pyrene	**0.0772**	**0.0809**	0.0833	0.0833	ND	93	97	41 - 137	5	25	
Benzo[a]anthracene	**0.0695**	**0.0731**	0.0833	0.0833	ND	83	88	43 - 132	5	26	
Chrysene	**0.0711**	**0.0748**	0.0833	0.0833	ND	85	90	46 - 126	5	24	
Benzo[b]fluoranthene	**0.0700**	**0.0763**	0.0833	0.0833	ND	84	92	44 - 134	9	24	
Benzo[k]fluoranthene	**0.0662**	**0.0739**	0.0833	0.0833	ND	79	89	45 - 132	11	20	
Benzo[a]pyrene	**0.0716**	**0.0757**	0.0833	0.0833	ND	86	91	36 - 136	6	23	
Indeno(1,2,3-c,d)pyrene	**0.0750**	**0.0808**	0.0833	0.0833	ND	90	97	40 - 136	7	16	
Dibenz[a,h]anthracene	**0.0758**	**0.0810**	0.0833	0.0833	ND	91	97	40 - 142	7	13	
Benzo[g,h,i]perylene	**0.0736**	**0.0769**	0.0833	0.0833	ND	88	92	37 - 137	4	18	
Surrogate:											
2-Fluorobiphenyl						*80*	*83*	*45 - 101*			
Pyrene-d10						*88*	*92*	*52 - 118*			
Terphenyl-d14						*78*	*85*	*41 - 106*			

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-108-01					
Client ID:	**P-PEX-19-7**					
Arsenic	**21**	11	6010B	9-14-10	9-14-10	
Barium	**62**	2.8	6010B	9-14-10	9-14-10	
Cadmium	**ND**	0.57	6010B	9-14-10	9-14-10	
Chromium	**35**	0.57	6010B	9-14-10	9-14-10	
Lead	**46**	5.7	6010B	9-14-10	9-14-10	
Mercury	**ND**	0.28	7471A	9-14-10	9-14-10	
Selenium	**ND**	11	6010B	9-14-10	9-14-10	
Silver	**ND**	0.57	6010B	9-14-10	9-14-10	
Lab ID:	09-108-02					
Client ID:	**P-PEX-20-8**					
Arsenic	**25**	11	6010B	9-14-10	9-14-10	
Barium	**62**	2.8	6010B	9-14-10	9-14-10	
Cadmium	**ND**	0.57	6010B	9-14-10	9-14-10	
Chromium	**42**	0.57	6010B	9-14-10	9-14-10	
Lead	**180**	5.7	6010B	9-14-10	9-14-10	
Mercury	**ND**	0.28	7471A	9-14-10	9-14-10	
Selenium	**ND**	11	6010B	9-14-10	9-14-10	
Silver	**ND**	0.57	6010B	9-14-10	9-14-10	

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	09-108-03					
Client ID:	**P-PEX-21-11**					
Arsenic	**ND**	12	6010B	9-14-10	9-14-10	
Barium	**32**	3.1	6010B	9-14-10	9-14-10	
Cadmium	**ND**	0.62	6010B	9-14-10	9-14-10	
Chromium	**20**	0.62	6010B	9-14-10	9-14-10	
Lead	**ND**	6.2	6010B	9-14-10	9-14-10	
Mercury	**ND**	0.31	7471A	9-14-10	9-14-10	
Selenium	**ND**	12	6010B	9-14-10	9-14-10	
Silver	**ND**	0.62	6010B	9-14-10	9-14-10	

Lab ID:	09-108-04					
Client ID:	**P-PEX-22-10**					
Arsenic	**ND**	12	6010B	9-14-10	9-14-10	
Barium	**34**	3.1	6010B	9-14-10	9-14-10	
Cadmium	**ND**	0.62	6010B	9-14-10	9-14-10	
Chromium	**24**	0.62	6010B	9-14-10	9-14-10	
Lead	**ND**	6.2	6010B	9-14-10	9-14-10	
Mercury	**ND**	0.31	7471A	9-14-10	9-14-10	
Selenium	**ND**	12	6010B	9-14-10	9-14-10	
Silver	**ND**	0.62	6010B	9-14-10	9-14-10	

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	09-108-05					
Client ID:	**P-PEX-23-5**					
Arsenic	**ND**	12	6010B	9-14-10	9-14-10	
Barium	**52**	2.9	6010B	9-14-10	9-14-10	
Cadmium	**ND**	0.58	6010B	9-14-10	9-14-10	
Chromium	**26**	0.58	6010B	9-14-10	9-14-10	
Lead	**26**	5.8	6010B	9-14-10	9-14-10	
Mercury	**ND**	0.29	7471A	9-14-10	9-14-10	
Selenium	**ND**	12	6010B	9-14-10	9-14-10	
Silver	**ND**	0.58	6010B	9-14-10	9-14-10	

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-14-10
Date Analyzed:	9-14-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0914S1&MB0914S2

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-14-10
Date Analyzed: 9-14-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-108-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**27.5**	**29.0**	5	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**19.0**	**16.4**	15	0.50	
Lead	**ND**	**ND**	NA	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-14-10
Date Analyzed: 9-14-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-108-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**92.2**	92	**92.8**	93	1	
Barium	100	**116**	89	**115**	87	2	
Cadmium	50	**46.7**	93	**46.3**	93	1	
Chromium	100	**113**	94	**110**	91	2	
Lead	250	**234**	94	**230**	92	2	
Mercury	0.50	**0.513**	103	**0.506**	101	2	
Selenium	100	**93.3**	93	**94.6**	95	1	
Silver	25	**22.7**	91	**22.4**	89	1	

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

% MOISTURE

Date Analyzed: 9-13-10

Client ID	Lab ID	% Moisture
P-PEX-19-7	09-108-01	12
P-PEX-20-8	09-108-02	12
P-PEX-21-11	09-108-03	19
P-PEX-22-10	09-108-04	20
P-PEX-23-5	09-108-05	14

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Company: HWA
Project Number: 2007-098-922
Project Name: Bothell Paint
Project Manager: Arnie Sugar
Sampled by: Norm Nielsen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☒ 1 Day (ASAP)
☐ 2 Day ☐ 3 Day
☐ Standard (7 working days)
(TPH analysis 5 working days)
☐ ______ (other)

Laboratory Number: 09-108

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM cPAHs	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664							% Moisture
1	P-PEX-19-7	9/13/10	12:30	Soil	4			X		X		X				X									X
2	P-PEX-20-8	↓	13:00	↓	↓			X		NO						X									X
3	P-PEX-21-11	↓	13:10	↓	↓			X		X		X				X									X
4	P-PEX-22-10	↓	13:20	↓	↓			X		X		X	yes			X									X
5	P-PEX-23-5	↓	13:40	↓	↓			X		X		X				X									X

	Signature	Company	Date	Time
Relinquished by		HWA	9/13/10	3:34
Received by		OSE	9/13/10	3:34
Relinquished by				
Received by				
Relinquished by				
Received by				

Reviewed by/Date

Reviewed by/Date

Comments/Special Instructions:

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Client Copy

9^{00}

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 16, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-120

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 14, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

Case Narrative

Samples were collected on September 14, 2010 and received by the laboratory on September 14, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CONC-1,2,3,4 Comp.**					
Laboratory ID:	09-120-01,02,03,04 Comp.					
Diesel Range Organics	**ND**	27	NWTPH-Dx	9-15-10	9-15-10	
Lube Oil Range Organics	**ND**	54	NWTPH-Dx	9-15-10	9-15-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*98*	*50-150*				

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0915S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-15-10	9-15-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-15-10	9-15-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*117*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-119-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**134**	**80.9**				49	NA	
Surrogate:								
o-Terphenyl			*115*	*98*	*50-150*			

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	09-120-01,02,03,04 Comp.					
Client ID:	**CONC-1,2,3,4 Comp.**					
Arsenic	**11**	11	6010B	9-15-10	9-15-10	
Barium	**69**	2.7	6010B	9-15-10	9-15-10	
Cadmium	**ND**	0.54	6010B	9-15-10	9-15-10	
Chromium	**20**	0.54	6010B	9-15-10	9-15-10	
Lead	**21**	5.4	6010B	9-15-10	9-15-10	
Mercury	**ND**	0.27	7471A	9-14-10	9-14-10	
Selenium	**ND**	11	6010B	9-15-10	9-15-10	
Silver	**ND**	0.54	6010B	9-15-10	9-15-10	

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-15-10
Date Analyzed:	9-15-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0915S1

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

TOTAL MERCURY
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-14-10
Date Analyzed:	9-14-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0914S1

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 9-15-10
Date Analyzed: 9-15-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-223-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**28.3**	**28.0**	1	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**12.6**	**12.0**	5	0.50	
Lead	**19.8**	**23.3**	16	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

TOTAL MERCURY
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted:	9-14-10
Date Analyzed:	9-14-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-108-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 9-15-10
Date Analyzed: 9-15-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-223-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**94.1**	94	**92.6**	93	2	
Barium	100	**122**	93	**124**	95	2	
Cadmium	50	**45.2**	90	**45.4**	91	0	
Chromium	100	**106**	94	**107**	94	0	
Lead	250	**240**	88	**247**	91	3	
Selenium	100	**94.6**	95	**93.9**	94	1	
Silver	25	**22.3**	89	**22.6**	90	1	

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

TOTAL MERCURY
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-14-10
Date Analyzed: 9-14-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-108-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.50	**0.513**	103	**0.506**	101	2	

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

cPAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CONC-01,02,03,04 Comp.**					
Laboratory ID:	09-120-01,02,03,04 Comp.					
Benzo[a]anthracene	**ND**	0.0072	EPA 8270/SIM	9-14-10	9-15-10	
Chrysene	**ND**	0.0072	EPA 8270/SIM	9-14-10	9-15-10	
Benzo[b]fluoranthene	**ND**	0.0072	EPA 8270/SIM	9-14-10	9-15-10	
Benzo[k]fluoranthene	**ND**	0.0072	EPA 8270/SIM	9-14-10	9-15-10	
Benzo[a]pyrene	**ND**	0.0072	EPA 8270/SIM	9-14-10	9-15-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0072	EPA 8270/SIM	9-14-10	9-15-10	
Dibenz[a,h]anthracene	**ND**	0.0072	EPA 8270/SIM	9-14-10	9-15-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*85*	*45 - 101*				
Pyrene-d10	*95*	*52 - 118*				
Terphenyl-d14	*84*	*41 - 106*				

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

cPAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0914S1					
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*95*	*45 - 101*				
Pyrene-d10	*106*	*52 - 118*				
Terphenyl-d14	*92*	*41 - 106*				

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

cPAHs by EPA 8270D/SIM
(with silica gel clean-up)
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
MATRIX SPIKES											
Laboratory ID:	09-108-03										
	MS	MSD	MS	MSD		MS	MSD				
Benzo[a]anthracene	**0.0695**	**0.0731**	0.0833	0.0833	ND	83	88	43 - 132	5	26	
Chrysene	**0.0711**	**0.0748**	0.0833	0.0833	ND	85	90	46 - 126	5	24	
Benzo[b]fluoranthene	**0.0700**	**0.0763**	0.0833	0.0833	ND	84	92	44 - 134	9	24	
Benzo[k]fluoranthene	**0.0662**	**0.0739**	0.0833	0.0833	ND	79	89	45 - 132	11	20	
Benzo[a]pyrene	**0.0716**	**0.0757**	0.0833	0.0833	ND	86	91	36 - 136	6	23	
Indeno(1,2,3-c,d)pyrene	**0.0750**	**0.0808**	0.0833	0.0833	ND	90	97	40 - 136	7	16	
Dibenz[a,h]anthracene	**0.0758**	**0.0810**	0.0833	0.0833	ND	91	97	40 - 142	7	13	
Surrogate:											
2-Fluorobiphenyl						*80*	*83*	*45 - 101*			
Pyrene-d10						*88*	*92*	*52 - 118*			
Terphenyl-d14						*78*	*85*	*41 - 106*			

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

% MOISTURE

Date Analyzed: 9-14-10

Client ID	Lab ID	% Moisture
CONC-01,02,03,04 Comp	09-120-01,02,03,04 Comp.	7

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
~~19730 64th Ave. W., Suite 200, Lynnwood, WA 98036~~ (425) 774-0106

Chain of Custody and Laboratory Analysis Request

DATE: 9/14/10
PAGE: 1 of 1

PROJECT NAME: Bothell Paint #: 2007-098-
SITE CODE:
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE: Ca At
HWA CONTACT: " " PHONE: 206-794-3124

09-120
24-hour

ANALYSIS REQUESTED

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH - Dx	RCRA Metals	cPAHs	REMARKS
Conc-1	9/14/10	1230		1	1	/	/	/	
Conc-2		1235		2	1	/	/	/	Composite +
Conc-3		1240		3	1	/	/	/	Analysis.
Conc-4		1245		4	1	/	/	/	

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Pete Pawson		HWA	9/14/10	15:20	
Received by:	M. Vouw		OSE	9/14/10	1500	
Relinquished by:						
Received by:						

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

APPENDIX C

DATA QUALITY ASSESSMENT

Introduction

This appendix presents a data quality assessment for the Bothell Paint and Decorating site interim action soil cleanup. Quality is the degree to which a set of inherent characteristics fulfills project requirements. Quality assurance (QA) is the processes of auditing the project's quality requirements and the results from quality control measurements to ensure appropriate quality standards are used. Quality control (QC) is the process of monitoring and recording results of executing the project quality activities to assess performance and to recommend necessary changes (PMI, 2008).

The principal ingredients that make up suitable data quality or “good data" are (Flory, 2000):

1. **Clearly stated measurement purposes:** Must include the chemical compounds to be analyzed; the sample matrices to be submitted; the intended use of the data, and the associated detection limits, accuracy, and precision required.

2. **Data management:** Refers to sample tracking (chain-of-custody) and associated activities that guarantee the laboratory results are associated with the correct sample.

3. **Sampling:** Includes a technically valid sampling plan that is correctly implemented to properly collect, identify, preserve, store and prepare samples for analysis.

4. **Analytical method:** Must have sufficient selectivity, detection limits, accuracy and precision to be technically valid.

5. **Quality control samples:** Must include sufficient quality control samples to support the necessary statements of accuracy, precision, and detection limits. These include blanks (field, trip, laboratory, reagent), duplicate measurements, matrix spikes, laboratory control samples, and performance evaluation samples.

6. **Quality control limits:** Includes clearly stated acceptable limits for quality control samples such as allowable blank contamination; precision of duplicate samples; and accuracy of matrix spikes, performance evaluation samples and laboratory control samples. Calibration frequency and linearity may also be included.

7. **Documentation:** Must be comprehensive enough to allow a third party evaluator to independently verify the suitability of the sample data.

The process of verifying the suitability of the data is termed data quality assessment. Data quality assessment is a determination of the suitability of the data for the intended use. It includes the four major tasks of (a) data management, (b) data validation, (c) data qualification/review (flagging), and (d) the determination of suitability. Data management includes determining the completeness of the data documentation. Environmental data validation primarily entails checking to see if the quality control requirements of the method have been met. Data qualification is the application of flags to the data that reflect the failures found during validation. The final determination of suitability must consider the technical validity of the data as well as the data qualifiers and be consistent with the intended use of the analytical data (Flory, 2000).

There were two components to the data quality program for the Bothell Paint and Decorating site cleanup: field and laboratory. Both components followed Washington Department of Ecology guidance (Ecology, 2004). Also, the *Compliance Monitoring Quality Assurance Project Plan, Bothell Paint and Decorating Site* (Attachment 1 within the *Interim Action Work Plan* (Parametrix, 2010)) specified the sample collection procedures and analysis, and defined the data quality objectives (DQOs) and criteria for the interim action cleanup. However, the *Interim Action Work Plan* and the *Compliance Monitoring Quality Assurance Project Plan* did not consistently list chemicals of potential concern for the Site which resulted in HWA field personnel not initially specifying soil analyses for polynuclear aromatic hydrocarbons (PAHs) to confirming soil cleanup because of this confusion.

Field QC Methods

Field QC included proper documentation of field activities in a field log book and daily field reports that provided a daily record of significant events, observations, deviations from the sampling plan and measurements collected during the field activities. Field personnel followed standard QC procedures to collect and transport samples including collection of duplicate samples, decontamination of reusable sampling equipment between samples, labeling samples, and following chain of custody procedures to transport samples to the laboratory. Field personnel photographically documented significant events and observations during the interim action cleanup.

Field QC methods deviated from the *Compliance Monitoring Quality Assurance Project Plan* in two instances during the cleanup:

1. Because of inconsistencies between the *Interim Action Work Plan* (Parametrix, 2010) and the *Compliance Monitoring Quality Assurance Project Plan* (Parametrix, 2010) in listing carcinogenic polynuclear aromatic hydrocarbons (cPAHs) as chemicals of potential concern at the Site, cPAHs were not specified on sample Chain of Custody forms for soil samples collected early in the site

cleanup; this resulted in PAH analyses for 18 samples being performed out of holding times.

2. Five soil samples for analyses of halogenated volatile organic compounds (HVOCs) were collected in jars without stir bars – a deviation from the analytical method specifications.

As discussed below in the Data Verification section of this appendix, neither oversight is thought to have significantly compromise the reported analytical results.

Laboratory QC Methods

OnSite Environmental Inc. of Redmond, Washington performed nearly all sample analyses. OnSite Environmental is accredited by the Washington Department of Ecology (Accreditation #C591-10) for all analyses performed for the interim action cleanup except for NWEPH analysis. Therefore, OnSite Environmental subcontracted NWEPH and some NWVPH analyses to ALS Environmental (Ecology Accreditation # C1336) in Everett, and also to Analytical Resources, Inc. (Ecology Accreditation # C558-10a) in Tukwila, Washington. ALS Environmental and Analytical Resources, Inc. are both accredited by the Department of Ecology for NWEPH and NWVPH analyses.

Specific laboratory QC consisted of the following (OnSite Environmental, 2008; Ecology, 2004):

- **Sample Batching.** A batch consisted of up to twenty samples in addition to any quality control samples that were required. The samples were extracted, digested, and prepared for analysis within a twelve-hour window. If more than twenty samples were to be extracted, a second batch of quality control samples was generated.

- **Method Blanks.** Method blanks were used to ensure that the extraction and analysis procedures did not contribute contamination to the analysis. Method blanks were prepared and analyzed in the laboratory to document the response of the measurement system to a sample containing effectively none of the analyte of interest. A positive blank response can be due to a variety of factors related to the procedure, equipment, or reagents. Unusually high blank responses indicate laboratory contamination. The method blank response becomes very important when the analyte concentration is near the detection limit.

- **Spike Blanks.** A spike blank is a laboratory QC sample prepared by adding a known amount of the target analyte(s) to a laboratory blank sample. This is a measure of the accuracy of the test procedure. If an analyte for any spike blank was outside of quality control criteria, then that particular analyte was evaluated and actions were taken to bring the analysis into control.

- **Duplicate Samples.** Duplicate samples were used to ensure that sample results could be reproduced in a precise manner.

- **Surrogates.** Surrogate compounds are compounds similar to the analytes of interest that were added to the sample at a known concentration in order to track the accuracy of the sample extraction and analysis. Some methods for organics analyses specify that all samples, including QC samples, be spiked with surrogate compounds at the start of the procedure. Because surrogate compounds are not expected to be present in the samples, they give analytical responses that can be distinguished from those of the analytes of interest. Surrogate percent recoveries (defined below) provided an estimate of accuracy for the entire analytical procedure. The standard deviations of surrogate results provided an estimate of analytical precision, while the mean percent recoveries indicated whether or not the sample results were biased.

- **Spiked Blank Duplicates.** These were a second laboratory spiked blank laboratory QC sample. The difference in the laboratory's recovery of the spiked blank and spiked blank duplicate was a measure of analytical precision, and was reported as relative percent difference (RPD) as defined below.

- **Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples.** Matrix spike samples were used to ensure the analytes of interest could be accurately recovered from the sample matrix. The matrix spike duplicate was also used to ensure the analytes could be repeatedly recovered in an accurate and precise manner.

Analytical Accuracy and Precision

Routine laboratory QC analyses provided information about accuracy and precision. The types of quality control samples differed depending on the method specifications. Analytical accuracy was assessed through the surrogate, spike blank, and matrix spike analysis as specified by the analytical method. Accuracy was expressed as percent recovery:

$$\text{Percent Recovery (\%R)} \quad = \quad 100*(X_s/C_t)$$

Where X_s was the observed concentration of the analyte, and C_t was the true concentration of the analyte. The acceptable range for accuracy was determined by the method or by control charting of actual laboratory samples. A control chart is a graphical representation of the precision of QC results showing whether the measurement system is in statistical control. The laboratory analyst was responsible for verifying that the surrogate, spike blank and MS/MSD percent recoveries meet the quality control limits.

Analytical precision was assessed through analysis of the sample duplicates or matrix spike duplicates as specified by the analytical method. Precision was expressed as relative percent difference:

$$\text{Relative Percent Difference (RPD)} = 100*(X_1-X_2)/((X_1+X_2)/2)$$

Where: X_1 was the concentration in the first duplicate sample and X_2 was the concentration in the second duplicate sample. The acceptable range for precision was determined by the method or by control charting of actual laboratory samples. The analyst was responsible for verifying that the duplicate or MS/MSD recoveries meet the quality control limits.

Practical Quantitation Limits and Method Detection Limits

OnSite Environmental reported all analytical results for the interim action cleanup as practical quantitation limits (PQLs). PQLs are the lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. OnSite Environmental's routine PQLs for all interim action analyses were lower than regulatory cleanup levels thus ensuring confirmation of successful cleanup. OnSite Environmental conducts studies annually for all accredited test methods to determine its PQLs.

Method detection limits (MDLs) are the lowest concentration that can be detected by an instrument with correction for the effects of sample matrix and method-specific parameters such as sample preparation. OnSite Environmental conducts studies annually for all accredited test methods to determine its method detection limits. MDLs are defined at 40 CFR Part 136 as three times the standard deviation of replicate spiked analyses. An analytical PQL is generally 5-10 times the MDL. MDLs are only a measure of the ability of the test procedure to generate a positive response and have nothing to do with the accuracy of that response (Quality Assurance Associates, 2010).

Data Verification

Seventy soil samples were analyzed for this interim action cleanup. The analyses performed included:

- NWTPH-Gx - Gasoline range petroleum hydrocarbons using Ecology Method NWTPH-Gx

- NWTPH-Dx - Diesel and oil range petroleum hydrocarbons using Ecology Method NWTPH-Dx

- BTEX - Benzene, toluene, ethylbenzene, and xylenes using EPA Method 8021

- RCRA 8 Metals - Arsenic, barium, cadmium, chromium, lead, selenium, silver using EPA Method 6010B and 6020; and mercury using EPA Method 7471A

- VOCs - Volatile organic hydrocarbons by EPA Method 8260B

- HVOCs - Halogenated volatile organic hydrocarbons by EPA Method 8260B

- PAHs - Polynuclear aromatic hydrocarbons by EPA Method 8270D/SIM

- VPH/EPH - Ecology methods VPH and EPH for volatile and extractable petroleum hydrocarbon fractions

- TCLP Metals - Toxicity Leaching Procedure using EPA Methods 1311, 6010B, and 7470A for RCRA 8 metals

Analytical data are summarized in Table 2 of the cleanup report. Verification of the data included checking holding times, checking that the laboratory performed the analyses requested on the chain of custody form, and that the laboratory's QC results were within established control limits. Table C-1 below summarizes the data verification results. Holding times, surrogate percent recoveries, method blank analytical results, lab duplicate RPDs, matrix spike/matrix spike duplicate percent recoveries and RPDs, and spiked blank/spiked blank duplicate percent recoveries and RPDs were all within control limits with the following exceptions:

- Eighteen of 31 soil samples submitted for PAH analyses (EPA Method 8270D/SIM) were analyzed after the 14 day holding time. This was due to field personnel not specifying PAH analysis when also specifying NWTPH-Dx analysis on the chain of custody forms when the sample was delivered to the lab. Table 3-4 (Summary of Sample Types, Analyses, and Number) in the *Compliance Monitoring Quality Assurance Project Plan* (Parametrix, 2010) specified that 29 PAH analyses plus one duplicate carcinogenic PAH (cPAH) analysis be performed to confirm cleanup; however, neither the *Interim Action Work Plan* text nor the text of the *Compliance Monitoring Quality Assurance Project Plan* listed cPAHs as chemical of potential concern at the Site that should be analyzed. HWA caught this inconsistency in a project quality control audit two weeks into the site cleanup and asked OnSite Environmental to perform PAH analyses on the stored samples. OnSite Environmental's policy is to store samples in a refrigerator at -7 to -20 degrees Celsius for 30 days from receipt. Of these 18 soil samples, 13 were confirmation samples. It is HWA's opinion that the PAH analytical data reported in the laboratory certificates and summarized in Table 2 should be considered valid and acceptable for further use because the samples were refrigerated at low temperatures while stored in sealed glass sample jars at the laboratory thus minimizing loss of semi-volatile PAHs. In addition, the PAH concentrations in confirmation samples analyzed within the holding time were similar to concentrations in samples prepared out of the holding time, indicating that the out-of-holding-time analytical results were not significantly biased.

- **Sample P-TP-23-2** contained 280 mg/Kg of primarily lube oil range TPH as well as low concentrations of PAHs and volatile organic compounds. The NWEPH/NWVPH sample analyses, however, did not detect any aliphatic and aromatic TPH across the entire TPH range, suggesting sample non-heterogeneity or laboratory QC issues. OnSite Environmental, not being Ecology certified for NWEPH analysis, split this sample and couriered the splits to ALS Environmental in Everett and to Analytical Resources, Inc. in Tukwila where the analyses were performed. The sample splitting likely impacted sample integrity resulting in the reported low EPH and VPH concentrations.

- **Samples P-TP-5-3, P-TP-22-3, P-TP-23-2, P-TP-23-4, P-TP-24-4, P-TP-25-4, and P-TP-25-6.** One of the OnSite Environmental's mass spectrometer's automatically injected internal standards for the volatile organics compounds (Method 8260B) analysis did not pass due to matrix effects. Each sample was re-run with similar results; all volatile organic compound (VOC) gas chromatography results from bromobenzene onward, including PQLs, should be considered estimates for these samples. However, all volatile organic COPCs for the interim action cleanup (e.g., BTEX and MTBE) eluted before bromobenzene from the gas chromatography column; therefore, the reported analytical results for volatile organic COPCs were accurate for these samples.

- **Samples P-TP-22-3, P-TP-23-2, P-TP-23-4, P-TP-24-4, P-TP-25-4, P-TP-25-6, P-TP-26-5, and P-TP-27-3.** Due to the high concentration of mercury in the lab's QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. However, the spike blank recovery was 96 percent. This QC issue arose because the QC sample for the batch had a high mercury concentration; the QC sample was from the site of another client of OnSite Environmental. For all other metals analyses the MS/MSD percent recoveries were within control limits for these samples as also were the method blank and lab duplicate QC checks. Consequently, HWA's opinion is that the mercury concentrations reported for these samples are accurate.

- **Samples P-PEX-16-10, P-PEX-17-7, P-PEX-18-9.** For the Method 6010B analysis (metals) the lab's duplicate QC sample RPD for lead was outside control limits due to high result variability when the analyte concentrations were less than five times the PQL. Poor duplicate RPDs for any analytes at low concentrations (i.e., near the PQL) are not uncommon, and are not considered a major QC issue. The duplicate QC sample for this batch was from another of OnSite Environemental's client's site, and had a very low lead concentration. Bothell samples in this batch P-PEX-16-10, P-PEX-17-7, P-PEX-18-9 were not confirmation samples. These three soil samples had elevated lead concentrations, and the areas represented by the samples were subsequently excavated. Consequently, this QC issue did not compromise the analytical results of other left-in-place confirmation samples.

- **Samples P-TP-1-3, P-TP-2-2, P-TP-3-3, P-TP-4-3, P-TP-18-2, P-TP-18-7, P-PEX-10-3, P-PEX-12-3, and P-PEX-15-3.** Hydrocarbons in the lube oil range impacted the diesel range result (an N Flag). This QC issue arose due to diesel and fuel oil's overlapping hydrocarbon ranges, and results in the reported concentration of the less dominant product being slightly higher than may actually be the case. Of these 9 samples, only P-PEX-10-3 and P-PEX-12-3 were confirmation samples of the excavation sidewall in an area having known high TPH concentrations and left in place along SR 522 to maintain road and utility integrity. The areas represented by the other 7 samples were subsequently excavated. Consequently, this QC issue did not compromise the analytical results of other left-in-place confirmation samples.

- **Sample P-TP-17-2.** The laboratory misread the chain of custody form and reported this as sample P-TP-12-2. This misunderstanding caused no confusion with other samples because HWA did not collect a sample at 2 feet below grade in test pit 12. This sample is correctly listed as P-TP-17-2 in the text, tables, and figures of the interim action cleanup report and Table C-1 of this appendix.

- **Samples P-PEX-19-7, P-PEX-20-8, P-PEX-21-11, P-PEX-22-10, and P-PEX-23-5.** Samples for halogenated volatile organic compound analysis (HVOCs by Method 8260B) were not collected in Method 5035 40-milliliter VOA vials containing a stir bar per the Method 8260B specification. The lab extracted the sample from the associated 4-ounce sample jar and analyzed. All HVOC compounds in these 5 samples were present in concentrations less than the lab's PQLs – the same results as for the 9 other soil samples analyzed for HVOCs during the interim action cleanup. Therefore, it is HWA's opinion that the lab having extracted the sample from the 4-ounce sample jar did not compromise confirmation of site cleanup.

Evaluation of Field Duplicate Sample Results

Field duplicate samples were collected at an approximate frequency of one duplicate per 16.5 soil samples – a frequency slightly more than the ratio of one duplicate per 20 samples specified in the *Compliance Monitoring Quality Assurance Project Plan* (Parametrix, 2010). The *Compliance Monitoring Quality Assurance Project Plan* did not specify quality criteria for field duplicate samples; HWA thus used the following U.S. Army Corps of Engineers criteria (Grant, Jenkins, and Mudambi, 1996) to evaluate the field duplicate analytical results:

Analytical Result	Criteria	Conclusion
Both results less than PQL	PQLs differ by more than ±25%	Disagreement
One result greater than PQL and one result less than PQL	>5x difference >10x difference	Disagreement Major disagreement
Both results greater than PQL	RPD >30% RPD >65%	Disagreement Major disagreement

Table C-2 summarizes the analytical results of the field duplicate samples. As can be seen, field duplicate sample analytical results were generally within the quality criteria listed above except for duplicates P-PEX-19-7 and P-PEX-20-8 which had major disagreement in the oil, lead, and cPAH results and disagreement in the total naphthalenes results probably because the samples were collected in a wood waste disposal area having a very heterogeneous distribution of contaminants. The cadmium results for duplicate samples P-PEX-6-3 and P-PEX-Dup disagreed, but other results were within the quality criteria. HWA attributes field duplicate variability to uneven distribution of COPCs over short distances, but as Table C-2 demonstrates, field duplicate analytical results were generally within the quality criteria.

Project Documentation and Data Management

Field personnel used bound waterproof field notebooks to record significant events and observations during the interim action cleanup. Entries were made in waterproof ink or pencil, signed, and dated. Field personnel also completed daily field reports and forwarded copies of the field report to City of Bothell representatives. All field logs, figures, and records are retained in project files at HWA's office.

Digital photographs taken of field activities and significant events are stored on HWA's computer system with the following information noted:

- Date, time, and location of photograph taken
- Description of photograph taken
- Reasons photograph was taken
- Viewing direction

Original laboratory certificates containing analytical results and laboratory QC data are documented in Appendix B of this report. An electronic copy of each laboratory certificate is stored on HWA's computer network server as PDF files in the project folder. In addition, OnSite Environmental's Electronic Data Deliverables (EDD) packages for all analytical results are stored on HWA's computer network server as

Microsoft Excel spreadsheets in the project folder. HWA routinely backs up its network servers.

Summary

- With the two exceptions noted above, field QC procedures were followed. The exceptions are not thought to have compromised data confirming site cleanup.

- The voluminous field and laboratory data generated during the interim action cleanup are technically complete, accessible, and efficiently handled.

- Except for the 18 PAH analyses noted above, all samples collected during the interim action cleanup were analyzed within holding times. Appropriate standard analytical methods were used. The few quality control issues noted above did not compromise the analytical accuracy or precision of the data.

- All reported data should be considered valid as qualified and acceptable for further use.

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Table C-1
Analytical Quality Control Summary

Sample ID	Matrix	OnSite Environmental Lab ID	Sample Date	On COC Form?	Requested Analyses[1]		Lab Prepared Sample Within Holding Time	Surrogate Recovery Within Control Limits	Method Blank Within Control Limits	Lab Duplicate Within Control Limits	Matrix Spike / Matrix Spike Duplicate Within Control Limits	Spiked Blank / Spiked Blank Duplicate Within Control Limits	Notes
P-TP-1-3	Soil	1008-195-01	8/25/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals PAHs NWVPH/NWEPH		√	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result VPH/EPH analyses performed by Analytical Resources Inc. and ALS Environmental labs on sample splits prepared by OnSite Environmental Inc.
P-TP-1-6	Soil	1008-195-02	8/25/10	√	NWTPH-Dx RCRA 8 Metals		√	√	√	√	√	√	
P-TP-2-2	Soil	1008-195-03	8/25/10	√	NWTPH-Dx		√	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result
P-TP-2-6	Soil	1008-195-04	8/25/10	√	NWTPH-Dx PAHs		See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-TP-3-3	Soil	1008-195-05	8/25/10	√	NWTPH-Dx		√	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result
P-TP-3-7	Soil	1008-195-06	8/25/10	√	NWTPH-Dx		√	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-TP-4-3	Soil	1008-195-07	8/25/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals PAHs NWVPH/NWEPH		√	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result VPH/EPH analyses were performed by Analytical Resources Inc. and ALS Environmental labs on sample splits prepared by OnSite Environmental Inc.
P-TP-4-6	Soil	1008-195-08	8/25/10	√	NWTPH-Dx RCRA 8 Metals		√	√	√	√	√	√	
P-TP-5-1	Soil	1008-195-09	8/25/10	√	NWTPH-Gx NWTPH-Dx VOCs	1	√	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample Z Flag for NWTPH-Gx analysis - The sample chromatogram is similar to mineral spirits
P-TP-5-3	Soil	1008-195-10	8/25/10	√	NWTPH-Gx NWTPH-Dx VOCs PAHs	1	See Notes	√	√	√	See Notes	√	One of the lab's internal standards for the 8260B analysis did not pass due to matrix effects. The sample was re-run with similar results; all VOC results from Bromobenzene onward, including PQLs, should be considered estimates Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-TP-6-1	Soil	1008-195-11	8/25/10	√	NWTPH-Gx NWTPH-Dx VOCs	1	√	√	√	√	√	√	
P-TP-7-2	Soil	1008-195-12	8/25/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals		√	√	√	√	√	√	
P-TP-7-5	Soil	1008-195-13	8/25/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals		√	√	√	√	√	√	
P-TP-8-3	Soil	1008-195-14	8/25/10	√	NWTPH-Dx RCRA 8 Metals		√	√	√	√	√	√	
P-TP-8-6	Soil	1008-195-15	8/25/10	√	NWTPH-Dx RCRA 8 Metals		√	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-TP-9-5	Soil	1008-217-01	8/26/10	√	NWTPH-Dx RCRA 8 Metals PAHs		See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-TP-9-8	Soil	1008-217-02	8/26/10	√									Sample put on hold at HWA GeoSciences' request
P-TP-10-6	Soil	1008-217-03	8/26/10	√	NWTPH-Dx RCRA 8 Metals PAHs		See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-TP-11-5	Soil	1008-217-04	8/26/10	√	NWTPH-Dx RCRA 8 Metals PAHs		See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-TP-11-7	Soil	1008-217-05	8/26/10	√									Sample put on hold at HWA GeoSciences' request
P-TP-12-4	Soil	1008-217-06	8/26/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals		√	√	√	√	√	√	
P-TP-12-6	Soil	1008-217-07	8/26/10	√	NWTPH-Dx RCRA 8 Metals		√	√	√	√	√	√	
P-TP-13-1	Soil	1008-217-08	8/26/10	√									Sample put on hold at HWA GeoSciences' request
P-TP-13-3	Soil	1008-217-09	8/26/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals PAHs NWVPH/NWEPH		See Notes	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met VPH/EPH analyses were performed by Analytical Resources Inc. and ALS Environmental labs on sample splits prepared by OnSite Environmental Inc.
P-TP-13-7	Soil	1008-217-10	8/26/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals PAHs		See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-TP-14-1	Soil	1008-217-11	8/26/10	√	RCRA 8 Metals		√	√	√	√	√	√	
P-TP-15-1	Soil	1008-217-12	8/26/10	√	RCRA 8 Metals		√	√	√	√	√	√	
P-TP-16-1	Soil	1008-217-13	8/26/10	√	RCRA 8 Metals		√	√	√	√	√	√	

Table C-1
Analytical Quality Control Summary

Sample ID	Matrix	OnSite Environmental Lab ID	Sample Date	On COC Form?	Requested Analyses[1]		Lab Prepared Sample Within Holding Time	Surrogate Recovery Within Control Limits	Method Blank Within Control Limits	Lab Duplicate Within Control Limits	Matrix Spike / Matrix Spike Duplicate Within Control Limits	Spiked Blank / Spiked Blank Duplicate Within Control Limits	Notes
P-TP-17-2	Soil	1008-217-14	8/26/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals		√	√	√	√	√	√	Lab misread COC form and reported sample as P-TP-12-2
P-TP-17-7	Soil	1008-217-15	8/26/10	√	NWTPH-Dx		√	√	√	√	√	√	
P-TP-18-2	Soil	1008-217-16	8/26/10	√	NWTPH-Dx PAHs NWVPH/NWEPH		See Notes	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met VPH/EPH analyses were performed by Analytical Resources Inc. and ALS Environmental labs on sample splits prepared by OnSite Environmental Inc.
P-TP-18-7	Soil	1008-217-17	8/26/10	√	NWTPH-Dx RCRA 8 Metals		√	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result
P-TP-19-3	Soil	1008-217-18	8/26/10	√	NWTPH-Dx		√	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-TP-19-7	Soil	1008-217-19	8/26/10	√	NWTPH-Dx RCRA 8 Metals		√	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-TP-20-4	Soil	1008-217-20	8/26/10	√	NWTPH-Dx PAHs		See Notes	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-TP-20-6	Soil	1008-217-21	8/26/10	√									Sample put on hold at HWA GeoSciences' request
P-TP-21-3	Soil	1008-217-22	8/26/10	√	NWTPH-Dx RCRA 8 Metals		√	√	√	√	√	√	
P-TP-21-7	Soil	1008-217-23	8/26/10	√									Sample put on hold at HWA GeoSciences' request
P-TP-22-3	Soil	1008-221-01	8/27/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals VOCs	1	√	√	√	√	See Notes	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses th MS/MSD recoveries were within control limits One of the lab's internal standards for the 8260B (VOCs) analysis did not pass due to matrix effects; the sample was re-run with similar results. All VOC results from Bromobenzene onward, including PQLs, should be considered estimates
P-TP-23-2	Soil	1008-221-02	8/27/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals VOCs PAHs NWVPH/NWEPH	1	See Notes	√	√	√	See Notes	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses th MS/MSD recoveries were within control limits One of the lab's internal standards for the 8260B (VOCs) analysis did not pass due to matrix effects; the sample was re-run with similar results. All VOC results from Bromobenzene onward, including PQLs, should be considered estimates VPH/EPH analyses were performed by Analytical Resources Inc. and ALS Environmental labs on sample splits prepared by OnSite Environmental Inc.
P-TP-23-4	Soil	1008-221-03	8/27/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals VOCs	1	√	√	√	√	See Notes	√	Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses th MS/MSD recoveries were within control limits One of the lab's internal standards for the 8260B (VOCs) analysis did not pass due to matrix effects; the sample was re-run with similar results. All VOC results from Bromobenzene onward, including PQLs, should be considered estimates
P-TP-24-4	Soil	1008-221-04	8/27/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals PAHs VOCs	1	See Notes	√	√	√	See Notes	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses th MS/MSD recoveries were within control limits One of the lab's internal standards for the 8260B (VOCs) analysis did not pass due to matrix effects; the sample was re-run with similar results. All VOC results from Bromobenzene onward, including PQLs, should be considered estimates

Table C-1
Analytical Quality Control Summary

Sample ID	Matrix	OnSite Environmental Lab ID	Sample Date	On COC Form?	Requested Analyses[1]		Lab Prepared Sample Within Holding Time	Surrogate Recovery Within Control Limits	Method Blank Within Control Limits	Lab Duplicate Within Control Limits	Matrix Spike / Matrix Spike Duplicate Within Control Limits	Spiked Blank / Spiked Blank Duplicate Within Control Limits	Notes
P-TP-25-4	Soil	1008-221-05	8/27/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals PAHs VOCs	1	See Notes	√	√	√	See Notes	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses th MS/MSD recoveries were within control limits One of the lab's internal standards for the 8260B (VOCs) analysis did not pass due to matrix effects; the sample was re-run with similar results. All VOC results from Bromobenzene onward, including PQLs, should be considered estimates
P-TP-25-6	Soil	1008-221-06	8/27/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals VOCs	1	√	√	√	√	See Notes	√	Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses th MS/MSD recoveries were within control limits One of the lab's internal standards for the 8260B (VOCs) analysis did not pass due to matrix effects; the sample was re-run with similar results. All VOC results from Bromobenzene onward, including PQLs, should be considered estimates
P-TP-26-5	Soil	1008-221-07	8/27/10	√	NWTPH-Dx RCRA 8 Metals		√	√	√	√	See Notes	√	Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses th MS/MSD recoveries were within control limits
P-TP-26-7	Soil	1008-221-08	8/27/10	√									Sample put on hold at HWA GeoSciences' request
P-TP-27-3	Soil	1008-221-09	8/27/10	√	NWTPH-Dx RCRA 8 Metals		√	√	√	√	See Notes	√	Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses th MS/MSD recoveries were within control limits
P-PEX-1-7	Soil	1008-240-01	8/31/10	√	NWTPH-Dx RCRA 8 Metals PAHs		See Notes	√	√	See Notes	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample K Flag for 6010B analysis (metals) - The lab duplicate relative % difference (RPD) for Barium was outside control limits due to sample inhomegeniety; the sample was later re-extracted and re-analyzed with similar results. The RPDs for all other metals in the lab QC duplicate sample were within control limits
P-PEX-2-6	Soil	1008-240-02	8/31/10	√	NWTPH-Dx RCRA 8 Metals PAHs		See Notes	√	√	See Notes	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met K Flag for 6010B analysis (metals) - The lab duplicate relative % difference (RPD) for Barium was outside control limits due to sample inhomegeniety; the sample was later re-extracted and re-analyzed with similar results. The RPDs for all other metals in the lab QC duplicate sample were within control limits
P-SP-1	Soil	1009-010-01	9/1/10	√	TCLP Metals		√		√	√	√		
P-SP-2	Soil	1009-010-02	9/1/10	√	TCLP Metals		√		√	√	√		
P-SP-3	Soil	1009-010-03	9/1/10	√	TCLP Metals		√		√	√	√		
P-PEX-3-4	Soil	1009-010-04	9/1/10	√	NWTPH-Dx RCRA 8 Metals PAHs		See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-PEX-4-6	Soil	1009-010-05	9/1/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals PAHs		See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-PEX-5-3	Soil	1009-016-01	9/1/10	√	NWTPH-Dx RCRA 8 Metals PAHs		See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-PEX-6-3	Soil	1009-016-02	9/1/10	√	NWTPH-Gx/BTEX NWTPH-Dx RCRA 8 Metals PAHs		See Notes	√	√	√	√	√	Duplicate of sample P-PEX-Dup Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-PEX-Dup	Soil	1009-016-03	9/1/10	√	NWTPH-Gx/BTEX NWTPH-Dx RCRA 8 Metals		√	√	√	√	√	√	Duplicate of P-PEX-6-3 U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-PEX-7-3	Soil	1009-039-01	9/3/10	√	Arsenic PAHs		√	√	√	√	√	√	
P-PEX-9-3	Soil	1009-039-02	9/3/10	√	NWTPH-Dx		√	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-PEX-10-3	Soil	1009-039-03	9/3/10	√	NWTPH-Dx		√	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result
P-PEX-11-3	Soil	1009-039-04	9/3/10	√	NWTPH-Dx PAHs		√	√	√	√	√	√	
P-PEX-12-3	Soil	1009-039-05	9/3/10	√	NWTPH-Dx		√	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result
P-PEX-8-8	Soil	1009-039-06	9/3/10	√	Arsenic PAHs		√	√	√	√	√	√	

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P-PEX-13-7	Soil	1009-039-07	9/3/10	√	Arsenic		√	√	√	√	√	√	
P-PEX-14-3	Soil	1009-039-08	9/3/10	√	NWTPH-Dx Arsenic PAHs		√	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-PEX-Dup-090310	Soil	1009-039-09	9/3/10	√	NWTPH-Dx		√	√	√	√	√	√	Duplicate of P-PEX-15-3 U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-PEX-15-3	Soil	1009-039-10	9/3/10	√	Arsenic PAHs		√	√	√	√	√	√	Duplicate of P-PEX-Dup-090310 N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result
P-PEX-16-10	Soil	1009-075-01	9/8/10	√	NWTPH-Dx RCRA 8 Metals PAHs		√	√	√	See Notes	See Notes	√	C Flag for 6010B analysis (metals) - The lab duplicate relative % difference (RPD) for lead was outside control limits due to high result variability when analyte concentrations are within five times the quantitation limits L Flag for 8270D/SIM (PAHs) analysis - The sample MS/MSD pair had several recoveries fall outside of control limits believed to be caused by sample matrix. The SB/SBD pair extracted with this batch had all parameters in control, no further lab action was deemed necessary
P-PEX-17-7	Soil	1009-075-02	9/8/10	√	NWTPH-Dx RCRA 8 Metals PAHs		√	√	√	See Notes	See Notes	√	C Flag for 6010B analysis (metals) - The lab duplicate relative % difference (RPD) for lead was outside control limits due to high result variability when analyte concentrations are within five times the quantitation limits L Flag for 8270D/SIM (PAHs) analysis - The sample MS/MSD pair had several recoveries fall outside of control limits believed to be caused by sample matrix. The SB/SBD pair extracted with this batch had all parameters in control, no further lab action was deemed necessary
P-PEX-18-9	Soil	1009-075-03	9/8/10	√	NWTPH-Dx RCRA 8 Metals PAHs		√	√	√	See Notes	See Notes	√	C Flag for 6010B analysis (metals) - The lab duplicate relative % difference (RPD) for lead was outside control limits due to high result variability when analyte concentrations are within five times the quantitation limits L Flag for 8270D/SIM (PAHs) analysis - The sample MS/MSD pair had several recoveries fall outside of control limits believed to be caused by sample matrix. The SB/SBD pair extracted with this batch had all parameters in control, no further lab action was deemed necessary
P-PEX-19-7	Soil	1009-108-01	9/13/10	√	NWTPH-Dx HVOCs RCRA 8 Metals PAHs		√	√	√	√	√	√	Duplicate of P-PEX-20-8 Sample for 8260B analysis (HVOCs) was not collected in a Method 5035 VOA vial containing a sti bar; lab extracted sample from 4-ounce sample jar and analyzed
P-PEX-20-8	Soil	1009-108-02	9/13/10	√	NWTPH-Dx HVOCs RCRA 8 Metals PAHs		√	√	√	√	√	√	Duplicate of P-PEX-19-7 Sample for 8260B analysis (HVOCs) was not collected in a Method 5035 VOA vial containing a sti bar; lab extracted sample from 4-ounce sample jar and analyzed
P-PEX-21-11	Soil	1009-108-03	9/13/10	√	NWTPH-Dx HVOCs RCRA 8 Metals PAHs		√	√	√	√	√	√	Duplicate of P-PEX-22-10 Sample for 8260B analysis (HVOCs) was not collected in a Method 5035 VOA vial containing a sti bar; lab extracted sample from 4-ounce sample jar and analyzed
P-PEX-22-10	Soil	1009-108-04	9/13/10	√	NWTPH-Dx HVOCs RCRA 8 Metals PAHs		√	√	√	√	√	√	Duplicate of P-PEX-21-11 Sample for 8260B analysis (HVOCs) was not collected in a Method 5035 VOA vial containing a sti bar; lab extracted sample from 4-ounce sample jar and analyzed
P-PEX-23-5	Soil	1009-108-05	9/13/10	√	NWTPH-Dx HVOCs RCRA 8 Metals PAHs		√	√	√	√	√	√	Sample for 8260B analysis (HVOCs) was not collected in a Method 5035 VOA vial containing a sti bar; lab extracted sample from 4-ounce sample jar and analyzed
CONC-1,2,3,4 Comp.	Concrete	1009-120-01,02,03,04 Comp.	9/14/10	√	NWTPH-Dx RCRA 8 Metals PAHs		√	√	√	√	√	√	Lab-composited sample of 4 discrete concrete grab samples for waste characterization

Footnotes:
√ - Indicates that QA/QC criteria were met for all analyses performed on sample
Blank cell (except for notes) indicates that the QC check was not applicable for the specified analyses
1 - Analyses Performed:
NWTPH-Gx - Gasoline range petroleum hydrocarbons using Ecology Method NWTPH-Gx
NWTPH-Dx - Diesel and oil range petroleum hydrocarbons using Ecology Method NWTPH-Dx
BTEX - Benzene, toluene, ethylbenzene, and xylenes using EPA Method 8021
RCRA 8 Metals - Arsenic, barium, cadmium, chromium, lead, selenium, silver using EPA Method 6010B and 6020; and mercury using EPA Method 7471A
VOCs - Volatile organic hydrocarbons by EPA Method 8260B
HVOCs - Halogenated volatile organic hydrocarbons by EPA Method 8260B
PAHs - Polynuclear aromatic hydrocarbons by EPA Method 8270D/SIM
NWVPH/NWEPH - Ecology methods VPH and EPH for volatile and extractable petroleum hydrocarbon fractions
TCLP Metals - Toxicity Leaching Procedure using EPA Methods 1311, 6010B, and 7470A for RCRA 8 metals

Table C-2
Evaluation of Field Duplicate Sample Results

Sample Location	Diesel	Oil	Gasoline	Arsenic	Barium	Cadmium	Chromium^{+3}	Lead	Mercury	Selenium	Silver	Total Naphthalenes	cPAHs TEC	Notes
P-PEX-6-3	<250	1600	7.4	27	64	0.68	35	120	<0.31	<12	<0.62	0.000	0.001	West sidewall
P-PEX-Dup	<250	1500	7.2	28	63	1.0	41	140	<0.29	<12	<0.58			Duplicate of P-PEX-6-3
Ratio of Non-detects[1]	1.0								1.1	1.0	1.1			
RPDs[2] for Detects		6.5%	2.7%	-3.6%	1.6%	-38.1%	-15.8%	-15.4%						
P-PEX-19-7	<28	110		21	62	<0.57	35	46	<0.28	<11	<0.57	0.092	0.030	Sidewall sample on west side of wood waste area
P-PEX-20-8	110	320		25	62	<0.57	42	180	<0.28	<11	<0.57	0.054	0.060	Duplicate of P-PEX-19-7
Ratio of Non-detects	3.9					1.0			1.0	1.0	1.0			
RPDs for Detects		-97.7%		-17.4%	0.0%		-18.2%	-118.6%				52.1%	-66.7%	
P-PEX-21-11	<31	<62		<12	32	<0.62	20	<6.2	<0.31	<12	<0.62	0.000	0.010	Bottom sample in wood waste area
P-PEX-22-10	<31	<62		<12	34	<0.62	24	<6.2	<0.31	<12	<0.62	0.000	0.010	Duplicate of P-PEX-21-11
Ratio of Non-detects	1.0	1.0		1.0		1.0		1.0	1.0	1.0	1.0			
RPDs for Detects					-6.1%		-18.2%					0.0%	0.0%	
P-PEX-15-3	210	2700		21										
P-PEX-Dup-090310	<201	2100												Duplicate of P-PEX-15-3
Ratio of Non-detects	1.0													
RPDs for Detects		25.0%												

Notes:

1 - Ratio of one PQL to another PQL or the ratio of a PQL to a reported analytical concentration

2 - RPD = Relative Percent Difference = 100*(X_1-X_2) / ((X_1+X_2)/2)

Where: X_1 is the concentration in the first sample and X_2 is the concentration in the duplicate sample.

🟨 Indicates disagreement in analytical results for duplicate samples

🟥 Indicates major disagreement in analytical results for duplicate samples

APPENDIX D

PHOTOGRAPHS OF SOIL CLEANUP ACTION

Photo 1 – Excavation limit looking southwest. Note peat layer on excavation floor. Select Borrow fill is being placed into excavation

Photo 2 – Looking to northwest. Extent of excavation was limited to maintain the structural integrity of SR 522 and related sidewalk and utilities.

Photo 3 – Concrete and wood debris in north end of excavation (looking to northwest)

Photo 4 – Concrete and wood debris in north end of excavation (looking to south).

Photo 5 – Peat layer and water table exposed in northern excavation (looking north towards SR 522).

Photo 6 – Mixing ORC in an excavator bucket.

Photo 7 – Placing ORC on northern sidewall along SR 522 before backfilling excavation with Select Borrow seen in foreground.

APPENDIX E

CEMEX USA RELEASE OF LIABILITY/CERTIFICATE OF DISPOSAL

ALLIED WASTE SERVICES CERTIFICATE OF DISPOSAL

Release of Liability/Certificate of Disposal

Hos Bros Construction Inc. and their client ; are released from liability for all petroleum contaminated soil originating from:

Bothell Crossroads Phase II
P&D Parcel
Bothell WA. 98011

and transported to:

CEMEX Soil Remediation Facility
6300 Glenwood Ave.
Everett WA 98203

From 09/092010 through 10/11/2010

A total of 7083.05 tons of petroleum-contaminated soil were transported to the above facility. The material was disposed of in the following manner:

Thermal Desorption/Landfill for Reclamation

Disposal of the contaminated soil was performed in accordance with all applicable federal, state, and local laws and regulations.

Signed: Date: November 29th, 2010

Larry W. Baker

Larry W. Baker
CEMEX USA.
Operations Manager
Soil Remediation Division

ALLIED WASTE SERVICES

Certificate of Disposal

November 5, 2010

City of Bothell
9654 NE 182nd Street
Bothell, WA

Job # LW-10377

This is to certify that 56.22 tons of Non-hazardous Sand Blasting Media was shipped from jobsite South of SR 522 and SR 527 Intersection (P and D Parcel) Bothell , Washington by the City of Bothell and received by Regional Disposal Company via our Seattle Transfer Station. The waste was shipped by rail to Roosevelt Regional Landfill, 500 Roosevelt Grade Road, Roosevelt WA 98356 for final disposal. The above-described NON-DANGEROUS WASTE was managed in compliance with all Permits and Laws Regulating this Facility.

Final Disposition: **Subtitle D and WAC 173-351 MSW Landfill**

Leslie Whiteman
Signature

For Regional Disposal Company

54 S. Dawson Street
Seattle, WA 98134
206.332.7700 / FAX 206.764.1234
www.disposal.com

APPENDIX F

SITE97 STATISTICAL ANALYSIS OF ARSENIC CONCENTRATIONS IN SITE SOILS FOLLOWING INTERIM ACTION CLEANUP

Introduction

This appendix addresses attainment of the MTCA Method A cleanup level for arsenic in Bothell Paint and Decorating Site soil remaining in place following the interim action cleanup. Of the 49 confirmation samples collected during the interim action cleanup (not including the soils left under the active SR 522 roadway to be cleaned up in a future phase), all but one did not contain any COPCs above the established cleanup levels. One sidewall location in the northwestern portion of the Site represented by sample P-PEX-19 had an arsenic concentration of 21 mg/kg and its duplicate sample had an arsenic concentration of 25 mg/kg; both concentrations slightly exceeded the MTCA Method A cleanup level of 20 mg/kg.

Site-wide compliance with the MTCA cleanup level is established based on the 95 percent upper confidence limit (UCL) of the mean of all confirmation soil sample concentrations. In addition, the following criteria must also be met:

- Data must be normally or lognormally distributed
- No single value can be greater than twice the cleanup level
- No more than 10 percent of samples can exceed the cleanup level

Arsenic Concentrations in Confirmation Samples

The following table lists the reported arsenic concentrations in confirmation samples.

Arsenic (mg/kg)	Sample location
<8.5	P-PEX-1-7
<8.6	P-PEX-2-6
<11	P-PEX-14-3
<11	P-PEX-4-6
<11	P-PEX-5-3
<11	P-TP-10-6
<11	P-TP-11-5
<11	P-TP-21-3
<11	P-TP-26-5
<11	P-TP-9-5
<12	P-PEX-21-11
<12	P-PEX-23-5
<12	P-PEX-7-3
<12	P-PEX-8-8
<12	P-TP-13-7
<12	P-TP-24-4
<12	P-TP-27-4
<13	P-TP-22-3
14	P-PEX-3-4
<16	P-TP-1-6
16	P-TP-19-7
20	P-TP-25-6
21	P-PEX-19-7
25	P-PEX-20-8 (Duplicate of P-PEX-19-7)

Inspection of these data reveals that the mean arsenic concentration in the confirmation samples must be less than 20 mg/kg because only one sample exceeded 20 mg/kg. This sample and a duplicate were taken at the same location (P-PEX-19-7 and P-PEX-20-8). Of these 23 soil samples, 19 analytical results were below the laboratory's practical quantitation limit (PQL). Per Ecology (1992), these 19 data are termed "censored," meaning that the true concentration is unknown but is some value below the PQL.

Calculating the 95 Percent Upper Confidence Limit of the Mean Arsenic Concentration

Due to the large number of non-detect results, the sample population distribution (e.g., normal or lognormal) could not reliably be determined in order to calculate the UCL statistic. Ecology guidance includes the default assumption of a lognormal distribution for soil and groundwater sampling data. Environmental data (e.g., of contaminated samples across a site) are typically lognormally distributed, as the values range from a theoretical zero (unimpacted) to some higher value (contaminated).

HWA employed the statistical technique of proxy or substitution, assigning proxy values to the non-detect data of either 1) values spaced evenly from zero to the PQL, or 2) values randomly distributed from zero to the PQL (Wendelberger and Campbell, 1994). HWA generated random numbers between 0.0 and 16 mg/kg (the maximum PQL for the data set) using Excel's Data Analysis Tool. For the non-censored data, we conservatively used the higher P-PEX-20-8 concentration of 25 mg/kg instead of the 21 mg/kg concentration of its duplicate sample P-PEX-19-7. HWA then calculated the UCL of the mean using Ecology's Microsoft Excel-based workbook tool, SITE97.XLT (Ecology, 1997). Both methods yielded similar results. Following are the SITE97.XLT output reports.

95% CONFIDENCE LIMIT ARSENIC CONCENTRATION
IN BOTHELL PAINT & DECORATING SITE CONFIRMATION SAMPLES
WITH EVENLY SPACED NUMBERS SUBSTITUTING FOR NON-DETECT DATA

DATA	
Arsenic Concentration (mg/Kg)	Sample ID
0.00	P-PEX-14-3
0.84	P-PEX-4-6
1.68	P-PEX-5-3
2.53	P-PEX-1-7
3.37	P-TP-22-3
4.21	P-TP-9-5
5.05	P-PEX-8-8
5.89	P-TP-27-4
6.74	P-PEX-23-5
7.58	P-PEX-7-3
8.42	P-TP-11-5
9.26	P-PEX-21-11
10.11	P-TP-26-5
10.95	P-TP-13-7
11.79	P-TP-1-6
12.63	P-TP-21-3
13.47	P-TP-10-6
14.00	P-PEX-3-4
14.32	P-TP-24-4
15.16	P-PEX-2-6
16.00	P-TP-19-7
20.00	P-TP-25-6
25.00	P-PEX-20-8

Number of samples		Uncensored values	
Uncensored	23	Mean	9.52
Censored	0	Lognormal mean	324.76
Detection limit or PQL	16	Std. devn.	6.35079769
Method detection limit	1	Median	9.26315789
TOTAL	23	Min.	0.00001
		Max.	25
Lognormal distribution?		Normal distribution?	
r-squared is:	0.426	r-squared is:	0.971

Recommendations:
Use normal distribution.

UCL (based on t-statistic) is 11.7954473827773

**95% CONFIDENCE LIMIT ARSENIC CONCENTRATION
IN BOTHELL PAINT & DECORATING SITE CONFIRMATION SAMPLES
WITH RANDOM NUMBERS SUBSTITUTING FOR NON-DETECT DATA**

DATA	
Arsenic Concentration (mg/Kg)	Sample ID
0.94	P-PEX-8-8
1.68	P-TP-21-3
2.42	P-TP-1-6
2.93	P-TP-9-5
3.15	P-PEX-21-11
3.32	P-PEX-2-6
3.53	P-TP-22-3
4.27	P-TP-24-4
4.74	P-PEX-5-3
4.91	P-PEX-7-3
5.08	P-TP-26-5
5.46	P-PEX-4-6
5.93	P-TP-27-4
6.92	P-PEX-23-5
8.21	P-TP-10-6
8.92	P-PEX-14-3
11.12	P-TP-13-7
13.59	P-TP-11-5
14.00	P-PEX-3-4
14.01	P-PEX-1-7
16.00	P-TP-19-7
20.00	P-TP-25-6
25.00	P-PEX-20-8

Number of samples		Uncensored values	
Uncensored	23	Mean	8.09
Censored	0	Lognormal mean	8.43
Detection limit or PQL	16	Std. devn.	6.31459332
Method detection limit	1	Median	5.45524461
TOTAL	23	Min.	0.94143498
		Max.	25
Lognormal distribution?		Normal distribution?	
r-squared is:	0.983	r-squared is:	0.873

Recommendations:
Use lognormal distribution.

UCL (Land's method) is 12.6316341778797

Summary

Using Ecology's SITE97.XLT workbook and the statistical technique of substitution, HWA calculated that the mean arsenic concentration at a 95 percent UCL is between 11.8 and 12.6 mg/kg – less than the MTCA Method A soil cleanup level of 20 mg/kg. In addition, other cleanup criteria were met:

- The data are lognormally distributed
- No single value is greater than twice the cleanup level
- Less than 10 percent of samples exceeded the cleanup level.

References

Washington State Department of Ecology, 1992, *Statistical Guidance for Ecology Site Managers*, Publication 92-54, August, 1992.

Washington Department of Ecology, 1997, *SITE97.XLT Workbook for Calculating Compliance Statistics* (www.ecy.wa.gov/programs/tcp/tools/toolmain.html).

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APPENDIX I

INTERIM ACTION CLEANUP REPORT, FORMER BOTHELL PAINT AND DECORATING SITE, BOTHELL, WASHINGTON (HWa, 2014A)

(ON CD)

INTERIM ACTION CLEANUP REPORT
FORMER BOTHELL PAINT AND DECORATING SITE
BOTHELL, WASHINGTON

Prepared for
City of Bothell

March 26, 2014

HWA GEOSCIENCES INC.

- Geotechnical Engineering
- Hydrogeology
- Geoenvironmental Services
- Inspection & Testing

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES (FOLLOWING TEXT)

APPENDICES

INTERIM ACTION CLEANUP REPORT
FORMER BOTHELL PAINT AND DECORATING SITE
BOTHELL, WASHINGTON

1.0 INTRODUCTION

This report documents the results of the interim action soil cleanup conducted in 2010 and 2013 for the City of Bothell (City) at the former Bothell Paint and Decorating Site (Site) (Figure 1). The City owns the former Bothell Paint and Decorating property, most of which is now occupied by the realigned State Route (SR) 522. Figure 2 depicts the new alignment of SR 522 through the Bothell Paint and Decorating property and adjacent properties.

The interim action cleanup reported herein was completed in two phases; the first one in 2010,before the roadway realignment; and the second one in 2013, after the roadway realignment. This phasing was necessary in order to effectively manage access to contaminated soils beneath the old and the new roadways, with minimal impacts to traffic.

The interim action cleanup was performed in compliance with the terms and conditions of Amendment No. 1 to Agreed Order Number DE 6296 as amended on June 9, 2010 between the Washington Department of Ecology (Ecology) and the City. Tasks performed to date to fulfill the Agreed Order include:

1. Preparation and submittal to Ecology of the *Remedial Investigation and Feasibility Study Work Plan* (HWA, 2009a)
2. Remedial investigation (RI) activities in 2009
3. Initiation of a feasibility study (FS) in 2009
4. Preparation and submittal to Ecology of the *Bothell Paint and Decorating Remedial Investigation/Feasibility Study,* which has not been finalized or approved pending completion of interim actions and ground water monitoring (Parametrix, 2009)
5. Preparation and submittal to Ecology of an *Interim Action Work Plan* (Parametrix, 2010)
6. Completion of the interim action soil cleanup, described herein

Remaining tasks to fulfill terms and conditions of the Agreed Order include preparation of a final RI/FS report and draft cleanup action plan (dCAP) that address contaminated soil or ground water remaining at the Site following remedial actions and confirmation ground water monitoring.

SITE LOCATION AND DESCRIPTION

The City owns the 0.79-acre property located at 18004 and 18005 Bothell Way NE (former King County Tax Parcel Nos. 945720-0081 and 945720-0072). Ecology's Facility Site ID is # 93536765. The latitude of the Site is 47.75885 and the longitude is -122.21012.

The City acquired two parcels comprising the Site from Victory Development LLC, and from Leonard P. Giannola in 2008 (Ecology, 2010). Recent prior property use was mixed commercial and retail. The Site is being redeveloped as part of the City's overall Downtown Revitalization Plan and now mostly accommodates the new SR 522 roadway.

1.1 AUTHORIZATION / SCOPE OF WORK

HWA GeoSciences' (HWA) work for this project was authorized under an On-Call Hazardous Materials Services Consultant Agreement with the City dated April 2010. HWA's scope of work for this portion of the project included:

- Perform environmental assessments, prepare technical documentation and develop remedial designs for cleanup of contaminated downtown properties.
- Provide permitting support
- Provide contract bid services
- Assist in coordinating with State and Federal environmental regulatory agencies.
- Conduct cleanup monitoring, confirmation sampling, backfill & compaction monitoring during construction
- Prepare Interim Action Soil Cleanup Report. This report incorporates by reference, the "Documentation of Interim Action at Former Bothell Paint & Decorating Site"(HWA, January 14, 2011) which focused on the first phase of the cleanup

1.2 OBJECTIVES

The objective of the interim action soil cleanup was to reduce the threat to the environment and human health posed by petroleum and metals impacted soil at the Site to the maximum extent possible consistent with the requirements of Washington's Model Toxics Control Act (MTCA) cleanup regulations (Chapter 173-340 WAC).

1.3 HISTORIC PROPERTY USE AND PREVIOUS SITE ASSESSMENTS

Details of historic property use and the several site assessments performed to date at the Site can be found in HWA (2008a, b, c, d), HWA (2009b), and Parametrix (2009). The following is a summary of those assessments.

A former tenant conducted sandblasting operations in the southern portion of the Site (Figure 3) resulting in shallow soils containing metals and petroleum hydrocarbons in concentrations exceeding MTCA cleanup levels cited in Chapter 173-340 WAC. Heavy metals in soils were from surficial deposition of sandblast grit and paint residue. Shallow petroleum soil impacts were from an air compressor blowdown pipe discharging to the ground surface. One soil sample contained cadmium exceeding Washington State Dangerous Waste requirements (Chapter 173-303 WAC) (Ecology, 2010). Ground water samples collected in this area had lead and arsenic concentrations exceeding MTCA cleanup levels (HWA, 2008c, d).

A 1,000-gallon underground storage tank (UST) was removed in the western area of the Site in 1988 (Figure 3). A hole in the UST was observed at the time of removal. Petroleum liquid (free product) was reported in the excavation on the surface of ground water. A soil sample collected from the sidewall of the excavation during tank removal contained petroleum hydrocarbons above MTCA cleanup levels (HWA, 2008a). Further environmental investigations were conducted by HWA (2008c, d) and Parametrix (2009) at the property. During those investigations, low concentrations (below MTCA cleanup levels) of volatile organic compounds were detected in ground water adjacent to the former leaking UST.

1.4 CURRENT AND PLANNED SITE USE

Recent property use was mixed commercial and retail, including a floor covering and home fixtures retailer, preserved fruit distributor, pottery distributor, welding shop, and espresso kiosk. The Site now mostly accommodates the new SR 522 roadway and related utilities and infrastructure, while remnant portions not occupied by the roadway will be redeveloped as part of the City’s overall Downtown Revitalization Plan.

2.0 ENVIRONMENTAL SETTING

2.1 PHYSICAL CONDITIONS / TOPOGRAPHY

The property and surrounding land is generally flat lying at an elevation of approximately 30 feet above mean sea level and slopes gently to the south/southeast towards the Sammamish River. A small retaining wall at the west-central portion of the site was removed, and the land filled and graded to accommodate the new roadway after the interim action soil cleanup described herein.

2.2 GEOLOGY

Site soils typically consist of silty sand fill over alluvial soil consisting of interbedded silt and peat. Interbedded alluvial sand and silt occurs below the peat. Much of the fill material is likely dredged spoils placed on the property from realignment of the Sammamish River in the 1960s (HWA, 2008d). Peat or silt beds with high organic content up to 13 feet thick are present within the alluvial soil, generally at depths greater than 7 feet below ground surface (bgs). These compressible, organic-rich beds appear to underlie much of the Site.

2.3 HYDROGEOLOGY

Ground water generally occurs between approximately 2 and 9.5 feet bgs, with confined artesian (flowing) conditions observed in one area, at the southwest portion of the site. Based on water level surveys of the area, ground water flow is to the east-southeast, toward the Sammamish River located approximately 300 feet to the southeast. The measured ground water gradient, i, ranged from 0.035 to 0.06 feet per foot. The estimated hydraulic conductivity, K, for the water-bearing zone ranged from 6.8×10^{-4} to 1.1×10^{-3} feet per minute (0.98 to 1.58 feet per day) based on slug testing (Parametrix, 2009). Assuming an effective porosity, n_e, of 0.2 for the aquifer materials at the site, ground water flow velocities in the water-bearing zone, based on the relationship $V = Ki / n_e$ are estimated to range from:

0.98 ft/d x 0.03536 / 0.2 = 0.17 feet/day = 63 feet/year to
1.58 ft/d x 0.0576 / 0.2 = 0.45 feet/day = 166 feet/year.

3.0 NATURE AND EXTENT OF CONTAMINATION

3.1 CHEMICALS OF POTENTIAL CONCERN

Based on the draft *Remedial Investigation/Feasibility Study* (Parametrix, 2009), chemicals of potential concern (COPCs) present in Site soils included arsenic, cadmium, and lead; diesel- and motor oil-range petroleum hydrocarbons; and benzene. For ground water, arsenic was the only COPCs listed in the RI/FS.

The *Interim Action Work Plan* (Parametrix, 2010) included barium, chromium, silver, and mercury as additional soil COPCs. For ground water, the *Interim Action Work Plan* included lead as an additional COPC.

Because barium, chromium, silver, or mercury were never detected in Site soil and lead was never detected in Site ground water at concentrations exceeding MTCA Method A or B cleanup levels during the RI or interim action cleanup they should be dropped as COPCs during future RI activities. Total petroleum hydrocarbons in the gasoline range, however, should be added to the soil COPC list, as it was detected in soils during the interim action cleanup. Similarly, benzene and total petroleum hydrocarbons (gasoline-, diesel-, and motor oil-range) should be added to the ground water COPC list because of their presence in Site soils.

Based on this information, soil COPCs for future site RI activities should include:

- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- Benzene
- Arsenic, cadmium, and lead

Ground water COPCs for future site RI activities should include:

- Total petroleum hydrocarbons (gasoline-, diesel-, and motor oil-range)
- Benzene
- Arsenic

3.2 EXTENT OF CONTAMINATION

Sandblasting operations in the southern portion of the Site resulted in shallow soils containing metals concentrations exceeding MTCA cleanup levels. Ground water samples collected in this area had lead and arsenic concentrations exceeding MTCA cleanup levels (HWA, 2008c, d). Discharge of compressor blowdown oil to the ground surface resulted in shallow soils containing petroleum hydrocarbons exceeding MTCA cleanup levels.

The leaking 1,000-gallon UST in the western area of the Site resulted in total petroleum hydrocarbon (TPH) concentrations above MTCA soil cleanup levels. Concentrations below MTCA cleanup levels of volatile organic compounds were detected in ground water adjacent to the former leaking UST (Ecology, 2010).

3.3 CLEANUP STANDARDS

Remediation levels proposed in the *Interim Action Work Plan* (Parametrix, 2010) and used during the cleanup included:

- MTCA Method A Soil Cleanup Levels for Unrestricted Land Use (WAC 173-340, Table 740-1).
- MTCA Method B TPH Soil Cleanup Levels for direct contact and protection of ground water

An evaluation of Method B risk-based TPH soil cleanup levels for the Site was specified in Section 3.1.1.1 of the *Compliance Monitoring Quality Assurance Project Plan* (CMQAPP) appendix of the *Interim Action Work Plan* (Parametrix, 2010). The CMQAPP called for characterization of TPH-impacted soil via analysis of petroleum hydrocarbon fractionation and other target compounds in order to evaluate whether the standard MTCA Method A soil cleanup levels were appropriate for the Site compared to MTCA Method B risk-based soil TPH cleanup levels. The results of the petroleum hydrocarbon fractionation analyses (NWVPH/NWEPH analysis) were to be input into Ecology’s MTCATPH11.1 spreadsheet model to determine TPH soil cleanup levels protective of human health via direct contact and via leaching to a source of potable ground water. HWA’s evaluation of MTCA Method B risk-based cleanup levels for TPH-impacted soil at the site is presented in Appendix A of this report. Table 1 summarizes the results of the analysis. The calculated Method B cleanup levels for diesel and lube oil range petroleum hydrocarbons at the Site range between approximately 1,000 to 1,500 milligrams per kilogram (mg/kg) depending on the mixture of hydrocarbon fractions and specific compounds, particularly carcinogenic polynuclear aromatic hydrocarbons (cPAHs). The MTCA Method A cleanup level for diesel and oil range petroleum hydrocarbons is 2,000 mg/kg. The calculated Method B soil cleanup level for gasoline range petroleum hydrocarbons at the Site is 581 mg/kg; compared to the MTCA Method A cleanup level of 100 mg/kg for soil having no benzene present and the total of ethylbenzene, toluene, and xylenes is less than one percent of the gasoline mixture. The MTCA Method cleanup level for gasoline range petroleum hydrocarbons is 30 mg/kg for all other mixtures.

The resulting soil remediation levels used (i.e., the more stringent of Method A or B) are extremely conservative, as most of the site will be covered by a five lane roadway, eliminating the direct contact pathway, and reducing ground water recharge by precipitation. These remediation levels meet all the requirements of WAC 173-340-720 through 173-340-760 and should be considered the Site cleanup levels.

3.4 REMEDIAL ACTION OBJECTIVES

The following remedial action objectives were established for the interim action cleanup (Parametrix, 2009):

- Achieve the MTCA Method A soil cleanup levels for TPH, benzene, arsenic, cadmium, and lead.
- Reduce or eliminate human exposure through direct contact (incidental soil ingestion, skin contact with soil, and inhalation of vapors) with contaminated soils that exceed protective regulatory levels.
- Reduce or eliminate risks to ecological receptors from contaminated soil.
- Use permanent solutions to the maximum extent practicable (which includes consideration of cost-effectiveness).

4.0 INTERIM ACTION SOIL CLEANUP

The interim action for contaminated soil at the Site included excavation and off-site disposal of all accessible impacted soils. The following sections describe the cleanup.

2010 interim action - The City engaged a construction contractor, Hos Brothers Construction of Woodinville, Washington to perform the interim action soil cleanup in August through October of 2010; HWA personnel monitored the cleanup activities and sampled soil to confirm successful cleanup. Prior to site cleanup, the Contractor demolished all the building slabs and parking lots and cleared and grubbed the Site in preparation for the soil cleanup and subsequent construction of the SR 522 realignment.

2013 interim action - The City engaged a construction contractor, Guy Atkinson of Renton, Washington to perform the interim action soil cleanup during the 2013/2014 construction season, as part of and during construction of the new SR522 roadway. HWA personnel monitored the cleanup activities and sampled soil to confirm successful cleanup.

4.1 PRE-CLEANUP CHARACTERIZATION

Prior to the large scale excavation activities at the Site in 2010 and 2013, HWA personnel conducted test pit characterization (i.e., “pot holing”) to 1) delineate clean overburden soils at the Site, 2) to assess the lateral and vertical extent of TPH and metals impacted soils with respect to previous investigations, and 3) to characterize excess soils excavated for utility and roadway construction for disposal.

HWA’s initial test pit characterization activities included collecting samples of TPH-impacted soil for analysis of petroleum hydrocarbon fractionation and other target compounds in order to calculate MTCA Method B risk-based soil cleanup levels for protection of human health and potable ground water. The results of the of the Method B risk analysis are presented in Appendix A and summarized in Table 1.

During the first phase of the interim action, twenty seven test pits were excavated in August 2010 using a rubber-tired backhoe operated by the Contractor. Fifteen additional test pits were excavated and sampled from March through October 2013 during the second phase of interim action. Figure 4 shows test pit locations. Test pits were excavated to a maximum depth of 8 feet bgs. HWA personnel collected a total of thirty representative soil samples at various depths within the test pits for chemical analysis. Additional samples were collected in some of the deeper test pits and were put on hold at the laboratory in the event that analysis of shallower test pit soils indicated that analysis of deeper soil was not warranted. OnSite Environmental Inc. of Redmond, Washington, an Ecology accredited laboratory, performed the soil analyses; laboratory reports are presented in Appendix B. Appendix C presents a project quality assurance audit including verification of the analytical data; the audit found that with minor exceptions, all reported data should be considered valid as qualified and acceptable for further use.

4.2 SOIL EXCAVATION

2010 interim action - The Contractor excavated contaminated soil at the Site between September 9 and October 11, 2010. HWA personnel directed the cleanup based upon prior sampling, as well as field screening information such as soil color, odor, and photoionization detector readings. When the screening information indicated clean soil, HWA collected confirmation samples for laboratory analysis to document that the soils left in place met the Site cleanup levels. Where confirmation sample results exceeded cleanup levels, the Contractor and HWA performed additional excavation and sampling until the cleanup goals were achieved.

Soil excavation generally proceeded from south to north. Contaminated soil was excavated generally down to the contact with a peat horizon underlying the site (Photo 1 in Appendix D), which was found to meet the cleanup levels. The approximate limits of soil excavation are shown on Figure 4. The final excavation was approximately 150 by 180 feet in its maximum width and length. The depth of the excavation ranged from approximately 4 to 11 feet bgs.

Along the northern property boundary, contaminated soil was left in place adjacent to SR 522 to protect the structural integrity of the active roadway and associated sidewalk and underground utilities (Photo 3 in Appendix D). Soils excavated in the northern portion of the Site contained sections of cut logs, broken concrete, and small quantities of metal and glass debris from about 2 to 10 feet bgs and lying immediately above the peat horizon (Photos 3 through 5 in Appendix D). The Contractor segregated and stockpiled the broken concrete for recycling (after HWA testing confirmed it was not contaminated) and transported the other debris with contaminated soil to the CEMEX USA (formerly Rinker) facility in Everett, Washington for thermal desorption treatment followed by permitted landfill disposal. Contaminated soils that could not be treated by thermal desorption were transported to alternate licensed disposal facilities.

A total of 7,083.05 tons of soil were excavated and transported to the CEMEX facility. Assuming a bulk density of 1.6 tons per bank cubic yard, the volume of soil excavated and transported to CEMEX was approximately 4,427 cubic yards. A copy of the CEMEX Release of Liability/Certificate of Disposal for the soil is presented in Appendix E.

A total of 56.22 tons of metals-impacted soil presumed to be sandblast grit was disposed of at the Allied Waste Services / Regional Disposal Company RCRA Subtitle D landfill in Klickitat County, Washington. These soils were located in the vicinity of one sample found to contain cadmium exceeding Washington State Dangerous Waste requirements, and were visually segregated and stockpiled for testing. The additional testing determined the soil did not classify as Dangerous Waste (Table 2). The Certificate of Disposal for this soil is presented in Appendix E.

2013 interim action – This cleanup was conducted in three stages to align with the contractor's work sequencing:

- UST area in the western portion of the site
- 180th street south leg, immediately adjacent to and south of the property
- Vacated SR522 roadway immediately adjacent to the northern property boundary

UST area – in March 2013, the area around a former UST was overexcavated to remove all contaminated soils (Figure 4). Three confirmation samples collected at the bottom and sidewalls of the excavation all met the Site cleanup levels. Approximately 22 tons of excavated petroleum-affected soils from this area were disposed of off-site at CEMEX in March 2013.

180th Street area – On March 29, 2013, the contractor encountered suspected petroleum contaminated soils during the excavation of a deep (18 feet) utility trench, for installation of a 72-inch diameter storm drain pipe, in an area under the former 180th Street right-of-way, and now located under the SR522 roadway.

HWA collected three confirmation soil samples during trench excavation to document the limited soil remediation. One soil sample was collected from the south sidewall of the trench (approximately 14 feet bgs) one at the excavation base (approximately 18 feet bgs) and one at the north sidewall (approximately 14 feet bgs) (Figure 4). The north sidewall sample was collected in an area of suspected impacted soils. A sample of excavated, stockpiled soils was also collected.

Confirmation samples collected from the south sidewall (180th-3-14) and base of the excavation (180th-1-18) did not contain detectable concentrations of petroleum hydrocarbons. The sample collected from north sidewall (180th-2-14) contained gasoline and oil-range petroleum hydrocarbons exceeding MTCA Method A cleanup levels (Table 2). Soils associated with this sample were left in place due to the disproportionate cost of attempting to excavate by hand-digging under the network of multiple utilities. However, this sample location will ultimately be located under the new roadway footprint, and therefore, the impacted soils that were left in place will be capped by the roadway pavement.

The marked increase in TPH concentration over such a small area, as well as the absence of petroleum impacts in nearby former sampling locations, suggests a very localized impact and small quantity of impacted soils. Similarly, the absence of any detectable petroleum hydrocarbons in ground water at monitoring well BC-11, located 40 feet directly downgradient of sample 180th-2-14, suggests no impacts to ground water. BC-11 was a geotechnical engineering boring converted to a ground water monitoring well and sampled in 2008.

Approximately 150 tons of excavated petroleum-affected soils from this area were disposed of off-site at CEMEX's thermal treatment facility in March 2013.

Vacated SR522 roadway - In March 2013, the area under the recently vacated SR522 roadway was made accessible for cleanup of soil left in place in 2010 (Figure 4). Ten confirmation samples collected at the bottom and sidewalls of the excavation all met the Site cleanup levels. Approximately 189 tons of excavated petroleum-affected soils from this area were disposed of off-site at the CEMEX facility.

4.3 CONFIRMATION SAMPLING

Table 2 summarizes the excavation sidewall and bottom confirmation samples. Figure 4 depicts confirmation sample locations. Laboratory certificates are included in Appendix B. Sixteen pre-excavation test pit samples collected at the extents of the excavation, and in some cases beyond, are included in Table 2 as confirmation samples because the soils represented by those samples did not contain chemicals of potential concern at concentrations exceeding site cleanup levels. Other than the one sample beneath the former 180th street south leg, (now the new SR 522 roadway), the interim action cleanup achieved the site cleanup levels.

One confirmation sample collected in the northwestern portion of the Site (sample P-PEX-19) had an arsenic concentration of 21 mg/kg and its duplicate sample had an arsenic concentration of 25 mg/kg; both concentrations slightly exceeded the MTCA Method A cleanup level of 20 mg/kg. Site-wide compliance with the MTCA cleanup level is established based on the 95 percent upper confidence limit (UCL) of the mean of all confirmation soil sample concentrations. In addition, the following criteria must also be met:

- Data must be normally or lognormally distributed
- No single value can be greater than twice the cleanup level
- No more than 10 percent of samples can exceed the cleanup level

Per the *Statistical Guidance for Ecology Site Managers* (Ecology, 1992), and using Ecology's Microsoft Excel-based workbook for calculating compliance statistics, SITE97.XLT (Ecology, 1997), HWA established that the above listed criteria were met, and calculated that the mean arsenic concentration (at a 95 percent UCL) of the confirmation samples was approximately 11 mg/kg, i.e., less than the MTCA Method A soil cleanup level of 20 mg/kg. The SITE97 statistical analysis is presented in Appendix F.

4.4 GROUND WATER MANAGEMENT

2010 interim action – Minor ground water seepage was present at approximately 8 to 10 feet below original grade at the Site (Photo 5 in Appendix D). Ground water flow into the excavation was managed by creating sumps and ponding the water behind soil berms. Accumulated water was removed with a gasoline powered ‘trash’ pump for temporary storage and settling in an on-site 20,000 gallon storage tank. This dewatering effluent was stored, tested, and discharged by the Contractor under a King County Industrial Waste Division temporary dewatering discharge permit to sanitary sewer, for treatment at King County’s wastewater treatment plant.

2013 interim action – No ground water was encountered during the 2013 interim action.

4.5 ORC PLACEMENT

2010 interim action – To facilitate bioremediation following soil removal, the Contractor applied 750 pounds of Oxygen Release Compound® (ORC) along excavation sidewalls where TPH contaminated soil was left in place. The ORC was prepared by mixing the powdered compound with water in an excavator bucket to form a slurry (Photo 6 in Appendix D). The Contractor applied ORC along the northern northwest sidewall along SR 522 at the elevation of ground water seeps (Photo 7). HWA estimates that the ORC slowly released dissolved oxygen to ground water following the cleanup thus encouraging destruction of residual hydrocarbons in soil and ground water by naturally-occurring aerobic bacteria in the soil; which, in addition to the polyethylene sheeting barrier reduced the possibility of re-contamination of clean fill south of the impacted soils.

The polyethylene sheeting was placed on this excavation sidewall prior to backfilling to 1) reduce the possibility of re-contamination of clean fill south of the impacted soils, and 2) provide a marker for the planned second phase of soil cleanup in 2011.

2013 interim action –The 2013 excavation located and removed the polyethylene sheeting placed in 2010, and proceeded northwards until cleanup levels were met, therefore no ORC was used.

4.6 WELL DECOMMISSIONING AND EXTENSION

Prior to the 2010 cleanup, Slead Construction Inc., a Washington State licensed well drilling contractor under subcontract to the Contractor, decommissioned ground water monitoring well BPMW-3 in accordance with WAC 173-160-381. This well was decommissioned because of its location within the cleanup excavation.

The riser pipes of monitoring wells MW-1 and BC-10, both located just outside the footprint of the new roadway, were extended to accommodate the higher grade of the Site after placement of a soil preload (see Section 5.7). After removing the well monuments, the riser pipes were extended by attaching a length of bell-ended 2-inch schedule 40 PVC pipe to the top of the existing well riser pipes. The pipes were joined using stainless steel pop rivets.

No other wells on the site were impacted during the 2013 interim action.

4.7 SITE RESTORATION

2010 interim action - After excavation of contaminated soil and receipt of confirmation sample analytical results, the Contractor backfilled and compacted the excavation with clean imported structural fill soils meeting the requirements of Select Borrow, per WSDOT Standard Specification 2-03.3(14)K. The imported select borrow was obtained from CEMEX, who mined the sandy soils from a quarry in Granite Falls, Washington (i.e., native quarry materials not excavated or reused from another developed property).

The select borrow and native soils were compacted to Method B of WSDOT Standard Specification 2-03.3(14)C, i.e., 90 percent of maximum dry density as determined using test method ASTM D 1557 (Modified Proctor) below two feet bgs, and 95 percent of maximum dry density for the upper two feet.

The backfilling occurred in stages as portions of the Site were confirmed to have been cleaned up. The excavation was generally backfilled from the south to north as contaminated soil was removed from the Site.

The Contractor placed additional clean imported soils to approximately 15 feet above original grade to preload the site prior to constructing the SR 522 realignment. The purpose of the preload was to consolidate compressible peat soils prior to construction of the roadway.

2013 interim action – The 2013 excavation was also backfilled with clean imported structural fill soils meeting the requirements of Select Borrow, per WSDOT Standard Specification 2-03.3(14)K.

4.8 SUMMARY

The 2010 and 2013 interim action soil cleanups were successfully completed, with all confirmation sampling reaching the Site cleanup levels except one sample located beneath the former 180th street (now the new SR 522 roadway), which, based on surrounding sampling, represents a small pocket of residual petroleum, now located under a roadway.

5.0 REFERENCES

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Washington Department of Ecology, 2010, Bothell Paint & Decorating Site Description (www.ecy.wa.gov/programs/tcp/sites/bothellPaint/bothellPaint_hp.html).

6.0 LIMITATIONS

The conclusions expressed by HWA are based solely on material referenced in this report. Observations were made under the conditions stated. Within the limitations of scope, schedule and budget, HWA attempted to execute these services in accordance with generally accepted professional principles and practices in the area at the time the report was prepared. No warranty, expressed or implied, is made. Experience has shown that subsurface soil and ground water conditions can vary significantly over small distances. It is always possible that contamination may exist in areas that were not sampled. HWA's findings and conclusions must not be considered as scientific or engineering certainties, but rather as our professional opinion concerning the significance of the limited data gathered and interpreted during the course of the assessment.

This study and report have been prepared on behalf of City of Bothell, for the specific application to the subject property. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

* * *

We appreciate the opportunity to provide professional services on this project. Please feel free to call us if you have any questions or need more information.

Sincerely,

HWA GEOSCIENCES INC.

State of Washington
Hydrogeologist
132
Licensed Geologist
VANCE ATKINS

3/26/14

Vance Atkins, LG, LHG
Senior Hydrogeologist

State of Washington
Hydrogeologist
170
Licensed Geologist
Arnon Sugar

3·26·14

Arnie Sugar, LG, LHG
President

Table 1
Summary of Site-Specific MTCA Method B Soil TPH Cleanup Levels
Bothell Paint and Decorating Site

Release area	**Former UST**	**Compressor blowdown**	**Fill soils**		
TPH Type	**Mineral spirits**	**Lube oil**	**Diesel and lube oil range hydrocarbons**		
Sample	**P-TP-23-2**	**P-TP-13-3**	**P-TP-1-3**	**P-TP-4-3**	**P-TP-18-2**
Calculated Method B TPH cleanup level for direct contact (mg/Kg)	581	39,709	1,153	999	1,505
Most stringent soil risk criterion for direct contact	cPAHs mixture	Hazard Index	cPAHs mixture	cPAHs mixture	cPAHs mixture
Method B soil TPH concentration protective of ground water (mg/Kg)	100% NAPL[1]	100% NAPL	100% NAPL	100% NAPL	100% NAPL
Most stringent soil risk criterion for protection of ground water	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture
Method A soil cleanup levels (mg/Kg)	30[2] (G) 2000 (D) 2000 (O) 5 (Naphthalenes)[3] 0.10 (cPAHs TEC)[4]	2000 (D) 2000 (O) 5 (Naphthalenes) 0.10 (cPAHs TEC)			

Notes:

1 - 100% NAPL means soil containing free product would not produce a TPH concentration ≥800 µg/L in ground water

2 - Cleanup level for gasoline mixtures with benzene

3 - Sum of Napthalene + 1-Methylnaphthalene + 2-Methylnaphthalene

4 - Toxic Equivalent Concentration of carcinogenic polynuclear aromatic hydrocarbons (cPAHs) per WAC 173-340-708(e)

TABLE 2
SOIL CLEANUP ANALYTICAL RESULTS, 2010 & 2013
BOTHELL PAINT AND DECORATING SITE
(all results in milligrams per kilogram (mg/kg))

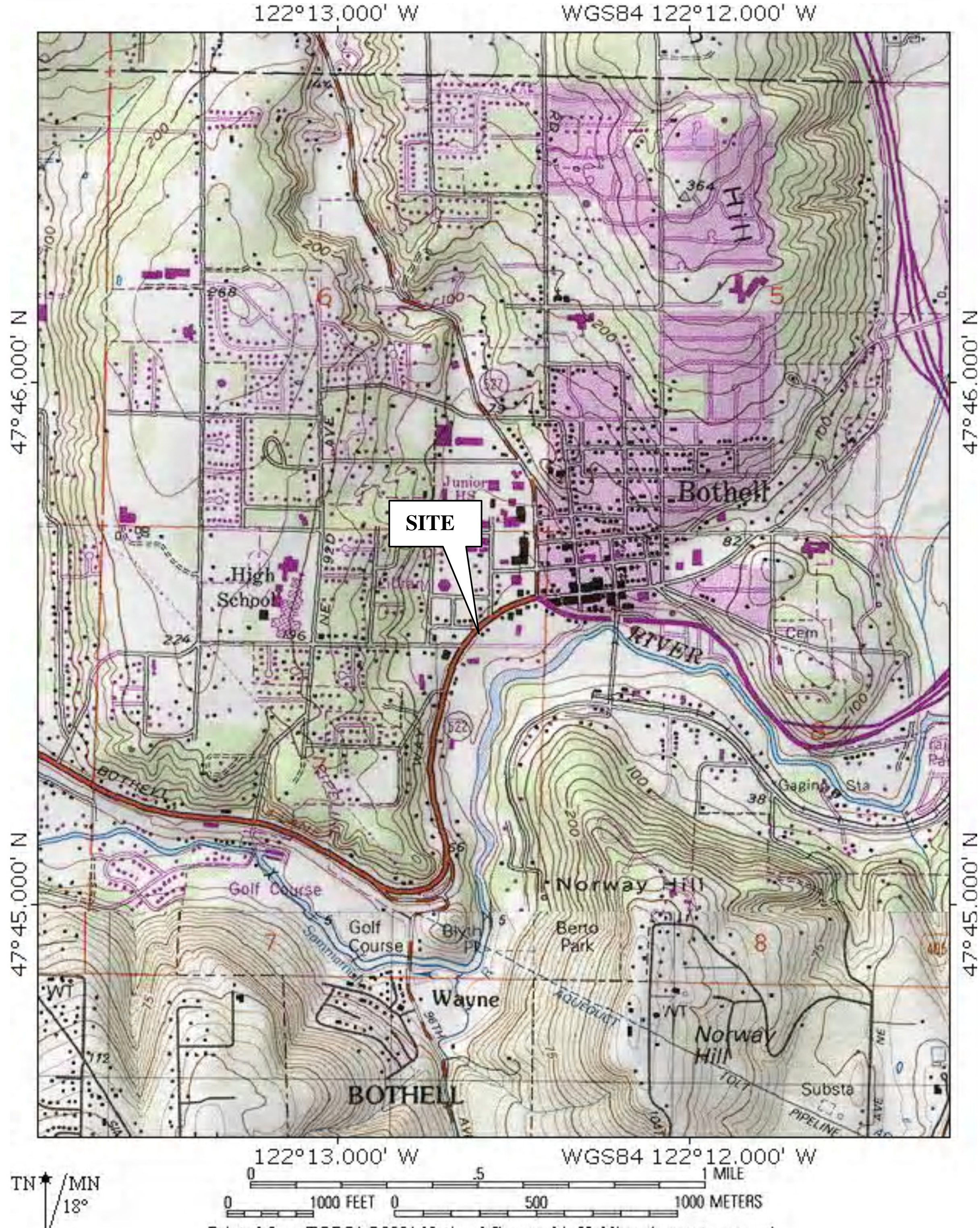
		Confirmation Sample[1]																	
Sample Location	**Sample Depth ft bgs**	**Sidewall**	**Bottom**	**Diesel**	**Oil**	**Gasoline**	**Benzene**	**Xylenes**	**Arsenic**	**Barium**	**Cadmium**	**Chromium**	**Lead**	**Mercury**	**Selenium**	**Silver**	**Total Naphthalenes[2]**	**cPAHs TEC[3]**	**Notes**
									2010 Cleanup										
P-TP-1-3	3			**280**	**950**	<5.8			**34**	**74**	<0.58	**29**	**130**	<0.29	<12	<0.58	**1.58**	**0.079**	Excavated as of 9/3
P-TP-1-6	6	X		<39	**100**				<16	**100**	<0.78	**67**	<7.8	<0.39	<16	<0.78			
P-TP-2-2	2			**810**	**3700**														Excavated as of 9/3
P-TP-2-6	6	X		**37**	**180**												0.000	0.000	
P-TP-3-3	3			**74**	**600**														Excavated as of 9/3
P-TP-3-7	7			<35	**290**														Excavated as of 9/3
P-TP-4-3	3			**200**	**650**	<5.3			**21**	**81**	<0.58	**41**	**77**	<0.29	<12	<0.58	**0.282**	**0.020**	Excavated as of 9/1
P-TP-4-6	6			**430**	**1700**				**28**	**92**	<0.58	**31**	**140**	<0.29	<12	<0.58			Excavated as of 9/3
P-TP-5-1	1			<140	**720**	**480**	<0.00087	<0.0017											Excavated as of 9/1
P-TP-5-3	3	X		<63	**170**	<20	<0.0036	<0.0036							<11	<0.55	0.000	0.000	
P-TP-6-1	1	X		<37	<74	<9.4	<0.0012	<0.0012											
P-TP-7-2	2			<28	<55	<4.4			<11	**53**	<0.55	**27**	<5.5	<0.28	<11	<0.55			Excavated as of 9/1
P-TP-7-5	5			<140	**490**	<53			<14	**380**	**2.0**	**100**	**250**	<1.4	<55	<2.8			Excavated as of 9/1
P-TP-8-3	3			<27	**96**				<11	33	<0.55	**22**	<5.5	<0.27	<11	<0.55			Excavated as of 9/1
P-TP-8-6	6			<230	**1500**				**27**	**140**	<1.9	**58**	**92**	<0.95	<38	<1.9			Excavated as of 9/1
P-TP-9-5	5		X	<27	<55				<11	**26**	<0.55	**19**	**7.5**	<0.27	<11	<0.55	0.000	0.000	
P-TP-9-8	8																		Sample put on hold at lab at HWA's request
P-TP-10-6	6	X		<29	<57				<11	**41**	<0.57	**23**	**12**	<0.29	<11	<0.57	0.000	0.000	
P-TP-11-5	5		X	<26	<53				<11	**34**	<0.53	**18**	**6.3**	<0.26	<11	<0.53	**0.0089**	**0.001**	
P-TP-11-7	7																		
P-TP-12-2	2			<28	<55														Excavated as of 9/1
P-TP-12-4	4			<29	<59	<5.9			<12	**73**	<0.59	**30**	<5.9	<0.29	<12	<0.59			
P-TP-12-6	6			<75	**160**				<15	**82**	<1.5	**19**	**16**	<0.75	<30	<1.5			
P-TP-13-1	1																		Excavated as of 9/1, sample put on hold at lab
P-TP-13-3	3			<320	**2900**	<5.9			<12	**56**	<0.59	**29**	**13**	<0.30	<12	<0.59	0.000	**0.001**	Excavated as of 9/1
P-TP-13-7	7		X	<29	<58	<5.9			<12	**61**	<0.58	**34**	**12**	<0.29	<12	<0.58	0.000	0.000	
P-TP-14-1	1			<28	<55				**32**	**470**	**12**	**170**	**860**	**0.66**	<11	<0.53			Excavated as of 9/1 - stockpile on site
P-TP-15-1	1								**21**	**860**	**41**	**280**	**770**	**0.48**	<10	<0.52			Excavated as of 9/1 - stockpile on site
P-TP-16-1	1								<11	**720**	**26**	**300**	**1600**	**5.1**	<11	<0.55			Excavated as of 9/1 - stockpile on site
P-TP-17-2	2					<5.5			<11	**49**	<0.55	**25**	**15**	<0.28	<11	<0.55			Excavated as of 9/1
P-TP-17-7	7			<34	<68														Excavated as of 9/3
P-TP-18-2	2			**210**	**1100**												**0.226**	**0.034**	Excavated as of 9/3
P-TP-18-7	7			**180**	**740**				**71**	**110**	<0.68	**36**	**150**	<0.34	<14	<0.68			Excavated as of 9/3
P-TP-19-3	3			<45	**220**														
P-TP-19-7	7	X		<69	**330**				**16**	**130**	<0.98	**64**	**190**	<0.49	<20	<0.98			
P-TP-20-4	4	X		<40	**230**												0.000	0.000	
P-TP-20-6	6																		Sample put on hold at lab at HWA's request
P-TP-21-3	3		X	<27	<55				<11	**39**	<0.55	**23**	<5.5	<0.27	<11	<0.55			
P-TP-21-7	7																		Sample put on hold at lab at HWA's request
P-TP-22-3	3	X		<71	**400**	<20	<0.0032	<0.0032	<13	**91**	<1.3	**32**	**81**	<0.64	<25	<1.3			
P-TP-23-2	2			<41	**230**	**8.6**	<0.0011	<0.0011	<11	**68**	<0.53	**37**	<5.3	<0.27	<11	<0.53	**0.113**	**0.050**	Excavated as of 9/1
P-TP-23-4	4			<120	**370**	<44	<0.0089	<0.0089	**27**	**190**	<1.2	**27**	**130**	<1.2	<47	<2.4			Excavated as of 9/1
P-TP-24-4	4	X		<30	<59	<5.7	<0.0011	<0.0011	<12	**120**	**0.74**	**33**	**150**	<0.30	<12	<0.59	0.000	**0.016**	West sidewall, former UST
P-TP-25-4	4			**260**	**560**	<6.5	<0.0011	**0.0022**	**62**	**83**	<0.59	**35**	**87**	<0.30	<12	<0.59	**0.209**	**0.019**	North sidewall, former UST, excavated as of 9/1
P-TP-25-8	6	X		<ND	**130**	**80**	<0.0025	**0.0079**	**20**	**97**	<0.88	**27**	**79**	<0.44	<18	<0.88			
P-TP-26-5	5	X		<26	<53				<11	**39**	<0.53	**22**	**18**	<0.26	<11	<0.53			
P-TP-26-7	7																		Sample put on hold at lab at HWA's request
P-TP-27-4	4		X	<29	**180**				<12	**25**	<0.59	**19**	<5.9	<0.29	<12	<0.59			
P-PEX-1-7	7		X	<240	**690**				<8.5	**72**	<1.7	**13**	<34	<1.7	<68	<3.4	0.000	0.000	Over excavation at TP-8
P-PEX-2-6	6	X		<170	**620**				<8.6	**63**	<1.7	**11**	<34	<1.7	<69	<3.4	0.000	0.000	Over excavation at TP-7
P-PEX-3-4	4		X	<28	<57				**14**	**57**	<0.57	**29**	**15**	<0.28	<11	<0.57	0.000	0.000	Confirmation sample north of steel building location
P-PEX-4-6	3	X		<53	**130**	<16			<11	**5.6**	<1.1	**19**	**15**	<0.53	<21	<1.1	0.000	0.000	
P-PEX-5-3	3	X		<28	<55				**<11**	**40**	<0.55	**64**	**11**	0.28			0.000	**0.008**	East sidewall, near BP-MW-1
P-PEX-6-3	3			<250	**1600**	**7.4**			**27**	**64**	**0.68**	**35**	**120**	<0.31	<12	<0.62	0.000	**0.001**	West sidewall, All BETX = ND, excavated 9/3
P-PEX-7-3	3	X							<12								0.000	0.000	Over excavation of P-PEX-6-3
P-PEX-8-8	8		X						<12										Over excavation of TP-17 location
P-PEX-9-3	3	X		<300	**2500**														West sidewall, max extent
P-PEX-10-3	3	X		**1300**	**3100**														25' west of BPMW-3 - soils left in place under road
P-PEX-11-3	3	X		**<30**	**120**												**0.040**	**0.033**	25' east of BPMW-3 - soils left in place under road
P-PEX-12-3	3	X		**300**	**1700**														East sidewall, max extent
P-PEX-13-7	7								**93**										Between TP-4 and VB-1
P-PEX-14-3	3	X		<30	**260**				<11										East sidewall, near former catch basin
P-PEX-15-3	3			**210**	**2700**				**21**										
P-PEX-16-10	10			<58	**210**				**47**	**590**	**2.5**	**49**	**410**	**1.2**	<23	<1.2	0.000	**0.150**	Bottom sample in wood waste area
P-PEX-17-7	7			**490**	**970**				**62**	**70**	**1.4**	**46**	**160**	<0.29	<12	<0.58	**0.663**	**0.020**	Sidewall sample to west of wood waste area
P-PEX-18-9	9			<44	**270**				<17	**110**	<0.87	37	**80**	<0.44	<17	<0.87	0.000	**0.570**	Bottom sample on east side of wood waste area
P-PEX-19-7	7	X		<28	**110**				**21**	**62**	<0.57	35	**46**	<0.28	<11	<0.57	**0.092**	**0.030**	Sidewall sample on west side of wood waste area
P-PEX-21-11	11		X	<31	<62				<12	**32**	<0.62	20	<6.2	<0.31	<12	<0.62	0.000	**0.010**	Bottom sample in wood waste area

TABLE 2
SOIL CLEANUP ANALYTICAL RESULTS, 2010 & 2013
BOTHELL PAINT AND DECORATING SITE
(all results in milligrams per kilogram (mg/kg))

		Confirmation Sample[1]																		
Sample Location	**Sample Depth ft bgs**	**Sidewall**	**Bottom**	**Diesel**	**Oil**	**Gasoline**	**Benzene**	**Xylenes**	**Arsenic**	**Barium**	**Cadmium**	**Chromium**	**Lead**	**Mercury**	**Selenium**	**Silver**	**Total Naphthalenes[2]**	**cPAHs TEC[3]**	**Notes**
P-PEX-23-5	5	X		68	**410**				<12	**52**	<0.58	26	**26**	<0.29	<12	<0.58	**0.063**	**0.030**	Sidewall sample on east side of wood waste area
CONC-1,2,3,4 Comp.	NA			<27	<54				**11**	**69**	<0.54	**20**	**21**	<0.27	<11	<0.54			Composite of 3 concrete stockpile samples
2013 Cleanup																			
Northwest excavation																			
P-PEX-24-6	6			<48	**250**	**33**	**0.022**	<0.075	**43**	**73**	<0.63	**53**	**100**	<0.32	<13	<1.3			
P-PEX-25-8	8	X		<36	<72	<9.0	<0.020	<0.09	<14	43	<0.72	44	<7.2	<0.36	<14	<1.4			
P-PEX-26-8	8	X				<5.5	<0.020	<0.055											
180th Street Drainage Improvements																			
180th-1-18	18		X	<29	<59	<6	<0.020	<0.06	<12	**35**	<0.59	**66**	<5.9	<0.29	<12	<1.2			
180th-2-14	14	X		<5100	**34000**	**150**	<0.020	**0.14**	<16	**74**	<0.81	**56**	**16**	<0.41	<16	<1.6			
180th-3-14	14	X		<29	<59	<5.3	<0.020	<0.053	<12	**31**	<0.58	**42**	<5.8	<0.29	<12	<1.2			
North (SR 522) remedial excavation																			
PTP28-9	9			<29	<59				<12	**40**	<0.59	**38**	<5.9	<0.29	<12	<1.2			
PTP28-11	11			<28	<56				<11	**29**	<0.56	**18**	<5.6	<0.28	<11	<1.1			
PTP29-5	5			<32	<63				<13	**66**	<0.64	**23**	<6.4	<0.32	<13	<1.3			
PTP29-11	11			<32	<64				<13	**43**	<0.63	**39**	<6.3	<0.31	<13	<1.3			
PTP30-6	6			<28	**120**				<11	**45**	<0.56	**41**	<5.6	<0.28	<11	<1.1			
PTP30-10	10			<32	<64				<13	**53**	<0.64	**37**	<6.4	<0.32	<13	<1.3			
PTP31-6	6			<30	<59				<12	**58**	<0.59	**36**	<5.9	<0.30	<12	<1.2			
PTP31-10	10			<29	<59				<12	**43**	<0.59	**31**	<5.9	<0.29	<12	<1.2			
PTP32-1.5	1.5			<120	**700**				<12	**76**	<0.60	**46**	**72**	<0.30	<12	<1.2			
PTP32-10	10			<29	**55**				<12	**57**	<0.58	**29**	**6.6**	<0.29	<12	<1.2			
PTP33-2	2			<30	**240**				<12	**75**	<0.60	**38**	**80**	<0.30	<12	<1.2			
PTP33-7	7			**100**	**190**				<13	**61**	<0.64	**38**	**25**	<0.32	<13	<1.3			
PTP33-9	9			**50**	**190**	<6.9			<12	**70**	<0.61	**42**	**62**	<0.31	<12	<1.2			
PTP33-11	11			**290**	**170**				<13	**57**	<0.64	**29**	**26**	<0.32	<13	<1.3			
PTP35-7	7			<31	**110**				<12	**80**	<0.62	**36**	**25**	<0.32	<12	<1.2			
PTP36-10	10			<29	<57				<11	**43**	<0.57	**38**	<6.7	<0.29	<11	<1.1			
PPEX-27-4	4	X		<32	<64														**Adjacent to P-PEX-9 (removed)**
PPEX-28-4	4	X		<31	**240**														**Adjacent to P-PEX-10 (removed)**
PPEX-29-8	8		X	<29	<59														**Adjacent to P-PEX-10 (removed)**
PPEX-30-3	3	X		**68**	**590**														
PPEX-31-7	7		X	<27	**180**														
PPEX-32-8	8		X	<27	**150**														
PPEX-33-6	6	X		<28	**69**														
PPEX-34-8	8		X	<29	<58														
PPEX-35-5	5	X		**65**	**310**														**Adjacent to P-PEX-12 (removed)**
PPEX-36-7	7		X	<29	**150**														**Adjacent to P-PEX-12 (removed)**
	MTCA Method A Cleanup Level[4]			2000		100/30[5]			20	NA	2	2000/19[6]	250	2	NA	NA	5	0.100	
	MTCA Method B Cleanup Level[7]			999		581			24	16,000	80	120,000	NA	24	400	400			
	Background[8]			NA		NA			7	255	1	48	24	0.07	0.78	0.61	NA	NA	

Notes:

< - Not detected at laboratory's reporting limit
Blank - Sample was not analyzed for this constituent
NA - Not applicable
Bold - Analyte Detected
Bold/Highlighted - Analyte detected above MTCA Method A soil cleanup leve
▨ - Sample in area that was subsequently excavated
1 - Confirmation that soil remaining in place meets MTCA cleanup levels or was left in place at the limits of excavation adjacent to SR 522
2 - Sum of Napthalene + 1-Methylnaphthalene + 2-Methylnaphthalene
3 - Toxic Equivalent Concentration of carcinogenic polynuclear aromatic hydrocarbons (cPAHs) per WAC 173-340-708(e)
4 - Washington Model Toxics Control Act Method A (Table 740-1) soil cleanup levels for unrestricted land use
5 - The MTCA Method A soil cleanup level is 100 mg/kg for gasoline mixtures without benzene and if the total of ethylbenzene, toluene, plus xylenes is less than 1% of the gasoline mixture. The soil cleanup level for all other gasoline mixtures is 30 mg/kg
6 - The MTCA Method A soil cleanup level for trivalent chromium is 2,000 mg/kg. Geochemical conditions on site would not cause oxidation to hexavalent chromium having a cleanup level of 19 mg/kg
7 - Method B TPH cleanup levels are site specific values calculated using MTCATPH1.1. Method B cleanup levels for metals are from Ecology's CLARC (Cleanup Level & Risk Calculations) database for non-carcinogens
8 - Background metals concentrations per *Natural Background Soil Metals Concentrations in Washington State* (Ecology, 1994) for the Puget Sound area



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HWA GEOSCIENCES INC.

SITE VICINITY

BOTHELL PAINT & DECORATING SITE
INTERIM ACTION CLEANUP
BOTHELL, WASHINGTON

FIGURE NO.
1

PROJECT NO.
2007-098-922

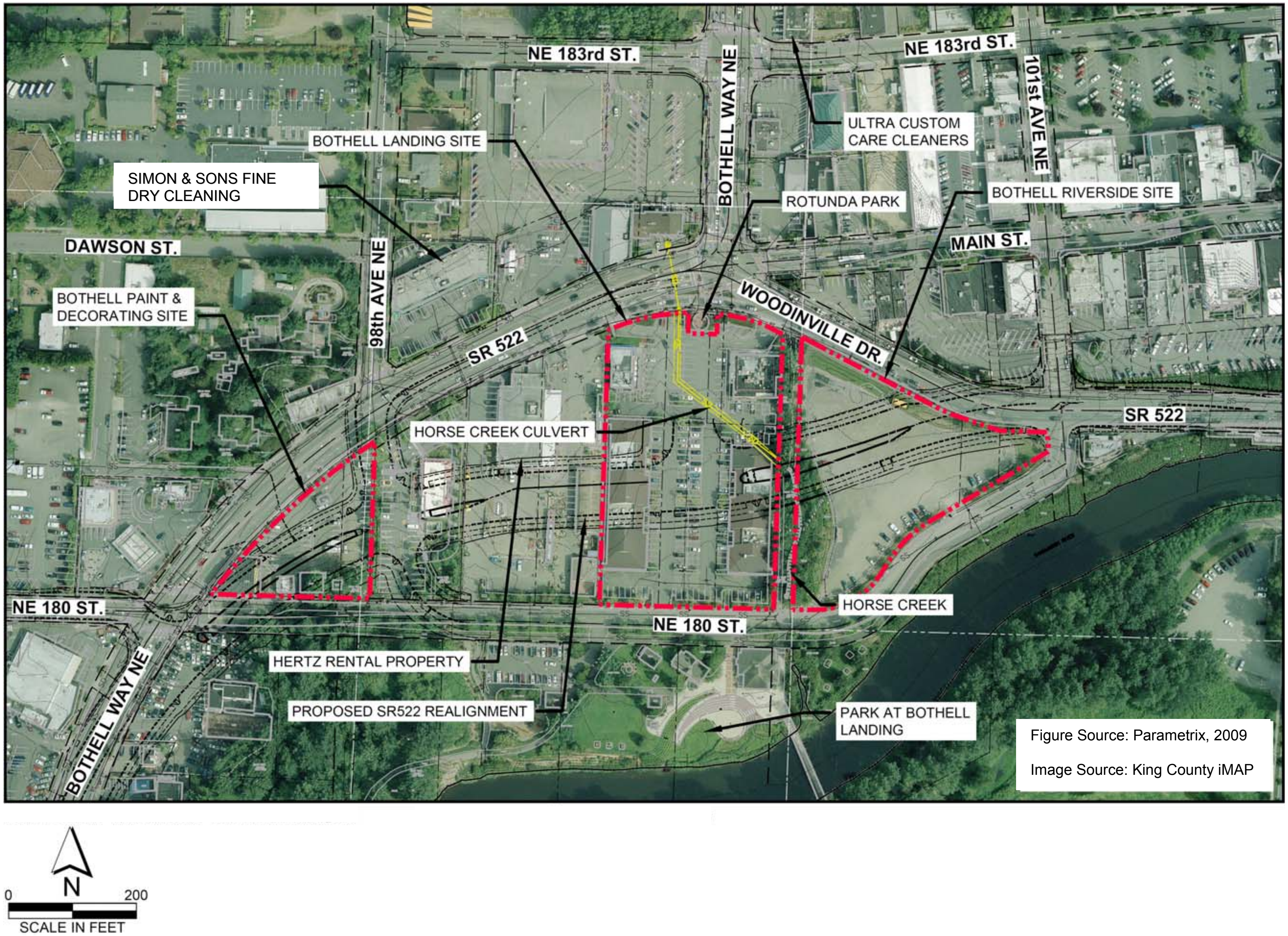


Figure Source: Parametrix, 2009

Image Source: King County iMAP

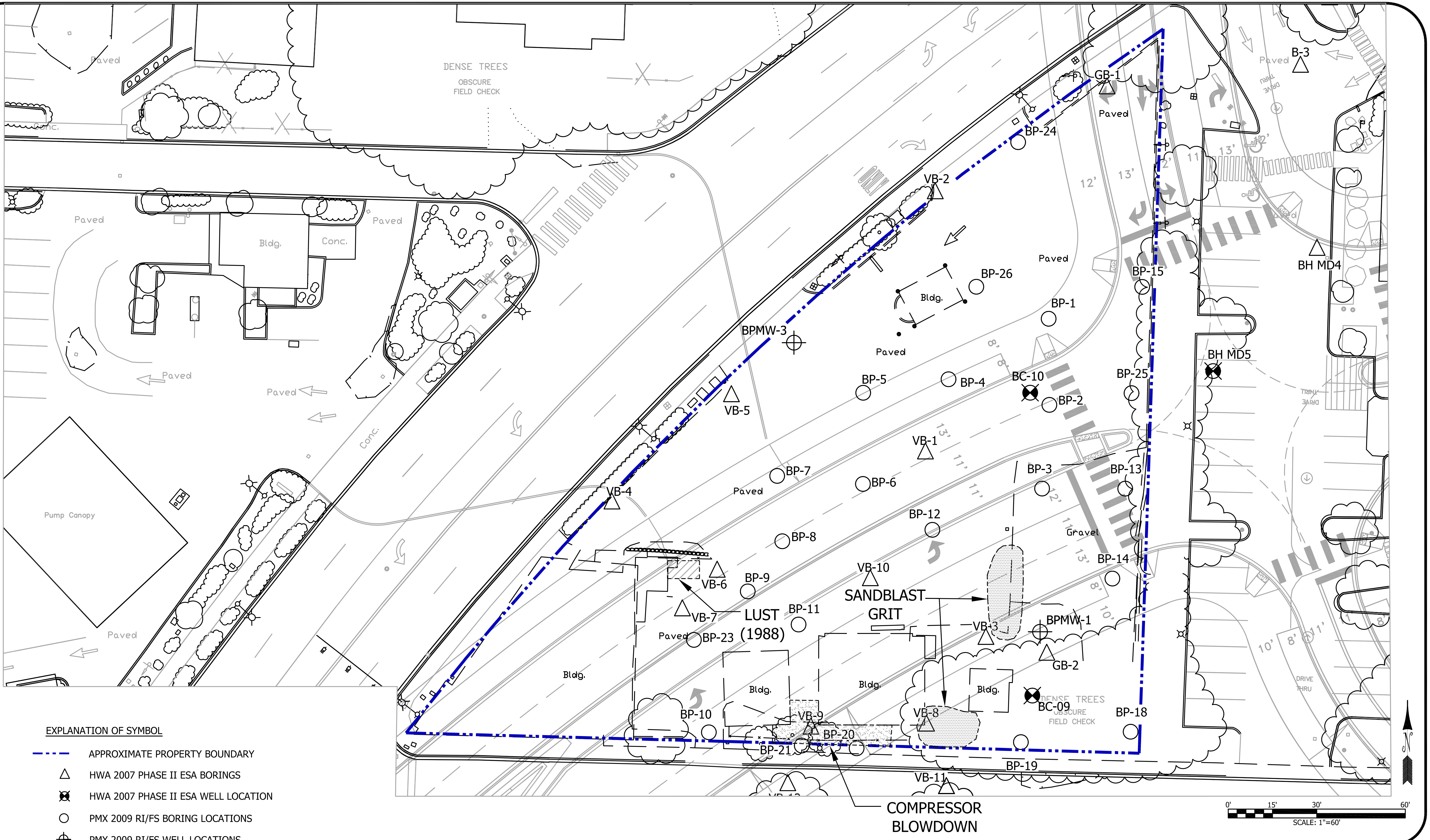
HWA GEOSCIENCES INC.

SITE LOCATION & ADJACENT PROPERTIES

BOTHELL PAINT & DECORATING SITE
INTERIM ACTION CLEANUP
BOTHELL, WASHINGTON

FIGURE NO.
2

PROJECT NO.
2007-098-922



EXPLANATION OF SYMBOL

- —·· APPROXIMATE PROPERTY BOUNDARY
- △ HWA 2007 PHASE II ESA BORINGS
- ⊗ HWA 2007 PHASE II ESA WELL LOCATION
- ○ PMX 2009 RI/FS BORING LOCATIONS
- ⊕ PMX 2009 RI/FS WELL LOCATIONS
- ✚ CDM ROW BORING LOCATIONS

BASE MAP PROVIDED BY PARAMETRIX

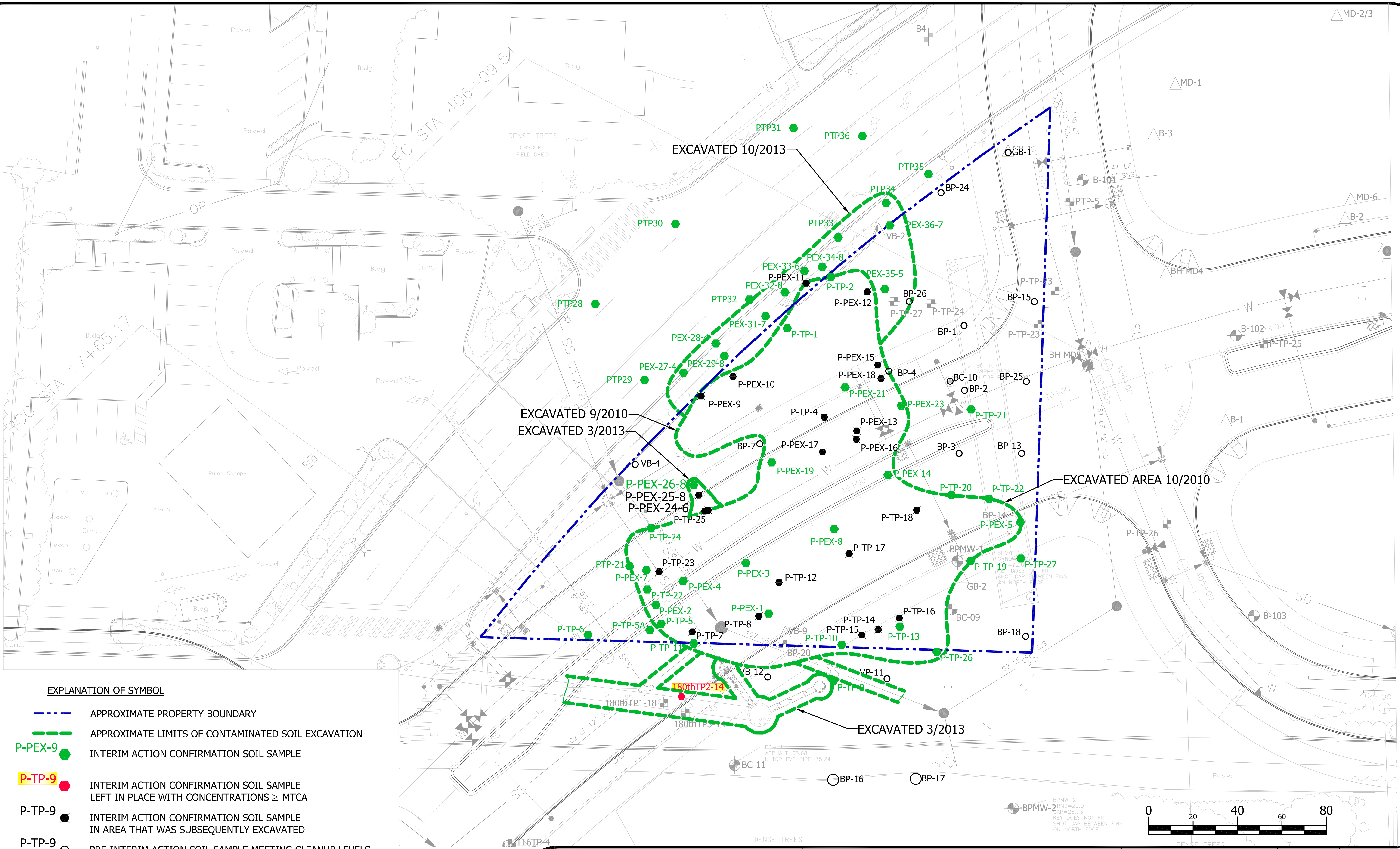
HWA GEOSCIENCES INC.

BOTHELL PAINT AND DECORATING SITE
INTERIM ACTION CLEANUP
BOTHELL, WASHINGTON

SITE PLAN
PRIOR TO CLEANUP

DRAWN BY EFK	FIGURE NO. 3
CHECK BY NN	PROJECT NO.
DATE 11.16.10	2007-098 T922

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T210.DWG <BOTHELL PAINT GPS F3> Plotted: 12/16/2010 9:16 AM



EXPLANATION OF SYMBOL

- · · -	APPROXIMATE PROPERTY BOUNDARY
- - -	APPROXIMATE LIMITS OF CONTAMINATED SOIL EXCAVATION
P-PEX-9 ⬢	INTERIM ACTION CONFIRMATION SOIL SAMPLE
P-TP-9 ⬢	INTERIM ACTION CONFIRMATION SOIL SAMPLE LEFT IN PLACE WITH CONCENTRATIONS ≥ MTCA
P-TP-9 ⬢	INTERIM ACTION CONFIRMATION SOIL SAMPLE IN AREA THAT WAS SUBSEQUENTLY EXCAVATED
P-TP-9 ○	PRE-INTERIM ACTION SOIL SAMPLE MEETING CLEANUP LEVELS
PTP-21 ▨	UTILITY TEST PIT SOIL SAMPLE MEETING CLEANUP LEVELS

BASE MAP PROVIDED BY PARAMETRIX

HWA GEOSCIENCES INC.

BOTHELL PAINT AND DECORATING SITE
INTERIM ACTION CLEANUP
BOTHELL, WASHINGTON

EXTENT OF INTERIM
ACTION SOIL CLEANUP

DRAWN BY EFK
CHECK BY NN
DATE 10.23.13
FIGURE NO. 4
PROJECT NO. 2007-098 T995

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T995A.DWG <BOTHELL PAINT GPS F4> Plotted: 12/27/2013 10:15 AM

APPENDIX A

DETERMINATION OF RISK-BASED CLEANUP LEVELS FOR THE SITE

HWA GEOSCIENCES INC.
Geotechnical & Pavement Engineering • Hydrogeology • Geoenvironmental • Planning & Permitting • Inspection & Testing

November 4, 2010
HWA Project No. 2007 098-922

City of Bothell
9654 NE 182nd St.
Bothell, Washington 98021

Attention: Nduta Mbuthia, Project Engineer, Public Works Capital Projects

Subject: **CLEANUP LEVEL DETERMINATION**
Bothell Paint and Decorating Site
Interim Action Cleanup
Bothell, Washington

Dear Ms. Mbuthia:

This letter describes HWA GeoSciences Inc. (HWA's) determination of risk-based soil cleanup levels at the Bothell Paint and Decorating Site, per the Interim Action Work Plan dated April 2010.

1.0 Introduction

The City of Bothell conducted an interim action cleanup at the Bothell Paint and Decorating Site in August and September 2010, consisting of excavation and off site treatment/disposal of metals and petroleum contaminated soils.

In order to establish soil cleanup levels, selected soil samples were collected and analyzed for petroleum hydrocarbon fractionation (VPH/EPH) and other target compounds (BTEX, cPAHs, EDB, EDC, MTBE). The results of the VPH/EPH analyses were then input into Ecology's MTCATPH11.1 spreadsheet model to determine TPH cleanup levels that are protective of direct contact and ground water, per the Ecology approved Interim Action Work Plan. Information regarding the use of petroleum hydrocarbon fractionation data and Ecology's MTCAPH11.1 model to calculate the risk at a petroleum contaminated site is presented in *Workbook Tools for Calculating Soil and Ground Water Cleanup Levels under the Model Toxics Control Act Cleanup Regulation User's Guide* (Ecology Publication No. 01-09-073).

2.0 Method B Soil Cleanup Levels

MTCA Method B cleanup levels are the universal cleanup levels that typically employ a risk-based approach as outlined in WAC 173-340-708. Cleanup levels for a particular

21312 30th Drive SE
Suite 110
Bothell, WA 98021.7010

Tel: 425.774.0106
Fax: 425.774.2714
www.hwageo.com

site are determined after evaluating appropriate exposure pathway endpoints (e.g., direct contact, drinking water, nonpotable ground water, surface water, soil, wildlife, etc.) based on site use, contaminant distribution, etc. The actual clean up *standard* is then based on the calculated cleanup levels, measured at the point of compliance.

HWA evaluated Bothell Paint site soils with respect to Method B cleanup levels for TPH. Under MTCA, once the source of contamination is removed, risk-based Method B (residential exposure scenario) TPH cleanup levels can be established. Method B cleanup levels must be protective for all exposure pathways, including direct contact with soil, leaching to ground water, and volatilization to air. Per the approved work plan, exposure pathways evaluated include:

- Direct human contact
- Protection of ground water

The vapor/odor pathway was not evaluated at this site, per the Ecology approved Interim Action Work Plan due to the non-volatile nature of the heavy hydrocarbons encountered and the absence of buildings over affected areas. The ground water to surface water pathway was also not evaluated, as the site remedial investigation indicated contaminated ground water was not migrating off site towards the Sammamish River.

Soil and ground water pathways (listed above) are discussed in the following sections.

Calculation of Method B cleanup levels is based on petroleum hydrocarbon fractionation analytical methods, collectively referred to as method E-TPH, that include Ecology methods VPH/EPH for volatile and extractable petroleum hydrocarbon fractions, BTEX, gasoline additives (MTBE, EDB, and EDC), and polynuclear aromatic hydrocarbons (PAHs).

Compounds composed of carbon and hydrogen are divided into two classes: aromatic compounds, which contain benzene rings or similar rings of atoms, and aliphatic compounds, which do not contain aromatic rings. The VPH/EPH method uses a fractionation approach to evaluate complex petroleum mixtures typically found in petroleum fuels and lubricants. The VPH/EPH approach divides petroleum into 12 compound groups (7 aliphatic and 5 aromatic) based on equivalent carbon (EC) number, which relates to the boiling point of a hydrocarbon compound. Hydrocarbons in the same EC group are assumed to have similar chemical, physical, and toxicological properties for the purposes of establishing cleanup levels. Each compound group is treated as if it was an individual chemical. Risks posed by site soils are calculated for each compound group and then summed across compound groups. Predicted ground water concentrations caused by leaching from the current soil concentrations are also estimated for each compound group and then summed across compound groups to produce a total ground water concentration.

2.1 Direct Contact Pathway

In the MTCA Method B risk analysis, the human health risk level for individual carcinogens may not exceed one-in-a-million ($1x10^{-6}$). If more than one type of hazardous substance is present, the total excess carcinogenic risk level at the site may not exceed 1 in 100,000 ($1x10^{-5}$). Cleanup levels protective of direct contact with soil for individual noncarcinogenic compounds are calculated in terms of hazard quotient (HQ), and for two or more compounds having similar toxic response by a hazard index (HI) that is the sum of individual hazard quotients. A HQ or HI less than 1.0 indicates an acceptable noncarcinogenic risk under MTCA Method B. Adverse effects resulting from exposure to two or more hazardous or carcinogenic compounds are assumed to be additive.

HWA used Ecology's MTCATPH11.1 electronic spreadsheet model (available at http://www.ecy.wa.gov/programs/tcp/tools/toolmain.html) to calculate the Method B cleanup levels protective of direct contact with soil. Table 1 summarizes the calculated Method B cleanup levels protective of the direct contact pathway; Appendix A contains the MTCATPH11.1 spreadsheet summary printouts. Per Ecology guidance (Publication No. 01-09-073 cited above), concentrations of TPH compounds not detected at the laboratory's practical quantitation limit (PQL) were entered into MTCATPH11.1 as the laboratory's method detection limit (MDL) – a value typically 5 or more times less than the practical quantitation limit.

2.2 Protection of Ground Water

Protection of ground water was evaluated for two pathways:

- Leaching from soil to ground water
- Residual soil saturation (the TPH concentration in soil at which a non aqueous phase liquid (NAPL) will form)

2.2.1 Leaching from soil to ground water

Soil cleanup levels protective of ground water may be calculated by several methods:

- Partitioning models
- Leaching tests
- Alternative fate & transport models
- Empirical demonstration

The Method B analyses used to calculate risk-based soil cleanup levels at the Bothell Paint site included evaluation of the soil-to-ground water pathway using Ecology's partitioning models (WAC 173-340-747) for two scenarios: potable ground water and the default MTCA Method A ground water cleanup level as the protective concentrations.

Table 1 summarizes the calculated Method B soil cleanup levels protective of direct contact and ground water; Appendix A contains the MTCATPH11.1 spreadsheet summary printouts.

Table 1
Summary of Method B Soil TPH Risk Calculations
Bothell Paint Site

Release area	Former UST	Compressor blowdown	Fill soils		
TPH Type	Mineral spirits	Lube oil	Diesel and lube oil range hydrocarbons		
Sample	P-TP-23-2	P-TP-13-3	P-TP-1-3	P-TP-4-3	P-TP-18-2
Calculated Method B TPH cleanup level for direct contact (mg/Kg)	581	39,709	1,153	999	1,505
Most stringent soil risk criterion for direct contact	cPAHs mixture	Hazard Index	cPAHs mixture	cPAHs mixture	cPAHs mixture
Method B soil TPH concentration protective of ground water (mg/Kg)	100% NAPL[1]	100% NAPL	100% NAPL	100% NAPL	100% NAPL
Most stringent soil risk criterion for protection of ground water	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture	Hazard Index Total risk 1E-5 cPAHs mixture
Method A soil cleanup levels (mg/Kg)	30[2] (G) 2000 (D) 2000 (O) 5 (Naphthalenes)[3] 0.10 (cPAHs TEC)[4]	2000 (D) 2000 (O) 5 (Naphthalenes) 0.10 (cPAHs TEC)			
Maximum value detected on site after cleanup[5]	<20 (G) 37 (D) 690 (O) 0.04 (Naphthalenes) 0.016 (cPAHs TEC)				
Cleanup levels met?	Method A Yes Method B Yes[6] TCs[7] Yes	Method A Yes Method B Yes TCs Yes	Method A Yes Method B Yes TCs Yes	Method A Yes Method B Yes TCs Yes	Method A Yes Method B Yes TCs Yes

Notes:
1 - 100% NAPL means soil containing free product would not produce a TPH concentration ≥800 µg/L in ground water
2 - Cleanup level for gasoline mixtures with benzene
3 - Sum of Napthalene + 1-Methylnaphthalene + 2-Methylnaphthalene
4 - Toxic Equivalent Concentration of carcinogenic polynuclear aromatic hydrocarbons (cPAHs) per WAC 173-340-708(e)
5 - Exclusive of SR522 sidewall, which is not accessible for cleanup due to the active roadway, but will be cleaned up in 2011 after the roadway is vacated
6 - EPH/VPH values were based on NWTPH-G and NWTPH-D results due to lab QC issues, (see discussion below and Appendix A)
7 - TCs: Cleanup levels for all target compounds (PAHs, EDB, EDC, MTBE, benzene, naphthalenes) were met as indicated by laboratory analysis for the individual compounds

2.2.2. Residual soil saturation

Evaluation of residual saturation concentrations is also required. Residual saturation refers to the soil concentration at which a nonaqueous phase liquid (a.k.a., NAPL or "free product") may form on or in soil or ground water. Residual saturation may be evaluated under MTCA using default screening values or an empirical demonstration. Criteria for an empirical demonstration include:

- NAPL has not formed in soil or ground water at the site
- NAPL will not form in the future, i.e., sufficient time has elapsed for migration of hazardous substances from soil into ground water to occur and that the characteristics of the site (e.g., depth to ground water and infiltration) are representative of future site conditions.

Both of these criteria are met at the site, as no NAPL has been observed in soil or ground water, and the impacted soils have likely been in place for at least 10 years prior to removal from the site.

3.0 Discussion

It is possible to extrapolate the results of the risk calculation to estimate a Method B soil "cleanup level" for total TPH concentrations at the site based on the most stringent pathway. This requires the assumption that the hydrocarbon fractions in the soil sample represents the distribution of hydrocarbon fractions in all residual petroleum hydrocarbons at the site. In general, this assumption is valid for sites where the residual hydrocarbons derive from a single source, or single type of fuel, which appears to be the case at each of the three source areas at this site, based on analytical results. Using this assumption, HWA extrapolated the risk results to indicate an appropriate Method B soil cleanup level for each of the three known release areas at the site, as summarized in Table 1.

HWA evaluated the potential risk to human health and the environment based on TPH concentrations in soil. Based on the Method B evaluation, site confirmation soil samples exclusive of the State Route 522 sidewall (which is not accessible for cleanup due to the active roadway, but will be cleaned up in 2011 after the roadway is vacated) met the Method B, residential exposure scenario TPH cleanup levels for direct contact (i.e., HI less than 1, individual compound carcinogen risk less than 1E-6, and total carcinogen risk less than 1E-5), and protection of ground water (leaching as predicted by partitioning models and empirical demonstration of residual saturation).

Soil sample P-TP-23-2 collected in the area of the former underground storage tank contained 280 mg/Kg of primarily lube oil range TPH (considerably below the 2,000 mg/Kg Method A cleanup level), as well as cPAHs (also below Method A and B cleanup

levels). No benzene, EDB, or EDC were detected above laboratory reporting limits. The EPH/VPH sample analysis, however, did not detect any aliphatic and aromatic TPH across the entire TPH range, suggesting sample non-heterogeneity or laboratory QC issues. This sample was split and sent to two subcontracted laboratories by the initial laboratory, which likely impacted sample integrity. Subsequent samples were not handled in this manner. The MTCATPH11.1 model was therefore populated with EPH/VPH values proportional to the sample's detected TPH concentrations in the gasoline, diesel and oil ranges.

4.0 Summary

Confirmation soil samples in all accessible cleanup areas (with the exception of soil remaining under the active SR 522 roadway, which will be cleaned up in 2011) met all applicable cleanup levels, including:

- Method A soil cleanup levels for TPH and all individual target compounds
- Method B soil cleanup levels for all individual target compounds
- Method B TPH soil cleanup levels protective of 1) direct contact, and 2) protection of ground water, calculated per Ecology's MTCATPH11.1 spreadsheet model based on the most stringent pathways

Residual soil at the site in all accessible areas (except under the SR 522 roadway) has been remediated to MTCA Method A or B cleanup levels, and therefore poses no risk to direct-contact exposure under a residential scenario, or to ground water by leaching.

* * *

We appreciate the opportunity to provide our services on this project. Please feel free to call us if you have any questions or need more information.

Sincerely,
HWA GeoSciences Inc.

State of Washington
Hydrogeologist
170
Licensed Geologist
Arnon Sugar

11-4-10

State of Washington
Geologist
Hydrogeologist
327
Licensed Geologist
NORMAN C. NIELSEN

11/4/10

Arnie Sugar, LG, LHG
President

Norm Nielsen, LG, LHG, PMP
Senior Hydrogeologist

APPENDIX A

MTCATPH11.1 METHOD B SPREADSHEET PRINTOUTS

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/11/10

Site Name: Bothell Crossroads, Bothell Paint Site

Sample Name: P-TP-1-3

Notes for Data Entry **Set Default Hydrogeology**

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	0.0603	0.01%
AL_EC >6-8	0.0404	0.00%
AL_EC >8-10	6.1	0.69%
AL_EC >10-12	46	5.23%
AL_EC >12-16	150	17.05%
AL_EC >16-21	56	6.36%
AL_EC >21-34	280	31.82%
AR_EC >8-10	6	0.69%
AR_EC >10-12	8	0.90%
AR_EC >12-16	36	4.09%
AR_EC >16-21	49.6867	5.65%
AR_EC >21-34	239.9993	27.28%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0	0.00%
Naphthalene	0.21	0.02%
1-Methyl Naphthalene	0.81	0.09%
2-Methyl Naphthalene	0.56	0.06%
n-Hexane	0.0603	0.01%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.069	0.01%
Benzo(b)fluoranthene	0.048	0.01%
Benzo(k)fluoranthene	0.000308	0.00%
Benzo(a)pyrene	0.066	0.01%
Chrysene	0.13	0.01%
Dibenz(a,h)anthracene	0.000342	0.00%
Indeno(1,2,3-cd)pyrene	0.000373	0.00%
Sum	879.831	100.00%

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here: 800 ug/L

REMARK:
Bothell Paint site pot hole sample
MTCA Method A cleanup level = 800 mg/Kg because benzene was detected in ground water in onsite monitoring wells

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/11/2010
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-1-3
Measured Soil TPH Concentration, mg/kg: **879.831**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc RISK @	With Measured Soil Conc HI @	Does Measured Soil Conc Pass or Fail?
Protection of Soil Direct Contact: Human Health	Method B	1,153	7.63E-07	2.76E-01	Pass
	Method C	40,129	1.89E-07	2.19E-02	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	100% NAPL	8.69E-10	2.35E-01	Pass
	Target TPH GW Conc. @ 800 ug/L	100% NAPL	NA	NA	Pass

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	**Method C: Industrial Land Use**
Protective Soil Concentration, TPH mg/kg	**1,153.11**	**40,129.24**
Most Stringent Criterion	**Risk of cPAHs mixture= 1E-6**	**HI =1**

Soil Criteria	**Protective Soil Concentration @Method B**				**Protective Soil Concentration @Method C**			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	*NO*	3.19E+03	2.77E-06	1.00E+00	YES	4.01E+04	8.64E-06	1.00E+00
Total Risk=1E-5	*NO*	1.15E+04	1.00E-05	3.61E+00	*NO*	4.64E+04	1.00E-05	1.16E+00
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	YES	1.15E+03	1.00E-06	3.61E-01				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**NA**
Protective Ground Water Concentration, ug/L	**NA**
Protective Soil Concentration, mg/kg	**Soil-to-Ground Water is not a critical pathway!**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	9.25E+01	8.60E-10	2.69E-01	100% NAPL
Total Risk = 1E-5	YES	9.25E+01	8.60E-10	2.69E-01	100% NAPL
Total Risk = 1E-6	YES	9.25E+01	8.60E-10	2.69E-01	100% NAPL
Risk of cPAHs mixture= 1E-5	YES	9.25E+01	8.60E-10	2.69E-01	100% NAPL
Benzene MCL = 5 ug/L	NA	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 78000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	9.25E+01	8.60E-10	2.69E-01	**100% NAPL**

Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Main Data Entry Form and Calculation Summary

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/12/10
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-4-3

Notes for Data Entry
Set Default Hydrogeology
Clear All Soil Concentration Data Entry Cells
Restore All Soil Concentration Data cleared previously

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	0.0480	0.02%
AL_EC >6-8	0.0404	0.02%
AL_EC >8-10	0.0512	0.03%
AL_EC >10-12	4.2	2.16%
AL_EC >12-16	13	6.68%
AL_EC >16-21	14	7.19%
AL_EC >21-34	100	51.35%
AR_EC >8-10	0	0.02%
AR_EC >10-12	1	0.32%
AR_EC >12-16	4.4	2.26%
AR_EC >16-21	10.9237	5.61%
AR_EC >21-34	46.9993	24.13%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0	0.00%
Naphthalene	0.032	0.02%
1-Methyl Naphthalene	0.11	0.06%
2-Methyl Naphthalene	0.14	0.07%
n-Hexane	0.0603	0.03%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.017	0.01%
Benzo(b)fluoranthene	0.011	0.01%
Benzo(k)fluoranthene	0.000308	0.00%
Benzo(a)pyrene	0.017	0.01%
Chrysene	0.031	0.02%
Dibenz(a,h)anthracene	0.000342	0.00%
Indeno(1,2,3-cd)pyrene	0.000373	0.00%
Sum	194.7407	100.00%

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	800	ug/L

REMARK:
Bothell Paint site pot hole sample
MTCA Method A cleanup level = 800 mg/Kg because benzene was detected in ground water in onsite monitoring wells

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/12/2010
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-4-3
Measured Soil TPH Concentration, mg/kg: **194.741**

1. Summary of Calculation Results

Exposure Pathway	**Method/Goal**	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	999	1.95E-07	4.10E-02	Pass
	Method C	40,228	4.84E-08	3.32E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	100% NAPL	1.17E-09	8.55E-02	Pass
	Target TPH GW Conc. @ 800 ug/L	100% NAPL	NA	NA	Pass

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	**Method C: Industrial Land Use**
Protective Soil Concentration, TPH mg/kg	**998.85**	**40,227.71**
Most Stringent Criterion	**Risk of cPAHs mixture= 1E-6**	**Total Risk=1E-5**

Soil Criteria	**Protective Soil Concentration @Method B**				**Protective Soil Concentration @Method C**			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	*NO*	4.75E+03	4.76E-06	1.00E+00	*NO*	5.87E+04	1.46E-05	1.00E+00
Total Risk=1E-5	*NO*	9.99E+03	1.00E-05	2.10E+00	YES	4.02E+04	1.00E-05	6.86E-01
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	YES	9.99E+02	1.00E-06	2.10E-01				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**NA**
Protective Ground Water Concentration, ug/L	**NA**
Protective Soil Concentration, mg/kg	**Soil-to-Ground Water is not a critical pathway!**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	3.07E+01	1.15E-09	1.40E-01	100% NAPL
Total Risk = 1E-5	YES	3.07E+01	1.15E-09	1.40E-01	100% NAPL
Total Risk = 1E-6	YES	3.07E+01	1.15E-09	1.40E-01	100% NAPL
Risk of cPAHs mixture= 1E-5	YES	3.07E+01	1.15E-09	1.40E-01	100% NAPL
Benzene MCL = 5 ug/L	NA	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 77000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	3.07E+01	1.15E-09	1.40E-01	**100% NAPL**

Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Main Data Entry Form and Calculation Summary

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/12/10
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-13-3

Notes for Data Entry
Set Default Hydrogeology
Clear All Soil Concentration Data Entry Cells
Restore All Soil Concentration Data cleared previously

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	0.0480	0.00%
AL_EC >6-8	0.0404	0.00%
AL_EC >8-10	0.0512	0.00%
AL_EC >10-12	0.491	0.02%
AL_EC >12-16	0.3525	0.02%
AL_EC >16-21	35	1.66%
AL_EC >21-34	2000	94.68%
AR_EC >8-10	0	0.00%
AR_EC >10-12	1	0.03%
AR_EC >12-16	0.6281	0.03%
AR_EC >16-21	0.0092	0.00%
AR_EC >21-34	74.9993	3.55%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0	0.00%
Naphthalene	0.000159	0.00%
1-Methyl Naphthalene	0.000151	0.00%
2-Methyl Naphthalene	0.000307	0.00%
n-Hexane	0.0603	0.00%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.000338	0.00%
Benzo(b)fluoranthene	0.00039	0.00%
Benzo(k)fluoranthene	0.000308	0.00%
Benzo(a)pyrene	0.000261	0.00%
Chrysene	0.0079	0.00%
Dibenz(a,h)anthracene	0.000342	0.00%
Indeno(1,2,3-cd)pyrene	0.000373	0.00%
Sum	2112.349311	100.00%

REMARK:
Bothell Paint site pot hole sample
MTCA Method A cleanup level = 800 mg/Kg because benzene was detected in ground water in onsite monitoring wells

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	800	ug/L

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/12/2010
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-13-3
Measured Soil TPH Concentration, mg/kg: **2,112.349**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	39,709	4.97E-09	5.32E-02	Pass
	Method C	478,924	1.23E-09	4.41E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectio	100% NAPL	3.25E-12	6.91E-03	Pass
	Target TPH GW Conc. @ 800 ug/L	100% NAPL	NA	NA	Pass

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

Warning! Check Residual Saturation (WAC340-747(10)).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	**39,708.79**	**478,924.20**
Most Stringent Criterion	**HI =1**	**HI =1**

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	YES	3.97E+04	9.34E-08	1.00E+00	YES	4.79E+05	2.80E-07	1.00E+00
Total Risk=1E-5	*NO*	4.25E+06	1.00E-05	1.07E+02	*NO*	1.71E+07	1.00E-05	3.58E+01
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	*NO*	4.25E+05	1.00E-06	1.07E+01				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**NA**
Protective Ground Water Concentration, ug/L	**NA**
Protective Soil Concentration, mg/kg	**Soil-to-Ground Water is not a critical pathway!**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	1.78E+00	3.26E-12	7.56E-03	100% NAPL
Total Risk = 1E-5	YES	1.78E+00	3.26E-12	7.56E-03	100% NAPL
Total Risk = 1E-6	YES	1.78E+00	3.26E-12	7.56E-03	100% NAPL
Risk of cPAHs mixture= 1E-5	YES	1.78E+00	3.26E-12	7.56E-03	100% NAPL
Benzene MCL = 5 ug/L	NA	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 69000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	1.78E+00	3.26E-12	7.56E-03	**100% NAPL**

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/12/10
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-18-2

Notes for Data Entry **Set Default Hydrogeology**

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	0.0480	0.01%
AL_EC >6-8	0.0404	0.01%
AL_EC >8-10	2.8	0.58%
AL_EC >10-12	14	2.88%
AL_EC >12-16	41	8.43%
AL_EC >16-21	22	4.52%
AL_EC >21-34	250	51.37%
AR_EC >8-10	0	0.01%
AR_EC >10-12	2	0.50%
AR_EC >12-16	12	2.47%
AR_EC >16-21	21.8860	4.50%
AR_EC >21-34	119.9785	24.65%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0	0.00%
Naphthalene	0.065	0.01%
1-Methyl Naphthalene	0.073	0.02%
2-Methyl Naphthalene	0.088	0.02%
n-Hexane	0.0603	0.01%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.024	0.00%
Benzo(b)fluoranthene	0.016	0.00%
Benzo(k)fluoranthene	0.01	0.00%
Benzo(a)pyrene	0.026	0.01%
Chrysene	0.038	0.01%
Dibenz(a,h)anthracene	0.0095	0.00%
Indeno(1,2,3-cd)pyrene	0.012	0.00%
Sum	486.6421	100.00%

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	800	ug/L

REMARK:
Bothell Paint site pot hole sample
MTCA Method A cleanup level = 800 mg/Kg because benzene was detected in ground water in onsite monitoring wells

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/12/2010
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-18-2
Measured Soil TPH Concentration, mg/kg: **486.642**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	1,505	3.23E-07	1.08E-01	Pass
	Method C	55,972	8.03E-08	8.69E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	100% NAPL	7.02E-10	1.00E-01	Pass
	Target TPH GW Conc. @ 800 ug/L	100% NAPL	NA	NA	Pass

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	**1,504.65**	**55,972.28**
Most Stringent Criterion	**Risk of cPAHs mixture= 1E-6**	**HI =1**

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	*NO*	4.50E+03	2.99E-06	1.00E+00	YES	5.60E+04	9.24E-06	1.00E+00
Total Risk=1E-5	*NO*	1.50E+04	1.00E-05	3.34E+00	*NO*	6.06E+04	1.00E-05	1.08E+00
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	YES	1.50E+03	1.00E-06	3.34E-01				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**NA**
Protective Ground Water Concentration, ug/L	**NA**
Protective Soil Concentration, mg/kg	**Soil-to-Ground Water is not a critical pathway!**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	3.15E+01	6.95E-10	1.24E-01	100% NAPL
Total Risk = 1E-5	YES	3.15E+01	6.95E-10	1.24E-01	100% NAPL
Total Risk = 1E-6	YES	3.15E+01	6.95E-10	1.24E-01	100% NAPL
Risk of cPAHs mixture= 1E-5	YES	3.15E+01	6.95E-10	1.24E-01	100% NAPL
Benzene MCL = 5 ug/L	NA	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 77000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	3.15E+01	6.95E-10	1.24E-01	**100% NAPL**

Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Main Data Entry Form and Calculation Summary

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/14/10
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-23-2

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	1.6	0.58%
AL_EC >6-8	1.6	0.58%
AL_EC >8-10	1.6	0.58%
AL_EC >10-12	0.736	0.27%
AL_EC >12-16	10.35	3.73%
AL_EC >16-21	10.35	3.73%
AL_EC >21-34	218.5	78.69%
AR_EC >8-10	2	0.72%
AR_EC >10-12	0.92	0.33%
AR_EC >12-16	9.89	3.56%
AR_EC >16-21	9.89	3.56%
AR_EC >21-34	9.89	3.56%
Benzene	0.0000011	0.00%
Toluene	0.00265	0.00%
Ethylbenzene	0.00055	0.00%
Total Xylenes	0.00105	0.00%
Naphthalene	0.00355	0.00%
1-Methyl Naphthalene	0.0185	0.01%
2-Methyl Naphthalene	0.038	0.01%
n-Hexane	0.1	0.04%
MTBE	0.0000011	0.00%
Ethylene Dibromide (EDB)	0.0000011	0.00%
1,2 Dichloroethane (EDC)	0.0000011	0.00%
Benzo(a)anthracene	0.028	0.01%
Benzo(b)fluoranthene	0.032	0.01%
Benzo(k)fluoranthene	0.024	0.01%
Benzo(a)pyrene	0.037	0.01%
Chrysene	0.031	0.01%
Dibenz(a,h)anthracene	0.0096	0.00%
Indeno(1,2,3-cd)pyrene	0.029	0.01%
Sum	277.6809044	100.00%

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	800	ug/L

Notes for Data Entry **Set Default Hydrogeology**

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

REMARK:
This is test 4 using MTCATPH11.1 for a synthetic TPH that is:
3.05% gasoline
14.58% diesel
82.25% oil (primarily EC 21-34 aliphatics)
and useing OnSite Environmental's reported PAH results (Method 8270D/SIM) which were the only VPH/EPH-related detects in the original analyses.

Also, entered benzene, MTBE, EDB, and EDC at 0.001 x MDL

Original NWTPH-Gx/Dx analysis was:
3.08% gasoline
14.66% diesel (assuming diesel was present at the PQL of 41 mg/kg)
82.26% oil

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/14/2010
Site Name: Bothell Crossroads, Bothell Paint Site
Sample Name: P-TP-23-2
Measured Soil TPH Concentration, mg/kg: **277.681**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	581	4.78E-07	2.43E-02	Pass
	Method C	23,386	1.19E-07	1.96E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	100% NAPL	3.45E-07	1.17E-01	Pass
	Target TPH GW Conc. @ 800 ug/L	100% NAPL	NA	NA	Pass

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	**580.75**	**23,385.60**
Most Stringent Criterion	**Risk of cPAHs mixture= 1E-6**	**Total Risk=1E-5**

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	*NO*	1.14E+04	1.96E-05	1.00E+00	*NO*	1.42E+05	6.06E-05	1.00E+00
Total Risk=1E-5	*NO*	5.81E+03	1.00E-05	5.09E-01	YES	2.34E+04	1.00E-05	1.65E-01
Risk of Benzene= 1E-6	*NO*	4.58E+09	7.90E+00	4.02E+05	NA			
Risk of cPAHs mixture= 1E-6	YES	5.81E+02	1.00E-06	5.09E-02				
EDB	*NO*	2.74E+06	4.73E-03	2.40E+02				
EDC	*NO*	2.56E+09	4.41E+00	2.25E+05				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	**NA**
Protective Ground Water Concentration, ug/L	**NA**
Protective Soil Concentration, mg/kg	**Soil-to-Ground Water is not a critical pathway!**

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	1.43E+02	2.18E-06	1.91E-01	100% NAPL
Total Risk = 1E-5	YES	1.43E+02	2.18E-06	1.91E-01	100% NAPL
Total Risk = 1E-6	YES	1.17E+02	1.00E-06	1.66E-01	1.24E+03
Risk of cPAHs mixture= 1E-5	YES	1.43E+02	2.18E-06	1.91E-01	100% NAPL
Benzene MCL = 5 ug/L	YES	1.43E+02	2.18E-06	1.91E-01	100% NAPL
MTBE = 20 ug/L	YES	1.43E+02	2.18E-06	1.91E-01	100% NAPL

Note: 100% NAPL is 70000 mg/kg TPH.

3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	1.43E+02	2.18E-06	1.91E-01	**100% NAPL**

APPENDIX B

LABORATORY CERTIFICATES OF ANALYSIS

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 1, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re:	Analytical Data for Project 2007-098
Laboratory Reference No. 1008-195

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 26, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

Case Narrative

Samples were collected on August 25, 2010 and received by the laboratory on August 26, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx Analysis

Per EPA Method 5035A, some samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis. The other samples were received by the laboratory in pre-weighed 40 mL VOA vials, preserved with either Methanol or Sodium Bisulfate.

The chromatogram for sample P-TP-5-1 is similar to mineral spirits.

Volatiles EPA 8260B Analysis

Per EPA Method 5035A, some samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis. The other samples were received by the laboratory in pre-weighed 40 mL VOA vials, preserved with either Methanol or Sodium Bisulfate.

The final internal standard did not pass for sample P-TP-5-3 due to matrix effects. The sample was re-run with similar results. All results from Bromobenzene onward, including PQLs, should be considered estimates.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-1-3**					
Laboratory ID:	08-195-01					
Diesel Range Organics	**280**	29	NWTPH-Dx	8-27-10	8-27-10	N
Lube Oil	**950**	58	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*108*	*50-150*				
Client ID:	**P-TP-1-6**					
Laboratory ID:	08-195-02					
Diesel Range Organics	**ND**	39	NWTPH-Dx	8-27-10	8-27-10	
Lube Oil	**100**	78	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				
Client ID:	**P-TP-2-2**					
Laboratory ID:	08-195-03					
Diesel Range Organics	**810**	140	NWTPH-Dx	8-27-10	8-27-10	N
Lube Oil	**3700**	280	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				
Client ID:	**P-TP-3-3**					
Laboratory ID:	08-195-05					
Diesel Range Organics	**74**	29	NWTPH-Dx	8-27-10	8-27-10	N
Lube Oil	**600**	59	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				
Client ID:	**P-TP-4-3**					
Laboratory ID:	08-195-07					
Diesel Range Organics	**200**	29	NWTPH-Dx	8-27-10	8-27-10	N
Lube Oil	**650**	58	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				
Client ID:	**P-TP-5-1**					
Laboratory ID:	08-195-09					
Diesel Range Organics	**ND**	140	NWTPH-Dx	8-27-10	8-27-10	U1
Lube Oil	**720**	61	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-5-3**					
Laboratory ID:	08-195-10					
Diesel Range Organics	**ND**	63	NWTPH-Dx	8-27-10	8-27-10	
Lube Oil	**170**	130	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				
Client ID:	**P-TP-6-1**					
Laboratory ID:	08-195-11					
Diesel Range Organics	**ND**	37	NWTPH-Dx	8-27-10	8-27-10	
Lube Oil Range Organics	**ND**	74	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*102*	*50-150*				
Client ID:	**P-TP-7-2**					
Laboratory ID:	08-195-12					
Diesel Range Organics	**ND**	28	NWTPH-Dx	8-27-10	8-27-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*103*	*50-150*				
Client ID:	**P-TP-7-5**					
Laboratory ID:	08-195-13					
Diesel Range Organics	**ND**	140	NWTPH-Dx	8-27-10	8-27-10	
Lube Oil	**490**	280	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				
Client ID:	**P-TP-8-3**					
Laboratory ID:	08-195-14					
Diesel Range Organics	**ND**	27	NWTPH-Dx	8-27-10	8-27-10	
Lube Oil	**96**	55	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*108*	*50-150*				
Client ID:	**P-TP-8-6**					
Laboratory ID:	08-195-15					
Diesel Range Organics	**ND**	230	NWTPH-Dx	8-27-10	8-27-10	U1
Lube Oil	**1500**	190	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*98*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0827S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-27-10	8-27-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-27-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-199-01							
	ORIG	DUP						
Diesel Fuel #2	**94.9**	**81.1**				16	NA	
Lube Oil	**188**	**170**				10	NA	
Surrogate:								
o-Terphenyl			*93*	*98*	*50-150*			
Laboratory ID:	08-195-12							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*103*	*88*	*50-150*			

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-2-6**					
Laboratory ID:	08-195-04					
Diesel Fuel #2	**37**	34	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil	**180**	67	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*109*	*50-150*				
Client ID:	**P-TP-3-7**					
Laboratory ID:	08-195-06					
Diesel Range Organics	**ND**	35	NWTPH-Dx	8-31-10	9-1-10	U1
Lube Oil	**290**	66	NWTPH-Dx	8-31-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*114*	*50-150*				
Client ID:	**P-TP-4-6**					
Laboratory ID:	08-195-08					
Diesel Fuel #2	**430**	29	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil	**1700**	58	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*119*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0831S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*116*	*50-150*				

Analyte	Result		Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE							
Laboratory ID:	08-187-09						
	ORIG	DUP					
Diesel Range Organics	**ND**	**ND**			NA	NA	U1
Lube Oil	**260**	**178**			37	NA	
Surrogate:							
o-Terphenyl			*104* *96*	*50-150*			

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-1-3**					
Laboratory ID:	08-195-01					
Gasoline	**ND**	5.8	NWTPH-Gx	8-26-10	8-26-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*55-127*				
Client ID:	**P-TP-4-3**					
Laboratory ID:	08-195-07					
Gasoline	**ND**	5.3	NWTPH-Gx	8-26-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*55-127*				
Client ID:	**P-TP-5-1**					
Laboratory ID:	08-195-09					
Gasoline	**480**	7.0	NWTPH-Gx	8-26-10	8-27-10	Z
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*84*	*55-127*				
Client ID:	**P-TP-5-3**					
Laboratory ID:	08-195-10					
Gasoline	**ND**	20	NWTPH-Gx	8-26-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*61*	*55-127*				
Client ID:	**P-TP-6-1**					
Laboratory ID:	08-195-11					
Gasoline	**ND**	9.4	NWTPH-Gx	8-26-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*80*	*55-127*				
Client ID:	**P-TP-7-2**					
Laboratory ID:	08-195-12					
Gasoline	**ND**	4.4	NWTPH-Gx	8-26-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*81*	*55-127*				
Client ID:	**P-TP-7-5**					
Laboratory ID:	08-195-13					
Gasoline	**ND**	53	NWTPH-Gx	8-26-10	8-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*79*	*55-127*				

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

NWTPH-Gx
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0826S2					
Gasoline	**ND**	5.0	NWTPH-Gx	8-26-10	8-26-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*82*	*55-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-159-02										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*89*	*86*	*55-127*			

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-195-01					
Client ID:	**P-TP-1-3**					
Arsenic	**34**	12	6010B	8-30-10	8-30-10	
Barium	**74**	2.9	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.58	6010B	8-30-10	8-30-10	
Chromium	**29**	0.58	6010B	8-30-10	8-30-10	
Lead	**130**	5.8	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.29	7471A	8-26-10	8-26-10	
Selenium	**ND**	12	6010B	8-30-10	8-30-10	
Silver	**ND**	0.58	6010B	8-30-10	8-30-10	
Lab ID:	08-195-02					
Client ID:	**P-TP-1-6**					
Arsenic	**ND**	16	6010B	8-30-10	8-30-10	
Barium	**100**	3.9	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.78	6010B	8-30-10	8-30-10	
Chromium	**67**	0.78	6010B	8-30-10	8-30-10	
Lead	**ND**	7.8	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.39	7471A	8-26-10	8-26-10	
Selenium	**ND**	16	6010B	8-30-10	8-30-10	
Silver	**ND**	0.78	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-195-07					
Client ID:	**P-TP-4-3**					
Arsenic	**21**	12	6010B	8-30-10	8-30-10	
Barium	**81**	2.9	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.58	6010B	8-30-10	8-30-10	
Chromium	**41**	0.58	6010B	8-30-10	8-30-10	
Lead	**77**	5.8	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.29	7471A	8-26-10	8-26-10	
Selenium	**ND**	12	6010B	8-30-10	8-30-10	
Silver	**ND**	0.58	6010B	8-30-10	8-30-10	

Lab ID:	08-195-12					
Client ID:	**P-TP-7-2**					
Arsenic	**ND**	11	6010B	8-30-10	8-30-10	
Barium	**53**	2.8	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.55	6010B	8-30-10	8-30-10	
Chromium	**27**	0.55	6010B	8-30-10	8-30-10	
Lead	**ND**	5.5	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.28	7471A	8-26-10	8-26-10	
Selenium	**ND**	11	6010B	8-30-10	8-30-10	
Silver	**ND**	0.55	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-195-13					
Client ID:	**P-TP-7-5**					
Arsenic	**ND**	14	6020	8-30-10	8-30-10	
Barium	**380**	14	6010B	8-30-10	8-30-10	
Cadmium	**2.0**	1.4	6020	8-30-10	8-30-10	
Chromium	**100**	2.8	6010B	8-30-10	8-30-10	
Lead	**250**	28	6010B	8-30-10	8-30-10	
Mercury	**ND**	1.4	7471A	8-26-10	8-26-10	
Selenium	**ND**	55	6010B	8-30-10	8-30-10	
Silver	**ND**	2.8	6010B	8-30-10	8-30-10	

Lab ID:	08-195-14					
Client ID:	**P-TP-8-3**					
Arsenic	**ND**	11	6010B	8-30-10	8-30-10	
Barium	**33**	2.7	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.55	6010B	8-30-10	8-30-10	
Chromium	**22**	0.55	6010B	8-30-10	8-30-10	
Lead	**ND**	5.5	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.27	7471A	8-26-10	8-26-10	
Selenium	**ND**	11	6010B	8-30-10	8-30-10	
Silver	**ND**	0.55	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-195-15					
Client ID:	**P-TP-8-6**					
Arsenic	**27**	19	6010B	8-30-10	8-30-10	
Barium	**140**	9.5	6010B	8-30-10	8-30-10	
Cadmium	**ND**	1.9	6010B	8-30-10	8-30-10	
Chromium	**58**	1.9	6010B	8-30-10	8-30-10	
Lead	**92**	19	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.95	7471A	8-26-10	8-26-10	
Selenium	**ND**	38	6010B	8-30-10	8-30-10	
Silver	**ND**	1.9	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0830S5

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-26-10
Date Analyzed:	8-26-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0826S2

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-195-12

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**48.1**	**44.4**	8	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**24.2**	**21.3**	13	0.50	
Lead	**ND**	**ND**	NA	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 8-26-10
Date Analyzed: 8-26-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-176-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-195-12

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**95.6**	96	**95.8**	96	0	
Barium	100	**142**	94	**142**	94	0	
Cadmium	50	**44.0**	88	**43.5**	87	1	
Chromium	100	**110**	86	**110**	86	1	
Lead	250	**232**	93	**219**	88	6	
Selenium	100	**98.2**	98	**97.6**	98	1	
Silver	25	**21.4**	86	**21.2**	85	1	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted: 8-26-10
Date Analyzed: 8-26-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-176-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.50	**0.493**	99	**0.488**	98	1	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-195-08					
Client ID:	**P-TP-4-6**					
Arsenic	**28**	12	6010B	8-31-10	8-31-10	
Barium	**92**	2.9	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.58	6010B	8-31-10	8-31-10	
Chromium	**31**	0.58	6010B	8-31-10	8-31-10	
Lead	**140**	5.8	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.29	7471A	9-1-10	9-1-10	
Selenium	**ND**	12	6010B	8-31-10	8-31-10	
Silver	**ND**	0.58	6010B	8-31-10	8-31-10	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0831S3

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	5.0
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-1-10
Date Analyzed:	9-1-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0901S4

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 8-31-10
Date Analyzed: 8-31-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-217-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**31.9**	**31.9**	NA	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**17.3**	**18.7**	8	0.50	
Lead	**5.95**	**5.40**	10	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-1-10
Date Analyzed: 9-1-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-191-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 8-31-10
Date Analyzed: 8-31-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-217-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**99.2**	99	**97.3**	97	2	
Barium	100	**129**	97	**132**	100	2	
Cadmium	50	**48.0**	96	**46.9**	94	2	
Chromium	100	**116**	99	**114**	97	2	
Lead	250	**245**	96	**242**	94	2	
Selenium	100	**100**	100	**99.4**	99	1	
Silver	25	**23.6**	94	**23.0**	92	3	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

TOTAL METALS
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-1-10
Date Analyzed: 9-1-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-191-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.50	**0.457**	91	**0.461**	92	1	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B

page 1 of 2

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-195-09
Client ID:	**P-TP-5-1**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.00087
Chloromethane	ND		0.0044
Vinyl Chloride	ND		0.00087
Bromomethane	ND		0.00087
Chloroethane	ND		0.0044
Trichlorofluoromethane	ND		0.00087
1,1-Dichloroethene	ND		0.00087
Acetone	0.073		0.0087
Iodomethane	ND		0.0044
Carbon Disulfide	0.0012		0.00087
Methylene Chloride	ND		0.0044
(trans) 1,2-Dichloroethene	ND		0.00087
Methyl t-Butyl Ether	ND		0.00087
1,1-Dichloroethane	ND		0.00087
Vinyl Acetate	ND		0.0044
2,2-Dichloropropane	ND		0.00087
(cis) 1,2-Dichloroethene	ND		0.00087
2-Butanone	ND		0.0044
Bromochloromethane	ND		0.00087
Chloroform	ND		0.00087
1,1,1-Trichloroethane	ND		0.00087
Carbon Tetrachloride	ND		0.00087
1,1-Dichloropropene	ND		0.00087
Benzene	ND		0.00087
1,2-Dichloroethane	ND		0.00087
Trichloroethene	ND		0.00087
1,2-Dichloropropane	ND		0.00087
Dibromomethane	ND		0.00087
Bromodichloromethane	ND		0.00087
2-Chloroethyl Vinyl Ether	ND		0.0044
(cis) 1,3-Dichloropropene	ND		0.00087
Methyl Isobutyl Ketone	ND		0.0044
Toluene	ND		0.0044
(trans) 1,3-Dichloropropene	ND		0.00087

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B
page 2 of 2

Lab ID: 08-195-09
Client ID: **P-TP-5-1**

Compound	**Results**	**Flags**	**PQL**
1,1,2-Trichloroethane	ND		0.00087
Tetrachloroethene	ND		0.00087
1,3-Dichloropropane	ND		0.00087
2-Hexanone	ND		0.0044
Dibromochloromethane	ND		0.00087
1,2-Dibromoethane	ND		0.00087
Chlorobenzene	ND		0.00087
1,1,1,2-Tetrachloroethane	ND		0.00087
Ethylbenzene	ND		0.00087
m,p-Xylene	ND		0.0017
o-Xylene	ND		0.00087
Styrene	ND		0.00087
Bromoform	ND		0.00087
Isopropylbenzene	ND		0.00087
Bromobenzene	ND		0.00087
1,1,2,2-Tetrachloroethane	ND	U1	0.0087
1,2,3-Trichloropropane	ND		0.00087
n-Propylbenzene	ND		0.00087
2-Chlorotoluene	ND		0.00087
4-Chlorotoluene	ND		0.00087
1,3,5-Trimethylbenzene	ND		0.00087
tert-Butylbenzene	ND		0.00087
1,2,4-Trimethylbenzene	0.00093		0.00087
sec-Butylbenzene	0.0030		0.00087
1,3-Dichlorobenzene	ND		0.00087
p-Isopropyltoluene	ND		0.00087
1,4-Dichlorobenzene	ND		0.00087
1,2-Dichlorobenzene	ND		0.00087
n-Butylbenzene	0.0014		0.00087
1,2-Dibromo-3-chloropropane	ND		0.0044
1,2,4-Trichlorobenzene	ND		0.00087
Hexachlorobutadiene	ND		0.0044
Naphthalene	ND		0.00087
1,2,3-Trichlorobenzene	ND		0.00087

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	84	66-128
Toluene-d8	94	68-126
4-Bromofluorobenzene	94	53-134

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B
page 1 of 2

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-195-10
Client ID:	**P-TP-5-3**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0036
Chloromethane	ND		0.018
Vinyl Chloride	ND		0.0036
Bromomethane	ND		0.0036
Chloroethane	ND		0.018
Trichlorofluoromethane	ND		0.0036
1,1-Dichloroethene	ND		0.0036
Acetone	0.73		0.036
Iodomethane	ND		0.018
Carbon Disulfide	ND		0.0036
Methylene Chloride	ND		0.018
(trans) 1,2-Dichloroethene	ND		0.0036
Methyl t-Butyl Ether	ND		0.0036
1,1-Dichloroethane	ND		0.0036
Vinyl Acetate	ND		0.018
2,2-Dichloropropane	ND		0.0036
(cis) 1,2-Dichloroethene	ND		0.0036
2-Butanone	0.14		0.018
Bromochloromethane	ND		0.0036
Chloroform	ND		0.0036
1,1,1-Trichloroethane	ND		0.0036
Carbon Tetrachloride	ND		0.0036
1,1-Dichloropropene	ND		0.0036
Benzene	ND		0.0036
1,2-Dichloroethane	ND		0.0036
Trichloroethene	ND		0.0036
1,2-Dichloropropane	ND		0.0036
Dibromomethane	ND		0.0036
Bromodichloromethane	ND		0.0036
2-Chloroethyl Vinyl Ether	ND		0.018
(cis) 1,3-Dichloropropene	ND		0.0036
Methyl Isobutyl Ketone	ND		0.018
Toluene	ND		0.018
(trans) 1,3-Dichloropropene	ND		0.0036

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B
page 2 of 2

Lab ID: 08-195-10
Client ID: **P-TP-5-3**

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0036
Tetrachloroethene	ND		0.0036
1,3-Dichloropropane	ND		0.0036
2-Hexanone	ND		0.018
Dibromochloromethane	ND		0.0036
1,2-Dibromoethane	ND		0.0036
Chlorobenzene	ND		0.0036
1,1,1,2-Tetrachloroethane	ND		0.0036
Ethylbenzene	ND		0.0036
m,p-Xylene	ND		0.0071
o-Xylene	ND		0.0036
Styrene	ND		0.0036
Bromoform	ND		0.0036
Isopropylbenzene	ND		0.0036
Bromobenzene	ND		0.0036
1,1,2,2-Tetrachloroethane	ND		0.0036
1,2,3-Trichloropropane	ND		0.0036
n-Propylbenzene	ND		0.0036
2-Chlorotoluene	ND		0.0036
4-Chlorotoluene	ND		0.0036
1,3,5-Trimethylbenzene	ND		0.0036
tert-Butylbenzene	ND		0.0036
1,2,4-Trimethylbenzene	ND		0.0036
sec-Butylbenzene	ND		0.0036
1,3-Dichlorobenzene	ND		0.0036
p-Isopropyltoluene	ND		0.0036
1,4-Dichlorobenzene	ND		0.0036
1,2-Dichlorobenzene	ND		0.0036
n-Butylbenzene	ND		0.0036
1,2-Dibromo-3-chloropropane	ND		0.018
1,2,4-Trichlorobenzene	ND		0.0036
Hexachlorobutadiene	ND		0.018
Naphthalene	ND		0.0036
1,2,3-Trichlorobenzene	ND		0.0036

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	89	66-128
Toluene-d8	94	68-126
4-Bromofluorobenzene	78	53-134

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B
page 1 of 2

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-195-11
Client ID: P-TP-6-1

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0012
Chloromethane	ND		0.0062
Vinyl Chloride	ND		0.0012
Bromomethane	ND		0.0012
Chloroethane	ND		0.0062
Trichlorofluoromethane	ND		0.0012
1,1-Dichloroethene	ND		0.0012
Acetone	0.10		0.012
Iodomethane	ND		0.0062
Carbon Disulfide	0.0024		0.0012
Methylene Chloride	ND		0.0062
(trans) 1,2-Dichloroethene	ND		0.0012
Methyl t-Butyl Ether	ND		0.0012
1,1-Dichloroethane	ND		0.0012
Vinyl Acetate	ND		0.0062
2,2-Dichloropropane	ND		0.0012
(cis) 1,2-Dichloroethene	ND		0.0012
2-Butanone	0.022		0.0062
Bromochloromethane	ND		0.0012
Chloroform	ND		0.0012
1,1,1-Trichloroethane	ND		0.0012
Carbon Tetrachloride	ND		0.0012
1,1-Dichloropropene	ND		0.0012
Benzene	ND		0.0012
1,2-Dichloroethane	ND		0.0012
Trichloroethene	ND		0.0012
1,2-Dichloropropane	ND		0.0012
Dibromomethane	ND		0.0012
Bromodichloromethane	ND		0.0012
2-Chloroethyl Vinyl Ether	ND		0.0062
(cis) 1,3-Dichloropropene	ND		0.0012
Methyl Isobutyl Ketone	ND		0.0062
Toluene	ND		0.0062
(trans) 1,3-Dichloropropene	ND		0.0012

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B

page 2 of 2

Lab ID:	08-195-11
Client ID:	**P-TP-6-1**

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0012
Tetrachloroethene	ND		0.0012
1,3-Dichloropropane	ND		0.0012
2-Hexanone	ND		0.0062
Dibromochloromethane	ND		0.0012
1,2-Dibromoethane	ND		0.0012
Chlorobenzene	ND		0.0012
1,1,1,2-Tetrachloroethane	ND		0.0012
Ethylbenzene	ND		0.0012
m,p-Xylene	ND		0.0025
o-Xylene	ND		0.0012
Styrene	ND		0.0012
Bromoform	ND		0.0012
Isopropylbenzene	ND		0.0012
Bromobenzene	ND		0.0012
1,1,2,2-Tetrachloroethane	ND		0.0012
1,2,3-Trichloropropane	ND		0.0012
n-Propylbenzene	ND		0.0012
2-Chlorotoluene	ND		0.0012
4-Chlorotoluene	ND		0.0012
1,3,5-Trimethylbenzene	ND		0.0012
tert-Butylbenzene	ND		0.0012
1,2,4-Trimethylbenzene	ND		0.0012
sec-Butylbenzene	ND		0.0012
1,3-Dichlorobenzene	ND		0.0012
p-Isopropyltoluene	ND		0.0012
1,4-Dichlorobenzene	ND		0.0012
1,2-Dichlorobenzene	ND		0.0012
n-Butylbenzene	ND		0.0012
1,2-Dibromo-3-chloropropane	ND		0.0062
1,2,4-Trichlorobenzene	ND		0.0012
Hexachlorobutadiene	ND		0.0062
Naphthalene	ND		0.0012
1,2,3-Trichlorobenzene	ND		0.0012

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	89	66-128
Toluene-d8	94	68-126
4-Bromofluorobenzene	88	53-134

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 1 of 2

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0830S1

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0010
Chloromethane	ND		0.0050
Vinyl Chloride	ND		0.0010
Bromomethane	ND		0.0010
Chloroethane	ND		0.0050
Trichlorofluoromethane	ND		0.0010
1,1-Dichloroethene	ND		0.0010
Acetone	ND		0.010
Iodomethane	ND		0.0050
Carbon Disulfide	ND		0.0010
Methylene Chloride	ND		0.0050
(trans) 1,2-Dichloroethene	ND		0.0010
Methyl t-Butyl Ether	ND		0.0010
1,1-Dichloroethane	ND		0.0010
Vinyl Acetate	ND		0.0050
2,2-Dichloropropane	ND		0.0010
(cis) 1,2-Dichloroethene	ND		0.0010
2-Butanone	ND		0.0050
Bromochloromethane	ND		0.0010
Chloroform	ND		0.0010
1,1,1-Trichloroethane	ND		0.0010
Carbon Tetrachloride	ND		0.0010
1,1-Dichloropropene	ND		0.0010
Benzene	ND		0.0010
1,2-Dichloroethane	ND		0.0010
Trichloroethene	ND		0.0010
1,2-Dichloropropane	ND		0.0010
Dibromomethane	ND		0.0010
Bromodichloromethane	ND		0.0010
2-Chloroethyl Vinyl Ether	ND		0.0050
(cis) 1,3-Dichloropropene	ND		0.0010
Methyl Isobutyl Ketone	ND		0.0050
Toluene	ND		0.0050
(trans) 1,3-Dichloropropene	ND		0.0010

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 2 of 2

Lab ID: MB0830S1

Compound	**Results**	**Flags**	**PQL**
1,1,2-Trichloroethane	ND		0.0010
Tetrachloroethene	ND		0.0010
1,3-Dichloropropane	ND		0.0010
2-Hexanone	ND		0.0050
Dibromochloromethane	ND		0.0010
1,2-Dibromoethane	ND		0.0010
Chlorobenzene	ND		0.0010
1,1,1,2-Tetrachloroethane	ND		0.0010
Ethylbenzene	ND		0.0010
m,p-Xylene	ND		0.0020
o-Xylene	ND		0.0010
Styrene	ND		0.0010
Bromoform	ND		0.0010
Isopropylbenzene	ND		0.0010
Bromobenzene	ND		0.0010
1,1,2,2-Tetrachloroethane	ND		0.0010
1,2,3-Trichloropropane	ND		0.0010
n-Propylbenzene	ND		0.0010
2-Chlorotoluene	ND		0.0010
4-Chlorotoluene	ND		0.0010
1,3,5-Trimethylbenzene	ND		0.0010
tert-Butylbenzene	ND		0.0010
1,2,4-Trimethylbenzene	ND		0.0010
sec-Butylbenzene	ND		0.0010
1,3-Dichlorobenzene	ND		0.0010
p-Isopropyltoluene	ND		0.0010
1,4-Dichlorobenzene	ND		0.0010
1,2-Dichlorobenzene	ND		0.0010
n-Butylbenzene	ND		0.0010
1,2-Dibromo-3-chloropropane	ND		0.0050
1,2,4-Trichlorobenzene	ND		0.0010
Hexachlorobutadiene	ND		0.0050
Naphthalene	ND		0.0010
1,2,3-Trichlorobenzene	ND		0.0010

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	90	66-128
Toluene-d8	97	68-126
4-Bromofluorobenzene	98	53-134

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0830S1

Compound	**Spike Amount**	**SB**	**Percent Recovery**	**SBD**	**Percent Recovery**	**Recovery Limits**	**Flags**
1,1-Dichloroethene	0.0500	0.0443	89	0.0464	93	70-130	
Benzene	0.0500	0.0417	83	0.0436	87	70-121	
Trichloroethene	0.0500	0.0416	83	0.0430	86	70-124	
Toluene	0.0500	0.0414	83	0.0430	86	70-123	
Chlorobenzene	0.0500	0.0448	90	0.0464	93	71-119	

	RPD	**RPD Limit**	**Flags**
1,1-Dichloroethene	5	14	
Benzene	4	10	
Trichloroethene	3	12	
Toluene	4	12	
Chlorobenzene	3	9	

Date of Report: September 1, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195
Project: 2007-098

% MOISTURE

Date Analyzed: 8-27&31-10

Client ID	Lab ID	% Moisture
P-TP-1-3	08-195-01	14
P-TP-1-6	08-195-02	36
P-TP-2-2	08-195-03	9
P-TP-2-6	08-195-04	26
P-TP-3-3	08-195-05	15
P-TP-3-7	08-195-06	24
P-TP-4-3	08-195-07	14
P-TP-4-6	08-195-08	14
P-TP-5-1	08-195-09	17
P-TP-5-3	08-195-10	60
P-TP-6-1	08-195-11	33
P-TP-7-2	08-195-12	9
P-TP-7-5	08-195-13	82
P-TP-8-3	08-195-14	9
P-TP-8-6	08-195-15	74

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z - The sample chromatogram is similar to mineral spirits

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

08-195

DATE: 8/25/10
PAGE: 1 of 1

PROJECT NAME: Bothell Crossroads #: 2007-098
SITE CODE: Bothell Paint
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: PHONE:

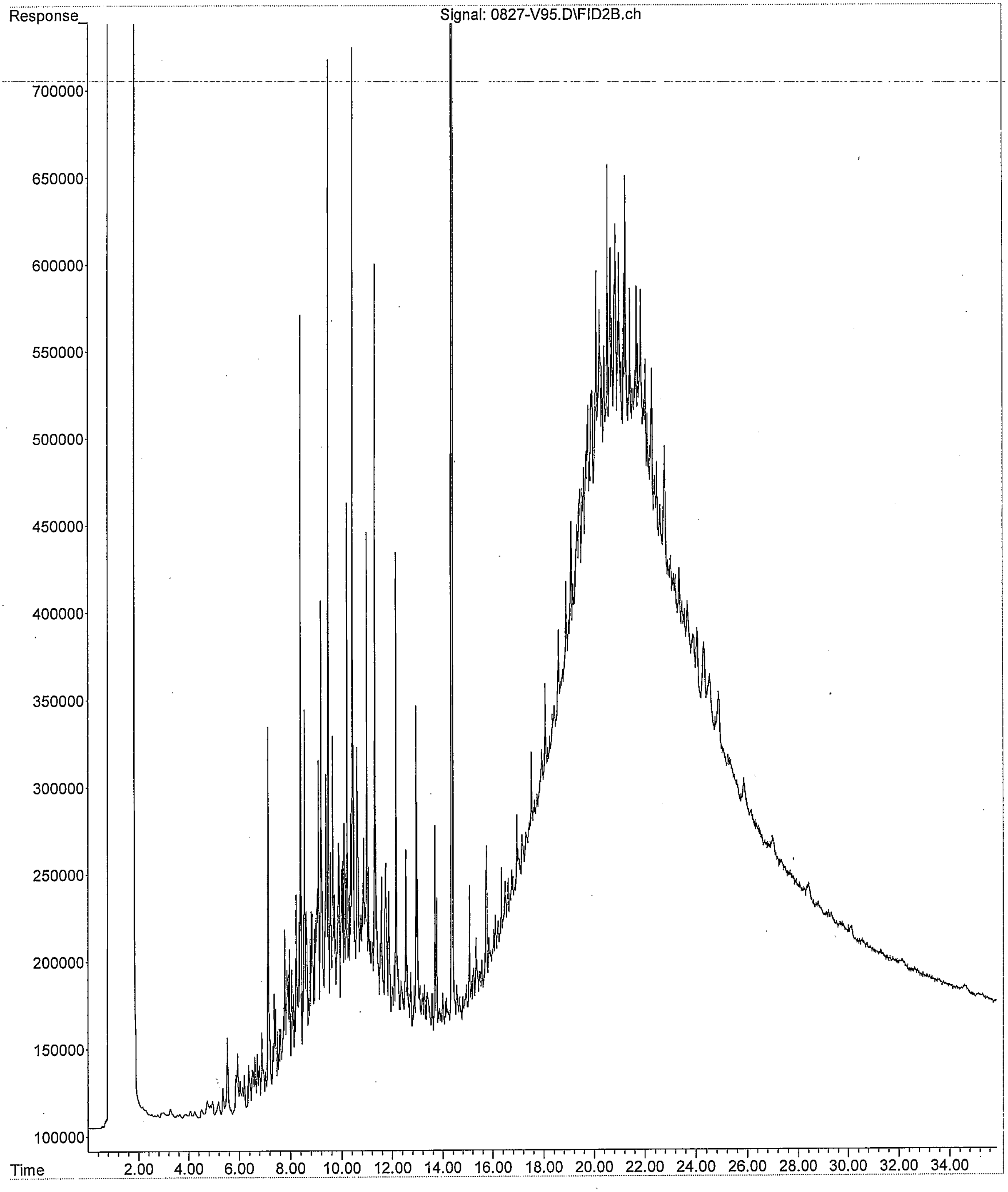
Rush TAT - 2 day TAT
(EPH, VPH - Std. TAT)

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	RCRA Metals	EPH/VPH (HOLD)	VOCs 8260	cPAHs	% Moisture	REMARKS
P-TP-1-3	8/25/10	1020	S	1	6	/	X	/	/			/	
P-TP-1-6	↓	1030	↓	2	5	/		/				↓	
P-TP-2-2		1400		3	5	/							
P-TP-2-6		1130		4	5	⊗						⊗	
P-TP-3-3		1200		5	5	/						/	
P-TP-3-7		1215		6	5	⊗						⊗	
P-TP-4-3		1230		7	7	/	X	/	/			/	
P-TP-4-6		1245		8	5	⊗		⊗				⊗	
P-TP-5-1		1310		9	5	/	X			/		/	⊗ Added 8/30/10 DB 5:22 pm - 1 day TAT.
P-TP-5-3		1315		10	5	/	/			/		↓	
P-TP-6-1		1330		11	5	/	/			/			
P-TP-7-2		1355		12	5	/	/	/					
P-TP-7-5		1400		13	5	/	/	/					
P-TP-8-3		1445		14	5	/		/					
P-TP-8-6	↓	1500	↓	15	5	/		/				↓	

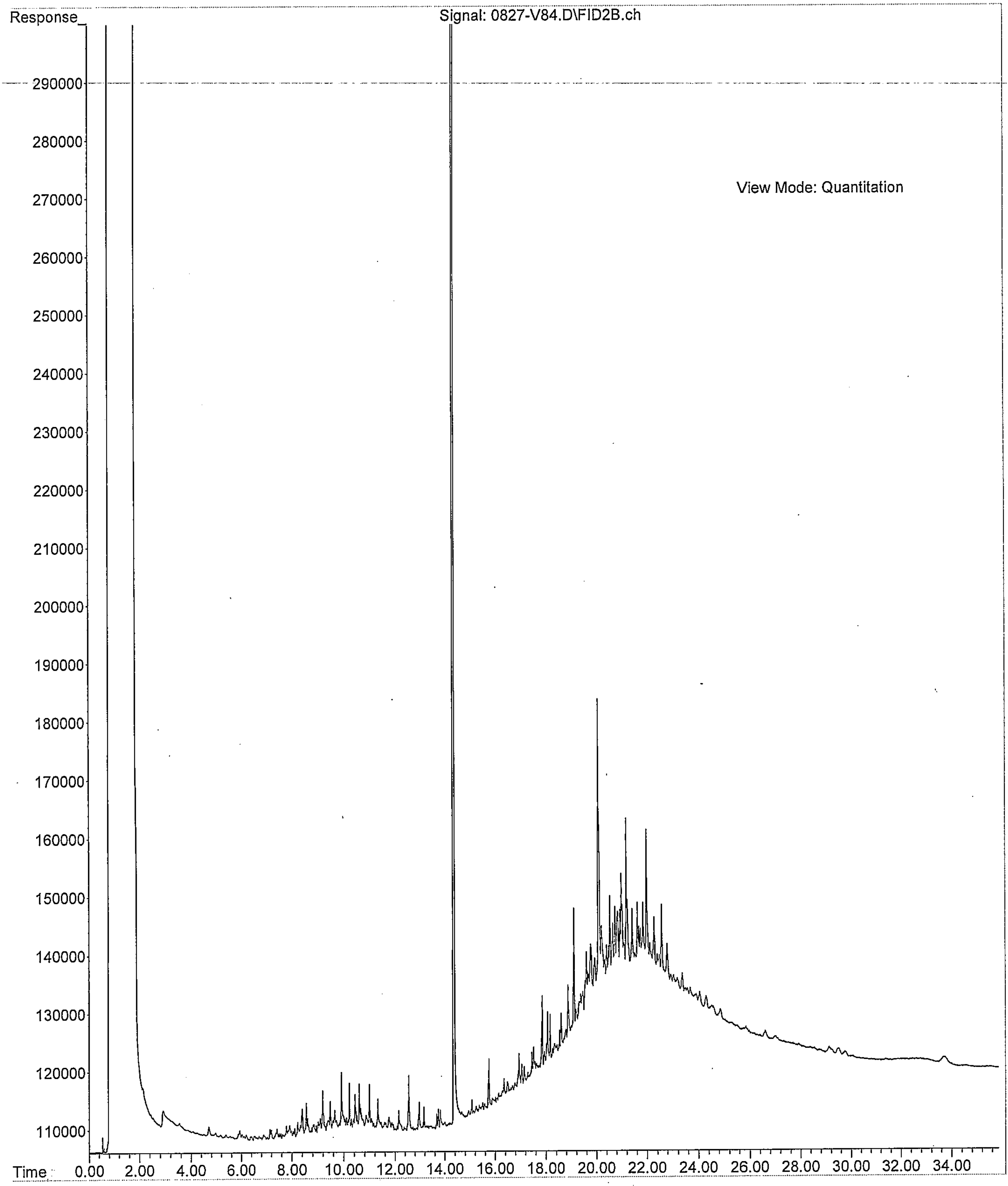
PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fisk		HWA GeoSciences	8/26/10	10:10am	
Received by:	Young Dong		Speedy	8/26/10	10:10am	
Relinquished by:	Young Dong		Speedy	8/26/10	10:54am	
Received by:	Mom Vuon		OSE	8/26/10	1054	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

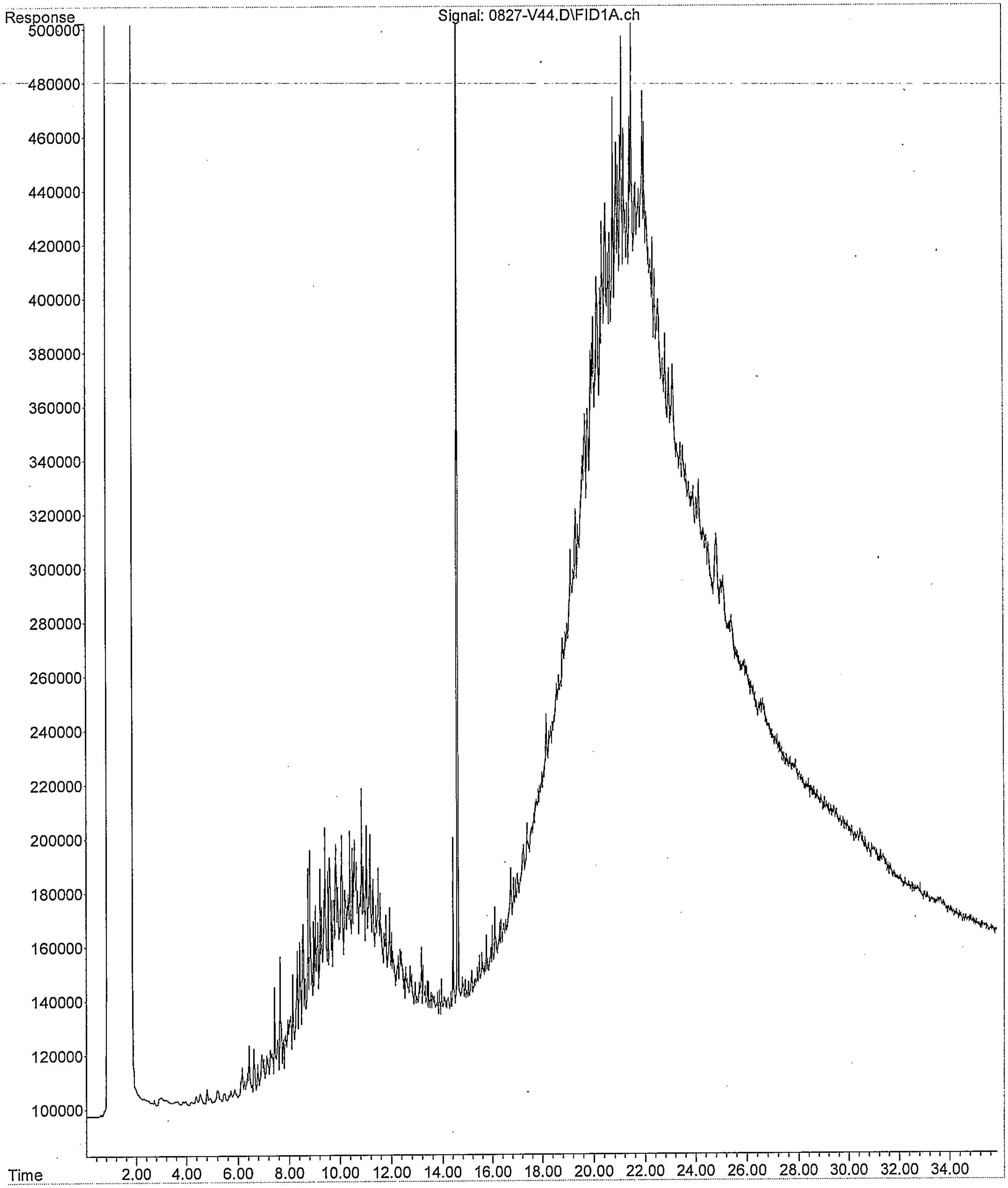
File   :C:\msdchem\2\DATA\V100827.SEC\0827-V95.D
Operator   :
Acquired   : 28 Aug 2010 15:32   using AcqMethod V100820F.M
Instrument :   VIGO
Sample Name: 08-195-01
Misc Info   :
Vial Number: 95



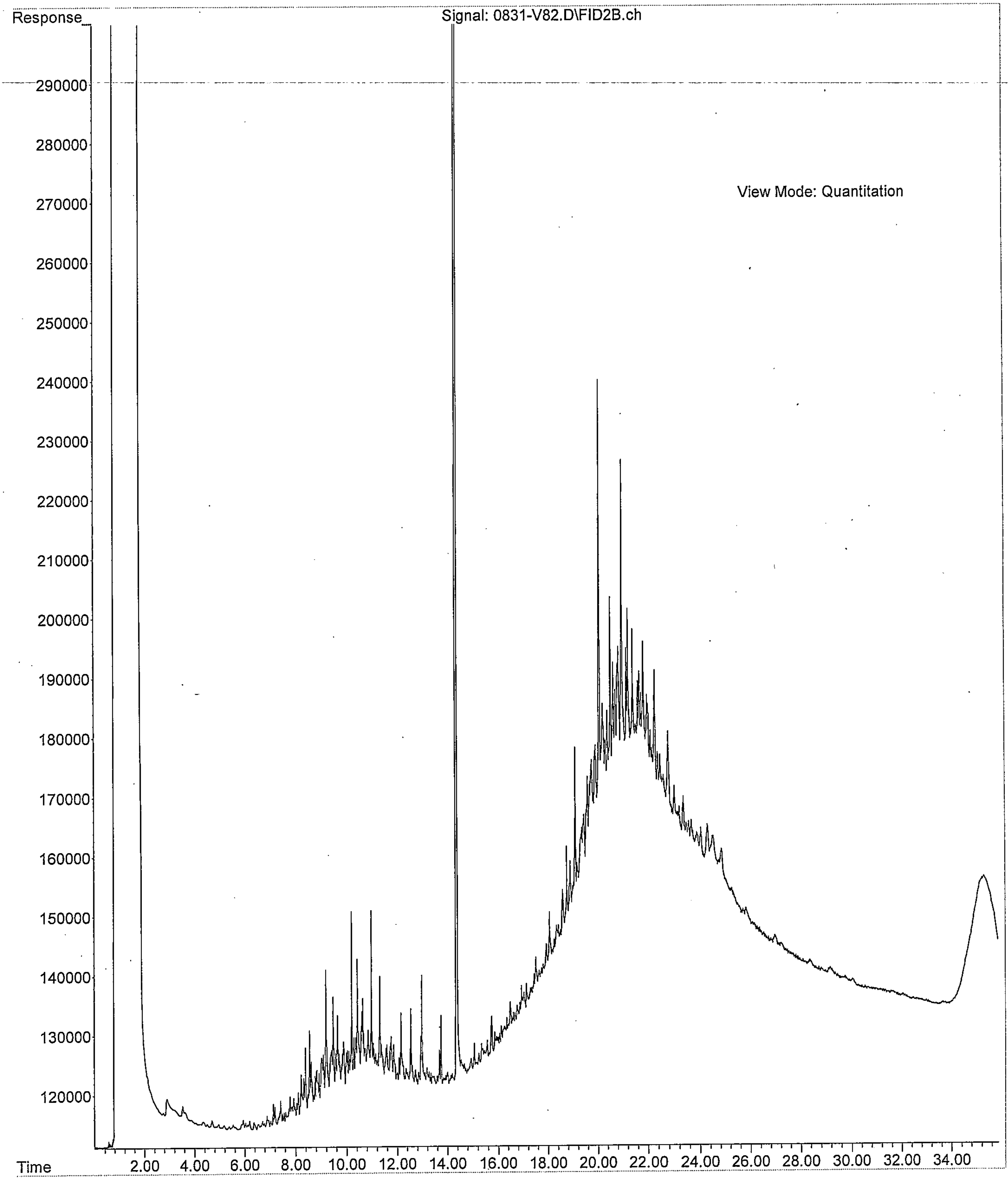
```
File        :C:\msdchem\2\DATA\V100827.SEC\0827-V84.D
Operator    :
Acquired    : 28 Aug 2010   8:13     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-02
Misc Info   :
Vial Number: 84
```



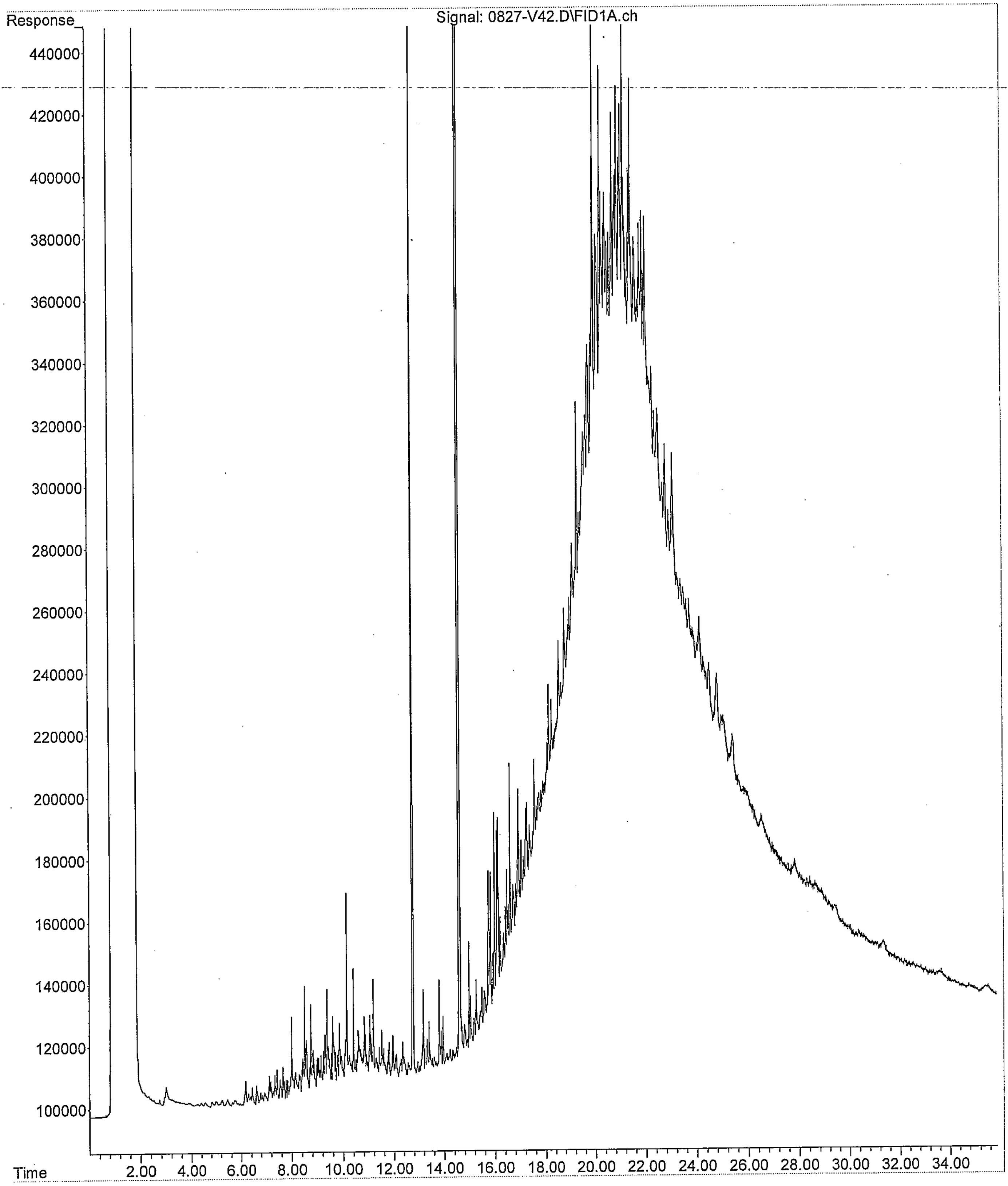
```
File        :C:\msdchem\2\DATA\V100827\0827-V44.D
Operator    :
Acquired    : 28 Aug 2010  14:52     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-03 5X
Misc Info   :
Vial Number: 44
```



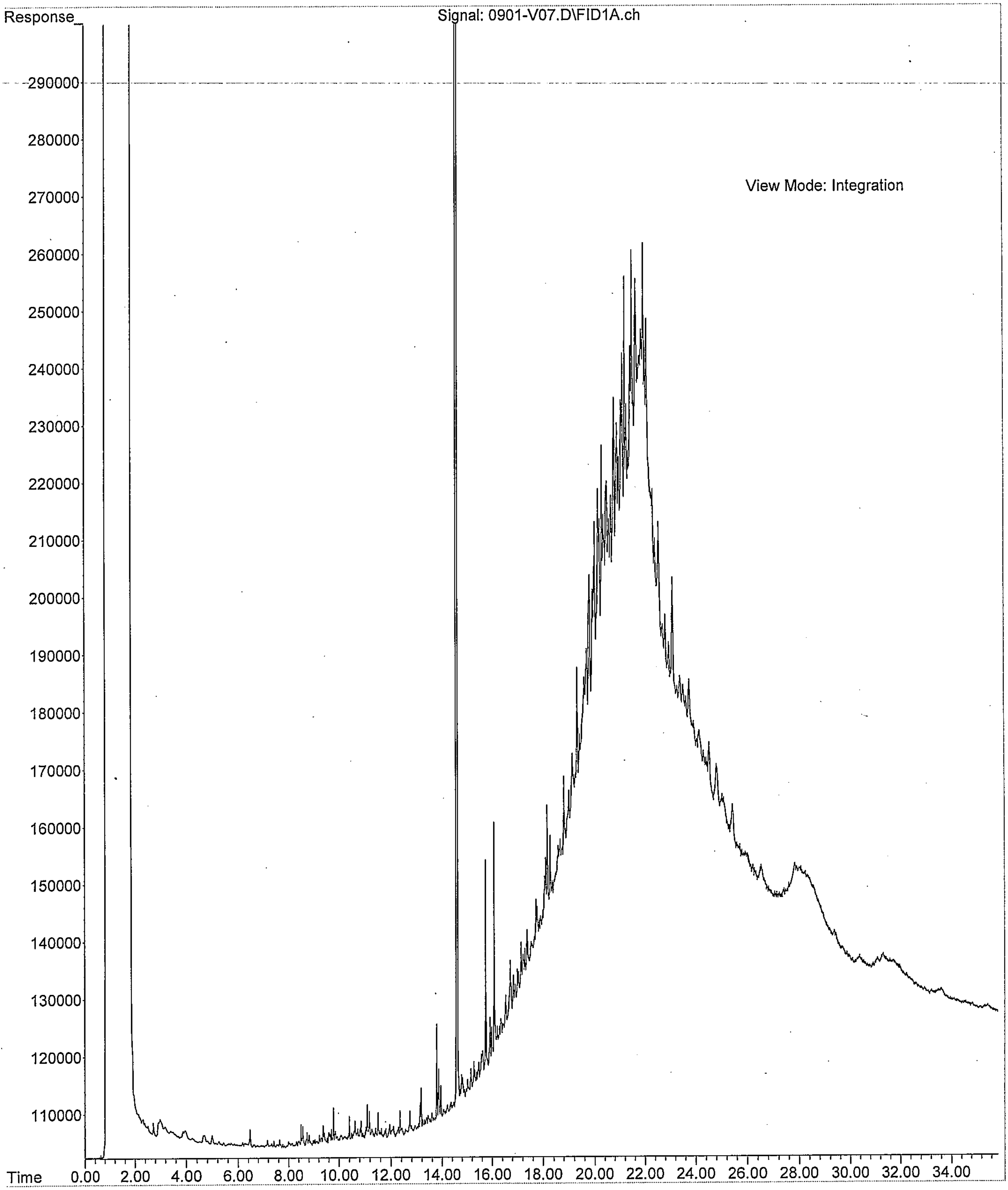
```
File       :C:\msdchem\2\DATA\V100831.SEC\0831-V82.D
Operator   :
Acquired   :  1 Sep 2010   6:46     using AcqMethod V100820F.M
Instrument :   VIGO
Sample Name: 08-195-04
Misc Info  :
Vial Number: 82
```



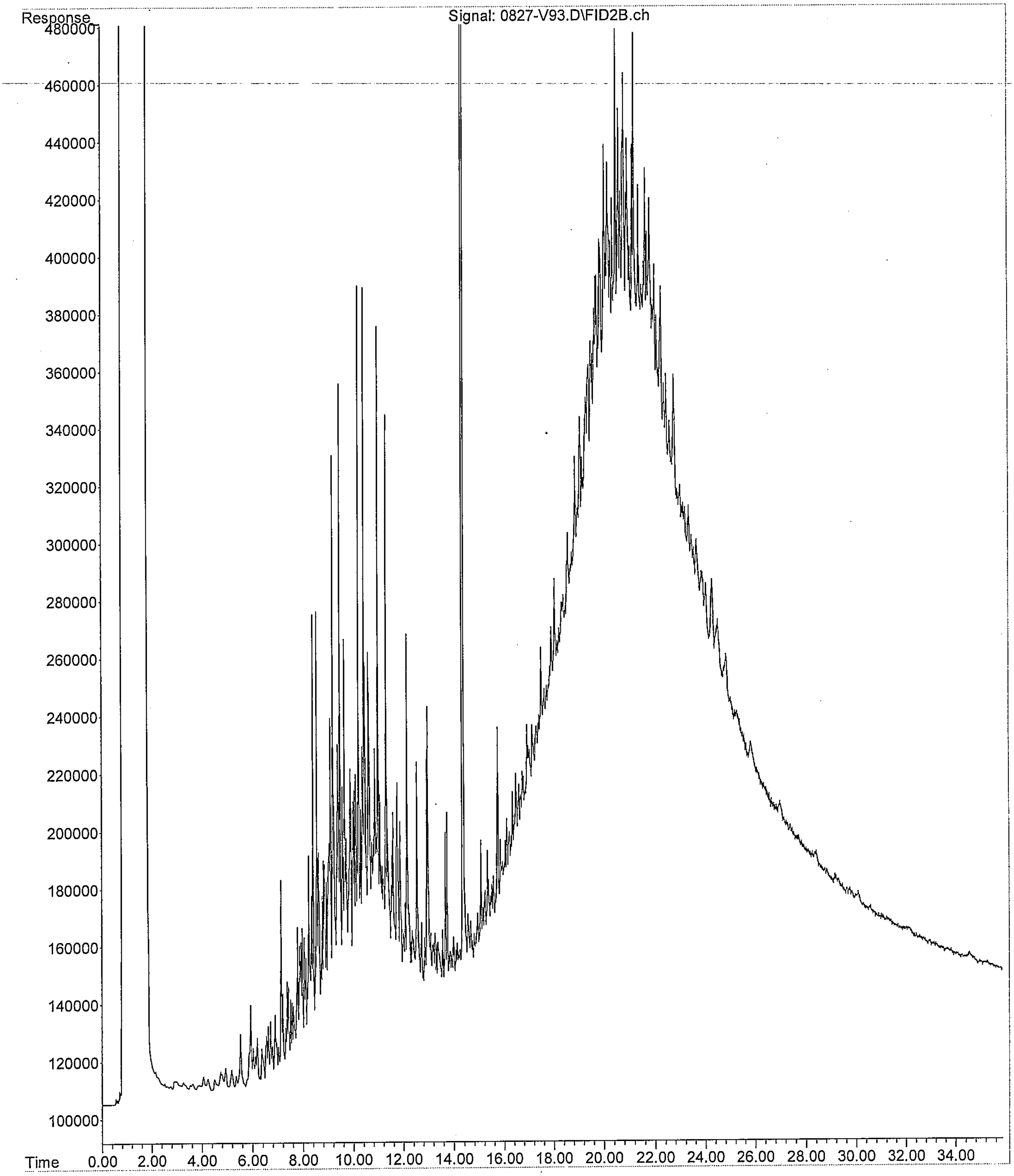
```
File        :C:\msdchem\2\DATA\V100827\0827-V42.D
Operator    :
Acquired    : 28 Aug 2010  13:32     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-05
Misc Info   :
Vial Number: 42
```



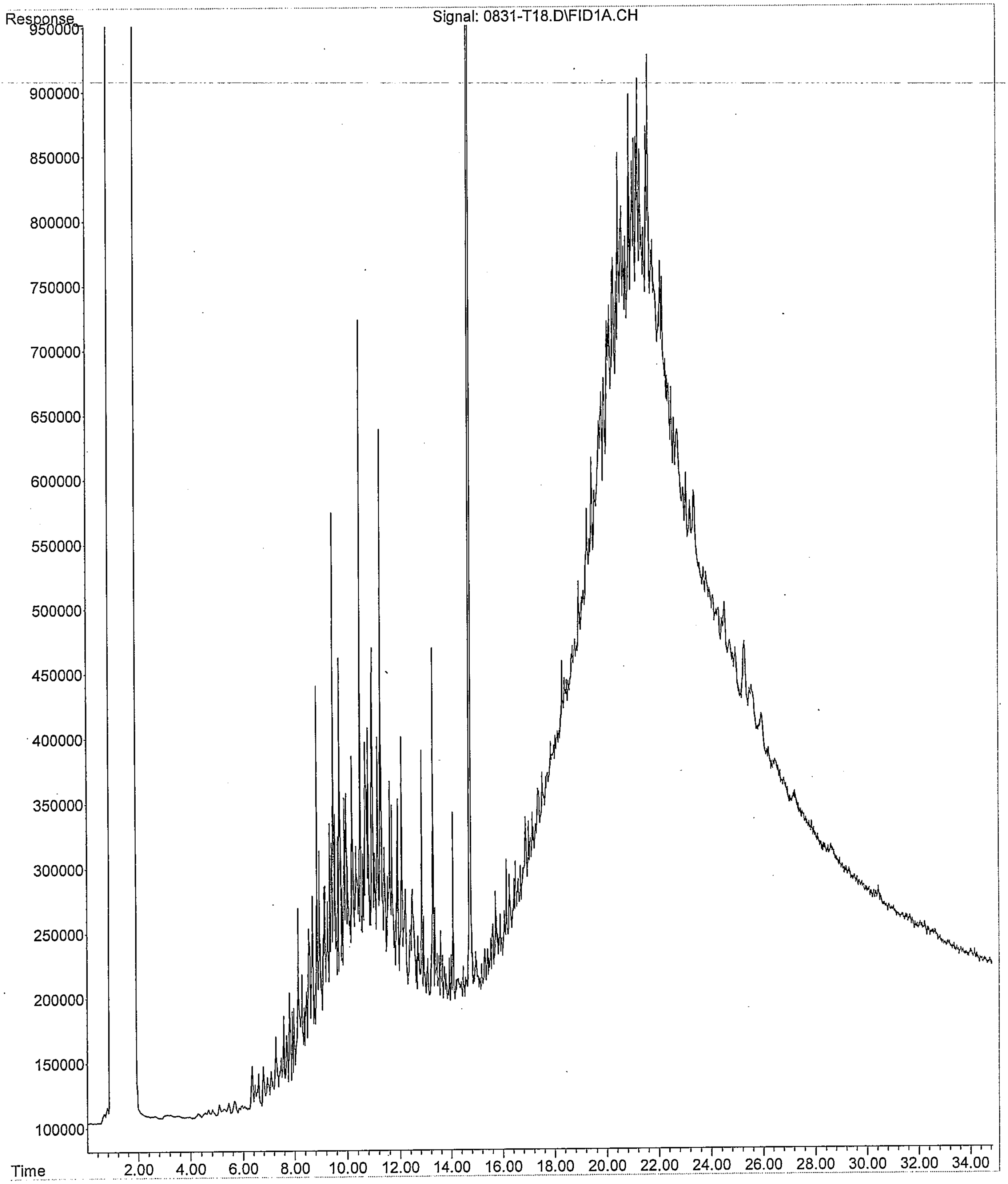
```
File        :C:\msdchem\2\DATA\V100901\0901-V07.D
Operator    :
Acquired    :  1 Sep 2010  14:28     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-06 RC
Misc Info   :
Vial Number: 7
```



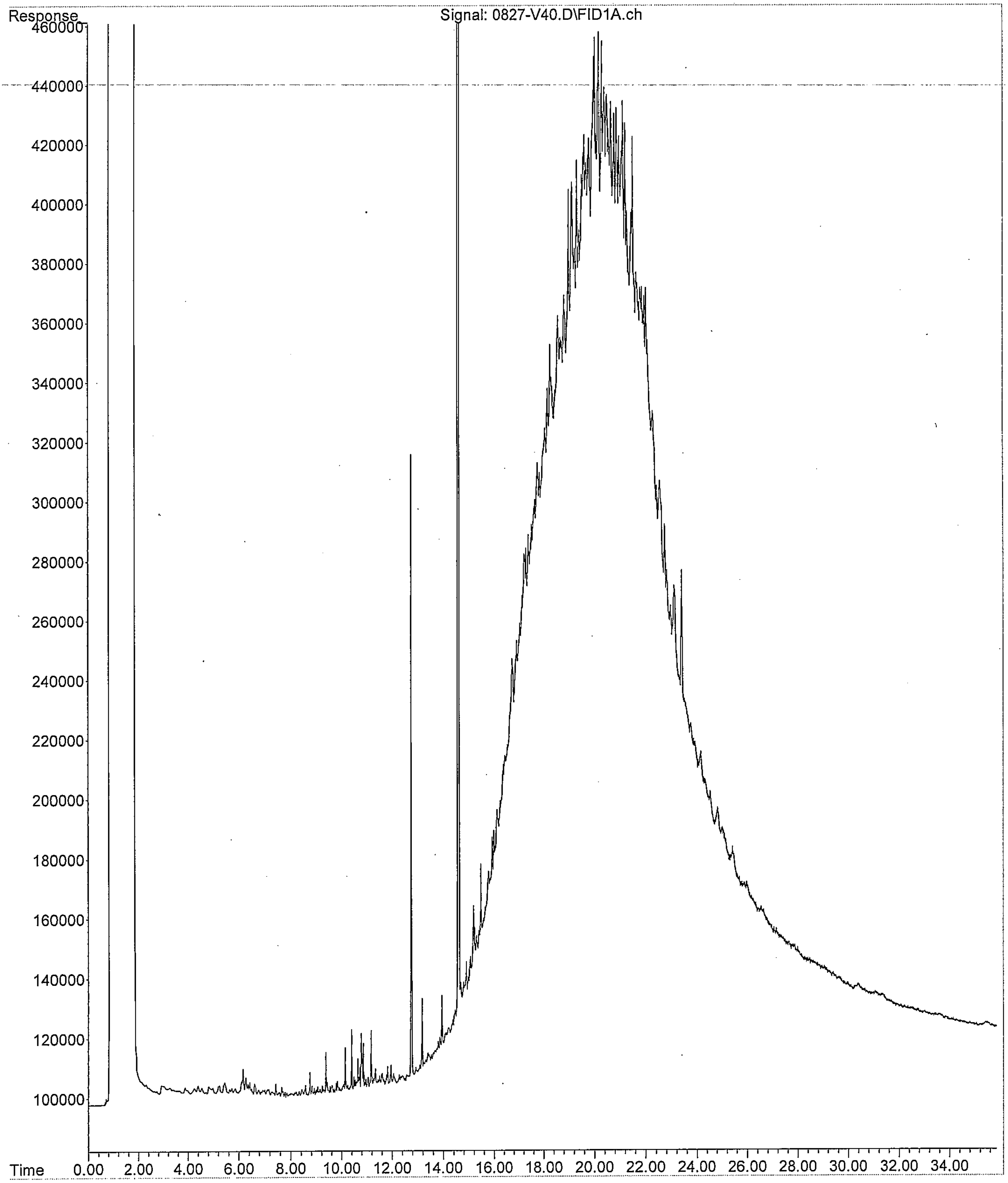
```
File        :C:\msdchem\2\DATA\V100827.SEC\0827-V93.D
Operator    :
Acquired    : 28 Aug 2010  14:12     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-07
Misc Info   :
Vial Number: 93
```



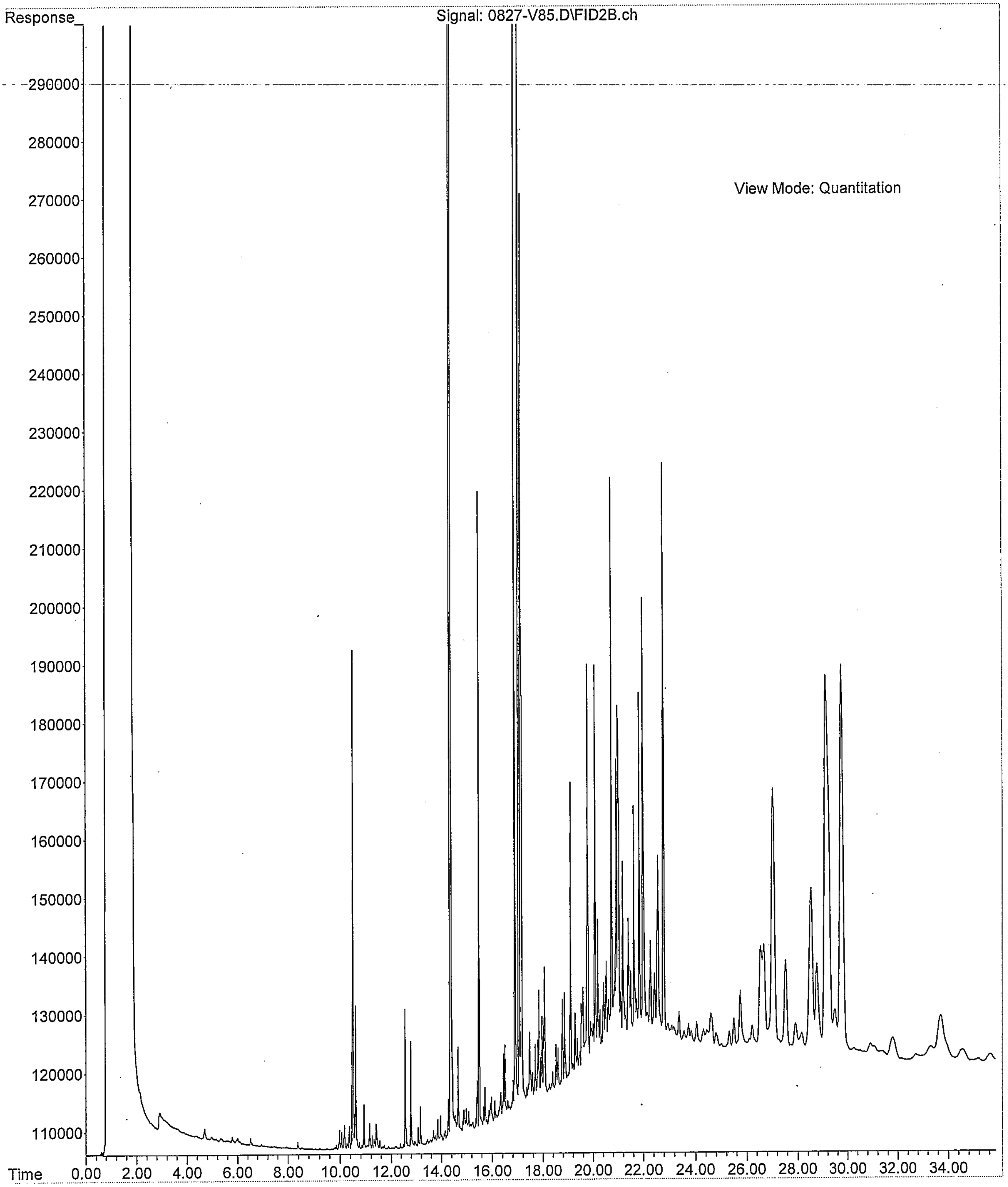
```
File        :C:\msdchem\1\DATA\T100831\0831-T18.D
Operator    : ZT
Acquired    : 31 Aug 2010   22:03     using AcqMethod T100818F.M
Instrument  :   Teri
Sample Name: 08-195-08
Misc Info   :
Vial Number: 18
```



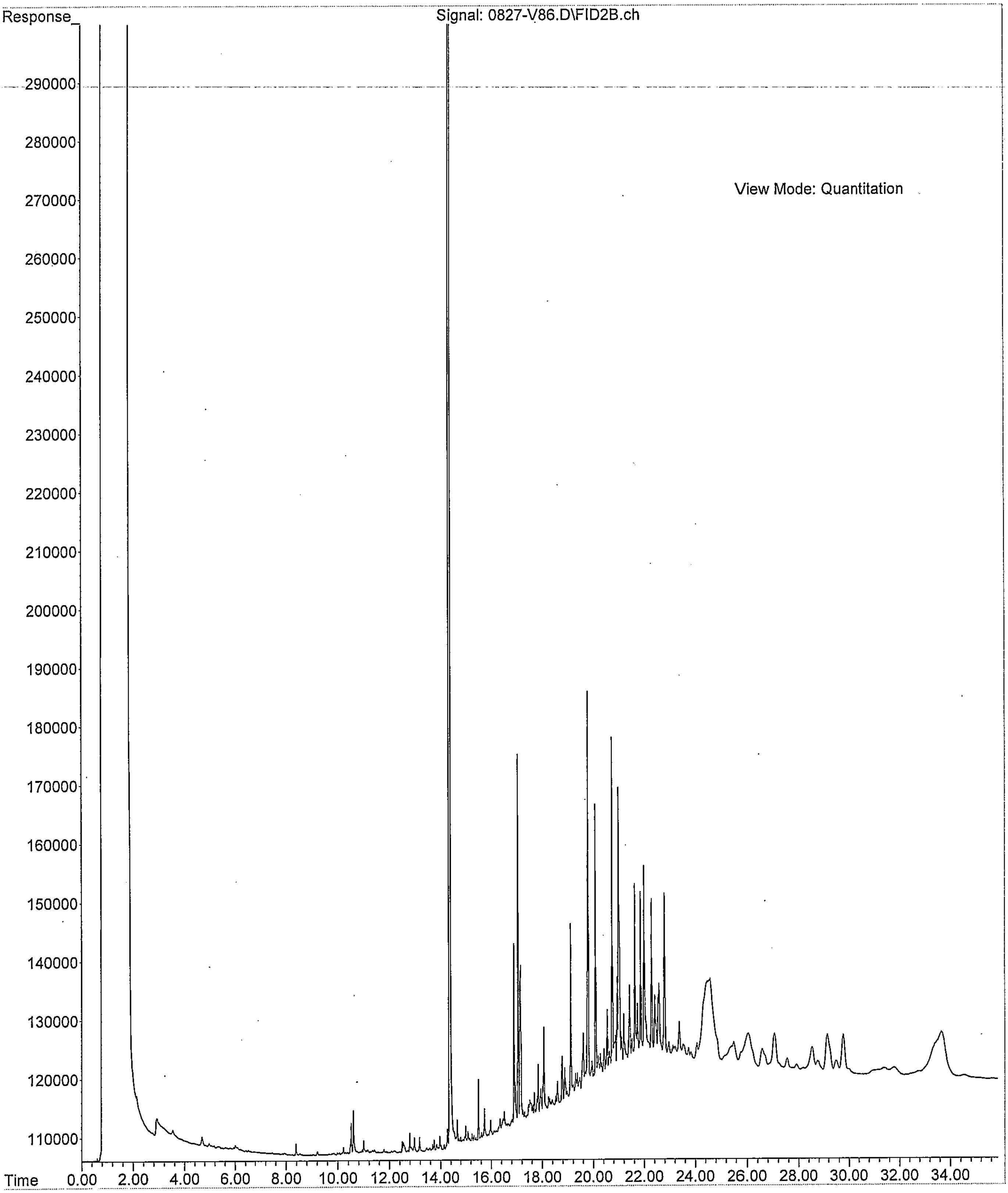
```
File        :C:\msdchem\2\DATA\V100827\0827-V40.D
Operator    :
Acquired    : 28 Aug 2010  12:12     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-09
Misc Info   :
Vial Number: 40
```



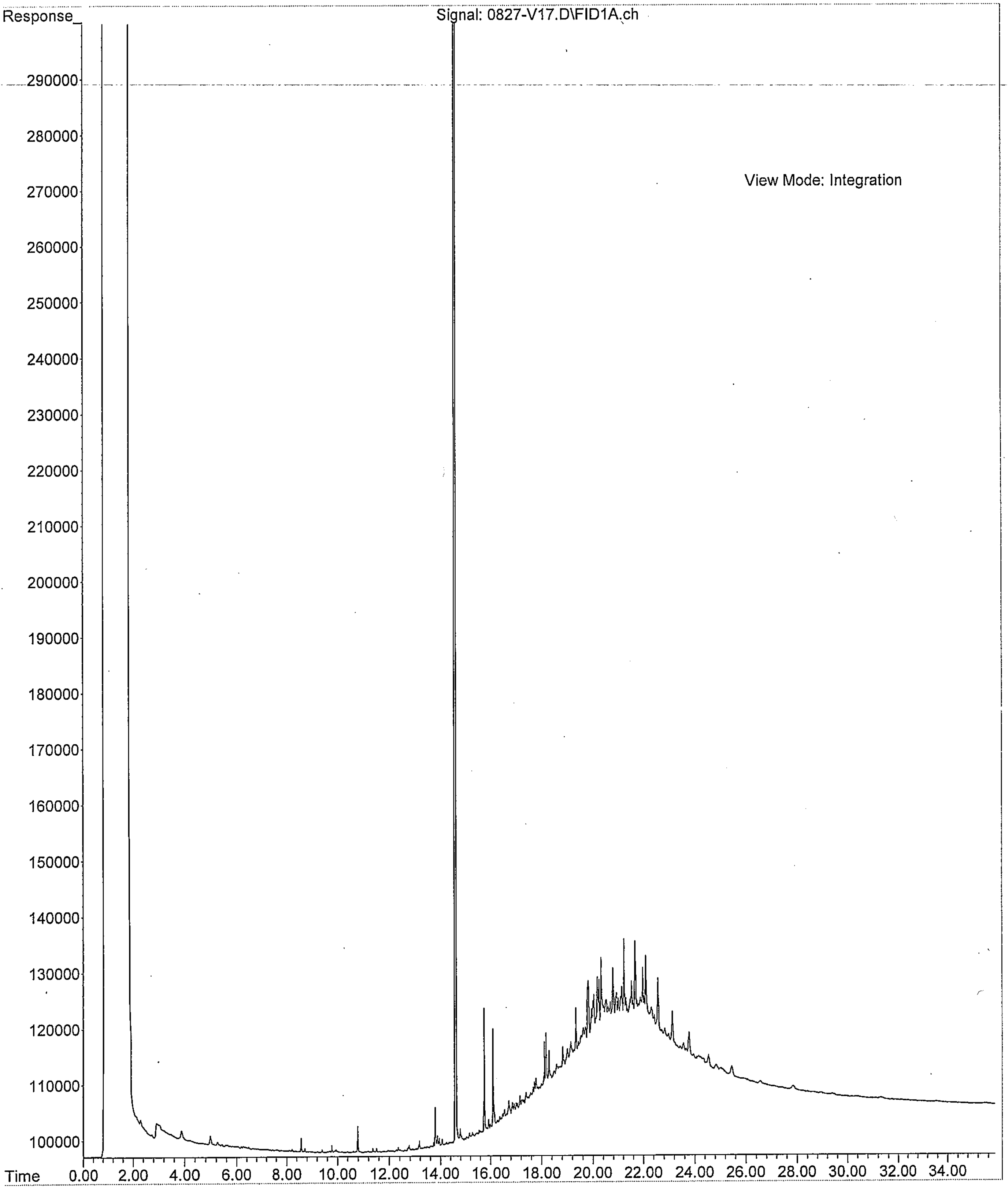
File   :C:\msdchem\2\DATA\V100827.SEC\0827-V85.D
Operator   :
Acquired   : 28 Aug 2010   8:52   using AcqMethod V100820F.M
Instrument :   VIGO
Sample Name: 08-195-10
Misc Info :
Vial Number: 85



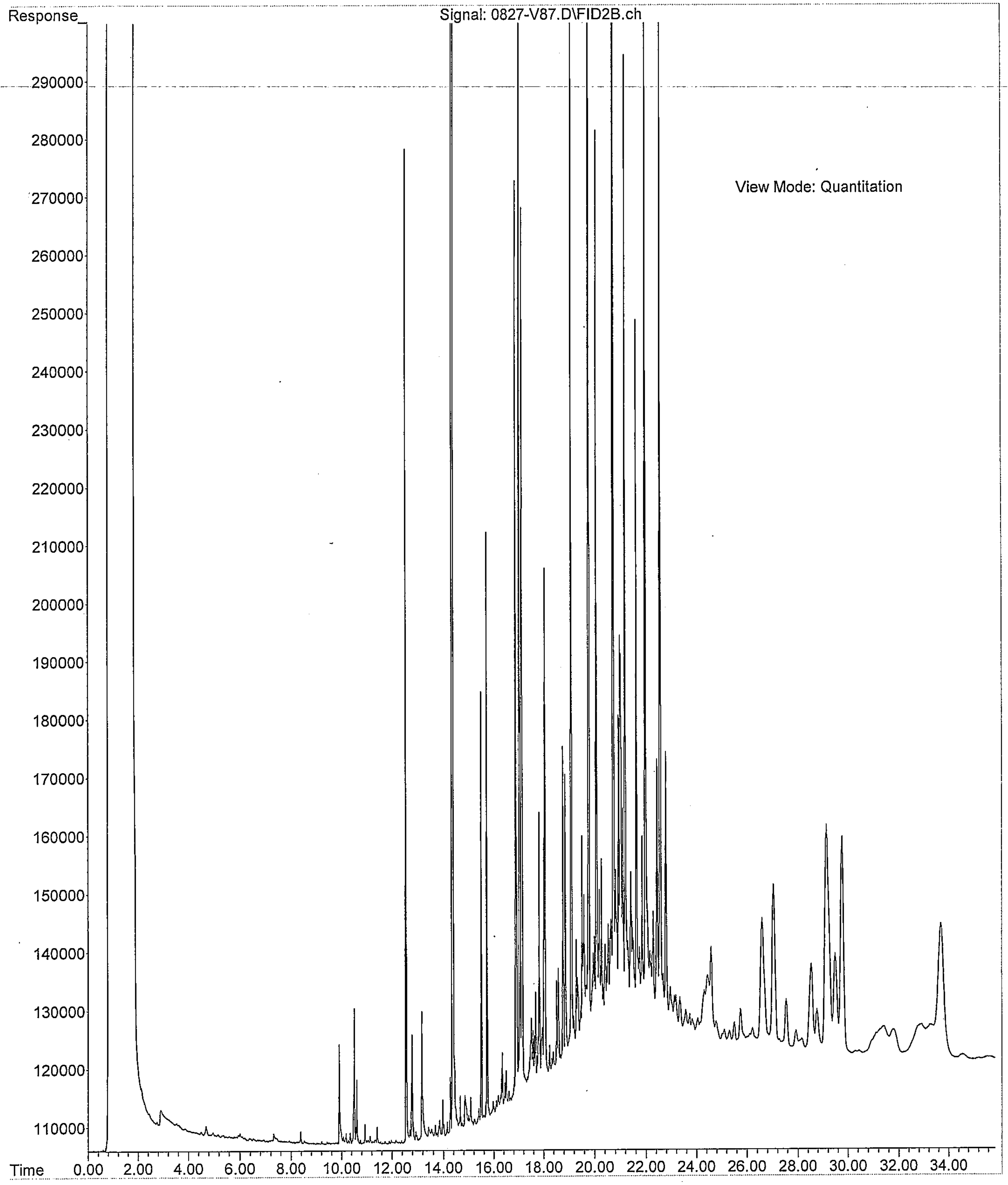
```
File        :C:\msdchem\2\DATA\V100827.SEC\0827-V86.D
Operator    :
Acquired    : 28 Aug 2010   9:32     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-11
Misc Info   :
Vial Number: 86
```



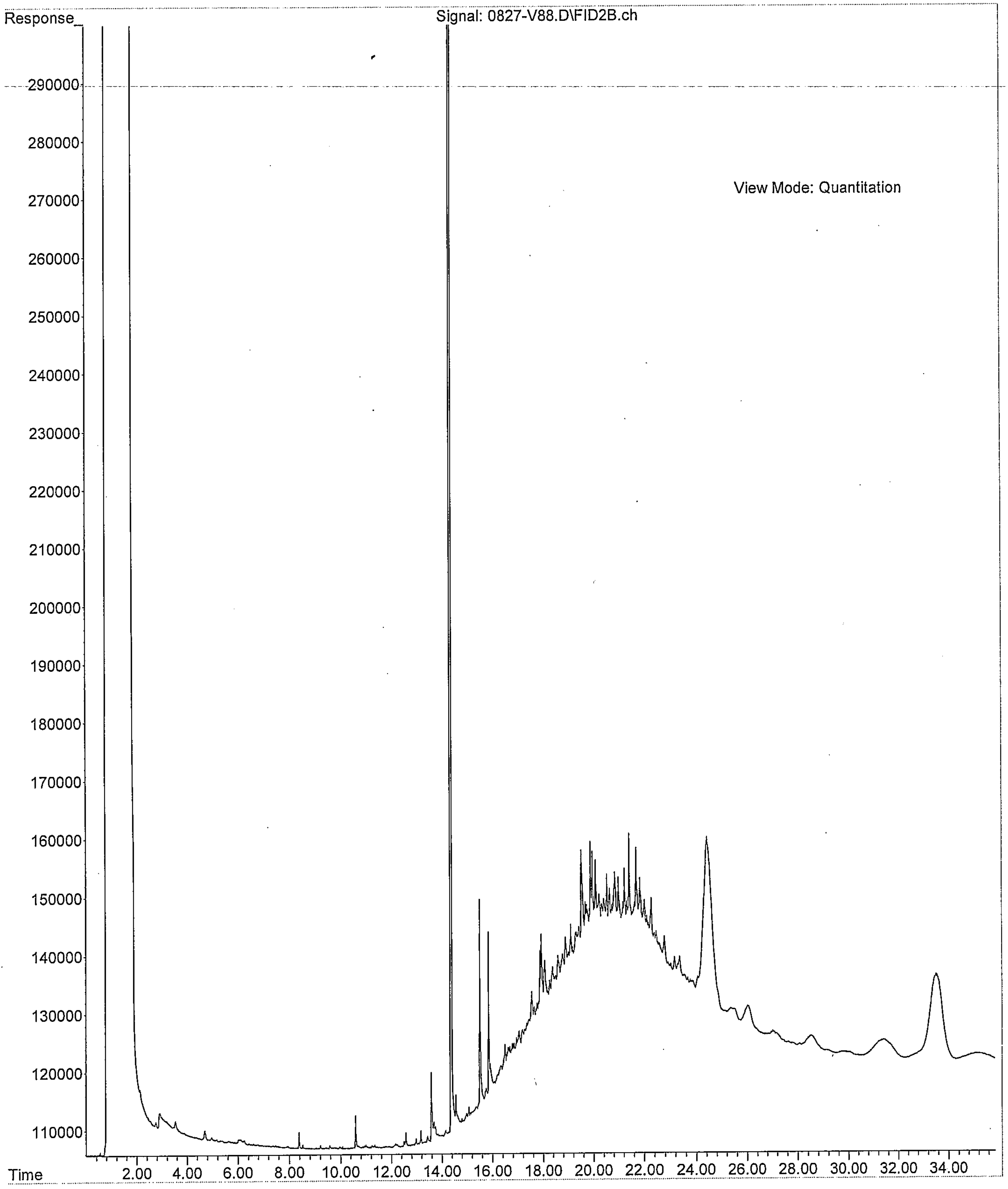
```
File        :C:\msdchem\2\DATA\V100827\0827-V17.D
Operator    :
Acquired    : 27 Aug 2010  20:55     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-12
Misc Info   :
Vial Number: 17
```



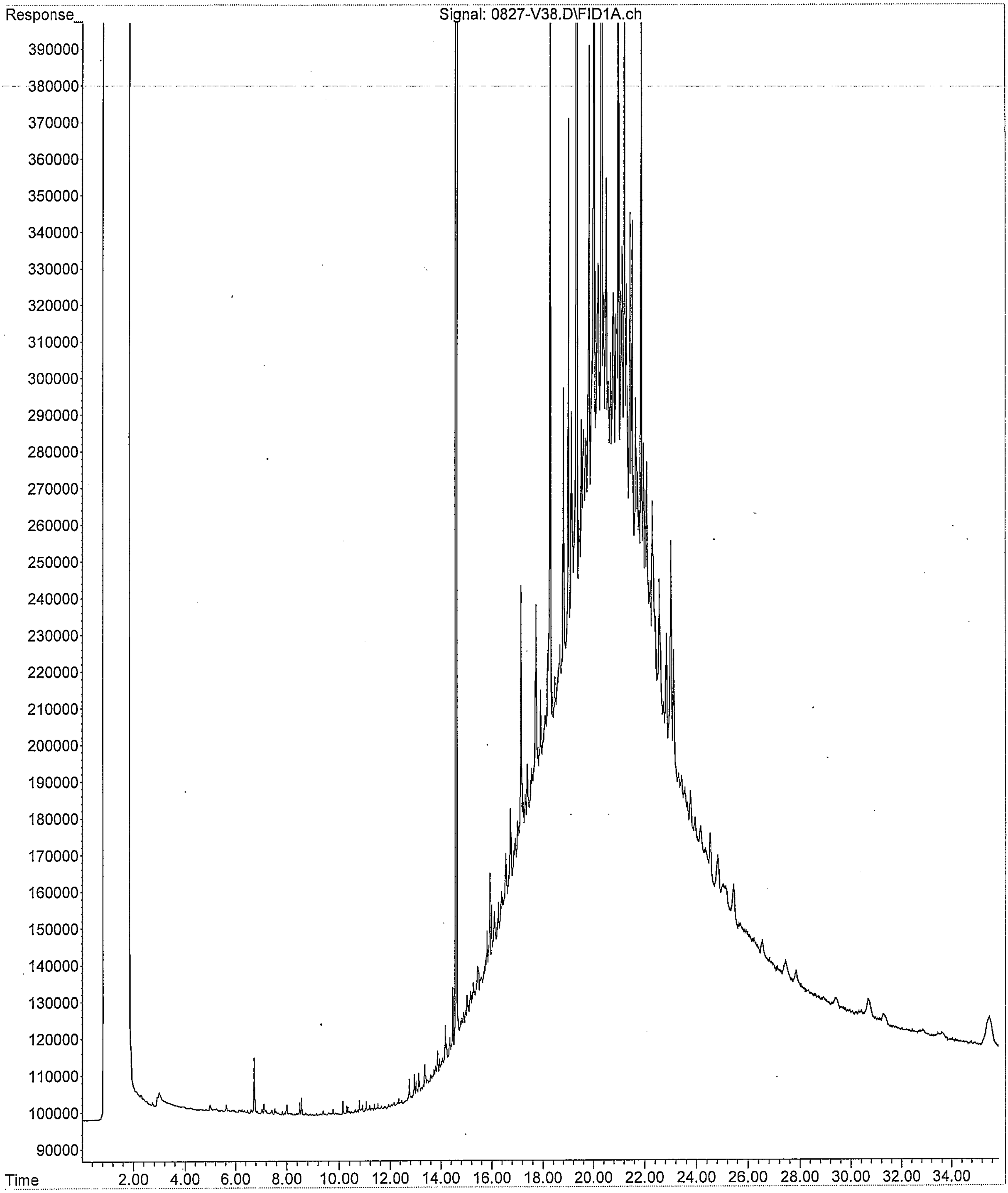
```
File        :C:\msdchem\2\DATA\V100827.SEC\0827-V87.D
Operator    :
Acquired    : 28 Aug 2010  10:12     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-13
Misc Info   :
Vial Number: 87
```



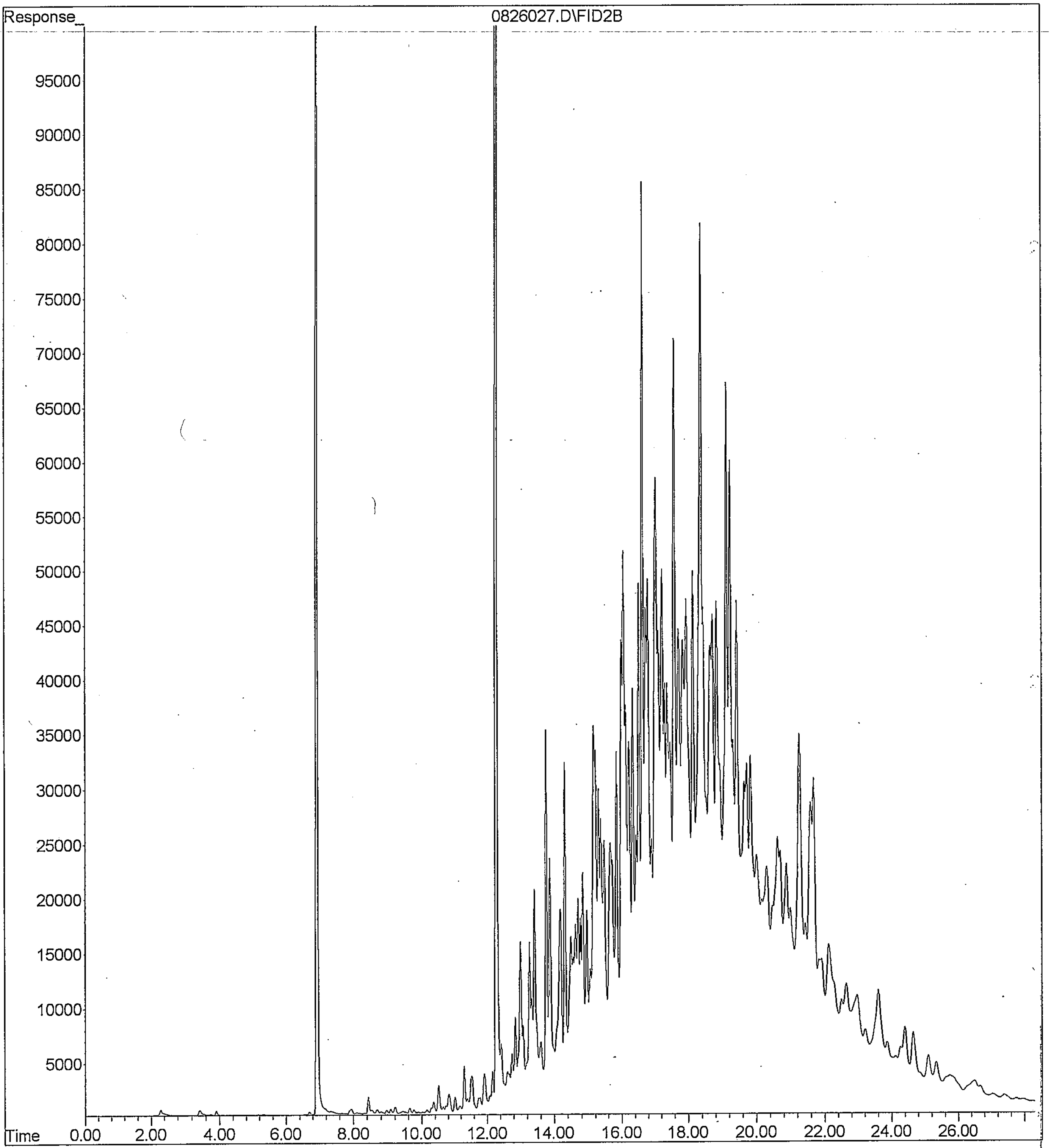
```
File        :C:\msdchem\2\DATA\V100827.SEC\0827-V88.D
Operator    :
Acquired    : 28 Aug 2010  10:52     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-195-14
Misc Info   :
Vial Number: 88
```



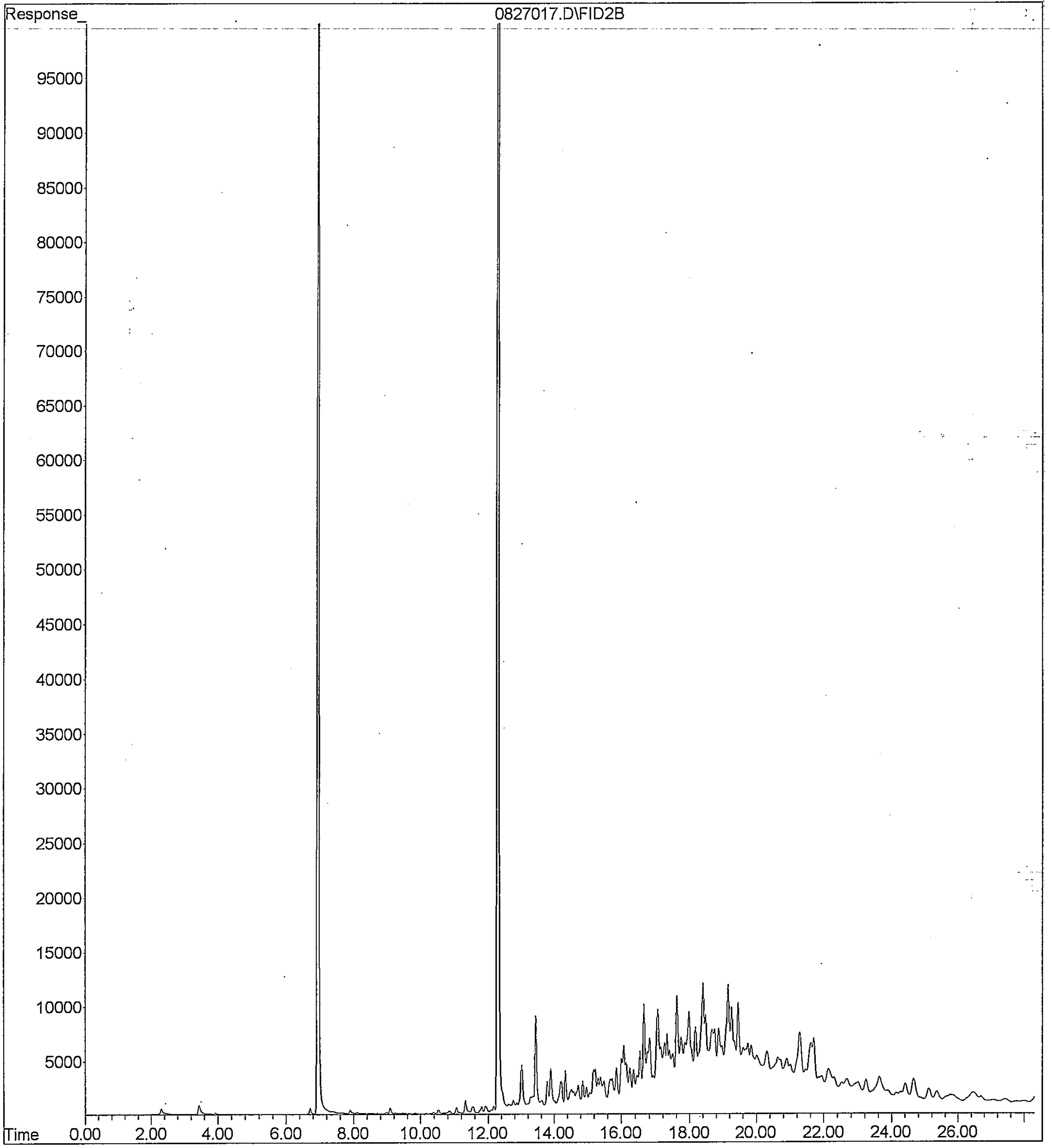
```
File         :C:\msdchem\2\DATA\V100827\0827-V38.D
Operator     :
Acquired     : 28 Aug 2010  10:52      using AcqMethod V100820F.M
Instrument :   VIGO
Sample Name: 08-195-15
Misc Info  :
Vial Number: 38
```



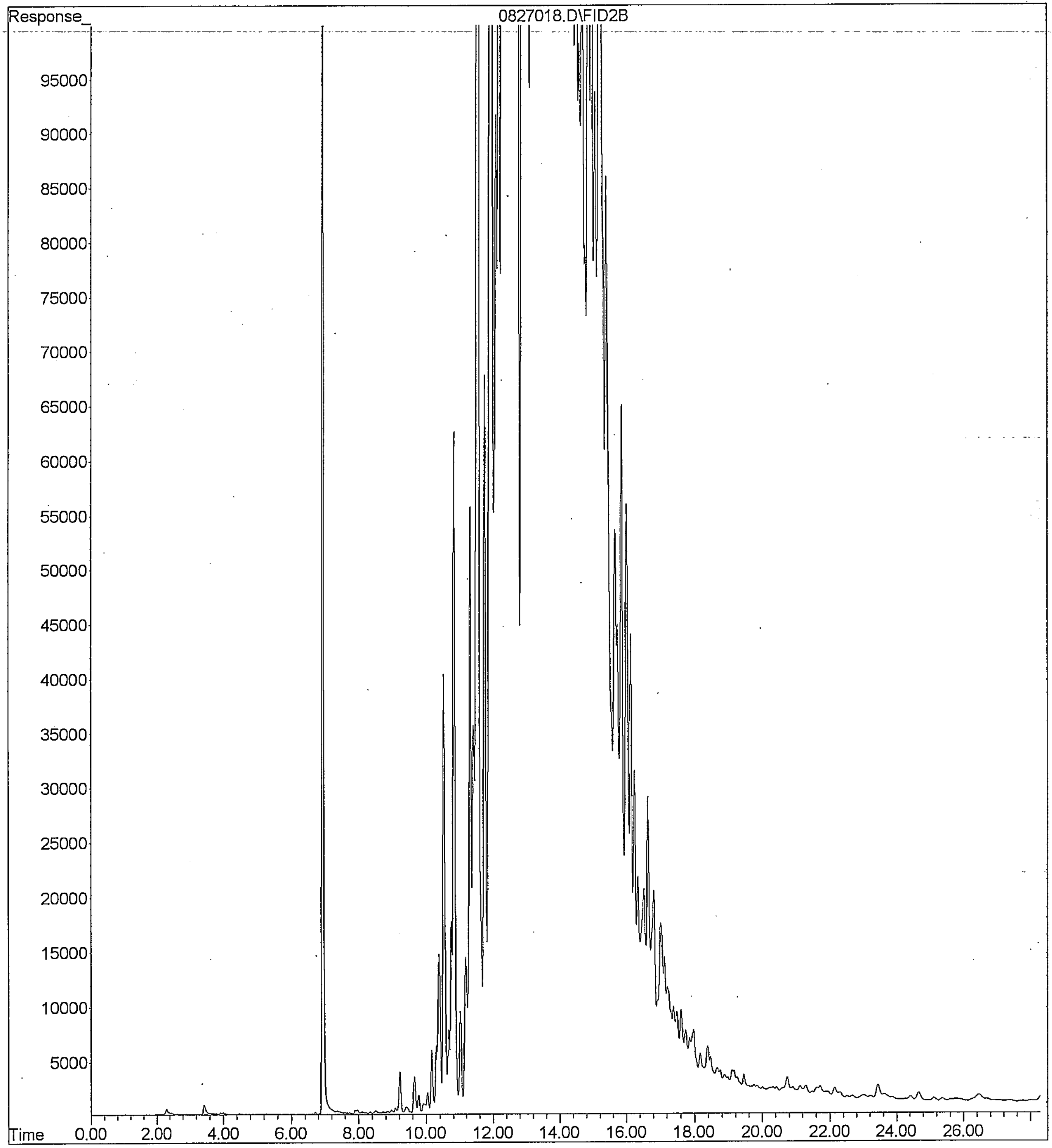
File   : X:\BTEX\DARYL\DATA\D100826\0826027.D
Operator   :
Acquired   : 27 Aug 2010   2:26   using AcqMethod 100816B.M
Instrument :   Daryl
Sample Name: 08-195-01s
Misc Info   : V2-24-02
Vial Number: 27



```
File        : X:\BTEX\DARYL\DATA\D100827\0827017.D
Operator    :
Acquired    : 27 Aug 2010  21:56     using AcqMethod 100816B.M
Instrument  :  Daryl
Sample Name: 08-195-07s
Misc Info   : V2-24-02
Vial Number: 17
```



```
File        : X:\BTEX\DARYL\DATA\D100827\0827018.D
Operator    :
Acquired    : 27 Aug 2010  22:30     using AcqMethod 100816B.M
Instrument  :   Daryl
Sample Name: 08-195-09s
Misc Info   : V2-24-02
Vial Number: 18
```



OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1008-195B

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 26, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

Case Narrative

Samples were collected on August 25, 2010 and received by the laboratory on August 26, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

PAHs EPA 8270D/SIM Analysis

Samples P-TP-2-6 and P-TP-5-3 were extracted and analyzed 9 days out of holding time.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-1-3**					
Laboratory ID:	08-195-01					
Naphthalene	**0.21**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
2-Methylnaphthalene	**0.81**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
1-Methylnaphthalene	**0.56**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthylene	**ND**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthene	**0.13**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Fluorene	**0.14**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Phenanthrene	**0.33**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Anthracene	**0.060**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Fluoranthene	**0.12**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Pyrene	**0.23**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]anthracene	**0.069**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Chrysene	**0.13**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[b]fluoranthene	**0.048**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[k]fluoranthene	**ND**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]pyrene	**0.066**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Dibenz[a,h]anthracene	**ND**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[g,h,i]perylene	**0.064**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*88*	*52 - 118*				
Terphenyl-d14	*79*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**P-TP-4-3**					
Laboratory ID:	08-195-07					
Naphthalene	**0.032**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
2-Methylnaphthalene	**0.14**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
1-Methylnaphthalene	**0.11**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthylene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthene	**0.039**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Fluorene	**0.027**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Phenanthrene	**0.058**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Anthracene	**0.011**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Fluoranthene	**0.037**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Pyrene	**0.057**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]anthracene	**0.017**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Chrysene	**0.031**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[b]fluoranthene	**0.011**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[k]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]pyrene	**0.017**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Dibenz[a,h]anthracene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[g,h,i]perylene	**0.015**	0.0077	EPA 8270/SIM	9-7-10	9-8-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*60*	*45 - 101*				
Pyrene-d10	*65*	*52 - 118*				
Terphenyl-d14	*41*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0907S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*85*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*87*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-038-01										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0726**	**0.0707**	0.0833	0.0833	ND	87	85	31 - 115	3	19	
Acenaphthylene	**0.0664**	**0.0631**	0.0833	0.0833	ND	80	76	40 - 134	5	22	
Acenaphthene	**0.0743**	**0.0715**	0.0833	0.0833	ND	89	86	48 - 118	4	17	
Fluorene	**0.0761**	**0.0730**	0.0833	0.0833	ND	91	88	54 - 122	4	16	
Phenanthrene	**0.0743**	**0.0711**	0.0833	0.0833	ND	89	85	46 - 123	4	19	
Anthracene	**0.0646**	**0.0645**	0.0833	0.0833	ND	78	77	53 - 123	0	27	
Fluoranthene	**0.0704**	**0.0683**	0.0833	0.0833	ND	85	82	47 - 132	3	26	
Pyrene	**0.0783**	**0.0742**	0.0833	0.0833	ND	94	89	41 - 137	5	25	
Benzo[a]anthracene	**0.0688**	**0.0672**	0.0833	0.0833	ND	83	81	43 - 132	2	26	
Chrysene	**0.0677**	**0.0673**	0.0833	0.0833	ND	81	81	46 - 126	1	24	
Benzo[b]fluoranthene	**0.0626**	**0.0634**	0.0833	0.0833	ND	75	76	44 - 134	1	24	
Benzo[k]fluoranthene	**0.0555**	**0.0595**	0.0833	0.0833	ND	67	71	45 - 132	7	20	
Benzo[a]pyrene	**0.0724**	**0.0721**	0.0833	0.0833	ND	87	87	36 - 136	0	23	
Indeno(1,2,3-c,d)pyrene	**0.0792**	**0.0783**	0.0833	0.0833	ND	95	94	40 - 136	1	16	
Dibenz[a,h]anthracene	**0.0821**	**0.0804**	0.0833	0.0833	ND	99	97	40 - 142	2	13	
Benzo[g,h,i]perylene	**0.0806**	**0.0779**	0.0833	0.0833	ND	97	94	37 - 137	3	18	
Surrogate:											
2-Fluorobiphenyl						*80*	*79*	*45 - 101*			
Pyrene-d10						*87*	*84*	*52 - 118*			
Terphenyl-d14						*77*	*82*	*41 - 106*			

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-2-6**					
Laboratory ID:	08-195-04					
Naphthalene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
2-Methylnaphthalene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
1-Methylnaphthalene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthylene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Fluorene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Phenanthrene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Anthracene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Fluoranthene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Pyrene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]anthracene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Chrysene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[b]fluoranthene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[k]fluoranthene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]pyrene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Dibenz[a,h]anthracene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[g,h,i]perylene	**ND**	0.0090	EPA 8270/SIM	9-17-10	9-18-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*67*	*45 - 101*				
Pyrene-d10	*86*	*52 - 118*				
Terphenyl-d14	*94*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-5-3**					
Laboratory ID:	08-195-10					
Naphthalene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
2-Methylnaphthalene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
1-Methylnaphthalene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthylene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Fluorene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Phenanthrene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Anthracene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Fluoranthene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Pyrene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]anthracene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Chrysene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[b]fluoranthene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[k]fluoranthene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]pyrene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Dibenz[a,h]anthracene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[g,h,i]perylene	**ND**	0.017	EPA 8270/SIM	9-17-10	9-18-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*65*	*45 - 101*				
Pyrene-d10	*65*	*52 - 118*				
Terphenyl-d14	*64*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0917S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*83*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*90*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 26, 2010
Laboratory Reference: 1008-195B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0917S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0659**	**0.0813**	0.0833	0.0833	79	98	33 - 105	21	30	
Acenaphthylene	**0.0647**	**0.0714**	0.0833	0.0833	78	86	51 - 110	10	22	
Acenaphthene	**0.0687**	**0.0804**	0.0833	0.0833	82	97	51 - 105	16	20	
Fluorene	**0.0709**	**0.0803**	0.0833	0.0833	85	96	61 - 107	12	17	
Phenanthrene	**0.0722**	**0.0791**	0.0833	0.0833	87	95	61 - 106	9	12	
Anthracene	**0.0628**	**0.0683**	0.0833	0.0833	75	82	59 - 106	8	12	
Fluoranthene	**0.0712**	**0.0772**	0.0833	0.0833	85	93	66 - 116	8	12	
Pyrene	**0.0746**	**0.0840**	0.0833	0.0833	90	101	67 - 118	12	14	
Benzo[a]anthracene	**0.0673**	**0.0727**	0.0833	0.0833	81	87	60 - 114	8	11	
Chrysene	**0.0738**	**0.0800**	0.0833	0.0833	89	96	64 - 112	8	12	
Benzo[b]fluoranthene	**0.0754**	**0.0812**	0.0833	0.0833	91	97	61 - 123	7	14	
Benzo[k]fluoranthene	**0.0715**	**0.0808**	0.0833	0.0833	86	97	50 - 124	12	17	
Benzo[a]pyrene	**0.0720**	**0.0776**	0.0833	0.0833	86	93	50 - 114	7	17	
Indeno(1,2,3-c,d)pyrene	**0.0900**	**0.0825**	0.0833	0.0833	108	99	56 - 122	9	16	
Dibenz[a,h]anthracene	**0.0914**	**0.0828**	0.0833	0.0833	110	99	57 - 124	10	16	
Benzo[g,h,i]perylene	**0.0841**	**0.0832**	0.0833	0.0833	101	100	56 - 121	1	15	
Surrogate:										
2-Fluorobiphenyl					*72*	*84*	*45 - 101*			
Pyrene-d10					*80*	*88*	*52 - 118*			
Terphenyl-d14					*92*	*94*	*41 - 106*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

08-195

DATE: 8/25/10
PAGE: 1 of 1

PROJECT NAME: Bothell Crossroads #: 2007-098
SITE CODE: Bothell Point
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: PHONE:

Rush TAT - 2 day TAT
(EPH, VPH - Std. TAT)

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	RCRA Metals	EPH/VPH (HOLD)	VOCs 8260	PAHs	% MOISTURE
P-TP-1-3	8/25/10	1020	S	1	6	/	X	/	⊛		⊛	/
P-TP-1-6	↓	1030	↓	2	5	/		/				↓
P-TP-2-2		1400		3	5	/						
P-TP-2-6		1130		4	5	⊗					○	⊗
P-TP-3-3		1200		5	5	/						/
P-TP-3-7		1215		6	5	⊗						⊗
P-TP-4-3		1230		7	7	/	X	/	⊛		⊛	/
P-TP-4-6		1245		8	5	⊗		⊗				⊗
P-TP-5-1		1310		9	5	/	X			/		/
P-TP-5-3		1315		10	5	/	/			/	○	↓
P-TP-6-1		1330		11	5	/	/			/		
P-TP-7-2		1355		12	5	/	/	/				
P-TP-7-5		1400		13	5	/	/	/				
P-TP-8-3		1445		14	5	/		/				
P-TP-8-6	↓	1500	↓	15	5	/		/				↓

REMARKS

⊗ Added 8/30/10 DB
5:22 pm - 1 day
TAT.

⊛ Added 9/2/10
RE STA

○ Added 9/15/10. DB
(STA)

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fisk		HWA GeoSciences	8/26/10	10:10am	
Received by:	Young Dong		Speedy	8/26/10	10:10am	
Relinquished by:	Young Dong		Speedy	8/26/10	10:54am	
Received by:	Mom Voun		OSE	8/26/10	1054	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

Analytical Resources, Incorporated
Analytical Chemists and Consultants

22 September 2010

David Baumeister
OnSite Environmental, Inc.
14648 NE 95th
Redmond, WA 98052

RE: Client Project: 2007-098
ARI Job No: RL77

Dear David:

Please find enclosed the chain-of-custody (COC) record and the final results for the samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted two soil samples on September 3, 2010. The samples were analyzed for EPH as requested.

There were no anomalies associated with these analyses.

An electronic copy of these reports will remain on file at ARI. Should you have any questions, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
markh@arilabs.com

Enclosures

cc: file RL77

MDH/esj

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Subcontract Laboratory: Analytical Resources, Inc.
Attention: Mark Harris
4611 S 134th Pl, Ste. 100 Tukwila, WA 98168
Phone Number: (206) 695-6200
Date/Time: ____________

Turnaround Request:
1 Day 2 Day 3 Day [✓ Standard]
Other: ____________

Laboratory Reference #: 08-195
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098
Project Name: ____________

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
1	P-TP-1-3	8/25/10		S	1	EPH
7	P-TP-4-3	|		|	|	|

	Signature	Company	Date	Time
Relinquished by:		OnSite Env	9/3/10	1010
Received by:	Van	Speedy	9/3/10	1010
Relinquished by:	Van	Speedy	9/3/10	1546
Received by:	Rik Mill	ARI	9/3/10	1540
Relinquished by:				
Received by:				

Comments/Special Instructions

EIM

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: OnSite

COC No(s): ____ [✓ NA]

Assigned ARI Job No: RL77

Project Name: ____

Delivered by: Fed-Ex UPS [✓ Courier] Hand Delivered Other: ____

Tracking No: ____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES [✓ NO]

Were custody papers included with the cooler? .... [✓ YES] NO

Were custody papers properly filled out (ink, signed, etc.) .... [✓ YES] NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)........ 7.6 ____ ____ ____

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90941619

Cooler Accepted by: JM Date: 9/3/10 Time: 1545

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? .... YES [✓ NO]

What kind of packing material was used? ... Bubble Wrap [✓ Wet Ice] Gel Packs [✓ Baggies] Foam Block Paper Other: ____

Was sufficient ice used (if appropriate)? .... NA YES [✓ NO]

Were all bottles sealed in individual plastic bags? .... YES [✓ NO]

Did all bottles arrive in good condition (unbroken)? .... [✓ YES] NO

Were all bottle labels complete and legible? .... [✓ YES] NO

Did the number of containers listed on COC match with the number of containers received? .... [✓ YES] NO

Did all bottle labels and tags agree with custody papers? .... [✓ YES] NO

Were all bottles used correct for the requested analyses? .... [✓ YES] NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... [✓ NA] YES NO

Were all VOC vials free of air bubbles? .... [✓ NA] YES NO

Was sufficient amount of sample sent in each bottle? .... [✓ YES] NO

Date VOC Trip Blank was made at ARI.. [✓ NA] ____

Was Sample Split by ARI : [✓ NA] YES Date/Time: ____ Equipment: ____ Split by: ____

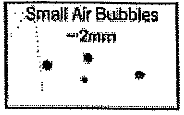
Samples Logged by: JM Date: 9/3/10 Time: 1730

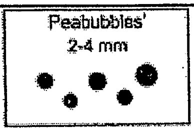
***** Notify Project Manager of discrepancies or concerns *****

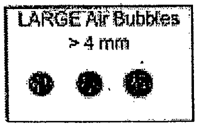
Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:







Small → **"sm"**
Peabubbles → **"pb"**
Large → **"lg"**
Headspace → **"hs"**

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 7/10/2009

Inorganic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Duplicate RPD is not within established control limits
B	Reported value is less than the CRDL but ≥ the Reporting Limit
N	Matrix Spike recovery not within established control limits
NA	Not Applicable, analyte not spiked
H	The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
L	Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Flagged value is not within established control limits
B	Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
J	Estimated concentration when the value is less than ARI's established reporting limits
D	The spiked compound was not detected due to sample extract dilution
E	Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).
S	Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 7/10/2009

NA	The flagged analyte was not analyzed for
NR	Spiked compound recovery is not reported due to chromatographic interference
NS	The flagged analyte was not spiked into the sample
M	Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
M2	The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
Y	The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
C	The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
P	The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

Geotechnical Data

A	The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
F	Samples were frozen prior to particle size determination
SM	Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
SS	Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
W	Weight of sample in some pipette aliquots was below the level required for accurate weighting

RL77 00005

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: MB-090810
METHOD BLANK

Lab Sample ID: MB-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted: 09/08/10
Percent Moisture: NA

Sample Amount: 10.0 g-as-rec
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/22/10 00:08
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 05:32
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	2,000	< 2,000 U
C10-C12 Aliphatics	2,000	< 2,000 U
C12-C16 Aliphatics	2,000	< 2,000 U
C16-C21 Aliphatics	2,000	< 2,000 U
C21-C34 Aliphatics	2,000	< 2,000 U
C8-C10 Aromatics	2,000	< 2,000 U
C10-C12 Aromatics	2,000	< 2,000 U
C12-C16 Aromatics	2,000	< 2,000 U
C16-C21 Aromatics	2,000	< 2,000 U
C21-C34 Aromatics	2,000	< 2,000 U

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	73.8%
Aromatic	o-Terphenyl	76.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-1-3
SAMPLE

Lab Sample ID: RL77A
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/25/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 16.0%

Sample Amount: 8.64 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 20:20
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 01:49
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Range	**RL**	**Result**	
C8-C10 Aliphatics	**2,300**	**6,100**	
C10-C12 Aliphatics	**2,300**	**46,000**	
C12-C16 Aliphatics	**2,300**	**150,000**	
C16-C21 Aliphatics	**2,300**	**56,000**	
C21-C34 Aliphatics	**2,300**	**280,000**	
C8-C10 Aromatics	2,300	< 2,300	U
C10-C12 Aromatics	**2,300**	**8,100**	
C12-C16 Aromatics	**2,300**	**36,000**	
C16-C21 Aromatics	**2,300**	**50,000**	
C21-C34 Aromatics	**2,300**	**240,000**	

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	68.0%
Aromatic	o-Terphenyl	73.8%

FORM I

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: P-TP-4-3
SAMPLE

Lab Sample ID: RL77B
LIMS ID: 10-22351
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/25/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 15.6%

Sample Amount: 8.70 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 21:10
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 02:39
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	2,300	< 2,300 U
C10-C12 Aliphatics	**2,300**	**4,200**
C12-C16 Aliphatics	**2,300**	**13,000**
C16-C21 Aliphatics	**2,300**	**14,000**
C21-C34 Aliphatics	**2,300**	**100,000**
C8-C10 Aromatics	2,300	< 2,300 U
C10-C12 Aromatics	2,300	< 2,300 U
C12-C16 Aromatics	**2,300**	**4,400**
C16-C21 Aromatics	**2,300**	**11,000**
C21-C34 Aromatics	**2,300**	**47,000**

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	69.6%
Aromatic	o-Terphenyl	79.3%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: LCS-090810
LCS/LCSD

Lab Sample ID: LCS-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 09/08/10

Sample Amount LCS: 10.0 g-as-rec
LCSD: 10.0 g-as-rec
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL

Aliphatic
Date Analyzed LCS: 09/21/10 23:17
LCSD: 09/21/10 23:43
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Aromatic
Date Analyzed LCS: 09/22/10 04:43
LCSD: 09/22/10 05:08
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
C8-C10 Aliphatics	11000	15000	73.3%	11600	15000	77.3%	5.3%
C10-C12 Aliphatics	9100	15000	60.7%	9500	15000	63.3%	4.3%
C12-C16 Aliphatics	14000	15000	93.3%	14400	15000	96.0%	2.8%
C16-C21 Aliphatics	14000	15000	93.3%	13800	15000	92.0%	1.4%
C10-C12 Aromatics	10300	15000	68.7%	10400	15000	69.3%	1.0%
C12-C16 Aromatics	12500	15000	83.3%	12900	15000	86.0%	3.1%
C16-C21 Aromatics	27100	30000	90.3%	29100	30000	97.0%	7.1%
C21-C34 Aromatics	26500	30000	88.3%	29000	30000	96.7%	9.0%

EPH Surrogate Recovery

		LCS	LCSD
Aliphatic	1-Chlorooctadecane	73.6%	74.5%
Aromatic	o-Terphenyl	75.6%	79.2%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE: 9/8/2010
ALS JOB#: 1009044
DATE RECEIVED: 9/3/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-195 / Proj #2207-098
CLIENT SAMPLE ID: 8/25/2010 P-TP-1-3
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C6-C8 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aromatics	NWVPH	**6.1**	5.0	1	MG/KG	9/7/2010	DLC
Total Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aromatics	NWVPH	**6.1**	5.0	1	MG/KG	9/7/2010	DLC
Hexane	NWVPH	ND	0.30	1	MG/KG	9/7/2010	DLC

* Note: Hexane reporting limit raised due to low sample weight.

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009044
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-195 / Proj #2207-098
CLIENT SAMPLE ID: 8/25/2010 P-TP-4-3
ALS SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C6-C8 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Hexane	NWVPH	ND	0.20	1	MG/KG	9/7/2010	DLC

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMT.
** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE: 9/8/2010
ALS JOB#: 1009044
DATE RECEIVED: 9/3/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-195 / Proj #2207-098

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
1009044-01	NWVPH	TFT - Aliphatic	83%
1009044-01	NWVPH	TFT - Aromatic	85%
1009044-01	NWVPH	TFT - Hexane	91%
1009044-02	NWVPH	TFT - Aliphatic	85%
1009044-02	NWVPH	TFT - Aromatic	88%
1009044-02	NWVPH	TFT - Hexane	93%

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009044
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-195 / Proj #2207-098

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MBLK-972010	Soil	NWVPH	C5-C6 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C6-C8 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C8-C10 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C8-C10 Aromatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Total Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Total Aromatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Hexane	ND(<0.20)	MG/KG

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE: 9/8/2010
ALS JOB#: 1009044
DATE RECEIVED: 9/3/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-195 / Proj #2207-098

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
R70417	Soil	NWVPH	C5-C6 Aliphatics	100	96%	99%	3
R70417	Soil	NWVPH	>C6-C8 Aliphatics	100	101%	111%	9
R70417	Soil	NWVPH	>C8-C10 Aliphatics	100	103%	107%	4
R70417	Soil	NWVPH	>C8-C10 Aromatics	100	102%	108%	6
R70417	Soil	NWVPH	Hexane	100	102%	101%	1

APPROVED BY:

1009044

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Page 1 of 1

Laboratory Reference #: 08-145

Project Manager: David Baumeister

email: dbaumeister@onsite-env.com

Project Number: 2007-098

Project Name:

Subcontract Laboratory:

Contact Person:

Address:

Phone Number:

Date/Time:

Turnaround Request:

1 Day 2 Day 3 Day [✓ Standard]

Other:

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
1	1	P-TP-1-3	8/25		S	1	VPH
2	7	P-TP-4-3	8/25		S	1	VPH

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:		OnSite En	9/3/10	1315	
Received by:		SP-207	9-3-10	321	
Relinquished by:					
Received by:	Shawn Robinson	ALS	9/3/10	4:15	
Relinquished by:					
Received by:					

Analytical Resources, Incorporated
Analytical Chemists and Consultants

22 September 2010

David Baumeister
OnSite Environmental, Inc.
14648 NE 95th
Redmond, WA 98052

RE: Client Project: 2007-098
ARI Job No: RL77

Dear David:

Please find enclosed the chain-of-custody (COC) record and the final results for the samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted five soil samples on September 3, 2010. The samples were analyzed for EPH as requested.

There were no anomalies associated with these analyses.

An electronic copy of these reports will remain on file at ARI. Should you have any questions, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
markh@arilabs.com

Enclosures

cc: file RL77

MDH/esj

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Subcontract Laboratory: Analytical Resources, Inc.
Attention: Mark Harris
4611 S 134th Pl, Ste. 100 Tukwila, WA 98168
Phone Number: (206) 695-6200
Date/Time:

Turnaround Request:
1 Day 2 Day 3 Day [✓ Standard]
Other:

Laboratory Reference #: 08-195
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098
Project Name:

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
1	P-TP-1-3	8/25/10		S	1	EPH
7	P-TP-4-3	⌊		⌊	⌊	⌊

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	OnSite Env	9/3/10	1010	EIM
Received by: Van	Speedy	9/3/10	1010	
Relinquished by: Van	Speedy	9/3/10	1548	
Received by:	ARI	9/3/10	1540	
Relinquished by:				
Received by:				

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Subcontract Laboratory: Analytical Resources, Inc.
Attention: Mark Harris
4611 S 134th Pl, Ste. 100 Tukwila, WA 98168
Phone Number: (206) 695-6200
Date/Time: ______

Turnaround Request:
1 Day 2 Day 3 Day
[✓ Standard]
Other: ______

Laboratory Reference #: 08-217
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098
Project Name: ______

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
9	P-TP-13-3	8/26/10		S	1	EPH
16	P-TP-18-2	↓		↓	↓	↓

	Signature	Company	Date	Time
Relinquished by:		OnSite En	9/3/10	1010
Received by:	Van	Speedy	9/3/10	1010
Relinquished by:	Van	Speedy	9/3/10	1540
Received by:		ARI	9/3/10	1540
Relinquished by:				
Received by:				

Comments/Special Instructions:

EIM

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Subcontract Laboratory: Analytical Resources, Inc.
Attention: Mark Harris
4611 S 134th Pl, Ste. 100 Tukwila, WA 98168
Phone Number: (206) 695-6200
Date/Time: ____

Turnaround Request:
1 Day 2 Day 3 Day
[✓ Standard]
Other: ____

Laboratory Reference #: 08-221
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098
Project Name: ____

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
2	P-TP-23-2	8/27/10		S	1	EPH

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:		OnSite Env	9/3/10	1400	EIM
Received by:	Van	Speedy	9/3/10	1010	
Relinquished by:	Van	Speedy	9/3/10	1540	
Received by:		ARI	9/3/10	1540	
Relinquished by:					
Received by:					

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: OnSite

Project Name:

COC No(s): [✓ NA]

Delivered by: Fed-Ex UPS [✓ Courier] Hand Delivered Other:

Assigned ARI Job No: RL77

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES [✓ NO]

Were custody papers included with the cooler? .... [✓ YES] NO

Were custody papers properly filled out (ink, signed, etc.) .... [✓ YES] NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)........ 7.6

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90941619

Cooler Accepted by: JM Date: 9/3/10 Time: 1545

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? .... YES [✓ NO]

What kind of packing material was used? ... Bubble Wrap [✓ Wet Ice] Gel Packs [✓ Baggies] Foam Block Paper Other:

Was sufficient ice used (if appropriate)? .... NA YES [✓ NO]

Were all bottles sealed in individual plastic bags? .... YES [✓ NO]

Did all bottles arrive in good condition (unbroken)? .... [✓ YES] NO

Were all bottle labels complete and legible? .... [✓ YES] NO

Did the number of containers listed on COC match with the number of containers received? .... [✓ YES] NO

Did all bottle labels and tags agree with custody papers? .... [✓ YES] NO

Were all bottles used correct for the requested analyses? .... [✓ YES] NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... [✓ NA] YES NO

Were all VOC vials free of air bubbles? .... [✓ NA] YES NO

Was sufficient amount of sample sent in each bottle? .... [✓ YES] NO

Date VOC Trip Blank was made at ARI........ [✓ NA]

Was Sample Split by ARI : [✓ NA] YES Date/Time: Equipment: Split by:

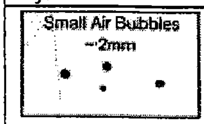
Samples Logged by: JM Date: 9/3/10 Time: 1730

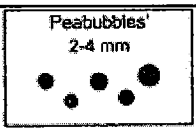
***** Notify Project Manager of discrepancies or concerns *****

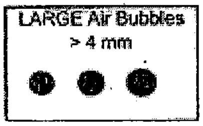
Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:


Small Air Bubbles
~2mm


Peabubbles'
2-4 mm


LARGE Air Bubbles
> 4 mm

Small → "sm"

Peabubbles → "pb"

Large → "lg"

Headspace → "hs"

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 7/10/2009

Inorganic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Duplicate RPD is not within established control limits
B	Reported value is less than the CRDL but ≥ the Reporting Limit
N	Matrix Spike recovery not within established control limits
NA	Not Applicable, analyte not spiked
H	The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
L	Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Flagged value is not within established control limits
B	Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
J	Estimated concentration when the value is less than ARI's established reporting limits
D	The spiked compound was not detected due to sample extract dilution
E	Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).
S	Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

Data Reporting Qualifiers

Effective 7/10/2009

NA	The flagged analyte was not analyzed for
NR	Spiked compound recovery is not reported due to chromatographic interference
NS	The flagged analyte was not spiked into the sample
M	Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
M2	The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
Y	The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
C	The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
P	The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

Geotechnical Data

A	The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
F	Samples were frozen prior to particle size determination
SM	Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
SS	Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
W	Weight of sample in some pipette aliquots was below the level required for accurate weighting

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: MB-090810
METHOD BLANK

Lab Sample ID: MB-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted: 09/08/10
Percent Moisture: NA

Sample Amount: 10.0 g-as-rec
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/22/10 00:08
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 05:32
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	**RL**	**Result**
C8-C10 Aliphatics	2,000	< 2,000 U
C10-C12 Aliphatics	2,000	< 2,000 U
C12-C16 Aliphatics	2,000	< 2,000 U
C16-C21 Aliphatics	2,000	< 2,000 U
C21-C34 Aliphatics	2,000	< 2,000 U
C8-C10 Aromatics	2,000	< 2,000 U
C10-C12 Aromatics	2,000	< 2,000 U
C12-C16 Aromatics	2,000	< 2,000 U
C16-C21 Aromatics	2,000	< 2,000 U
C21-C34 Aromatics	2,000	< 2,000 U

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	73.8%
Aromatic	o-Terphenyl	76.2%

FORM I

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-1-3
SAMPLE

Lab Sample ID: RL77A
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/25/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 16.0%

Sample Amount: 8.64 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 20:20
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 01:49
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	**2,300**	**6,100**
C10-C12 Aliphatics	**2,300**	**46,000**
C12-C16 Aliphatics	**2,300**	**150,000**
C16-C21 Aliphatics	**2,300**	**56,000**
C21-C34 Aliphatics	**2,300**	**280,000**
C8-C10 Aromatics	2,300	< 2,300 U
C10-C12 Aromatics	**2,300**	**8,100**
C12-C16 Aromatics	**2,300**	**36,000**
C16-C21 Aromatics	**2,300**	**50,000**
C21-C34 Aromatics	**2,300**	**240,000**

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	68.0%
Aromatic	o-Terphenyl	73.8%

FORM I

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-4-3
SAMPLE

Lab Sample ID: RL77B
LIMS ID: 10-22351
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/25/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 15.6%

Sample Amount: 8.70 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 21:10
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 02:39
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	2,300	< 2,300 U
C10-C12 Aliphatics	**2,300**	**4,200**
C12-C16 Aliphatics	**2,300**	**13,000**
C16-C21 Aliphatics	**2,300**	**14,000**
C21-C34 Aliphatics	**2,300**	**100,000**
C8-C10 Aromatics	2,300	< 2,300 U
C10-C12 Aromatics	2,300	< 2,300 U
C12-C16 Aromatics	**2,300**	**4,400**
C16-C21 Aromatics	**2,300**	**11,000**
C21-C34 Aromatics	**2,300**	**47,000**

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	69.6%
Aromatic	o-Terphenyl	79.3%

FORM I

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-13-3
SAMPLE

Lab Sample ID: RL77C
LIMS ID: 10-22352
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/26/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 17.1%

Sample Amount: 8.70 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 21:35
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 03:04
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	**RL**	**Result**
C8-C10 Aliphatics	2,300	< 2,300 U
C10-C12 Aliphatics	2,300	< 2,300 U
C12-C16 Aliphatics	2,300	< 2,300 U
C16-C21 Aliphatics	**2,300**	**35,000**
C21-C34 Aliphatics	**2,300**	**2,000,000**
C8-C10 Aromatics	2,300	< 2,300 U
C10-C12 Aromatics	2,300	< 2,300 U
C12-C16 Aromatics	2,300	< 2,300 U
C16-C21 Aromatics	2,300	< 2,300 U
C21-C34 Aromatics	**2,300**	**75,000**

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	68.5%
Aromatic	o-Terphenyl	78.4%

FORM I

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-18-2
SAMPLE

Lab Sample ID: RL77D
LIMS ID: 10-22353
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/26/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 11.7%

Sample Amount: 8.89 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 22:01
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 03:29
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	**2,200**	**2,800**
C10-C12 Aliphatics	**2,200**	**14,000**
C12-C16 Aliphatics	**2,200**	**41,000**
C16-C21 Aliphatics	**2,200**	**22,000**
C21-C34 Aliphatics	**2,200**	**250,000**
C8-C10 Aromatics	2,200	< 2,200 U
C10-C12 Aromatics	**2,200**	**2,500**
C12-C16 Aromatics	**2,200**	**12,000**
C16-C21 Aromatics	**2,200**	**22,000**
C21-C34 Aromatics	**2,200**	**120,000**

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	70.6%
Aromatic	o-Terphenyl	76.0%

FORM I

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-23-2
SAMPLE

Lab Sample ID: RL77E
LIMS ID: 10-22354
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/27/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 13.6%

Sample Amount: 8.80 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 22:52
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 04:18
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	**RL**	**Result**
C8-C10 Aliphatics	2,300	< 2,300 U
C10-C12 Aliphatics	2,300	< 2,300 U
C12-C16 Aliphatics	2,300	< 2,300 U
C16-C21 Aliphatics	2,300	< 2,300 U
C21-C34 Aliphatics	2,300	< 2,300 U
C8-C10 Aromatics	2,300	< 2,300 U
C10-C12 Aromatics	2,300	< 2,300 U
C12-C16 Aromatics	2,300	< 2,300 U
C16-C21 Aromatics	2,300	< 2,300 U
C21-C34 Aromatics	2,300	< 2,300 U

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	73.7%
Aromatic	o-Terphenyl	67.2%

FORM I

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: LCS-090810
LCS/LCSD

Lab Sample ID: LCS-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 09/08/10

Sample Amount LCS: 10.0 g-as-rec
LCSD: 10.0 g-as-rec
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL

Aliphatic
Date Analyzed LCS: 09/21/10 23:17
LCSD: 09/21/10 23:43
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Aromatic
Date Analyzed LCS: 09/22/10 04:43
LCSD: 09/22/10 05:08
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Range	**LCS**	**Spike Added-LCS**	**LCS Recovery**	**LCSD**	**Spike Added-LCSD**	**LCSD Recovery**	**RPD**
C8-C10 Aliphatics	11000	15000	73.3%	11600	15000	77.3%	5.3%
C10-C12 Aliphatics	9100	15000	60.7%	9500	15000	63.3%	4.3%
C12-C16 Aliphatics	14000	15000	93.3%	14400	15000	96.0%	2.8%
C16-C21 Aliphatics	14000	15000	93.3%	13800	15000	92.0%	1.4%
C10-C12 Aromatics	10300	15000	68.7%	10400	15000	69.3%	1.0%
C12-C16 Aromatics	12500	15000	83.3%	12900	15000	86.0%	3.1%
C16-C21 Aromatics	27100	30000	90.3%	29100	30000	97.0%	7.1%
C21-C34 Aromatics	26500	30000	88.3%	29000	30000	96.7%	9.0%

EPH Surrogate Recovery

		LCS	**LCSD**
Aliphatic	1-Chlorooctadecane	73.6%	74.5%
Aromatic	o-Terphenyl	75.6%	79.2%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

FORM III

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 1, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1008-217

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 27, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

Case Narrative

Samples were collected on August 26, 2010 and received by the laboratory on August 27, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-9-5**					
Laboratory ID:	08-217-01					
Diesel Range Organics	**ND**	27	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*119*	*50-150*				
Client ID:	**TP-10-6**					
Laboratory ID:	08-217-03					
Diesel Range Organics	**ND**	29	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*107*	*50-150*				
Client ID:	**TP-11-5**					
Laboratory ID:	08-217-04					
Diesel Range Organics	**ND**	26	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	53	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*119*	*50-150*				
Client ID:	**P-TP-12-4**					
Laboratory ID:	08-217-06					
Diesel Range Organics	**ND**	29	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*103*	*50-150*				
Client ID:	**P-TP-12-6**					
Laboratory ID:	08-217-07					
Diesel Range Organics	**ND**	75	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**160**	150	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				
Client ID:	**P-TP-13-3**					
Laboratory ID:	08-217-09					
Diesel Range Organics	**ND**	320	NWTPH-Dx	8-30-10	8-30-10	U1
Lube Oil	**2900**	59	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-13-7**					
Laboratory ID:	08-217-10					
Diesel Range Organics	**ND**	29	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*106*	*50-150*				
Client ID:	**P-TP-12-2**					
Laboratory ID:	08-217-14					
Diesel Range Organics	**ND**	28	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*115*	*50-150*				
Client ID:	**P-TP-17-7**					
Laboratory ID:	08-217-15					
Diesel Range Organics	**ND**	34	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	68	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*110*	*50-150*				
Client ID:	**P-TP-18-2**					
Laboratory ID:	08-217-16					
Diesel Fuel #2	**210**	29	NWTPH-Dx	8-30-10	8-30-10	N
Lube Oil	**1100**	57	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*116*	*50-150*				
Client ID:	**P-TP-18-7**					
Laboratory ID:	08-217-17					
Diesel Fuel #2	**180**	34	NWTPH-Dx	8-30-10	8-31-10	N
Lube Oil	**740**	68	NWTPH-Dx	8-30-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*124*	*50-150*				
Client ID:	**P-TP-19-3**					
Laboratory ID:	08-217-18					
Diesel Range Organics	**ND**	45	NWTPH-Dx	8-30-10	8-30-10	U1
Lube Oil	**220**	58	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*116*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-19-7**					
Laboratory ID:	08-217-19					
Diesel Range Organics	**ND**	69	NWTPH-Dx	8-30-10	8-30-10	U1
Lube Oil	**330**	98	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				
Client ID:	**P-TP-20-4**					
Laboratory ID:	08-217-20					
Diesel Range Organics	**ND**	40	NWTPH-Dx	8-30-10	8-30-10	U1
Lube Oil	**230**	54	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*117*	*50-150*				
Client ID:	**P-TP-21-3**					
Laboratory ID:	08-217-22					
Diesel Range Organics	**ND**	27	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0830S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-30-10	8-30-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-30-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*117*	*50-150*				

Analyte	**Result**		**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE								
Laboratory ID:	08-217-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*119*	*108*	*50-150*			
Laboratory ID:	08-217-03							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*107*	*110*	*50-150*			

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**P-TP-12-4**					
Laboratory ID:	08-217-06					
Gasoline	**ND**	5.9	NWTPH-Gx	8-28-10	8-28-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*55-127*				
Client ID:	**P-TP-13-3**					
Laboratory ID:	08-217-09					
Gasoline	**ND**	5.9	NWTPH-Gx	8-28-10	8-28-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*55-127*				
Client ID:	**P-TP-13-7**					
Laboratory ID:	08-217-10					
Gasoline	**ND**	5.9	NWTPH-Gx	8-28-10	8-28-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*55-127*				
Client ID:	**P-TP-17-2**					
Laboratory ID:	08-217-14					
Gasoline	**ND**	5.5	NWTPH-Gx	8-28-10	8-28-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*55-127*				

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

NWTPH-Gx
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0828S2					
Gasoline	**ND**	5.0	NWTPH-Gx	8-28-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*55-127*				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	08-198-03										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*85*	*83*	*55-127*			

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-217-01					
Client ID:	**TP-9-5**					
Arsenic	**ND**	11	6010B	8-31-10	8-31-10	
Barium	**26**	2.7	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.55	6010B	8-31-10	8-31-10	
Chromium	**19**	0.55	6010B	8-31-10	8-31-10	
Lead	**7.5**	5.5	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.27	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-31-10	8-31-10	
Silver	**ND**	0.55	6010B	8-31-10	8-31-10	
Lab ID:	08-217-03					
Client ID:	**TP-10-6**					
Arsenic	**ND**	11	6010B	8-31-10	8-31-10	
Barium	**41**	2.9	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.57	6010B	8-31-10	8-31-10	
Chromium	**23**	0.57	6010B	8-31-10	8-31-10	
Lead	**12**	5.7	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.29	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-31-10	8-31-10	
Silver	**ND**	0.57	6010B	8-31-10	8-31-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-217-04					
Client ID:	**TP-11-5**					
Arsenic	**ND**	11	6010B	8-31-10	8-31-10	
Barium	**34**	2.6	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.53	6010B	8-31-10	8-31-10	
Chromium	**18**	0.53	6010B	8-31-10	8-31-10	
Lead	**6.3**	5.3	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.26	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-31-10	8-31-10	
Silver	**ND**	0.53	6010B	8-31-10	8-31-10	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-217-06					
Client ID:	**P-TP-12-4**					
Arsenic	**ND**	12	6010B	8-31-10	8-31-10	
Barium	**73**	2.9	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.59	6010B	8-31-10	8-31-10	
Chromium	**30**	0.59	6010B	8-31-10	8-31-10	
Lead	**ND**	5.9	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.29	7471A	8-30-10	8-30-10	
Selenium	**ND**	12	6010B	8-31-10	8-31-10	
Silver	**ND**	0.59	6010B	8-31-10	8-31-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	08-217-07					
Client ID:	**P-TP-12-6**					
Arsenic	**ND**	15	6010B	8-31-10	8-31-10	
Barium	**82**	7.5	6010B	8-31-10	8-31-10	
Cadmium	**ND**	1.5	6010B	8-31-10	8-31-10	
Chromium	**19**	1.5	6010B	8-31-10	8-31-10	
Lead	**16**	15	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.75	7471A	8-30-10	8-30-10	
Selenium	**ND**	30	6010B	8-31-10	8-31-10	
Silver	**ND**	1.5	6010B	8-31-10	8-31-10	

Lab ID:	08-217-09					
Client ID:	**P-TP-13-3**					
Arsenic	**ND**	12	6010B	8-31-10	8-31-10	
Barium	**56**	3.0	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.59	6010B	8-31-10	8-31-10	
Chromium	**29**	0.59	6010B	8-31-10	8-31-10	
Lead	**13**	5.9	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.30	7471A	8-30-10	8-30-10	
Selenium	**ND**	12	6010B	8-31-10	8-31-10	
Silver	**ND**	0.59	6010B	8-31-10	8-31-10	

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-217-10					
Client ID:	**P-TP-13-7**					
Arsenic	**ND**	12	6010B	8-31-10	8-31-10	
Barium	**61**	2.9	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.58	6010B	8-31-10	8-31-10	
Chromium	**34**	0.58	6010B	8-31-10	8-31-10	
Lead	**12**	5.8	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.29	7471A	8-30-10	8-30-10	
Selenium	**ND**	12	6010B	8-31-10	8-31-10	
Silver	**ND**	0.58	6010B	8-31-10	8-31-10	
Lab ID:	08-217-11					
Client ID:	**P-TP-14-1**					
Arsenic	**32**	11	6010B	8-31-10	8-31-10	
Barium	**470**	13	6010B	8-31-10	8-31-10	
Cadmium	**12**	0.53	6010B	8-31-10	8-31-10	
Chromium	**170**	0.53	6010B	8-31-10	8-31-10	
Lead	**860**	5.3	6010B	8-31-10	8-31-10	
Mercury	**0.66**	0.26	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-31-10	8-31-10	
Silver	**ND**	0.53	6010B	8-31-10	8-31-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-217-12					
Client ID:	**P-TP-15-1**					
Arsenic	**21**	10	6010B	8-31-10	8-31-10	
Barium	**860**	13	6010B	8-31-10	8-31-10	
Cadmium	**41**	0.52	6010B	8-31-10	8-31-10	
Chromium	**280**	0.52	6010B	8-31-10	8-31-10	
Lead	**770**	5.2	6010B	8-31-10	8-31-10	
Mercury	**0.48**	0.26	7471A	8-30-10	8-30-10	
Selenium	**ND**	10	6010B	8-31-10	8-31-10	
Silver	**ND**	0.52	6010B	8-31-10	8-31-10	
Lab ID:	08-217-13					
Client ID:	**P-TP-16-1**					
Arsenic	**ND**	11	6010B	8-31-10	8-31-10	
Barium	**720**	14	6010B	8-31-10	8-31-10	
Cadmium	**26**	0.55	6010B	8-31-10	8-31-10	
Chromium	**300**	0.55	6010B	8-31-10	8-31-10	
Lead	**1600**	5.5	6010B	8-31-10	8-31-10	
Mercury	**5.1**	1.4	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-31-10	8-31-10	
Silver	**ND**	0.55	6010B	8-31-10	8-31-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-217-14					
Client ID:	**P-TP-17-2**					
Arsenic	**ND**	11	6010B	8-31-10	8-31-10	
Barium	**49**	2.8	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.55	6010B	8-31-10	8-31-10	
Chromium	**25**	0.55	6010B	8-31-10	8-31-10	
Lead	**15**	5.5	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.28	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-31-10	8-31-10	
Silver	**ND**	0.55	6010B	8-31-10	8-31-10	

Lab ID:	08-217-17					
Client ID:	**P-TP-18-7**					
Arsenic	**71**	14	6010B	8-31-10	8-31-10	
Barium	**110**	3.4	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.68	6010B	8-31-10	8-31-10	
Chromium	**36**	0.68	6010B	8-31-10	8-31-10	
Lead	**150**	6.8	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.34	7471A	8-30-10	8-30-10	
Selenium	**ND**	14	6010B	8-31-10	8-31-10	
Silver	**ND**	0.68	6010B	8-31-10	8-31-10	

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	08-217-19					
Client ID:	**P-TP-19-7**					
Arsenic	**16**	9.8	6010B	8-31-10	8-31-10	
Barium	**130**	4.9	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.98	6010B	8-31-10	8-31-10	
Chromium	**64**	0.98	6010B	8-31-10	8-31-10	
Lead	**190**	9.8	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.49	7471A	8-30-10	8-30-10	
Selenium	**ND**	20	6010B	8-31-10	8-31-10	
Silver	**ND**	0.98	6010B	8-31-10	8-31-10	
Lab ID:	08-217-22					
Client ID:	**P-TP-21-3**					
Arsenic	**ND**	11	6010B	8-31-10	8-31-10	
Barium	**39**	2.7	6010B	8-31-10	8-31-10	
Cadmium	**ND**	0.55	6010B	8-31-10	8-31-10	
Chromium	**23**	0.55	6010B	8-31-10	8-31-10	
Lead	**ND**	5.5	6010B	8-31-10	8-31-10	
Mercury	**ND**	0.27	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-31-10	8-31-10	
Silver	**ND**	0.55	6010B	8-31-10	8-31-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0831S3

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	5.0
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0830S1

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-217-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**31.9**	**31.9**	NA	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**17.3**	**18.7**	8	0.50	
Lead	**5.95**	**5.40**	10	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-203-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 8-31-10
Date Analyzed: 8-31-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-217-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**99.2**	99	**97.3**	97	2	
Barium	100	**129**	97	**132**	100	2	
Cadmium	50	**48.0**	96	**46.9**	94	2	
Chromium	100	**116**	99	**114**	97	2	
Lead	250	**245**	96	**242**	94	2	
Selenium	100	**100**	100	**99.4**	99	1	
Silver	25	**23.6**	94	**23.0**	92	3	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

TOTAL METALS
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-203-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.50	**0.495**	99	**0.509**	102	3	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217
Project: 2007-098

% MOISTURE

Date Analyzed: 8-30&31-2010

Client ID	Lab ID	% Moisture
P-TP-9-5	08-217-01	9
P-TP-10-6	08-217-03	13
P-TP-11-5	08-217-04	5
P-TP-12-4	08-217-06	15
P-TP-12-6	08-217-07	67
P-TP-13-3	08-217-09	15
P-TP-13-7	08-217-10	14
P-TP-14-1	08-217-11	5
P-TP-15-1	08-217-12	4
P-TP-16-1	08-217-13	9
P-TP-12-2	08-217-14	10
P-TP-12-7	08-217-15	26
P-TP-18-2	08-217-16	12
P-TP-18-7	08-217-17	27
P-TP-19-3	08-217-18	14
P-TP-19-7	08-217-19	49
P-TP-20-4	08-217-20	7
P-TP-21-3	08-217-22	9

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

DATE: 8/26/10
PAGE: 1 of 2

PROJECT NAME: Bothell Xroads #: 2007-098
SITE CODE: Bothell Point
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: Atkins PHONE:

08-217

RUSH: 2 day TAT!

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	VOCs 8260	EPH/VPH (HOLD)	cPAH	RCRA Metals	% MOISTURE	REMARKS
P-TP-9-5	8/26/10	900	S	1	5	X					X	X	
P-TP-9-8		910		2									
P-TP-10-6		930		3		X					X	X	
P-TP-11-5		945		4		X					X	X	
P-TP-11-7		955		5									
P-TP-12-4		1130		6	7	X	X				X	X	
P-TP-12-6		1145		7	5	X					X	X	
P-TP-13-1		1240		8	2								
P-TP-13-3		1245		9	7	X	X		X		X	X	
P-TP-13-7		1230		10	5	X	X				X	X	
P-TP-14-1		1240		11	2						X	X	
P-TP-15-1		1245		12	2						X	X	
P-TP-16-1		1250		13	2						X	X	
P-TP-17-~~3~~		1300		14	~~3~~ 7	X	X		X		X	X	
P-TP-17-7		1315		15	5	X						X	
P-TP-18-2		1330		16	7	X						X	
P-TP-18-7		1340		17	5	X					X	X	
P-TP-19-3		1345		18	5	X						X	
P-TP-19-~~7~~	1400	~~1355~~		19	5	X					X	X	
P-TP-20-4		1405		20	5	X						X	

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fisk	CFisk	HWA GeoSciences	8/27/10	11:20am	
Received by:	Van	Van Vlochett	Speedy	8/27/10	11:20	
Relinquished by:	Van	Van	Speedy	8/27/10	12:40	
Received by:	M Voun		OSE	8/27/10	1240	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

DATE: 8/26/10
PAGE: 2 of 2

08-217

RUSH - 2 day TAT!

PROJECT NAME: Bothell Crossroads #: 2007-091
SITE CODE: Bothell Paint
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: PHONE:

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	VOC's 8260	CPH/VPH (HOLD)	cPAH	RCRA Metals								% Moisture		REMARKS
P-TP-20-6	8/26/10	1415	S	21	5																
P-TP-21-3	↓	1430	↓	22	5	X					X								X		
P-TP-21-7	↓	1445	↓	23	5																

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fask	CFask	HWA GeoSciences	8/27	11:20am	
Received by:	Van	Van Hochstt	Speedy	8/27	11:20	
Relinquished by:	Van	Van	Speedy	8/27/10	12:40	
Received by:	MVoun		OSE	8/27/10	1240	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1008-217B

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 27, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

Case Narrative

Samples were collected on August 26, 2010 and received by the laboratory on August 27, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

PAHs EPA 8270D/SIM Analysis

Samples TP-9-5, TP-10-6, TP-11-5, TP-13-7, and TP-20-4 were extracted and analyzed out of holding time.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-13-3**					
Laboratory ID:	08-217-09					
Naphthalene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
2-Methylnaphthalene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
1-Methylnaphthalene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthylene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Fluorene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Phenanthrene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Anthracene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Pyrene	**0.0092**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]anthracene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Chrysene	**0.0079**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[b]fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[k]fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]pyrene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Dibenz[a,h]anthracene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[g,h,i]perylene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-8-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*85*	*45 - 101*				
Pyrene-d10	*99*	*52 - 118*				
Terphenyl-d14	*88*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-18-2**					
Laboratory ID:	08-217-16					
Naphthalene	**0.065**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
2-Methylnaphthalene	**0.088**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
1-Methylnaphthalene	**0.073**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Acenaphthene	**0.061**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Fluorene	**0.075**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Phenanthrene	**0.21**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Anthracene	**0.030**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Fluoranthene	**0.086**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Pyrene	**0.087**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Benzo[a]anthracene	**0.024**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Chrysene	**0.038**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Benzo[b]fluoranthene	**0.016**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Benzo[k]fluoranthene	**0.010**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Benzo[a]pyrene	**0.026**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Indeno(1,2,3-c,d)pyrene	**0.012**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Dibenz[a,h]anthracene	**0.0095**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Benzo[g,h,i]perylene	**0.033**	0.0076	EPA 8270/SIM	9-7-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*59*	*45 - 101*				
Pyrene-d10	*61*	*52 - 118*				
Terphenyl-d14	*46*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0907S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*85*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*87*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-038-01										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0726**	**0.0707**	0.0833	0.0833	ND	87	85	31 - 115	3	19	
Acenaphthylene	**0.0664**	**0.0631**	0.0833	0.0833	ND	80	76	40 - 134	5	22	
Acenaphthene	**0.0743**	**0.0715**	0.0833	0.0833	ND	89	86	48 - 118	4	17	
Fluorene	**0.0761**	**0.0730**	0.0833	0.0833	ND	91	88	54 - 122	4	16	
Phenanthrene	**0.0743**	**0.0711**	0.0833	0.0833	ND	89	85	46 - 123	4	19	
Anthracene	**0.0646**	**0.0645**	0.0833	0.0833	ND	78	77	53 - 123	0	27	
Fluoranthene	**0.0704**	**0.0683**	0.0833	0.0833	ND	85	82	47 - 132	3	26	
Pyrene	**0.0783**	**0.0742**	0.0833	0.0833	ND	94	89	41 - 137	5	25	
Benzo[a]anthracene	**0.0688**	**0.0672**	0.0833	0.0833	ND	83	81	43 - 132	2	26	
Chrysene	**0.0677**	**0.0673**	0.0833	0.0833	ND	81	81	46 - 126	1	24	
Benzo[b]fluoranthene	**0.0626**	**0.0634**	0.0833	0.0833	ND	75	76	44 - 134	1	24	
Benzo[k]fluoranthene	**0.0555**	**0.0595**	0.0833	0.0833	ND	67	71	45 - 132	7	20	
Benzo[a]pyrene	**0.0724**	**0.0721**	0.0833	0.0833	ND	87	87	36 - 136	0	23	
Indeno(1,2,3-c,d)pyrene	**0.0792**	**0.0783**	0.0833	0.0833	ND	95	94	40 - 136	1	16	
Dibenz[a,h]anthracene	**0.0821**	**0.0804**	0.0833	0.0833	ND	99	97	40 - 142	2	13	
Benzo[g,h,i]perylene	**0.0806**	**0.0779**	0.0833	0.0833	ND	97	94	37 - 137	3	18	
Surrogate:											
2-Fluorobiphenyl						*80*	*79*	*45 - 101*			
Pyrene-d10						*87*	*84*	*52 - 118*			
Terphenyl-d14						*77*	*82*	*41 - 106*			

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-9-5**					
Laboratory ID:	08-217-01					
Naphthalene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
2-Methylnaphthalene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
1-Methylnaphthalene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthylene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Fluorene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Phenanthrene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Anthracene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Pyrene	**0.0076**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]anthracene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Chrysene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[b]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[k]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]pyrene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Dibenz[a,h]anthracene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[g,h,i]perylene	**ND**	0.0073	EPA 8270/SIM	9-17-10	9-18-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*76*	*45 - 101*				
Pyrene-d10	*88*	*52 - 118*				
Terphenyl-d14	*94*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-10-6**					
Laboratory ID:	08-217-03					
Naphthalene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
2-Methylnaphthalene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
1-Methylnaphthalene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Fluorene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Phenanthrene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Anthracene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Pyrene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]anthracene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Chrysene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[b]fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[k]fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]pyrene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Dibenz[a,h]anthracene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[g,h,i]perylene	**ND**	0.0076	EPA 8270/SIM	9-17-10	9-18-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*67*	*45 - 101*				
Pyrene-d10	*73*	*52 - 118*				
Terphenyl-d14	*71*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-11-5**					
Laboratory ID:	08-217-04					
Naphthalene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
2-Methylnaphthalene	**0.0089**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
1-Methylnaphthalene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthylene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Fluorene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Phenanthrene	**0.016**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Anthracene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Fluoranthene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Pyrene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]anthracene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Chrysene	**0.010**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[b]fluoranthene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[k]fluoranthene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]pyrene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Dibenz[a,h]anthracene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[g,h,i]perylene	**ND**	0.0070	EPA 8270/SIM	9-17-10	9-18-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*79*	*45 - 101*				
Pyrene-d10	*87*	*52 - 118*				
Terphenyl-d14	*84*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-13-7**					
Laboratory ID:	08-217-10					
Naphthalene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
2-Methylnaphthalene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
1-Methylnaphthalene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthylene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Fluorene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Phenanthrene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Anthracene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Fluoranthene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Pyrene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]anthracene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Chrysene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[b]fluoranthene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[k]fluoranthene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]pyrene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Dibenz[a,h]anthracene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[g,h,i]perylene	**ND**	0.0078	EPA 8270/SIM	9-17-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*70*	*45 - 101*				
Pyrene-d10	*79*	*52 - 118*				
Terphenyl-d14	*92*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-20-4**					
Laboratory ID:	08-217-20					
Naphthalene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
2-Methylnaphthalene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
1-Methylnaphthalene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthylene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Fluorene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Phenanthrene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Anthracene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Fluoranthene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Pyrene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]anthracene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Chrysene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[b]fluoranthene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[k]fluoranthene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]pyrene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Dibenz[a,h]anthracene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[g,h,i]perylene	**ND**	0.0072	EPA 8270/SIM	9-17-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*63*	*45 - 101*				
Pyrene-d10	*71*	*52 - 118*				
Terphenyl-d14	*78*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0917S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*83*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*90*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-217B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**		**Spike Level**		**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
SPIKE BLANKS										
Laboratory ID:	SB0917S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0659**	**0.0813**	0.0833	0.0833	79	98	33 - 105	21	30	
Acenaphthylene	**0.0647**	**0.0714**	0.0833	0.0833	78	86	51 - 110	10	22	
Acenaphthene	**0.0687**	**0.0804**	0.0833	0.0833	82	97	51 - 105	16	20	
Fluorene	**0.0709**	**0.0803**	0.0833	0.0833	85	96	61 - 107	12	17	
Phenanthrene	**0.0722**	**0.0791**	0.0833	0.0833	87	95	61 - 106	9	12	
Anthracene	**0.0628**	**0.0683**	0.0833	0.0833	75	82	59 - 106	8	12	
Fluoranthene	**0.0712**	**0.0772**	0.0833	0.0833	85	93	66 - 116	8	12	
Pyrene	**0.0746**	**0.0840**	0.0833	0.0833	90	101	67 - 118	12	14	
Benzo[a]anthracene	**0.0673**	**0.0727**	0.0833	0.0833	81	87	60 - 114	8	11	
Chrysene	**0.0738**	**0.0800**	0.0833	0.0833	89	96	64 - 112	8	12	
Benzo[b]fluoranthene	**0.0754**	**0.0812**	0.0833	0.0833	91	97	61 - 123	7	14	
Benzo[k]fluoranthene	**0.0715**	**0.0808**	0.0833	0.0833	86	97	50 - 124	12	17	
Benzo[a]pyrene	**0.0720**	**0.0776**	0.0833	0.0833	86	93	50 - 114	7	17	
Indeno(1,2,3-c,d)pyrene	**0.0900**	**0.0825**	0.0833	0.0833	108	99	56 - 122	9	16	
Dibenz[a,h]anthracene	**0.0914**	**0.0828**	0.0833	0.0833	110	99	57 - 124	10	16	
Benzo[g,h,i]perylene	**0.0841**	**0.0832**	0.0833	0.0833	101	100	56 - 121	1	15	
Surrogate:										
2-Fluorobiphenyl					*72*	*84*	*45 - 101*			
Pyrene-d10					*80*	*88*	*52 - 118*			
Terphenyl-d14					*92*	*94*	*41 - 106*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

DATE: 8/26/10
PAGE: 1 of 2

08-217

RUSH: 2 day TAT!

PROJECT NAME: Bothell Xroads #: 2007-098
SITE CODE: Bothell Point
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: Atkins PHONE:

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	VOA 8260	EPH/VPH (HOLD)	PAHs	RCRA Metals								% MOISTURE		REMARKS
P-TP-9-5	8/26/10	900	S	1	5	X				○	X								X		
P-TP-9-8		910		2																	
P-TP-10-6		930		3		X				○	X								X		⊗ Added 9/2/10 ~~BC~~ STA
P-TP-11-5		945		4		X				○	X								X		
P-TP-11-7		955		5																	
P-TP-12-4		1130		6	7	X	X				X								X		○ Added 9/15/10. DB (STA)
P-TP-12-6		1145		7	5	X					X								X		
P-TP-13-1		1240		8	2																
P-TP-13-3		1245		9	7	X	X		⊗	⊗	X								X		
P-TP-13-7		1230		10	5	X	X			○	X								X		
P-TP-14-1		1240		11	2						X								X		
P-TP-15-1		1245		12	2						X								X		
P-TP-16-1		1250		13	2						X								X		
P-TP-17-2		1300		14	~~3~~ 7	X	X		X		X								X		
P-TP-17-7		1315		15	5	X													X		
P-TP-18-2		1330		16	7	X			⊗	⊗									X		
P-TP-18-7		1340		17	5	X					X								X		
P-TP-19-3		1345		18	5	X													X		
P-TP-19-7	1400	~~1350~~		19	5	X					X								X		
P-TP-20-4		1405	↓	20	5	X				○									X		

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fisk	C Fisk	HWA GeoSciences	8/27/10	11:20am	
Received by:	Van	Van Vochett	Speedy	8/27/10	11:20	
Relinquished by:	Van	Van	Speedy	8/27/10	12:40	
Received by:	M Vouin		OBE	8/27/10	1240	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

DATE: 8/26/10
PAGE: 2 of 2

08-217

RUSH - 2 day TAT!

PROJECT NAME: Bothell Crossroads #: 2007-091
SITE CODE: Bothell Paint
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: PHONE:

ANALYSIS REQUESTED

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	VOC's 8260	EPH/VPH (HOLD)	cPAH	RCRA Metals								% MOISTURE		REMARKS
P-TP-20-6	8/26/10	1415	S	21	5																
P-TP-21-3	↓	1430	↓	22	5	X					X								X		
P-TP-21-7	↓	1440	↓	23	5																

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fask	CFask	HWA GeoSciences	8/27	11:20am	
Received by:	Van	Van Hochott	Speedy	8/27	11:20	
Relinquished by:	Van	Van	Speedy	8/27/10	12:40	
Received by:	MVOUN		OSE	8/27/10	1240	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

Analytical Resources, Incorporated
Analytical Chemists and Consultants

22 September 2010

David Baumeister
OnSite Environmental, Inc.
14648 NE 95th
Redmond, WA 98052

RE: Client Project: 2007-098
ARI Job No: RO04

Dear David:

Please find enclosed the chain-of-custody (COC) record and the final results for the samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted two soil samples on September 3, 2010. The samples were analyzed for EPH as requested.

There were no anomalies associated with these analyses.

An electronic copy of these reports will remain on file at ARI. Should you have any questions, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
markh@arilabs.com

Enclosures

cc: file RO04

MDH/esj

OnSite Environmental Inc.

R004 10-22352

10-22353

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Page 1 of 1

Subcontract Laboratory: Analytical Resources, Inc.

Attention: Mark Harris

4611 S 134th Pl, Ste. 100 Tukwila, WA 98168

Phone Number: (206) 695-6200

Date/Time: ______

Turnaround Request:

1 Day 2 Day 3 Day [✓ Standard]

Other: ______

Laboratory Reference #: 08-217

Project Manager: David Baumeister

email: dbaumeister@onsite-env.com

Project Number: 2007-098

Project Name: ______

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
9	P-TP-13-3	8/26/10		S	1	EPH
16	P-TP-18-2	|		|	|	|

	Signature	Company	Date	Time
Relinquished by:		OnSite Env	9/3/10	1010
Received by:	Van	Speedy	9/3/10	1010
Relinquished by:	Van	Speedy	9/3/10	1540
Received by:		ARI	9/3/10	1540
Relinquished by:				
Received by:				

Comments/Special Instructions

EIM

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: OnSite

COC No(s): [✓ NA]

Assigned ARI Job No: RL77

Project Name:

Delivered by: Fed-Ex UPS [✓ Courier] Hand Delivered Other:

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES [✓ NO]

Were custody papers included with the cooler? .... [✓ YES] NO

Were custody papers properly filled out (ink, signed, etc.) .... [✓ YES] NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)........ 7.6

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90941619

Cooler Accepted by: JM Date: 9/3/10 Time: 1545

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? .... YES [✓ NO]

What kind of packing material was used? ... Bubble Wrap [✓ Wet Ice] Gel Packs [✓ Baggies] Foam Block Paper Other:

Was sufficient ice used (if appropriate)? .... NA YES [✓ NO]

Were all bottles sealed in individual plastic bags? .... YES [✓ NO]

Did all bottles arrive in good condition (unbroken)? .... [✓ YES] NO

Were all bottle labels complete and legible? .... [✓ YES] NO

Did the number of containers listed on COC match with the number of containers received? .... [✓ YES] NO

Did all bottle labels and tags agree with custody papers? .... [✓ YES] NO

Were all bottles used correct for the requested analyses? .... [✓ YES] NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... [✓ NA] YES NO

Were all VOC vials free of air bubbles? .... [✓ NA] YES NO

Was sufficient amount of sample sent in each bottle? .... [✓ YES] NO

Date VOC Trip Blank was made at ARI.. [✓ NA]

Was Sample Split by ARI : [✓ NA] YES Date/Time: Equipment: Split by:

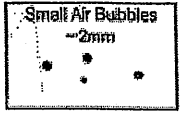
Samples Logged by: JM Date: 9/3/10 Time: 1730

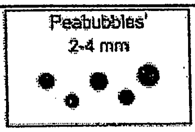
***** Notify Project Manager of discrepancies or concerns *****

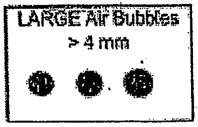
Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:


Small Air Bubbles
~2mm


Peabubbles
2-4 mm


LARGE Air Bubbles
> 4 mm

Small → "sm"	
Peabubbles → "pb"	
Large → "lg"	
Headspace → "hs"	

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: MB-090810
METHOD BLANK

Lab Sample ID: MB-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted: 09/08/10
Percent Moisture: NA

Sample Amount: 10.0 g-as-rec
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/22/10 00:08
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 05:32
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Range	**RL**	**Result**
C8-C10 Aliphatics	2,000	< 2,000 U
C10-C12 Aliphatics	2,000	< 2,000 U
C12-C16 Aliphatics	2,000	< 2,000 U
C16-C21 Aliphatics	2,000	< 2,000 U
C21-C34 Aliphatics	2,000	< 2,000 U
C8-C10 Aromatics	2,000	< 2,000 U
C10-C12 Aromatics	2,000	< 2,000 U
C12-C16 Aromatics	2,000	< 2,000 U
C16-C21 Aromatics	2,000	< 2,000 U
C21-C34 Aromatics	2,000	< 2,000 U

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	73.8%
Aromatic	o-Terphenyl	76.2%

FORM I

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-13-3
SAMPLE

Lab Sample ID: R004C
LIMS ID: 10-22352
Matrix: Soil
Data Release Authorized:
Reported: 09/23/10

QC Report No: R004-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/26/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 17.1%

Sample Amount: 8.70 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 21:35
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 03:04
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	2,300	< 2,300 U
C10-C12 Aliphatics	2,300	< 2,300 U
C12-C16 Aliphatics	2,300	< 2,300 U
C16-C21 Aliphatics	**2,300**	**35,000**
C21-C34 Aliphatics	**2,300**	**2,000,000**
C8-C10 Aromatics	2,300	< 2,300 U
C10-C12 Aromatics	2,300	< 2,300 U
C12-C16 Aromatics	2,300	< 2,300 U
C16-C21 Aromatics	2,300	< 2,300 U
C21-C34 Aromatics	**2,300**	**75,000**

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	68.5%
Aromatic	o-Terphenyl	78.4%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-18-2
SAMPLE

Lab Sample ID: RO04D
LIMS ID: 10-22353
Matrix: Soil
Data Release Authorized:
Reported: 09/23/10

QC Report No: RO04-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/26/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 11.7%

Sample Amount: 8.89 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 22:01
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 03:29
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	**2,200**	**2,800**
C10-C12 Aliphatics	**2,200**	**14,000**
C12-C16 Aliphatics	**2,200**	**41,000**
C16-C21 Aliphatics	**2,200**	**22,000**
C21-C34 Aliphatics	**2,200**	**250,000**
C8-C10 Aromatics	2,200	< 2,200 U
C10-C12 Aromatics	**2,200**	**2,500**
C12-C16 Aromatics	**2,200**	**12,000**
C16-C21 Aromatics	**2,200**	**22,000**
C21-C34 Aromatics	**2,200**	**120,000**

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	70.6%
Aromatic	o-Terphenyl	76.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: LCS-090810
LCS/LCSD

Lab Sample ID: LCS-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 09/08/10

Sample Amount LCS: 10.0 g-as-rec
LCSD: 10.0 g-as-rec
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL

Aliphatic
Date Analyzed LCS: 09/21/10 23:17
LCSD: 09/21/10 23:43
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Aromatic
Date Analyzed LCS: 09/22/10 04:43
LCSD: 09/22/10 05:08
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Range	**LCS**	**Spike Added-LCS**	**LCS Recovery**	**LCSD**	**Spike Added-LCSD**	**LCSD Recovery**	**RPD**
C8-C10 Aliphatics	11000	15000	73.3%	11600	15000	77.3%	5.3%
C10-C12 Aliphatics	9100	15000	60.7%	9500	15000	63.3%	4.3%
C12-C16 Aliphatics	14000	15000	93.3%	14400	15000	96.0%	2.8%
C16-C21 Aliphatics	14000	15000	93.3%	13800	15000	92.0%	1.4%
C10-C12 Aromatics	10300	15000	68.7%	10400	15000	69.3%	1.0%
C12-C16 Aromatics	12500	15000	83.3%	12900	15000	86.0%	3.1%
C16-C21 Aromatics	27100	30000	90.3%	29100	30000	97.0%	7.1%
C21-C34 Aromatics	26500	30000	88.3%	29000	30000	96.7%	9.0%

EPH Surrogate Recovery

		LCS	LCSD
Aliphatic	1-Chlorooctadecane	73.6%	74.5%
Aromatic	o-Terphenyl	75.6%	79.2%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE: 9/8/2010
ALS JOB#: 1009042
DATE RECEIVED: 9/3/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-217 / Proj #2007-098
CLIENT SAMPLE ID: 8/26/2010 P-TP-13-3
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C6-C8 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Hexane	NWVPH	ND	0.20	1	MG/KG	9/7/2010	DLC

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009042
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT:	Dave Baumeister
CLIENT PROJECT ID:	Lab Ref #08-217 / Proj #2007-098
CLIENT SAMPLE ID:	8/26/2010 P-TP-18-2
ALS SAMPLE #:	-02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C6-C8 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Hexane	NWVPH	ND	0.20	1	MG/KG	9/7/2010	DLC

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009042
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-217 / Proj #2007-098

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
1009042-01	NWVPH	TFT - Aliphatic	81%
1009042-01	NWVPH	TFT - Aromatic	82%
1009042-01	NWVPH	TFT - Hexane	86%
1009042-02	NWVPH	TFT - Aliphatic	92%
1009042-02	NWVPH	TFT - Aromatic	92%
1009042-02	NWVPH	TFT - Hexane	96%

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009042
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-217 / Proj #2007-098

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MBLK-972010	Soil	NWVPH	C5-C6 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C6-C8 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C8-C10 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C8-C10 Aromatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Total Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Total Aromatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Hexane	ND(<0.20)	MG/KG

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE: 9/8/2010
ALS JOB#: 1009042
DATE RECEIVED: 9/3/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-217 / Proj #2007-098

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
R70417	Soil	NWVPH	C5-C6 Aliphatics	100	96%	99%	3
R70417	Soil	NWVPH	>C6-C8 Aliphatics	100	101%	111%	9
R70417	Soil	NWVPH	>C8-C10 Aliphatics	100	103%	107%	4
R70417	Soil	NWVPH	>C8-C10 Aromatics	100	102%	108%	6
R70417	Soil	NWVPH	Hexane	100	102%	101%	1

APPROVED BY:

1009042

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Subcontract Laboratory:
Contact Person:
Address:
Phone Number:
Date/Time:

Turnaround Request:
1 Day 2 Day 3 Day
[✓ Standard]
Other:

Laboratory Reference #: 08-217
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098
Project Name:

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
1	9	P-TP-13-3	8/26		S	1	VPH
2	16	P-TP-18-2	⊥		⊥	⊥	⊥

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:		OnSite Env	9/3/10	1315	
Received by:		Speedy	9-30-10	321	
Relinquished by:					
Received by:	Shawn Robinson	ALS	9/3/10	4:15	
Relinquished by:					
Received by:					

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 1, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1008-221

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 27, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

Case Narrative

Samples were collected on August 27, 2010 and received by the laboratory on August 27, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Volatiles EPA 8260B Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

One of the internal standards did not pass for samples P-TP-22-3, P-TP-23-4 and P-TP-25-6 due to matrix effects. The samples was re-run with similar results. All results from Bromobenzene onward, including PQLs, should be considered estimates.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Total Metals EPA 6010B/7471A Analysis

Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-22-3**					
Laboratory ID:	08-221-01					
Diesel Range Organics	**ND**	71	NWTPH-Dx	8-31-10	8-31-10	U1
Lube Oil	**400**	130	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				
Client ID:	**P-TP-23-2**					
Laboratory ID:	08-221-02					
Diesel Range Organics	**ND**	41	NWTPH-Dx	8-31-10	8-31-10	U1
Lube Oil	**230**	53	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**P-TP-23-4**					
Laboratory ID:	08-221-03					
Diesel Range Organics	**ND**	120	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil Range Organics	**370**	240	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*98*	*50-150*				
Client ID:	**P-TP-24-4**					
Laboratory ID:	08-221-04					
Diesel Range Organics	**ND**	30	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**P-TP-25-4**					
Laboratory ID:	08-221-05					
Diesel Fuel #2	**260**	30	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil	**560**	59	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-25-6**					
Laboratory ID:	08-221-06					
Diesel Range Organics	**ND**	44	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil	**130**	88	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*109*	*50-150*				
Client ID:	**P-TP-26-5**					
Laboratory ID:	08-221-07					
Diesel Range Organics	**ND**	26	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil Range Organics	**ND**	53	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*106*	*50-150*				
Client ID:	**P-TP-27-4**					
Laboratory ID:	08-221-09					
Diesel Range Organics	**ND**	29	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil	**180**	59	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0831S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-31-10	8-31-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-31-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*107*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-221-09							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**153**	**80.2**				62	NA	
Surrogate:								
o-Terphenyl			*94*	*105*	*50-150*			

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-22-3**					
Laboratory ID:	08-221-01					
Gasoline	**ND**	20	NWTPH-Gx	8-28-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*82*	*55-127*				
Client ID:	**P-TP-23-2**					
Laboratory ID:	08-221-02					
Gasoline	**8.6**	7.8	NWTPH-Gx	8-28-10	8-28-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*79*	*55-127*				
Client ID:	**P-TP-23-4**					
Laboratory ID:	08-221-03					
Gasoline	**ND**	44	NWTPH-Gx	8-28-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*77*	*55-127*				
Client ID:	**P-TP-24-4**					
Laboratory ID:	08-221-04					
Gasoline	**ND**	5.7	NWTPH-Gx	8-28-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*55-127*				
Client ID:	**P-TP-25-4**					
Laboratory ID:	08-221-05					
Gasoline	**ND**	6.5	NWTPH-Gx	8-28-10	8-30-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*55-127*				
Client ID:	**P-TP-25-6**					
Laboratory ID:	08-221-06					
Gasoline	**80**	25	NWTPH-Gx	8-28-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*72*	*55-127*				

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

NWTPH-Gx
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0828S2					
Gasoline	**ND**	5.0	NWTPH-Gx	8-28-10	8-31-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*55-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-198-03										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*85*	*83*	*55-127*			

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-221-01
Client ID:	**P-TP-22-3**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0032
Chloromethane	ND		0.016
Vinyl Chloride	ND		0.0032
Bromomethane	ND		0.0032
Chloroethane	ND		0.016
Trichlorofluoromethane	ND		0.0032
1,1-Dichloroethene	ND		0.0032
Acetone	0.97	E	0.032
Iodomethane	ND		0.016
Carbon Disulfide	0.0099		0.0032
Methylene Chloride	ND		0.016
(trans) 1,2-Dichloroethene	ND		0.0032
Methyl t-Butyl Ether	ND		0.0032
1,1-Dichloroethane	ND		0.0032
Vinyl Acetate	ND		0.016
2,2-Dichloropropane	ND		0.0032
(cis) 1,2-Dichloroethene	ND		0.0032
2-Butanone	0.22		0.016
Bromochloromethane	ND		0.0032
Chloroform	ND		0.0032
1,1,1-Trichloroethane	ND		0.0032
Carbon Tetrachloride	ND		0.0032
1,1-Dichloropropene	ND		0.0032
Benzene	ND		0.0032
1,2-Dichloroethane	ND		0.0032
Trichloroethene	ND		0.0032
1,2-Dichloropropane	ND		0.0032
Dibromomethane	ND		0.0032
Bromodichloromethane	ND		0.0032
2-Chloroethyl Vinyl Ether	ND		0.016
(cis) 1,3-Dichloropropene	ND		0.0032
Methyl Isobutyl Ketone	ND		0.016
Toluene	ND		0.016
(trans) 1,3-Dichloropropene	ND		0.0032

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID:	08-221-01
Client ID:	**P-TP-22-3**

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0032
Tetrachloroethene	ND		0.0032
1,3-Dichloropropane	ND		0.0032
2-Hexanone	ND		0.016
Dibromochloromethane	ND		0.0032
1,2-Dibromoethane	ND		0.0032
Chlorobenzene	ND		0.0032
1,1,1,2-Tetrachloroethane	ND		0.0032
Ethylbenzene	ND		0.0032
m,p-Xylene	ND		0.0064
o-Xylene	ND		0.0032
Styrene	ND		0.0032
Bromoform	ND		0.0032
Isopropylbenzene	ND		0.0032
Bromobenzene	ND		0.0032
1,1,2,2-Tetrachloroethane	ND		0.0032
1,2,3-Trichloropropane	ND		0.0032
n-Propylbenzene	ND		0.0032
2-Chlorotoluene	ND		0.0032
4-Chlorotoluene	ND		0.0032
1,3,5-Trimethylbenzene	ND		0.0032
tert-Butylbenzene	ND		0.0032
1,2,4-Trimethylbenzene	0.0059		0.0032
sec-Butylbenzene	ND		0.0032
1,3-Dichlorobenzene	ND		0.0032
p-Isopropyltoluene	ND		0.0032
1,4-Dichlorobenzene	ND		0.0032
1,2-Dichlorobenzene	ND		0.0032
n-Butylbenzene	ND		0.0032
1,2-Dibromo-3-chloropropane	ND		0.016
1,2,4-Trichlorobenzene	ND		0.0032
Hexachlorobutadiene	ND		0.016
Naphthalene	ND		0.0032
1,2,3-Trichlorobenzene	ND		0.0032

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	92	66-128
Toluene-d8	93	68-126
4-Bromofluorobenzene	76	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B

Page 1 of 2

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-221-02
Client ID:	**P-TP-23-2**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0011
Chloromethane	ND		0.0053
Vinyl Chloride	ND		0.0011
Bromomethane	ND		0.0011
Chloroethane	ND		0.0053
Trichlorofluoromethane	ND		0.0011
1,1-Dichloroethene	ND		0.0011
Acetone	0.081		0.011
Iodomethane	ND		0.0053
Carbon Disulfide	ND		0.0011
Methylene Chloride	ND		0.0053
(trans) 1,2-Dichloroethene	ND		0.0011
Methyl t-Butyl Ether	ND		0.0011
1,1-Dichloroethane	ND		0.0011
Vinyl Acetate	ND		0.0053
2,2-Dichloropropane	ND		0.0011
(cis) 1,2-Dichloroethene	ND		0.0011
2-Butanone	ND		0.0053
Bromochloromethane	ND		0.0011
Chloroform	ND		0.0011
1,1,1-Trichloroethane	ND		0.0011
Carbon Tetrachloride	ND		0.0011
1,1-Dichloropropene	ND		0.0011
Benzene	ND		0.0011
1,2-Dichloroethane	ND		0.0011
Trichloroethene	ND		0.0011
1,2-Dichloropropane	ND		0.0011
Dibromomethane	ND		0.0011
Bromodichloromethane	ND		0.0011
2-Chloroethyl Vinyl Ether	ND		0.0053
(cis) 1,3-Dichloropropene	ND		0.0011
Methyl Isobutyl Ketone	ND		0.0053
Toluene	ND		0.0053
(trans) 1,3-Dichloropropene	ND		0.0011

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 08-221-02
Client ID: P-TP-23-2

Compound	**Results**	**Flags**	**PQL**
1,1,2-Trichloroethane	ND		0.0011
Tetrachloroethene	ND		0.0011
1,3-Dichloropropane	ND		0.0011
2-Hexanone	ND		0.0053
Dibromochloromethane	ND		0.0011
1,2-Dibromoethane	ND		0.0011
Chlorobenzene	ND		0.0011
1,1,1,2-Tetrachloroethane	ND		0.0011
Ethylbenzene	ND		0.0011
m,p-Xylene	ND		0.0021
o-Xylene	ND		0.0011
Styrene	ND		0.0011
Bromoform	ND		0.0011
Isopropylbenzene	ND		0.0011
Bromobenzene	ND		0.0011
1,1,2,2-Tetrachloroethane	ND		0.0011
1,2,3-Trichloropropane	ND		0.0011
n-Propylbenzene	0.0021		0.0011
2-Chlorotoluene	ND		0.0011
4-Chlorotoluene	ND		0.0011
1,3,5-Trimethylbenzene	ND		0.0011
tert-Butylbenzene	ND		0.0011
1,2,4-Trimethylbenzene	0.0019		0.0011
sec-Butylbenzene	0.0017		0.0011
1,3-Dichlorobenzene	ND		0.0011
p-Isopropyltoluene	ND		0.0011
1,4-Dichlorobenzene	ND		0.0011
1,2-Dichlorobenzene	ND		0.0011
n-Butylbenzene	0.0022		0.0011
1,2-Dibromo-3-chloropropane	ND		0.0053
1,2,4-Trichlorobenzene	ND		0.0011
Hexachlorobutadiene	ND		0.0053
Naphthalene	ND		0.0011
1,2,3-Trichlorobenzene	ND		0.0011

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	84	66-128
Toluene-d8	95	68-126
4-Bromofluorobenzene	92	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-221-03
Client ID:	**P-TP-23-4**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0089
Chloromethane	ND		0.045
Vinyl Chloride	ND		0.0089
Bromomethane	ND		0.0089
Chloroethane	ND		0.045
Trichlorofluoromethane	ND		0.0089
1,1-Dichloroethene	ND		0.0089
Acetone	3.3	E	0.089
Iodomethane	ND		0.045
Carbon Disulfide	0.095		0.0089
Methylene Chloride	ND		0.045
(trans) 1,2-Dichloroethene	ND		0.0089
Methyl t-Butyl Ether	ND		0.0089
1,1-Dichloroethane	ND		0.0089
Vinyl Acetate	ND		0.045
2,2-Dichloropropane	ND		0.0089
(cis) 1,2-Dichloroethene	ND		0.0089
2-Butanone	0.73		0.045
Bromochloromethane	ND		0.0089
Chloroform	ND		0.0089
1,1,1-Trichloroethane	ND		0.0089
Carbon Tetrachloride	ND		0.0089
1,1-Dichloropropene	ND		0.0089
Benzene	ND		0.0089
1,2-Dichloroethane	ND		0.0089
Trichloroethene	ND		0.0089
1,2-Dichloropropane	ND		0.0089
Dibromomethane	ND		0.0089
Bromodichloromethane	ND		0.0089
2-Chloroethyl Vinyl Ether	ND		0.045
(cis) 1,3-Dichloropropene	ND		0.0089
Methyl Isobutyl Ketone	ND		0.045
Toluene	ND		0.045
(trans) 1,3-Dichloropropene	ND		0.0089

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 08-221-03
Client ID: P-TP-23-4

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0089
Tetrachloroethene	ND		0.0089
1,3-Dichloropropane	ND		0.0089
2-Hexanone	ND		0.045
Dibromochloromethane	ND		0.0089
1,2-Dibromoethane	ND		0.0089
Chlorobenzene	ND		0.0089
1,1,1,2-Tetrachloroethane	ND		0.0089
Ethylbenzene	ND		0.0089
m,p-Xylene	ND		0.018
o-Xylene	ND		0.0089
Styrene	ND		0.0089
Bromoform	ND		0.0089
Isopropylbenzene	0.014		0.0089
Bromobenzene	ND		0.0089
1,1,2,2-Tetrachloroethane	ND		0.0089
1,2,3-Trichloropropane	ND		0.0089
n-Propylbenzene	0.055		0.0089
2-Chlorotoluene	ND		0.0089
4-Chlorotoluene	ND		0.0089
1,3,5-Trimethylbenzene	0.0094		0.0089
tert-Butylbenzene	ND		0.0089
1,2,4-Trimethylbenzene	0.022		0.0089
sec-Butylbenzene	0.030		0.0089
1,3-Dichlorobenzene	ND		0.0089
p-Isopropyltoluene	ND		0.0089
1,4-Dichlorobenzene	ND		0.0089
1,2-Dichlorobenzene	ND		0.0089
n-Butylbenzene	0.033		0.0089
1,2-Dibromo-3-chloropropane	ND		0.045
1,2,4-Trichlorobenzene	ND		0.0089
Hexachlorobutadiene	ND		0.045
Naphthalene	ND		0.0089
1,2,3-Trichlorobenzene	ND		0.0089

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	92	66-128
Toluene-d8	97	68-126
4-Bromofluorobenzene	79	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B

Page 1 of 2

Date Extracted:	8-25-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-221-04
Client ID:	**P-TP-24-4**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0011
Chloromethane	ND		0.0055
Vinyl Chloride	ND		0.0011
Bromomethane	ND		0.0011
Chloroethane	ND		0.0055
Trichlorofluoromethane	ND		0.0011
1,1-Dichloroethene	ND		0.0011
Acetone	0.12		0.0055
Iodomethane	ND		0.0055
Carbon Disulfide	ND		0.0011
Methylene Chloride	ND		0.0055
(trans) 1,2-Dichloroethene	ND		0.0011
Methyl t-Butyl Ether	ND		0.0011
1,1-Dichloroethane	ND		0.0011
Vinyl Acetate	ND		0.0055
2,2-Dichloropropane	ND		0.0011
(cis) 1,2-Dichloroethene	ND		0.0011
2-Butanone	0.026		0.0055
Bromochloromethane	ND		0.0011
Chloroform	ND		0.0011
1,1,1-Trichloroethane	ND		0.0011
Carbon Tetrachloride	ND		0.0011
1,1-Dichloropropene	ND		0.0011
Benzene	ND		0.0011
1,2-Dichloroethane	ND		0.0011
Trichloroethene	ND		0.0011
1,2-Dichloropropane	ND		0.0011
Dibromomethane	ND		0.0011
Bromodichloromethane	ND		0.0011
2-Chloroethyl Vinyl Ether	ND		0.0055
(cis) 1,3-Dichloropropene	ND		0.0011
Methyl Isobutyl Ketone	ND		0.0055
Toluene	ND		0.0055
(trans) 1,3-Dichloropropene	ND		0.0011

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 08-221-04
Client ID: P-TP-24-4

Compound	**Results**	**Flags**	**PQL**
1,1,2-Trichloroethane	ND		0.0011
Tetrachloroethene	ND		0.0011
1,3-Dichloropropane	ND		0.0011
2-Hexanone	ND		0.0055
Dibromochloromethane	ND		0.0011
1,2-Dibromoethane	ND		0.0011
Chlorobenzene	ND		0.0011
1,1,1,2-Tetrachloroethane	ND		0.0011
Ethylbenzene	ND		0.0011
m,p-Xylene	ND		0.0022
o-Xylene	ND		0.0011
Styrene	ND		0.0011
Bromoform	ND		0.0011
Isopropylbenzene	ND		0.0011
Bromobenzene	ND		0.0011
1,1,2,2-Tetrachloroethane	ND		0.0011
1,2,3-Trichloropropane	ND		0.0011
n-Propylbenzene	ND		0.0011
2-Chlorotoluene	ND		0.0011
4-Chlorotoluene	ND		0.0011
1,3,5-Trimethylbenzene	ND		0.0011
tert-Butylbenzene	ND		0.0011
1,2,4-Trimethylbenzene	ND		0.0011
sec-Butylbenzene	ND		0.0011
1,3-Dichlorobenzene	ND		0.0011
p-Isopropyltoluene	ND		0.0011
1,4-Dichlorobenzene	ND		0.0011
1,2-Dichlorobenzene	ND		0.0011
n-Butylbenzene	ND		0.0011
1,2-Dibromo-3-chloropropane	ND		0.0055
1,2,4-Trichlorobenzene	ND		0.0011
Hexachlorobutadiene	ND		0.0055
Naphthalene	ND		0.0011
1,2,3-Trichlorobenzene	ND		0.0011

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	84	66-128
Toluene-d8	97	68-126
4-Bromofluorobenzene	95	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B

Page 1 of 2

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-221-05
Client ID:	**P-TP-25-4**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0011
Chloromethane	ND		0.0054
Vinyl Chloride	ND		0.0011
Bromomethane	ND		0.0011
Chloroethane	ND		0.0054
Trichlorofluoromethane	ND		0.0011
1,1-Dichloroethene	ND		0.0011
Acetone	0.045		0.011
Iodomethane	ND		0.0054
Carbon Disulfide	ND		0.0011
Methylene Chloride	ND		0.0054
(trans) 1,2-Dichloroethene	ND		0.0011
Methyl t-Butyl Ether	ND		0.0011
1,1-Dichloroethane	ND		0.0011
Vinyl Acetate	ND		0.0054
2,2-Dichloropropane	ND		0.0011
(cis) 1,2-Dichloroethene	ND		0.0011
2-Butanone	0.0074		0.0054
Bromochloromethane	ND		0.0011
Chloroform	ND		0.0011
1,1,1-Trichloroethane	ND		0.0011
Carbon Tetrachloride	ND		0.0011
1,1-Dichloropropene	ND		0.0011
Benzene	ND		0.0011
1,2-Dichloroethane	ND		0.0011
Trichloroethene	ND		0.0011
1,2-Dichloropropane	ND		0.0011
Dibromomethane	ND		0.0011
Bromodichloromethane	ND		0.0011
2-Chloroethyl Vinyl Ether	ND		0.0054
(cis) 1,3-Dichloropropene	ND		0.0011
Methyl Isobutyl Ketone	ND		0.0054
Toluene	ND		0.0054
(trans) 1,3-Dichloropropene	ND		0.0011

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B

Page 2 of 2

Lab ID: 08-221-05
Client ID: **P-TP-25-4**

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0011
Tetrachloroethene	ND		0.0011
1,3-Dichloropropane	ND		0.0011
2-Hexanone	ND		0.0054
Dibromochloromethane	ND		0.0011
1,2-Dibromoethane	ND		0.0011
Chlorobenzene	ND		0.0011
1,1,1,2-Tetrachloroethane	ND		0.0011
Ethylbenzene	ND		0.0011
m,p-Xylene	ND		0.0021
o-Xylene	0.0022		0.0011
Styrene	ND		0.0011
Bromoform	ND		0.0011
Isopropylbenzene	0.0097		0.0011
Bromobenzene	ND		0.0011
1,1,2,2-Tetrachloroethane	ND		0.0011
1,2,3-Trichloropropane	ND		0.0011
n-Propylbenzene	0.0044		0.0011
2-Chlorotoluene	ND		0.0011
4-Chlorotoluene	ND		0.0011
1,3,5-Trimethylbenzene	0.0039		0.0011
tert-Butylbenzene	0.0045		0.0011
1,2,4-Trimethylbenzene	0.012		0.0011
sec-Butylbenzene	0.011		0.0011
1,3-Dichlorobenzene	ND		0.0011
p-Isopropyltoluene	0.0042		0.0011
1,4-Dichlorobenzene	ND		0.0011
1,2-Dichlorobenzene	ND		0.0011
n-Butylbenzene	0.0090		0.0011
1,2-Dibromo-3-chloropropane	ND		0.0054
1,2,4-Trichlorobenzene	ND		0.0011
Hexachlorobutadiene	ND		0.0054
Naphthalene	0.0071		0.0011
1,2,3-Trichlorobenzene	ND		0.0011

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	86	66-128
Toluene-d8	88	68-126
4-Bromofluorobenzene	84	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B

Page 1 of 2

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-221-06
Client ID:	**P-TP-25-6**

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0025
Chloromethane	ND		0.013
Vinyl Chloride	ND		0.0025
Bromomethane	ND		0.0025
Chloroethane	ND		0.013
Trichlorofluoromethane	ND		0.0025
1,1-Dichloroethene	ND		0.0025
Acetone	0.61		0.025
Iodomethane	ND		0.013
Carbon Disulfide	0.0042		0.0025
Methylene Chloride	ND		0.013
(trans) 1,2-Dichloroethene	ND		0.0025
Methyl t-Butyl Ether	ND		0.0025
1,1-Dichloroethane	ND		0.0025
Vinyl Acetate	ND		0.013
2,2-Dichloropropane	ND		0.0025
(cis) 1,2-Dichloroethene	ND		0.0025
2-Butanone	0.14		0.013
Bromochloromethane	ND		0.0025
Chloroform	ND		0.0025
1,1,1-Trichloroethane	ND		0.0025
Carbon Tetrachloride	ND		0.0025
1,1-Dichloropropene	ND		0.0025
Benzene	ND		0.0025
1,2-Dichloroethane	ND		0.0025
Trichloroethene	ND		0.0025
1,2-Dichloropropane	ND		0.0025
Dibromomethane	ND		0.0025
Bromodichloromethane	ND		0.0025
2-Chloroethyl Vinyl Ether	ND		0.013
(cis) 1,3-Dichloropropene	ND		0.0025
Methyl Isobutyl Ketone	ND		0.013
Toluene	ND		0.013
(trans) 1,3-Dichloropropene	ND		0.0025

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B

Page 2 of 2

Lab ID: 08-221-06
Client ID: **P-TP-25-6**

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0025
Tetrachloroethene	ND		0.0025
1,3-Dichloropropane	ND		0.0025
2-Hexanone	ND		0.013
Dibromochloromethane	ND		0.0025
1,2-Dibromoethane	ND		0.0025
Chlorobenzene	ND		0.0025
1,1,1,2-Tetrachloroethane	ND		0.0025
Ethylbenzene	ND		0.0025
m,p-Xylene	0.0079		0.0050
o-Xylene	ND		0.0025
Styrene	ND		0.0025
Bromoform	ND		0.0025
Isopropylbenzene	0.012		0.0025
Bromobenzene	ND		0.0025
1,1,2,2-Tetrachloroethane	ND		0.0025
1,2,3-Trichloropropane	ND		0.0025
n-Propylbenzene	0.055		0.0025
2-Chlorotoluene	ND		0.0025
4-Chlorotoluene	ND		0.0025
1,3,5-Trimethylbenzene	0.026		0.0025
tert-Butylbenzene	0.0040		0.0025
1,2,4-Trimethylbenzene	0.093		0.0025
sec-Butylbenzene	0.018		0.0025
1,3-Dichlorobenzene	ND		0.0025
p-Isopropyltoluene	0.010		0.0025
1,4-Dichlorobenzene	ND		0.0025
1,2-Dichlorobenzene	ND		0.0025
n-Butylbenzene	0.021		0.0025
1,2-Dibromo-3-chloropropane	ND		0.013
1,2,4-Trichlorobenzene	ND		0.0025
Hexachlorobutadiene	ND		0.013
Naphthalene	ND		0.0025
1,2,3-Trichlorobenzene	ND		0.0025

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	89	66-128
Toluene-d8	96	68-126
4-Bromofluorobenzene	77	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0830S1

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0010
Chloromethane	ND		0.0050
Vinyl Chloride	ND		0.0010
Bromomethane	ND		0.0010
Chloroethane	ND		0.0050
Trichlorofluoromethane	ND		0.0010
1,1-Dichloroethene	ND		0.0010
Acetone	ND		0.010
Iodomethane	ND		0.0050
Carbon Disulfide	ND		0.0010
Methylene Chloride	ND		0.0050
(trans) 1,2-Dichloroethene	ND		0.0010
Methyl t-Butyl Ether	ND		0.0010
1,1-Dichloroethane	ND		0.0010
Vinyl Acetate	ND		0.0050
2,2-Dichloropropane	ND		0.0010
(cis) 1,2-Dichloroethene	ND		0.0010
2-Butanone	ND		0.0050
Bromochloromethane	ND		0.0010
Chloroform	ND		0.0010
1,1,1-Trichloroethane	ND		0.0010
Carbon Tetrachloride	ND		0.0010
1,1-Dichloropropene	ND		0.0010
Benzene	ND		0.0010
1,2-Dichloroethane	ND		0.0010
Trichloroethene	ND		0.0010
1,2-Dichloropropane	ND		0.0010
Dibromomethane	ND		0.0010
Bromodichloromethane	ND		0.0010
2-Chloroethyl Vinyl Ether	ND		0.0050
(cis) 1,3-Dichloropropene	ND		0.0010
Methyl Isobutyl Ketone	ND		0.0050
Toluene	ND		0.0050
(trans) 1,3-Dichloropropene	ND		0.0010

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB0830S1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0010
Tetrachloroethene	ND		0.0010
1,3-Dichloropropane	ND		0.0010
2-Hexanone	ND		0.0050
Dibromochloromethane	ND		0.0010
1,2-Dibromoethane	ND		0.0010
Chlorobenzene	ND		0.0010
1,1,1,2-Tetrachloroethane	ND		0.0010
Ethylbenzene	ND		0.0010
m,p-Xylene	ND		0.0020
o-Xylene	ND		0.0010
Styrene	ND		0.0010
Bromoform	ND		0.0010
Isopropylbenzene	ND		0.0010
Bromobenzene	ND		0.0010
1,1,2,2-Tetrachloroethane	ND		0.0010
1,2,3-Trichloropropane	ND		0.0010
n-Propylbenzene	ND		0.0010
2-Chlorotoluene	ND		0.0010
4-Chlorotoluene	ND		0.0010
1,3,5-Trimethylbenzene	ND		0.0010
tert-Butylbenzene	ND		0.0010
1,2,4-Trimethylbenzene	ND		0.0010
sec-Butylbenzene	ND		0.0010
1,3-Dichlorobenzene	ND		0.0010
p-Isopropyltoluene	ND		0.0010
1,4-Dichlorobenzene	ND		0.0010
1,2-Dichlorobenzene	ND		0.0010
n-Butylbenzene	ND		0.0010
1,2-Dibromo-3-chloropropane	ND		0.0050
1,2,4-Trichlorobenzene	ND		0.0010
Hexachlorobutadiene	ND		0.0050
Naphthalene	ND		0.0010
1,2,3-Trichlorobenzene	ND		0.0010

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	90	66-128
Toluene-d8	97	68-126
4-Bromofluorobenzene	98	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0831S1

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0010
Chloromethane	ND		0.0050
Vinyl Chloride	ND		0.0010
Bromomethane	ND		0.0010
Chloroethane	ND		0.0050
Trichlorofluoromethane	ND		0.0010
1,1-Dichloroethene	ND		0.0010
Acetone	ND		0.010
Iodomethane	ND		0.0050
Carbon Disulfide	ND		0.0010
Methylene Chloride	ND		0.0050
(trans) 1,2-Dichloroethene	ND		0.0010
Methyl t-Butyl Ether	ND		0.0010
1,1-Dichloroethane	ND		0.0010
Vinyl Acetate	ND		0.0050
2,2-Dichloropropane	ND		0.0010
(cis) 1,2-Dichloroethene	ND		0.0010
2-Butanone	ND		0.0050
Bromochloromethane	ND		0.0010
Chloroform	ND		0.0010
1,1,1-Trichloroethane	ND		0.0010
Carbon Tetrachloride	ND		0.0010
1,1-Dichloropropene	ND		0.0010
Benzene	ND		0.0010
1,2-Dichloroethane	ND		0.0010
Trichloroethene	ND		0.0010
1,2-Dichloropropane	ND		0.0010
Dibromomethane	ND		0.0010
Bromodichloromethane	ND		0.0010
2-Chloroethyl Vinyl Ether	ND		0.0050
(cis) 1,3-Dichloropropene	ND		0.0010
Methyl Isobutyl Ketone	ND		0.0050
Toluene	ND		0.0050
(trans) 1,3-Dichloropropene	ND		0.0010

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB0831S1

Compound	**Results**	**Flags**	**PQL**
1,1,2-Trichloroethane	ND		0.0010
Tetrachloroethene	ND		0.0010
1,3-Dichloropropane	ND		0.0010
2-Hexanone	ND		0.0050
Dibromochloromethane	ND		0.0010
1,2-Dibromoethane	ND		0.0010
Chlorobenzene	ND		0.0010
1,1,1,2-Tetrachloroethane	ND		0.0010
Ethylbenzene	ND		0.0010
m,p-Xylene	ND		0.0020
o-Xylene	ND		0.0010
Styrene	ND		0.0010
Bromoform	ND		0.0010
Isopropylbenzene	ND		0.0010
Bromobenzene	ND		0.0010
1,1,2,2-Tetrachloroethane	ND		0.0010
1,2,3-Trichloropropane	ND		0.0010
n-Propylbenzene	ND		0.0010
2-Chlorotoluene	ND		0.0010
4-Chlorotoluene	ND		0.0010
1,3,5-Trimethylbenzene	ND		0.0010
tert-Butylbenzene	ND		0.0010
1,2,4-Trimethylbenzene	ND		0.0010
sec-Butylbenzene	ND		0.0010
1,3-Dichlorobenzene	ND		0.0010
p-Isopropyltoluene	ND		0.0010
1,4-Dichlorobenzene	ND		0.0010
1,2-Dichlorobenzene	ND		0.0010
n-Butylbenzene	ND		0.0010
1,2-Dibromo-3-chloropropane	ND		0.0050
1,2,4-Trichlorobenzene	ND		0.0010
Hexachlorobutadiene	ND		0.0050
Naphthalene	ND		0.0010
1,2,3-Trichlorobenzene	ND		0.0010

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	89	66-128
Toluene-d8	97	68-126
4-Bromofluorobenzene	95	53-134

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0830S1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	0.0500	0.0443	89	0.0464	93	70-130	
Benzene	0.0500	0.0417	83	0.0436	87	70-121	
Trichloroethene	0.0500	0.0416	83	0.0430	86	70-124	
Toluene	0.0500	0.0414	83	0.0430	86	70-123	
Chlorobenzene	0.0500	0.0448	90	0.0464	93	71-119	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	5	14	
Benzene	4	10	
Trichloroethene	3	12	
Toluene	4	12	
Chlorobenzene	3	9	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 8-31-10
Date Analyzed: 8-31-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0831S1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	0.0500	0.0475	95	0.0498	100	70-130	
Benzene	0.0500	0.0424	85	0.0443	89	70-121	
Trichloroethene	0.0500	0.0415	83	0.0436	87	70-124	
Toluene	0.0500	0.0431	86	0.0449	90	70-123	
Chlorobenzene	0.0500	0.0454	91	0.0467	93	71-119	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	5	14	
Benzene	4	10	
Trichloroethene	5	12	
Toluene	4	12	
Chlorobenzene	3	9	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-221-01					
Client ID:	**P-TP-22-3**					
Arsenic	**ND**	13	6010B	8-30-10	8-30-10	
Barium	**91**	6.4	6010B	8-30-10	8-30-10	
Cadmium	**ND**	1.3	6010B	8-30-10	8-30-10	
Chromium	**32**	1.3	6010B	8-30-10	8-30-10	
Lead	**81**	13	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.64	7471A	8-30-10	8-30-10	
Selenium	**ND**	25	6010B	8-30-10	8-30-10	
Silver	**ND**	1.3	6010B	8-30-10	8-30-10	
Lab ID:	08-221-02					
Client ID:	**P-TP-23-2**					
Arsenic	**ND**	11	6010B	8-30-10	8-30-10	
Barium	**68**	2.7	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.53	6010B	8-30-10	8-30-10	
Chromium	**37**	0.53	6010B	8-30-10	8-30-10	
Lead	**ND**	5.3	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.27	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-30-10	8-30-10	
Silver	**ND**	0.53	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-221-03					
Client ID:	**P-TP-23-4**					
Arsenic	**27**	24	6010B	8-30-10	8-30-10	
Barium	**190**	12	6010B	8-30-10	8-30-10	
Cadmium	**ND**	1.2	6020	8-30-10	8-30-10	
Chromium	**27**	2.4	6010B	8-30-10	8-30-10	
Lead	**130**	24	6010B	8-30-10	8-30-10	
Mercury	**ND**	1.2	7471A	8-30-10	8-30-10	
Selenium	**ND**	47	6010B	8-30-10	8-30-10	
Silver	**ND**	2.4	6010B	8-30-10	8-30-10	

Lab ID:	08-221-04					
Client ID:	**P-TP-24-4**					
Arsenic	**ND**	12	6010B	8-30-10	8-30-10	
Barium	**120**	3.0	6010B	8-30-10	8-30-10	
Cadmium	**0.74**	0.59	6010B	8-30-10	8-30-10	
Chromium	**33**	0.59	6010B	8-30-10	8-30-10	
Lead	**150**	5.9	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.30	7471A	8-30-10	8-30-10	
Selenium	**ND**	12	6010B	8-30-10	8-30-10	
Silver	**ND**	0.59	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-221-05					
Client ID:	**P-TP-25-4**					
Arsenic	**62**	12	6010B	8-30-10	8-30-10	
Barium	**83**	3.0	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.59	6010B	8-30-10	8-30-10	
Chromium	**35**	0.59	6010B	8-30-10	8-30-10	
Lead	**87**	5.9	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.30	7471A	8-30-10	8-30-10	
Selenium	**ND**	12	6010B	8-30-10	8-30-10	
Silver	**ND**	0.59	6010B	8-30-10	8-30-10	

Lab ID:	08-221-06					
Client ID:	**P-TP-25-6**					
Arsenic	**20**	18	6010B	8-30-10	8-30-10	
Barium	**97**	4.4	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.88	6010B	8-30-10	8-30-10	
Chromium	**27**	0.88	6010B	8-30-10	8-30-10	
Lead	**79**	8.8	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.44	7471A	8-30-10	8-30-10	
Selenium	**ND**	18	6010B	8-30-10	8-30-10	
Silver	**ND**	0.88	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-221-07					
Client ID:	**P-TP-26-5**					
Arsenic	**ND**	11	6010B	8-30-10	8-30-10	
Barium	**39**	2.6	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.53	6010B	8-30-10	8-30-10	
Chromium	**22**	0.53	6010B	8-30-10	8-30-10	
Lead	**18**	5.3	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.26	7471A	8-30-10	8-30-10	
Selenium	**ND**	11	6010B	8-30-10	8-30-10	
Silver	**ND**	0.53	6010B	8-30-10	8-30-10	
Lab ID:	08-221-09					
Client ID:	**P-TP-27-4**					
Arsenic	**ND**	12	6010B	8-30-10	8-30-10	
Barium	**25**	2.9	6010B	8-30-10	8-30-10	
Cadmium	**ND**	0.59	6010B	8-30-10	8-30-10	
Chromium	**19**	0.59	6010B	8-30-10	8-30-10	
Lead	**ND**	5.9	6010B	8-30-10	8-30-10	
Mercury	**ND**	0.29	7471A	8-30-10	8-30-10	
Selenium	**ND**	12	6010B	8-30-10	8-30-10	
Silver	**ND**	0.59	6010B	8-30-10	8-30-10	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0830S5

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	5.0
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0830S3

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted:	8-30-10
Date Analyzed:	8-30-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-195-12

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	5.0	
Barium	**48.1**	**44.4**	8	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**24.2**	**21.3**	13	0.50	
Lead	**ND**	**ND**	NA	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-202-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**8.58**	**9.88**	14	0.25	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-195-12

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**95.6**	96	**95.8**	96	0	
Barium	100	**142**	94	**142**	94	0	
Cadmium	50	**43.3**	87	**43.3**	87	0	
Chromium	100	**110**	86	**110**	86	1	
Lead	250	**217**	87	**219**	88	1	
Selenium	100	**98.2**	98	**97.6**	98	1	
Silver	25	**21.4**	86	**21.2**	85	1	

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

TOTAL METALS
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted: 8-30-10
Date Analyzed: 8-30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-202-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.50	**8.62**	8	**9.2**	124	7	A

Date of Report: September 1, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221
Project: 2007-098

% MOISTURE

Date Analyzed: 8-30-10

Client ID	Lab ID	% Moisture
P-TP-22-3	08-221-01	61
P-TP-23-2	08-221-02	6
P-TP-23-4	08-221-03	79
P-TP-24-4	08-221-04	15
P-TP-25-4	08-221-05	16
P-TP-25-6	08-221-06	43
P-TP-26-5	08-221-07	5
P-TP-27-4	08-221-09	15

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

08-221
DATE: 8/27/10
PAGE: 1 of

PROJECT NAME: Bothell Crossroads #: 2007-092
SITE CODE: Bothell Paint
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: PHONE:

RUSH: 2 DAY TAT!

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	VOC's 8260	RCRA METALS	% MOISTURE	REMARKS
P-TP-22-3	8/27/10	730	S	1	5	X	X	X	X	X	
P-TP-23-2		820		2		X	X	X	X		
P-TP-23-4		835		3		X	X	X	X		
P-TP-24-4		845		4		X	X	X	X		
P-TP-25-4		910		5		X	X	X	X		
P-TP-25-6		915		6		X	X	X	X		
P-TP-26-5		1040		7		X			X		
P-TP-26-7		1100		8							
P-TP-27-~~3~~4 03		1115		9	09 ~~4~~ 2	X			X	X	

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: Chrissi Fisk		HWA GeoSciences	8/27/10	1:48pm	
Received by: Michael Daugherty		Speedy	8-27-10	1:48pm	
Relinquished by: Michael Daugherty		Speedy	8-27-10	1420	
Received by:	Blair Goodrow	[illegible]	8/27/10	1420	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1008-221B

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 27, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

Case Narrative

Samples were collected on August 27, 2010 and received by the laboratory on August 27, 2010. They were maintained at the laboratory at a temperature of 2^{o}C to 6^{o}C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-23-2**					
Laboratory ID:	08-221-02					
Naphthalene	**ND**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
2-Methylnaphthalene	**0.076**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
1-Methylnaphthalene	**0.037**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthylene	**ND**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthene	**ND**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Fluorene	**0.0081**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Phenanthrene	**0.033**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Anthracene	**0.0085**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Fluoranthene	**0.060**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Pyrene	**0.055**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]anthracene	**0.028**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Chrysene	**0.031**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[b]fluoranthene	**0.032**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[k]fluoranthene	**0.024**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[a]pyrene	**0.037**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Indeno(1,2,3-c,d)pyrene	**0.029**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Dibenz[a,h]anthracene	**0.0096**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Benzo[g,h,i]perylene	**0.033**	0.0071	EPA 8270/SIM	9-7-10	9-8-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*79*	*45 - 101*				
Pyrene-d10	*94*	*52 - 118*				
Terphenyl-d14	*75*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0907S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*85*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*87*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-038-01										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0726**	**0.0707**	0.0833	0.0833	ND	87	85	31 - 115	3	19	
Acenaphthylene	**0.0664**	**0.0631**	0.0833	0.0833	ND	80	76	40 - 134	5	22	
Acenaphthene	**0.0743**	**0.0715**	0.0833	0.0833	ND	89	86	48 - 118	4	17	
Fluorene	**0.0761**	**0.0730**	0.0833	0.0833	ND	91	88	54 - 122	4	16	
Phenanthrene	**0.0743**	**0.0711**	0.0833	0.0833	ND	89	85	46 - 123	4	19	
Anthracene	**0.0646**	**0.0645**	0.0833	0.0833	ND	78	77	53 - 123	0	27	
Fluoranthene	**0.0704**	**0.0683**	0.0833	0.0833	ND	85	82	47 - 132	3	26	
Pyrene	**0.0783**	**0.0742**	0.0833	0.0833	ND	94	89	41 - 137	5	25	
Benzo[a]anthracene	**0.0688**	**0.0672**	0.0833	0.0833	ND	83	81	43 - 132	2	26	
Chrysene	**0.0677**	**0.0673**	0.0833	0.0833	ND	81	81	46 - 126	1	24	
Benzo[b]fluoranthene	**0.0626**	**0.0634**	0.0833	0.0833	ND	75	76	44 - 134	1	24	
Benzo[k]fluoranthene	**0.0555**	**0.0595**	0.0833	0.0833	ND	67	71	45 - 132	7	20	
Benzo[a]pyrene	**0.0724**	**0.0721**	0.0833	0.0833	ND	87	87	36 - 136	0	23	
Indeno(1,2,3-c,d)pyrene	**0.0792**	**0.0783**	0.0833	0.0833	ND	95	94	40 - 136	1	16	
Dibenz[a,h]anthracene	**0.0821**	**0.0804**	0.0833	0.0833	ND	99	97	40 - 142	2	13	
Benzo[g,h,i]perylene	**0.0806**	**0.0779**	0.0833	0.0833	ND	97	94	37 - 137	3	18	
Surrogate:											
2-Fluorobiphenyl						*80*	*79*	*45 - 101*			
Pyrene-d10						*87*	*84*	*52 - 118*			
Terphenyl-d14						*77*	*82*	*41 - 106*			

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-24-4**					
Laboratory ID:	08-221-04					
Naphthalene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
2-Methylnaphthalene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
1-Methylnaphthalene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthylene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Fluorene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Phenanthrene	**0.015**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Anthracene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Fluoranthene	**0.024**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Pyrene	**0.021**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]anthracene	**0.010**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Chrysene	**0.014**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[b]fluoranthene	**0.012**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[k]fluoranthene	**0.0094**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]pyrene	**0.012**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Indeno(1,2,3-c,d)pyrene	**0.0079**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Dibenz[a,h]anthracene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[g,h,i]perylene	**0.0099**	0.0079	EPA 8270/SIM	9-17-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*70*	*45 - 101*				
Pyrene-d10	*78*	*52 - 118*				
Terphenyl-d14	*98*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP-25-4**					
Laboratory ID:	08-221-05					
Naphthalene	**0.013**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
2-Methylnaphthalene	**0.076**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
1-Methylnaphthalene	**0.12**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthylene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Acenaphthene	**0.031**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Fluorene	**0.028**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Phenanthrene	**0.074**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Anthracene	**0.015**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Fluoranthene	**0.026**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Pyrene	**0.042**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]anthracene	**0.020**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Chrysene	**0.032**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[b]fluoranthene	**0.015**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[k]fluoranthene	**0.0098**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[a]pyrene	**0.014**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Dibenz[a,h]anthracene	**ND**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Benzo[g,h,i]perylene	**0.012**	0.0079	EPA 8270/SIM	9-17-10	9-18-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*80*	*45 - 101*				
Pyrene-d10	*90*	*52 - 118*				
Terphenyl-d14	*96*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0917S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*83*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*90*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 27, 2010
Laboratory Reference: 1008-221B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**		**Spike Level**		**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
SPIKE BLANKS										
Laboratory ID:	SB0917S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0659**	**0.0813**	0.0833	0.0833	79	98	33 - 105	21	30	
Acenaphthylene	**0.0647**	**0.0714**	0.0833	0.0833	78	86	51 - 110	10	22	
Acenaphthene	**0.0687**	**0.0804**	0.0833	0.0833	82	97	51 - 105	16	20	
Fluorene	**0.0709**	**0.0803**	0.0833	0.0833	85	96	61 - 107	12	17	
Phenanthrene	**0.0722**	**0.0791**	0.0833	0.0833	87	95	61 - 106	9	12	
Anthracene	**0.0628**	**0.0683**	0.0833	0.0833	75	82	59 - 106	8	12	
Fluoranthene	**0.0712**	**0.0772**	0.0833	0.0833	85	93	66 - 116	8	12	
Pyrene	**0.0746**	**0.0840**	0.0833	0.0833	90	101	67 - 118	12	14	
Benzo[a]anthracene	**0.0673**	**0.0727**	0.0833	0.0833	81	87	60 - 114	8	11	
Chrysene	**0.0738**	**0.0800**	0.0833	0.0833	89	96	64 - 112	8	12	
Benzo[b]fluoranthene	**0.0754**	**0.0812**	0.0833	0.0833	91	97	61 - 123	7	14	
Benzo[k]fluoranthene	**0.0715**	**0.0808**	0.0833	0.0833	86	97	50 - 124	12	17	
Benzo[a]pyrene	**0.0720**	**0.0776**	0.0833	0.0833	86	93	50 - 114	7	17	
Indeno(1,2,3-c,d)pyrene	**0.0900**	**0.0825**	0.0833	0.0833	108	99	56 - 122	9	16	
Dibenz[a,h]anthracene	**0.0914**	**0.0828**	0.0833	0.0833	110	99	57 - 124	10	16	
Benzo[g,h,i]perylene	**0.0841**	**0.0832**	0.0833	0.0833	101	100	56 - 121	1	15	
Surrogate:										
2-Fluorobiphenyl					*72*	*84*	*45 - 101*			
Pyrene-d10					*80*	*88*	*52 - 118*			
Terphenyl-d14					*92*	*94*	*41 - 106*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

08-221
DATE: 8/27/10
PAGE: 1 of

PROJECT NAME: Bothell Crossroads #: 2007-092
SITE CODE: Bothell Paint
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: PHONE:

RUSH: 2 DAY TAT!

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	VOC's 8260	RCRA METALS	EPH	VPH	PAHs								% MOISTURE	REMARKS
P-TP-22-3	8/27/10	730	S	1	5	x	x	x	x											X	
P-TP-23-2		820		2		x	x	x	x	(X)	(X)	(X)									(X) Added 9/2/10
P-TP-23-4		835		3		x	x	x	x												~~RG~~ STA
P-TP-24-4		845		4		x	x	x	x			O									
P-TP-25-4		910		5		x	x	x	x			O									O Added 9/15/10. DR (STA)
P-TP-25-6		915		6		x	x	x	x												
P-TP-26-5		1040		7		x			x												
P-TP-26-7		1100		8																	
P-TP-27-~~3~~4 03		115		9	03 ~~4~~ 2	x			x											X	

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fisk		HWA GeoSciences	8/27/10	1:48pm	
Received by:	Michael Daugherty	Michael Daugherty	Speedy	8-27-10	1:48pm	
Relinquished by:	Michael Daugherty	Michael Daugherty	Speedy	8-27-10	1420	
Received by:		Blair Goodrow	OS [illegible]	8/27/10	1420	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

Analytical Resources, Incorporated
Analytical Chemists and Consultants

22 September 2010

David Baumeister
OnSite Environmental, Inc.
14648 NE 95th
Redmond, WA 98052

RE: Client Project: 2007-098
ARI Job No: RO05

Dear David:

Please find enclosed the chain-of-custody (COC) record and the final results for the sample from the project referenced above. Analytical Resources, Inc. (ARI) accepted one soil sample on September 3, 2010. The sample was analyzed for EPH as requested.

There were no anomalies associated with these analyses.

An electronic copy of these reports will remain on file at ARI. Should you have any questions, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
markh@arilabs.com

Enclosures

cc: file RO05

MDH/esj

R005 10-22354

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Subcontract Laboratory: Analytical Resources, Inc.
Attention: Mark Harris
4611 S 134th Pl, Ste. 100 Tukwila, WA 98168
Phone Number: (206) 695-6200
Date/Time:

Turnaround Request:
1 Day 2 Day 3 Day [✓ Standard]
Other:

Laboratory Reference #: 08-221
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098
Project Name:

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
2	P-TP-23-2	8/27/10		S	1	EPH

Signature	Company	Date	Time
Relinquished by:	OnSite En	9/3/10	1010
Received by: Van	Speedy	9/3/10	1010
Relinquished by: Van	Speedy	9/3/10	1540
Received by:	ARI	9/3/10	1540
Relinquished by:			
Received by:			

Comments/Special Instructions

EIM

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: OnSite

COC No(s): ______ [✓ NA]

Assigned ARI Job No: RL77

Project Name: ______

Delivered by: Fed-Ex UPS [✓ Courier] Hand Delivered Other: ______

Tracking No: ______ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES [✓ NO]

Were custody papers included with the cooler? .... [✓ YES] NO

Were custody papers properly filled out (ink, signed, etc.) .... [✓ YES] NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)........ 7.6 ___ ___ ___

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90941619

Cooler Accepted by: JM Date: 9/3/10 Time: 1545

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? .... YES [✓ NO]

What kind of packing material was used? ... Bubble Wrap [✓ Wet Ice] Gel Packs [✓ Baggies] Foam Block Paper Other: ______

Was sufficient ice used (if appropriate)? .... NA YES [✓ NO]

Were all bottles sealed in individual plastic bags? .... YES [✓ NO]

Did all bottles arrive in good condition (unbroken)? .... [✓ YES] NO

Were all bottle labels complete and legible? .... [✓ YES] NO

Did the number of containers listed on COC match with the number of containers received? .... [✓ YES] NO

Did all bottle labels and tags agree with custody papers? .... [✓ YES] NO

Were all bottles used correct for the requested analyses? .... [✓ YES] NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... [✓ NA] YES NO

Were all VOC vials free of air bubbles? .... [✓ NA] YES NO

Was sufficient amount of sample sent in each bottle? .... [✓ YES] NO

Date VOC Trip Blank was made at ARI.. [✓ NA] ______

Was Sample Split by ARI : [✓ NA] YES Date/Time: ______ Equipment: ______ Split by: ______

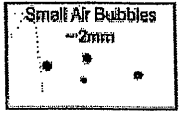
Samples Logged by: JM Date: 9/3/10 Time: 1730

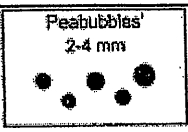
***** Notify Project Manager of discrepancies or concerns *****

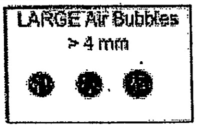
Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:







Small → "sm"	
Peabubbles → "pb"	
Large → "lg"	
Headspace → "hs"	

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: MB-090810
METHOD BLANK

Lab Sample ID: MB-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted: 09/08/10
Percent Moisture: NA

Sample Amount: 10.0 g-as-rec
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/22/10 00:08
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 05:32
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	2,000	< 2,000 U
C10-C12 Aliphatics	2,000	< 2,000 U
C12-C16 Aliphatics	2,000	< 2,000 U
C16-C21 Aliphatics	2,000	< 2,000 U
C21-C34 Aliphatics	2,000	< 2,000 U
C8-C10 Aromatics	2,000	< 2,000 U
C10-C12 Aromatics	2,000	< 2,000 U
C12-C16 Aromatics	2,000	< 2,000 U
C16-C21 Aromatics	2,000	< 2,000 U
C21-C34 Aromatics	2,000	< 2,000 U

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	73.8%
Aromatic	o-Terphenyl	76.2%

FORM I

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: P-TP-23-2
SAMPLE

Lab Sample ID: R005E
LIMS ID: 10-22354
Matrix: Soil
Data Release Authorized:
Reported: 09/23/10

QC Report No: R005-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: 08/27/10
Date Received: 09/03/10

Date Extracted: 09/08/10
Percent Moisture: 13.6%

Sample Amount: 8.80 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic
Date Analyzed: 09/21/10 22:52
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Aromatic
Date Analyzed: 09/22/10 04:18
Instrument/Analyst: FID8/MS
Dilution Factor: 1.00

Range	**RL**	**Result**
C8-C10 Aliphatics	2,300	< 2,300 U
C10-C12 Aliphatics	2,300	< 2,300 U
C12-C16 Aliphatics	2,300	< 2,300 U
C16-C21 Aliphatics	2,300	< 2,300 U
C21-C34 Aliphatics	2,300	< 2,300 U
C8-C10 Aromatics	2,300	< 2,300 U
C10-C12 Aromatics	2,300	< 2,300 U
C12-C16 Aromatics	2,300	< 2,300 U
C16-C21 Aromatics	2,300	< 2,300 U
C21-C34 Aromatics	2,300	< 2,300 U

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	73.7%
Aromatic	o-Terphenyl	67.2%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: LCS-090810
LCS/LCSD

Lab Sample ID: LCS-090810
LIMS ID: 10-22350
Matrix: Soil
Data Release Authorized:
Reported: 09/22/10

QC Report No: RL77-OnSite Environmental, Inc.
Project: 2007-098

Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 09/08/10

Sample Amount LCS: 10.0 g-as-rec
LCSD: 10.0 g-as-rec
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL

Aliphatic
Date Analyzed LCS: 09/21/10 23:17
LCSD: 09/21/10 23:43
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Aromatic
Date Analyzed LCS: 09/22/10 04:43
LCSD: 09/22/10 05:08
Instrument/Analyst LCS: FID8/MS
LCSD: FID8/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Range	**LCS**	**Spike Added-LCS**	**LCS Recovery**	**LCSD**	**Spike Added-LCSD**	**LCSD Recovery**	**RPD**
C8-C10 Aliphatics	11000	15000	73.3%	11600	15000	77.3%	5.3%
C10-C12 Aliphatics	9100	15000	60.7%	9500	15000	63.3%	4.3%
C12-C16 Aliphatics	14000	15000	93.3%	14400	15000	96.0%	2.8%
C16-C21 Aliphatics	14000	15000	93.3%	13800	15000	92.0%	1.4%
C10-C12 Aromatics	10300	15000	68.7%	10400	15000	69.3%	1.0%
C12-C16 Aromatics	12500	15000	83.3%	12900	15000	86.0%	3.1%
C16-C21 Aromatics	27100	30000	90.3%	29100	30000	97.0%	7.1%
C21-C34 Aromatics	26500	30000	88.3%	29000	30000	96.7%	9.0%

EPH Surrogate Recovery

		LCS	**LCSD**
Aliphatic	1-Chlorooctadecane	73.6%	74.5%
Aromatic	o-Terphenyl	75.6%	79.2%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE: 9/8/2010
ALS JOB#: 1009043
DATE RECEIVED: 9/3/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-221 / Proj #2007-098
CLIENT SAMPLE ID: 8/27/2010 P-TP-23-2
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C6-C8 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
>C8-C10 Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aliphatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Total Aromatics	NWVPH	ND	5.0	1	MG/KG	9/7/2010	DLC
Hexane	NWVPH	ND	0.20	1	MG/KG	9/7/2010	DLC

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMT.
** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009043
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-221 / Proj #2007-098

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
1009043-01	NWVPH	TFT - Aliphatic	89%
1009043-01	NWVPH	TFT - Aromatic	88%
1009043-01	NWVPH	TFT - Hexane	92%

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009043
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-221 / Proj #2007-098

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MBLK-972010	Soil	NWVPH	C5-C6 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C6-C8 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C8-C10 Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	>C8-C10 Aromatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Total Aliphatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Total Aromatics	ND(<5.0)	MG/KG
MBLK-972010	Soil	NWVPH	Hexane	ND(<0.20)	MG/KG

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/8/2010
		ALS JOB#:	1009043
		DATE RECEIVED:	9/3/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #08-221 / Proj #2007-098

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
R70417	Soil	NWVPH	C5-C6 Aliphatics	100	96%	99%	3
R70417	Soil	NWVPH	>C6-C8 Aliphatics	100	101%	111%	9
R70417	Soil	NWVPH	>C8-C10 Aliphatics	100	103%	107%	4
R70417	Soil	NWVPH	>C8-C10 Aromatics	100	102%	108%	6
R70417	Soil	NWVPH	Hexane	100	102%	101%	1

APPROVED BY:

1009043

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Page 1 of 1

Subcontract Laboratory:
Contact Person:
Address:
Phone Number:
Date/Time:

Turnaround Request:
1 Day 2 Day 3 Day [✓ Standard]
Other:

Laboratory Reference #: 08-221
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098
Project Name:

1

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
2	P-TP-23-2	8/27		S	1	VPH

	Signature	Company	Date	Time
Relinquished by:		OnSite Env	9/3/10	1315
Received by:		# Speedy	9/3/10	321
Relinquished by:				
Received by:	Shawn Robinson	ALS	9/3/10	4:15
Relinquished by:				
Received by:				

Comments/Special Instructions:

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 2, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1008-240

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 31, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

Case Narrative

Samples were collected on August 31, 2010 and received by the laboratory on August 31, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010B/6020/7471A Analysis

The duplicate RPD for Barium is outside control limits due to sample inhomogeniety. The samples were re-extracted and re-analyzed with similar results.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-1-7**					
Laboratory ID:	08-240-01					
Diesel Range Organics	**ND**	240	NWTPH-Dx	9-1-10	9-1-10	U1
Lube Oil Range Organics	**690**	340	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*80*	*50-150*				
Client ID:	**P-PEX-2-6**					
Laboratory ID:	08-240-02					
Diesel Range Organics	**ND**	170	NWTPH-Dx	9-1-10	9-1-10	
Lube Oil Range Organics	**620**	340	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0901S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-1-10	9-1-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*125*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-237-05							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*109*	*101*	*50-150*			

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

TOTAL METALS
EPA 6010B/6020/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-240-01					
Client ID:	**P-PEX-1-7**					
Arsenic	**ND**	8.5	6020	8-31-10	9-1-10	
Barium	**72**	17	6010B	8-31-10	8-31-10	
Cadmium	**ND**	1.7	6020	8-31-10	9-1-10	
Chromium	**13**	3.4	6010B	8-31-10	8-31-10	
Lead	**ND**	34	6010B	8-31-10	8-31-10	
Mercury	**ND**	1.7	7471A	9-1-10	9-1-10	
Selenium	**ND**	68	6010B	8-31-10	8-31-10	
Silver	**ND**	3.4	6010B	8-31-10	8-31-10	
Lab ID:	08-240-02					
Client ID:	**P-PEX-2-6**					
Arsenic	**ND**	8.6	6020	8-31-10	9-1-10	
Barium	**63**	17	6010B	8-31-10	8-31-10	
Cadmium	**ND**	1.7	6020	8-31-10	9-1-10	
Chromium	**11**	3.4	6010B	8-31-10	8-31-10	
Lead	**ND**	34	6010B	8-31-10	8-31-10	
Mercury	**ND**	1.7	7471A	9-1-10	9-1-10	
Selenium	**ND**	69	6010B	8-31-10	8-31-10	
Silver	**ND**	3.4	6010B	8-31-10	8-31-10	

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-31-10
Date Analyzed:	8-31-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0831S5

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

TOTAL MERCURY
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-1-10
Date Analyzed:	9-1-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0901S4

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

TOTAL METALS
EPA 6020
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-1-10
Date Analyzed:	9-1-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0831S5

Analyte	Method	Result	PQL
Arsenic	6020	**ND**	1.3
Cadmium	6020	**ND**	0.25

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 8-31-10
Date Analyzed: 8-31-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-175-19

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**21.7**	**16.5**	27	2.5	K
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**6.83**	**5.69**	18	0.50	
Lead	**ND**	**ND**	NA	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

TOTAL MERCURY
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted:	9-1-10
Date Analyzed:	9-1-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-191-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 8-31-10
Date Analyzed: 8-31-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-175-19

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**92.5**	92	**91.1**	91	2	
Barium	100	**113**	91	**117**	96	4	
Cadmium	50	**45.1**	90	**45.0**	90	0	
Chromium	100	**101**	94	**101**	94	0	
Lead	250	**235**	94	**233**	93	1	
Selenium	100	**94.8**	95	**94.0**	94	1	
Silver	25	**19.5**	78	**23.3**	93	18	

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

TOTAL MERCURY
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-1-10
Date Analyzed: 9-1-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-191-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.50	**0.457**	91	**0.461**	92	1	

Date of Report: September 2, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240
Project: 2007-098

% MOISTURE

Date Analyzed: 8-31-10

Client ID	Lab ID	% Moisture
P-PEX-1-7	08-240-01	85
P-PEX-2-6	08-240-02	85

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA
HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

DATE: 8/31/10
PAGE: 1 of 1

08-240

24-hour TAT

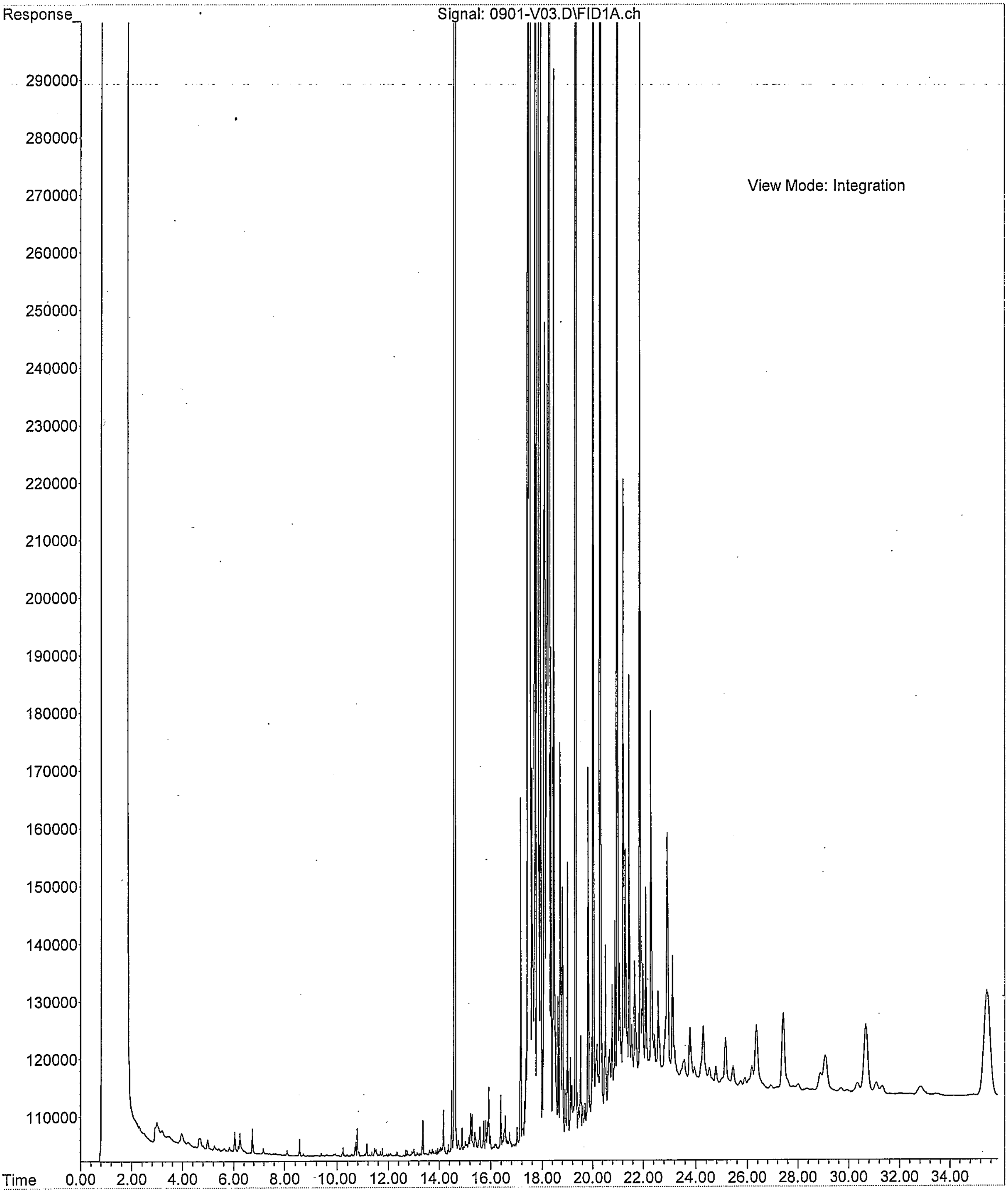
PROJECT NAME: Bothell Paint #: 2007098
SITE CODE:
SAMPLERS NAME: P. Pearson PHONE: 206 · 794 3113
SAMPLERS SIGNATURE:
HWA CONTACT: Vance Atkins PHONE: 206 794 312x

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH-Dx	RCRA-8												%moisture		REMARKS
P-PEX-1-7	8/31/10	12:10	S	1	2	X	X												X		
P-PEX-2-6	8/31/10	12:15	S	2	2	X	X												↓		

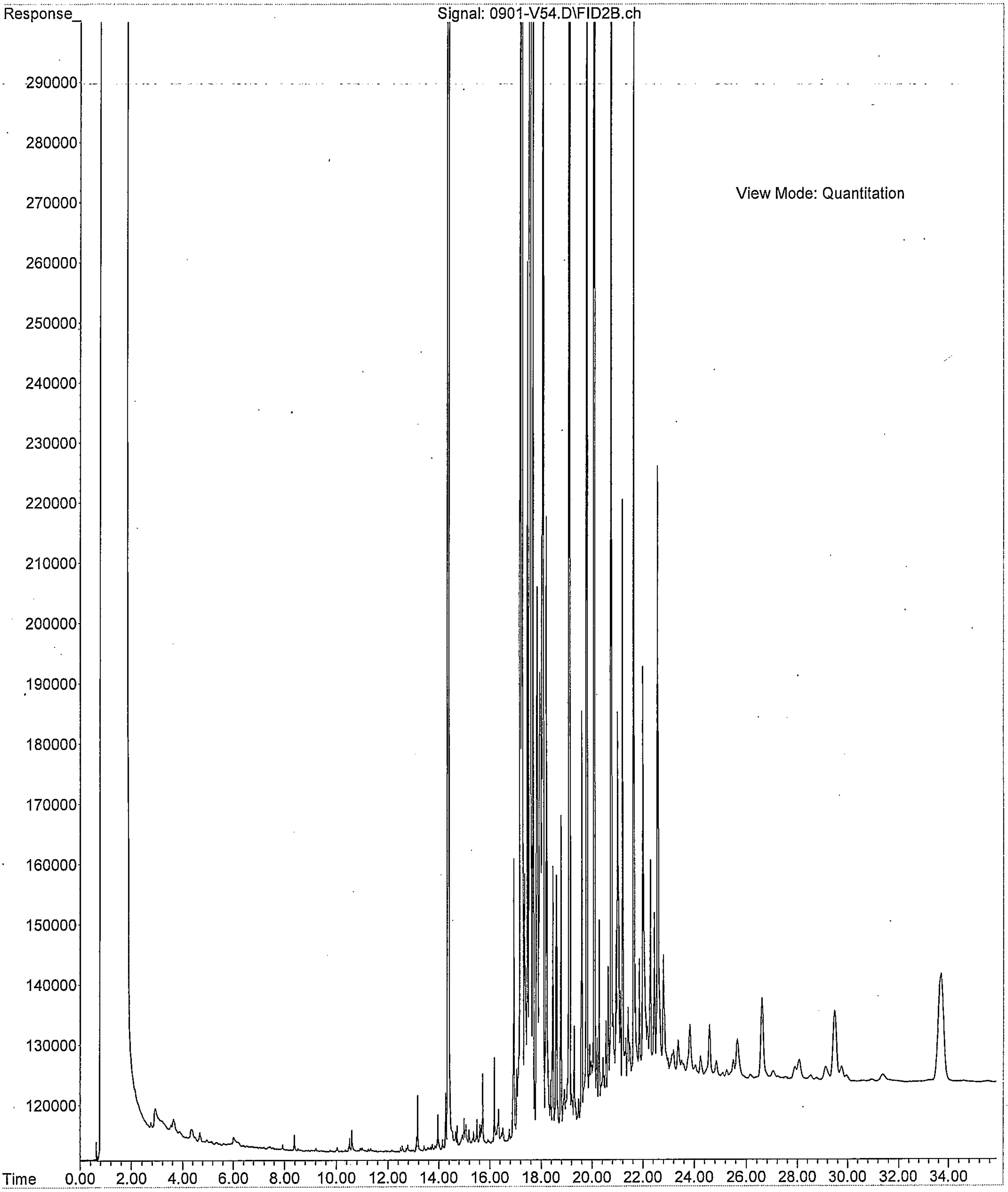
	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Pete Pearson		HWA	8/31/10	12:37	
Received by:	M. Voun		OSE	8/31/10	1237	
Relinquished by:						
Received by:						

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

```
File        :C:\msdchem\2\DATA\V100901\0901-V03.D
Operator    :
Acquired    :  1 Sep 2010  11:45     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-240-01
Misc Info   :
Vial Number: 3
```



```
File        :C:\msdchem\2\DATA\V100901.SEC\0901-V54.D
Operator    :
Acquired    :  1 Sep 2010  12:25     using AcqMethod V100820F.M
Instrument  :   VIGO
Sample Name: 08-240-02
Misc Info   :
Vial Number: 54
```



OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re:	Analytical Data for Project 2007-098
Laboratory Reference No. 1008-240B

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 31, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 23, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240B
Project: 2007-098

Case Narrative

Samples were collected on August 31, 2010 and received by the laboratory on August 31, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

PAHs EPA 8270D/SIM Analysis

The samples were extracted and analyzed out of holding time.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-1-7**					
Laboratory ID:	08-240-01					
Naphthalene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
2-Methylnaphthalene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
1-Methylnaphthalene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthylene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Fluorene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Phenanthrene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Anthracene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Fluoranthene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Pyrene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]anthracene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Chrysene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[b]fluoranthene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[k]fluoranthene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]pyrene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Dibenz[a,h]anthracene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[g,h,i]perylene	**ND**	0.045	EPA 8270/SIM	9-17-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*62*	*45 - 101*				
Pyrene-d10	*67*	*52 - 118*				
Terphenyl-d14	*79*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-2-6**					
Laboratory ID:	08-240-02					
Naphthalene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
2-Methylnaphthalene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
1-Methylnaphthalene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthylene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Acenaphthene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Fluorene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Phenanthrene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Anthracene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Fluoranthene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Pyrene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]anthracene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Chrysene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[b]fluoranthene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[k]fluoranthene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[a]pyrene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Dibenz[a,h]anthracene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Benzo[g,h,i]perylene	**ND**	0.046	EPA 8270/SIM	9-17-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*50*	*45 - 101*				
Pyrene-d10	*53*	*52 - 118*				
Terphenyl-d14	*57*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0917S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-17-10	9-17-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*83*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*90*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: August 31, 2010
Laboratory Reference: 1008-240B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0917S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0659**	**0.0813**	0.0833	0.0833	79	98	33 - 105	21	30	
Acenaphthylene	**0.0647**	**0.0714**	0.0833	0.0833	78	86	51 - 110	10	22	
Acenaphthene	**0.0687**	**0.0804**	0.0833	0.0833	82	97	51 - 105	16	20	
Fluorene	**0.0709**	**0.0803**	0.0833	0.0833	85	96	61 - 107	12	17	
Phenanthrene	**0.0722**	**0.0791**	0.0833	0.0833	87	95	61 - 106	9	12	
Anthracene	**0.0628**	**0.0683**	0.0833	0.0833	75	82	59 - 106	8	12	
Fluoranthene	**0.0712**	**0.0772**	0.0833	0.0833	85	93	66 - 116	8	12	
Pyrene	**0.0746**	**0.0840**	0.0833	0.0833	90	101	67 - 118	12	14	
Benzo[a]anthracene	**0.0673**	**0.0727**	0.0833	0.0833	81	87	60 - 114	8	11	
Chrysene	**0.0738**	**0.0800**	0.0833	0.0833	89	96	64 - 112	8	12	
Benzo[b]fluoranthene	**0.0754**	**0.0812**	0.0833	0.0833	91	97	61 - 123	7	14	
Benzo[k]fluoranthene	**0.0715**	**0.0808**	0.0833	0.0833	86	97	50 - 124	12	17	
Benzo[a]pyrene	**0.0720**	**0.0776**	0.0833	0.0833	86	93	50 - 114	7	17	
Indeno(1,2,3-c,d)pyrene	**0.0900**	**0.0825**	0.0833	0.0833	108	99	56 - 122	9	16	
Dibenz[a,h]anthracene	**0.0914**	**0.0828**	0.0833	0.0833	110	99	57 - 124	10	16	
Benzo[g,h,i]perylene	**0.0841**	**0.0832**	0.0833	0.0833	101	100	56 - 121	1	15	
Surrogate:										
2-Fluorobiphenyl					*72*	*84*	*45 - 101*			
Pyrene-d10					*80*	*88*	*52 - 118*			
Terphenyl-d14					*92*	*94*	*41 - 106*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

DATE: 8/31/10
PAGE: 1 of 1

08-240

24-hour TAT

PROJECT NAME: Bothell Pant #: 2007098
SITE CODE:
SAMPLERS NAME: P. Pearson PHONE: 206·794 3113
SAMPLERS SIGNATURE:
HWA CONTACT: Vance Atkins PHONE: 206 794 3128

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH - Dx	RCRA - 8	PAHs											% moisture		REMARKS
P-PEX-1-7	8/31/10	12:10	S	1	2	X	X	⊗											X		
P-PEX-2-6	8/31/10	12:15	S	2	2	X	X	⊗											↓		
																					⊗Added 9/15/10 DR (STA)

PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Pete Pearson		HWA	8/31/10	12:37	
Received by:	M. VOUN		OSE	8/31/10	1237	
Relinquished by:						
Received by:						

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 3, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-010

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 1, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

Case Narrative

Samples were collected on September 1, 2010 and received by the laboratory on September 1, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-3-4**					
Laboratory ID:	09-010-04					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-1-10	9-1-10	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*114*	*50-150*				
Client ID:	**P-PEX-4-6**					
Laboratory ID:	09-010-05					
Diesel Range Organics	**ND**	53	NWTPH-Dx	9-1-10	9-1-10	
Lube Oil	**130**	110	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*108*	*50-150*				

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0901S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-1-10	9-1-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*132*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-011-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*125*	*115*	*50-150*			

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-4-6**					
Laboratory ID:	09-010-05					
Gasoline	**ND**	16	NWTPH-Gx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*122*	*55-127*				

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

NWTPH-Gx
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0901S3					
Gasoline	**ND**	5.0	NWTPH-Gx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*55-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-011-01										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*103*	*100*	*55-127*			

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	09-010-04					
Client ID:	**P-PEX-3-4**					
Arsenic	**14**	11	6010B	9-2-10	9-2-10	
Barium	**57**	2.8	6010B	9-2-10	9-2-10	
Cadmium	**ND**	0.57	6010B	9-2-10	9-2-10	
Chromium	**29**	0.57	6010B	9-2-10	9-2-10	
Lead	**15**	5.7	6010B	9-2-10	9-2-10	
Mercury	**ND**	0.28	7471A	9-1-10	9-1-10	
Selenium	**ND**	11	6010B	9-2-10	9-2-10	
Silver	**ND**	0.57	6010B	9-2-10	9-2-10	
Lab ID:	09-010-05					
Client ID:	**P-PEX-4-6**					
Arsenic	**ND**	11	6010B	9-2-10	9-2-10	
Barium	**56**	5.3	6010B	9-2-10	9-2-10	
Cadmium	**ND**	1.1	6010B	9-2-10	9-2-10	
Chromium	**19**	1.1	6010B	9-2-10	9-2-10	
Lead	**15**	11	6010B	9-2-10	9-2-10	
Mercury	**ND**	0.53	7471A	9-1-10	9-1-10	
Selenium	**ND**	21	6010B	9-2-10	9-2-10	
Silver	**ND**	1.1	6010B	9-2-10	9-2-10	

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-1&2-10
Date Analyzed:	9-1&2-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0901S5&MB0902S1

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	5.0
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-1&2-10
Date Analyzed: 9-1&2-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-011-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	5	
Barium	**38.3**	**35.9**	6	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**23.9**	**24.4**	2	0.50	
Lead	**ND**	**ND**	NA	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted:	9-1&2-10
Date Analyzed:	9-1&2-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-011-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**88.5**	88	**91.3**	91	3	
Barium	100	**129**	91	**126**	88	3	
Cadmium	50	**44.5**	89	**44.4**	89	0	
Chromium	100	**113**	89	**112**	88	1	
Lead	250	**226**	90	**229**	92	1	
Mercury	0.50	**0.495**	99	**0.485**	97	2	
Selenium	100	**89.7**	90	**91.3**	91	2	
Silver	25	**20.7**	83	**21.6**	86	4	

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TCLP METALS
EPA 1311/6010B/7470A

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-010-01					
Client ID:	**P-SP-1**					
Arsenic	**ND**	0.40	6010B	9-3-10	9-3-10	
Barium	**1.4**	0.20	6010B	9-3-10	9-3-10	
Cadmium	**0.17**	0.020	6010B	9-3-10	9-3-10	
Chromium	**0.035**	0.020	6010B	9-3-10	9-3-10	
Lead	**0.50**	0.20	6010B	9-3-10	9-3-10	
Mercury	**ND**	0.0050	7470A	9-3-10	9-3-10	
Selenium	**ND**	0.40	6010B	9-3-10	9-3-10	
Silver	**ND**	0.020	6010B	9-3-10	9-3-10	
Lab ID:	09-010-02					
Client ID:	**P-SP-2**					
Arsenic	**ND**	0.40	6010B	9-3-10	9-3-10	
Barium	**1.9**	0.20	6010B	9-3-10	9-3-10	
Cadmium	**0.13**	0.020	6010B	9-3-10	9-3-10	
Chromium	**0.038**	0.020	6010B	9-3-10	9-3-10	
Lead	**1.1**	0.20	6010B	9-3-10	9-3-10	
Mercury	**ND**	0.0050	7470A	9-3-10	9-3-10	
Selenium	**ND**	0.40	6010B	9-3-10	9-3-10	
Silver	**ND**	0.020	6010B	9-3-10	9-3-10	

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TCLP METALS
EPA 1311/6010B/7470A

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	09-010-03					
Client ID:	**P-SP-3**					
Arsenic	**ND**	0.40	6010B	9-3-10	9-3-10	
Barium	**1.5**	0.20	6010B	9-3-10	9-3-10	
Cadmium	**0.041**	0.020	6010B	9-3-10	9-3-10	
Chromium	**ND**	0.020	6010B	9-3-10	9-3-10	
Lead	**0.58**	0.20	6010B	9-3-10	9-3-10	
Mercury	**ND**	0.0050	7470A	9-3-10	9-3-10	
Selenium	**ND**	0.40	6010B	9-3-10	9-3-10	
Silver	**ND**	0.020	6010B	9-3-10	9-3-10	

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TCLP METALS
EPA 1311/6010B/7470A
METHOD BLANK QUALITY CONTROL

Date Prepared:	9-2-10
Date Extracted:	9-3-10
Date Analyzed:	9-3-10
Matrix:	TCLP Extract
Units:	mg/L (ppm)
Lab ID:	MB0903T1&MB0903T2

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	0.40
Barium	6010B	**ND**	0.20
Cadmium	6010B	**ND**	0.020
Chromium	6010B	**ND**	0.020
Lead	6010B	**ND**	0.20
Mercury	7470A	**ND**	0.0050
Selenium	6010B	**ND**	0.40
Silver	6010B	**ND**	0.020

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TCLP METALS
EPA 1311/6010B/7470A
DUPLICATE QUALITY CONTROL

Date Prepared:	9-2-10
Date Extracted:	9-3-10
Date Analyzed:	9-3-10
Matrix:	TCLP Extract
Units:	mg/L (ppm)
Lab ID:	09-010-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	0.40	
Barium	**1.43**	**1.43**	0	0.20	
Cadmium	**0.172**	**0.172**	0	0.020	
Chromium	**0.0350**	**0.0282**	22	0.020	C
Lead	**0.504**	**0.534**	6	0.20	
Mercury	**ND**	**ND**	NA	0.0050	
Selenium	**ND**	**ND**	NA	0.40	
Silver	**ND**	**ND**	NA	0.020	

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

TCLP METALS
EPA 1311/6010B/7470A
MS/MSD QUALITY CONTROL

Date Prepared:	9-2-10
Date Extracted:	9-3-10
Date Analyzed:	9-3-10
Matrix:	TCLP Extract
Units:	mg/L (ppm)
Lab ID:	09-010-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	4.0	**3.74**	93	**3.77**	94	1	
Barium	4.0	**4.94**	88	**5.02**	90	2	
Cadmium	2.0	**1.95**	89	**1.98**	90	1	
Chromium	4.0	**3.62**	90	**3.63**	90	0	
Lead	10	**9.30**	88	**9.46**	90	2	
Mercury	0.050	**0.0457**	91	**0.0469**	94	3	
Selenium	4.0	**4.03**	101	**4.16**	104	3	
Silver	1.0	**0.924**	92	**0.936**	94	1	

Date of Report: September 3, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010
Project: 2007-098

% MOISTURE

Date Analyzed: 9-1-10

Client ID	Lab ID	% Moisture
P-PEX-3-4	09-010-04	12
P-PEX-4-6	09-010-05	52

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

09-010

DATE: 9/1/10
PAGE: 1 of 1

PROJECT NAME: Bothell #: 2002-098
SITE CODE: Paint
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: PHONE:

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	ANALYSIS REQUESTED: NWTPH-Dx	NWTPH-Gx	RCRA Metals	TCLP RCRA Metals		% Moisture	REMARKS
P-SP-1	9/1/10	805	S	1	1				X			48 Hr TAT
P-SP-2		810		2	1				X			
P-SP-3		815		3	1				X			
P-PSx-3-4		1215		4	2	X		X			X	24 Hr TAT
P-PSx-4-6		1230		5	2	X	X	X			X	

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	James Atkins		HWA	9/1/10	1300	
Received by:	Michael Dougherty		Speedy	9-1-10	1400	
Relinquished by:	Michael Dougherty		Speedy	9-1-10	1418	
Received by:	Blair Goodrow		OnSite Env.	9/1/10	1418	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 20, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-010B

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 1, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010B
Project: 2007-098

Case Narrative

Samples were collected on September 1, 2010 and received by the laboratory on September 1, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-3-4**					
Laboratory ID:	09-010-04					
Naphthalene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**ND**	0.0075	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*70*	*45 - 101*				
Pyrene-d10	*81*	*52 - 118*				
Terphenyl-d14	*78*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-4-6**					
Laboratory ID:	09-010-05					
Naphthalene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**ND**	0.014	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*79*	*45 - 101*				
Pyrene-d10	*87*	*52 - 118*				
Terphenyl-d14	*85*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0915S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*97*	*52 - 118*				
Terphenyl-d14	*86*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-010B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0915S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0737**	**0.0800**	0.0833	0.0833	88	96	33 - 105	8	30	
Acenaphthylene	**0.0866**	**0.0889**	0.0833	0.0833	104	107	51 - 110	3	22	
Acenaphthene	**0.0802**	**0.0822**	0.0833	0.0833	96	99	51 - 105	2	20	
Fluorene	**0.0827**	**0.0823**	0.0833	0.0833	99	99	61 - 107	0	17	
Phenanthrene	**0.0810**	**0.0815**	0.0833	0.0833	97	98	61 - 106	1	12	
Anthracene	**0.0762**	**0.0764**	0.0833	0.0833	91	92	59 - 106	0	12	
Fluoranthene	**0.0816**	**0.0823**	0.0833	0.0833	98	99	66 - 116	1	12	
Pyrene	**0.0848**	**0.0855**	0.0833	0.0833	102	103	67 - 118	1	14	
Benzo[a]anthracene	**0.0776**	**0.0773**	0.0833	0.0833	93	93	60 - 114	0	11	
Chrysene	**0.0803**	**0.0810**	0.0833	0.0833	96	97	64 - 112	1	12	
Benzo[b]fluoranthene	**0.0820**	**0.0792**	0.0833	0.0833	98	95	61 - 123	3	14	
Benzo[k]fluoranthene	**0.0810**	**0.0816**	0.0833	0.0833	97	98	50 - 124	1	17	
Benzo[a]pyrene	**0.0784**	**0.0782**	0.0833	0.0833	94	94	50 - 114	0	17	
Indeno(1,2,3-c,d)pyrene	**0.0874**	**0.0903**	0.0833	0.0833	105	108	56 - 122	3	16	
Dibenz[a,h]anthracene	**0.0859**	**0.0894**	0.0833	0.0833	103	107	57 - 124	4	16	
Benzo[g,h,i]perylene	**0.0841**	**0.0851**	0.0833	0.0833	101	102	56 - 121	1	15	
Surrogate:										
2-Fluorobiphenyl					*86*	*91*	*45 - 101*			
Pyrene-d10					*100*	*99*	*52 - 118*			
Terphenyl-d14					*88*	*90*	*41 - 106*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

09-010

DATE: 9/1/10

PAGE: 1 of 1

PROJECT NAME: Bothell #: 2002-098

SITE CODE: Paint

SAMPLERS NAME: Atkins PHONE:

SAMPLERS SIGNATURE:

HWA CONTACT: PHONE:

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Dx	NWTPH-Gx	RCRA Metals	TCLP RCRA Metals	PAHs	% Moisture	REMARKS
P-SP-1	9/1/10	805	S	1	1				X			
P-SP-2	↓	810	↓	2	1				X			} 48 Hr TAT
P-SP-3	↓	815	↓	3	1				X			
P-PSx-3-4	↓	1215	↓	4	2	X		X		O	X	} 24 Hr TAT
P-PSa-4-6	↓	1230	↓	5	2	X	X	X		O	X	

O Added 9/15/10. DB (STA)

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	James Atkins		HWA	9/1/10	1300	
Received by:	Michael Daugherty		Speedy	9-1-10	1400	
Relinquished by:	Michael Daugherty		Speedy	9-1-10	1418	
Received by:	Blair Goodrow		OnSite Env.	9/1/10	1418	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 2, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-016

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on Septemebr 1, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

Case Narrative

Samples were collected on September 1, 2010 and received by the laboratory on September 1, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-6.3**					
Laboratory ID:	09-016-02					
Benzene	**ND**	0.020	EPA 8021	9-1-10	9-1-10	
Toluene	**ND**	0.063	EPA 8021	9-1-10	9-1-10	
Ethyl Benzene	**ND**	0.063	EPA 8021	9-1-10	9-1-10	
m,p-Xylene	**ND**	0.063	EPA 8021	9-1-10	9-1-10	
o-Xylene	**ND**	0.063	EPA 8021	9-1-10	9-1-10	
Gasoline	**7.4**	6.3	NWTPH-Gx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*55-127*				
Client ID:	**P-PEX-Dup**					
Laboratory ID:	09-016-03					
Benzene	**ND**	0.020	EPA 8021	9-1-10	9-1-10	
Toluene	**ND**	0.057	EPA 8021	9-1-10	9-1-10	
Ethyl Benzene	**ND**	0.057	EPA 8021	9-1-10	9-1-10	
m,p-Xylene	**ND**	0.057	EPA 8021	9-1-10	9-1-10	
o-Xylene	**ND**	0.057	EPA 8021	9-1-10	9-1-10	
Gasoline	**7.2**	5.7	NWTPH-Gx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*55-127*				

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0901S2					
Benzene	**ND**	0.020	EPA 8021	9-1-10	9-1-10	
Toluene	**ND**	0.050	EPA 8021	9-1-10	9-1-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-1-10	9-1-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-1-10	9-1-10	
o-Xylene	**ND**	0.050	EPA 8021	9-1-10	9-1-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*55-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-237-18										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*98*	*97*	*55-127*			
SPIKE BLANKS											
Laboratory ID:	SB0901S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.03**	**1.04**	1.00	1.00		**103**	**104**	75-113	1	9	
Toluene	**0.989**	**1.01**	1.00	1.00		**99**	**101**	75-116	2	10	
Ethyl Benzene	**0.997**	**1.02**	1.00	1.00		**100**	**102**	82-117	2	10	
m,p-Xylene	**1.01**	**1.03**	1.00	1.00		**101**	**103**	81-122	2	10	
o-Xylene	**1.01**	**1.03**	1.00	1.00		**101**	**103**	83-118	2	10	
Surrogate:											
Fluorobenzene						*98*	*98*	*55-127*			

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-5-3**					
Laboratory ID:	09-016-01					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-1-10	9-1-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*122*	*50-150*				
Client ID:	**P-PEX-6-3**					
Laboratory ID:	09-016-02					
Diesel Range Organics	**ND**	250	NWTPH-Dx	9-1-10	9-1-10	U1
Lube Oil	**1600**	62	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*105*	*50-150*				
Client ID:	**P-PEX-Dup**					
Laboratory ID:	09-016-03					
Diesel Range Organics	**ND**	240	NWTPH-Dx	9-1-10	9-1-10	U1
Lube Oil	**1500**	58	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*130*	*50-150*				

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0901S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-1-10	9-1-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-1-10	9-1-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*132*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-011-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*125*	*115*	*50-150*			

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-016-01					
Client ID:	**P-PEX-5-3**					
Arsenic	**ND**	11	6010B	9-2-10	9-2-10	
Barium	**40**	2.8	6010B	9-2-10	9-2-10	
Cadmium	**ND**	0.55	6010B	9-2-10	9-2-10	
Chromium	**64**	0.55	6010B	9-2-10	9-2-10	
Lead	**11**	5.5	6010B	9-2-10	9-2-10	
Mercury	**ND**	0.28	7471A	9-1-10	9-1-10	
Selenium	**ND**	11	6010B	9-2-10	9-2-10	
Silver	**ND**	0.55	6010B	9-2-10	9-2-10	
Lab ID:	09-016-02					
Client ID:	**P-PEX-6-3**					
Arsenic	**27**	12	6010B	9-2-10	9-2-10	
Barium	**64**	3.1	6010B	9-2-10	9-2-10	
Cadmium	**0.68**	0.62	6010B	9-2-10	9-2-10	
Chromium	**35**	0.62	6010B	9-2-10	9-2-10	
Lead	**120**	6.2	6010B	9-2-10	9-2-10	
Mercury	**ND**	0.31	7471A	9-1-10	9-1-10	
Selenium	**ND**	12	6010B	9-2-10	9-2-10	
Silver	**ND**	0.62	6010B	9-2-10	9-2-10	

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-016-03					
Client ID:	**P-PEX-Dup**					
Arsenic	**28**	12	6010B	9-2-10	9-2-10	
Barium	**63**	2.9	6010B	9-2-10	9-2-10	
Cadmium	**1.0**	0.58	6010B	9-2-10	9-2-10	
Chromium	**41**	0.58	6010B	9-2-10	9-2-10	
Lead	**140**	5.8	6010B	9-2-10	9-2-10	
Mercury	**ND**	0.29	7471A	9-1-10	9-1-10	
Selenium	**ND**	12	6010B	9-2-10	9-2-10	
Silver	**ND**	0.58	6010B	9-2-10	9-2-10	

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-1&2-10
Date Analyzed:	9-1&2-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0901S5&MB0902S1

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-1&2-10
Date Analyzed: 9-1&2-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-011-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**38.3**	**35.9**	6	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**23.9**	**24.4**	2	0.50	
Lead	**ND**	**ND**	NA	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-1&2-10
Date Analyzed: 9-1&2-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-011-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**88.5**	88	**91.3**	91	3	
Barium	100	**129**	91	**126**	88	3	
Cadmium	50	**44.5**	89	**44.4**	89	0	
Chromium	100	**113**	89	**112**	88	1	
Lead	250	**226**	90	**229**	92	1	
Mercury	0.50	**0.495**	99	**0.485**	97	2	
Selenium	100	**89.7**	90	**91.3**	91	2	
Silver	25	**20.7**	83	**21.6**	86	4	

Date of Report: September 2, 2010
Samples Submitted: Septemebr 1, 2010
Laboratory Reference: 1009-016
Project: 2007-098

% MOISTURE

Date Analyzed: 9-1-10

Client ID	Lab ID	% Moisture
P-PEX-5-3	09-016-01	9
P-PEX-6-3	09-016-02	19
P-PEX-DUP	09-016-03	14

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 1

Company: Hwa
Project Number: Bothell Paint
Project Name:
Project Manager: Atkins
Sampled by: Atkins

Turnaround Request (in working days)
(Check One) NO
☒ Same Day ~~☒~~ 1 Day
☐ 2 Day ☐ 3 Day
☐ Standard (7 working days) (TPH analysis 5 working days)
☐ ______ (other)

Laboratory Number: 09-016

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664							% Moisture
1	P-PEX-5-3	9/1/10	1345	S	12			X								X									X
2	P-PEX-6-3	/	1350	/	2		X	X								X									↓
3	P-PEX-Dup	/	1330	/	2		X	X								X									↓

	Signature	Company	Date	Time
Relinquished by		Hwa	9/1/10	1540
Received by		OSE	9/1/10	1540
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Client Copy

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Environmental Inc.

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September 20, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-016B

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 1, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-016B
Project: 2007-098

Case Narrative

Samples were collected on September 1, 2010 and received by the laboratory on September 1, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-016B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-5-3**					
Laboratory ID:	09-016-01					
Naphthalene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**0.013**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**0.012**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**0.0079**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**0.0079**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**0.0073**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**ND**	0.0073	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*75*	*45 - 101*				
Pyrene-d10	*85*	*52 - 118*				
Terphenyl-d14	*84*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-016B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-6-3**					
Laboratory ID:	09-016-02					
Naphthalene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**0.0093**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**0.0086**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**0.010**	0.0082	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*79*	*45 - 101*				
Pyrene-d10	*84*	*52 - 118*				
Terphenyl-d14	*72*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-016B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0915S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*97*	*52 - 118*				
Terphenyl-d14	*86*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 1, 2010
Laboratory Reference: 1009-016B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0915S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0737**	**0.0800**	0.0833	0.0833	88	96	33 - 105	8	30	
Acenaphthylene	**0.0866**	**0.0889**	0.0833	0.0833	104	107	51 - 110	3	22	
Acenaphthene	**0.0802**	**0.0822**	0.0833	0.0833	96	99	51 - 105	2	20	
Fluorene	**0.0827**	**0.0823**	0.0833	0.0833	99	99	61 - 107	0	17	
Phenanthrene	**0.0810**	**0.0815**	0.0833	0.0833	97	98	61 - 106	1	12	
Anthracene	**0.0762**	**0.0764**	0.0833	0.0833	91	92	59 - 106	0	12	
Fluoranthene	**0.0816**	**0.0823**	0.0833	0.0833	98	99	66 - 116	1	12	
Pyrene	**0.0848**	**0.0855**	0.0833	0.0833	102	103	67 - 118	1	14	
Benzo[a]anthracene	**0.0776**	**0.0773**	0.0833	0.0833	93	93	60 - 114	0	11	
Chrysene	**0.0803**	**0.0810**	0.0833	0.0833	96	97	64 - 112	1	12	
Benzo[b]fluoranthene	**0.0820**	**0.0792**	0.0833	0.0833	98	95	61 - 123	3	14	
Benzo[k]fluoranthene	**0.0810**	**0.0816**	0.0833	0.0833	97	98	50 - 124	1	17	
Benzo[a]pyrene	**0.0784**	**0.0782**	0.0833	0.0833	94	94	50 - 114	0	17	
Indeno(1,2,3-c,d)pyrene	**0.0874**	**0.0903**	0.0833	0.0833	105	108	56 - 122	3	16	
Dibenz[a,h]anthracene	**0.0859**	**0.0894**	0.0833	0.0833	103	107	57 - 124	4	16	
Benzo[g,h,i]perylene	**0.0841**	**0.0851**	0.0833	0.0833	101	102	56 - 121	1	15	
Surrogate:										
2-Fluorobiphenyl					*86*	*91*	*45 - 101*			
Pyrene-d10					*100*	*99*	*52 - 118*			
Terphenyl-d14					*88*	*90*	*41 - 106*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 1

Laboratory Number: 09-016

Company: Hwa
Project Number: Bothell Paint
Project Name:
Project Manager: Atkins
Sampled by: Atkins

Turnaround Request (in working days)
(Check One) NO
☒ Same Day ☒ 1 Day
☐ 2 Day ☐ 3 Day
☐ Standard (7 working days) (TPH analysis 5 working days)
☐ ______ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664							% Moisture
1	P-PEX-5-3	9/1/10	1345	S	2			X				O				X									X
2	P-PEX-6-3	/	1350	/	2		X	X				O				X									↓
3	P-PEX-Dup	/	1330	/	2		X	X								X									↓

	Signature	Company	Date	Time
Relinquished by		Hwa	9/1/10	1540
Received by		OSE	9/1/10	1540
Relinquished by				
Received by				
Relinquished by				
Received by				

Reviewed by/Date

Reviewed by/Date

Comments/Special Instructions:
○ Added 9/15/10. DB (STA)

Chromatograms with final report ☐

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Chain of Custody

Page 1 of 1

Company: Hwa
Project Number: Bothell Paint
Project Name:
Project Manager: Atkins
Sampled by: Atkins

Turnaround Request (in working days)
(Check One) NO
☒ Same Day ~~☒~~ 1 Day
☐ 2 Day ☐ 3 Day
☐ Standard (7 working days)
(TPH analysis 5 working days)
☐ ______ (other)

Laboratory Number: 09-016

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664							% Moisture
1	P-PEX-5-3	9/1/10	1345	S	12			X				O				X									X
2	P-PEX-6-3	/	1350	|	2		X	X				O				X									↓
3	P-PEX-Dup	/	1330	|	2		X	X								X									↓

	Signature	Company	Date	Time
Relinquished by		Hwa	9/1/10	1540
Received by		OSE	9/1/10	1540
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
O Added 9/15/10. DB (STA)

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Environmental Inc.
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September 7, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-039

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 3, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 7, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039
Project: 2007-098

Case Narrative

Samples were collected on September 3, 2010 and received by the laboratory on September 3, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 7, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-9-3**					
Laboratory ID:	09-039-02					
Diesel Range Organics	**ND**	300	NWTPH-Dx	9-3-10	9-3-10	U1
Lube Oil	**2500**	270	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*128*	*50-150*				
Client ID:	**P-PEX-10-3**					
Laboratory ID:	09-039-03					
Diesel Fuel #2	**1300**	130	NWTPH-Dx	9-3-10	9-3-10	N
Lube Oil	**3100**	270	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*136*	*50-150*				
Client ID:	**P-PEX-11-3**					
Laboratory ID:	09-039-04					
Diesel Range Organics	**ND**	30	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil	**120**	60	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				
Client ID:	**P-PEX-12-3**					
Laboratory ID:	09-039-05					
Diesel Fuel #2	**300**	140	NWTPH-Dx	9-3-10	9-3-10	N
Lube Oil	**1700**	280	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*118*	*50-150*				
Client ID:	**P-PEX-14-3**					
Laboratory ID:	09-039-08					
Diesel Range Organics	**ND**	30	NWTPH-Dx	9-3-10	9-3-10	U1
Lube Oil	**260**	56	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				
Client ID:	**P-PEX-Dup-090310**					
Laboratory ID:	09-039-09					
Diesel Range Organics	**ND**	210	NWTPH-Dx	9-3-10	9-3-10	U1
Lube Oil	**2100**	270	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*120*	*50-150*				
Client ID:	**P-PEX-15-3**					
Laboratory ID:	09-039-10					
Diesel Fuel #2	**210**	140	NWTPH-Dx	9-3-10	9-3-10	N
Lube Oil	**2700**	280	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*129*	*50-150*				

Date of Report: September 7, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0903S3					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-039-04							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**99.3**	**85.1**				15	NA	
Surrogate:								
o-Terphenyl			*91*	*104*	*50-150*			

Date of Report: September 7, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039
Project: 2007-098

TOTAL ARSENIC
EPA 6010B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-039-01					
Client ID:	**P-PEX-7-3**					
Arsenic	**ND**	12	6010B	9-3-10	9-7-10	
Lab ID:	09-039-06					
Client ID:	**P-PEX-8-8**					
Arsenic	**ND**	12	6010B	9-3-10	9-7-10	
Lab ID:	09-039-07					
Client ID:	**P-PEX-13-7**					
Arsenic	**93**	12	6010B	9-3-10	9-7-10	
Lab ID:	09-039-08					
Client ID:	**P-PEX-14-3**					
Arsenic	**ND**	11	6010B	9-3-10	9-7-10	
Lab ID:	09-039-10					
Client ID:	**P-PEX-15-3**					
Arsenic	**21**	11	6010B	9-3-10	9-7-10	

Date of Report: September 7, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039
Project: 2007-098

TOTAL ARSENIC
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-3-10
Date Analyzed:	9-7-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0903S4

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10

Date of Report: September 7, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039
Project: 2007-098

TOTAL ARSENIC
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted:	9-3-10
Date Analyzed:	9-7-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-039-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	

Date of Report: September 7, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039
Project: 2007-098

TOTAL ARSENIC
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted:	9-3-10
Date Analyzed:	9-7-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-039-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**94.0**	94	**96.7**	97	3	

Date of Report: September 7, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039
Project: 2007-098

% MOISTURE

Date Analyzed: 9-3-10

Client ID	Lab ID	% Moisture
P-PEX-7-3	09-039-01	13
P-PEX-9-3	09-039-02	8
P-PEX-10-3	09-039-03	6
P-PEX-11-3	09-039-04	17
P-PEX-12-3	09-039-05	11
P-PEX-8-8	09-039-06	17
P-PEX-13-7	09-039-07	15
P-PEX-14-3	09-039-08	10
P-PEX-Dup-090310	09-039-09	8
P-PEX-15-3	09-039-10	10

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Page 1 of 1

Company: HWA
Project Number: 2007-098
Project Name: Bitman Point
Project Manager: Atkins
Sampled by: Sams.

Turnaround Request (in working days)
(Check One)
☐ Same Day
☐ 1 Day NO
☒ 2 Day
☐ 3 Day
☐ Standard (7 working days) (TPH analysis 5 working days)
☐ ________ (other)

Laboratory Number: 09-039

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	Arsenic						% Moisture
1	P-Pex-7-3	9/3/10	820	S	1														X						X
2	P-Pex-9-3		900					X																	
3	P-Pex-10-3		905					X																	
4	P-Pex-11-3		910					X																	
5	P-Pex-12-3		915					X																	
6	P-Pex-8-8		845																X						
7	P-Pex-13-7		1100																X						
8	P-Pex-14-3		1115					X											X						
9	P-Pex-Dup-090310		1200					X											X						
10	P-PEX-15-3	9/3/10	1120	S	1			⊗											⊗						

	Signature	Company	Date	Time
Relinquished by		HWA	9/3/10	1150
Received by		OSE	9/3/10	1150
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
⊗ Added 9/3/10 SB

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 20, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-039B

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 3, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 20, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039B
Project: 2007-098

Case Narrative

Samples were collected on September 3, 2010 and received by the laboratory on September 3, 2010. They were maintained at the laboratory at a temperature of 2^oC to 6^oC.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 20, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-7-3**					
Laboratory ID:	09-039-01					
Naphthalene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**ND**	0.0077	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*65*	*45 - 101*				
Pyrene-d10	*85*	*52 - 118*				
Terphenyl-d14	*81*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-11-3**					
Laboratory ID:	09-039-04					
Naphthalene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**0.023**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**0.017**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**0.039**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**0.0080**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**0.048**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**0.063**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**0.022**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**0.029**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**0.020**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**0.017**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**0.025**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**0.018**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**0.025**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*76*	*45 - 101*				
Pyrene-d10	*85*	*52 - 118*				
Terphenyl-d14	*82*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**P-PEX-8-8**					
Laboratory ID:	09-039-06					
Naphthalene	**0.013**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**ND**	0.0080	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*82*	*45 - 101*				
Pyrene-d10	*85*	*52 - 118*				
Terphenyl-d14	*85*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-14-3**					
Laboratory ID:	09-039-08					
Naphthalene	**0.0098**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
2-Methylnaphthalene	**ND**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
1-Methylnaphthalene	**ND**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthylene	**ND**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Acenaphthene	**ND**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Fluorene	**ND**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Phenanthrene	**0.012**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Anthracene	**ND**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Fluoranthene	**0.025**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Pyrene	**0.028**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]anthracene	**0.011**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Chrysene	**0.020**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[b]fluoranthene	**0.015**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[k]fluoranthene	**0.011**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[a]pyrene	**0.015**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Indeno(1,2,3-c,d)pyrene	**0.014**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Dibenz[a,h]anthracene	**ND**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Benzo[g,h,i]perylene	**0.019**	0.0074	EPA 8270/SIM	9-15-10	9-16-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*74*	*45 - 101*				
Pyrene-d10	*84*	*52 - 118*				
Terphenyl-d14	*82*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0915S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-15-10	9-15-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*97*	*52 - 118*				
Terphenyl-d14	*86*	*41 - 106*				

Date of Report: September 20, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-039B
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0915S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0737**	**0.0800**	0.0833	0.0833	88	96	33 - 105	8	30	
Acenaphthylene	**0.0866**	**0.0889**	0.0833	0.0833	104	107	51 - 110	3	22	
Acenaphthene	**0.0802**	**0.0822**	0.0833	0.0833	96	99	51 - 105	2	20	
Fluorene	**0.0827**	**0.0823**	0.0833	0.0833	99	99	61 - 107	0	17	
Phenanthrene	**0.0810**	**0.0815**	0.0833	0.0833	97	98	61 - 106	1	12	
Anthracene	**0.0762**	**0.0764**	0.0833	0.0833	91	92	59 - 106	0	12	
Fluoranthene	**0.0816**	**0.0823**	0.0833	0.0833	98	99	66 - 116	1	12	
Pyrene	**0.0848**	**0.0855**	0.0833	0.0833	102	103	67 - 118	1	14	
Benzo[a]anthracene	**0.0776**	**0.0773**	0.0833	0.0833	93	93	60 - 114	0	11	
Chrysene	**0.0803**	**0.0810**	0.0833	0.0833	96	97	64 - 112	1	12	
Benzo[b]fluoranthene	**0.0820**	**0.0792**	0.0833	0.0833	98	95	61 - 123	3	14	
Benzo[k]fluoranthene	**0.0810**	**0.0816**	0.0833	0.0833	97	98	50 - 124	1	17	
Benzo[a]pyrene	**0.0784**	**0.0782**	0.0833	0.0833	94	94	50 - 114	0	17	
Indeno(1,2,3-c,d)pyrene	**0.0874**	**0.0903**	0.0833	0.0833	105	108	56 - 122	3	16	
Dibenz[a,h]anthracene	**0.0859**	**0.0894**	0.0833	0.0833	103	107	57 - 124	4	16	
Benzo[g,h,i]perylene	**0.0841**	**0.0851**	0.0833	0.0833	101	102	56 - 121	1	15	
Surrogate:										
2-Fluorobiphenyl					*86*	*91*	*45 - 101*			
Pyrene-d10					*100*	*99*	*52 - 118*			
Terphenyl-d14					*88*	*90*	*41 - 106*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Company: HWA
Project Number: 2007-098
Project Name: Boston Paint
Project Manager: Atkins
Sampled by: Same

Turnaround Request (in working days)
(Check One)
☐ Same Day ~~☐ 1 Day~~ NO
☒ 2 Day ☐ 3 Day
☐ Standard (7 working days)
(TPH analysis 5 working days)
☐ ______ (other)

Laboratory Number: 09-039

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	ARSENIC						% Moisture
1	PPEx-7-3	9/3/10	820	S	1							O							X						X
2	PPEx-9-3	↓	900	↓	↓			X																	↓
3	P-PEx-10-3	↓	905	↓	↓			X																	↓
4	P-PEx-11-3	↓	910	↓	↓			X				O													↓
5	P-PEx-12-3	↓	915	↓	↓			X																	↓
6	P-PEx-8-8	↓	845	↓	↓							O							X						↓
7	P-PEx-13-7	↓	1100	↓	↓														X						↓
8	P-PEx-14-3	↓	1115	↓	↓			X				O							X						↓
9	P-PEx-Dup-090310	↓	1200	↓	↓			X											X						↓
10	P-PEX-15-3	9/3/10	1120	S	1			⊗											⊗						

	Signature	Company	Date	Time
Relinquished by		HWA	9/3/10	11:50
Received by		OSE	9/3/10	1150
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
⊗ Added 9/3/10 BQ
○ Added 9/15/10. DB (STA)

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 10, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-075

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 8, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

Case Narrative

Samples were collected on September 8, 2010 and received by the laboratory on September 8, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

PAHs EPA 8270D/SIM Analysis

Sample MS/MSD pair had several recoveries fall outside of control limits believed to be caused by sample matrix. The SB/SBD pair extracted with this batch had all parameters in control, no further action was deemed necessary.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-16-10**					
Laboratory ID:	09-075-01					
Diesel Range Organics	**ND**	58	NWTPH-Dx	9-9-10	9-9-10	
Lube Oil	**210**	120	NWTPH-Dx	9-9-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				
Client ID:	**P-PEX-17-7**					
Laboratory ID:	09-075-02					
Diesel Fuel #2	**490**	29	NWTPH-Dx	9-9-10	9-9-10	
Lube Oil	**970**	58	NWTPH-Dx	9-9-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*100*	*50-150*				
Client ID:	**P-PEX-18-9**					
Laboratory ID:	09-075-03					
Diesel Range Organics	**ND**	44	NWTPH-Dx	9-9-10	9-9-10	
Lube Oil	**270**	87	NWTPH-Dx	9-9-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*107*	*50-150*				

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0909S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-9-10	9-9-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-9-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				

Analyte	Result		Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE							
Laboratory ID:	09-075-03						
	ORIG	DUP					
Diesel Range Organics	**ND**	**ND**			NA	NA	
Lube Oil	**153**	**123**			22	NA	
Surrogate:							
o-Terphenyl			*107 97*	*50-150*			

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-075-01					
Client ID:	**P-PEX-16-10**					
Arsenic	**47**	23	6010B	9-9-10	9-10-10	
Barium	**590**	58	6010B	9-9-10	9-10-10	
Cadmium	**2.5**	1.2	6010B	9-9-10	9-10-10	
Chromium	**49**	1.2	6010B	9-9-10	9-10-10	
Lead	**410**	12	6010B	9-9-10	9-10-10	
Mercury	**1.2**	0.58	7471A	9-9-10	9-9-10	
Selenium	**ND**	23	6010B	9-9-10	9-10-10	
Silver	**ND**	1.2	6010B	9-9-10	9-10-10	
Lab ID:	09-075-02					
Client ID:	**P-PEX-17-7**					
Arsenic	**62**	12	6010B	9-9-10	9-10-10	
Barium	**70**	2.9	6010B	9-9-10	9-10-10	
Cadmium	**1.4**	0.58	6010B	9-9-10	9-10-10	
Chromium	**46**	0.58	6010B	9-9-10	9-10-10	
Lead	**160**	5.8	6010B	9-9-10	9-10-10	
Mercury	**ND**	0.29	7471A	9-9-10	9-9-10	
Selenium	**ND**	12	6010B	9-9-10	9-10-10	
Silver	**ND**	0.58	6010B	9-9-10	9-10-10	

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	09-075-03					
Client ID:	**P-PEX-18-9**					
Arsenic	**ND**	17	6010B	9-9-10	9-10-10	
Barium	**110**	4.4	6010B	9-9-10	9-10-10	
Cadmium	**ND**	0.87	6010B	9-9-10	9-10-10	
Chromium	**37**	0.87	6010B	9-9-10	9-10-10	
Lead	**80**	8.7	6010B	9-9-10	9-10-10	
Mercury	**ND**	0.44	7471A	9-9-10	9-9-10	
Selenium	**ND**	17	6010B	9-9-10	9-10-10	
Silver	**ND**	0.87	6010B	9-9-10	9-10-10	

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-9-10
Date Analyzed:	9-9&10-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0909S1&MB0909S2

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-9-10
Date Analyzed: 9-9&10-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-074-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**36.5**	**38.4**	5	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**23.8**	**24.4**	3	0.50	
Lead	**16.5**	**11.4**	37	5.0	C
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-9-10
Date Analyzed: 9-9&10-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-074-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**94.2**	94	**95.1**	95	1	
Barium	100	**134**	97	**133**	96	1	
Cadmium	50	**46.4**	93	**45.8**	92	1	
Chromium	100	**118**	94	**118**	95	0	
Lead	250	**231**	86	**235**	87	2	
Mercury	0.50	**0.504**	101	**0.502**	100	0	
Selenium	100	**95.2**	95	**95.2**	95	0	
Silver	25	**21.7**	87	**21.8**	87	0	

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**P-PEX-16-10**					
Laboratory ID:	09-075-01					
Naphthalene	**ND**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
2-Methylnaphthalene	**ND**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
1-Methylnaphthalene	**ND**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Acenaphthylene	**ND**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Acenaphthene	**ND**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Fluorene	**ND**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Phenanthrene	**0.060**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Anthracene	**ND**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Fluoranthene	**0.19**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Pyrene	**0.22**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[a]anthracene	**0.063**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Chrysene	**0.10**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[b]fluoranthene	**0.086**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[k]fluoranthene	**0.082**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[a]pyrene	**0.11**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Indeno(1,2,3-c,d)pyrene	**0.088**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Dibenz[a,h]anthracene	**0.021**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[g,h,i]perylene	**0.10**	0.015	EPA 8270/SIM	9-9-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*63*	*45 - 101*				
Pyrene-d10	*84*	*52 - 118*				
Terphenyl-d14	*80*	*41 - 106*				

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-17-7**					
Laboratory ID:	09-075-02					
Naphthalene	**0.043**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
2-Methylnaphthalene	**0.28**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
1-Methylnaphthalene	**0.34**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Acenaphthylene	**0.011**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Acenaphthene	**0.056**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Fluorene	**0.049**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Phenanthrene	**0.11**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Anthracene	**0.016**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Fluoranthene	**0.035**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Pyrene	**0.048**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Benzo[a]anthracene	**0.016**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Chrysene	**0.032**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Benzo[b]fluoranthene	**0.014**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Benzo[k]fluoranthene	**0.0094**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Benzo[a]pyrene	**0.017**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Indeno(1,2,3-c,d)pyrene	**0.0093**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Dibenz[a,h]anthracene	**ND**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Benzo[g,h,i]perylene	**0.017**	0.0078	EPA 8270/SIM	9-9-10	9-10-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*75*	*45 - 101*				
Pyrene-d10	*78*	*52 - 118*				
Terphenyl-d14	*79*	*41 - 106*				

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-18-9**					
Laboratory ID:	09-075-03					
Naphthalene	**ND**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
2-Methylnaphthalene	**ND**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
1-Methylnaphthalene	**ND**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Acenaphthylene	**0.035**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Acenaphthene	**ND**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Fluorene	**ND**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Phenanthrene	**0.14**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Anthracene	**0.024**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Fluoranthene	**0.70**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Pyrene	**0.76**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[a]anthracene	**0.15**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Chrysene	**0.42**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[b]fluoranthene	**0.36**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[k]fluoranthene	**0.36**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[a]pyrene	**0.43**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Indeno(1,2,3-c,d)pyrene	**0.41**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Dibenz[a,h]anthracene	**0.10**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[g,h,i]perylene	**0.47**	0.012	EPA 8270/SIM	9-9-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*75*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*85*	*41 - 106*				

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0909S2					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-9-10	9-9-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*76*	*45 - 101*				
Pyrene-d10	*79*	*52 - 118*				
Terphenyl-d14	*94*	*41 - 106*				

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-074-02										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0886**	**0.108**	0.0833	0.0833	0.0284	72	96	31 - 115	20	19	L
Acenaphthylene	**0.0643**	**0.0658**	0.0833	0.0833	ND	77	79	40 - 134	2	22	
Acenaphthene	**0.0795**	**0.0822**	0.0833	0.0833	0.00902	85	88	48 - 118	3	17	
Fluorene	**0.0688**	**0.0642**	0.0833	0.0833	0.00814	73	67	54 - 122	7	16	
Phenanthrene	**0.0920**	**0.0961**	0.0833	0.0833	0.0274	78	82	46 - 123	4	19	
Anthracene	**0.0712**	**0.0623**	0.0833	0.0833	0.0107	73	62	53 - 123	13	27	
Fluoranthene	**0.0915**	**0.0786**	0.0833	0.0833	0.0154	91	76	47 - 132	15	26	
Pyrene	**0.0966**	**0.0893**	0.0833	0.0833	0.0177	95	86	41 - 137	8	25	
Benzo[a]anthracene	**0.0671**	**0.0612**	0.0833	0.0833	ND	81	73	43 - 132	9	26	
Chrysene	**0.0656**	**0.0640**	0.0833	0.0833	ND	79	77	46 - 126	2	24	
Benzo[b]fluoranthene	**0.0612**	**0.0525**	0.0833	0.0833	ND	73	63	44 - 134	15	24	
Benzo[k]fluoranthene	**0.0666**	**0.0476**	0.0833	0.0833	ND	80	57	45 - 132	33	20	L
Benzo[a]pyrene	**0.0700**	**0.0609**	0.0833	0.0833	ND	84	73	36 - 136	14	23	
Indeno(1,2,3-c,d)pyrene	**0.0844**	**0.0618**	0.0833	0.0833	ND	101	74	40 - 136	31	16	L
Dibenz[a,h]anthracene	**0.0865**	**0.0646**	0.0833	0.0833	ND	104	78	40 - 142	29	13	L
Benzo[g,h,i]perylene	**0.0809**	**0.0715**	0.0833	0.0833	0.00900	86	75	37 - 137	12	18	
Surrogate:											
2-Fluorobiphenyl						*76*	*81*	*45 - 101*			
Pyrene-d10						*88*	*85*	*52 - 118*			
Terphenyl-d14						*93*	*73*	*41 - 106*			

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**		**Spike Level**		**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
SPIKE BLANKS										
Laboratory ID:	SB0909S2									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0755**	**0.0787**	0.0833	0.0833	91	94	33 - 105	4	30	
Acenaphthylene	**0.0801**	**0.0754**	0.0833	0.0833	96	91	51 - 110	6	22	
Acenaphthene	**0.0762**	**0.0785**	0.0833	0.0833	91	94	51 - 105	3	20	
Fluorene	**0.0695**	**0.0766**	0.0833	0.0833	83	92	61 - 107	10	17	
Phenanthrene	**0.0718**	**0.0742**	0.0833	0.0833	86	89	61 - 106	3	12	
Anthracene	**0.0691**	**0.0701**	0.0833	0.0833	83	84	59 - 106	1	12	
Fluoranthene	**0.0708**	**0.0709**	0.0833	0.0833	85	85	66 - 116	0	12	
Pyrene	**0.0787**	**0.0756**	0.0833	0.0833	94	91	67 - 118	4	14	
Benzo[a]anthracene	**0.0677**	**0.0710**	0.0833	0.0833	81	85	60 - 114	5	11	
Chrysene	**0.0623**	**0.0649**	0.0833	0.0833	75	78	64 - 112	4	12	
Benzo[b]fluoranthene	**0.0623**	**0.0660**	0.0833	0.0833	75	79	61 - 123	6	14	
Benzo[k]fluoranthene	**0.0641**	**0.0716**	0.0833	0.0833	77	86	50 - 124	11	17	
Benzo[a]pyrene	**0.0728**	**0.0731**	0.0833	0.0833	87	88	50 - 114	0	17	
Indeno(1,2,3-c,d)pyrene	**0.106**	**0.107**	0.0833	0.0833	127	128	56 - 130	1	16	
Dibenz[a,h]anthracene	**0.111**	**0.112**	0.0833	0.0833	133	134	57 - 134	1	16	
Benzo[g,h,i]perylene	**0.101**	**0.0982**	0.0833	0.0833	121	118	56 - 121	3	15	
Surrogate:										
2-Fluorobiphenyl					*88*	*83*	*45 - 101*			
Pyrene-d10					*83*	*78*	*52 - 118*			
Terphenyl-d14					*97*	*95*	*41 - 106*			

Date of Report: September 10, 2010
Samples Submitted: September 8, 2010
Laboratory Reference: 1009-075
Project: 2007-098

% MOISTURE

Date Analyzed: 9-9-10

Client ID	Lab ID	% Moisture
P-PEX-16-10	09-075-01	57
P-PEX-17-7	09-075-02	14
P-PEX-18-9	09-075-03	43

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106

Chain of Custody and Laboratory Analysis Request

09-075
DATE: 9/8/10
PAGE: 1 of 1

PROJECT NAME: Bothell Crossroads Paint #: 2007-98
SITE CODE:
SAMPLERS NAME: Norm Nielsen PHONE: 206-450-0552
SAMPLERS SIGNATURE: Norm Niel
HWA CONTACT: Vance Atkins PHONE: 425-774-0106

24-hour TAT

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-DX	RCR8-8 metals		% moisture	REMARKS
P-PEX-16-10	9/8/10	13:40	Soil	1	4	X	X		X	
P-PEX-17-7	↓	14:00	Soil	2	4	X	X		X	
P-PEX-18-9		14:15	Soil	3	4	X	X		X	

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Pete Pera		HWA	9/8/10	3:45	
Received by:	Van	Van	Speedy	9/8/10	3:45	
Relinquished by:						
Received by:		Blair Goodrow	OnSite Env	9/8/10	1008	

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 15, 2010

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-922
Laboratory Reference No. 1009-108

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on September 13, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

Case Narrative

Samples were collected on September 13, 2010 and received by the laboratory on September 13, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Halogenated Volatiles EPA 8260B Analysis

Method 5035 VOA vials containing stir bars were not provided for samples P-PEX-19-7, P-PEX-21-11, P-PEX-22-10, and P-PEX-23-5. The samples were therefore extracted from 4-ounce jars and analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-19-7**					
Laboratory ID:	09-108-01					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-13-10	9-13-10	
Lube Oil	**110**	57	NWTPH-Dx	9-13-10	9-13-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				
Client ID:	**P-PEX-20-8**					
Laboratory ID:	09-108-02					
Diesel Range Organics	**110**	28	NWTPH-Dx	9-13-10	9-13-10	
Lube Oil	**320**	57	NWTPH-Dx	9-13-10	9-13-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*115*	*50-150*				
Client ID:	**P-PEX-21-11**					
Laboratory ID:	09-108-03					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-13-10	9-13-10	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	9-13-10	9-13-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*99*	*50-150*				
Client ID:	**P-PEX-22-10**					
Laboratory ID:	09-108-04					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-13-10	9-13-10	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	9-13-10	9-13-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*113*	*50-150*				
Client ID:	**P-PEX-23-5**					
Laboratory ID:	09-108-05					
Diesel Range Organics	**68**	29	NWTPH-Dx	9-13-10	9-13-10	
Lube Oil	**410**	58	NWTPH-Dx	9-13-10	9-13-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*119*	*50-150*				

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0913S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-13-10	9-13-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-13-10	9-13-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*103*	*50-150*				

Analyte	**Result**		**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE								
Laboratory ID:	09-085-10							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**841**	**805**				4	NA	
Surrogate:								
o-Terphenyl			*121*	*129*	*50-150*			

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B
page 1 of 2

Date Extracted:	9-13-10
Date Analyzed:	9-13-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-108-01
Client ID:	**P-PEX-19-7**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0011
Chloromethane	ND		0.0057
Vinyl Chloride	ND		0.0011
Bromomethane	ND		0.0011
Chloroethane	ND		0.0057
Trichlorofluoromethane	ND		0.0011
1,1-Dichloroethene	ND		0.0011
Iodomethane	ND		0.0057
Methylene Chloride	ND		0.0057
(trans) 1,2-Dichloroethene	ND		0.0011
1,1-Dichloroethane	ND		0.0011
2,2-Dichloropropane	ND		0.0011
(cis) 1,2-Dichloroethene	ND		0.0011
Bromochloromethane	ND		0.0011
Chloroform	ND		0.0011
1,1,1-Trichloroethane	ND		0.0011
Carbon Tetrachloride	ND		0.0011
1,1-Dichloropropene	ND		0.0011
1,2-Dichloroethane	ND		0.0011
Trichloroethene	ND		0.0011
1,2-Dichloropropane	ND		0.0011
Dibromomethane	ND		0.0011
Bromodichloromethane	ND		0.0011
2-Chloroethyl Vinyl Ether	ND		0.0057
(cis) 1,3-Dichloropropene	ND		0.0011
(trans) 1,3-Dichloropropene	ND		0.0011

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B

page 2 of 2

Lab ID: 09-108-01
Client ID: **P-PEX-19-7**

Compound	**Results**	**Flags**	**PQL**
1,1,2-Trichloroethane	ND		0.0011
Tetrachloroethene	ND		0.0011
1,3-Dichloropropane	ND		0.0011
Dibromochloromethane	ND		0.0011
1,2-Dibromoethane	ND		0.0011
Chlorobenzene	ND		0.0011
1,1,1,2-Tetrachloroethane	ND		0.0011
Bromoform	ND		0.0011
Bromobenzene	ND		0.0011
1,1,2,2-Tetrachloroethane	ND		0.0011
1,2,3-Trichloropropane	ND		0.0011
2-Chlorotoluene	ND		0.0011
4-Chlorotoluene	ND		0.0011
1,3-Dichlorobenzene	ND		0.0011
1,4-Dichlorobenzene	ND		0.0011
1,2-Dichlorobenzene	ND		0.0011
1,2-Dibromo-3-chloropropane	ND		0.0057
1,2,4-Trichlorobenzene	ND		0.0011
Hexachlorobutadiene	ND		0.0057
1,2,3-Trichlorobenzene	ND		0.0011

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	90	66-128
Toluene-d8	104	68-126
4-Bromofluorobenzene	82	53-134

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B

page 1 of 2

Date Extracted:	9-13-10
Date Analyzed:	9-13-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-108-03
Client ID:	**P-PEX-21-11**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0012
Chloromethane	ND		0.0062
Vinyl Chloride	ND		0.0012
Bromomethane	ND		0.0012
Chloroethane	ND		0.0062
Trichlorofluoromethane	ND		0.0012
1,1-Dichloroethene	ND		0.0012
Iodomethane	ND		0.0062
Methylene Chloride	ND		0.0062
(trans) 1,2-Dichloroethene	ND		0.0012
1,1-Dichloroethane	ND		0.0012
2,2-Dichloropropane	ND		0.0012
(cis) 1,2-Dichloroethene	ND		0.0012
Bromochloromethane	ND		0.0012
Chloroform	ND		0.0012
1,1,1-Trichloroethane	ND		0.0012
Carbon Tetrachloride	ND		0.0012
1,1-Dichloropropene	ND		0.0012
1,2-Dichloroethane	ND		0.0012
Trichloroethene	ND		0.0012
1,2-Dichloropropane	ND		0.0012
Dibromomethane	ND		0.0012
Bromodichloromethane	ND		0.0012
2-Chloroethyl Vinyl Ether	ND		0.0062
(cis) 1,3-Dichloropropene	ND		0.0012
(trans) 1,3-Dichloropropene	ND		0.0012

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B

page 2 of 2

Lab ID: 09-108-03
Client ID: **P-PEX-21-11**

Compound	**Results**	**Flags**	**PQL**
1,1,2-Trichloroethane	ND		0.0012
Tetrachloroethene	ND		0.0012
1,3-Dichloropropane	ND		0.0012
Dibromochloromethane	ND		0.0012
1,2-Dibromoethane	ND		0.0012
Chlorobenzene	ND		0.0012
1,1,1,2-Tetrachloroethane	ND		0.0012
Bromoform	ND		0.0012
Bromobenzene	ND		0.0012
1,1,2,2-Tetrachloroethane	ND		0.0012
1,2,3-Trichloropropane	ND		0.0012
2-Chlorotoluene	ND		0.0012
4-Chlorotoluene	ND		0.0012
1,3-Dichlorobenzene	ND		0.0012
1,4-Dichlorobenzene	ND		0.0012
1,2-Dichlorobenzene	ND		0.0012
1,2-Dibromo-3-chloropropane	ND		0.0062
1,2,4-Trichlorobenzene	ND		0.0012
Hexachlorobutadiene	ND		0.0062
1,2,3-Trichlorobenzene	ND		0.0012

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	82	66-128
Toluene-d8	99	68-126
4-Bromofluorobenzene	78	53-134

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B

page 1 of 2

Date Extracted:	9-13-10
Date Analyzed:	9-13-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-108-04
Client ID:	**P-PEX-22-10**

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0012
Chloromethane	ND		0.0062
Vinyl Chloride	ND		0.0012
Bromomethane	ND		0.0012
Chloroethane	ND		0.0062
Trichlorofluoromethane	ND		0.0012
1,1-Dichloroethene	ND		0.0012
Iodomethane	ND		0.0062
Methylene Chloride	ND		0.0062
(trans) 1,2-Dichloroethene	ND		0.0012
1,1-Dichloroethane	ND		0.0012
2,2-Dichloropropane	ND		0.0012
(cis) 1,2-Dichloroethene	ND		0.0012
Bromochloromethane	ND		0.0012
Chloroform	ND		0.0012
1,1,1-Trichloroethane	ND		0.0012
Carbon Tetrachloride	ND		0.0012
1,1-Dichloropropene	ND		0.0012
1,2-Dichloroethane	ND		0.0012
Trichloroethene	ND		0.0012
1,2-Dichloropropane	ND		0.0012
Dibromomethane	ND		0.0012
Bromodichloromethane	ND		0.0012
2-Chloroethyl Vinyl Ether	ND		0.0062
(cis) 1,3-Dichloropropene	ND		0.0012
(trans) 1,3-Dichloropropene	ND		0.0012

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B

page 2 of 2

Lab ID:	09-108-04
Client ID:	**P-PEX-22-10**

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0012
Tetrachloroethene	ND		0.0012
1,3-Dichloropropane	ND		0.0012
Dibromochloromethane	ND		0.0012
1,2-Dibromoethane	ND		0.0012
Chlorobenzene	ND		0.0012
1,1,1,2-Tetrachloroethane	ND		0.0012
Bromoform	ND		0.0012
Bromobenzene	ND		0.0012
1,1,2,2-Tetrachloroethane	ND		0.0012
1,2,3-Trichloropropane	ND		0.0012
2-Chlorotoluene	ND		0.0012
4-Chlorotoluene	ND		0.0012
1,3-Dichlorobenzene	ND		0.0012
1,4-Dichlorobenzene	ND		0.0012
1,2-Dichlorobenzene	ND		0.0012
1,2-Dibromo-3-chloropropane	ND		0.0062
1,2,4-Trichlorobenzene	ND		0.0012
Hexachlorobutadiene	ND		0.0062
1,2,3-Trichlorobenzene	ND		0.0012

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	83	66-128
Toluene-d8	100	68-126
4-Bromofluorobenzene	81	53-134

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B

page 1 of 2

Date Extracted:	9-13-10
Date Analyzed:	9-13-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-108-05
Client ID:	**P-PEX-23-5**

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0012
Chloromethane	ND		0.0058
Vinyl Chloride	ND		0.0012
Bromomethane	ND		0.0012
Chloroethane	ND		0.0058
Trichlorofluoromethane	ND		0.0012
1,1-Dichloroethene	ND		0.0012
Iodomethane	ND		0.0058
Methylene Chloride	ND		0.0058
(trans) 1,2-Dichloroethene	ND		0.0012
1,1-Dichloroethane	ND		0.0012
2,2-Dichloropropane	ND		0.0012
(cis) 1,2-Dichloroethene	ND		0.0012
Bromochloromethane	ND		0.0012
Chloroform	ND		0.0012
1,1,1-Trichloroethane	ND		0.0012
Carbon Tetrachloride	ND		0.0012
1,1-Dichloropropene	ND		0.0012
1,2-Dichloroethane	ND		0.0012
Trichloroethene	ND		0.0012
1,2-Dichloropropane	ND		0.0012
Dibromomethane	ND		0.0012
Bromodichloromethane	ND		0.0012
2-Chloroethyl Vinyl Ether	ND		0.0058
(cis) 1,3-Dichloropropene	ND		0.0012
(trans) 1,3-Dichloropropene	ND		0.0012

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B

page 2 of 2

Lab ID:	09-108-05
Client ID:	**P-PEX-23-5**

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0012
Tetrachloroethene	ND		0.0012
1,3-Dichloropropane	ND		0.0012
Dibromochloromethane	ND		0.0012
1,2-Dibromoethane	ND		0.0012
Chlorobenzene	ND		0.0012
1,1,1,2-Tetrachloroethane	ND		0.0012
Bromoform	ND		0.0012
Bromobenzene	ND		0.0012
1,1,2,2-Tetrachloroethane	ND		0.0012
1,2,3-Trichloropropane	ND		0.0012
2-Chlorotoluene	ND		0.0012
4-Chlorotoluene	ND		0.0012
1,3-Dichlorobenzene	ND		0.0012
1,4-Dichlorobenzene	ND		0.0012
1,2-Dichlorobenzene	ND		0.0012
1,2-Dibromo-3-chloropropane	ND		0.0058
1,2,4-Trichlorobenzene	ND		0.0012
Hexachlorobutadiene	ND		0.0058
1,2,3-Trichlorobenzene	ND		0.0012

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	79	66-128
Toluene-d8	97	68-126
4-Bromofluorobenzene	76	53-134

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 1 of 2

Date Extracted:	9-13-10
Date Analyzed:	9-13-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0913S1

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0010
Chloromethane	ND		0.0050
Vinyl Chloride	ND		0.0010
Bromomethane	ND		0.0010
Chloroethane	ND		0.0050
Trichlorofluoromethane	ND		0.0010
1,1-Dichloroethene	ND		0.0010
Iodomethane	ND		0.0050
Methylene Chloride	ND		0.0050
(trans) 1,2-Dichloroethene	ND		0.0010
1,1-Dichloroethane	ND		0.0010
2,2-Dichloropropane	ND		0.0010
(cis) 1,2-Dichloroethene	ND		0.0010
Bromochloromethane	ND		0.0010
Chloroform	ND		0.0010
1,1,1-Trichloroethane	ND		0.0010
Carbon Tetrachloride	ND		0.0010
1,1-Dichloropropene	ND		0.0010
1,2-Dichloroethane	ND		0.0010
Trichloroethene	ND		0.0010
1,2-Dichloropropane	ND		0.0010
Dibromomethane	ND		0.0010
Bromodichloromethane	ND		0.0010
2-Chloroethyl Vinyl Ether	ND		0.0050
(cis) 1,3-Dichloropropene	ND		0.0010
(trans) 1,3-Dichloropropene	ND		0.0010

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 2 of 2

Lab ID: MB0913S1

Compound	**Results**	**Flags**	**PQL**
1,1,2-Trichloroethane	ND		0.0010
Tetrachloroethene	ND		0.0010
1,3-Dichloropropane	ND		0.0010
Dibromochloromethane	ND		0.0010
1,2-Dibromoethane	ND		0.0010
Chlorobenzene	ND		0.0010
1,1,1,2-Tetrachloroethane	ND		0.0010
Bromoform	ND		0.0010
Bromobenzene	ND		0.0010
1,1,2,2-Tetrachloroethane	ND		0.0010
1,2,3-Trichloropropane	ND		0.0010
2-Chlorotoluene	ND		0.0010
4-Chlorotoluene	ND		0.0010
1,3-Dichlorobenzene	ND		0.0010
1,4-Dichlorobenzene	ND		0.0010
1,2-Dichlorobenzene	ND		0.0010
1,2-Dibromo-3-chloropropane	ND		0.0050
1,2,4-Trichlorobenzene	ND		0.0010
Hexachlorobutadiene	ND		0.0050
1,2,3-Trichlorobenzene	ND		0.0010

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	87	66-128
Toluene-d8	101	68-126
4-Bromofluorobenzene	88	53-134

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

HALOGENATED VOLATILES by EPA 8260B
MS/MSD QUALITY CONTROL

Date Extracted:	9-13-10
Date Analyzed:	9-13-10
Matrix:	Soil
Units:	mg/kg (ppm)

Lab ID: 09-106-04

Compound	Sample Amount	Spike Amount	MS	Percent Recovery	MSD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	ND	1.02/0.969	1.01	99	0.920	95	70-130	
Benzene	ND	1.02/0.969	0.941	92	0.870	90	70-130	
Trichloroethene	ND	1.02/0.969	1.04	102	0.975	101	70-130	
Toluene	ND	1.02/0.969	1.01	99	0.946	98	70-126	
Chlorobenzene	ND	1.02/0.969	1.01	99	0.982	101	70-130	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	4	14	
Benzene	2	14	
Trichloroethene	1	18	
Toluene	1	20	
Chlorobenzene	2	15	

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-19-7**					
Laboratory ID:	09-108-01					
Naphthalene	**0.0080**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
2-Methylnaphthalene	**0.027**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
1-Methylnaphthalene	**0.057**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthene	**0.020**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Fluorene	**0.023**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Phenanthrene	**0.076**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Anthracene	**0.012**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Fluoranthene	**0.049**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Pyrene	**0.064**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]anthracene	**0.020**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Chrysene	**0.042**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[b]fluoranthene	**0.016**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[k]fluoranthene	**0.011**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]pyrene	**0.019**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Indeno(1,2,3-c,d)pyrene	**0.011**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Dibenz[a,h]anthracene	**ND**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[g,h,i]perylene	**0.017**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*75*	*45 - 101*				
Pyrene-d10	*81*	*52 - 118*				
Terphenyl-d14	*71*	*41 - 106*				

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-20-8**					
Laboratory ID:	09-108-02					
Naphthalene	**ND**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
2-Methylnaphthalene	**0.016**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
1-Methylnaphthalene	**0.038**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthene	**0.016**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Fluorene	**0.018**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Phenanthrene	**0.062**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Anthracene	**0.010**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Fluoranthene	**0.061**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Pyrene	**0.075**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]anthracene	**0.037**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Chrysene	**0.047**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[b]fluoranthene	**0.029**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[k]fluoranthene	**0.028**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]pyrene	**0.042**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Indeno(1,2,3-c,d)pyrene	**0.024**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Dibenz[a,h]anthracene	**0.0086**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[g,h,i]perylene	**0.030**	0.0076	EPA 8270/SIM	9-14-10	9-14-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*85*	*45 - 101*				
Pyrene-d10	*93*	*52 - 118*				
Terphenyl-d14	*92*	*41 - 106*				

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-21-11**					
Laboratory ID:	09-108-03					
Naphthalene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
2-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
1-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthylene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Fluorene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Phenanthrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Anthracene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Pyrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]anthracene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Chrysene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[b]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[k]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]pyrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Dibenz[a,h]anthracene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[g,h,i]perylene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*87*	*45 - 101*				
Pyrene-d10	*93*	*52 - 118*				
Terphenyl-d14	*86*	*41 - 106*				

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-22-10**					
Laboratory ID:	09-108-04					
Naphthalene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
2-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
1-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthylene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Fluorene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Phenanthrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Anthracene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Pyrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]anthracene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Chrysene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[b]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[k]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]pyrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Dibenz[a,h]anthracene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[g,h,i]perylene	**ND**	0.0083	EPA 8270/SIM	9-14-10	9-14-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*92*	*52 - 118*				
Terphenyl-d14	*86*	*41 - 106*				

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-23-5**					
Laboratory ID:	09-108-05					
Naphthalene	**0.029**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
2-Methylnaphthalene	**0.016**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
1-Methylnaphthalene	**0.018**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthylene	**ND**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthene	**0.061**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Fluorene	**0.048**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Phenanthrene	**0.12**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Anthracene	**0.016**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Fluoranthene	**0.070**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Pyrene	**0.067**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]anthracene	**0.022**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Chrysene	**0.034**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[b]fluoranthene	**0.019**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[k]fluoranthene	**0.014**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]pyrene	**0.022**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Indeno(1,2,3-c,d)pyrene	**0.013**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Dibenz[a,h]anthracene	**ND**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[g,h,i]perylene	**0.022**	0.0077	EPA 8270/SIM	9-14-10	9-14-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*74*	*45 - 101*				
Pyrene-d10	*81*	*52 - 118*				
Terphenyl-d14	*77*	*41 - 106*				

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0914S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*95*	*45 - 101*				
Pyrene-d10	*106*	*52 - 118*				
Terphenyl-d14	*92*	*41 - 106*				

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

PAHs by EPA 8270D/SIM
(with silica gel clean-up)
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-108-03										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0671**	**0.0714**	0.0833	0.0833	ND	81	86	31 - 115	6	19	
Acenaphthylene	**0.0735**	**0.0760**	0.0833	0.0833	ND	88	91	40 - 134	3	22	
Acenaphthene	**0.0742**	**0.0767**	0.0833	0.0833	ND	89	92	48 - 118	3	17	
Fluorene	**0.0763**	**0.0801**	0.0833	0.0833	ND	92	96	54 - 122	5	16	
Phenanthrene	**0.0738**	**0.0777**	0.0833	0.0833	ND	89	93	46 - 123	5	19	
Anthracene	**0.0708**	**0.0741**	0.0833	0.0833	ND	85	89	53 - 123	5	27	
Fluoranthene	**0.0741**	**0.0776**	0.0833	0.0833	ND	89	93	47 - 132	5	26	
Pyrene	**0.0772**	**0.0809**	0.0833	0.0833	ND	93	97	41 - 137	5	25	
Benzo[a]anthracene	**0.0695**	**0.0731**	0.0833	0.0833	ND	83	88	43 - 132	5	26	
Chrysene	**0.0711**	**0.0748**	0.0833	0.0833	ND	85	90	46 - 126	5	24	
Benzo[b]fluoranthene	**0.0700**	**0.0763**	0.0833	0.0833	ND	84	92	44 - 134	9	24	
Benzo[k]fluoranthene	**0.0662**	**0.0739**	0.0833	0.0833	ND	79	89	45 - 132	11	20	
Benzo[a]pyrene	**0.0716**	**0.0757**	0.0833	0.0833	ND	86	91	36 - 136	6	23	
Indeno(1,2,3-c,d)pyrene	**0.0750**	**0.0808**	0.0833	0.0833	ND	90	97	40 - 136	7	16	
Dibenz[a,h]anthracene	**0.0758**	**0.0810**	0.0833	0.0833	ND	91	97	40 - 142	7	13	
Benzo[g,h,i]perylene	**0.0736**	**0.0769**	0.0833	0.0833	ND	88	92	37 - 137	4	18	
Surrogate:											
2-Fluorobiphenyl						*80*	*83*	*45 - 101*			
Pyrene-d10						*88*	*92*	*52 - 118*			
Terphenyl-d14						*78*	*85*	*41 - 106*			

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-108-01					
Client ID:	**P-PEX-19-7**					
Arsenic	**21**	11	6010B	9-14-10	9-14-10	
Barium	**62**	2.8	6010B	9-14-10	9-14-10	
Cadmium	**ND**	0.57	6010B	9-14-10	9-14-10	
Chromium	**35**	0.57	6010B	9-14-10	9-14-10	
Lead	**46**	5.7	6010B	9-14-10	9-14-10	
Mercury	**ND**	0.28	7471A	9-14-10	9-14-10	
Selenium	**ND**	11	6010B	9-14-10	9-14-10	
Silver	**ND**	0.57	6010B	9-14-10	9-14-10	
Lab ID:	09-108-02					
Client ID:	**P-PEX-20-8**					
Arsenic	**25**	11	6010B	9-14-10	9-14-10	
Barium	**62**	2.8	6010B	9-14-10	9-14-10	
Cadmium	**ND**	0.57	6010B	9-14-10	9-14-10	
Chromium	**42**	0.57	6010B	9-14-10	9-14-10	
Lead	**180**	5.7	6010B	9-14-10	9-14-10	
Mercury	**ND**	0.28	7471A	9-14-10	9-14-10	
Selenium	**ND**	11	6010B	9-14-10	9-14-10	
Silver	**ND**	0.57	6010B	9-14-10	9-14-10	

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-108-03					
Client ID:	**P-PEX-21-11**					
Arsenic	**ND**	12	6010B	9-14-10	9-14-10	
Barium	**32**	3.1	6010B	9-14-10	9-14-10	
Cadmium	**ND**	0.62	6010B	9-14-10	9-14-10	
Chromium	**20**	0.62	6010B	9-14-10	9-14-10	
Lead	**ND**	6.2	6010B	9-14-10	9-14-10	
Mercury	**ND**	0.31	7471A	9-14-10	9-14-10	
Selenium	**ND**	12	6010B	9-14-10	9-14-10	
Silver	**ND**	0.62	6010B	9-14-10	9-14-10	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-108-04					
Client ID:	**P-PEX-22-10**					
Arsenic	**ND**	12	6010B	9-14-10	9-14-10	
Barium	**34**	3.1	6010B	9-14-10	9-14-10	
Cadmium	**ND**	0.62	6010B	9-14-10	9-14-10	
Chromium	**24**	0.62	6010B	9-14-10	9-14-10	
Lead	**ND**	6.2	6010B	9-14-10	9-14-10	
Mercury	**ND**	0.31	7471A	9-14-10	9-14-10	
Selenium	**ND**	12	6010B	9-14-10	9-14-10	
Silver	**ND**	0.62	6010B	9-14-10	9-14-10	

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-108-05					
Client ID:	**P-PEX-23-5**					
Arsenic	**ND**	12	6010B	9-14-10	9-14-10	
Barium	**52**	2.9	6010B	9-14-10	9-14-10	
Cadmium	**ND**	0.58	6010B	9-14-10	9-14-10	
Chromium	**26**	0.58	6010B	9-14-10	9-14-10	
Lead	**26**	5.8	6010B	9-14-10	9-14-10	
Mercury	**ND**	0.29	7471A	9-14-10	9-14-10	
Selenium	**ND**	12	6010B	9-14-10	9-14-10	
Silver	**ND**	0.58	6010B	9-14-10	9-14-10	

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-14-10
Date Analyzed:	9-14-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0914S1&MB0914S2

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted:	9-14-10
Date Analyzed:	9-14-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-108-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**27.5**	**29.0**	5	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**19.0**	**16.4**	15	0.50	
Lead	**ND**	**ND**	NA	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted:	9-14-10
Date Analyzed:	9-14-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-108-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**92.2**	92	**92.8**	93	1	
Barium	100	**116**	89	**115**	87	2	
Cadmium	50	**46.7**	93	**46.3**	93	1	
Chromium	100	**113**	94	**110**	91	2	
Lead	250	**234**	94	**230**	92	2	
Mercury	0.50	**0.513**	103	**0.506**	101	2	
Selenium	100	**93.3**	93	**94.6**	95	1	
Silver	25	**22.7**	91	**22.4**	89	1	

Date of Report: September 15, 2010
Samples Submitted: September 13, 2010
Laboratory Reference: 1009-108
Project: 2007-098-922

% MOISTURE

Date Analyzed: 9-13-10

Client ID	Lab ID	% Moisture
P-PEX-19-7	09-108-01	12
P-PEX-20-8	09-108-02	12
P-PEX-21-11	09-108-03	19
P-PEX-22-10	09-108-04	20
P-PEX-23-5	09-108-05	14

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Company: HWA
Project Number: 2007-098-922
Project Name: Bothell Paint
Project Manager: Arnie Sugar
Sampled by: Norm Nielsen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☒ 1 Day (ASAP)
☐ 2 Day ☐ 3 Day
☐ Standard (7 working days) (TPH analysis 5 working days)
☐ ______ (other)

Laboratory Number: 09-108

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM cPAHs	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664							% Moisture
1	P-PEX-19-7	9/13/10	12:30	Soil	4			X		X		X				X									X
2	P-PEX-20-8	↓	13:00	↓	↓			X		NO		yes				X									X
3	P-PEX-21-11		13:10					X		X		X				X									X
4	P-PEX-22-10		13:20					X		X		X				X									X
5	P-PEX-23-5		13:40					X		X		X				X									X

	Signature	Company	Date	Time
Relinquished by		HWA	9/13/10	3:34
Received by		OSE	9/13/10	3:34
Relinquished by				
Received by				
Relinquished by				
Received by				

Comments/Special Instructions:

Reviewed by/Date

Reviewed by/Date

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Client Copy

9°°

OnSite
Environmental Inc.

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September 16, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1009-120

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 14, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

Case Narrative

Samples were collected on September 14, 2010 and received by the laboratory on September 14, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CONC-1,2,3,4 Comp.**					
Laboratory ID:	09-120-01,02,03,04 Comp.					
Diesel Range Organics	**ND**	27	NWTPH-Dx	9-15-10	9-15-10	
Lube Oil Range Organics	**ND**	54	NWTPH-Dx	9-15-10	9-15-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*98*	*50-150*				

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0915S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-15-10	9-15-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-15-10	9-15-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*117*	*50-150*				

Analyte	Result		Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE							
Laboratory ID:	09-119-01						
	ORIG	DUP					
Diesel Range Organics	**ND**	**ND**			NA	NA	
Lube Oil	**134**	**80.9**			49	NA	
Surrogate:							
o-Terphenyl			*115* *98*	*50-150*			

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-120-01,02,03,04 Comp.					
Client ID:	**CONC-1,2,3,4 Comp.**					
Arsenic	**11**	11	6010B	9-15-10	9-15-10	
Barium	**69**	2.7	6010B	9-15-10	9-15-10	
Cadmium	**ND**	0.54	6010B	9-15-10	9-15-10	
Chromium	**20**	0.54	6010B	9-15-10	9-15-10	
Lead	**21**	5.4	6010B	9-15-10	9-15-10	
Mercury	**ND**	0.27	7471A	9-14-10	9-14-10	
Selenium	**ND**	11	6010B	9-15-10	9-15-10	
Silver	**ND**	0.54	6010B	9-15-10	9-15-10	

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-15-10
Date Analyzed:	9-15-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0915S1

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

TOTAL MERCURY
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-14-10
Date Analyzed:	9-14-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0914S1

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted:	9-15-10
Date Analyzed:	9-15-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	08-223-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**28.3**	**28.0**	1	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**12.6**	**12.0**	5	0.50	
Lead	**19.8**	**23.3**	16	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

TOTAL MERCURY
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-14-10
Date Analyzed: 9-14-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-108-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 9-15-10
Date Analyzed: 9-15-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-223-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**94.1**	94	**92.6**	93	2	
Barium	100	**122**	93	**124**	95	2	
Cadmium	50	**45.2**	90	**45.4**	91	0	
Chromium	100	**106**	94	**107**	94	0	
Lead	250	**240**	88	**247**	91	3	
Selenium	100	**94.6**	95	**93.9**	94	1	
Silver	25	**22.3**	89	**22.6**	90	1	

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

TOTAL MERCURY
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted:	9-14-10
Date Analyzed:	9-14-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-108-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.50	**0.513**	103	**0.506**	101	2	

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

cPAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CONC-01,02,03,04 Comp.**					
Laboratory ID:	09-120-01,02,03,04 Comp.					
Benzo[a]anthracene	**ND**	0.0072	EPA 8270/SIM	9-14-10	9-15-10	
Chrysene	**ND**	0.0072	EPA 8270/SIM	9-14-10	9-15-10	
Benzo[b]fluoranthene	**ND**	0.0072	EPA 8270/SIM	9-14-10	9-15-10	
Benzo[k]fluoranthene	**ND**	0.0072	EPA 8270/SIM	9-14-10	9-15-10	
Benzo[a]pyrene	**ND**	0.0072	EPA 8270/SIM	9-14-10	9-15-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0072	EPA 8270/SIM	9-14-10	9-15-10	
Dibenz[a,h]anthracene	**ND**	0.0072	EPA 8270/SIM	9-14-10	9-15-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*85*	*45 - 101*				
Pyrene-d10	*95*	*52 - 118*				
Terphenyl-d14	*84*	*41 - 106*				

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

cPAHs by EPA 8270D/SIM
(with silica gel clean-up)
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0914S1					
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-14-10	9-14-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*95*	*45 - 101*				
Pyrene-d10	*106*	*52 - 118*				
Terphenyl-d14	*92*	*41 - 106*				

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

cPAHs by EPA 8270D/SIM
(with silica gel clean-up)
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-108-03										
	MS	MSD	MS	MSD		MS	MSD				
Benzo[a]anthracene	**0.0695**	**0.0731**	0.0833	0.0833	ND	83	88	43 - 132	5	26	
Chrysene	**0.0711**	**0.0748**	0.0833	0.0833	ND	85	90	46 - 126	5	24	
Benzo[b]fluoranthene	**0.0700**	**0.0763**	0.0833	0.0833	ND	84	92	44 - 134	9	24	
Benzo[k]fluoranthene	**0.0662**	**0.0739**	0.0833	0.0833	ND	79	89	45 - 132	11	20	
Benzo[a]pyrene	**0.0716**	**0.0757**	0.0833	0.0833	ND	86	91	36 - 136	6	23	
Indeno(1,2,3-c,d)pyrene	**0.0750**	**0.0808**	0.0833	0.0833	ND	90	97	40 - 136	7	16	
Dibenz[a,h]anthracene	**0.0758**	**0.0810**	0.0833	0.0833	ND	91	97	40 - 142	7	13	
Surrogate:											
2-Fluorobiphenyl						*80*	*83*	*45 - 101*			
Pyrene-d10						*88*	*92*	*52 - 118*			
Terphenyl-d14						*78*	*85*	*41 - 106*			

Date of Report: September 16, 2010
Samples Submitted: September 14, 2010
Laboratory Reference: 1009-120
Project: 2007-098

% MOISTURE

Date Analyzed: 9-14-10

Client ID	Lab ID	% Moisture
CONC-01,02,03,04 Comp	09-120-01,02,03,04 Comp.	7

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
~~19730 64th Ave. W., Suite 200, Lynnwood, WA 98036~~ (425) 774-0106

Chain of Custody and Laboratory Analysis Request

DATE: 9/14/10
PAGE: 1 of

09-120
24-hour

PROJECT NAME: Bothell Paint #: 2007-098-
SITE CODE:
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE:
HWA CONTACT: " " PHONE: 206-794-3124

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH - Dx	RCRA Metals	cPAHs	REMARKS
Conc-1	9/14/10	1230		1	1	/	/	/	Composite + Analyze.
Conc-2		1235		2	1	/	/	/	
Conc-3		1240		3	1	/	/	/	
Conc-4		1245		4	1	/	/	/	

	PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Pete Pawson		HWA	9/14/10	15:20	
Received by:	M. Voun		OSE	9/14/10	1500	
Relinquished by:						
Received by:						

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

March 19, 2013

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1303-117

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on March 14, 2013.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: March 19, 2013
Samples Submitted: March 14, 2013
Laboratory Reference: 1303-117
Project: 2007-098

Case Narrative

Samples were collected on March 14, 2013 and received by the laboratory on March 14, 2013. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

The chromatogram for sample P-PEX-24-6 is similar to mineral spirits.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: March 19, 2013
Samples Submitted: March 14, 2013
Laboratory Reference: 1303-117
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-24-6**					
Laboratory ID:	03-117-01					
Benzene	**0.022**	0.020	EPA 8021B	3-14-13	3-15-13	
Toluene	**ND**	0.075	EPA 8021B	3-14-13	3-15-13	
Ethyl Benzene	**ND**	0.075	EPA 8021B	3-14-13	3-15-13	
m,p-Xylene	**ND**	0.075	EPA 8021B	3-14-13	3-15-13	
o-Xylene	**ND**	0.075	EPA 8021B	3-14-13	3-15-13	
Gasoline	**33**	7.5	NWTPH-Gx	3-14-13	3-15-13	Z
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*70-132*				
Client ID:	**P-PEX-25-8**					
Laboratory ID:	03-117-02					
Benzene	**ND**	0.020	EPA 8021B	3-14-13	3-15-13	
Toluene	**ND**	0.090	EPA 8021B	3-14-13	3-15-13	
Ethyl Benzene	**ND**	0.090	EPA 8021B	3-14-13	3-15-13	
m,p-Xylene	**ND**	0.090	EPA 8021B	3-14-13	3-15-13	
o-Xylene	**ND**	0.090	EPA 8021B	3-14-13	3-15-13	
Gasoline	**ND**	9.0	NWTPH-Gx	3-14-13	3-15-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*70-132*				

Date of Report: March 19, 2013
Samples Submitted: March 14, 2013
Laboratory Reference: 1303-117
Project: 2007-098

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0314S2					
Benzene	**ND**	0.020	EPA 8021B	3-14-13	3-14-13	
Toluene	**ND**	0.050	EPA 8021B	3-14-13	3-14-13	
Ethyl Benzene	**ND**	0.050	EPA 8021B	3-14-13	3-14-13	
m,p-Xylene	**ND**	0.050	EPA 8021B	3-14-13	3-14-13	
o-Xylene	**ND**	0.050	EPA 8021B	3-14-13	3-14-13	
Gasoline	**ND**	5.0	NWTPH-Gx	3-14-13	3-14-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*70-132*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-094-04										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*105*	*105*	*70-132*			
SPIKE BLANKS											
Laboratory ID:	SB0314S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.04**	**0.973**	1.00	1.00		**104**	**97**	71-125	7	11	
Toluene	**1.05**	**1.01**	1.00	1.00		**105**	**101**	77-125	4	11	
Ethyl Benzene	**1.04**	**1.00**	1.00	1.00		**104**	**100**	76-125	4	10	
m,p-Xylene	**1.06**	**1.06**	1.00	1.00		**106**	**106**	78-124	0	9	
o-Xylene	**1.05**	**1.02**	1.00	1.00		**105**	**102**	77-123	3	9	
Surrogate:											
Fluorobenzene						*101*	*92*	*70-132*			

Date of Report: March 19, 2013
Samples Submitted: March 14, 2013
Laboratory Reference: 1303-117
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-24-6**					
Laboratory ID:	03-117-01					
Diesel Range Organics	**ND**	48	NWTPH-Dx	3-15-13	3-15-13	U1
Lube Oil	**250**	64	NWTPH-Dx	3-15-13	3-15-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				
Client ID:	**P-PEX-25-8**					
Laboratory ID:	03-117-02					
Diesel Range Organics	**ND**	36	NWTPH-Dx	3-15-13	3-15-13	
Lube Oil Range Organics	**ND**	72	NWTPH-Dx	3-15-13	3-15-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				

Date of Report: March 19, 2013
Samples Submitted: March 14, 2013
Laboratory Reference: 1303-117
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0315S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	3-15-13	3-15-13	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	3-15-13	3-15-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				

Analyte	Result		Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE							
Laboratory ID:	03-094-14						
	ORIG	DUP					
Diesel Fuel #2	**1810**	**1550**			15	NA	M
Lube Oil	**224**	**193**			15	NA	N1
Surrogate:							
o-Terphenyl			*101* *88*	*50-150*			

Date of Report: March 19, 2013
Samples Submitted: March 14, 2013
Laboratory Reference: 1303-117
Project: 2007-098

TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-117-01					
Client ID:	**P-PEX-24-6**					
Arsenic	**43**	13	6010C	3-15-13	3-18-13	
Barium	**73**	3.2	6010C	3-15-13	3-18-13	
Cadmium	**ND**	0.63	6010C	3-15-13	3-18-13	
Chromium	**53**	0.63	6010C	3-15-13	3-18-13	
Lead	**100**	6.3	6010C	3-15-13	3-18-13	
Mercury	**ND**	0.32	7471B	3-15-13	3-15-13	
Selenium	**ND**	13	6010C	3-15-13	3-18-13	
Silver	**ND**	1.3	6010C	3-15-13	3-18-13	
Lab ID:	03-117-02					
Client ID:	**P-PEX-25-8**					
Arsenic	**ND**	14	6010C	3-15-13	3-18-13	
Barium	**43**	3.6	6010C	3-15-13	3-18-13	
Cadmium	**ND**	0.72	6010C	3-15-13	3-18-13	
Chromium	**44**	0.72	6010C	3-15-13	3-18-13	
Lead	**ND**	7.2	6010C	3-15-13	3-18-13	
Mercury	**ND**	0.36	7471B	3-15-13	3-15-13	
Selenium	**ND**	14	6010C	3-15-13	3-18-13	
Silver	**ND**	1.4	6010C	3-15-13	3-18-13	

Date of Report: March 19, 2013
Samples Submitted: March 14, 2013
Laboratory Reference: 1303-117
Project: 2007-098

TOTAL METALS
EPA 6010C/7471B
METHOD BLANK QUALITY CONTROL

Date Extracted:	3-15-13
Date Analyzed:	3-15&18-13
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0315SM1&MB0315S1

Analyte	Method	Result	PQL
Arsenic	6010C	**ND**	10
Barium	6010C	**ND**	2.5
Cadmium	6010C	**ND**	0.50
Chromium	6010C	**ND**	0.50
Lead	6010C	**ND**	5.0
Mercury	7471B	**ND**	0.25
Selenium	6010C	**ND**	10
Silver	6010C	**ND**	1.0

Date of Report: March 19, 2013
Samples Submitted: March 14, 2013
Laboratory Reference: 1303-117
Project: 2007-098

TOTAL METALS
EPA 6010C/7471B
DUPLICATE QUALITY CONTROL

Date Extracted:	3-15-13
Date Analyzed:	3-15&18-13
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	03-117-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**30.0**	**33.8**	12	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**30.7**	**32.8**	6	0.50	
Lead	**ND**	**ND**	NA	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	1.0	

Date of Report: March 19, 2013
Samples Submitted: March 14, 2013
Laboratory Reference: 1303-117
Project: 2007-098

TOTAL METALS
EPA 6010C/7471B
MS/MSD QUALITY CONTROL

Date Extracted:	3-15-13
Date Analyzed:	3-15&18-13
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	03-117-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**100**	100	**103**	103	3	
Barium	100	**129**	99	**133**	103	3	
Cadmium	50.0	**49.1**	98	**50.1**	100	2	
Chromium	100	**122**	92	**125**	94	2	
Lead	250	**235**	94	**241**	96	3	
Mercury	0.500	**0.462**	92	**0.485**	97	5	
Selenium	100	**96.7**	97	**99.6**	100	3	
Silver	25.0	**22.7**	91	**23.3**	93	3	

Date of Report: March 19, 2013
Samples Submitted: March 14, 2013
Laboratory Reference: 1303-117
Project: 2007-098

% MOISTURE

Date Analyzed: 3-15-13

Client ID	Lab ID	% Moisture
P-PEX-24-6	03-117-01	21
P-PEX-25-8	03-117-02	30

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z - The sample chromatogram is similar to mineral spirits.

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page ______ of ______

Laboratory Number: 03-117

Company: Hwa
Project Number: 2007-098
Project Name: Bothell Paint
Project Manager: Atkins
Sampled by: Atkins

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Days ☒ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total 8 [✓ RCRA] Metals/ MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664A							% Moisture
1	P-PEX-24-6	3/14/13	1015	S	2		X		X									X									X
2	P-PEX-25-8	3/14/13	1000	S	2		X		X									X									X

	Signature	Company	Date	Time
Relinquished		HWA GeoSciences	3/14/13	
Received	Van	Spdy	3/14	1300
Relinquished	Van	Spdy	3/14	1350
Received		OnSite Env	3/14/13	1350
Relinquished				
Received				

Comments/Special Instructions

Reviewed/Date

Reviewed/Date

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Environmental Inc.

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March 22, 2013

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-945
Laboratory Reference No. 1303-169

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on March 20, 2013.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: March 22, 2013
Samples Submitted: March 20, 2013
Laboratory Reference: 1303-169
Project: 2007-098-945

Case Narrative

Samples were collected on March 20, 2013 and received by the laboratory on March 20, 2013. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: March 22, 2013
Samples Submitted: March 20, 2013
Laboratory Reference: 1303-169
Project: 2007-098-945

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-26-8**					
Laboratory ID:	03-169-01					
Benzene	**ND**	0.020	EPA 8021B	3-21-13	3-21-13	
Toluene	**ND**	0.055	EPA 8021B	3-21-13	3-21-13	
Ethyl Benzene	**ND**	0.055	EPA 8021B	3-21-13	3-21-13	
m,p-Xylene	**ND**	0.055	EPA 8021B	3-21-13	3-21-13	
o-Xylene	**ND**	0.055	EPA 8021B	3-21-13	3-21-13	
Gasoline	**ND**	5.5	NWTPH-Gx	3-21-13	3-21-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*70-132*				

Date of Report: March 22, 2013
Samples Submitted: March 20, 2013
Laboratory Reference: 1303-169
Project: 2007-098-945

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0321S1					
Benzene	**ND**	0.020	EPA 8021B	3-21-13	3-22-13	
Toluene	**ND**	0.050	EPA 8021B	3-21-13	3-22-13	
Ethyl Benzene	**ND**	0.050	EPA 8021B	3-21-13	3-22-13	
m,p-Xylene	**ND**	0.050	EPA 8021B	3-21-13	3-22-13	
o-Xylene	**ND**	0.050	EPA 8021B	3-21-13	3-22-13	
Gasoline	**ND**	5.0	NWTPH-Gx	3-21-13	3-22-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*70-132*				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	03-169-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*97*	*102*	*70-132*			
SPIKE BLANKS											
Laboratory ID:	SB0321S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.985**	**1.03**	1.00	1.00		**99**	**103**	71-125	4	11	
Toluene	**0.999**	**1.04**	1.00	1.00		**100**	**104**	77-125	4	11	
Ethyl Benzene	**0.971**	**0.971**	1.00	1.00		**97**	**97**	76-125	0	10	
m,p-Xylene	**0.984**	**0.973**	1.00	1.00		**98**	**97**	78-124	1	9	
o-Xylene	**0.960**	**0.911**	1.00	1.00		**96**	**91**	77-123	5	9	
Surrogate:											
Fluorobenzene						*95*	*95*	*70-132*			

Date of Report: March 22, 2013
Samples Submitted: March 20, 2013
Laboratory Reference: 1303-169
Project: 2007-098-945

% MOISTURE

Date Analyzed: 3-20-13

Client ID	Lab ID	% Moisture
P-PEX-26-8	03-169-01	10

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 1

Company: HWA
Project Number: 2007-098-945
Project Name: Bothell Paint
Project Manager: Atkins
Sampled by: Atkins

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☒ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ________ (other)

Laboratory Number: 03-169

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664					% Moisture
1	P-PSX-26-8	3/20/13	930	S	2		X																			X

	Signature	Company	Date	Time
Relinquished		HWA GeoSciences	3/20/13	
Received	Van	Speedy	3/20	12:55
Relinquished	Van	11	11	1325
Received		OSE	3/20/13	1328
Relinquished				
Received				

Comments/Special Instructions:

Reviewed/Date

Reviewed/Date

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

March 29, 2013

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1303-248

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on March 28, 2013.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: March 29, 2013
Samples Submitted: March 28, 2013
Laboratory Reference: 1303-248
Project: 2007-098

Case Narrative

Samples were collected on March 28, 2013 and received by the laboratory on March 28, 2013. They were maintained at the laboratory at a temperature of 2^{o}C to 6^{o}C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7^{o}C and -20^{o}C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: March 29, 2013
Samples Submitted: March 28, 2013
Laboratory Reference: 1303-248
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**180th-1-18**					
Laboratory ID:	03-248-01					
Benzene	**ND**	0.020	EPA 8021B	3-28-13	3-28-13	
Toluene	**ND**	0.060	EPA 8021B	3-28-13	3-28-13	
Ethyl Benzene	**ND**	0.060	EPA 8021B	3-28-13	3-28-13	
m,p-Xylene	**ND**	0.060	EPA 8021B	3-28-13	3-28-13	
o-Xylene	**ND**	0.060	EPA 8021B	3-28-13	3-28-13	
Gasoline	**ND**	6.0	NWTPH-Gx	3-28-13	3-28-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*70-132*				
Client ID:	**180th-2-14**					
Laboratory ID:	03-248-02					
Benzene	**ND**	0.021	EPA 8021B	3-28-13	3-29-13	
Toluene	**ND**	0.11	EPA 8021B	3-28-13	3-29-13	
Ethyl Benzene	**ND**	0.11	EPA 8021B	3-28-13	3-29-13	
m,p-Xylene	**0.14**	0.11	EPA 8021B	3-28-13	3-29-13	
o-Xylene	**ND**	0.11	EPA 8021B	3-28-13	3-29-13	
Gasoline	**150**	11	NWTPH-Gx	3-28-13	3-29-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*70-132*				
Client ID:	**180th-3-14**					
Laboratory ID:	03-248-03					
Benzene	**ND**	0.020	EPA 8021B	3-28-13	3-28-13	
Toluene	**ND**	0.053	EPA 8021B	3-28-13	3-28-13	
Ethyl Benzene	**ND**	0.053	EPA 8021B	3-28-13	3-28-13	
m,p-Xylene	**ND**	0.053	EPA 8021B	3-28-13	3-28-13	
o-Xylene	**ND**	0.053	EPA 8021B	3-28-13	3-28-13	
Gasoline	**ND**	5.3	NWTPH-Gx	3-28-13	3-28-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*70-132*				

Date of Report: March 29, 2013
Samples Submitted: March 28, 2013
Laboratory Reference: 1303-248
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Stockpile 180th**					
Laboratory ID:	03-248-04					
Benzene	**ND**	0.020	EPA 8021B	3-28-13	3-28-13	
Toluene	**ND**	0.080	EPA 8021B	3-28-13	3-28-13	
Ethyl Benzene	**ND**	0.080	EPA 8021B	3-28-13	3-28-13	
m,p-Xylene	**ND**	0.080	EPA 8021B	3-28-13	3-28-13	
o-Xylene	**ND**	0.080	EPA 8021B	3-28-13	3-28-13	
Gasoline	**25**	8.0	NWTPH-Gx	3-28-13	3-28-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*70-132*				

Date of Report: March 29, 2013
Samples Submitted: March 28, 2013
Laboratory Reference: 1303-248
Project: 2007-098

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0328S1					
Benzene	**ND**	0.020	EPA 8021B	3-28-13	3-28-13	
Toluene	**ND**	0.050	EPA 8021B	3-28-13	3-28-13	
Ethyl Benzene	**ND**	0.050	EPA 8021B	3-28-13	3-28-13	
m,p-Xylene	**ND**	0.050	EPA 8021B	3-28-13	3-28-13	
o-Xylene	**ND**	0.050	EPA 8021B	3-28-13	3-28-13	
Gasoline	**ND**	5.0	NWTPH-Gx	3-28-13	3-28-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*70-132*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-245-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*99*	*96*	*70-132*			
SPIKE BLANKS											
Laboratory ID:	SB0328S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.919**	**0.942**	1.00	1.00		**92**	**94**	71-125	2	11	
Toluene	**0.948**	**0.971**	1.00	1.00		**95**	**97**	77-125	2	11	
Ethyl Benzene	**0.936**	**0.943**	1.00	1.00		**94**	**94**	76-125	1	10	
m,p-Xylene	**0.955**	**0.966**	1.00	1.00		**96**	**97**	78-124	1	9	
o-Xylene	**0.956**	**0.968**	1.00	1.00		**96**	**97**	77-123	1	9	
Surrogate:											
Fluorobenzene						*89*	*90*	*70-132*			

Date of Report: March 29, 2013
Samples Submitted: March 28, 2013
Laboratory Reference: 1303-248
Project: 2007-098

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**180th-1-18**					
Laboratory ID:	03-248-01					
Diesel Range Organics	**ND**	29	NWTPH-Dx	3-28-13	3-28-13	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	3-28-13	3-28-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				
Client ID:	**180th-2-14**					
Laboratory ID:	03-248-02					
Diesel Range Organics	**ND**	5100	NWTPH-Dx	3-28-13	3-29-13	U1
Lube Oil	**34000**	1600	NWTPH-Dx	3-28-13	3-29-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*---*	*50-150*				S
Client ID:	**180th-3-14**					
Laboratory ID:	03-248-03					
Diesel Range Organics	**ND**	29	NWTPH-Dx	3-28-13	3-28-13	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	3-28-13	3-28-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**Stockpile 180th**					
Laboratory ID:	03-248-04					
Diesel Range Organics	**ND**	390	NWTPH-Dx	3-28-13	3-28-13	U1
Lube Oil	**2400**	68	NWTPH-Dx	3-28-13	3-28-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				

Date of Report: March 29, 2013
Samples Submitted: March 28, 2013
Laboratory Reference: 1303-248
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0328S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	3-28-13	3-28-13	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	3-28-13	3-28-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	03-248-04							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	U1
Lube Oil	**1790**	**1730**				3	NA	
Surrogate:								
o-Terphenyl			*85*	*87*	*50-150*			

Date of Report: March 29, 2013
Samples Submitted: March 28, 2013
Laboratory Reference: 1303-248
Project: 2007-098

TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-248-01					
Client ID:	**180th-1-18**					
Arsenic	**ND**	12	6010C	3-29-13	3-29-13	
Barium	**35**	2.9	6010C	3-29-13	3-29-13	
Cadmium	**ND**	0.59	6010C	3-29-13	3-29-13	
Chromium	**66**	0.59	6010C	3-29-13	3-29-13	
Lead	**ND**	5.9	6010C	3-29-13	3-29-13	
Mercury	**ND**	0.29	7471B	3-29-13	3-29-13	
Selenium	**ND**	12	6010C	3-29-13	3-29-13	
Silver	**ND**	1.2	6010C	3-29-13	3-29-13	
Lab ID:	03-248-02					
Client ID:	**180th-2-14**					
Arsenic	**ND**	16	6010C	3-29-13	3-29-13	
Barium	**74**	4.1	6010C	3-29-13	3-29-13	
Cadmium	**ND**	0.81	6010C	3-29-13	3-29-13	
Chromium	**56**	0.81	6010C	3-29-13	3-29-13	
Lead	**16**	8.1	6010C	3-29-13	3-29-13	
Mercury	**ND**	0.41	7471B	3-29-13	3-29-13	
Selenium	**ND**	16	6010C	3-29-13	3-29-13	
Silver	**ND**	1.6	6010C	3-29-13	3-29-13	

Date of Report: March 29, 2013
Samples Submitted: March 28, 2013
Laboratory Reference: 1303-248
Project: 2007-098

TOTAL METALS
EPA 6010C/7471B

Matrix:	Soil
Units:	mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-248-03					
Client ID:	**180th-3-14**					
Arsenic	**ND**	12	6010C	3-29-13	3-29-13	
Barium	**31**	2.9	6010C	3-29-13	3-29-13	
Cadmium	**ND**	0.58	6010C	3-29-13	3-29-13	
Chromium	**42**	0.58	6010C	3-29-13	3-29-13	
Lead	**ND**	5.8	6010C	3-29-13	3-29-13	
Mercury	**ND**	0.29	7471B	3-29-13	3-29-13	
Selenium	**ND**	12	6010C	3-29-13	3-29-13	
Silver	**ND**	1.2	6010C	3-29-13	3-29-13	

Lab ID:	03-248-04					
Client ID:	**Stockpile 180th**					
Arsenic	**ND**	14	6010C	3-29-13	3-29-13	
Barium	**46**	3.4	6010C	3-29-13	3-29-13	
Cadmium	**ND**	0.68	6010C	3-29-13	3-29-13	
Chromium	**38**	0.68	6010C	3-29-13	3-29-13	
Lead	**9.8**	6.8	6010C	3-29-13	3-29-13	
Mercury	**ND**	0.34	7471B	3-29-13	3-29-13	
Selenium	**ND**	14	6010C	3-29-13	3-29-13	
Silver	**ND**	1.4	6010C	3-29-13	3-29-13	

Date of Report: March 29, 2013
Samples Submitted: March 28, 2013
Laboratory Reference: 1303-248
Project: 2007-098

TOTAL METALS
EPA 6010C/7471B
METHOD BLANK QUALITY CONTROL

Date Extracted:	3-29-13
Date Analyzed:	3-29-13
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0329SM1&MB0329S1

Analyte	Method	Result	PQL
Arsenic	6010C	**ND**	10
Barium	6010C	**ND**	2.5
Cadmium	6010C	**ND**	0.50
Chromium	6010C	**ND**	0.50
Lead	6010C	**ND**	5.0
Mercury	7471B	**ND**	0.25
Selenium	6010C	**ND**	10
Silver	6010C	**ND**	1.0

TOTAL METALS
EPA 6010C/7471B
DUPLICATE QUALITY CONTROL

Date Extracted: 3-29-13
Date Analyzed: 3-29-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 03-248-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**29.9**	**31.9**	7	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**56.4**	**57.2**	2	0.50	
Lead	**ND**	**ND**	NA	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	1.0	

Date of Report: March 29, 2013
Samples Submitted: March 28, 2013
Laboratory Reference: 1303-248
Project: 2007-098

TOTAL METALS
EPA 6010C/7471B
MS/MSD QUALITY CONTROL

Date Extracted: 3-29-13
Date Analyzed: 3-29-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 03-248-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**99.5**	100	**100**	100	1	
Barium	100	**125**	95	**134**	104	7	
Cadmium	50.0	**49.1**	98	**50.5**	101	3	
Chromium	100	**151**	95	**155**	98	2	
Lead	250	**238**	95	**246**	98	3	
Mercury	0.500	**0.477**	95	**0.466**	93	2	
Selenium	100	**98.1**	98	**97.5**	98	1	
Silver	25.0	**22.7**	91	**23.3**	93	3	

Date of Report: March 29, 2013
Samples Submitted: March 28, 2013
Laboratory Reference: 1303-248
Project: 2007-098

% MOISTURE

Date Analyzed: 3-28-13

Client ID	Lab ID	% Moisture
180th-1-18	03-248-01	15
180th-2-14	03-248-02	38
180th-3-14	03-248-03	15
Stockpile 180th	03-248-04	26

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page ______ of ______

Laboratory Number: 03-248

Company: HWA
Project Number: 2007-098
Project Name: BOTHELL - 180TH
Project Manager: ATKINS
Sampled by: ATKINS

Turnaround Request (in working days)
(Check One)
☐ Same Day ☒ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total [✓ RCRA] Metals/ MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664A							% Moisture
1	180TH-1-18	3/28/13	1130	S			/		/									/									X
2	180TH-2-14	|	1145	|			/		/									/									X
3	180TH-3-14	|	1200	|			/		/									/									X
4	STOCKPILE 180TH	|	1230	|			/		/									//									X

	Signature	Company	Date	Time
Relinquished		HWA GeoSciences	3/28/13	1:47pm
Received		Fleetfoot	3/28/13	147
Relinquished	Rick McLaughlin	Fleetfoot	3/28/13	245PM
Received			3/28/13	1445
Relinquished				
Received				

Comments/Special Instructions

Reviewed/Date

Reviewed/Date

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☒ Electronic Data Deliverables (EDDs) ☐ ________

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 10, 2013

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-995
Laboratory Reference No. 1310-089

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on October 9, 2013.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

Case Narrative

Samples were collected on October 8, 2013 and received by the laboratory on October 9, 2013. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP33-9**					
Laboratory ID:	10-089-13					
Gasoline	**ND**	6.9	NWTPH-Gx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*71-121*				
Client ID:	**P-TP33-11**					
Laboratory ID:	10-089-14					
Gasoline	**ND**	5.4	NWTPH-Gx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*109*	*71-121*				

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

NWTPH-Gx
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1009S2					
Gasoline	**ND**	5.0	NWTPH-Gx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	10-096-01										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*108*	*110*	*71-121*			

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP28-9**					
Laboratory ID:	10-089-01					
Diesel Range Organics	**ND**	29	NWTPH-Dx	10-9-13	10-9-13	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*81*	*50-150*				
Client ID:	**P-TP28-11**					
Laboratory ID:	10-089-02					
Diesel Range Organics	**ND**	28	NWTPH-Dx	10-9-13	10-9-13	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*78*	*50-150*				
Client ID:	**P-TP29-5**					
Laboratory ID:	10-089-03					
Diesel Range Organics	**ND**	32	NWTPH-Dx	10-9-13	10-9-13	
Lube Oil Range Organics	**ND**	64	NWTPH-Dx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*73*	*50-150*				
Client ID:	**P-TP29-11**					
Laboratory ID:	10-089-04					
Diesel Range Organics	**ND**	32	NWTPH-Dx	10-9-13	10-9-13	
Lube Oil Range Organics	**ND**	63	NWTPH-Dx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*61*	*50-150*				
Client ID:	**P-TP30-6**					
Laboratory ID:	10-089-05					
Diesel Range Organics	**ND**	28	NWTPH-Dx	10-10-13	10-10-13	
Lube Oil	**120**	56	NWTPH-Dx	10-10-13	10-10-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*75*	*50-150*				
Client ID:	**P-TP30-10**					
Laboratory ID:	10-089-06					
Diesel Range Organics	**ND**	32	NWTPH-Dx	10-9-13	10-9-13	
Lube Oil Range Organics	**ND**	64	NWTPH-Dx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*75*	*50-150*				

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP31-6**					
Laboratory ID:	10-089-07					
Diesel Range Organics	**ND**	30	NWTPH-Dx	10-9-13	10-9-13	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*72*	*50-150*				
Client ID:	**P-TP31-10**					
Laboratory ID:	10-089-08					
Diesel Range Organics	**ND**	29	NWTPH-Dx	10-9-13	10-9-13	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				
Client ID:	**P-TP32-1.5**					
Laboratory ID:	10-089-09					
Diesel Range Organics	**ND**	120	NWTPH-Dx	10-9-13	10-9-13	U1
Lube Oil	**700**	60	NWTPH-Dx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				
Client ID:	**P-TP32-10**					
Laboratory ID:	10-089-10					
Diesel Range Organics	**ND**	29	NWTPH-Dx	10-9-13	10-9-13	
Lube Oil	**65**	58	NWTPH-Dx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*62*	*50-150*				
Client ID:	**P-TP33-2**					
Laboratory ID:	10-089-11					
Diesel Range Organics	**ND**	30	NWTPH-Dx	10-9-13	10-9-13	
Lube Oil	**240**	60	NWTPH-Dx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*61*	*50-150*				
Client ID:	**P-TP33-7**					
Laboratory ID:	10-089-12					
Diesel Range Organics	**100**	32	NWTPH-Dx	10-10-13	10-10-13	
Lube Oil	**190**	64	NWTPH-Dx	10-10-13	10-10-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*76*	*50-150*				

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-TP33-9**					
Laboratory ID:	10-089-13					
Diesel Range Organics	**50**	31	NWTPH-Dx	10-9-13	10-9-13	
Lube Oil	**180**	61	NWTPH-Dx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*72*	*50-150*				
Client ID:	**P-TP33-11**					
Laboratory ID:	10-089-14					
Diesel Fuel #2	**290**	32	NWTPH-Dx	10-9-13	10-9-13	
Lube Oil	**170**	64	NWTPH-Dx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*73*	*50-150*				
Client ID:	**P-TP35-7**					
Laboratory ID:	10-089-15					
Diesel Range Organics	**ND**	31	NWTPH-Dx	10-9-13	10-9-13	
Lube Oil	**110**	62	NWTPH-Dx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*60*	*50-150*				
Client ID:	**P-TP36-10**					
Laboratory ID:	10-089-16					
Diesel Range Organics	**ND**	29	NWTPH-Dx	10-9-13	10-9-13	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1009S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	10-9-13	10-9-13	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	10-9-13	10-9-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				
Laboratory ID:	MB1010S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	10-10-13	10-10-13	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	10-10-13	10-10-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	10-077-02							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*91*	*73*	*50-150*			
Laboratory ID:	10-089-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*81*	*80*	*50-150*			
Laboratory ID:	10-089-05							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**103**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*75*	*75*	*50-150*			

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	10-089-01					
Client ID:	**P-TP28-9**					
Arsenic	**ND**	12	6010C	10-9-13	10-9-13	
Barium	**40**	2.9	6010C	10-9-13	10-9-13	
Cadmium	**ND**	0.59	6010C	10-9-13	10-9-13	
Chromium	**38**	0.59	6010C	10-9-13	10-9-13	
Lead	**ND**	5.9	6010C	10-9-13	10-9-13	
Mercury	**ND**	0.29	7471B	10-9-13	10-9-13	
Selenium	**ND**	12	6010C	10-9-13	10-9-13	
Silver	**ND**	1.2	6010C	10-9-13	10-9-13	
Lab ID:	10-089-02					
Client ID:	**P-TP28-11**					
Arsenic	**ND**	11	6010C	10-9-13	10-9-13	
Barium	**29**	2.8	6010C	10-9-13	10-9-13	
Cadmium	**ND**	0.56	6010C	10-9-13	10-9-13	
Chromium	**18**	0.56	6010C	10-9-13	10-9-13	
Lead	**ND**	5.6	6010C	10-9-13	10-9-13	
Mercury	**ND**	0.28	7471B	10-9-13	10-9-13	
Selenium	**ND**	11	6010C	10-9-13	10-9-13	
Silver	**ND**	1.1	6010C	10-9-13	10-9-13	

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-089-03					
Client ID:	**P-TP29-5**					
Arsenic	**ND**	13	6010C	10-9-13	10-9-13	
Barium	**66**	3.2	6010C	10-9-13	10-9-13	
Cadmium	**ND**	0.64	6010C	10-9-13	10-9-13	
Chromium	**23**	0.64	6010C	10-9-13	10-9-13	
Lead	**ND**	6.4	6010C	10-9-13	10-9-13	
Mercury	**ND**	0.32	7471B	10-9-13	10-9-13	
Selenium	**ND**	13	6010C	10-9-13	10-9-13	
Silver	**ND**	1.3	6010C	10-9-13	10-9-13	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-089-04					
Client ID:	**P-TP29-11**					
Arsenic	**ND**	13	6010C	10-9-13	10-9-13	
Barium	**43**	3.1	6010C	10-9-13	10-9-13	
Cadmium	**ND**	0.63	6010C	10-9-13	10-9-13	
Chromium	**39**	0.63	6010C	10-9-13	10-9-13	
Lead	**ND**	6.3	6010C	10-9-13	10-9-13	
Mercury	**ND**	0.31	7471B	10-9-13	10-9-13	
Selenium	**ND**	13	6010C	10-9-13	10-9-13	
Silver	**ND**	1.3	6010C	10-9-13	10-9-13	

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-089-05					
Client ID:	**P-TP30-6**					
Arsenic	**ND**	11	6010C	10-9-13	10-9-13	
Barium	**45**	2.8	6010C	10-9-13	10-9-13	
Cadmium	**ND**	0.56	6010C	10-9-13	10-9-13	
Chromium	**41**	0.56	6010C	10-9-13	10-9-13	
Lead	**ND**	5.6	6010C	10-9-13	10-9-13	
Mercury	**ND**	0.28	7471B	10-9-13	10-9-13	
Selenium	**ND**	11	6010C	10-9-13	10-9-13	
Silver	**ND**	1.1	6010C	10-9-13	10-9-13	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-089-06					
Client ID:	**P-TP30-10**					
Arsenic	**ND**	13	6010C	10-9-13	10-9-13	
Barium	**53**	3.2	6010C	10-9-13	10-9-13	
Cadmium	**ND**	0.64	6010C	10-9-13	10-9-13	
Chromium	**37**	0.64	6010C	10-9-13	10-9-13	
Lead	**ND**	6.4	6010C	10-9-13	10-9-13	
Mercury	**ND**	0.32	7471B	10-9-13	10-9-13	
Selenium	**ND**	13	6010C	10-9-13	10-9-13	
Silver	**ND**	1.3	6010C	10-9-13	10-9-13	

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	10-089-07					
Client ID:	**P-TP31-6**					
Arsenic	**ND**	12	6010C	10-9-13	10-9-13	
Barium	**58**	3.0	6010C	10-9-13	10-9-13	
Cadmium	**ND**	0.59	6010C	10-9-13	10-9-13	
Chromium	**36**	0.59	6010C	10-9-13	10-9-13	
Lead	**ND**	5.9	6010C	10-9-13	10-9-13	
Mercury	**ND**	0.30	7471B	10-9-13	10-9-13	
Selenium	**ND**	12	6010C	10-9-13	10-9-13	
Silver	**ND**	1.2	6010C	10-9-13	10-9-13	

Lab ID:	10-089-08					
Client ID:	**P-TP31-10**					
Arsenic	**ND**	12	6010C	10-9-13	10-9-13	
Barium	**43**	2.9	6010C	10-9-13	10-9-13	
Cadmium	**ND**	0.59	6010C	10-9-13	10-9-13	
Chromium	**31**	0.59	6010C	10-9-13	10-9-13	
Lead	**ND**	5.9	6010C	10-9-13	10-9-13	
Mercury	**ND**	0.29	7471B	10-9-13	10-9-13	
Selenium	**ND**	12	6010C	10-9-13	10-9-13	
Silver	**ND**	1.2	6010C	10-9-13	10-9-13	

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-089-09					
Client ID:	**P-TP32-1.5**					
Arsenic	**ND**	12	6010C	10-9-13	10-9-13	
Barium	**76**	3.0	6010C	10-9-13	10-9-13	
Cadmium	**ND**	0.60	6010C	10-9-13	10-9-13	
Chromium	**46**	0.60	6010C	10-9-13	10-9-13	
Lead	**72**	6.0	6010C	10-9-13	10-9-13	
Mercury	**ND**	0.30	7471B	10-9-13	10-9-13	
Selenium	**ND**	12	6010C	10-9-13	10-9-13	
Silver	**ND**	1.2	6010C	10-9-13	10-9-13	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-089-10					
Client ID:	**P-TP32-10**					
Arsenic	**ND**	12	6010C	10-9-13	10-9-13	
Barium	**57**	2.9	6010C	10-9-13	10-9-13	
Cadmium	**ND**	0.58	6010C	10-9-13	10-9-13	
Chromium	**29**	0.58	6010C	10-9-13	10-9-13	
Lead	**6.6**	5.8	6010C	10-9-13	10-9-13	
Mercury	**ND**	0.29	7471B	10-9-13	10-9-13	
Selenium	**ND**	12	6010C	10-9-13	10-9-13	
Silver	**ND**	1.2	6010C	10-9-13	10-9-13	

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-089-11					
Client ID:	**P-TP33-2**					
Arsenic	**ND**	12	6010C	10-9-13	10-9-13	
Barium	**75**	3.0	6010C	10-9-13	10-9-13	
Cadmium	**ND**	0.60	6010C	10-9-13	10-9-13	
Chromium	**38**	0.60	6010C	10-9-13	10-9-13	
Lead	**80**	6.0	6010C	10-9-13	10-9-13	
Mercury	**ND**	0.30	7471B	10-9-13	10-9-13	
Selenium	**ND**	12	6010C	10-9-13	10-9-13	
Silver	**ND**	1.2	6010C	10-9-13	10-9-13	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-089-12					
Client ID:	**P-TP33-7**					
Arsenic	**ND**	13	6010C	10-9-13	10-9-13	
Barium	**61**	3.2	6010C	10-9-13	10-9-13	
Cadmium	**ND**	0.64	6010C	10-9-13	10-9-13	
Chromium	**38**	0.64	6010C	10-9-13	10-9-13	
Lead	**25**	6.4	6010C	10-9-13	10-9-13	
Mercury	**ND**	0.32	7471B	10-9-13	10-9-13	
Selenium	**ND**	13	6010C	10-9-13	10-9-13	
Silver	**ND**	1.3	6010C	10-9-13	10-9-13	

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-089-13					
Client ID:	**P-TP33-9**					
Arsenic	**ND**	12	6010C	10-9-13	10-9-13	
Barium	**70**	3.1	6010C	10-9-13	10-9-13	
Cadmium	**ND**	0.61	6010C	10-9-13	10-9-13	
Chromium	**42**	0.61	6010C	10-9-13	10-9-13	
Lead	**62**	6.1	6010C	10-9-13	10-9-13	
Mercury	**ND**	0.31	7471B	10-9-13	10-9-13	
Selenium	**ND**	12	6010C	10-9-13	10-9-13	
Silver	**ND**	1.2	6010C	10-9-13	10-9-13	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-089-14					
Client ID:	**P-TP33-11**					
Arsenic	**ND**	13	6010C	10-9-13	10-9-13	
Barium	**57**	3.2	6010C	10-9-13	10-9-13	
Cadmium	**ND**	0.64	6010C	10-9-13	10-9-13	
Chromium	**29**	0.64	6010C	10-9-13	10-9-13	
Lead	**26**	6.4	6010C	10-9-13	10-9-13	
Mercury	**ND**	0.32	7471B	10-9-13	10-9-13	
Selenium	**ND**	13	6010C	10-9-13	10-9-13	
Silver	**ND**	1.3	6010C	10-9-13	10-9-13	

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-089-15					
Client ID:	**P-TP35-7**					
Arsenic	**ND**	12	6010C	10-9-13	10-10-13	
Barium	**80**	3.1	6010C	10-9-13	10-10-13	
Cadmium	**ND**	0.62	6010C	10-9-13	10-10-13	
Chromium	**36**	0.62	6010C	10-9-13	10-10-13	
Lead	**25**	6.2	6010C	10-9-13	10-10-13	
Mercury	**ND**	0.31	7471B	10-9-13	10-9-13	
Selenium	**ND**	12	6010C	10-9-13	10-10-13	
Silver	**ND**	1.2	6010C	10-9-13	10-10-13	
Lab ID:	10-089-16					
Client ID:	**P-TP36-10**					
Arsenic	**ND**	11	6010C	10-9-13	10-10-13	
Barium	**43**	2.9	6010C	10-9-13	10-10-13	
Cadmium	**ND**	0.57	6010C	10-9-13	10-10-13	
Chromium	**38**	0.57	6010C	10-9-13	10-10-13	
Lead	**ND**	5.7	6010C	10-9-13	10-10-13	
Mercury	**ND**	0.29	7471B	10-9-13	10-9-13	
Selenium	**ND**	11	6010C	10-9-13	10-10-13	
Silver	**ND**	1.1	6010C	10-9-13	10-10-13	

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

TOTAL METALS
EPA 6010C/7471B
METHOD BLANK QUALITY CONTROL

Date Extracted:	10-9-13
Date Analyzed:	10-9-13
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB1009SM2&MB1009S2

Analyte	Method	Result	PQL
Arsenic	6010C	**ND**	10
Barium	6010C	**ND**	2.5
Cadmium	6010C	**ND**	0.50
Chromium	6010C	**ND**	0.50
Lead	6010C	**ND**	5.0
Mercury	7471B	**ND**	0.25
Selenium	6010C	**ND**	10
Silver	6010C	**ND**	1.0

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

TOTAL METALS
EPA 6010C/7471B
DUPLICATE QUALITY CONTROL

Date Extracted:	10-9-13
Date Analyzed:	10-9-13
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	10-089-10

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**49.5**	**49.4**	0	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**24.9**	**23.4**	6	0.50	
Lead	**5.75**	**8.58**	39	5.0	C
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	1.0	

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

TOTAL METALS
EPA 6010C/7471B
MS/MSD QUALITY CONTROL

Date Extracted: 10-9-13
Date Analyzed: 10-9-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 10-089-10

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**89.7**	90	**89.6**	90	0	
Barium	100	**134**	84	**144**	95	8	
Cadmium	50.0	**43.2**	86	**44.4**	89	3	
Chromium	100	**117**	92	**119**	94	2	
Lead	250	**206**	80	**212**	83	3	
Mercury	0.500	**0.525**	105	**0.527**	105	0	
Selenium	100	**86.6**	87	**88.2**	88	2	
Silver	25.0	**19.7**	79	**19.9**	80	1	

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-089
Project: 2007-098-995

% MOISTURE

Date Analyzed: 10-9-13

Client ID	Lab ID	% Moisture
P-TP28-9	10-089-01	15
P-TP28-11	10-089-02	10
P-TP29-5	10-089-03	22
P-TP29-11	10-089-04	21
P-TP30-6	10-089-05	11
P-TP30-10	10-089-06	22
P-TP31-6	10-089-07	15
P-TP31-10	10-089-08	15
P-TP32-1.5	10-089-09	16
P-TP32-10	10-089-10	13
P-TP33-2	10-089-11	17
P-TP33-7	10-089-12	22
P-TP33-9	10-089-13	19
P-TP33-11	10-089-14	22
P-TP35-7	10-089-15	20
P-TP36-10	10-089-16	13

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 2

Company: HWA
Project Number: 2007-098-995
Project Name: Bothell Crossroads
Project Manager: Arnie Sugar
Sampled by: Norm Nielsen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☒ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ______ (other)

Laboratory Number: 10-089

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664					% Moisture
1	P-TP28-9	10/8/13	8:15	Soil	1				X									X								X
2	P-TP28-11	↓	8:20	↓	1				X									X								X
3	P-TP29-5		9:00		1				X									X								X
4	P-TP29-11		9:10		1				X									X								X
5	P-TP30-6		9:35		1				X									X								X
6	P-TP30-10		9:40		1				X									X								X
7	P-TP31-6		10:20		1				X									X								X
8	P-TP31-10		10:25		1				X									X								X
9	P-TP32-1.5		11:00		1				X									X								X
10	P-TP32-10		11:05		1				X									X								X

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		HWA	10/9/13	8:35	
Received		OSE	10/9/13	0835	
Relinquished					
Received					
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

Page 2 of 2

Laboratory Number: 10-089

Company: HWA
Project Number: 2007-098-995
Project Name: Bothell Crossroads
Project Manager: Annie Sagar
Sampled by: Norm Nielsen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☒ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664					% Moisture
11	P-TP33-2	10/8/13	11:30	Soil	1				X									X								X
12	P-TP33-7		11:35		1				X									X								X
13	P-TP33-9		11:40		3			X	X									X								X
14	P-TP33-11		11:45		3			X	X									X								X
15	P-TP35-7		13:00		1				X									X								X
16	P-TP36-10		13:25		1				X									X								X

	Signature	Company	Date	Time
Relinquished	Norm Niel	HWA	10/9/13	8:55
Received		OSE	10/9/13	08:35
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

Page 1 of 2

Company: HWA
Project Number: 2007-098-995
Project Name: Bothell Crossroads
Project Manager: Arnie Sugar
Sampled by: Norm Nielsen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☒ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ________ (other)

Laboratory Number: 10-089

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664					% Moisture
1	P-TP29-9	10/8/13	8:15	Soil	1				X									X								X
2	P-TP28-11	↓	8:20	↓	1				X									X								X
3	P-TP29-5	↓	9:00	↓	1				X									X								X
4	P-TP29-11	↓	9:10	↓	1				X									X								X
5	P-TP30-6	↓	9:35	↓	1				X									X								X
6	P-TP30-10	↓	9:40	↓	1				X									X								X
7	P-TP31-6	↓	10:20	↓	1				X									X								X
8	P-TP31-10	↓	10:25	↓	1				X									X								X
9	P-TP32-1.5	↓	11:00	↓	1				X									X								X
10	P-TP32-10	↓	11:05	↓	1				X									X								X

	Signature	Company	Date	Time
Relinquished		HWA	10/9/13	8:35
Received		OSE	10/9/13	0835
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

Page 2 of 2

Company: HWA
Project Number: 2007-098-995
Project Name: Bothell Crossroads
Project Manager: Annie Sagar
Sampled by: Norm Nielsen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☒ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ____________ (other)

Laboratory Number: 10-089

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664					% Moisture
11	P-TP33-2	10/8/13	11:30	Soil	1				X									X								X
12	P-TP33-7		11:35		1				X									X								X
13	P-TP33-9		11:40		3			X	X									X								X
14	P-TP33-11		11:45		3			X	X									X								X
15	P-TP35-7		13:00		1				X									X								X
16	P-TP36-10		13:25		1				X									X								X

	Signature	Company	Date	Time
Relinquished		HWA	10/9/13	8:55
Received		OSE	10/9/13	0835
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 21, 2013

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-995
Laboratory Reference No. 1310-182

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on October 17, 2013.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 21, 2013
Samples Submitted: October 17, 2013
Laboratory Reference: 1310-182
Project: 2007-098-995

Case Narrative

Samples were collected on October 16, 2013 and received by the laboratory on October 17, 2013. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: October 21, 2013
Samples Submitted: October 17, 2013
Laboratory Reference: 1310-182
Project: 2007-098-995

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-27-4**					
Laboratory ID:	10-182-01					
Diesel Range Organics	**ND**	32	NWTPH-Dx	10-17-13	10-18-13	X1
Lube Oil Range Organics	**ND**	64	NWTPH-Dx	10-17-13	10-18-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				
Client ID:	**P-PEX-28-4**					
Laboratory ID:	10-182-02					
Diesel Range Organics	**ND**	31	NWTPH-Dx	10-17-13	10-18-13	X1
Lube Oil	**240**	61	NWTPH-Dx	10-17-13	10-18-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*100*	*50-150*				
Client ID:	**P-PEX-29-8**					
Laboratory ID:	10-182-03					
Diesel Range Organics	**ND**	29	NWTPH-Dx	10-17-13	10-18-13	X1
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	10-17-13	10-18-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*96*	*50-150*				

Date of Report: October 21, 2013
Samples Submitted: October 17, 2013
Laboratory Reference: 1310-182
Project: 2007-098-995

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1017S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	10-17-13	10-18-13	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	10-17-13	10-18-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*102*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	10-182-03							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	X1
Lube Oil Range Organics	**ND**	**ND**				NA	NA	X1
Surrogate:								
o-Terphenyl			*96*	*104*	*50-150*			

Date of Report: October 21, 2013
Samples Submitted: October 17, 2013
Laboratory Reference: 1310-182
Project: 2007-098-995

% MOISTURE

Date Analyzed: 10-17-13

Client ID	Lab ID	% Moisture
P-PEX-27-4	10-182-01	22
P-PEX-28-4	10-182-02	18
P-PEX-29-8	10-182-03	15

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page ______ of ______

Company: HWA
Project Number: 2007-098-995
Project Name: Bothell - Paint
Project Manager: Atkins
Sampled by: Atkins

Turnaround Request (in working days)
(Check One)
☐ Same Day ☒ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ________ (other)

Laboratory Number: 10-182

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx SG cleanup	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664	% Moisture
1	P-PSa-27-4	10/16/13	1410	S	1				X													X
2	P-PEx-28-4	|	1420	|	1				X													|
3	P-PEx-29-8	|	1430	|	1				X													↓

	Signature	Company	Date	Time
Relinquished		HWA GeoSciences	10/17/13	8:00am
Received		Speedy Msngr	10-17-13	0913
Relinquished		" "	" "	0948
Received		OSE	10/17/13	0948
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 21, 2013

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-995
Laboratory Reference No. 1310-194

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on October 17, 2013.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 21, 2013
Samples Submitted: October 17, 2013
Laboratory Reference: 1310-194
Project: 2007-098-995

Case Narrative

Samples were collected on October 17, 2013 and received by the laboratory on October 17, 2013. They were maintained at the laboratory at a temperature of 2^{o}C to 6^{o}C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-30-3**					
Laboratory ID:	10-194-01					
Diesel Range Organics	**68**	28	NWTPH-Dx	10-17-13	10-18-13	X1,N
Lube Oil	**590**	55	NWTPH-Dx	10-17-13	10-18-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*116*	*50-150*				
Client ID:	**P-PEX-31-7**					
Laboratory ID:	10-194-02					
Diesel Range Organics	**ND**	27	NWTPH-Dx	10-17-13	10-18-13	X1
Lube Oil	**180**	54	NWTPH-Dx	10-17-13	10-18-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*95*	*50-150*				

Date of Report: October 21, 2013
Samples Submitted: October 17, 2013
Laboratory Reference: 1310-194
Project: 2007-098-995

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1017S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	10-17-13	10-18-13	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	10-17-13	10-18-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*102*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	10-182-03							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	X1
Lube Oil Range Organics	**ND**	**ND**				NA	NA	X1
Surrogate:								
o-Terphenyl			*96*	*104*	*50-150*			

Date of Report: October 21, 2013
Samples Submitted: October 17, 2013
Laboratory Reference: 1310-194
Project: 2007-098-995

% MOISTURE

Date Analyzed: 10-17-13

Client ID	Lab ID	% Moisture
P-PEX-30-3	10-194-01	9
P-PEX-31-7	10-194-02	7

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 1

Laboratory Number: 10-194

Company: HWA
Project Number: 2007-098-995
Project Name: Bothell Paint
Project Manager: Atkins
Sampled by: Anderson

Turnaround Request (in working days)
(Check One)
☐ Same Day ☑ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx SG Cleanup	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664					% Moisture
1	P-PEX-30-3	10/17/2013	14:25 ↕	Soil	1				✓																	X
2	P-PEX-31-7	10/17/2013	14:30	⊥	⊥				✓																	X

	Signature	Company	Date	Time
Relinquished		HWA	10/17/13	3:15 pm
Received		OSE	10/17/13	3:15 pm
Relinquished				
Received				
Relinquished				
Received				

Comments/Special Instructions:

Reviewed/Date

Reviewed/Date

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 21, 2013

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re:	Analytical Data for Project 2007-098-995
	Laboratory Reference No. 1310-205

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on October 18, 2013.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 21, 2013
Samples Submitted: October 18, 2013
Laboratory Reference: 1310-205
Project: 2007-098-995

Case Narrative

Samples were collected on October 18, 2013 and received by the laboratory on October 18, 2013. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: October 21, 2013
Samples Submitted: October 18, 2013
Laboratory Reference: 1310-205
Project: 2007-098-995

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**P-PEX-32-8**					
Laboratory ID:	10-205-01					
Diesel Range Organics	**ND**	27	NWTPH-Dx	10-18-13	10-18-13	X1
Lube Oil	**150**	54	NWTPH-Dx	10-18-13	10-18-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*100*	*50-150*				
Client ID:	**P-PEX-33-6**					
Laboratory ID:	10-205-02					
Diesel Range Organics	**ND**	28	NWTPH-Dx	10-18-13	10-18-13	X1
Lube Oil	**69**	55	NWTPH-Dx	10-18-13	10-18-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*84*	*50-150*				
Client ID:	**P-PEX-34-8**					
Laboratory ID:	10-205-03					
Diesel Range Organics	**ND**	29	NWTPH-Dx	10-18-13	10-18-13	X1
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	10-18-13	10-18-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*81*	*50-150*				
Client ID:	**P-PEX-35-5**					
Laboratory ID:	10-205-04					
Diesel Range Organics	**65**	29	NWTPH-Dx	10-18-13	10-18-13	X1
Lube Oil	**310**	57	NWTPH-Dx	10-18-13	10-18-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				
Client ID:	**P-PEX-36-7**					
Laboratory ID:	10-205-05					
Diesel Range Organics	**ND**	29	NWTPH-Dx	10-18-13	10-18-13	X1
Lube Oil	**150**	57	NWTPH-Dx	10-18-13	10-18-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*71*	*50-150*				

Date of Report: October 21, 2013
Samples Submitted: October 18, 2013
Laboratory Reference: 1310-205
Project: 2007-098-995

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1018S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	10-18-13	10-18-13	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	10-18-13	10-18-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*96*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	10-205-03							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	X1
Lube Oil Range Organics	**ND**	**ND**				NA	NA	X1
Surrogate:								
o-Terphenyl			*81*	*81*	*50-150*			

Date of Report: October 21, 2013
Samples Submitted: October 18, 2013
Laboratory Reference: 1310-205
Project: 2007-098-995

% MOISTURE

Date Analyzed: 10-18-13

Client ID	Lab ID	% Moisture
P-PEX-32-8	10-205-01	7
P-PEX-33-6	10-205-02	9
P-PEX-34-8	10-205-03	14
P-PEX-35-5	10-205-04	13
P-PEX-36-7	10-205-05	13

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 1

Laboratory Number: 10-205

Company: HWA
Project Number: 2007-098-995
Project Name: Bothell Paint
Project Manager: ATKINS
Sampled by: Anderson

Turnaround Request (in working days)
(Check One)
☐ Same Day ☑ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals/ MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664A							% Moisture
1	P-PEX-32-8	10/18/13	8:30	soil	1				✓																		✓
2	P-PEX-33-6	10/18/13	8:40						✓																		
3	P-PEX-34-8	10/18/13	8:45						✓																		
4	P-~~PE~~X 35-5	10/18/13	9:05						✓																		
5	P-PEX-36-7	10/18/13	9:15						✓																		

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		HWA	10/18/2013	11:34	Please use Silica gel
Received		OSE	10/18/13	1134	
Relinquished					
Received					
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

APPENDIX C

DATA QUALITY ASSESSMENT

Introduction

This appendix presents a data quality assessment for the Bothell Paint and Decorating site interim action soil cleanup. This appendix addresses data quality for the 2010 and 2013 interim action cleanups.

Quality is the degree to which a set of inherent characteristics fulfills project requirements. Quality assurance (QA) is the processes of auditing the project's quality requirements and the results from quality control measurements to ensure appropriate quality standards are used. Quality control (QC) is the process of monitoring and recording results of executing the project quality activities to assess performance and to recommend necessary changes (PMI, 2008).

The principal ingredients that make up suitable data quality or "good data" are (Flory, 2000):

1. **Clearly stated measurement purposes:** Must include the chemical compounds to be analyzed; the sample matrices to be submitted; the intended use of the data, and the associated detection limits, accuracy, and precision required.

2. **Data management:** Refers to sample tracking (chain-of-custody) and associated activities that guarantee the laboratory results are associated with the correct sample.

3. **Sampling:** Includes a technically valid sampling plan that is correctly implemented to properly collect, identify, preserve, store and prepare samples for analysis.

4. **Analytical method:** Must have sufficient selectivity, detection limits, accuracy and precision to be technically valid.

5. **Quality control samples:** Must include sufficient quality control samples to support the necessary statements of accuracy, precision, and detection limits. These include blanks (field, trip, laboratory, reagent), duplicate measurements, matrix spikes, laboratory control samples, and performance evaluation samples.

6. **Quality control limits:** Includes clearly stated acceptable limits for quality control samples such as allowable blank contamination; precision of duplicate samples; and accuracy of matrix spikes, performance evaluation samples and laboratory control samples. Calibration frequency and linearity may also be included.

7. **Documentation:** Must be comprehensive enough to allow a third party evaluator to independently verify the suitability of the sample data.

The process of verifying the suitability of the data is termed data quality assessment. Data quality assessment is a determination of the suitability of the data for the intended use. It includes the four major tasks of (a) data management, (b) data validation, (c) data qualification/review (flagging), and (d) the determination of suitability. Data management includes determining the completeness of the data documentation. Environmental data validation primarily entails checking to see if the quality control requirements of the method have been met. Data qualification is the application of flags to the data that reflect the failures found during validation. The final determination of suitability must consider the technical validity of the data as well as the data qualifiers and be consistent with the intended use of the analytical data (Flory, 2000).

There were two components to the data quality program for the Bothell Paint and Decorating site cleanup: field and laboratory. Both components followed Washington Department of Ecology guidance (Ecology, 2004). Also, the *Compliance Monitoring Quality Assurance Project Plan*, *Bothell Paint and Decorating Site* (Attachment 1 within the *Interim Action Work Plan* (Parametrix, 2010)) specified the sample collection procedures and analysis, and defined the data quality objectives (DQOs) and criteria for the interim action cleanup. However, the *Interim Action Work Plan* and the *Compliance Monitoring Quality Assurance Project Plan* did not consistently list chemicals of potential concern for the Site which resulted in HWA field personnel not initially specifying soil analyses for polynuclear aromatic hydrocarbons (PAHs) to confirming soil cleanup because of this confusion.

2010 Field QC Methods

Field QC included proper documentation of field activities in a field log book and daily field reports that provided a daily record of significant events, observations, deviations from the sampling plan and measurements collected during the field activities. Field personnel followed standard QC procedures to collect and transport samples including collection of duplicate samples, decontamination of reusable sampling equipment between samples, labeling samples, and following chain of custody procedures to transport samples to the laboratory. Field personnel photographically documented significant events and observations during the interim action cleanup.

Field QC methods deviated from the *Compliance Monitoring Quality Assurance Project Plan* in two instances during the cleanup:

1. Because of inconsistencies between the main text of the *Interim Action Work Plan* (Parametrix, 2010) and the *Compliance Monitoring Quality Assurance Project Plan* contained therein in listing carcinogenic polynuclear aromatic hydrocarbons

(cPAHs) as chemicals of potential concern at the Site, cPAHs were not specified on sample Chain of Custody forms for soil samples collected early in the site cleanup; this resulted in PAH analyses for 18 samples being performed out of holding times.
2. Five soil samples for analyses of halogenated volatile organic compounds (HVOCs) were collected in jars without stir bars – a deviation from the analytical method specifications.

As discussed below in the Data Verification section of this appendix, neither oversight is thought to have significantly compromise the reported analytical results.

2013 Field QC Methods

The same field QC procedures followed for the 2010 interim action cleanup were followed in 2013 except that no duplicate samples were collected during the 2013 soil cleanup due to the small number of samples submitted to the laboratory.

2010 and 2013 Laboratory QC Methods

OnSite Environmental Inc. of Redmond, Washington performed nearly all sample analyses. OnSite Environmental is accredited by the Washington Department of Ecology (Accreditation #C591-13) for all analyses performed for the interim action cleanup except for NWEPH analysis. Therefore, OnSite Environmental subcontracted NWEPH and some NWVPH analyses to ALS Environmental (Ecology Accreditation # C601-13a) in Everett, and also to Analytical Resources, Inc. (Ecology Accreditation # C558-13b) in Tukwila, Washington. ALS Environmental and Analytical Resources, Inc. are both accredited by the Department of Ecology for NWEPH and NWVPH analyses.

Specific laboratory QC consisted of the following (OnSite Environmental, 2008; Ecology, 2004):

- **Sample Batching.** A batch consisted of up to twenty samples in addition to any quality control samples that were required. The samples were extracted, digested, and prepared for analysis within a twelve-hour window. If more than twenty samples were to be extracted, a second batch of quality control samples was generated.

- **Method Blanks.** Method blanks were used to ensure that the extraction and analysis procedures did not contribute contamination to the analysis. Method blanks were prepared and analyzed in the laboratory to document the response of the measurement system to a sample containing effectively none of the analyte of interest. A positive blank response can be due to a variety of factors related to the procedure, equipment, or reagents. Unusually high blank responses indicate laboratory contamination. The method blank response becomes very important when the analyte concentration is near the detection limit.

- **Spike Blanks.** A spike blank is a laboratory QC sample prepared by adding a known amount of the target analyte(s) to a laboratory blank sample. This is a measure of the accuracy of the test procedure. If an analyte for any spike blank was outside of quality control criteria, then that particular analyte was evaluated and actions were taken to bring the analysis into control.

- **Duplicate Samples.** Duplicate samples were used to ensure that sample results could be reproduced in a precise manner.

- **Surrogates.** Surrogate compounds are compounds similar to the analytes of interest that were added to the sample at a known concentration in order to track the accuracy of the sample extraction and analysis. Some methods for organics analyses specify that all samples, including QC samples, be spiked with surrogate compounds at the start of the procedure. Because surrogate compounds are not expected to be present in the samples, they give analytical responses that can be distinguished from those of the analytes of interest. Surrogate percent recoveries (defined below) provided an estimate of accuracy for the entire analytical procedure. The standard deviations of surrogate results provided an estimate of analytical precision, while the mean percent recoveries indicated whether or not the sample results were biased.

- **Spiked Blank Duplicates.** These were a second laboratory spiked blank laboratory QC sample. The difference in the laboratory’s recovery of the spiked blank and spiked blank duplicate was a measure of analytical precision, and was reported as relative percent difference (RPD) as defined below.

- **Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples.** Matrix spike samples were used to ensure the analytes of interest could be accurately recovered from the sample matrix. The matrix spike duplicate was also used to ensure the analytes could be repeatedly recovered in an accurate and precise manner.

2010 and 2013 Analytical Accuracy and Precision

Routine laboratory QC analyses provided information about accuracy and precision. The types of quality control samples differed depending on the method specifications. Analytical accuracy was assessed through the surrogate, spike blank, and matrix spike analysis as specified by the analytical method. Accuracy was expressed as percent recovery:

Percent Recovery (%R) = $100*(X_s/C_t)$

Where X_s was the observed concentration of the analyte, and C_t was the true concentration of the analyte. The acceptable range for accuracy was determined by the method or by control charting of actual laboratory samples. A control chart is a graphical representation of the precision of QC results showing whether the measurement system is in statistical control. The laboratory analyst was responsible for verifying that the surrogate, spike blank and MS/MSD percent recoveries meet the quality control limits.

Analytical precision was assessed through analysis of the sample duplicates or matrix spike duplicates as specified by the analytical method. Precision was expressed as relative percent difference:

Relative Percent Difference (RPD) = $100*(X_1-X_2)/((X_1+X_2)/2)$

Where: X_1 was the concentration in the first duplicate sample and X_2 was the concentration in the second duplicate sample. The acceptable range for precision was determined by the method or by control charting of actual laboratory samples. The analyst was responsible for verifying that the duplicate or MS/MSD recoveries meet the quality control limits.

2010 and 2013 Practical Quantitation Limits and Method Detection Limits

OnSite Environmental reported all analytical results for the interim action cleanup as practical quantitation limits (PQLs). PQLs are the lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. OnSite Environmental’s routine PQLs for all interim action analyses were lower than regulatory cleanup levels thus ensuring confirmation of successful cleanup. OnSite Environmental conducts studies annually for all accredited test methods to determine its PQLs.

Method detection limits (MDLs) are the lowest concentration that can be detected by an instrument with correction for the effects of sample matrix and method-specific parameters such as sample preparation. OnSite Environmental conducts studies annually for all accredited test methods to determine its method detection limits. MDLs are defined at 40 CFR Part 136 as three times the standard deviation of replicate spiked analyses. An analytical PQL is generally 5-10 times the MDL. MDLs are only a measure of the ability of the test procedure to generate a positive response and have nothing to do with the accuracy of that response (Quality Assurance Associates, 2010).

2010 Data Verification

Seventy soil samples were analyzed for the 2010 interim action cleanup. The analyses performed included:

- NWTPH-Gx - Gasoline range petroleum hydrocarbons using Ecology Method NWTPH-Gx
- NWTPH-Dx - Diesel and oil range petroleum hydrocarbons using Ecology Method NWTPH-Dx
- BTEX - Benzene, toluene, ethylbenzene, and xylenes using EPA Method 8021
- RCRA 8 Metals - Arsenic, barium, cadmium, chromium, lead, selenium, silver using EPA Methods 6010B and 6020; and mercury using EPA Method 7471A
- VOCs - Volatile organic hydrocarbons by EPA Method 8260B
- HVOCs - Halogenated volatile organic hydrocarbons by EPA Method 8260B
- PAHs - Polynuclear aromatic hydrocarbons by EPA Method 8270D/SIM
- VPH/EPH - Ecology methods VPH and EPH for volatile and extractable petroleum hydrocarbon fractions
- TCLP Metals - Toxicity Leaching Procedure using EPA Methods 1311, 6010B, and 7470A for RCRA 8 metals

Analytical data are summarized in Table 2 of the cleanup report. Verification of the data included checking holding times, checking that the laboratory performed the analyses requested on the chain of custody form, and that the laboratory's QC results were within established control limits. Table C-1 below summarizes the data verification results. Holding times, surrogate percent recoveries, method blank analytical results, lab duplicate RPDs, matrix spike/matrix spike duplicate percent recoveries and RPDs, and spiked blank/spiked blank duplicate percent recoveries and RPDs were all within control limits with the following exceptions:

- Eighteen of 31 soil samples submitted for PAH analyses (EPA Method 8270D/SIM) were analyzed after the 14 day holding time. This was due to field personnel not specifying PAH analysis when also specifying NWTPH-Dx analysis on the chain of custody forms when the sample was delivered to the lab. Table 3-4 (Summary of Sample Types, Analyses, and Number) in the *Compliance*

Monitoring Quality Assurance Project Plan (Parametrix, 2010) specified that 29 PAH analyses plus one duplicate carcinogenic PAH (cPAH) analysis be performed to confirm cleanup; however, neither the *Interim Action Work Plan* text nor the text of the *Compliance Monitoring Quality Assurance Project Plan* listed cPAHs as chemical of potential concern at the Site that should be analyzed. HWA caught this inconsistency in a project quality control audit two weeks into the site cleanup and asked OnSite Environmental to perform PAH analyses on the stored samples. OnSite Environmental's policy is to store samples in a refrigerator at -7 to -20 degrees Celsius for 30 days from receipt. Of these 18 soil samples, 13 were confirmation samples. It is HWA's opinion that the PAH analytical data reported in the laboratory certificates and summarized in Table 2 should be considered valid and acceptable for further use because the samples were refrigerated at low temperatures while stored in sealed glass sample jars at the laboratory thus minimizing loss of semi-volatile PAHs. In addition, the PAH concentrations in confirmation samples analyzed within the holding time were similar to concentrations in samples prepared out of the holding time, indicating that the out-of-holding-time analytical results were not significantly biased.

- **Sample P-TP-23-2** contained 280 mg/Kg of primarily lube oil range TPH as well as low concentrations of PAHs and volatile organic compounds. The NWEPH/NWVPH sample analyses, however, did not detect any aliphatic and aromatic TPH across the entire TPH range, suggesting sample non-heterogeneity or laboratory QC issues. OnSite Environmental, not being Ecology certified for NWEPH analysis, split this sample and couriered the splits to ALS Environmental in Everett and to Analytical Resources, Inc. in Tukwila where the analyses were performed. The sample splitting likely impacted sample integrity resulting in the reported low EPH and VPH concentrations.

- **Samples P-TP-5-3, P-TP-22-3, P-TP-23-2, P-TP-23-4, P-TP-24-4, P-TP-25-4, and P-TP-25-6.** One of the OnSite Environmental's mass spectrometer's automatically injected internal standards for the volatile organics compounds (Method 8260B) analysis did not pass due to matrix effects. Each sample was re-run with similar results; all volatile organic compound (VOC) gas chromatography results from bromobenzene onward, including PQLs, should be considered estimates for these samples. However, all volatile organic COPCs for the interim action cleanup (e.g., BTEX and MTBE) eluted before bromobenzene from the gas chromatography column; therefore, the reported analytical results for volatile organic COPCs were accurate for these samples.

- **Samples P-TP-22-3, P-TP-23-2, P-TP-23-4, P-TP-24-4, P-TP-25-4, P-TP-25-6, P-TP-26-5, and P-TP-27-3.** Due to the high concentration of mercury in the lab's QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. However, the spike blank recovery was 96 percent. This QC issue arose because the QC sample for the batch had a high mercury concentration; the QC sample was from the site of another client of OnSite Environmental. For all other metals analyses the MS/MSD percent recoveries were within control limits for these samples as also were the method blank and lab duplicate QC checks. Consequently, HWA's opinion is that the mercury concentrations reported for these samples are accurate.

- **Samples P-PEX-16-10, P-PEX-17-7, P-PEX-18-9.** For the Method 6010B analysis (metals) the lab's duplicate QC sample RPD for lead was outside control limits due to high result variability when the analyte concentrations were less than five times the PQL. Poor duplicate RPDs for any analytes at low concentrations (i.e., near the PQL) are not uncommon, and are not considered a major QC issue. The duplicate QC sample for this batch was from another of OnSite Environemental's client's site, and had a very low lead concentration. Bothell samples in this batch P-PEX-16-10, P-PEX-17-7, P-PEX-18-9 were not confirmation samples. These three soil samples had elevated lead concentrations, and the areas represented by the samples were subsequently excavated. Consequently, this QC issue did not compromise the analytical results of other left-in-place confirmation samples.

- **Samples P-TP-1-3, P-TP-2-2, P-TP-3-3, P-TP-4-3, P-TP-18-2, P-TP-18-7, P-PEX-10-3, P-PEX-12-3, and P-PEX-15-3.** Hydrocarbons in the lube oil range impacted the diesel range result (an N Flag). This QC issue arose due to diesel and fuel oil's overlapping hydrocarbon ranges, and results in the reported concentration of the less dominant product being slightly higher than may actually be the case. Of these 9 samples, only P-PEX-10-3 and P-PEX-12-3 were confirmation samples of the excavation sidewall in an area having known high TPH concentrations and left in place along SR 522 to maintain road and utility integrity. The areas represented by the other 7 samples were subsequently excavated. Consequently, this QC issue did not compromise the analytical results of other left-in-place confirmation samples.

- **Sample P-TP-17-2.** The laboratory misread the chain of custody form and reported this as sample P-TP-12-2. This misunderstanding caused no confusion with other samples because HWA did not collect a sample at 2 feet below grade in test pit 12. This sample is correctly listed as P-TP-17-2 in the text, tables, and figures of the interim action cleanup report and Table C-1 of this appendix.

- **Samples P-PEX-19-7, P-PEX-20-8, P-PEX-21-11, P-PEX-22-10, and P-PEX-23-5.** Samples for halogenated volatile organic compound analysis (HVOCs by Method 8260B) were not collected in Method 5035 40-milliliter VOA vials containing a stir bar per the Method 8260B specification. The lab extracted the sample from the associated 4-ounce sample jar and analyzed. All HVOC compounds in these 5 samples were present in concentrations less than the lab's PQLs – the same results as for the 9 other soil samples analyzed for HVOCs during the interim action cleanup. Therefore, it is HWA's opinion that the lab having extracted the sample from the 4-ounce sample jar did not compromise confirmation of site cleanup.

2010 Evaluation of Field Duplicate Sample Results

Field duplicate samples were collected at an approximate frequency of one duplicate per 16.5 soil samples – a frequency slightly more than the ratio of one duplicate per 20 samples specified in the *Compliance Monitoring Quality Assurance Project Plan* (Parametrix, 2010). The *Compliance Monitoring Quality Assurance Project Plan* did not specify quality criteria for field duplicate samples; HWA thus used the following U.S. Army Corps of Engineers criteria (Grant, Jenkins, and Mudambi, 1996) to evaluate the field duplicate analytical results:

Analytical Result	Criteria	Conclusion
Both results less than PQL	PQLs differ by more than ±25%	Disagreement
One result greater than PQL and one result less than PQL	>5x difference >10x difference	Disagreement Major disagreement
Both results greater than PQL	RPD >30% RPD >65%	Disagreement Major disagreement

Table C-2 summarizes the analytical results of the field duplicate samples. As can be seen, field duplicate sample analytical results were generally within the quality criteria listed above except for duplicates P-PEX-19-7 and P-PEX-20-8 which had major disagreement in the oil, lead, and cPAH results and disagreement in the total naphthalenes results probably because the samples were collected in a wood waste disposal area having a very heterogeneous distribution of contaminants. The cadmium results for duplicate samples P-PEX-6-3 and P-PEX-Dup disagreed, but other results were within the quality criteria. HWA attributes field duplicate variability to uneven distribution of COPCs over short distances, but as Table C-2 demonstrates, field duplicate analytical results were generally within the quality criteria.

2013 Data Verification

Twenty-one soil samples were analyzed for this soil cleanup. The analyses performed included:

- NWTPH-Gx – Gasoline range petroleum hydrocarbons using Ecology Method NWTPH-Gx

- NWTPH-Dx – Diesel and oil range petroleum hydrocarbons using Ecology Method NWTPH-Dx

- RCRA 8 Metals – Arsenic, barium, cadmium, chromium, lead, selenium, silver using EPA Method 6010C and mercury using EPA Method 7471B

Analytical data are summarized in Table 2A of the cleanup report. Verification of the data included checking holding times, checking that the laboratory performed the analyses requested on the chain of custody form, and that the laboratory's QC results were within established control limits. Holding times, surrogate percent recoveries, method blank analytical results, lab duplicate RPDs, matrix spike/matrix spike duplicate percent recoveries and RPDs, and spiked blank/spiked blank duplicate percent recoveries and RPDs were all within control limits.

The lab identified two QC issues for the 2013 data. The first was a C flag for the laboratory duplicate lead analysis of the October 8th soil samples. The lab duplicate RPD for lead was outside control limits due to high result variability because the lead concentrations were within five times the quantitation limit. HWA does not think this lab QC issue affects the validity of the soil metals data because when detected above the PQL the lead concentrations in the October 8th samples were all approximately an order of magnitude less than the MTCA Method A soil cleanup level of 250 mg/Kg.

The second QC issue for the 2013 data was an N flag for the WTPH-Dx analysis of sample P-PEX-30-3. The N flag indicated that oil range hydrocarbons in that sample impacted the diesel range hydrocarbon result. HWA does not think that this overlap of diesel and oil range hydrocarbons affects conclusions drawn from the analytical data, as the total diesel and oil range hydrocarbon content of 658 mg/Kg for sample P-PEX-30-3 (68 mg/Kg diesel and 590 mg/Kg oil) is much less than the risk-based site cleanup levels; i.e., if all the hydrocarbons were either diesel or oil, the total concentration would be less than the cleanup level.

2013 Evaluation of Field Duplicate Sample Results

No duplicate samples were collected during the soil cleanup evaluation due to the small number of samples submitted to the laboratory.

2010 and 2013 Project Documentation and Data Management

Field personnel used bound waterproof field notebooks to record significant events and observations during the interim action cleanup. Entries were made in waterproof ink or pencil, signed, and dated. Field personnel also completed daily field reports and forwarded copies of the field report to City of Bothell representatives. All field logs, figures, and records are retained in project files at HWA's office.

Digital photographs taken of field activities and significant events are stored on HWA's computer system with the following information noted:

- Date, time, and location of photograph taken
- Description of photograph taken
- Reasons photograph was taken
- Viewing direction

Original laboratory certificates containing analytical results and laboratory QC data are documented in Appendix B of this report. An electronic copy of each laboratory certificate is stored on HWA's computer network server as PDF files in the project folder. In addition, OnSite Environmental's Electronic Data Deliverables (EDD) packages for all analytical results are stored on HWA's computer network server as Microsoft Excel spreadsheets in the project folder. HWA routinely backs up its network servers.

Summary

- With the three exceptions noted above, field QC procedures were followed. The exceptions are not thought to have compromised data confirming site cleanup.

- The voluminous field and laboratory data generated during the interim action cleanup are technically complete, accessible, and efficiently handled.

- Except for the 18 PAH analyses noted above, all samples collected during the interim action cleanup were analyzed within holding times. Appropriate standard analytical methods were used. The few quality control issues noted above did not compromise the analytical accuracy or precision of the data.

- All reported data should be considered valid as qualified and acceptable for further use.

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Table C-1
Analytical Quality Control Summary

Sample ID	Matrix	OnSite Environmental Lab ID	Sample Date	On COC Form?	Requested Analyses[1]	Lab Prepared Sample Within Holding Time	Surrogate Recovery Within Control Limits	Method Blank Within Control Limits	Lab Duplicate Within Control Limits	Matrix Spike / Matrix Spike Duplicate Within Control Limits	Spiked Blank / Spiked Blank Duplicate Within Control Limits	Notes
P-TP-1-3	Soil	1008-195-01	8/25/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals PAHs NWVPH/NWEPH	√	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result VPH/EPH analyses performed by Analytical Resources Inc. and ALS Environmental labs on sample splits prepared by OnSite Environmental Inc.
P-TP-1-6	Soil	1008-195-02	8/25/10	√	NWTPH-Dx RCRA 8 Metals	√	√	√	√	√	√	
P-TP-2-2	Soil	1008-195-03	8/25/10	√	NWTPH-Dx	√	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result
P-TP-2-6	Soil	1008-195-04	8/25/10	√	NWTPH-Dx PAHs	See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-TP-3-3	Soil	1008-195-05	8/25/10	√	NWTPH-Dx	√	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result
P-TP-3-7	Soil	1008-195-06	8/25/10	√	NWTPH-Dx	√	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-TP-4-3	Soil	1008-195-07	8/25/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals PAHs NWVPH/NWEPH	√	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result VPH/EPH analyses were performed by Analytical Resources Inc. and ALS Environmental labs on sample splits prepared by OnSite Environmental Inc.
P-TP-4-6	Soil	1008-195-08	8/25/10	√	NWTPH-Dx RCRA 8 Metals	√	√	√	√	√	√	
P-TP-5-1	Soil	1008-195-09	8/25/10	√	NWTPH-Gx NWTPH-Dx VOCs	√	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample Z Flag for NWTPH-Gx analysis - The sample chromatogram is similar to mineral spirits
P-TP-5-3	Soil	1008-195-10	8/25/10	√	NWTPH-Gx NWTPH-Dx VOCs PAHs	See Notes	√	√	√	See Notes	√	One of the lab's internal standards for the 8260B analysis did not pass due to matrix effects. The sample was re-run with similar results; all VOC results from Bromobenzene onward, including PQLs, should be considered estimates Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-TP-6-1	Soil	1008-195-11	8/25/10	√	NWTPH-Gx NWTPH-Dx VOCs	√	√	√	√	√	√	
P-TP-7-2	Soil	1008-195-12	8/25/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals	√	√	√	√	√	√	
P-TP-7-5	Soil	1008-195-13	8/25/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals	√	√	√	√	√	√	
P-TP-8-3	Soil	1008-195-14	8/25/10	√	NWTPH-Dx RCRA 8 Metals	√	√	√	√	√	√	
P-TP-8-6	Soil	1008-195-15	8/25/10	√	NWTPH-Dx RCRA 8 Metals	√	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-TP-9-5	Soil	1008-217-01	8/26/10	√	NWTPH-Dx RCRA 8 Metals PAHs	See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-TP-9-8	Soil	1008-217-02	8/26/10	√								Sample put on hold at HWA GeoSciences' request
P-TP-10-6	Soil	1008-217-03	8/26/10	√	NWTPH-Dx RCRA 8 Metals PAHs	See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-TP-11-5	Soil	1008-217-04	8/26/10	√	NWTPH-Dx RCRA 8 Metals PAHs	See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-TP-11-7	Soil	1008-217-05	8/26/10	√								Sample put on hold at HWA GeoSciences' request
P-TP-12-4	Soil	1008-217-06	8/26/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals	√	√	√	√	√	√	
P-TP-12-6	Soil	1008-217-07	8/26/10	√	NWTPH-Dx RCRA 8 Metals	√	√	√	√	√	√	
P-TP-13-1	Soil	1008-217-08	8/26/10	√								Sample put on hold at HWA GeoSciences' request

Table C-1
Analytical Quality Control Summary

Sample ID	Matrix	OnSite Environmental Lab ID	Sample Date	On COC Form?	Requested Analyses[1]	Lab Prepared Sample Within Holding Time	Surrogate Recovery Within Control Limits	Method Blank Within Control Limits	Lab Duplicate Within Control Limits	Matrix Spike / Matrix Spike Duplicate Within Control Limits	Spiked Blank / Spiked Blank Duplicate Within Control Limits	Notes
P-TP-13-3	Soil	1008-217-09	8/26/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals PAHs NWVPH/NWEPH	See Notes	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met VPH/EPH analyses were performed by Analytical Resources Inc. and ALS Environmental labs on sample splits prepared by OnSite Environmental Inc.
P-TP-13-7	Soil	1008-217-10	8/26/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals PAHs	See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-TP-14-1	Soil	1008-217-11	8/26/10	√	RCRA 8 Metals	√	√	√	√	√	√	
P-TP-15-1	Soil	1008-217-12	8/26/10	√	RCRA 8 Metals	√	√	√	√	√	√	
P-TP-16-1	Soil	1008-217-13	8/26/10	√	RCRA 8 Metals	√	√	√	√	√	√	
P-TP-17-2	Soil	1008-217-14	8/26/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals	√	√	√	√	√	√	Lab misread COC form and reported sample as P-TP-12-2
P-TP-17-7	Soil	1008-217-15	8/26/10	√	NWTPH-Dx	√	√	√	√	√	√	
P-TP-18-2	Soil	1008-217-16	8/26/10	√	NWTPH-Dx PAHs NWVPH/NWEPH	See Notes	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met VPH/EPH analyses were performed by Analytical Resources Inc. and ALS Environmental labs on sample splits prepared by OnSite Environmental Inc.
P-TP-18-7	Soil	1008-217-17	8/26/10	√	NWTPH-Dx RCRA 8 Metals	√	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result
P-TP-19-3	Soil	1008-217-18	8/26/10	√	NWTPH-Dx	√	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-TP-19-7	Soil	1008-217-19	8/26/10	√	NWTPH-Dx RCRA 8 Metals	√	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-TP-20-4	Soil	1008-217-20	8/26/10	√	NWTPH-Dx PAHs	See Notes	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-TP-20-6	Soil	1008-217-21	8/26/10	√								Sample put on hold at HWA GeoSciences' request
P-TP-21-3	Soil	1008-217-22	8/26/10	√	NWTPH-Dx RCRA 8 Metals	√	√	√	√	√	√	
P-TP-21-7	Soil	1008-217-23	8/26/10	√								Sample put on hold at HWA GeoSciences' request
P-TP-22-3	Soil	1008-221-01	8/27/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals VOCs	√	√	√	√	See Notes	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses the MS/MSD recoveries were within control limits One of the lab's internal standards for the 8260B (VOCs) analysis did not pass due to matrix effects; the sample was re-run with similar results. All VOC results from Bromobenzene onward, including PQLs, should be considered estimates

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Sample ID	Matrix	OnSite Environmental Lab ID	Sample Date	On COC Form?	Requested Analyses[1]	Lab Prepared Sample Within Holding Time	Surrogate Recovery Within Control Limits	Method Blank Within Control Limits	Lab Duplicate Within Control Limits	Matrix Spike / Matrix Spike Duplicate Within Control Limits	Spiked Blank / Spiked Blank Duplicate Within Control Limits	Notes
P-TP-23-2	Soil	1008-221-02	8/27/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals VOCs PAHs NWVPH/NWEPH	See Notes	√	√	√	See Notes	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses the MS/MSD recoveries were within control limits One of the lab's internal standards for the 8260B (VOCs) analysis did not pass due to matrix effects; the sample was re-run with similar results. All VOC results from Bromobenzene onward, including PQLs, should be considered estimates VPH/EPH analyses were performed by Analytical Resources Inc. and ALS Environmental labs on sample splits prepared by OnSite Environmental Inc.
P-TP-23-4	Soil	1008-221-03	8/27/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals VOCs	√	√	√	√	See Notes	√	Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses the MS/MSD recoveries were within control limits One of the lab's internal standards for the 8260B (VOCs) analysis did not pass due to matrix effects; the sample was re-run with similar results. All VOC results from Bromobenzene onward, including PQLs, should be considered estimates
P-TP-24-4	Soil	1008-221-04	8/27/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals PAHs VOCs	See Notes	√	√	√	See Notes	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses the MS/MSD recoveries were within control limits One of the lab's internal standards for the 8260B (VOCs) analysis did not pass due to matrix effects; the sample was re-run with similar results. All VOC results from Bromobenzene onward, including PQLs, should be considered estimates
P-TP-25-4	Soil	1008-221-05	8/27/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals PAHs VOCs	See Notes	√	√	√	See Notes	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses the MS/MSD recoveries were within control limits One of the lab's internal standards for the 8260B (VOCs) analysis did not pass due to matrix effects; the sample was re-run with similar results. All VOC results from Bromobenzene onward, including PQLs, should be considered estimates
P-TP-25-6	Soil	1008-221-06	8/27/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals VOCs	√	√	√	√	See Notes	√	Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses the MS/MSD recoveries were within control limits One of the lab's internal standards for the 8260B (VOCs) analysis did not pass due to matrix effects; the sample was re-run with similar results. All VOC results from Bromobenzene onward, including PQLs, should be considered estimates
P-TP-26-5	Soil	1008-221-07	8/27/10	√	NWTPH-Dx RCRA 8 Metals	√	√	√	√	See Notes	√	Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses the MS/MSD recoveries were within control limits
P-TP-26-7	Soil	1008-221-08	8/27/10	√								Sample put on hold at HWA GeoSciences' request
P-TP-27-3	Soil	1008-221-09	8/27/10	√	NWTPH-Dx RCRA 8 Metals	√	√	√	√	See Notes	√	Due to the high concentration of mercury in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 96%. For all other analyses the MS/MSD recoveries were within control limits

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Sample ID	Matrix	OnSite Environmental Lab ID	Sample Date	On COC Form?	Requested Analyses[1]	Lab Prepared Sample Within Holding Time	Surrogate Recovery Within Control Limits	Method Blank Within Control Limits	Lab Duplicate Within Control Limits	Matrix Spike / Matrix Spike Duplicate Within Control Limits	Spiked Blank / Spiked Blank Duplicate Within Control Limits	Notes
P-PEX-1-7	Soil	1008-240-01	8/31/10	√	NWTPH-Dx RCRA 8 Metals PAHs	See Notes	√	√	See Notes	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample K Flag for 6010B analysis (metals) - The lab duplicate relative % difference (RPD) for Barium was outside control limits due to sample inhomegeniety; the sample was later re-extracted and re-analyzed with similar results. The RPDs for all other metals in the lab QC duplicate sample were within control limits
P-PEX-2-6	Soil	1008-240-02	8/31/10	√	NWTPH-Dx RCRA 8 Metals PAHs	See Notes	√	√	See Notes	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met K Flag for 6010B analysis (metals) - The lab duplicate relative % difference (RPD) for Barium was outside control limits due to sample inhomegeniety; the sample was later re-extracted and re-analyzed with similar results. The RPDs for all other metals in the lab QC duplicate sample were within control limits
P-SP-1	Soil	1009-010-01	9/1/10	√	TCLP Metals	√		√	√	√		
P-SP-2	Soil	1009-010-02	9/1/10	√	TCLP Metals	√		√	√	√		
P-SP-3	Soil	1009-010-03	9/1/10	√	TCLP Metals	√		√	√	√		
P-PEX-3-4	Soil	1009-010-04	9/1/10	√	NWTPH-Dx RCRA 8 Metals PAHs	See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-PEX-4-6	Soil	1009-010-05	9/1/10	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals PAHs	See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-PEX-5-3	Soil	1009-016-01	9/1/10	√	NWTPH-Dx RCRA 8 Metals PAHs	See Notes	√	√	√	√	√	Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met
P-PEX-6-3	Soil	1009-016-02	9/1/10	√	NWTPH-Gx/BTEX NWTPH-Dx RCRA 8 Metals PAHs	See Notes	√	√	√	√	√	Duplicate of sample P-PEX-Dup Extraction and analysis for 8270D/SIM (PAHs) were performed out of holding times; for all other analyses the sample holding times were met U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-PEX-Dup	Soil	1009-016-03	9/1/10	√	NWTPH-Gx/BTEX NWTPH-Dx RCRA 8 Metals	√	√	√	√	√	√	Duplicate of P-PEX-6-3 U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-PEX-7-3	Soil	1009-039-01	9/3/10	√	Arsenic PAHs	√	√	√	√	√	√	
P-PEX-9-3	Soil	1009-039-02	9/3/10	√	NWTPH-Dx	√	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-PEX-10-3	Soil	1009-039-03	9/3/10	√	NWTPH-Dx	√	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result
P-PEX-11-3	Soil	1009-039-04	9/3/10	√	NWTPH-Dx PAHs	√	√	√	√	√	√	
P-PEX-12-3	Soil	1009-039-05	9/3/10	√	NWTPH-Dx	√	√	√	√	√	√	N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result
P-PEX-8-8	Soil	1009-039-06	9/3/10	√	Arsenic PAHs	√	√	√	√	√	√	
P-PEX-13-7	Soil	1009-039-07	9/3/10	√	Arsenic	√	√	√	√	√	√	
P-PEX-14-3	Soil	1009-039-08	9/3/10	√	NWTPH-Dx Arsenic PAHs	√	√	√	√	√	√	U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-PEX-Dup-090310	Soil	1009-039-09	9/3/10	√	NWTPH-Dx	√	√	√	√	√	√	Duplicate of P-PEX-15-3 U1 Flag for NWTPH-Dx analysis - The PQL is elevated due to interferences present in the sample
P-PEX-15-3	Soil	1009-039-10	9/3/10	√	Arsenic PAHs	√	√	√	√	√	√	Duplicate of P-PEX-Dup-090310 N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result

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P-PEX-16-10	Soil	1009-075-01	9/8/10	√	NWTPH-Dx RCRA 8 Metals PAHs	√	√	√	See Notes	See Notes	√	C Flag for 6010B analysis (metals) - The lab duplicate relative % difference (RPD) for lead was outside control limits due to high result variability when analyte concentrations are within five times the quantitation limits L Flag for 8270D/SIM (PAHs) analysis - The sample MS/MSD pair had several recoveries fall outside of control limits believed to be caused by sample matrix. The SB/SBD pair extracted with this batch had all parameters in control, no further lab action was deemed necessary
P-PEX-17-7	Soil	1009-075-02	9/8/10	√	NWTPH-Dx RCRA 8 Metals PAHs	√	√	√	See Notes	See Notes	√	C Flag for 6010B analysis (metals) - The lab duplicate relative % difference (RPD) for lead was outside control limits due to high result variability when analyte concentrations are within five times the quantitation limits L Flag for 8270D/SIM (PAHs) analysis - The sample MS/MSD pair had several recoveries fall outside of control limits believed to be caused by sample matrix. The SB/SBD pair extracted with this batch had all parameters in control, no further lab action was deemed necessary
P-PEX-18-9	Soil	1009-075-03	9/8/10	√	NWTPH-Dx RCRA 8 Metals PAHs	√	√	√	See Notes	See Notes	√	C Flag for 6010B analysis (metals) - The lab duplicate relative % difference (RPD) for lead was outside control limits due to high result variability when analyte concentrations are within five times the quantitation limits L Flag for 8270D/SIM (PAHs) analysis - The sample MS/MSD pair had several recoveries fall outside of control limits believed to be caused by sample matrix. The SB/SBD pair extracted with this batch had all parameters in control, no further lab action was deemed necessary
P-PEX-19-7	Soil	1009-108-01	9/13/10	√	NWTPH-Dx HVOCs RCRA 8 Metals PAHs	√	√	√	√	√		Duplicate of P-PEX-20-8 Sample for 8260B analysis (HVOCs) was not collected in a Method 5035 VOA vial containing a stir bar; lab extracted sample from 4-ounce sample jar and analyzed
P-PEX-20-8	Soil	1009-108-02	9/13/10	√	NWTPH-Dx HVOCs RCRA 8 Metals PAHs	√	√	√	√	√		Duplicate of P-PEX-19-7 Sample for 8260B analysis (HVOCs) was not collected in a Method 5035 VOA vial containing a stir bar; lab extracted sample from 4-ounce sample jar and analyzed
P-PEX-21-11	Soil	1009-108-03	9/13/10	√	NWTPH-Dx HVOCs RCRA 8 Metals PAHs	√	√	√	√	√		Duplicate of P-PEX-22-10 Sample for 8260B analysis (HVOCs) was not collected in a Method 5035 VOA vial containing a stir bar; lab extracted sample from 4-ounce sample jar and analyzed
P-PEX-22-10	Soil	1009-108-04	9/13/10	√	NWTPH-Dx HVOCs RCRA 8 Metals PAHs	√	√	√	√	√		Duplicate of P-PEX-21-11 Sample for 8260B analysis (HVOCs) was not collected in a Method 5035 VOA vial containing a stir bar; lab extracted sample from 4-ounce sample jar and analyzed
P-PEX-23-5	Soil	1009-108-05	9/13/10	√	NWTPH-Dx HVOCs RCRA 8 Metals PAHs	√	√	√	√	√		Sample for 8260B analysis (HVOCs) was not collected in a Method 5035 VOA vial containing a stir bar; lab extracted sample from 4-ounce sample jar and analyzed
CONC-1,2,3,4 Comp.	Concrete	1009-120-01,02,03,04 Comp.	9/14/10	√	NWTPH-Dx RCRA 8 Metals PAHs	√	√	√	√	√		Lab-composited sample of 4 discrete concrete grab samples for waste characterization
P-TP28-9	Soil	10-089-01	10/8/13	√	NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability
P-TP28-11	Soil	10-089-02	10/8/13	√	NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability
P-TP29-5	Soil	10-089-03	10/8/13	√	NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability
P-TP29-11	Soil	10-089-04	10/8/13	√	NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability
P-TP30-6	Soil	10-089-05	10/8/13	√	NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability
P-TP30-10	Soil	10-089-06	10/8/13	√	NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability
P-TP31-6	Soil	10-089-07	10/8/13	√	NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability
P-TP31-10	Soil	10-089-08	10/8/13	√	NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability
P-TP32-1.5	Soil	10-089-09	10/8/13	√	NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability
P-TP32-10	Soil	10-089-10	10/8/13	√	NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability
P-TP33-2	Soil	10-089-11	10/8/13	√	NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability

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P-TP33-7	Soil	10-089-12	10/8/13	√	NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability
P-TP33-9	Soil	10-089-13	10/8/13	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability
P-TP33-11	Soil	10-089-14	10/8/13	√	NWTPH-Gx NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability
P-TP35-7	Soil	10-089-15	10/8/13	√	NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability
P-TP36-10	Soil	10-089-16	10/8/13	√	NWTPH-Dx RCRA 8 Metals	√	√	√	See Notes	√		C Flag for lab duplicate - RPD for lead lab duplicate analyses was outside control limits due to high result variability
P-PEX-27-4	Soil	10-182-01	10/16/13	√	NWTPH-Dx	√	√	√	√	√		Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure
P-PEX-28-4	Soil	10-182-02	10/16/13	√	NWTPH-Dx	√	√	√	√	√		Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure
P-PEX-29-8	Soil	10-182-03	10/16/13	√	NWTPH-Dx	√	√	√	√	√		Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure
P-PEX-30-3	Soil	10-194-01	10/17/13	√	NWTPH-Dx	√	√	√	√	√		Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure N Flag for NWTPH-Dx analysis - Hydrocarbons in the lube oil range are impacting the diesel range result
P-PEX-31-7	Soil	10-194-02	10/17/13	√	NWTPH-Dx	√	√	√	√	√		Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure

Footnotes:
√ - Indicates that QA/QC criteria were met for all analyses performed on sample
Blank cell (except for notes) indicates that the QC check was not applicable for the specified analyses
1 - Analyses Performed:
- NWTPH-Gx - Gasoline range petroleum hydrocarbons using Ecology Method NWTPH-Gx
- NWTPH-Dx - Diesel and oil range petroleum hydrocarbons using Ecology Method NWTPH-Dx
- BTEX - Benzene, toluene, ethylbenzene, and xylenes using EPA Method 8021
- RCRA 8 Metals - Arsenic, barium, cadmium, chromium, lead, selenium, silver using EPA Method 6010B and 6020; and mercury using EPA Method 7471A
- VOCs - Volatile organic hydrocarbons by EPA Method 8260B
- HVOCs - Halogenated volatile organic hydrocarbons by EPA Method 8260B
- PAHs - Polynuclear aromatic hydrocarbons by EPA Method 8270D/SIM
- NWVPH/NWEPH - Ecology methods VPH and EPH for volatile and extractable petroleum hydrocarbon fractions
- TCLP Metals - Toxicity Leaching Procedure using EPA Methods 1311, 6010B, and 7470A for RCRA 8 metals

APPENDIX D

PHOTOGRAPHS OF SOIL CLEANUP ACTION

Photo 1 – Excavation limit looking southwest. Note peat layer on excavation floor. Select Borrow fill is being placed into excavation

Photo 2 – Looking to northwest. Extent of excavation was limited to maintain the structural integrity of SR 522 and related sidewalk and utilities.

Photo 3 – Concrete and wood debris in north end of excavation (looking to northwest)

Photo 4 – Concrete and wood debris in north end of excavation (looking to south).

Photo 5 – Peat layer and water table exposed in northern excavation (looking north towards SR 522).

Photo 6 – Mixing ORC in an excavator bucket.

Photo 7 – Placing ORC on northern sidewall along SR 522 before backfilling excavation with Select Borrow seen in foreground.

Photo 8 – Exposing liner and ORC from 2010 Interim Action along former SR 522 during October, 2013 remedial excavation.

Photo 9 – Debris and fill encountered along former SR 522 during October, 2013 remedial excavation.

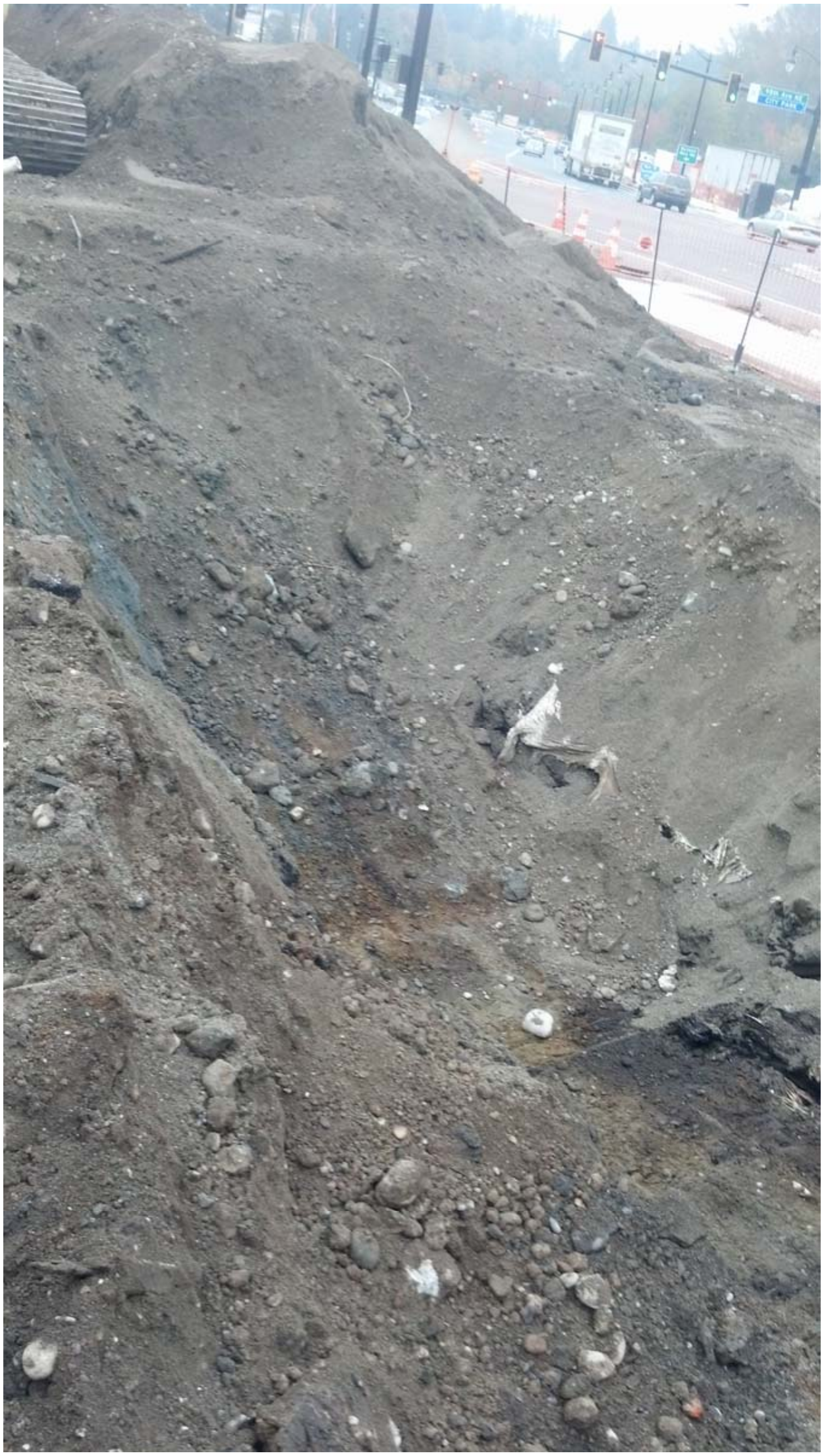


Photo 10 – Debris and fill encountered along former SR 522 during October, 2013 remedial excavation. Photo taken at northeast corner of excavation, liner and imported backfill from 2010 Interim Action visible.

APPENDIX E

CEMEX USA RELEASE OF LIABILITY/CERTIFICATE OF DISPOSAL

ALLIED WASTE SERVICES CERTIFICATE OF DISPOSAL

CEMEX

Release of Liability/Certificate of Disposal

Hos Bros Construction Inc. and their client ; are released from liability for all petroleum contaminated soil originating from:

Bothell Crossroads Phase II
P&D Parcel
Bothell WA. 98011

and transported to:

CEMEX Soil Remediation Facility
6300 Glenwood Ave.
Everett WA 98203

From 09/092010 through 10/11/2010

A total of 7083.05 tons of petroleum-contaminated soil were transported to the above facility. The material was disposed of in the following manner:

Thermal Desorption/Landfill for Reclamation

Disposal of the contaminated soil was performed in accordance with all applicable federal, state, and local laws and regulations.

Signed: Date: November 29th, 2010

Larry W. Baker

Larry W. Baker
CEMEX USA.
Operations Manager
Soil Remediation Division

ALLIED WASTE SERVICES

Certificate of Disposal

November 5, 2010

City of Bothell
9654 NE 182nd Street
Bothell, WA

Job # LW-10377

This is to certify that 56.22 tons of Non-hazardous Sand Blasting Media was shipped from jobsite South of SR 522 and SR 527 Intersection (P and D Parcel) Bothell , Washington by the City of Bothell and received by Regional Disposal Company via our Seattle Transfer Station. The waste was shipped by rail to Roosevelt Regional Landfill, 500 Roosevelt Grade Road, Roosevelt WA 98356 for final disposal. The above-described NON-DANGEROUS WASTE was managed in compliance with all Permits and Laws Regulating this Facility.

Final Disposition: **Subtitle D and WAC 173-351 MSW Landfill**

Leslie Whiteman
Signature

For Regional Disposal Company

54 S. Dawson Street
Seattle, WA 98134
206.332.7700 / FAX 206.764.1234
www.disposal.com

CEMEX 1876063052

Weighed At: Soil Remediation
6300 Glenwood Ave
Everett, WA 98213
Location: 1876

Order: 40904558 **Dispatch:** **0Date:** 04/11/2013
Ship To: 3034360 - KLB CONSTRUCTION
76:BOTHELL CROSSROADS
76:18305 101ST AVE NE - SEATTLE
EVERETT, WA 98203
Instruct: TO EVERETT SOIL REMEDIATION - PLANT CL3

Job #: BTHL. CRSRDS. PH **PO:** 212895
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2030442 - KL90T,KLB TRUCKING Bothell paint
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 29.76 ton
Weighmaster: CEMEX
Deputy Weighmaster: Malia J. Leake

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tne
Gross:	96,520	48.26	43.78
Tare:	37,000	18.50	16.78
Net:	59,520	29.76	27.00

Scale: 1
In: 8:09 am
Out: 8:23 am
Today Loads: 1
Today Qty: -29.76 ton
0.00

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

264.79

0.00

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1876063055

Weighed At: Soil Remediation
6300 Glenwood Ave
Everett, WA 98213
Location: 1876

Order: 40904558 **Dispatch:** **0Date:** 04/11/2013
Ship To: 3034360 - KLB CONSTRUCTION
76:BOTHELL CROSSROADS
76:18305 101ST AVE NE - SEATTLE
EVERETT, WA 98203
Instruct: TO EVERETT SOIL REMEDIATION - PLANT CL3
KLB 96

Job #: BTHL. CRSRDS. PH **PO:** 212895
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2030442 - KL90T,KLB TRUCKING Bothell paint
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 32.43 ton
Weighmaster: CEMEX
Deputy Weighmaster: Malia J. Leake

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tne
Gross:	101,860	50.93	46.20
Tare:	37,000	18.50	16.78
Net:	64,860	32.43	29.42

* Predetermined Tare

Scale: 1
In:
Out: 9:29 am
Today Loads: 3
Today Qty: -28.38 ton
0.00

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

0.00

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1876063054

Weighed At. Soil Remediation
6300 Glenwood Ave
Everett, WA 98213 Bothell paint
Location: 1876

Order: 40904558 **Dispatch:** **0Date:** 04/11/2013
Ship To: 3034360 - KLB CONSTRUCTION
76:BOTHELL CROSSROADS
76:18305 101ST AVE NE - SEATTLE
EVERETT, WA 98203
Instruct: TO EVERETT SOIL REMEDIATION - PLANT CL3
KLB122T

Job #: BTHL. CRSRDS. PH **PO:** 212895
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2034263 - 1876-1,EVERETT SOIL GENERIC
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 31.05 ton
Weighmaster: CEMEX
Deputy Weighmaster: Malia J. Leake

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tne
Gross:	102,720	51.36	46.59
Tare:	40,620	20.31	18.42
Net:	62,100	31.05	28.17

Scale: 1
In: 9:14 am
Out: 9:26 am
Today Loads: 2
Today Qty: -60.81 ton
0.00

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

0.00

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1876063059

Weighed At: Soil Remediation Bothell paint
6300 Glenwood Ave
Everett, WA 98213
Location: 1876

Order: 40904558 **Dispatch:** **0Date:** 04/11/2013
Ship To: 3034360 - KLB CONSTRUCTION
76:BOTHELL CROSSROADS
76:18305 101ST AVE NE - SEATTLE
EVERETT, WA 98203
Instruct: TO EVERETT SOIL REMEDIATION - PLANT CL3
KLB122T

Job #: BTHL. CRSRDS. PH **PO:** 212895
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2034263 - 1876-1,EVERETT SOIL GENERIC
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 32.15 ton
Weighmaster: CEMEX
Deputy Weighmaster: Malia J. Leake

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tne
Gross:	104,920	52.46	47.59
Tare:	40,620	20.31	18.42
Net:	64,300	32.15	29.17

* Predetermined Tare

Scale: 1
In:
Out: 10:30 am
Today Loads: 4
Today Qty: 3.77 ton
0.00

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

0.00

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1876063061

Weighed At: Soil Remediation
6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 40904558 **Dispatch:** 0**Date:** 04/11/2013
Ship To: 3034360 - KLB CONSTRUCTION
76:BOTHELL CROSSROADS
76:18305 101ST AVE NE - SEATTLE
EVERETT, WA 98203
Instruct: TO EVERETT SOIL REMEDIATION - PLANT CL3
KLB 96

Job #: BTHL. CRSRDS. PH **PO:** 212895
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2030442 - KL90T,KLB TRUCKING
Tractor / Trailer1 / Trailer 2 -/- -/-

Bothell Paint

Qty: 29.88 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Malia J. Leake
Scale: 1
In:
Out: 10:37 am

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tne
Gross:	96,760	48.38	43.89
Tare:	37,000	18.50	16.78
Net:	59,760	29.88	27.11

* Predetermined Tare

Today Loads: 5
Today Qty: 33.65 ton
0.00

CEMEX'S STANDARD TERMS AND
CONDITIONS INCORPORATED HEREIN.

0.00

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1876063066

Weighed At: Soil Remediation
6300 Glenwood Ave
Everett, WA 98213

Bothell paint

Location: 1876

Order: 40904558 **Dispatch:** 0**Date:** 04/11/2013
Ship To: 3034360 - KLB CONSTRUCTION
76:BOTHELL CROSSROADS
76:18305 101ST AVE NE - SEATTLE
EVERETT, WA 98203
Instruct: TO EVERETT SOIL REMEDIATION - PLANT CL3
KLB122T

Job #: BTHL. CRSRDS. PH **PO:** 212895
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2034263 - 1876-1,EVERETT SOIL GENERIC
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 28.18 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Malia J. Leake
Scale: 1
In:
Out: 11:43 am

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tne
Gross:	96,980	48.49	43.99
Tare:	40,620	20.31	18.42
Net:	56,360	28.18	25.56

* Predetermined Tare

Today Loads: 6
Today Qty: 61.83 ton
0.00

CEMEX'S STANDARD TERMS AND
CONDITIONS INCORPORATED HEREIN.

0.00

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1876063067

Weighed At: Soil Remediation
6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 40904558 **Dispatch:** 0**Date:** 04/11/2013
Ship To: 3034360 - KLB CONSTRUCTION
76:BOTHELL CROSSROADS
76:18305 101ST AVE NE - SEATTLE
EVERETT, WA 98203
Instruct: TO EVERETT SOIL REMEDIATION - PLANT CL3
KLB 96

Job #: BTHL. CRSRDS. PH **PO:** 212895
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2030442 - KL90T,KLB TRUCKING
Tractor / Trailer1 / Trailer 2 -/- -/-

Bothell Paint

Qty: 28.74 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Malia J. Leake
Scale: 1
In:
Out: 11:55 am

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tne
Gross:	94,480	47.24	42.86
Tare:	37,000	18.50	16.78
Net:	57,480	28.74	26.07

* Predetermined Tare

Today Loads: 7
Today Qty: 90.57 ton
0.00

CEMEX'S STANDARD TERMS AND
CONDITIONS INCORPORATED HEREIN.

0.00

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1876063070

Weighed At: Soil Remediation
6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 40904558 **Dispatch:** 0**Date:** 04/11/2013
Ship To: 3034360 - KLB CONSTRUCTION
76:BOTHELL CROSSROADS
76:18305 101ST AVE NE - SEATTLE
EVERETT, WA 98203
Instruct: TO EVERETT SOIL REMEDIATION - PLANT CL3
KLB122T
BOTHELL PAINT

Job #: BTHL. CRSRDS. PH **PO:** 212895
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2034263 - 1876-1,EVERETT SOIL GENERIC
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 25.05 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Malia J. Leake
Scale: 1
In:
Out: 12:54 pm

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tne
Gross:	90,720	45.36	41.15
Tare:	40,620	20.31	18.42
Net:	50,100	25.05	22.72

* Predetermined Tare

Today Loads: 8
Today Qty: 115.62 ton
0.00

CEMEX'S STANDARD TERMS AND
CONDITIONS INCORPORATED HEREIN.

0.00

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1876063072

Weighed At: Soil Remediation
6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 40904558 **Dispatch:** 0 **Date:** 04/11/2013

Ship To: 3034360 - KLB CONSTRUCTION
76:BOTHELL CROSSROADS
76:18305 101ST AVE NE - SEATTLE
EVERETT, WA 98203

Instruct: TO EVERETT SOIL REMEDIATION - PLANT CL3
KLB 96
BOTHELL PAINT

Job #: BTHL. CRSRDS. PH **PO:** 212895

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2030442 - KL90T,KLB TRUCKING

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 27.55 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Malia J. Leake

Scale: 1
In: 11:56 am
Out: 1:33 pm

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tne
Gross:	92,100	46.05	41.78
Tare:	37,000	18.50	16.78
Net:	55,100	27.55	24.99

Today Loads: 9
Today Qty: 143.17 ton

0.00

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

0.00

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS

SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

AAA MONROE ROCK CORP., STATE PIT D139/D311/D160
15421 166TH ST SE
SNOHOMISH, WA 98290

6E

Truck No.: 132
Truck Type:
Customer: 148-Z
CUST.CODE: 148

Ticket No.: AA*13*10186
Date: 10/18/13
Time: 10:50:33

Gross: 108,760
Tare: 39,500

Net: 69,260
Tons: 34.63

Product: FILLMX - FILL-DIRT/CONCRETE/ASPHALT MIX
Comment:

Job: 148-Z KLB JOB 895

Driver's Signature:

Weighed By:

Office Copy (2)

17KR 101013

AAA MONROE ROCK CORP., STATE PIT D139/D311/D160
15421 166TH ST SE
SNOHOMISH, WA 98290

6E

Truck No.: 136
Truck Type:
Customer: 148-Z
CUST.CODE: 148

Ticket No.: AA*13*10188
Date: 10/18/13
Time: 10:56:33

Gross: 98,340
Tare: 40,180

Net: 58,160
Tons: 29.08

Product: FILLMX - FILL-DIRT/CONCRETE/ASPHALT MIX
Comment:

Job: 148-Z KLB JOB 895

Driver's Signature:

Weighed By:

Office Copy (2)

17KR101813 SB

AAA MONROE ROCK CORP., STATE PIT D139/D311/D160
15421 166TH ST SE
SNOHOMISH, WA 98290

6E

Truck No.: 132	Ticket No.: AA*13*10194	Gross:	105,360
Truck Type:		Tare:	39,500
Customer: 148-Z	Date: 10/18/13	--------------------	
CUST.CODE: 148	Time: 11:56:08	Net:	65,860
		Tons:	32.93

Product: FILLMX - FILL-DIRT/CONCRETE/ASPHALT MIX

Comment:

Job: 148-Z KLB JOB 895

Driver's Signature:

Weighed By:

Office Copy (2)

17KR101813

6E

AAA MONROE ROCK CORP., STATE PIT D139/D311/D160
15421 166TH ST SE
SNOHOMISH, WA 98290

Truck No.: 132

Truck Type:

Customer: 148-Z

CUST.CODE: 148

Ticket No.: AA*13*10204

Date: 10/18/13

Time: 13:21:27

Gross:	103,340
Tare:	39,500
Net:	63,840
Tons:	31.92

Product: FILLMX - FILL-DIRT/CONCRETE/ASPHALT MIX

Comment:

Job: 148-Z KLB JOB 895

Driver's Signature:

Weighed By:

Office Copy (2)

17KR101813

6E

AAA MONROE ROCK CORP., STATE PIT D139/D311/D160
15421 166TH ST SE
SNOHOMISH, WA 98290

Truck No.: 136
Truck Type:
Customer: 148-Z
CUST.CODE: 148

Ticket No.: AA*13*10207

Date: 10/18/13
Time: 14:09:29

Gross: 90,480
Tare: 40,180

Net: 50,300
Tons: 25.15

Product: FILLMX - FILL-DIRT/CONCRETE/ASPHALT MIX
Comment:

Job: 148-Z KLB JOB 895

Driver's Signature:

Weighed By:

Office Copy (2)

6E

AAA MONROE ROCK CORP., STATE PIT D139/D311/D160
15421 166TH ST SE
SNOHOMISH, WA 98290

Truck No.: 132
Truck Type:
Customer: 148-Z
CUST.CODE: 148

Ticket No.: AA*13*10208

Date: 10/18/13
Time: 14:37:29

Gross: 110,660
Tare: 39,500

Net: 71,160
Tons: 35.58

Product: FILLMX - FILL-DIRT/CONCRETE/ASPHALT MIX
Comment:

Job: 148-Z KLB JOB 895

Driver's Signature:

Weighed By:

Office Copy (2)

17KR101813

APPENDIX F

SITE97 STATISTICAL ANALYSIS OF ARSENIC CONCENTRATIONS IN SITE SOILS FOLLOWING INTERIM ACTION CLEANUP

January 8, 2014
HWA Project No. 2007-098

Introduction

This appendix addresses attainment of the MTCA Method A cleanup level for arsenic in Bothell Paint and Decorating Site soil remaining in place following interim action cleanups in 2010 and 2013. Of the 43 confirmation soil samples collected during the interim action cleanups with arsenic analyses, all but one did not contain any arsenic above the cleanup level. One sidewall location in the northwestern portion of the Site represented by sample P-PEX-19 had an arsenic concentration of 21 mg/kg and its duplicate sample had an arsenic concentration of 25 mg/kg; both concentrations slightly exceeded the MTCA Method A cleanup level of 20 mg/kg.

Site-wide compliance with the MTCA cleanup level is established based on the 95 percent upper confidence limit (UCL) of the mean of all confirmation soil sample concentrations. In addition, the following criteria must also be met:

- Data must be normally or lognormally distributed
- No single value can be greater than twice the cleanup level
- No more than 10 percent of samples can exceed the cleanup level

Arsenic Concentrations in Confirmation Samples

The following table lists the reported arsenic concentrations in confirmation samples.

Arsenic (mg/kg)	Sample location
<8.6	P-PEX-2-6
<8.5	P-PEX-1-7
<11	P-PEX-14-3
<11	P-PEX-4-6
<11	P-PEX-5-3
<11	P-TP-10-6
<11	P-TP-11-5
<11	P-TP-21-3
<11	P-TP-26-5
<11	P-TP-9-5
<11	PTP28-11
<11	PTP30-6
<11	PTP36-10
<12	P-PEX-21-11
<12	P-PEX-23-5
<12	P-PEX-7-3
<12	P-PEX-8-8
<12	P-TP-13-7
<12	P-TP-24-4
<12	P-TP-27-4
<12	180th-1-18
<12	180th-3-14
<12	PTP28-9
<12	PTP31-6
<12	PTP31-10
<12	PTP32-10
<12	PTP33-2
<12	PTP33-9
<12	PTP35-7
<13	P-TP-22-3
<13	PTP29-5
<13	PTP29-11
<13	PTP30-10
<13	PTP33-7
<13	PTP33-11
<14	P-PEX-25-8
<16	P-TP-1-6
<16	180th-2-14

14	P-PEX-3-4
16	P-TP-19-7
20	P-TP-25-6
25	P-PEX-20-8 (Duplicate of P-PEX-19-7)

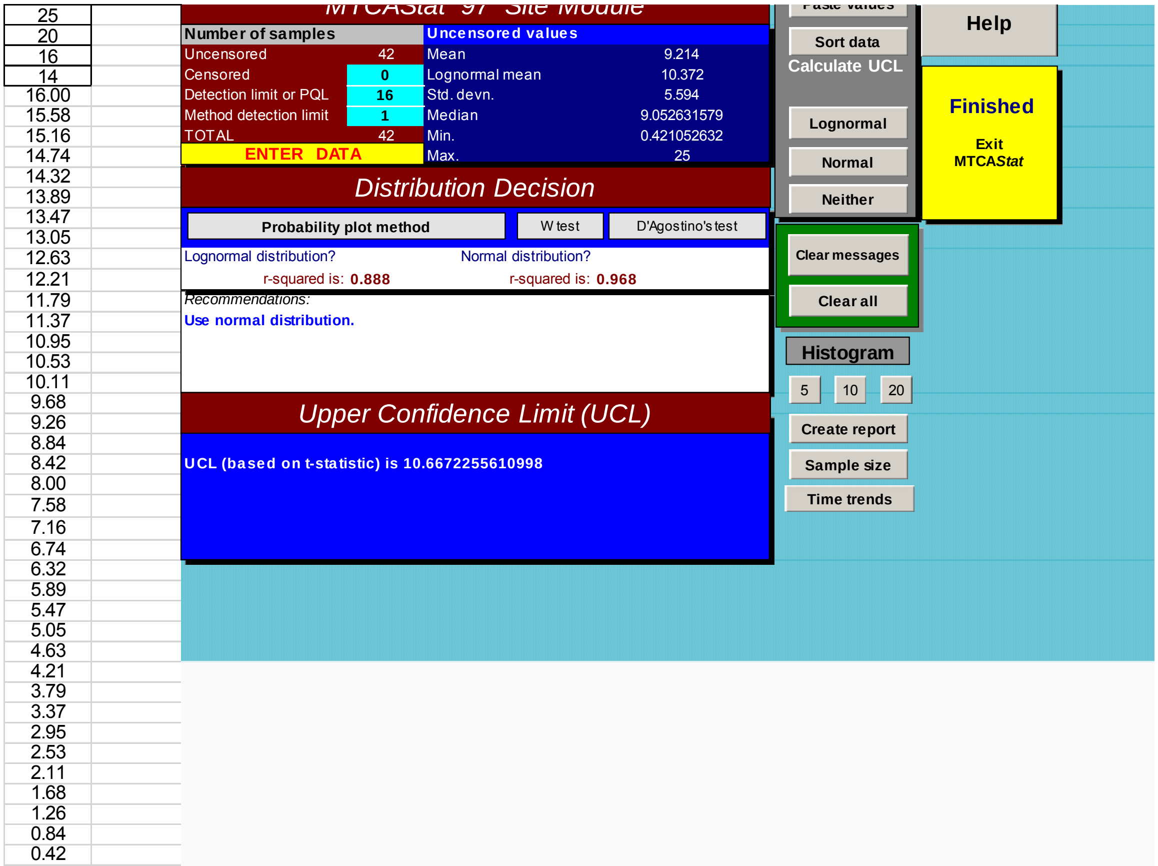
Inspection of these data reveals that the mean arsenic concentration in the confirmation samples must be less than 20 mg/kg because only one sample exceeded 20 mg/kg. This sample and a duplicate were taken at the same location (P-PEX-19-7 and P-PEX-20-8). Of these 43 soil samples, 38 analytical results were below the laboratory's practical quantitation limit (PQL). Per Ecology (1992), these 38 data are termed "censored," meaning that the true concentration is unknown but is some value below the PQL.

Calculating the 95 Percent Upper Confidence Limit of the Mean Arsenic Concentration

Due to the large number of non-detect results, the sample population distribution (e.g., normal or lognormal) could not reliably be determined in order to calculate the UCL statistic. Ecology guidance includes the default assumption of a lognormal distribution for soil and groundwater sampling data. Environmental data (e.g., of contaminated samples across a site) are typically lognormally distributed, as the values range from a theoretical zero (unimpacted) to some higher value (contaminated).

HWA employed the statistical technique of proxy or substitution, assigning proxy values to the non-detect data of either 1) values spaced evenly from zero to the PQL, or 2) values randomly distributed from zero to the PQL (Wendelberger and Campbell, 1994). HWA generated random numbers between 0.0 and 16 mg/kg (the maximum PQL for the data set) using Excel's Data Analysis Tool. For the non-censored data, we conservatively used the higher P-PEX-20-8 concentration of 25 mg/kg instead of the 21 mg/kg concentration of its duplicate sample P-PEX-19-7. HWA then calculated the UCL of the mean using Ecology's Microsoft Excel-based workbook tool, SITE97.XLT (Ecology, 1997). Both methods yielded similar results. Following are the SITE97.XLT output reports.

95% Confidence limit arsenic concentration in Bothell Paint & Decorating Site confirmation samples with evenly spaced numbers substituting for non-detect data



25
20
16
14
16.00
15.58
15.16
14.74
14.32
13.89
13.47
13.05
12.63
12.21
11.79
11.37
10.95
10.53
10.11
9.68
9.26
8.84
8.42
8.00
7.58
7.16
6.74
6.32
5.89
5.47
5.05
4.63
4.21
3.79
3.37
2.95
2.53
2.11
1.68
1.26
0.84
0.42

Number of samples		Uncensored values	
Uncensored	42	Mean	9.214
Censored	0	Lognormal mean	10.372
Detection limit or PQL	16	Std. devn.	5.594
Method detection limit	1	Median	9.052631579
TOTAL	42	Min.	0.421052632
		Max.	25

Lognormal distribution? r-squared is: **0.888**

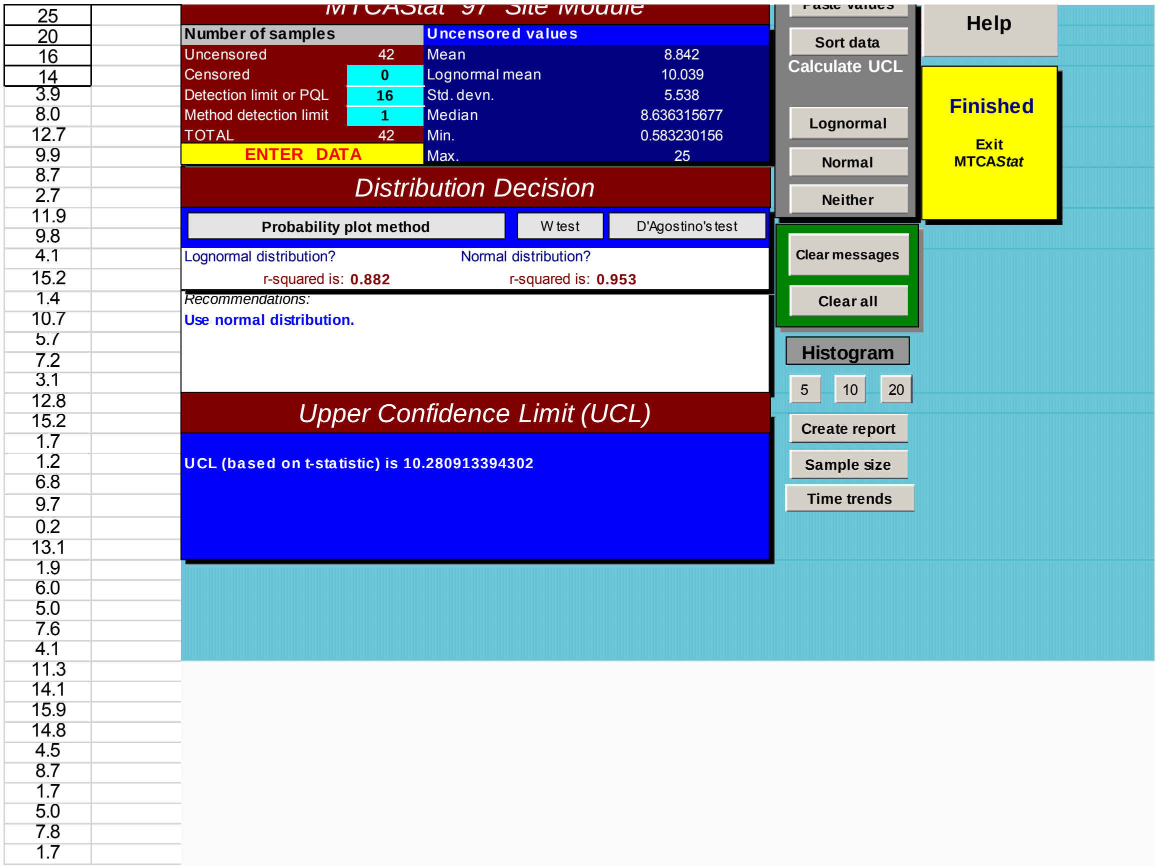
Normal distribution? r-squared is: **0.968**

Recommendations:

Use normal distribution.

UCL (based on t-statistic) is 10.6672255610998

95% Confidence limit arsenic concentration in Bothell Paint & Decorating Site confirmation samples with random numbers substituting for non-detect data



25
20
16
14
3.9
8.0
12.7
9.9
8.7
2.7
11.9
9.8
4.1
15.2
1.4
10.7
5.7
7.2
3.1
12.8
15.2
1.7
1.2
6.8
9.7
0.2
13.1
1.9
6.0
5.0
7.6
4.1
11.3
14.1
15.9
14.8
4.5
8.7
1.7
5.0
7.8
1.7

Number of samples		Uncensored values	
Uncensored	42	Mean	8.842
Censored	0	Lognormal mean	10.039
Detection limit or PQL	16	Std. devn.	5.538
Method detection limit	1	Median	8.636315677
TOTAL	42	Min.	0.583230156
		Max.	25

Distribution Decision

Lognormal distribution? r-squared is: 0.882

Normal distribution? r-squared is: 0.953

Recommendations:

Use normal distribution.

Upper Confidence Limit (UCL)

UCL (based on t-statistic) is 10.280913394302

Summary

Using Ecology's SITE97.XLT workbook and the statistical technique of substitution, HWA calculated that the mean arsenic concentration at a 95 percent UCL is between 10.28 and 10.67 mg/kg – less than the MTCA Method A soil cleanup level of 20 mg/kg. In addition, other cleanup criteria were met:

- The data are normally distributed
- No single value is greater than twice the cleanup level
- Less than 10 percent of samples exceeded the cleanup level.

References

Washington State Department of Ecology, 1992, *Statistical Guidance for Ecology Site Managers*, Publication 92-54, August, 1992.

Washington Department of Ecology, 1997, *SITE97.XLT Workbook for Calculating Compliance Statistics* (www.ecy.wa.gov/programs/tcp/tools/toolmain.html).

Wendelberger, J. and Campbell, K. 1994, *Non-Detect Data in Environmental Investigations,* American Statistical Association, Toronto, Canada

APPENDIX J

LABORATORY CERTIFICATES OF ANALYSIS

(ON CD)

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

January 17, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-98-998
Laboratory Reference No. 1401-054

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on January 9, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

Case Narrative

Samples were collected on January 6, 7, and 8, 2014 and received by the laboratory on January 9, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

Per EPA Method 5035A, samples BL MW-12-11 and BL MW-12-9 were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. All other samples were received outside of 48 hours from the time of collection. Upon receipt, they were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Halogenated Volatiles EPA 8260C Analysis

Per EPA Method 5035A, samples BL MW-12-11 and BL MW-12-9 were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. All other samples were received outside of 48 hours from the time of collection. Upon receipt, they were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Internal Standard 1,4-Dichlorobenzene-d4 does not meet acceptance criteria for sample BP MW-5-5 due to sample matrix effects. The sample was re-analyzed with similar results. All results, including Practical Quantitation Limits, from Bromobenzene onward should be considered estimates.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZ MW-16-12.5**					
Laboratory ID:	01-054-01					
Benzene	**ND**	0.020	EPA 8021B	1-14-14	1-14-14	
Toluene	**ND**	0.055	EPA 8021B	1-14-14	1-14-14	
Ethyl Benzene	**ND**	0.055	EPA 8021B	1-14-14	1-14-14	
m,p-Xylene	**ND**	0.055	EPA 8021B	1-14-14	1-14-14	
o-Xylene	**ND**	0.055	EPA 8021B	1-14-14	1-14-14	
Gasoline	**ND**	5.5	NWTPH-Gx	1-14-14	1-14-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*71-121*				
Client ID:	**HZ MW-18-7.5**					
Laboratory ID:	01-054-02					
Benzene	**ND**	0.020	EPA 8021B	1-14-14	1-16-14	
Toluene	**ND**	0.051	EPA 8021B	1-14-14	1-16-14	
Ethyl Benzene	**ND**	0.051	EPA 8021B	1-14-14	1-16-14	
m,p-Xylene	**ND**	0.051	EPA 8021B	1-14-14	1-16-14	
o-Xylene	**ND**	0.051	EPA 8021B	1-14-14	1-16-14	
Gasoline	**ND**	5.1	NWTPH-Gx	1-14-14	1-16-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*82*	*71-121*				
Client ID:	**BP MW-4-14**					
Laboratory ID:	01-054-03					
Benzene	**ND**	0.020	EPA 8021B	1-14-14	1-14-14	
Toluene	**ND**	0.057	EPA 8021B	1-14-14	1-14-14	
Ethyl Benzene	**ND**	0.057	EPA 8021B	1-14-14	1-14-14	
m,p-Xylene	**ND**	0.057	EPA 8021B	1-14-14	1-14-14	
o-Xylene	**ND**	0.057	EPA 8021B	1-14-14	1-14-14	
Gasoline	**ND**	5.7	NWTPH-Gx	1-14-14	1-14-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*106*	*71-121*				

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BP MW-5-5**					
Laboratory ID:	01-054-04					
Benzene	**ND**	0.020	EPA 8021B	1-14-14	1-16-14	
Toluene	**ND**	0.078	EPA 8021B	1-14-14	1-16-14	
Ethyl Benzene	**ND**	0.078	EPA 8021B	1-14-14	1-16-14	
m,p-Xylene	**ND**	0.078	EPA 8021B	1-14-14	1-16-14	
o-Xylene	**ND**	0.078	EPA 8021B	1-14-14	1-16-14	
Gasoline	**ND**	7.8	NWTPH-Gx	1-14-14	1-16-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*84*	*71-121*				
Client ID:	**BP MW-6-10**					
Laboratory ID:	01-054-05					
Benzene	**ND**	0.020	EPA 8021B	1-14-14	1-14-14	
Toluene	**ND**	0.048	EPA 8021B	1-14-14	1-14-14	
Ethyl Benzene	**ND**	0.048	EPA 8021B	1-14-14	1-14-14	
m,p-Xylene	**ND**	0.048	EPA 8021B	1-14-14	1-14-14	
o-Xylene	**ND**	0.048	EPA 8021B	1-14-14	1-14-14	
Gasoline	**ND**	4.8	NWTPH-Gx	1-14-14	1-14-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*71-121*				
Client ID:	**BL MW-12-11**					
Laboratory ID:	01-054-06					
Benzene	**ND**	0.020	EPA 8021B	1-14-14	1-14-14	
Toluene	**ND**	0.064	EPA 8021B	1-14-14	1-14-14	
Ethyl Benzene	**ND**	0.064	EPA 8021B	1-14-14	1-14-14	
m,p-Xylene	**ND**	0.064	EPA 8021B	1-14-14	1-14-14	
o-Xylene	**ND**	0.064	EPA 8021B	1-14-14	1-14-14	
Gasoline	**ND**	6.4	NWTPH-Gx	1-14-14	1-14-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*71-121*				

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BL MW-12-9**					
Laboratory ID:	01-054-07					
Benzene	**ND**	0.022	EPA 8021B	1-14-14	1-14-14	
Toluene	**ND**	0.11	EPA 8021B	1-14-14	1-14-14	
Ethyl Benzene	**ND**	0.11	EPA 8021B	1-14-14	1-14-14	
m,p-Xylene	**ND**	0.11	EPA 8021B	1-14-14	1-14-14	
o-Xylene	**ND**	0.11	EPA 8021B	1-14-14	1-14-14	
Gasoline	**ND**	11	NWTPH-Gx	1-14-14	1-14-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*112*	*71-121*				

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0114S1					
Benzene	**ND**	0.020	EPA 8021B	1-14-14	1-14-14	
Toluene	**ND**	0.050	EPA 8021B	1-14-14	1-14-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-14-14	1-14-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-14-14	1-14-14	
o-Xylene	**ND**	0.050	EPA 8021B	1-14-14	1-14-14	
Gasoline	**ND**	5.0	NWTPH-Gx	1-14-14	1-14-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-054-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*96*	*79*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0114S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.08**	**1.13**	1.00	1.00		**108**	**113**	73-121	5	10	
Toluene	**1.10**	**1.14**	1.00	1.00		**110**	**114**	75-124	4	10	
Ethyl Benzene	**1.07**	**1.12**	1.00	1.00		**107**	**112**	75-125	5	9	
m,p-Xylene	**1.07**	**1.11**	1.00	1.00		**107**	**111**	75-126	4	9	
o-Xylene	**1.05**	**1.08**	1.00	1.00		**105**	**108**	74-123	3	8	
Surrogate:											
Fluorobenzene						*103*	*105*	*71-121*			

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZ MW-16-12.5**					
Laboratory ID:	01-054-01					
Dichlorodifluoromethane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Chloromethane	ND	0.0045	EPA 8260C	1-10-14	1-10-14	
Vinyl Chloride	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Bromomethane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Chloroethane	ND	0.0045	EPA 8260C	1-10-14	1-10-14	
Trichlorofluoromethane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Iodomethane	ND	0.0045	EPA 8260C	1-10-14	1-10-14	
Methylene Chloride	ND	0.0045	EPA 8260C	1-10-14	1-10-14	
(trans) 1,2-Dichloroethene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
2,2-Dichloropropane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
(cis) 1,2-Dichloroethene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Bromochloromethane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Chloroform	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
1,1,1-Trichloroethane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Carbon Tetrachloride	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloropropene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloroethane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Trichloroethene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloropropane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Dibromomethane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Bromodichloromethane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
2-Chloroethyl Vinyl Ether	ND	0.0045	EPA 8260C	1-10-14	1-10-14	
(cis) 1,3-Dichloropropene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
(trans) 1,3-Dichloropropene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZ MW-16-12.5**					
Laboratory ID:	01-054-01					
1,1,2-Trichloroethane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Tetrachloroethene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
1,3-Dichloropropane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Dibromochloromethane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromoethane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Chlorobenzene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
1,1,1,2-Tetrachloroethane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Bromoform	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Bromobenzene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
1,1,2,2-Tetrachloroethane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichloropropane	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
2-Chlorotoluene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
4-Chlorotoluene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
1,3-Dichlorobenzene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
1,4-Dichlorobenzene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
1,2-Dichlorobenzene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromo-3-chloropropane	ND	0.0045	EPA 8260C	1-10-14	1-10-14	
1,2,4-Trichlorobenzene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Hexachlorobutadiene	ND	0.0045	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichlorobenzene	ND	0.00091	EPA 8260C	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*95*	*65-129*				
Toluene-d8	*99*	*77-122*				
4-Bromofluorobenzene	*99*	*73-124*				

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C

page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZ MW-18-7.5**					
Laboratory ID:	01-054-02					
Dichlorodifluoromethane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Chloromethane	ND	0.0044	EPA 8260C	1-10-14	1-10-14	
Vinyl Chloride	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Bromomethane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Chloroethane	ND	0.0044	EPA 8260C	1-10-14	1-10-14	
Trichlorofluoromethane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Iodomethane	ND	0.0044	EPA 8260C	1-10-14	1-10-14	
Methylene Chloride	ND	0.0044	EPA 8260C	1-10-14	1-10-14	
(trans) 1,2-Dichloroethene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
2,2-Dichloropropane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
(cis) 1,2-Dichloroethene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Bromochloromethane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Chloroform	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
1,1,1-Trichloroethane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Carbon Tetrachloride	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloropropene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloroethane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Trichloroethene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloropropane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Dibromomethane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Bromodichloromethane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
2-Chloroethyl Vinyl Ether	ND	0.0044	EPA 8260C	1-10-14	1-10-14	
(cis) 1,3-Dichloropropene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
(trans) 1,3-Dichloropropene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C

page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZ MW-18-7.5**					
Laboratory ID:	01-054-02					
1,1,2-Trichloroethane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Tetrachloroethene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
1,3-Dichloropropane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Dibromochloromethane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromoethane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Chlorobenzene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
1,1,1,2-Tetrachloroethane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Bromoform	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Bromobenzene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
1,1,2,2-Tetrachloroethane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichloropropane	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
2-Chlorotoluene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
4-Chlorotoluene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
1,3-Dichlorobenzene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
1,4-Dichlorobenzene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
1,2-Dichlorobenzene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromo-3-chloropropane	ND	0.0044	EPA 8260C	1-10-14	1-10-14	
1,2,4-Trichlorobenzene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Hexachlorobutadiene	ND	0.0044	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichlorobenzene	ND	0.00088	EPA 8260C	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*96*	*65-129*				
Toluene-d8	*100*	*77-122*				
4-Bromofluorobenzene	*101*	*73-124*				

Date of Report: January 17, 2014
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Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BP MW-4-14**					
Laboratory ID:	01-054-03					
Dichlorodifluoromethane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Chloromethane	ND	0.0042	EPA 8260C	1-10-14	1-10-14	
Vinyl Chloride	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Bromomethane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Chloroethane	ND	0.0042	EPA 8260C	1-10-14	1-10-14	
Trichlorofluoromethane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Iodomethane	ND	0.0042	EPA 8260C	1-10-14	1-10-14	
Methylene Chloride	ND	0.0042	EPA 8260C	1-10-14	1-10-14	
(trans) 1,2-Dichloroethene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
2,2-Dichloropropane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
(cis) 1,2-Dichloroethene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Bromochloromethane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Chloroform	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
1,1,1-Trichloroethane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Carbon Tetrachloride	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloropropene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloroethane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Trichloroethene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloropropane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Dibromomethane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Bromodichloromethane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
2-Chloroethyl Vinyl Ether	ND	0.0042	EPA 8260C	1-10-14	1-10-14	
(cis) 1,3-Dichloropropene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
(trans) 1,3-Dichloropropene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BP MW-4-14**					
Laboratory ID:	01-054-03					
1,1,2-Trichloroethane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Tetrachloroethene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
1,3-Dichloropropane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Dibromochloromethane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromoethane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Chlorobenzene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
1,1,1,2-Tetrachloroethane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Bromoform	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Bromobenzene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
1,1,2,2-Tetrachloroethane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichloropropane	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
2-Chlorotoluene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
4-Chlorotoluene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
1,3-Dichlorobenzene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
1,4-Dichlorobenzene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
1,2-Dichlorobenzene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromo-3-chloropropane	ND	0.0042	EPA 8260C	1-10-14	1-10-14	
1,2,4-Trichlorobenzene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Hexachlorobutadiene	ND	0.0042	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichlorobenzene	ND	0.00085	EPA 8260C	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*95*	*65-129*				
Toluene-d8	*99*	*77-122*				
4-Bromofluorobenzene	*98*	*73-124*				

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BP MW-5-5**					
Laboratory ID:	01-054-04					
Dichlorodifluoromethane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Chloromethane	ND	0.0061	EPA 8260C	1-10-14	1-10-14	
Vinyl Chloride	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Bromomethane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Chloroethane	ND	0.0061	EPA 8260C	1-10-14	1-10-14	
Trichlorofluoromethane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Iodomethane	ND	0.0061	EPA 8260C	1-10-14	1-10-14	
Methylene Chloride	ND	0.0061	EPA 8260C	1-10-14	1-10-14	
(trans) 1,2-Dichloroethene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
2,2-Dichloropropane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
(cis) 1,2-Dichloroethene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Bromochloromethane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Chloroform	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
1,1,1-Trichloroethane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Carbon Tetrachloride	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloropropene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloroethane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Trichloroethene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloropropane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Dibromomethane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Bromodichloromethane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
2-Chloroethyl Vinyl Ether	ND	0.0061	EPA 8260C	1-10-14	1-10-14	
(cis) 1,3-Dichloropropene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
(trans) 1,3-Dichloropropene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BP MW-5-5**					
Laboratory ID:	01-054-04					
1,1,2-Trichloroethane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Tetrachloroethene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
1,3-Dichloropropane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Dibromochloromethane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromoethane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Chlorobenzene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
1,1,1,2-Tetrachloroethane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Bromoform	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Bromobenzene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
1,1,2,2-Tetrachloroethane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichloropropane	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
2-Chlorotoluene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
4-Chlorotoluene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
1,3-Dichlorobenzene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
1,4-Dichlorobenzene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
1,2-Dichlorobenzene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromo-3-chloropropane	ND	0.0061	EPA 8260C	1-10-14	1-10-14	
1,2,4-Trichlorobenzene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Hexachlorobutadiene	ND	0.0061	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichlorobenzene	ND	0.0012	EPA 8260C	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*96*	*65-129*				
Toluene-d8	*97*	*77-122*				
4-Bromofluorobenzene	*79*	*73-124*				

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BP MW-6-10**					
Laboratory ID:	01-054-05					
Dichlorodifluoromethane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Chloromethane	ND	0.0037	EPA 8260C	1-10-14	1-10-14	
Vinyl Chloride	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Bromomethane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Chloroethane	ND	0.0037	EPA 8260C	1-10-14	1-10-14	
Trichlorofluoromethane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Iodomethane	ND	0.0037	EPA 8260C	1-10-14	1-10-14	
Methylene Chloride	ND	0.0037	EPA 8260C	1-10-14	1-10-14	
(trans) 1,2-Dichloroethene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
2,2-Dichloropropane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
(cis) 1,2-Dichloroethene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Bromochloromethane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Chloroform	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
1,1,1-Trichloroethane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Carbon Tetrachloride	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloropropene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloroethane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Trichloroethene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloropropane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Dibromomethane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Bromodichloromethane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
2-Chloroethyl Vinyl Ether	ND	0.0037	EPA 8260C	1-10-14	1-10-14	
(cis) 1,3-Dichloropropene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
(trans) 1,3-Dichloropropene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BP MW-6-10**					
Laboratory ID:	01-054-05					
1,1,2-Trichloroethane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Tetrachloroethene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
1,3-Dichloropropane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Dibromochloromethane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromoethane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Chlorobenzene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
1,1,1,2-Tetrachloroethane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Bromoform	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Bromobenzene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
1,1,2,2-Tetrachloroethane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichloropropane	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
2-Chlorotoluene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
4-Chlorotoluene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
1,3-Dichlorobenzene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
1,4-Dichlorobenzene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
1,2-Dichlorobenzene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromo-3-chloropropane	ND	0.0037	EPA 8260C	1-10-14	1-10-14	
1,2,4-Trichlorobenzene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Hexachlorobutadiene	ND	0.0037	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichlorobenzene	ND	0.00073	EPA 8260C	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*94*	*65-129*				
Toluene-d8	*96*	*77-122*				
4-Bromofluorobenzene	*97*	*73-124*				

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BL MW-12-11**					
Laboratory ID:	01-054-06					
Dichlorodifluoromethane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Chloromethane	ND	0.0054	EPA 8260C	1-10-14	1-10-14	
Vinyl Chloride	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Bromomethane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Chloroethane	ND	0.0054	EPA 8260C	1-10-14	1-10-14	
Trichlorofluoromethane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Iodomethane	ND	0.0054	EPA 8260C	1-10-14	1-10-14	
Methylene Chloride	ND	0.0054	EPA 8260C	1-10-14	1-10-14	
(trans) 1,2-Dichloroethene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
2,2-Dichloropropane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
(cis) 1,2-Dichloroethene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Bromochloromethane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Chloroform	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
1,1,1-Trichloroethane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Carbon Tetrachloride	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloropropene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloroethane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Trichloroethene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloropropane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Dibromomethane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Bromodichloromethane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
2-Chloroethyl Vinyl Ether	ND	0.0054	EPA 8260C	1-10-14	1-10-14	
(cis) 1,3-Dichloropropene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
(trans) 1,3-Dichloropropene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BL MW-12-11**					
Laboratory ID:	01-054-06					
1,1,2-Trichloroethane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Tetrachloroethene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
1,3-Dichloropropane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Dibromochloromethane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromoethane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Chlorobenzene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
1,1,1,2-Tetrachloroethane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Bromoform	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Bromobenzene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
1,1,2,2-Tetrachloroethane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichloropropane	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
2-Chlorotoluene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
4-Chlorotoluene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
1,3-Dichlorobenzene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
1,4-Dichlorobenzene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
1,2-Dichlorobenzene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromo-3-chloropropane	ND	0.0054	EPA 8260C	1-10-14	1-10-14	
1,2,4-Trichlorobenzene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Hexachlorobutadiene	ND	0.0054	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichlorobenzene	ND	0.0011	EPA 8260C	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*95*	*65-129*				
Toluene-d8	*98*	*77-122*				
4-Bromofluorobenzene	*98*	*73-124*				

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Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BL MW-12-9**					
Laboratory ID:	01-054-07					
Dichlorodifluoromethane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Chloromethane	ND	0.0084	EPA 8260C	1-10-14	1-10-14	
Vinyl Chloride	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Bromomethane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Chloroethane	ND	0.0084	EPA 8260C	1-10-14	1-10-14	
Trichlorofluoromethane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Iodomethane	ND	0.0084	EPA 8260C	1-10-14	1-10-14	
Methylene Chloride	ND	0.0084	EPA 8260C	1-10-14	1-10-14	
(trans) 1,2-Dichloroethene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
2,2-Dichloropropane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
(cis) 1,2-Dichloroethene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Bromochloromethane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Chloroform	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
1,1,1-Trichloroethane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Carbon Tetrachloride	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloropropene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloroethane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Trichloroethene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloropropane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Dibromomethane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Bromodichloromethane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
2-Chloroethyl Vinyl Ether	ND	0.0084	EPA 8260C	1-10-14	1-10-14	
(cis) 1,3-Dichloropropene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
(trans) 1,3-Dichloropropene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BL MW-12-9**					
Laboratory ID:	01-054-07					
1,1,2-Trichloroethane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Tetrachloroethene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
1,3-Dichloropropane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Dibromochloromethane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromoethane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Chlorobenzene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
1,1,1,2-Tetrachloroethane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Bromoform	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Bromobenzene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
1,1,2,2-Tetrachloroethane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichloropropane	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
2-Chlorotoluene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
4-Chlorotoluene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
1,3-Dichlorobenzene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
1,4-Dichlorobenzene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
1,2-Dichlorobenzene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromo-3-chloropropane	ND	0.0084	EPA 8260C	1-10-14	1-10-14	
1,2,4-Trichlorobenzene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Hexachlorobutadiene	ND	0.0084	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichlorobenzene	ND	0.0017	EPA 8260C	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*93*	*65-129*				
Toluene-d8	*97*	*77-122*				
4-Bromofluorobenzene	*92*	*73-124*				

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0110S1					
Dichlorodifluoromethane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Chloromethane	ND	0.0050	EPA 8260C	1-10-14	1-10-14	
Vinyl Chloride	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Bromomethane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Chloroethane	ND	0.0050	EPA 8260C	1-10-14	1-10-14	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Iodomethane	ND	0.0050	EPA 8260C	1-10-14	1-10-14	
Methylene Chloride	ND	0.0050	EPA 8260C	1-10-14	1-10-14	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Bromochloromethane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Chloroform	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Trichloroethene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Dibromomethane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Bromodichloromethane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
2-Chloroethyl Vinyl Ether	ND	0.0050	EPA 8260C	1-10-14	1-10-14	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0110S1					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Tetrachloroethene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Dibromochloromethane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Chlorobenzene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Bromoform	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Bromobenzene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
2-Chlorotoluene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
4-Chlorotoluene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260C	1-10-14	1-10-14	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	1-10-14	1-10-14	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*98*	*65-129*				
Toluene-d8	*101*	*77-122*				
4-Bromofluorobenzene	*102*	*73-124*				

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0110S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0490**	**0.0495**	0.0500	0.0500	98	99	56-141	1	15	
Benzene	**0.0474**	**0.0481**	0.0500	0.0500	95	96	70-121	1	15	
Trichloroethene	**0.0480**	**0.0483**	0.0500	0.0500	96	97	74-118	1	15	
Toluene	**0.0477**	**0.0480**	0.0500	0.0500	95	96	75-120	1	15	
Chlorobenzene	**0.0525**	**0.0516**	0.0500	0.0500	105	103	75-120	2	15	
Surrogate:										
Dibromofluoromethane					*93*	*93*	*65-129*			
Toluene-d8					*95*	*94*	*77-122*			
4-Bromofluorobenzene					*96*	*96*	*73-124*			

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

% MOISTURE

Date Analyzed: 1-10-14

Client ID	Lab ID	% Moisture
HZ MW-16-12.5	01-054-01	14
HZ MW-18-7.5	01-054-02	13
BP MW-4-14	01-054-03	18
BP MW-5-5	01-054-04	25
BP MW-6-10	01-054-05	10
BL MW-12-11	01-054-06	21
BL MW-12-9	01-054-07	38

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Laboratory Number: 01-054

Company: HWA
Project Number: 2007-98-998
Project Name: Bothell
Project Manager: Arnie Sugar
Sampled by: Norm Nielsen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals/ MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664A							% Moisture
1	HZMW-16-12.5	1/6/14	10:00	Soil	5		X				X																X
2	HZ MW-18-7.5	1/6/14	13:30		5		X				X																X
3	BPMW-4-14	1/7/14	8:45		5		X				X																X
4	BPMW-5-5	1/7/14	12:00		5		X				X																X
5	BPMW-6-10	1/7/14	14:30		5		X				X																X
6	BL MW-12-11	1/8/14	9:40		5		X				X																X
7	BL MW-12-9	1/8/14	9:25		5		X				X																X

	Signature	Company	Date	Time
Relinquished		HWA	1/9/14	1400
Received		OSE	1/9/14	1400
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

June 5, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-998
Laboratory Reference No. 1405-215

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on May 28, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: June 5, 2014
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215
Project: 2007-098-998

Case Narrative

Samples were collected on May 27 and 28, 2014 and received by the laboratory on May 28, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: June 5, 2014
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW-6**					
Laboratory ID:	05-215-01					
Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Toluene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Gasoline	**ND**	100	NWTPH-Gx	5-29-14	5-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*71-112*				
Client ID:	**BPMW-2**					
Laboratory ID:	05-215-02					
Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Toluene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Gasoline	**ND**	100	NWTPH-Gx	5-29-14	5-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-112*				
Client ID:	**BC-11**					
Laboratory ID:	05-215-03					
Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Toluene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Gasoline	**ND**	100	NWTPH-Gx	5-29-14	5-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-112*				

Date of Report: June 5, 2014
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW-1**					
Laboratory ID:	05-215-04					
Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Toluene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Gasoline	**ND**	100	NWTPH-Gx	5-29-14	5-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-112*				
Client ID:	**BPMW-4**					
Laboratory ID:	05-215-05					
Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Toluene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Gasoline	**ND**	100	NWTPH-Gx	5-29-14	5-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*71-112*				
Client ID:	**BPMW-5**					
Laboratory ID:	05-215-06					
Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Toluene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Gasoline	**ND**	100	NWTPH-Gx	5-29-14	5-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*71-112*				

Date of Report: June 5, 2014
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Trip Blank**					
Laboratory ID:	05-215-07					
Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Toluene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Gasoline	**ND**	100	NWTPH-Gx	5-29-14	5-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*71-112*				

Date of Report: June 5, 2014
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215
Project: 2007-098-998

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0529W1					
Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Toluene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	5-29-14	5-29-14	
Gasoline	**ND**	100	NWTPH-Gx	5-29-14	5-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*71-112*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-209-09										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*96*	*94*	*71-112*			
MATRIX SPIKES											
Laboratory ID:	05-209-09										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**54.0**	**52.5**	50.0	50.0	ND	**108**	**105**	78-120	3	12	
Toluene	**56.0**	**52.6**	50.0	50.0	ND	**112**	**105**	80-121	6	12	
Ethyl Benzene	**55.5**	**51.6**	50.0	50.0	ND	**111**	**103**	81-120	7	13	
m,p-Xylene	**57.0**	**51.3**	50.0	50.0	ND	**114**	**103**	81-119	11	13	
o-Xylene	**56.3**	**49.8**	50.0	50.0	ND	**113**	**100**	79-117	12	13	
Surrogate:											
Fluorobenzene						*98*	*103*	*71-112*			

Date of Report: June 5, 2014
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215
Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW-6**					
Laboratory ID:	05-215-01					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	6-2-14	6-2-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	6-2-14	6-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**BPMW-2**					
Laboratory ID:	05-215-02					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	6-2-14	6-2-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	6-2-14	6-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**BC-11**					
Laboratory ID:	05-215-03					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	6-2-14	6-2-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	6-2-14	6-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				
Client ID:	**BPMW-1**					
Laboratory ID:	05-215-04					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	6-2-14	6-2-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	6-2-14	6-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*84*	*50-150*				
Client ID:	**BPMW-4**					
Laboratory ID:	05-215-05					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	6-2-14	6-2-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	6-2-14	6-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				
Client ID:	**BPMW-5**					
Laboratory ID:	05-215-06					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	6-2-14	6-2-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	6-2-14	6-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				

Date of Report: June 5, 2014
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215
Project: 2007-098-998

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0602W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	6-2-14	6-2-14	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	6-2-14	6-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-215-01										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*88*	*91*	*50-150*			

Date of Report: June 5, 2014
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	05-215-01					
Client ID:	**BPMW-6**					
Arsenic	**13**	3.3	200.8	5-29-14	5-29-14	
Lab ID:	05-215-02					
Client ID:	**BPMW-2**					
Arsenic	**ND**	3.3	200.8	5-29-14	5-29-14	
Lab ID:	05-215-03					
Client ID:	**BC-11**					
Arsenic	**6.2**	3.3	200.8	5-29-14	5-29-14	
Lab ID:	05-215-04					
Client ID:	**BPMW-1**					
Arsenic	**20**	3.3	200.8	5-29-14	5-29-14	
Lab ID:	05-215-05					
Client ID:	**BPMW-4**					
Arsenic	**ND**	3.3	200.8	5-29-14	5-29-14	
Lab ID:	05-215-06					
Client ID:	**BPMW-5**					
Arsenic	**4.3**	3.3	200.8	5-29-14	5-29-14	

Date of Report: June 5, 2014
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	5-29-14
Date Analyzed:	5-29-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0529WM1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3

Date of Report: June 5, 2014
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted:	5-29-14
Date Analyzed:	5-29-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	05-215-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**6.18**	**5.88**	5	3.3	

TOTAL ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 5-29-14
Date Analyzed: 5-29-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 05-215-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	110	**125**	108	**128**	111	2	

Date of Report: June 5, 2014
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	05-215-01					
Client ID:	**BPMW-6**					
Arsenic	**13**	3.0	200.8		5-29-14	
Lab ID:	05-215-02					
Client ID:	**BPMW-2**					
Arsenic	**ND**	3.0	200.8		5-29-14	
Lab ID:	05-215-03					
Client ID:	**BC-11**					
Arsenic	**5.1**	3.0	200.8		5-29-14	
Lab ID:	05-215-04					
Client ID:	**BPMW-1**					
Arsenic	**19**	3.0	200.8		5-29-14	
Lab ID:	05-215-05					
Client ID:	**BPMW-4**					
Arsenic	**ND**	3.0	200.8		5-29-14	
Lab ID:	05-215-06					
Client ID:	**BPMW-5**					
Arsenic	**ND**	3.0	200.8		5-29-14	

Date of Report: June 5, 2014
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed:	5-29-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0529D1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0

Date of Report: June 5, 2014
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed: 5-29-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 05-209-09

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	

Date of Report: June 5, 2014
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed: 5-29-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 05-209-09

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**202**	101	**206**	103	2	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 1

Laboratory Number: 05-215

Company: HWA GeoSciences
Project Number: 2007-098-998
Project Name: Area-Wide Monitoring, Point
Project Manager: Arnie Sagar
Sampled by: Norm Nielsen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total Arsenic	Dissolved Arsenic			% Moisture
1	BPMW-6	5/27/14	13:57	W	7		X		+													X	X			
2	BPMW-2	5/27/14	15:32	↓	↓		X		+													X	X			
3	BC-11	5/27/14	17:18	↓	↓		X		+													X	X			
4	BPMW-1	5/27/14	18:28	↓	↓		X		+													X	X			
5	BPMW-4	5/28/14	8:15	↓	↓		X		X													X	X			
6	BPMW-5	5/28/14	9:41	↓	↓		X		X													X	X			
7	Trip Blank	5/28/14	10:30	↓	↓		X																			

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	CFisk	HWA GeoSciences	5/28/14	1:27pm	
Received	Pat Mill	Speedy Mess.	5/28/14	1:28 PM	
Relinquished	Pat Mill	Speedy	5/28/14	1:55	
Received		OSE	5/28/14	1355	
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

March 30, 2015

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-998
Laboratory Reference No. 1405-215B

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on May 28, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: March 30, 2015
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215B
Project: 2007-098-998

Case Narrative

Samples were collected on May 27, 2014 and received by the laboratory on May 28, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: March 30, 2015
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215B
Project: 2007-098-998

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	05-215-01					
Client ID:	**BPMW-6**					
Cadmium	**ND**	4.4	200.8	5-29-14	5-29-14	
Chromium	**ND**	11	200.8	5-29-14	5-29-14	
Lead	**ND**	1.1	200.8	5-29-14	5-29-14	

Date of Report: March 30, 2015
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215B
Project: 2007-098-998

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	5-29-14
Date Analyzed:	5-29-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0529WM1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Lead	200.8	**ND**	1.1

Date of Report: March 30, 2015
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215B
Project: 2007-098-998

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted:	5-29-14
Date Analyzed:	5-29-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	05-215-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	4.4	
Chromium	**ND**	**ND**	NA	11	
Lead	**ND**	**ND**	NA	1.1	

Date of Report: March 30, 2015
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215B
Project: 2007-098-998

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted:	5-29-14
Date Analyzed:	5-29-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	05-215-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	111	**122**	110	**121**	109	1	
Chromium	111	**111**	100	**114**	103	3	
Lead	111	**116**	104	**117**	105	1	

Date of Report: March 30, 2015
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215B
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	05-215-01					
Client ID:	**BPMW-6**					
Cadmium	**ND**	4.0	200.8		5-29-14	
Chromium	**ND**	10	200.8		5-29-14	
Lead	**ND**	1.0	200.8		5-29-14	

Date of Report: March 30, 2015
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215B
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed:	5-29-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0529D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Lead	200.8	**ND**	1.0

Date of Report: March 30, 2015
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215B
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed:	5-29-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	05-209-09

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	

Date of Report: March 30, 2015
Samples Submitted: May 28, 2014
Laboratory Reference: 1405-215B
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed:	5-29-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	05-209-09

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	200	**200**	100	**203**	102	2	
Chromium	200	**189**	95	**191**	95	1	
Lead	200	**199**	99	**198**	99	0	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 1

Company: HWA GeoSciences
Project Number: 2007-098-998
Project Name: Area-Wide Monitoring, Point
Project Manager: Arnie Sugar
Sampled by: Norm Nielsen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ ______ (other)

Laboratory Number: 05-215

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total Arsenic	Dissolved Arsenic		TOTAL Cd, Cr, Pb	DISSOLVED Cd, Cr, Pb	% Moisture
1	BPMW-6	5/27/14	13:57	W	7		X		+													X	X		⊗	⊗	
2	BPMW-2	5/27/14	15:32	↓	↓		X		+													X	X				
3	BC-11	5/27/14	17:18	↓	↓		X		+													X	X				
4	BPMW-1	5/27/14	18:28	↓	↓		X		+													X	X				
5	BPMW-4	5/28/14	8:15	↓	↓		X		X													X	X				
6	BPMW-5	5/28/14	9:41	↓	↓		X		X													X	X				
7	Trip Blank	5/28/14	10:30	↓	↓		X																				

	Signature	Company	Date	Time
Relinquished		HWA GeoSciences	5/28/14	1:27pm
Received		Speedy Mess.	5/28/14	1:28 PM
Relinquished		Speedy	5/28/14	1:55
Received		OSE	5/28/14	1355
Relinquished				
Received				

Reviewed/Date
Reviewed/Date

Comments/Special Instructions: ⊗ Added 3/23/15. DB (STA)

Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

June 23, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-998
Laboratory Reference No. 1406-131

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on June 13, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: June 23, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-131
Project: 2007-098-998

Case Narrative

Samples were collected on June 13, 2014 and received by the laboratory on June 13, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: June 23, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-131
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BC-10**					
Laboratory ID:	06-131-01					
Benzene	**ND**	1.0	EPA 8021B	6-16-14	6-16-14	
Toluene	**ND**	1.0	EPA 8021B	6-16-14	6-16-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	6-16-14	6-16-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	6-16-14	6-16-14	
o-Xylene	**ND**	1.0	EPA 8021B	6-16-14	6-16-14	
Gasoline	**ND**	100	NWTPH-Gx	6-16-14	6-16-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*71-112*				

Date of Report: June 23, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-131
Project: 2007-098-998

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0616W3					
Benzene	**ND**	1.0	EPA 8021B	6-16-14	6-16-14	
Toluene	**ND**	1.0	EPA 8021B	6-16-14	6-16-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	6-16-14	6-16-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	6-16-14	6-16-14	
o-Xylene	**ND**	1.0	EPA 8021B	6-16-14	6-16-14	
Gasoline	**ND**	100	NWTPH-Gx	6-16-14	6-16-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*71-112*				
Laboratory ID:	MB0618W2					
Benzene	**ND**	1.0	EPA 8021B	6-18-14	6-18-14	
Toluene	**ND**	1.0	EPA 8021B	6-18-14	6-18-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	6-18-14	6-18-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	6-18-14	6-18-14	
o-Xylene	**ND**	1.0	EPA 8021B	6-18-14	6-18-14	
Gasoline	**ND**	100	NWTPH-Gx	6-18-14	6-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-112*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	06-129-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*95*	*95*	*71-112*			
MATRIX SPIKES											
Laboratory ID:	06-129-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**48.1**	**50.5**	50.0	50.0	ND	**96**	**101**	78-120	5	12	
Toluene	**49.9**	**51.4**	50.0	50.0	ND	**100**	**103**	80-121	3	12	
Ethyl Benzene	**49.9**	**50.0**	50.0	50.0	ND	**100**	**100**	81-120	0	13	
m,p-Xylene	**50.0**	**49.5**	50.0	50.0	ND	**100**	**99**	81-119	1	13	
o-Xylene	**49.5**	**47.5**	50.0	50.0	ND	**99**	**95**	79-117	4	13	
Surrogate:											
Fluorobenzene						*94*	*96*	*71-112*			

Date of Report: June 23, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-131
Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BC-10**					
Laboratory ID:	06-131-01					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	6-14-14	6-16-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	6-14-14	6-16-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				

Date of Report: June 23, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-131
Project: 2007-098-998

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0614W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	6-14-14	6-16-14	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	6-14-14	6-16-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	06-082-01										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	U1
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*85*	*89*	*50-150*			

Date of Report: June 23, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-131
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	06-131-01					
Client ID:	**BC-10**					
Arsenic	**ND**	3.0	200.8		6-16-14	

Date of Report: June 23, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-131
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed:	6-16-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0611F1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0

Date of Report: June 23, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-131
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed: 6-16-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 06-117-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**8.05**	**8.35**	4	3.0	

Date of Report: June 23, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-131
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed:	6-16-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	06-117-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**220**	106	**224**	108	2	

Date of Report: June 23, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-131
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	06-131-01					
Client ID:	**BC-10**					
Arsenic	**ND**	3.3	200.8	6-18-14	6-18-14	

Date of Report: June 23, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-131
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	6-18-14
Date Analyzed:	6-18-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	06-073-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**7.28**	**7.17**	2	3.3	

Date of Report: June 23, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-131
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 6-18-14
Date Analyzed: 6-18-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 06-073-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	111	**125**	106	**127**	108	1	

Date of Report: June 23, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-131
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	06-131-01					
Client ID:	**BC-10**					
Arsenic	**ND**	3.3	200.8	6-18-14	6-18-14	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.

21312 30th Drive SE, Suite 110, Bothell, Washington 98021-7010
Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

06-131

Chain of Custody and Laboratory Anaylsis Request

DATE: 6/13/14
PAGE: 1 of 1

2007-098

PROJECT NAME: Area Wide Monitoring, Paint #: 998
SAMPLERS NAME: Norm Nielsen PHONE: 206 450-0552
SAMPLERS SIGNATURE: Norm Nielsen DATE: 6/13/14
HWA CONTACT: Arnie Sugar PHONE:

ANALYSIS REQUESTED

TURNAROUND TIME
☐ DAYS
☒ STANDARD

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	WTPH-Gx / BTEX	WTPH-Dx	Dissolved As	Total As	EDD	REMARKS
BC-10	6/13/14	11:21	W	1	7	X	X	X	X		

PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fisk		HWA GeoSciences	6/13/14	2:52pm	
Received by:	K. TIBBLES		speedy	6/13/14	252pm	
Relinquished by:	K. TRIBBLES		speedy	6/13/14	3:45p	
Received by:	MVOUN		OSE	6/13/14	1545	

DISTRIBUTION: WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 30, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-2008
Laboratory Reference No. 1409-066B

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on September 8, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 30, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066B
Project: 2007-098-2008

Case Narrative

Samples were collected on September 8, 2014 and received by the laboratory on September 8, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 30, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066B
Project: 2007-098-2008

TOTAL ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-066-02					
Client ID:	**BPMW-6**					
Arsenic	**39**	3.3	200.8	9-24-14	9-24-14	
Lab ID:	09-066-03					
Client ID:	**BPMW-1**					
Arsenic	**14**	3.3	200.8	9-24-14	9-24-14	

Date of Report: September 30, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066B
Project: 2007-098-2008

TOTAL ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-24-14
Date Analyzed:	9-24-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0924WM1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3

Date of Report: September 30, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066B
Project: 2007-098-2008

TOTAL ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted:	9-24-14
Date Analyzed:	9-24-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	09-060-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.3	

Date of Report: September 30, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066B
Project: 2007-098-2008

TOTAL ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted:	9-24-14
Date Analyzed:	9-24-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	09-060-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	111	**116**	105	**118**	106	1	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.

21312 30th Drive SE, Suite 110, Bothell, Washington 98021-7010
Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

09-066

Chain of Custody and Laboratory Anaylsis Request

DATE:
PAGE: 1 of 1

PROJECT NAME: Bothell Crossroad Paint #: 2007098 2008
SAMPLERS NAME: KStilson PHONE:
SAMPLERS SIGNATURE: K Stilson DATE: 9/8/14
HWA CONTACT: Arnie Sugar PHONE:

TURNAROUND TIME
☐ DAYS
☒ STANDARD

						ANALYSIS REQUESTED															
HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH-G	Dx	BTEX	Metals Diss	Metals Total		TOTAL As								EDD	REMARKS
BPMW-2	9/8/14	200	W	1	7	\	\	\	\	\		~~⊗~~									Run Dissolved
BPMW-6	|	345	W	2	7	\	\	\	\	\		⊗									Archive Total
BPMW-1	—	450	W	3	7	\	\	\	\	\		⊗									
																					Metals:
																					As, Cd, Cr, Pb
																					⊗ Added 9/22/14,
																					DB (STA)

PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	KStilson	K Stilson	HWA	9/8/14	545	
Received by:	M VAN		OSE	9/8/14	1745	
Relinquished by:						
Received by:						

DISTRIBUTION: WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 19, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-2008
Laboratory Reference No. 1409-066

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on September 8, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 19, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066
Project: 2007-098-2008

Case Narrative

Samples were collected on September 8, 2014 and received by the laboratory on September 8, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 19, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066
Project: 2007-098-2008

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW-2**					
Laboratory ID:	09-066-01					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*71-112*				
Client ID:	**BPMW-6**					
Laboratory ID:	09-066-02					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*71-112*				
Client ID:	**BPMW-1**					
Laboratory ID:	09-066-03					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*71-112*				

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0912W2					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-112*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-066-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*97*	*97*	*71-112*			
MATRIX SPIKES											
Laboratory ID:	09-107-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**55.9**	**53.0**	50.0	50.0	ND	**112**	**106**	78-120	5	12	
Toluene	**55.2**	**51.8**	50.0	50.0	ND	**110**	**104**	80-121	6	12	
Ethyl Benzene	**54.6**	**51.1**	50.0	50.0	ND	**109**	**102**	81-120	7	13	
m,p-Xylene	**54.3**	**50.4**	50.0	50.0	ND	**109**	**101**	81-119	7	13	
o-Xylene	**54.4**	**50.8**	50.0	50.0	ND	**109**	**102**	79-117	7	13	
Surrogate:											
Fluorobenzene						*100*	*99*	*71-112*			

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW-2**					
Laboratory ID:	09-066-01					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				
Client ID:	**BPMW-6**					
Laboratory ID:	09-066-02					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				
Client ID:	**BPMW-1**					
Laboratory ID:	09-066-03					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*87*	*50-150*				

Date of Report: September 19, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066
Project: 2007-098-2008

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0912W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-066-02										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*83*	*79*	*50-150*			

Date of Report: September 19, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-066-01					
Client ID:	**BPMW-2**					
Arsenic	**ND**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	
Lab ID:	09-066-02					
Client ID:	**BPMW-6**					
Arsenic	**23**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	
Lab ID:	09-066-03					
Client ID:	**BPMW-1**					
Arsenic	**8.7**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	

Date of Report: September 19, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed: 9-16-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0916D1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Lead	200.8	**ND**	1.0

Date of Report: September 19, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed: 9-16-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-066-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	

Date of Report: September 19, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed: 9-16-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-066-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**207**	103	**211**	106	2	
Cadmium	200	**207**	104	**210**	105	1	
Chromium	200	**195**	97	**200**	100	3	
Lead	200	**198**	99	**201**	101	2	

OnSite
Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.

21312 30th Drive SE, Suite 110, Bothell, Washington 98021-7010
Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

09-066

Chain of Custody and Laboratory Anaylsis Request

DATE:
PAGE: 1 of 1

PROJECT NAME: Bothell Crossroad Paint #: 20070982008
SAMPLERS NAME: KStilson PHONE:
SAMPLERS SIGNATURE: K Stilson DATE: 9/8/14
HWA CONTACT: Arnie Sugar PHONE:

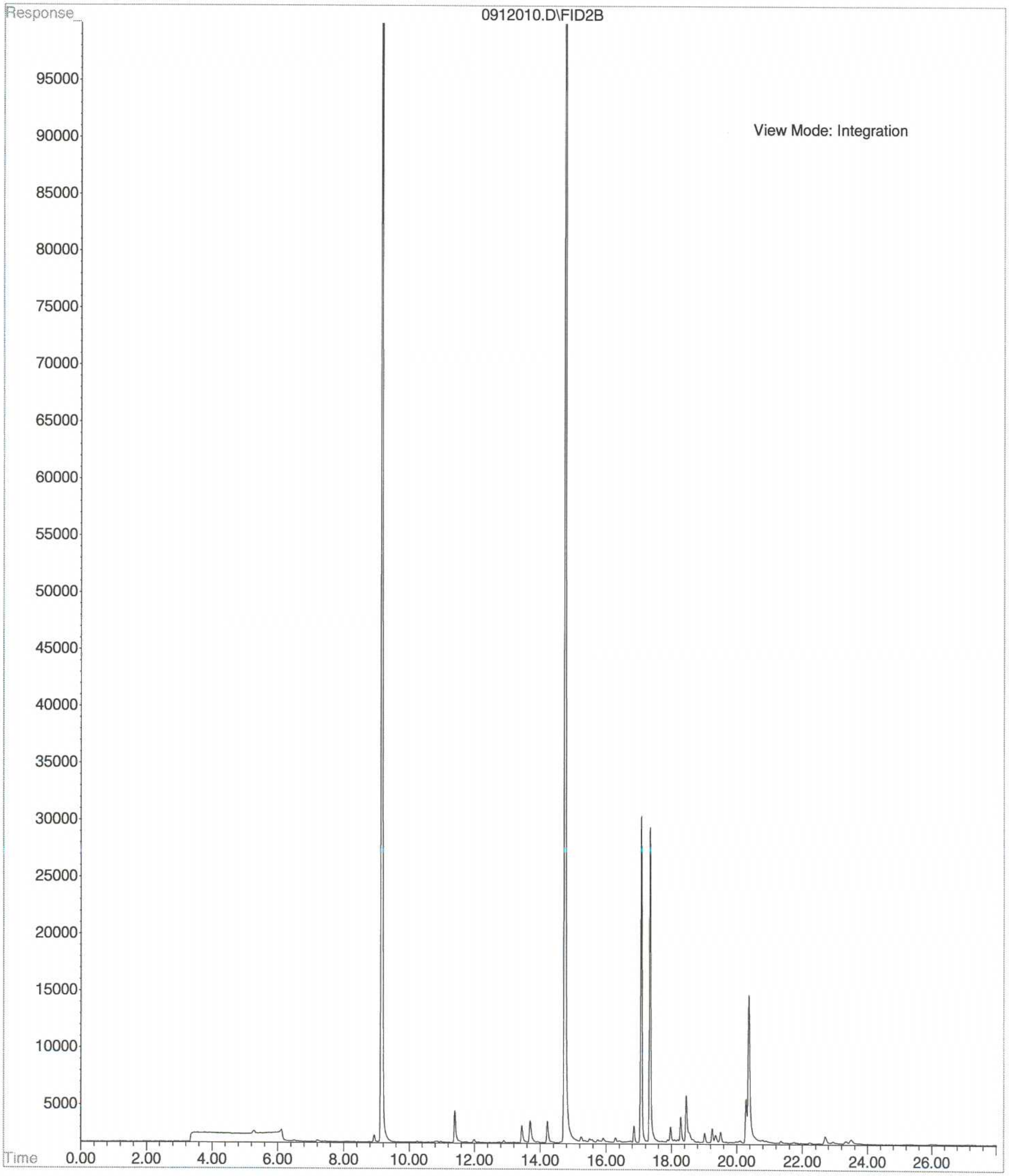
TURNAROUND TIME
☐ DAYS
☒ STANDARD

						ANALYSIS REQUESTED						
HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH-G	Dx	BTEX	Metals Diss	Metals Total	EDD	REMARKS
BPMW-2	9/8/14	200	W	1	7	/	/	/	/	/		Run Dissolved
BPMW-6	|	345	W	2	7	/	/	/	/	/		Archive Total
BPMW-1	—	450	W	3	7	/	/	/	/	/		
												Metals:
												As, Cd, Cr, Pb

PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	KStilson	K Stilson	HWA	9/8/14	545	
Received by:	M VAN		OSE	9/8/14	1745	
Relinquished by:						
Received by:						

DISTRIBUTION: **WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler**

```
File       : X:\BTEX\HOPE\DATA\H140912\0912010.D
Operator   :
Acquired   : 12 Sep 2014  16:07     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-066-01f
Misc Info  : V2-35-19
Vial Number: 10
```



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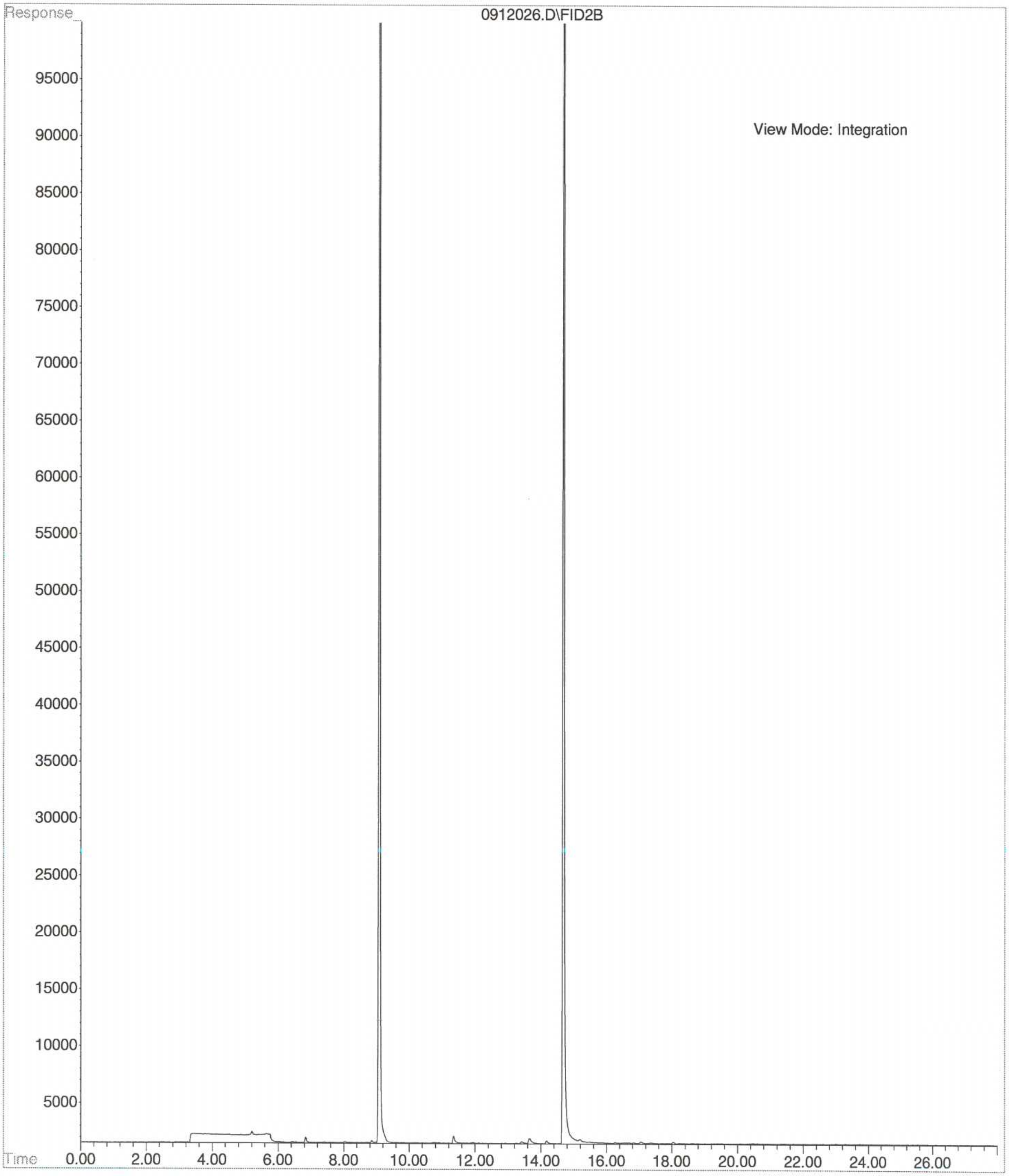
File       : X:\BTEX\HOPE\DATA\H140912\0912026.D
Operator   :
Acquired   : 13 Sep 2014   1:11     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-066-02f
Misc Info  : V2-35-19
Vial Number: 26
```



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File       : X:\BTEX\HOPE\DATA\H140912\0912024.D
Operator   :
Acquired   : 13 Sep 2014  00:05     using AcqMethod 140822B.M
Instrument :    HOPE
Sample Name: 09-066-03f
Misc Info  : V2-35-19
Vial Number: 24
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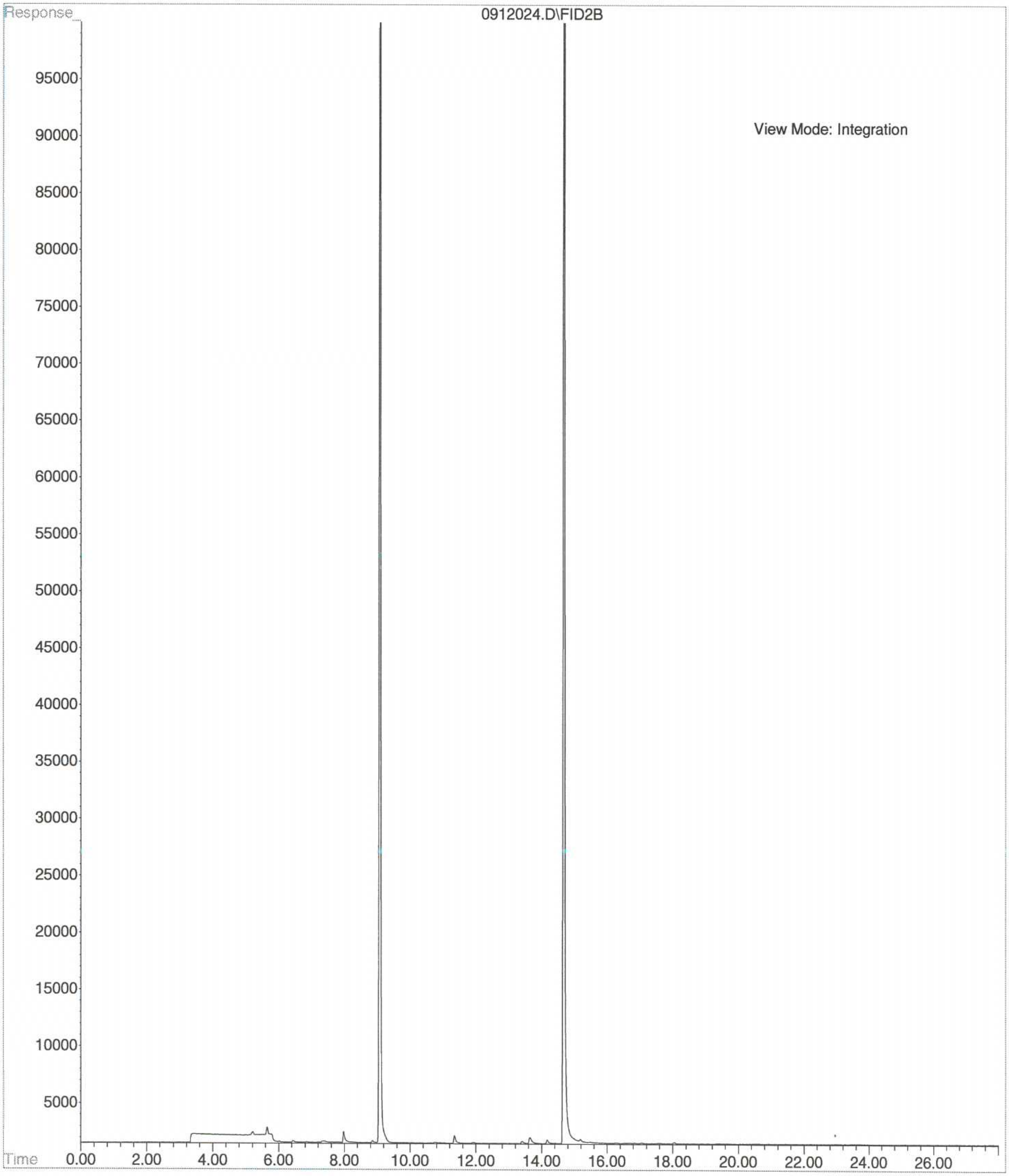
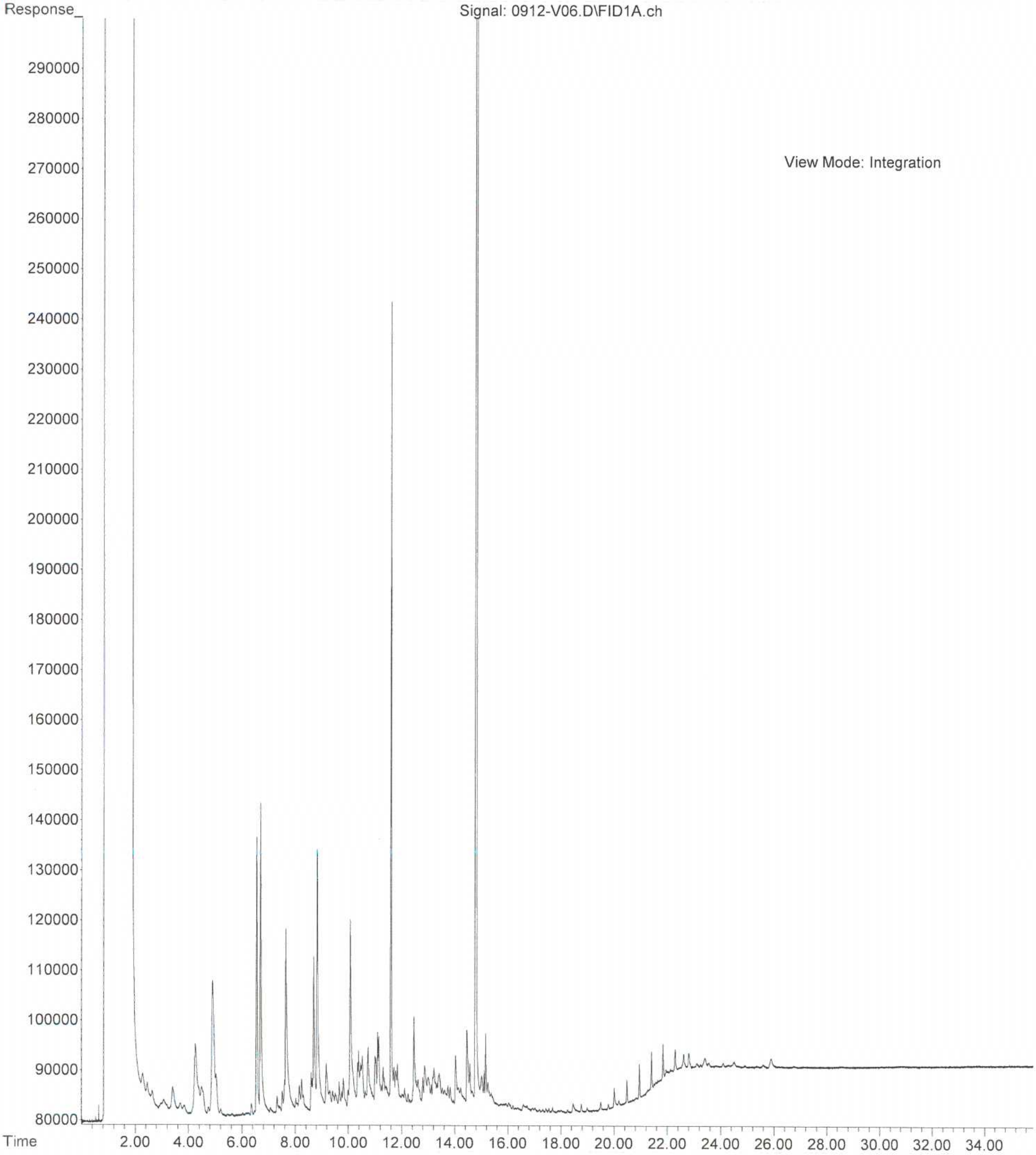
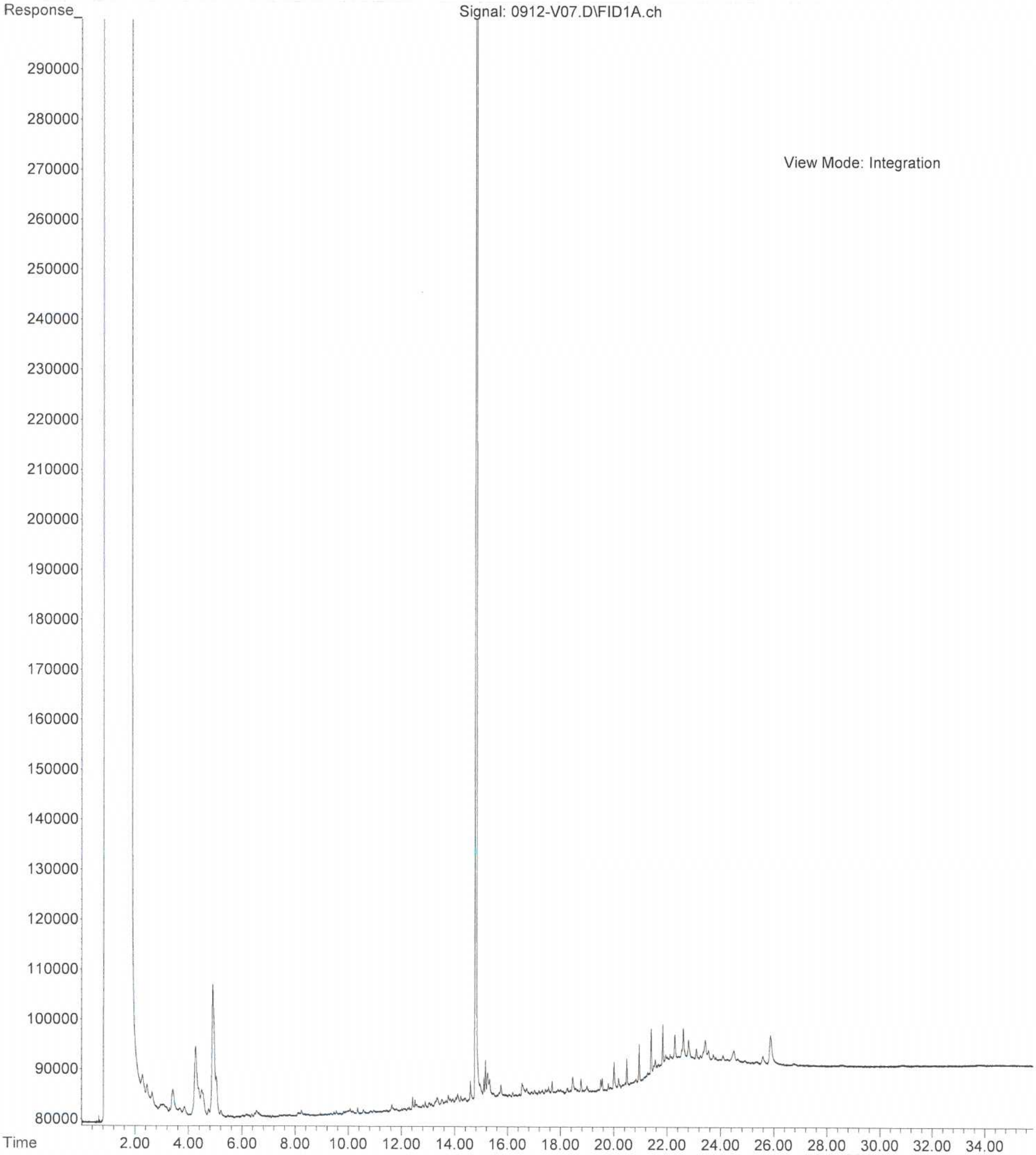


```
File        :C:\msdchem\2\DATA\V140912\0912-V06.D
Operator    :
Acquired    : 12 Sep 2014  13:26     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-066-01
Misc Info   :
Vial Number: 6
```



```
File        :C:\msdchem\2\DATA\V140912\0912-V07.D
Operator    :
Acquired    : 12 Sep 2014  14:14     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-066-02
Misc Info   :
Vial Number: 7
```



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File        :C:\msdchem\2\DATA\V140912\0912-V09.D
Operator    :
Acquired    : 12 Sep 2014  15:36     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-066-03
Misc Info   :
Vial Number: 9
```
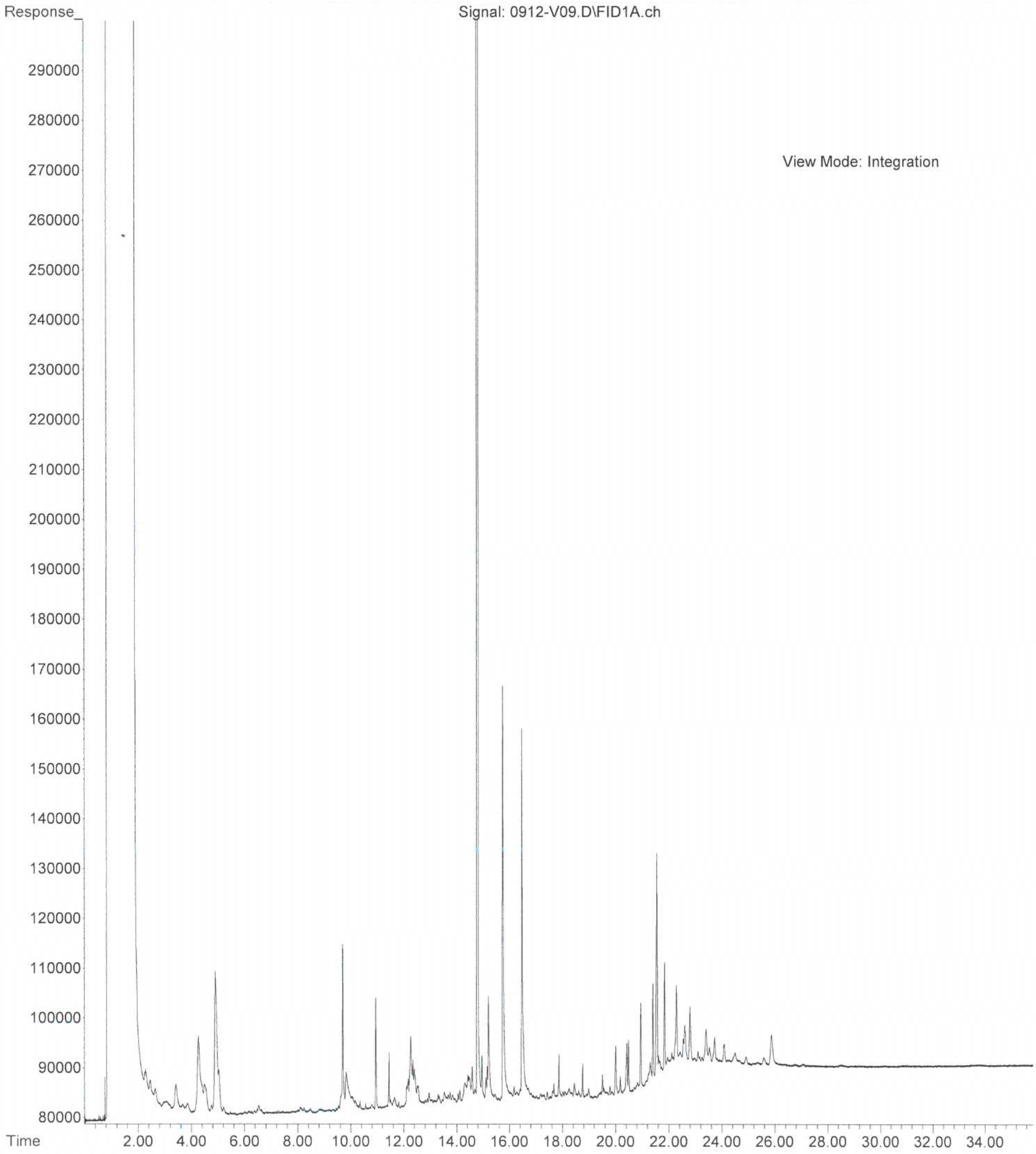



OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 19, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-2008
Laboratory Reference No. 1409-066

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on September 8, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 19, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066
Project: 2007-098-2008

Case Narrative

Samples were collected on September 8, 2014 and received by the laboratory on September 8, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 19, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066
Project: 2007-098-2008

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW-2**					
Laboratory ID:	09-066-01					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*71-112*				
Client ID:	**BPMW-6**					
Laboratory ID:	09-066-02					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*71-112*				
Client ID:	**BPMW-1**					
Laboratory ID:	09-066-03					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*71-112*				

Date of Report: September 19, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066
Project: 2007-098-2008

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0912W2					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-112*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-066-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*97*	*97*	*71-112*			
MATRIX SPIKES											
Laboratory ID:	09-107-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**55.9**	**53.0**	50.0	50.0	ND	**112**	**106**	78-120	5	12	
Toluene	**55.2**	**51.8**	50.0	50.0	ND	**110**	**104**	80-121	6	12	
Ethyl Benzene	**54.6**	**51.1**	50.0	50.0	ND	**109**	**102**	81-120	7	13	
m,p-Xylene	**54.3**	**50.4**	50.0	50.0	ND	**109**	**101**	81-119	7	13	
o-Xylene	**54.4**	**50.8**	50.0	50.0	ND	**109**	**102**	79-117	7	13	
Surrogate:											
Fluorobenzene						*100*	*99*	*71-112*			

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW-2**					
Laboratory ID:	09-066-01					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				
Client ID:	**BPMW-6**					
Laboratory ID:	09-066-02					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				
Client ID:	**BPMW-1**					
Laboratory ID:	09-066-03					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*87*	*50-150*				

Date of Report: September 19, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066
Project: 2007-098-2008

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0912W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	09-066-02										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*83*	*79*	*50-150*			

Date of Report: September 19, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-066-01					
Client ID:	**BPMW-2**					
Arsenic	**ND**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	
Lab ID:	09-066-02					
Client ID:	**BPMW-6**					
Arsenic	**23**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	
Lab ID:	09-066-03					
Client ID:	**BPMW-1**					
Arsenic	**8.7**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	

Date of Report: September 19, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed: 9-16-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0916D1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Lead	200.8	**ND**	1.0

Date of Report: September 19, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed: 9-16-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-066-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	

Date of Report: September 19, 2014
Samples Submitted: September 8, 2014
Laboratory Reference: 1409-066
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed: 9-16-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-066-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**207**	103	**211**	106	2	
Cadmium	200	**207**	104	**210**	105	1	
Chromium	200	**195**	97	**200**	100	3	
Lead	200	**198**	99	**201**	101	2	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.

21312 30th Drive SE, Suite 110, Bothell, Washington 98021-7010
Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

09-066

Chain of Custody and Laboratory Anaylsis Request

DATE:
PAGE: 1 of 1

PROJECT NAME: Bothell Crossroad Paint #: 2007098 2008
SAMPLERS NAME: K Stilson PHONE:
SAMPLERS SIGNATURE: K Stilson DATE: 9/8/14
HWA CONTACT: Arnie Sugar PHONE:

TURNAROUND TIME
☐ DAYS
☒ STANDARD

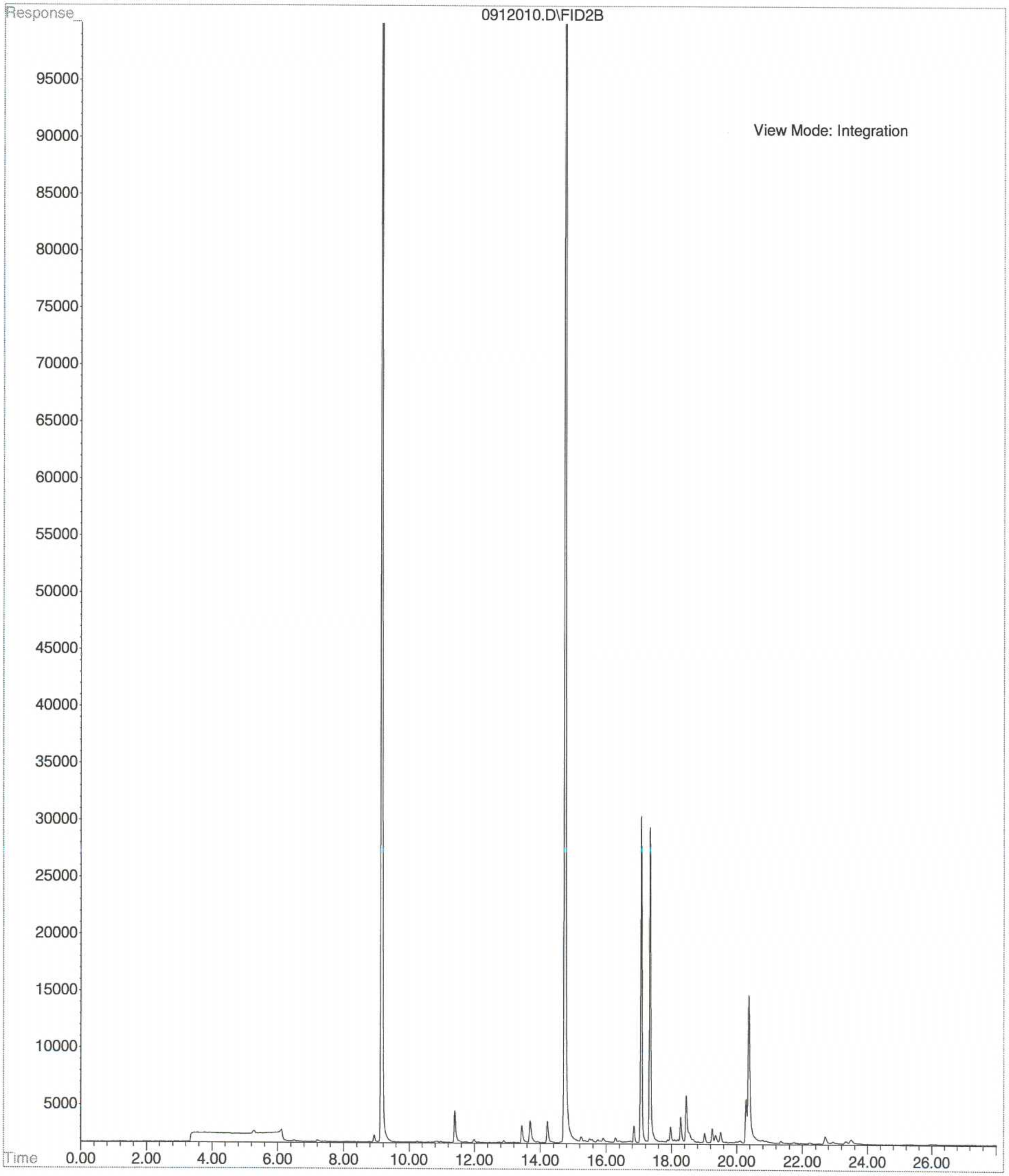
HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH-G	Dx	BTEX	Metals Diss	Metals Total	EDD	REMARKS
BPMW-2	9/8/14	200	W	1	7	/	/	/	/	/		Run Dissolved
BPMW-6	|	345	W	2	7	/	/	/	/	/		Archive Total
BPMW-1	—	450	W	3	7	/	/	/	/	/		
												Metals:
												As, Cd, Cr, Pb

ANALYSIS REQUESTED

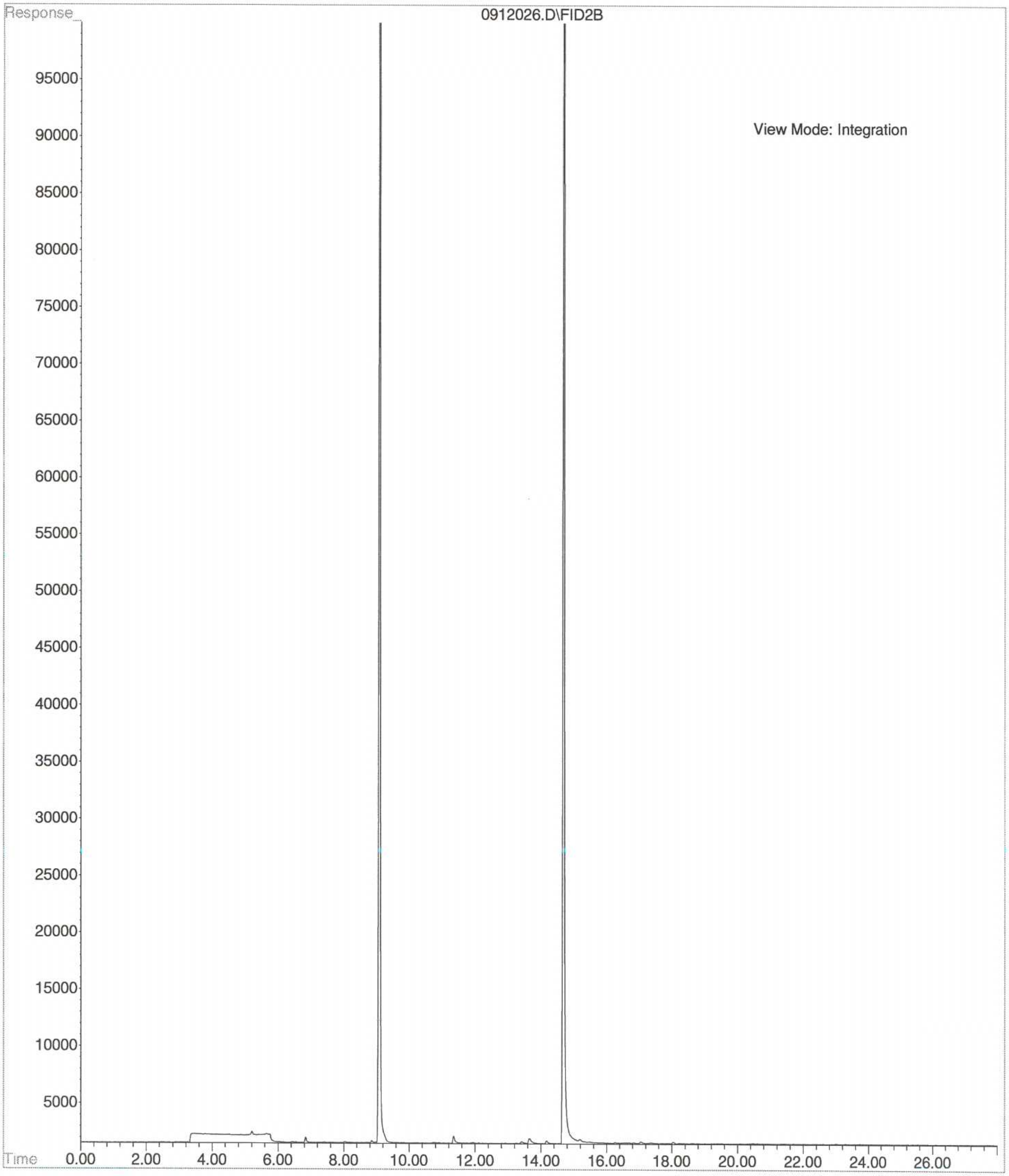
PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	KStilson	K Stilson	HWA	9/8/14	545	
Received by:	M VAN		OSE	9/8/14	1745	
Relinquished by:						
Received by:						

DISTRIBUTION: WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler

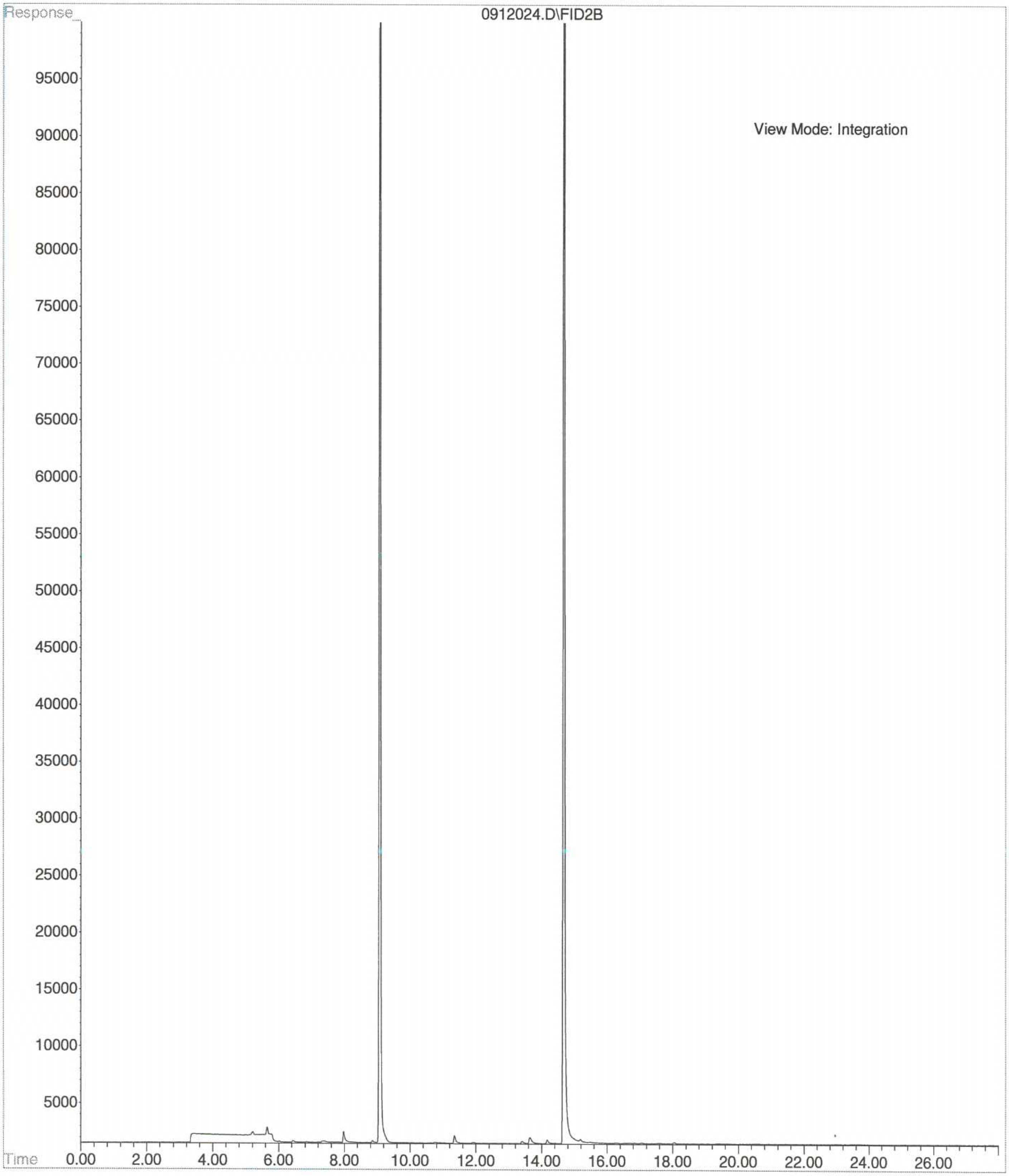
```
File       : X:\BTEX\HOPE\DATA\H140912\0912010.D
Operator   :
Acquired   : 12 Sep 2014  16:07     using AcqMethod 140822B.M
Instrument :    HOPE
Sample Name: 09-066-01f
Misc Info  : V2-35-19
Vial Number: 10
```



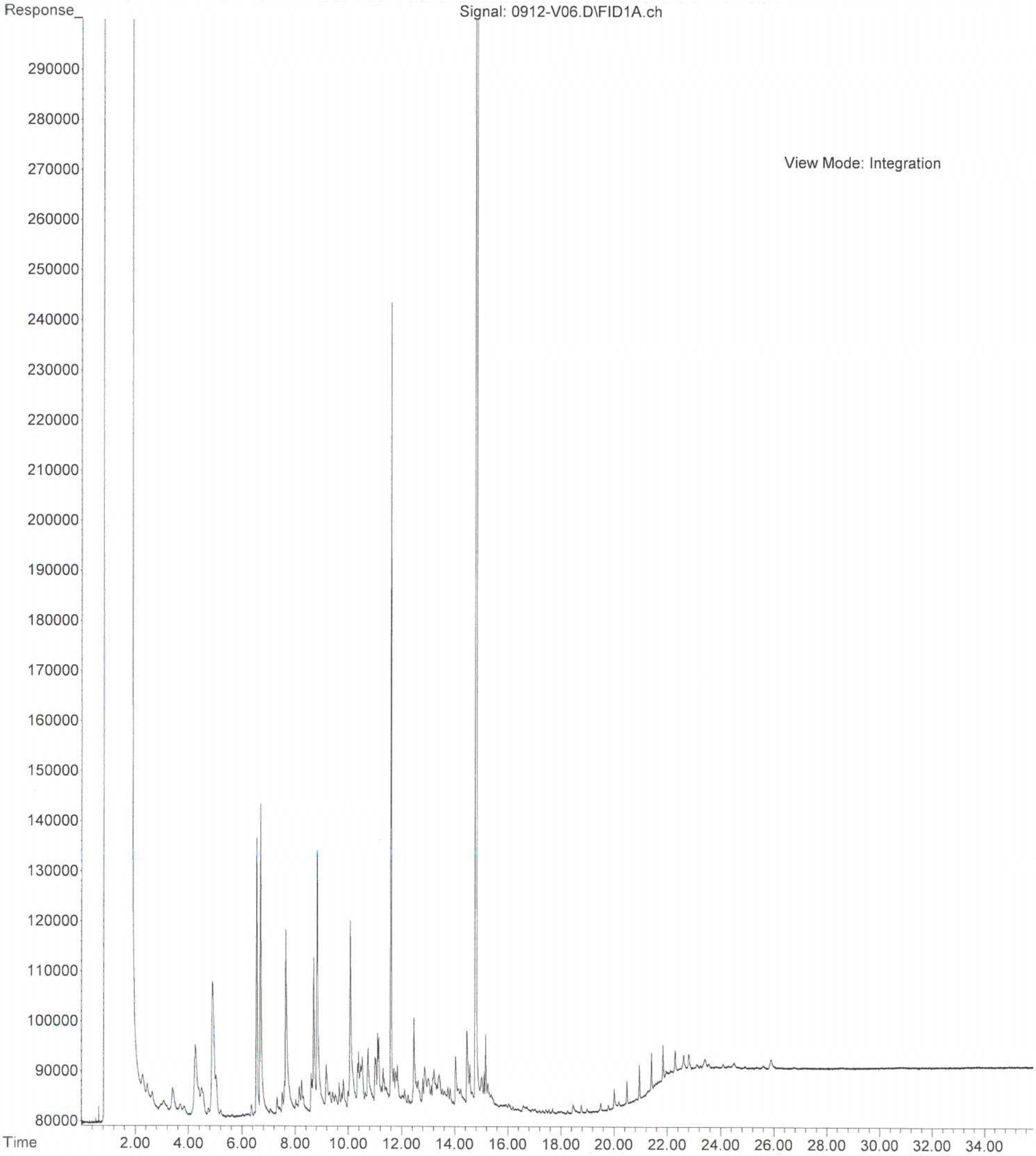
```
File        : X:\BTEX\HOPE\DATA\H140912\0912026.D
Operator    :
Acquired    : 13 Sep 2014   1:11     using AcqMethod 140822B.M
Instrument :    HOPE
Sample Name: 09-066-02f
Misc Info   : V2-35-19
Vial Number: 26
```



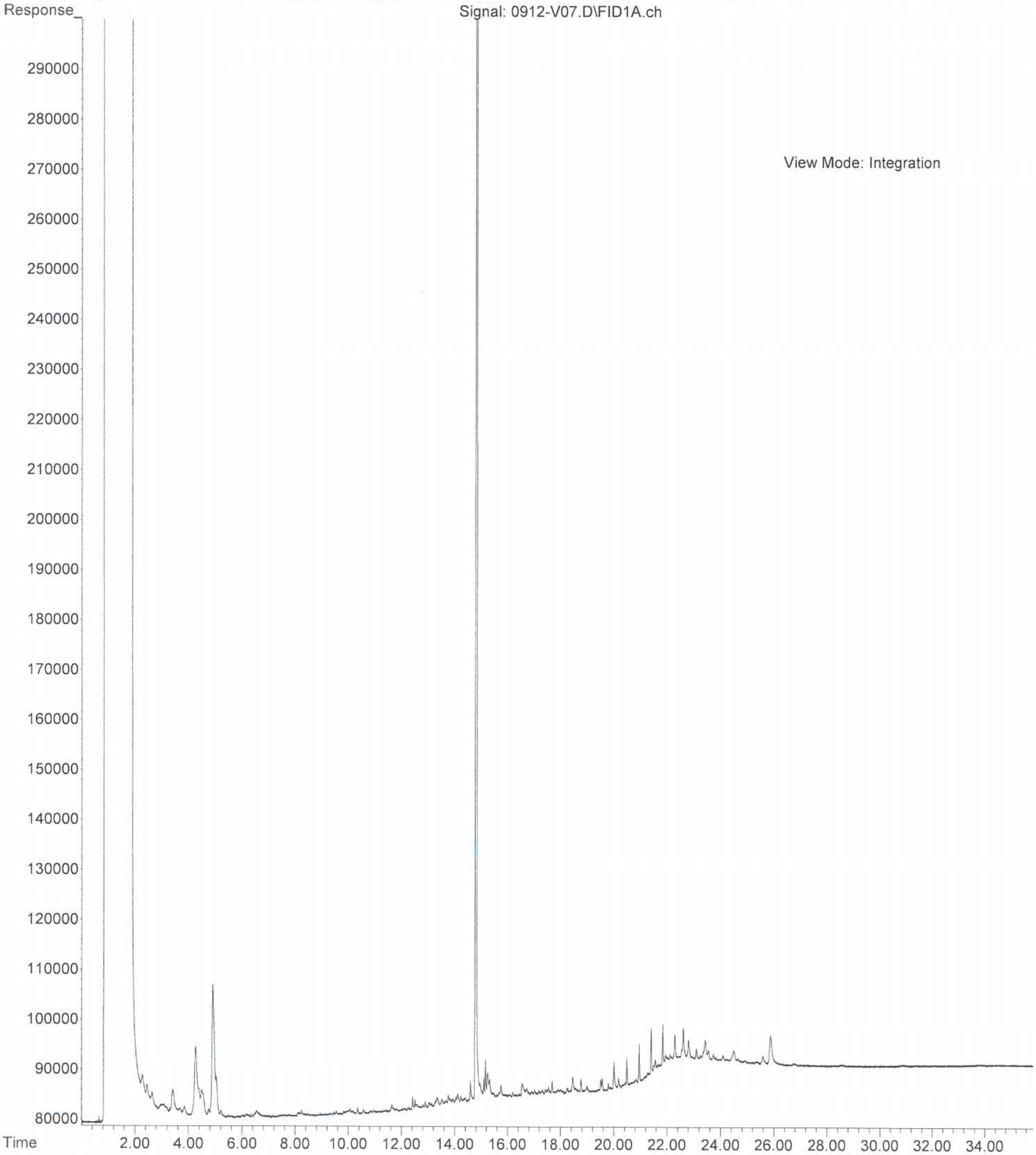
```
File       : X:\BTEX\HOPE\DATA\H140912\0912024.D
Operator   :
Acquired   : 13 Sep 2014  00:05     using AcqMethod 140822B.M
Instrument :    HOPE
Sample Name: 09-066-03f
Misc Info  : V2-35-19
Vial Number: 24
```



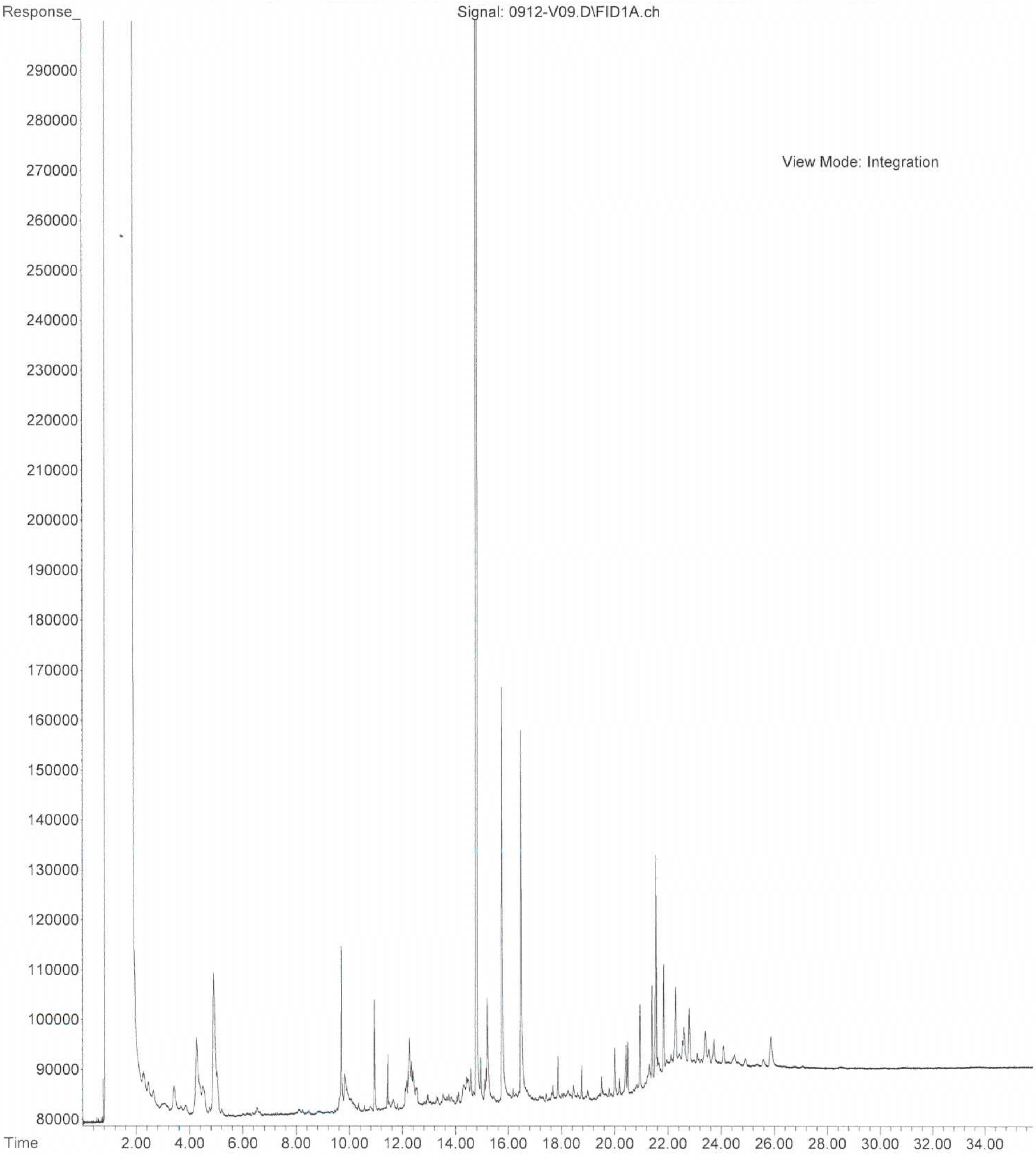
```
File        :C:\msdchem\2\DATA\V140912\0912-V06.D
Operator    :
Acquired    : 12 Sep 2014  13:26      using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-066-01
Misc Info  :
Vial Number: 6
```



```
File        :C:\msdchem\2\DATA\V140912\0912-V07.D
Operator    :
Acquired    : 12 Sep 2014  14:14     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-066-02
Misc Info   :
Vial Number: 7
```



```
File        :C:\msdchem\2\DATA\V140912\0912-V09.D
Operator    :
Acquired    : 12 Sep 2014  15:36     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-066-03
Misc Info   :
Vial Number: 9
```



OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 19, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-2008
Laboratory Reference No. 1409-107

Dear Kim:

Enclosed are the analytical results and associated quality control data for samples submitted on September 11, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

Case Narrative

Samples were collected on September 9 and 10, 2014 and received by the laboratory on September 10, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW4**					
Laboratory ID:	09-107-01					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*71-112*				
Client ID:	**BPMW5**					
Laboratory ID:	09-107-02					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*71-112*				
Client ID:	**BLMW11**					
Laboratory ID:	09-107-03					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-112*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**BLMW8**					
Laboratory ID:	09-107-04					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*71-112*				
Client ID:	**BLMW7**					
Laboratory ID:	09-107-05					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-112*				
Client ID:	**BLMW6R**					
Laboratory ID:	09-107-06					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*71-112*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**BLMW5R**					
Laboratory ID:	09-107-07					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*79*	*71-112*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0912W2					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-112*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-066-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*97*	*97*	*71-112*			
MATRIX SPIKES											
Laboratory ID:	09-107-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**55.9**	**53.0**	50.0	50.0	ND	**112**	**106**	78-120	5	12	
Toluene	**55.2**	**51.8**	50.0	50.0	ND	**110**	**104**	80-121	6	12	
Ethyl Benzene	**54.6**	**51.1**	50.0	50.0	ND	**109**	**102**	81-120	7	13	
m,p-Xylene	**54.3**	**50.4**	50.0	50.0	ND	**109**	**101**	81-119	7	13	
o-Xylene	**54.4**	**50.8**	50.0	50.0	ND	**109**	**102**	79-117	7	13	
Surrogate:											
Fluorobenzene						*100*	*99*	*71-112*			

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**BPMW4**					
Laboratory ID:	09-107-01					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				
Client ID:	**BPMW5**					
Laboratory ID:	09-107-02					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				
Client ID:	**BLMW11**					
Laboratory ID:	09-107-03					
Diesel Range Organics	**0.32**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**0.43**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				
Client ID:	**BLMW8**					
Laboratory ID:	09-107-04					
Diesel Range Organics	**0.28**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**0.54**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				
Client ID:	**BLMW7**					
Laboratory ID:	09-107-05					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				
Client ID:	**BLMW6R**					
Laboratory ID:	09-107-06					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**BLMW5R**					
Laboratory ID:	09-107-07					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0912W2					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-107-01										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*85*	*84*	*50-150*			

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-107-01					
Client ID:	**BPMW4**					
Arsenic	**ND**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	
Lab ID:	09-107-02					
Client ID:	**BPMW5**					
Arsenic	**ND**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**1.6**	1.0	200.8		9-16-14	
Lab ID:	09-107-03					
Client ID:	**BLMW11**					
Arsenic	**110**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	
Lab ID:	09-107-04					
Client ID:	**BLMW8**					
Arsenic	**ND**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-107-05					
Client ID:	**BLMW7**					
Arsenic	**ND**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	
Lab ID:	09-107-06					
Client ID:	**BLMW6R**					
Arsenic	**4.7**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	
Lab ID:	09-107-07					
Client ID:	**BLMW5R**					
Arsenic	**ND**	3.0	200.8	9-11-14	9-16-14	
Cadmium	**ND**	4.0	200.8	9-11-14	9-16-14	
Chromium	**ND**	10	200.8	9-11-14	9-16-14	
Lead	**ND**	1.0	200.8	9-11-14	9-16-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered:	9-11-14
Date Analyzed:	9-16-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0911F1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Lead	200.8	**ND**	1.0

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered:	9-11-14
Date Analyzed:	9-16-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	09-066-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered:	9-11-14
Date Analyzed:	9-16-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	09-066-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**207**	103	**211**	106	2	
Cadmium	200	**207**	104	**210**	105	1	
Chromium	200	**195**	97	**200**	100	3	
Lead	200	**198**	99	**201**	101	2	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW11**					
Laboratory ID:	09-107-03					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW11**					
Laboratory ID:	09-107-03					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*107*	*62-122*				
Toluene-d8	*98*	*70-120*				
4-Bromofluorobenzene	*94*	*71-120*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C

page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW8**					
Laboratory ID:	09-107-04					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW8**					
Laboratory ID:	09-107-04					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*101*	*62-122*				
Toluene-d8	*101*	*70-120*				
4-Bromofluorobenzene	*97*	*71-120*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW7**					
Laboratory ID:	09-107-05					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	0.91	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	0.22	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW7**					
Laboratory ID:	09-107-05					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*101*	*62-122*				
Toluene-d8	*98*	*70-120*				
4-Bromofluorobenzene	*94*	*71-120*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C

page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW6R**					
Laboratory ID:	09-107-06					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C

page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW6R**					
Laboratory ID:	09-107-06					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*100*	*62-122*				
Toluene-d8	*101*	*70-120*				
4-Bromofluorobenzene	*98*	*71-120*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C

page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW5R**					
Laboratory ID:	09-107-07					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW5R**					
Laboratory ID:	09-107-07					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*98*	*62-122*				
Toluene-d8	*101*	*70-120*				
4-Bromofluorobenzene	*98*	*71-120*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0918W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0918W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*102*	*62-122*				
Toluene-d8	*101*	*70-120*				
4-Bromofluorobenzene	*97*	*71-120*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
MS/MSD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-148-02										
	MS	MSD	MS	MSD		MS	MSD				
1,1-Dichloroethene	**8.07**	**8.44**	10.0	10.0	ND	81	84	57-133	4	15	
Benzene	**8.37**	**8.89**	10.0	10.0	ND	84	89	75-117	6	15	
Trichloroethene	**7.56**	**7.74**	10.0	10.0	ND	76	77	75-120	2	15	
Toluene	**7.67**	**8.11**	10.0	10.0	ND	77	81	75-115	6	15	
Chlorobenzene	**8.23**	**8.21**	10.0	10.0	ND	82	82	75-122	0	15	
Surrogate:											
Dibromofluoromethane						*96*	*105*	*62-122*			
Toluene-d8						*93*	*101*	*70-120*			
4-Bromofluorobenzene						*93*	*95*	*71-120*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
21312 30th Drive SE, Suite 110, Bothell, Washington 98021-7010
Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

Chain of Custody and Laboratory Anaylsis Request

DATE: ____
PAGE: __ of __

09-107

PROJECT NAME: Bothell Paint / Bothell Landing #: 2007098008
SAMPLERS NAME: KStilson PHONE: ____
SAMPLERS SIGNATURE: KA Sti DATE: 9/11/14
HWA CONTACT: Arnie Sugar PHONE: ____

TURNAROUND TIME
☐ DAYS
☑ STANDARD

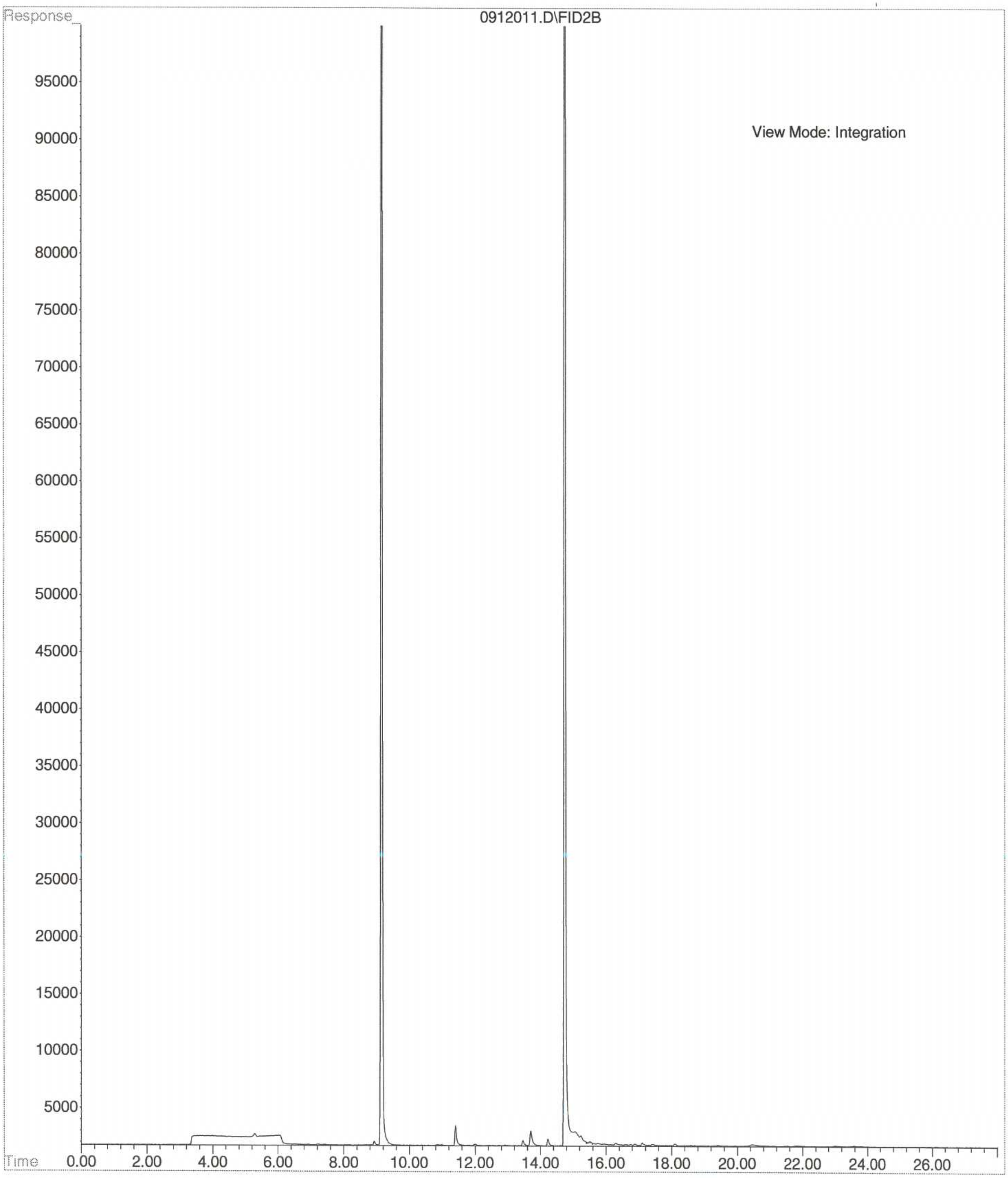
	HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPHG	Dx	BTEX	Total Metals	Diss Metals	HVOCs	EDD	REMARKS
1	BPMW4	9/9/14	930	W		7	✓	✓	✓	✓	✓			Run D initially
2	BPMW5	|	1245	W		7	✓	✓	✓	✓	✓			Archive T metals
3	BLMW11	|	545	W		9	✓	✓	✓	✓	✓	✓		
4	BLMW8	9/10/14	900	W		9	✓	✓	✓	✓	✓	✓		Metals:
5	BLMW7	|	1015	W		9	✓	✓	✓	✓	✓	✓		As, Cd, Cr, Pb
6	BLMW6R	|	1115	W		9	✓	✓	✓	✓	✓	✓		
7	BLMW5R	|	1220	W		9	✓	✓	✓	✓	✓	✓		

*Note BLMW5R Diss metals in Unpreserved poly please filter @ Lab

PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	KStilson	KA Sti	HWA	9/11/14	830	
Received by:	T Har	T Harrl	Speedy	9-11-14	832	
Relinquished by:	T H	T Harle	Speedy	9-11-14	930	
Received by:	alex Armantrout	Alex Armantrout	OSE	9/11	930	

DISTRIBUTION: WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler

File   : X:\BTEX\HOPE\DATA\H140912\0912011.D
Operator   :
Acquired   : 12 Sep 2014 16:43   using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-01f
Misc Info   : V2-35-19
Vial Number: 11



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File        : X:\BTEX\HOPE\DATA\H140912\0912018.D
Operator    :
Acquired    : 12 Sep 2014  20:45     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-02f
Misc Info  : V2-35-19
Vial Number: 18
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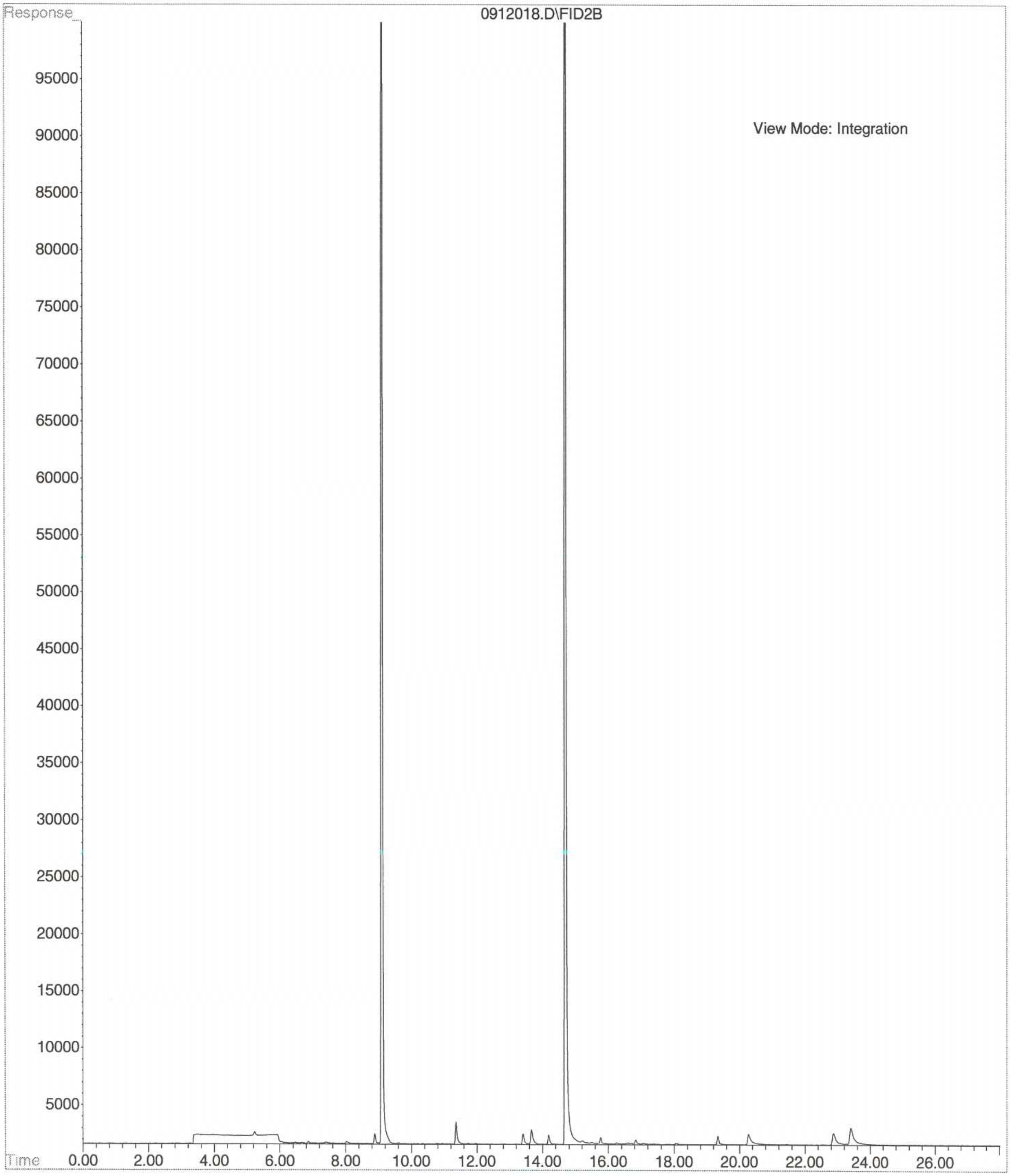

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File       : X:\BTEX\HOPE\DATA\H140912\0912028.D
Operator   :
Acquired   : 13 Sep 2014   2:17     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-03f
Misc Info  : V2-35-19
Vial Number: 28
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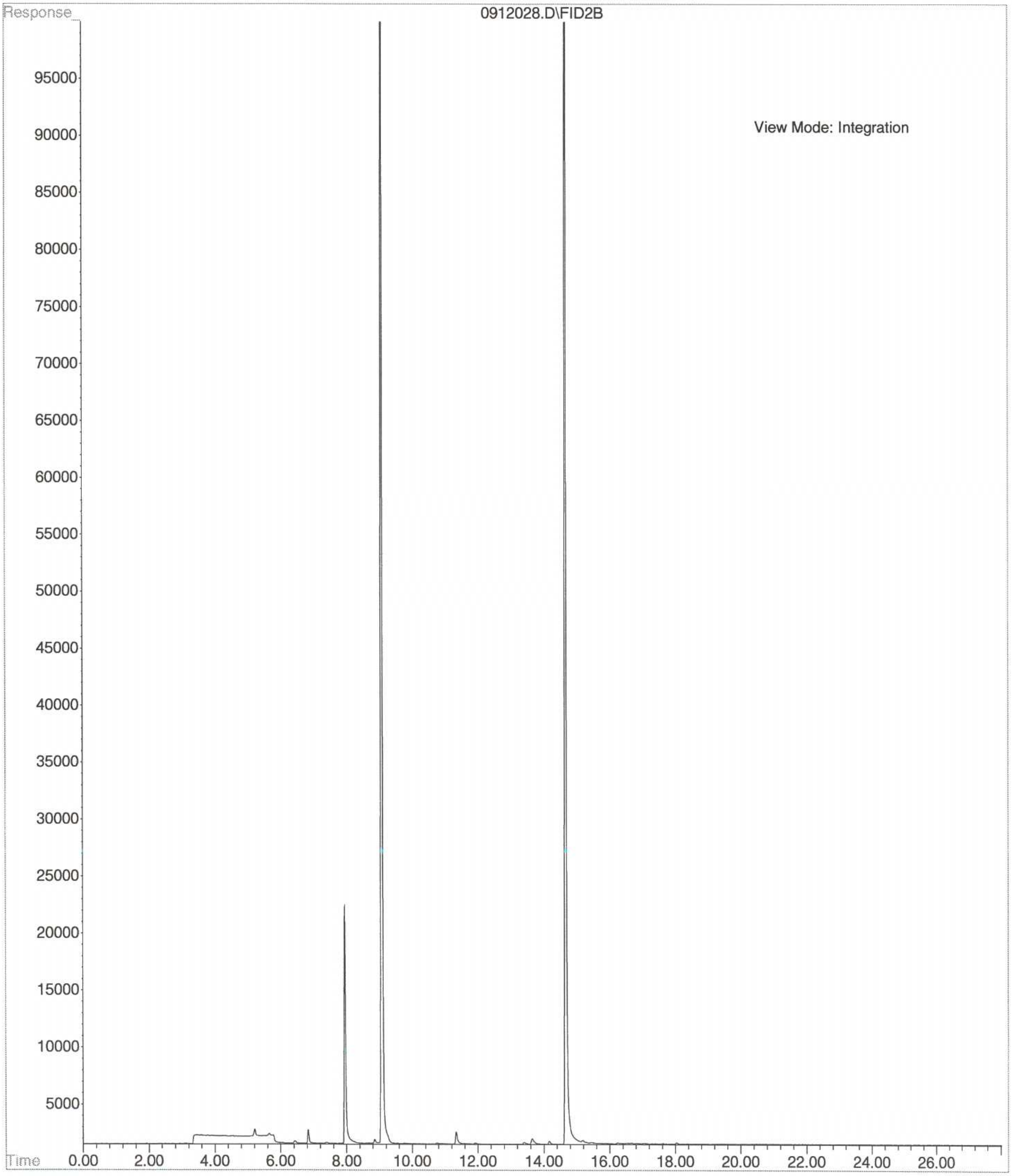

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Operator   :
Acquired   : 13 Sep 2014   1:44     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-04f
Misc Info  : V2-35-19
Vial Number: 27
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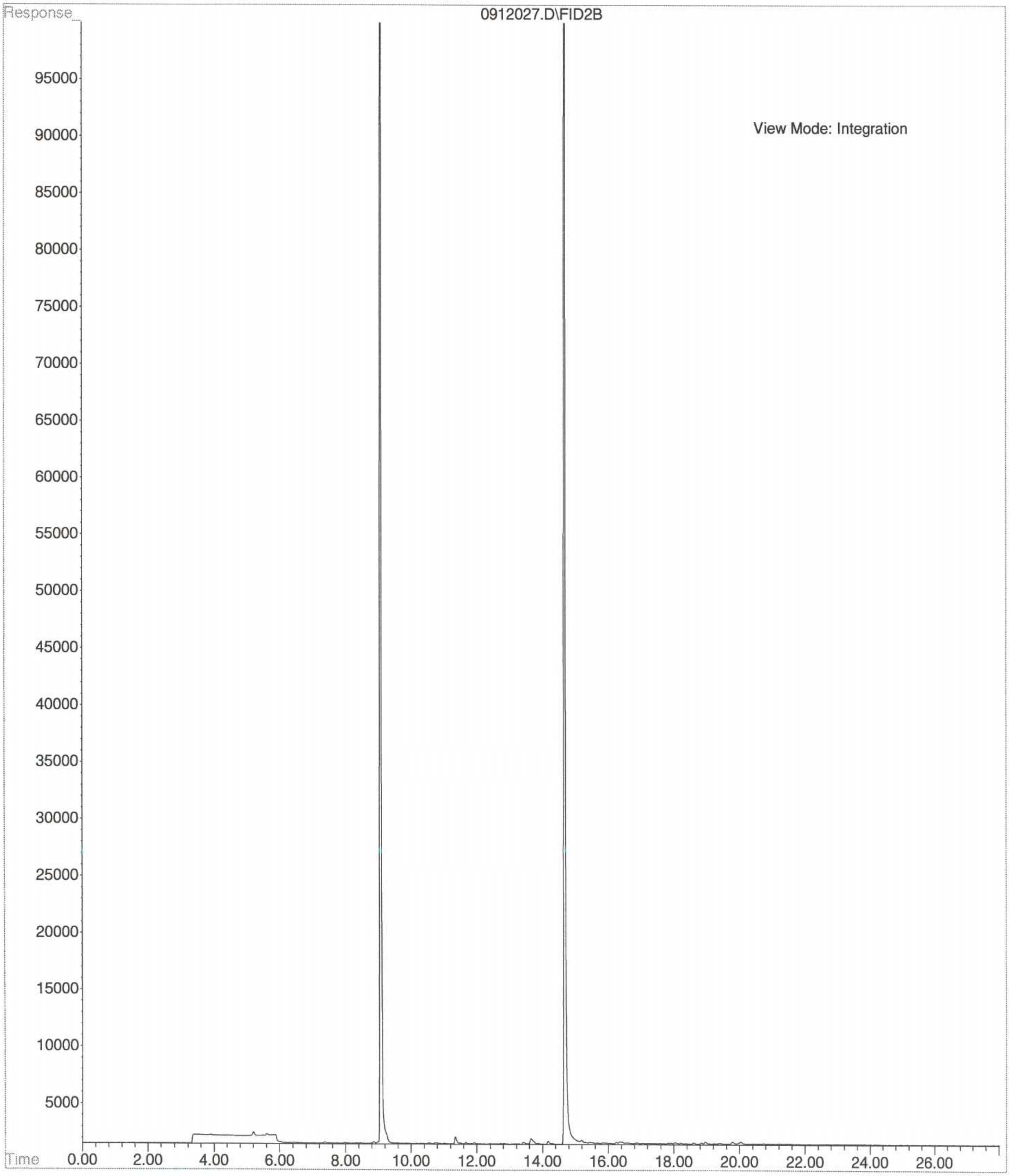

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File        : X:\BTEX\HOPE\DATA\H140912\0912019.D
Operator    :
Acquired    : 12 Sep 2014  21:18     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-05f
Misc Info   : V2-35-19
Vial Number: 19
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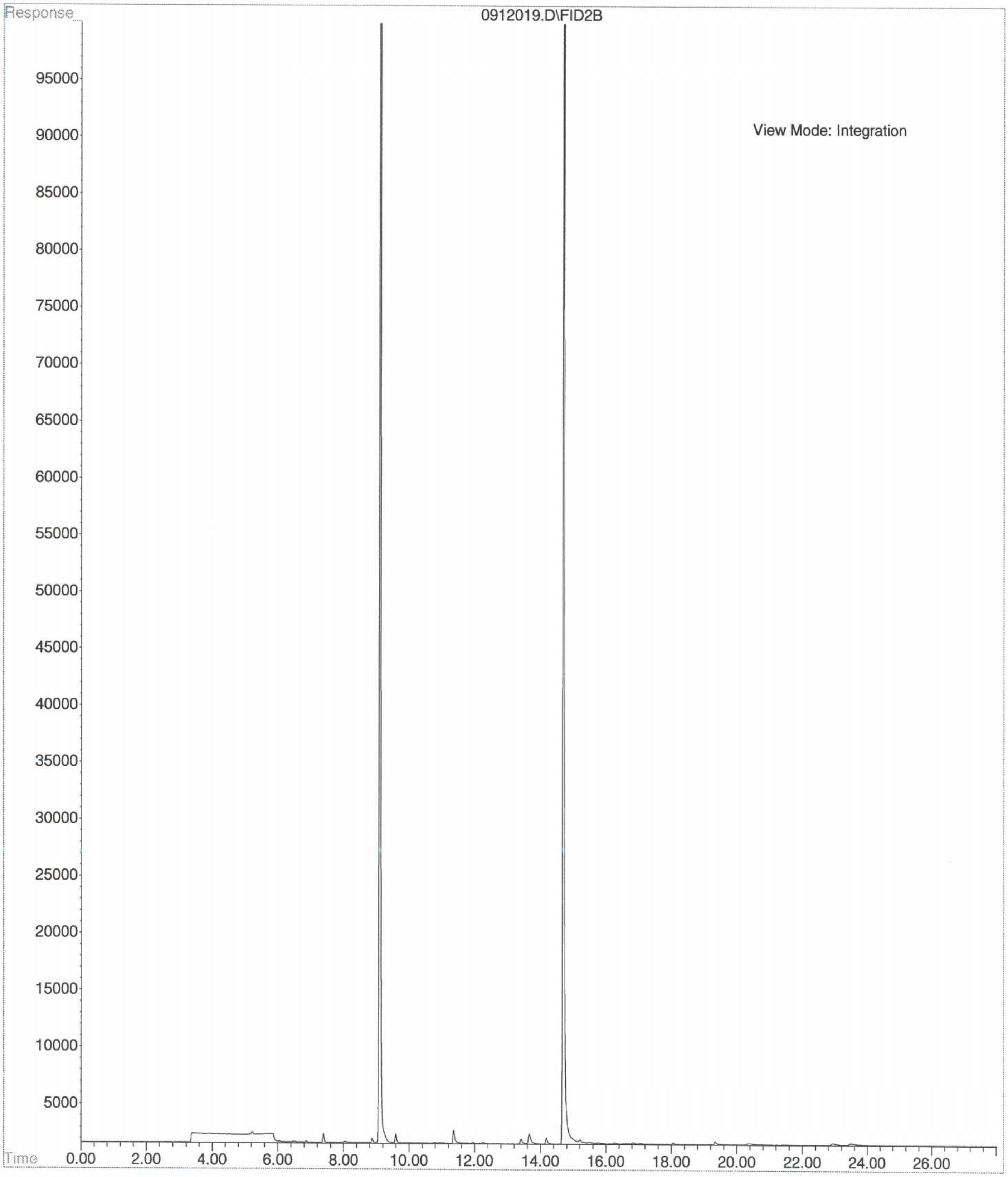

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File       : X:\BTEX\HOPE\DATA\H140912\0912025.D
Operator   :
Acquired   : 13 Sep 2014  00:38     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-06f
Misc Info  : V2-35-19
Vial Number: 25
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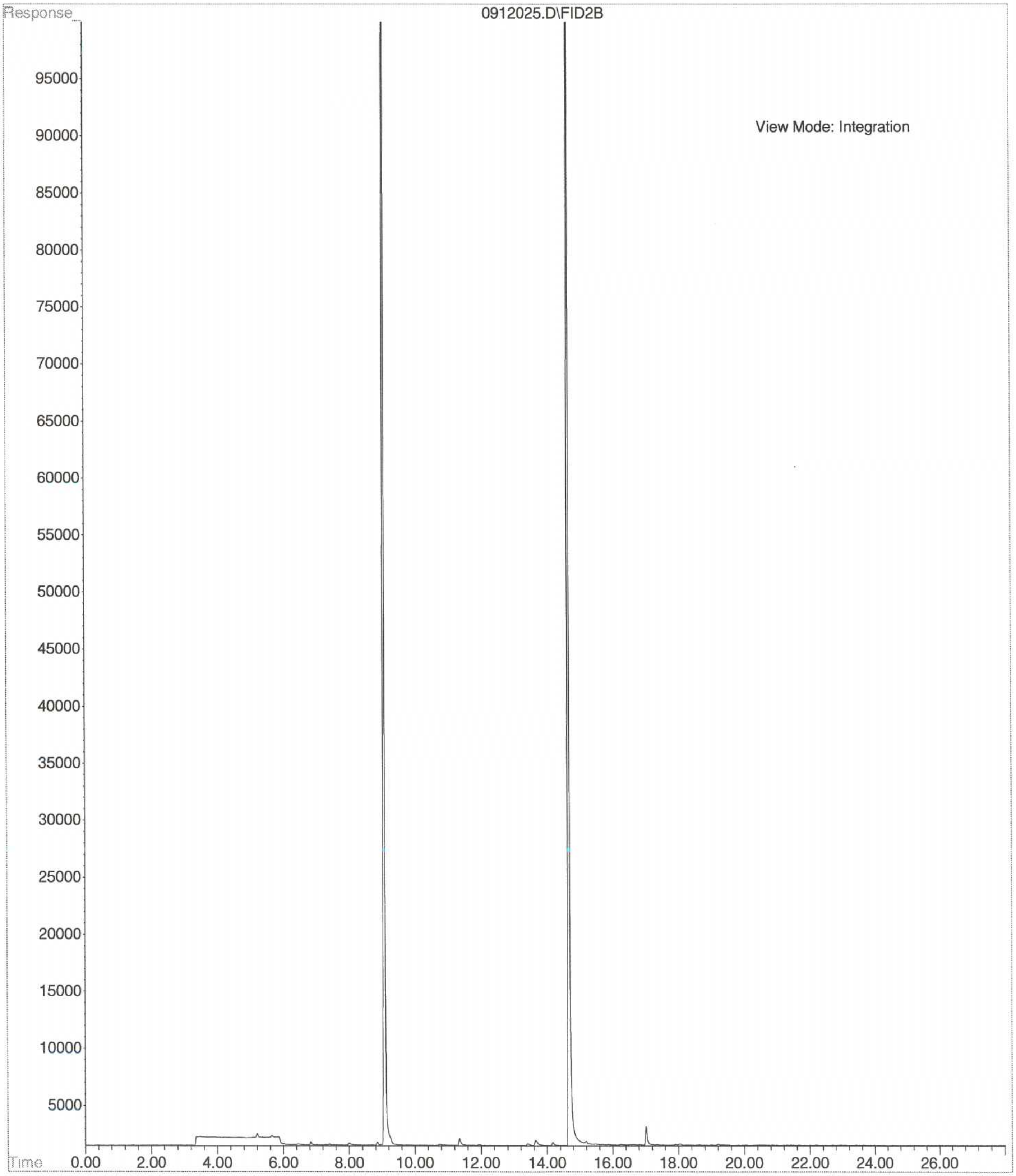

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File       : X:\BTEX\HOPE\DATA\H140912\0912020.D
Operator   :
Acquired   : 12 Sep 2014  21:52     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-07f
Misc Info  : V2-35-19
Vial Number: 20
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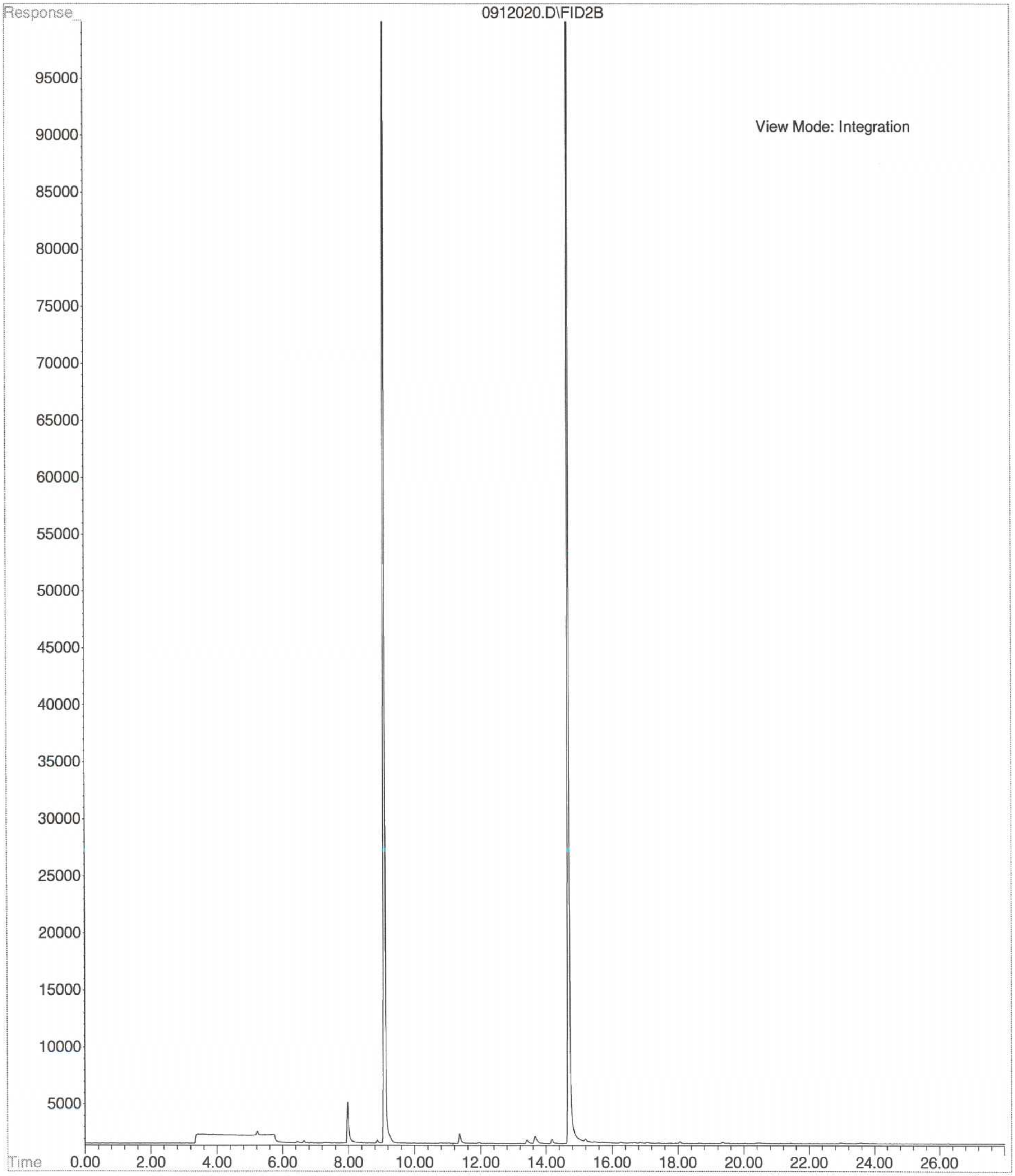

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File        :C:\msdchem\2\DATA\V140912\0912-V13.D
Operator    :
Acquired    : 12 Sep 2014  19:08     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-01
Misc Info   :
Vial Number: 13
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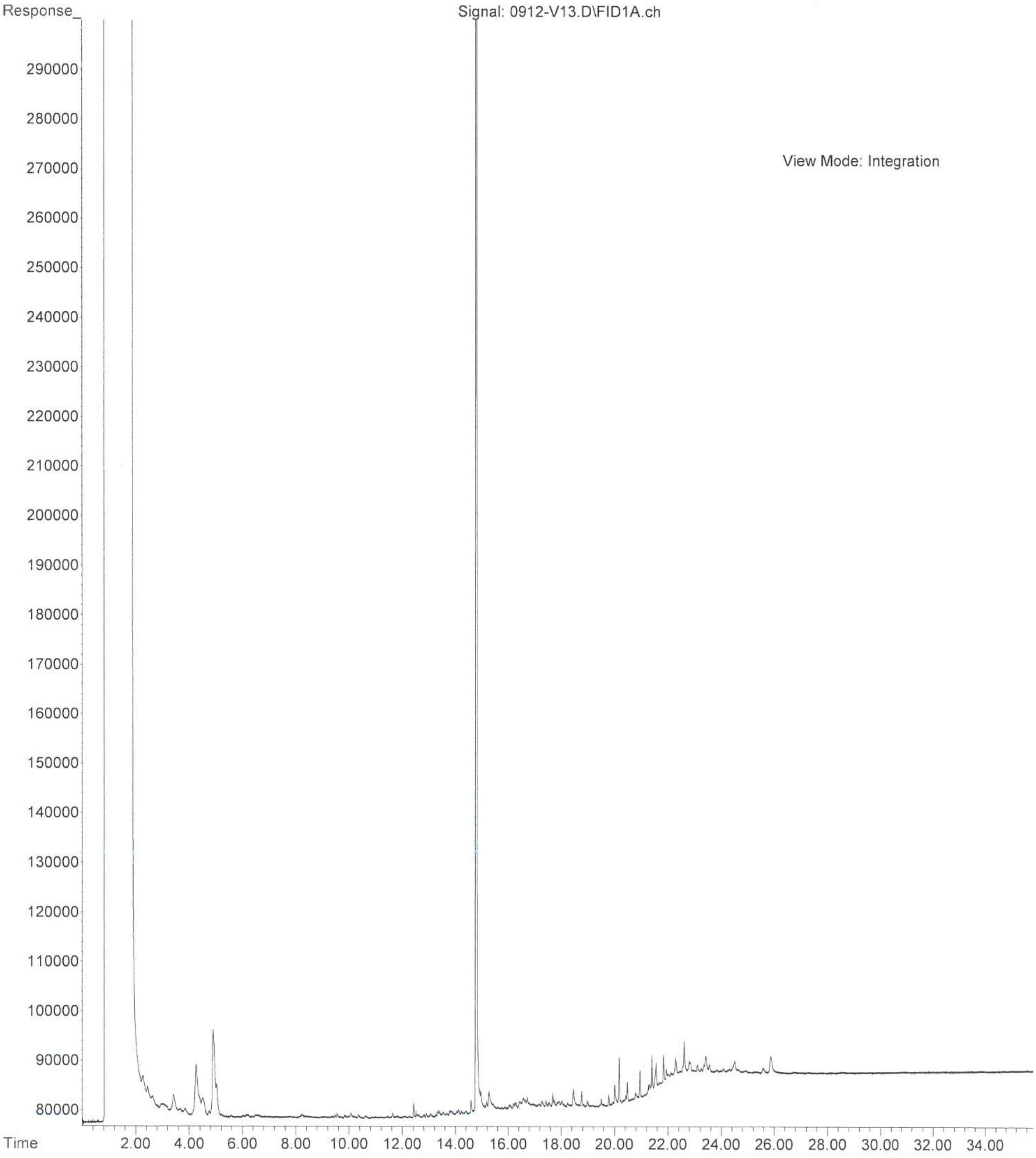

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File        :C:\msdchem\2\DATA\V140912\0912-V15.D
Operator    :
Acquired    : 12 Sep 2014  20:30     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-02
Misc Info   :
Vial Number: 15
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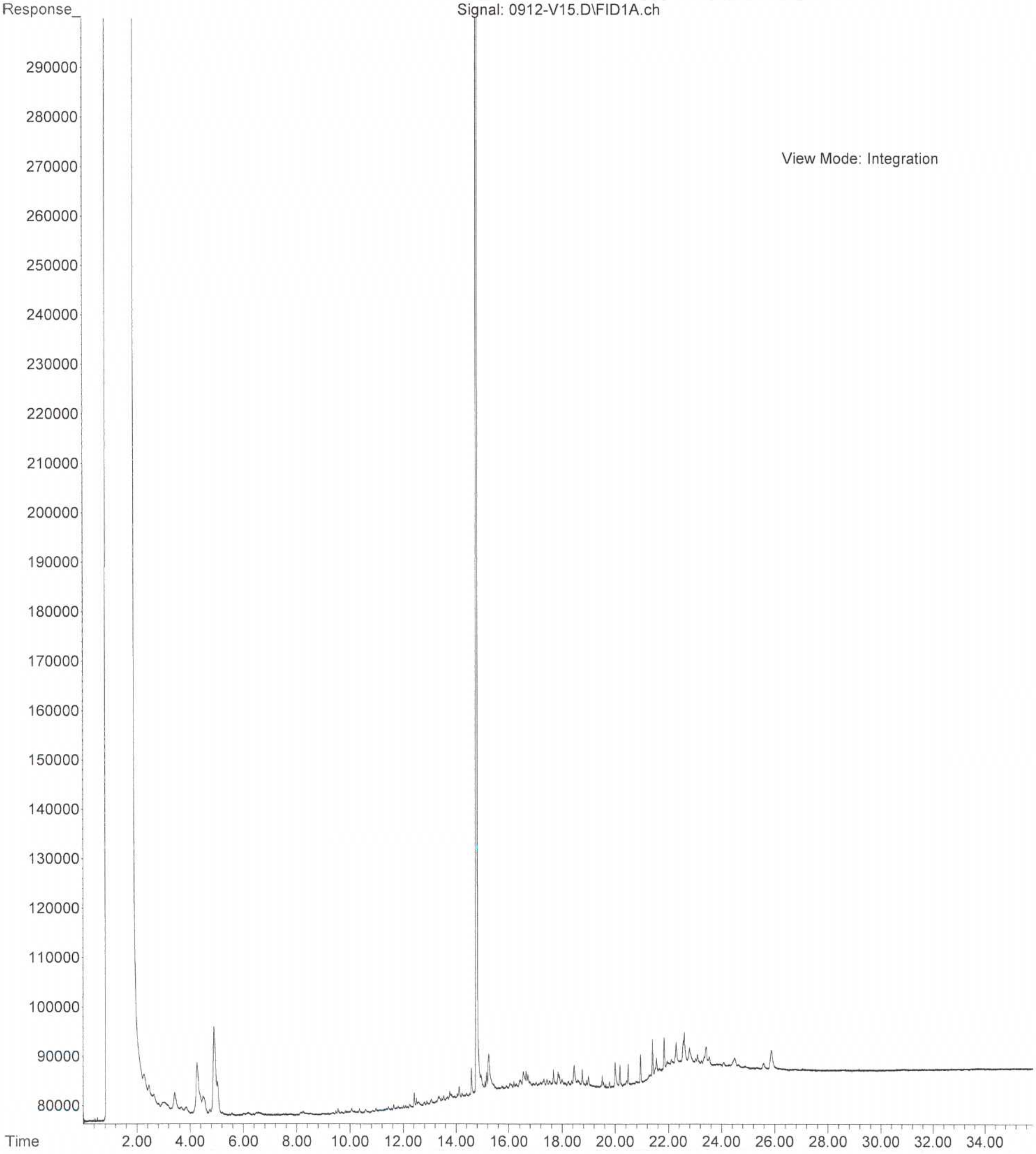

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Instrument :   Vigo
Sample Name: 09-107-03
Misc Info   :
Vial Number: 16
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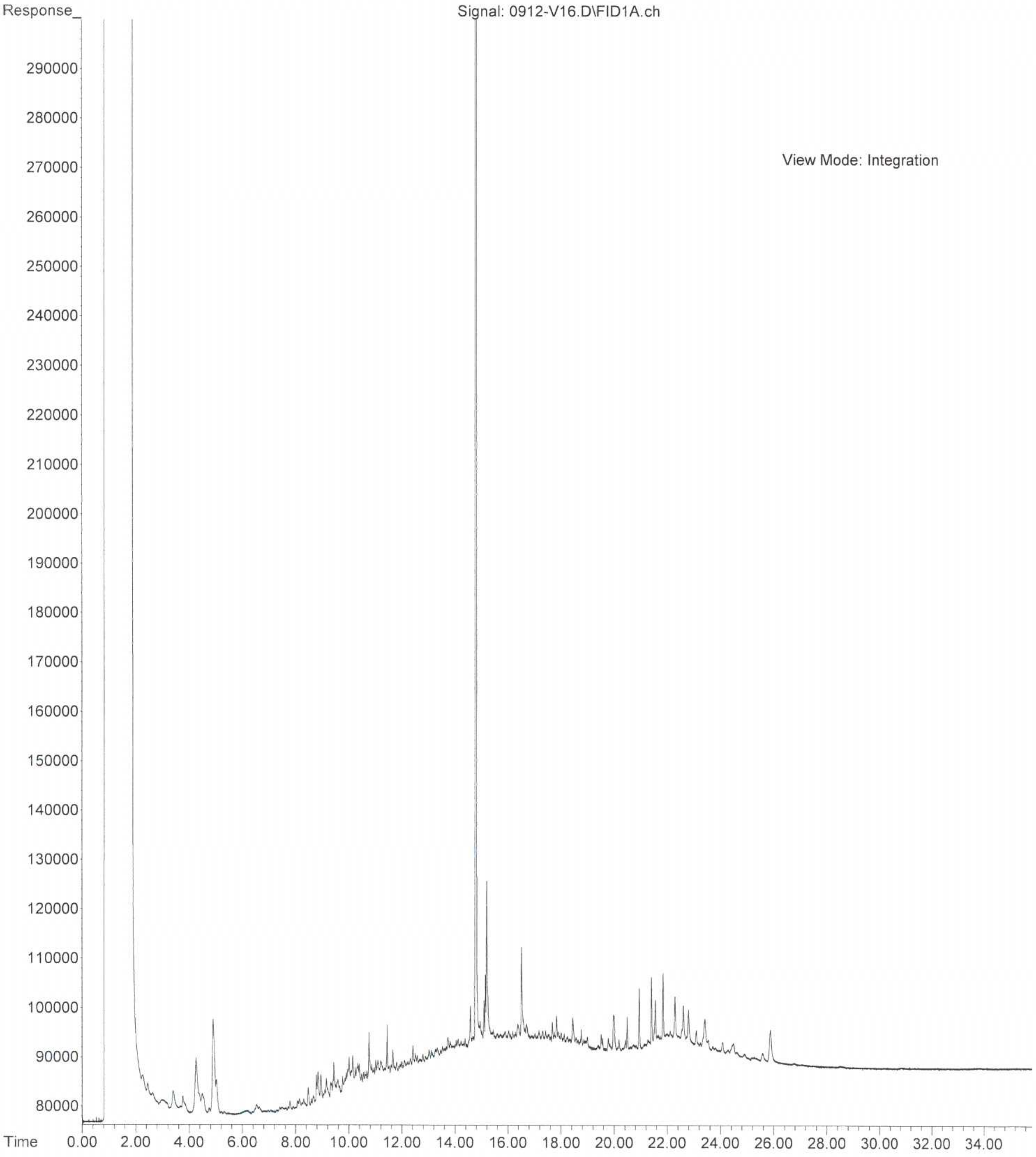

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Operator    :
Acquired    : 12 Sep 2014  21:52     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-04
Misc Info   :
Vial Number: 17
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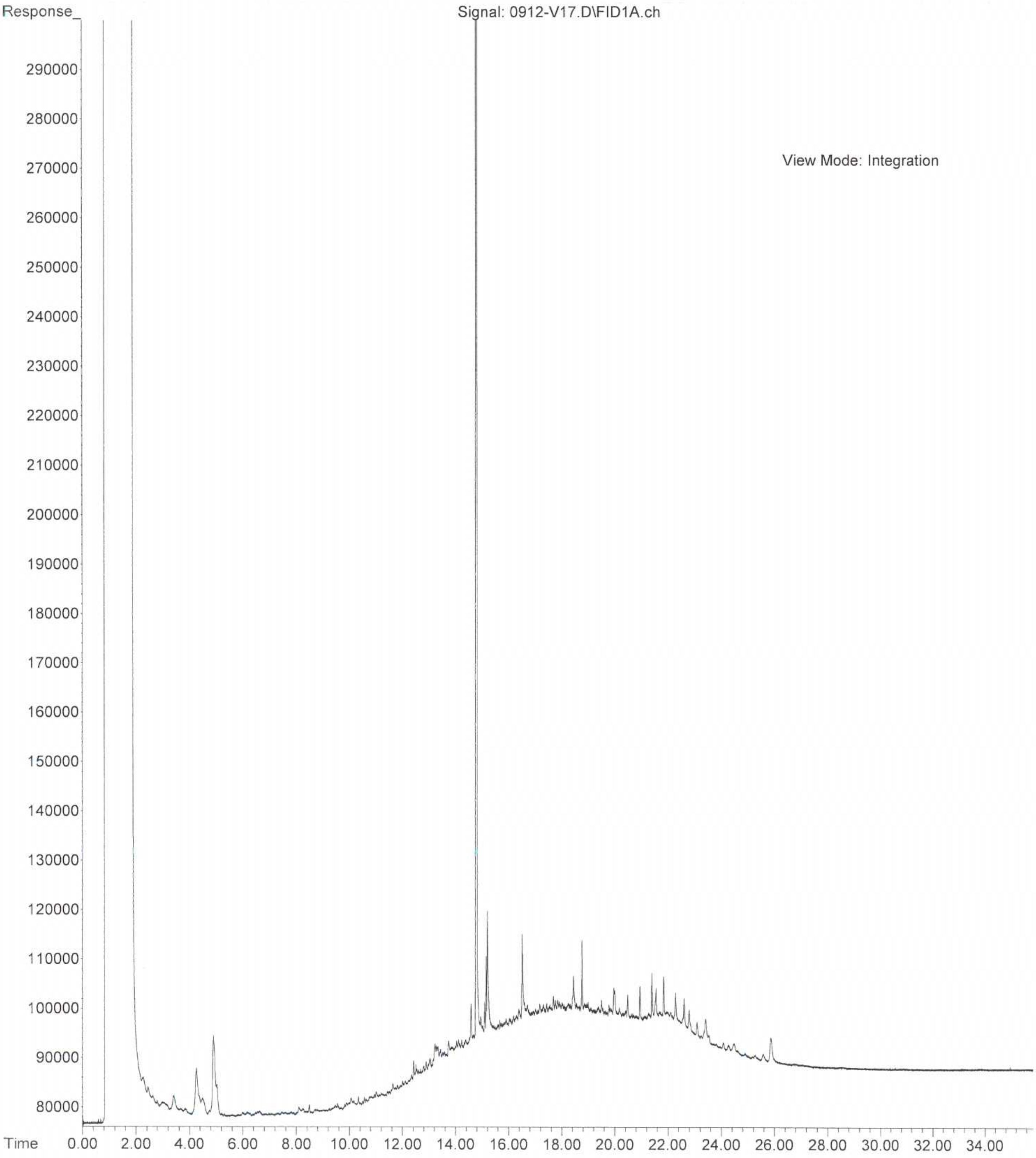

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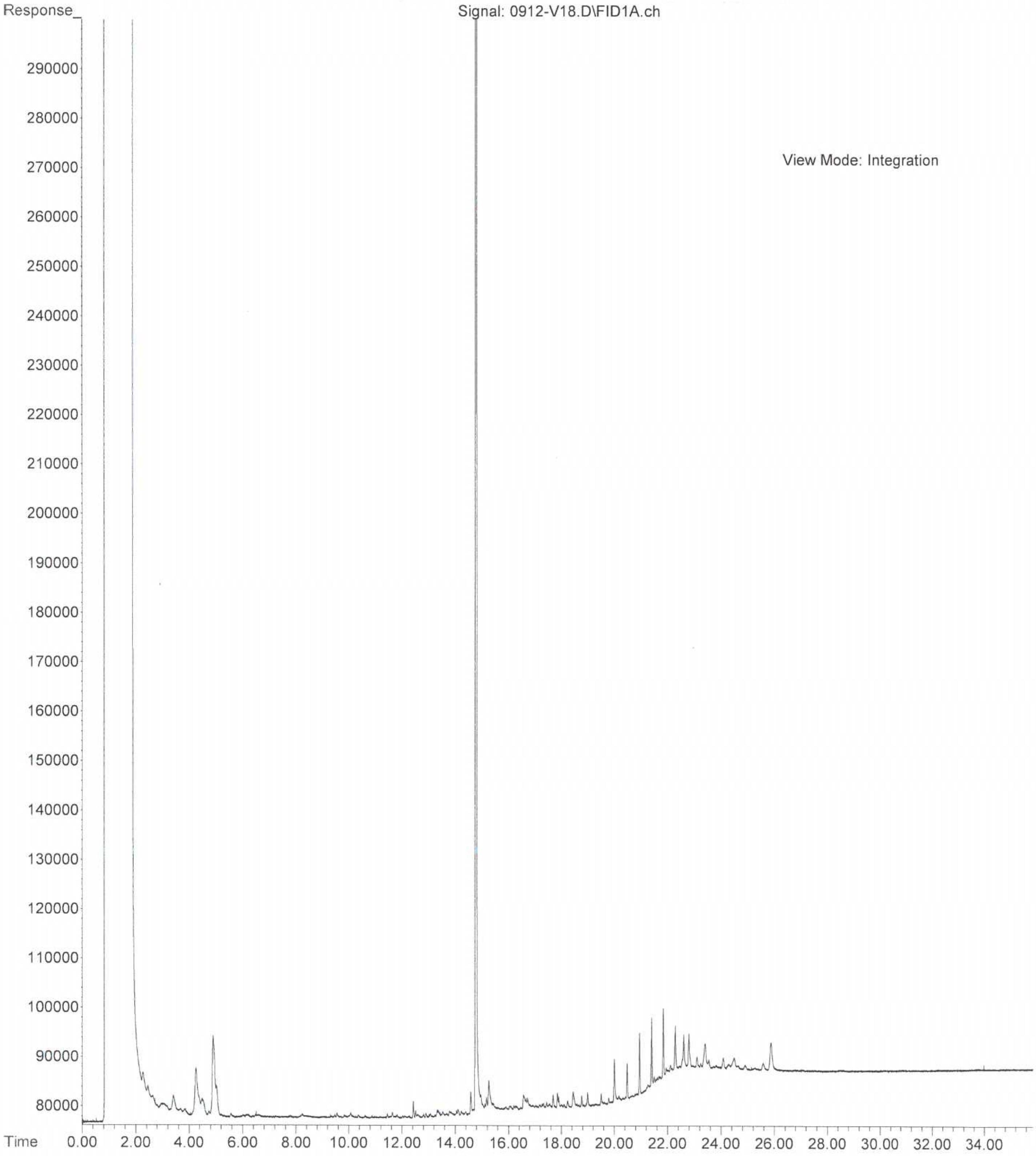
Operator    :
Acquired    : 12 Sep 2014  22:34     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-05
Misc Info   :
Vial Number: 18
```



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Operator    :
Acquired    : 12 Sep 2014  23:15     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-06
Misc Info   :
Vial Number: 19
```

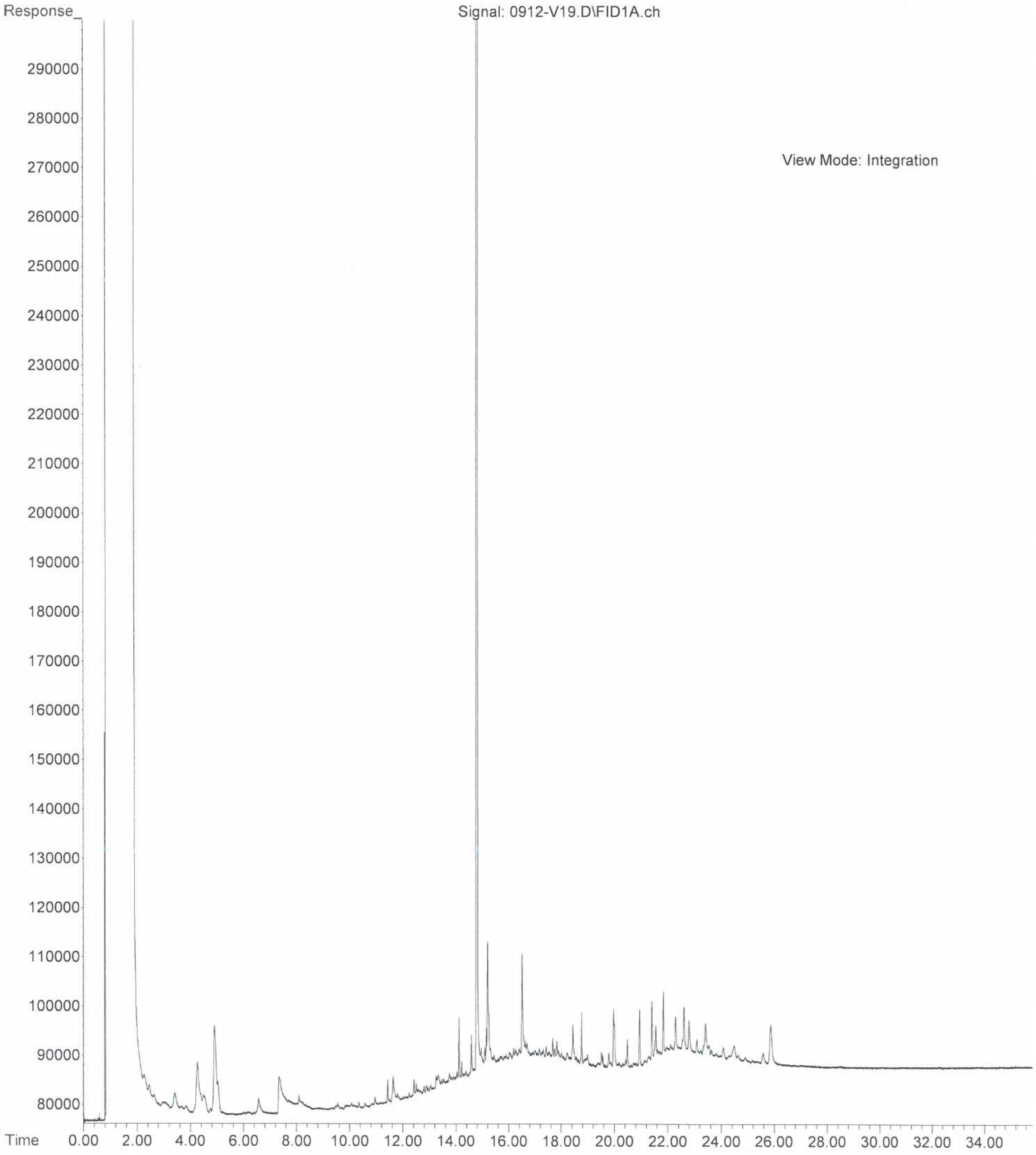

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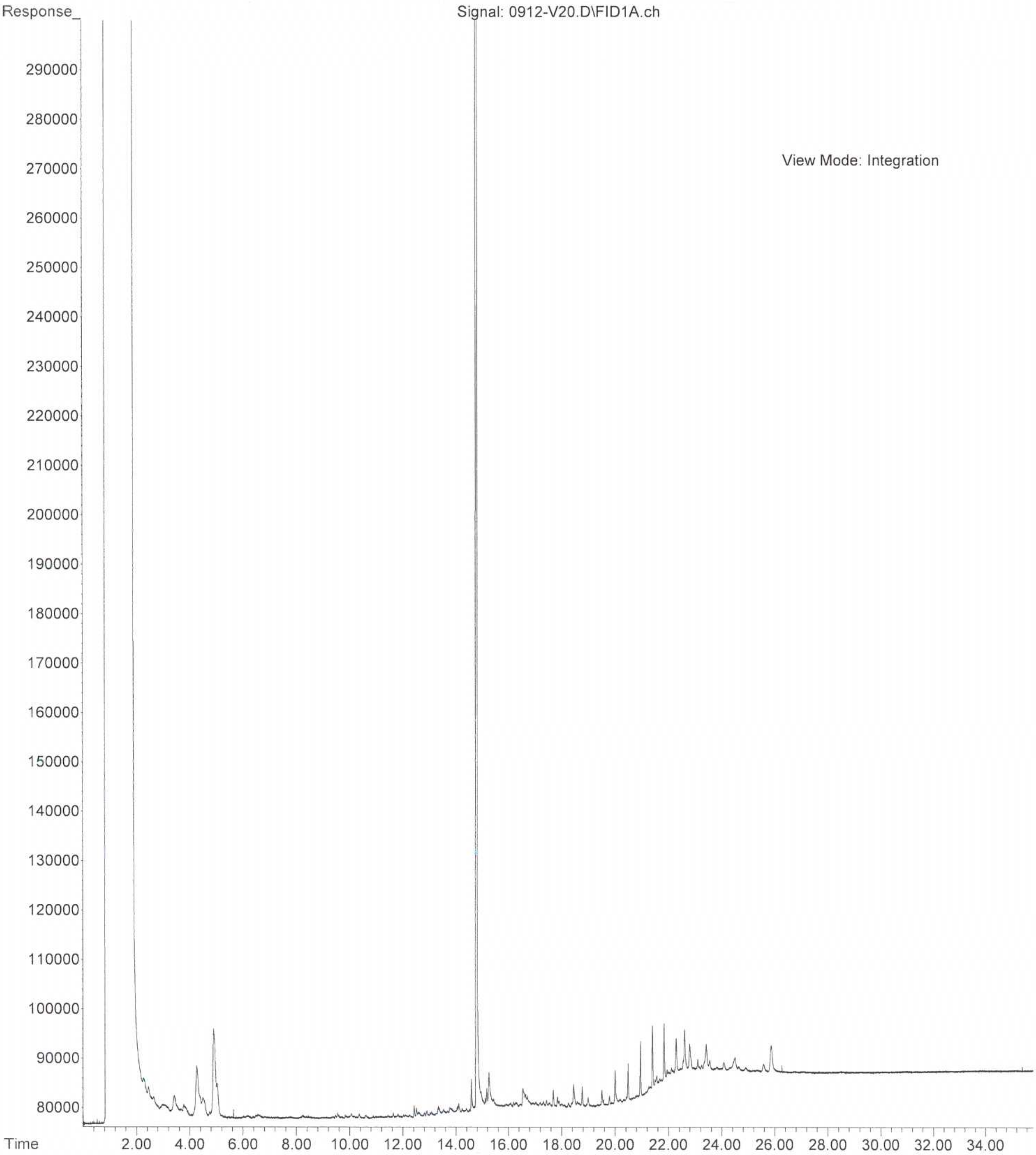
Operator   :
Acquired   : 12 Sep 2014  23:55     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-07
Misc Info  :
Vial Number: 20
```



OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 19, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-2008
Laboratory Reference No. 1409-107

Dear Kim:

Enclosed are the analytical results and associated quality control data for samples submitted on September 11, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

Case Narrative

Samples were collected on September 9 and 10, 2014 and received by the laboratory on September 10, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW4**					
Laboratory ID:	09-107-01					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*71-112*				
Client ID:	**BPMW5**					
Laboratory ID:	09-107-02					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*71-112*				
Client ID:	**BLMW11**					
Laboratory ID:	09-107-03					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-112*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW8**					
Laboratory ID:	09-107-04					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*71-112*				
Client ID:	**BLMW7**					
Laboratory ID:	09-107-05					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-112*				
Client ID:	**BLMW6R**					
Laboratory ID:	09-107-06					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*71-112*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**BLMW5R**					
Laboratory ID:	09-107-07					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*79*	*71-112*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0912W2					
Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Toluene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-12-14	9-12-14	
Gasoline	**ND**	100	NWTPH-Gx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-112*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-066-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*97*	*97*	*71-112*			
MATRIX SPIKES											
Laboratory ID:	09-107-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**55.9**	**53.0**	50.0	50.0	ND	**112**	**106**	78-120	5	12	
Toluene	**55.2**	**51.8**	50.0	50.0	ND	**110**	**104**	80-121	6	12	
Ethyl Benzene	**54.6**	**51.1**	50.0	50.0	ND	**109**	**102**	81-120	7	13	
m,p-Xylene	**54.3**	**50.4**	50.0	50.0	ND	**109**	**101**	81-119	7	13	
o-Xylene	**54.4**	**50.8**	50.0	50.0	ND	**109**	**102**	79-117	7	13	
Surrogate:											
Fluorobenzene						*100*	*99*	*71-112*			

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW4**					
Laboratory ID:	09-107-01					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				
Client ID:	**BPMW5**					
Laboratory ID:	09-107-02					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				
Client ID:	**BLMW11**					
Laboratory ID:	09-107-03					
Diesel Range Organics	**0.32**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**0.43**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				
Client ID:	**BLMW8**					
Laboratory ID:	09-107-04					
Diesel Range Organics	**0.28**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**0.54**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				
Client ID:	**BLMW7**					
Laboratory ID:	09-107-05					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				
Client ID:	**BLMW6R**					
Laboratory ID:	09-107-06					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW5R**					
Laboratory ID:	09-107-07					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0912W2					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	9-12-14	9-12-14	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	9-12-14	9-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	09-107-01									
	ORIG	DUP								
Diesel Range	**ND**	**ND**	NA	NA		NA	NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA	NA	NA	NA	
Surrogate:										
o-Terphenyl						*85* *84*	*50-150*			

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-107-01					
Client ID:	**BPMW4**					
Arsenic	**ND**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	
Lab ID:	09-107-02					
Client ID:	**BPMW5**					
Arsenic	**ND**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**1.6**	1.0	200.8		9-16-14	
Lab ID:	09-107-03					
Client ID:	**BLMW11**					
Arsenic	**110**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	
Lab ID:	09-107-04					
Client ID:	**BLMW8**					
Arsenic	**ND**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-107-05					
Client ID:	**BLMW7**					
Arsenic	**ND**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-107-06					
Client ID:	**BLMW6R**					
Arsenic	**4.7**	3.0	200.8		9-16-14	
Cadmium	**ND**	4.0	200.8		9-16-14	
Chromium	**ND**	10	200.8		9-16-14	
Lead	**ND**	1.0	200.8		9-16-14	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-107-07					
Client ID:	**BLMW5R**					
Arsenic	**ND**	3.0	200.8	9-11-14	9-16-14	
Cadmium	**ND**	4.0	200.8	9-11-14	9-16-14	
Chromium	**ND**	10	200.8	9-11-14	9-16-14	
Lead	**ND**	1.0	200.8	9-11-14	9-16-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered:	9-11-14
Date Analyzed:	9-16-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0911F1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Lead	200.8	**ND**	1.0

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 9-11-14
Date Analyzed: 9-16-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-066-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered:	9-11-14
Date Analyzed:	9-16-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	09-066-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**207**	103	**211**	106	2	
Cadmium	200	**207**	104	**210**	105	1	
Chromium	200	**195**	97	**200**	100	3	
Lead	200	**198**	99	**201**	101	2	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C

page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW11**					
Laboratory ID:	09-107-03					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW11**					
Laboratory ID:	09-107-03					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*107*	*62-122*				
Toluene-d8	*98*	*70-120*				
4-Bromofluorobenzene	*94*	*71-120*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW8**					
Laboratory ID:	09-107-04					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C

page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW8**					
Laboratory ID:	09-107-04					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*101*	*62-122*				
Toluene-d8	*101*	*70-120*				
4-Bromofluorobenzene	*97*	*71-120*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW7**					
Laboratory ID:	09-107-05					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	0.91	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	0.22	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW7**					
Laboratory ID:	09-107-05					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*101*	*62-122*				
Toluene-d8	*98*	*70-120*				
4-Bromofluorobenzene	*94*	*71-120*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW6R**					
Laboratory ID:	09-107-06					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**BLMW6R**					
Laboratory ID:	09-107-06					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*100*	*62-122*				
Toluene-d8	*101*	*70-120*				
4-Bromofluorobenzene	*98*	*71-120*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW5R**					
Laboratory ID:	09-107-07					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW5R**					
Laboratory ID:	09-107-07					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*98*	*62-122*				
Toluene-d8	*101*	*70-120*				
4-Bromofluorobenzene	*98*	*71-120*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0918W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0918W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*102*	*62-122*				
Toluene-d8	*101*	*70-120*				
4-Bromofluorobenzene	*97*	*71-120*				

Date of Report: September 19, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107
Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
MS/MSD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-148-02										
	MS	MSD	MS	MSD		MS	MSD				
1,1-Dichloroethene	**8.07**	**8.44**	10.0	10.0	ND	81	84	57-133	4	15	
Benzene	**8.37**	**8.89**	10.0	10.0	ND	84	89	75-117	6	15	
Trichloroethene	**7.56**	**7.74**	10.0	10.0	ND	76	77	75-120	2	15	
Toluene	**7.67**	**8.11**	10.0	10.0	ND	77	81	75-115	6	15	
Chlorobenzene	**8.23**	**8.21**	10.0	10.0	ND	82	82	75-122	0	15	
Surrogate:											
Dibromofluoromethane						*96*	*105*	*62-122*			
Toluene-d8						*93*	*101*	*70-120*			
4-Bromofluorobenzene						*93*	*95*	*71-120*			

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.

21312 30th Drive SE, Suite 110, Bothell, Washington 98021-7010
Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

Chain of Custody and Laboratory Anaylsis Request

DATE:
PAGE: of

09-107

PROJECT NAME: Bothell Paint/Bothell Landing #: 2007098[illegible]008
SAMPLERS NAME: KStilson PHONE:
SAMPLERS SIGNATURE: KA
DATE: 9/11/14
HWA CONTACT: Arnie Sugar PHONE:

ANALYSIS REQUESTED

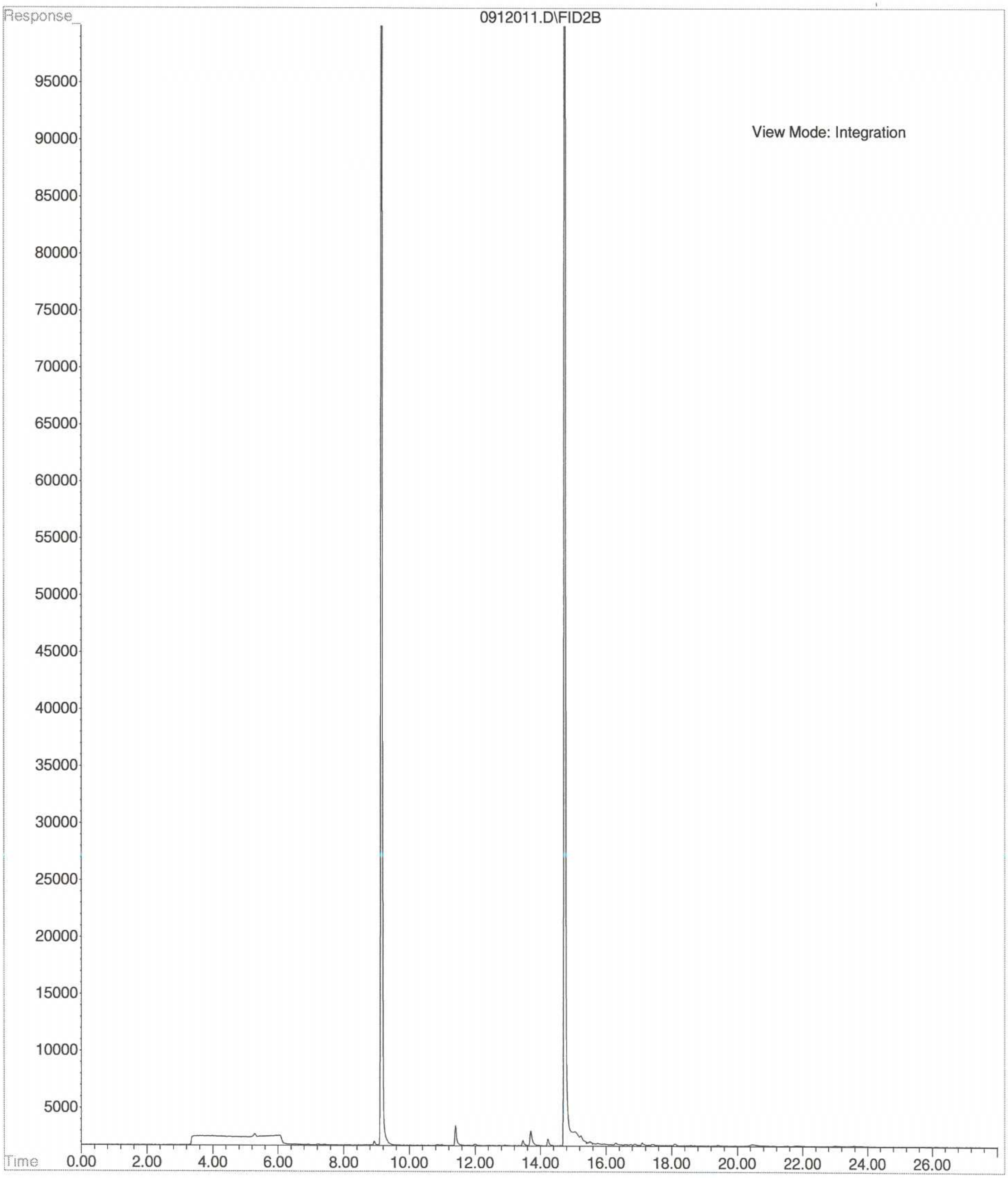
TURNAROUND TIME
☐ DAYS
☑ STANDARD

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPHG	Dx	BTEX	Total Metals	Diss Metals	HVOCs									EDD	REMARKS
1 BPMW4	9/9/14	930	W		7	/	/	/	/	/											Run D initially
2 BPMW5		1245	W		7	/	/	/	/	/											Archive T metals
3 BLMW11		545	W		9	/	/	/	/	/	/										
4 BLMW8	9/10/14	900	W		9	/	/	/	/	/	/										Metals:
5 BLMW7		1015	W		9	/	/	/	/	/	/										As, Cd, Cr, Pb
6 BLMW6R		1115	W		9	/	/	/	/	/	/										
7 BLMW5R		1220	W		9	/	/	/	/	/	/										
																					*Note BLMW5R
																					Diss metals in
																					Unpreserved poly
																					please filter
																					@ Lab

PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	KStilson	KA	HWA	9/11/14	830	
Received by:	T Har	T HARR	Speedy	9-11-14	832	
Relinquished by:	T H	T Harle	Speedy	9-11-14	930	
Received by:	alex armantrout	Alex Armantrout	OSE	9/11	930	

DISTRIBUTION: WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler

```
File       : X:\BTEX\HOPE\DATA\H140912\0912011.D
Operator   :
Acquired   : 12 Sep 2014  16:43     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-01f
Misc Info  : V2-35-19
Vial Number: 11
```



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File       : X:\BTEX\HOPE\DATA\H140912\0912018.D
Operator   :
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Instrument :   HOPE
Sample Name: 09-107-02f
Misc Info  : V2-35-19
Vial Number: 18
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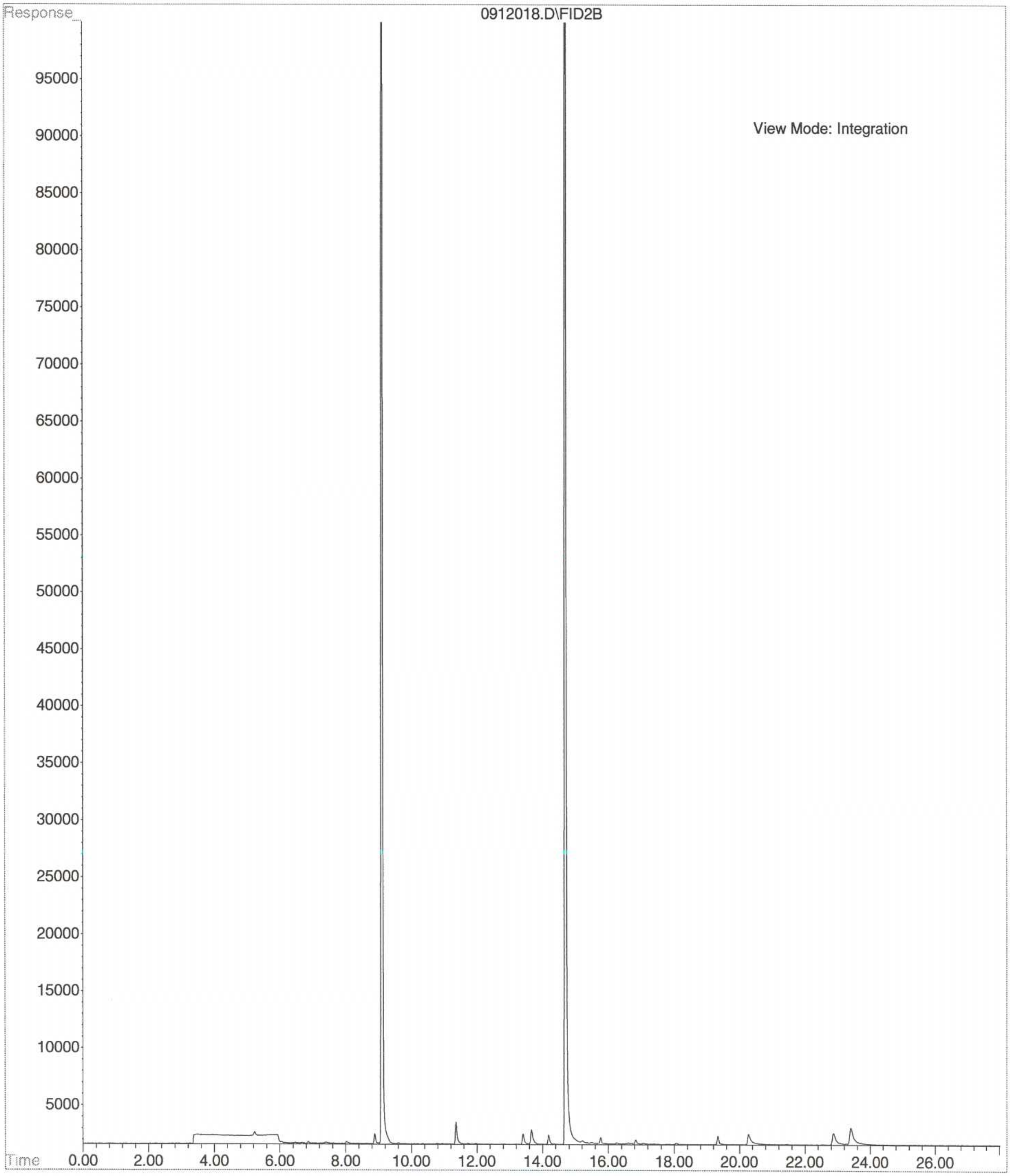

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Operator   :
Acquired   : 13 Sep 2014   2:17     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-03f
Misc Info  : V2-35-19
Vial Number: 28
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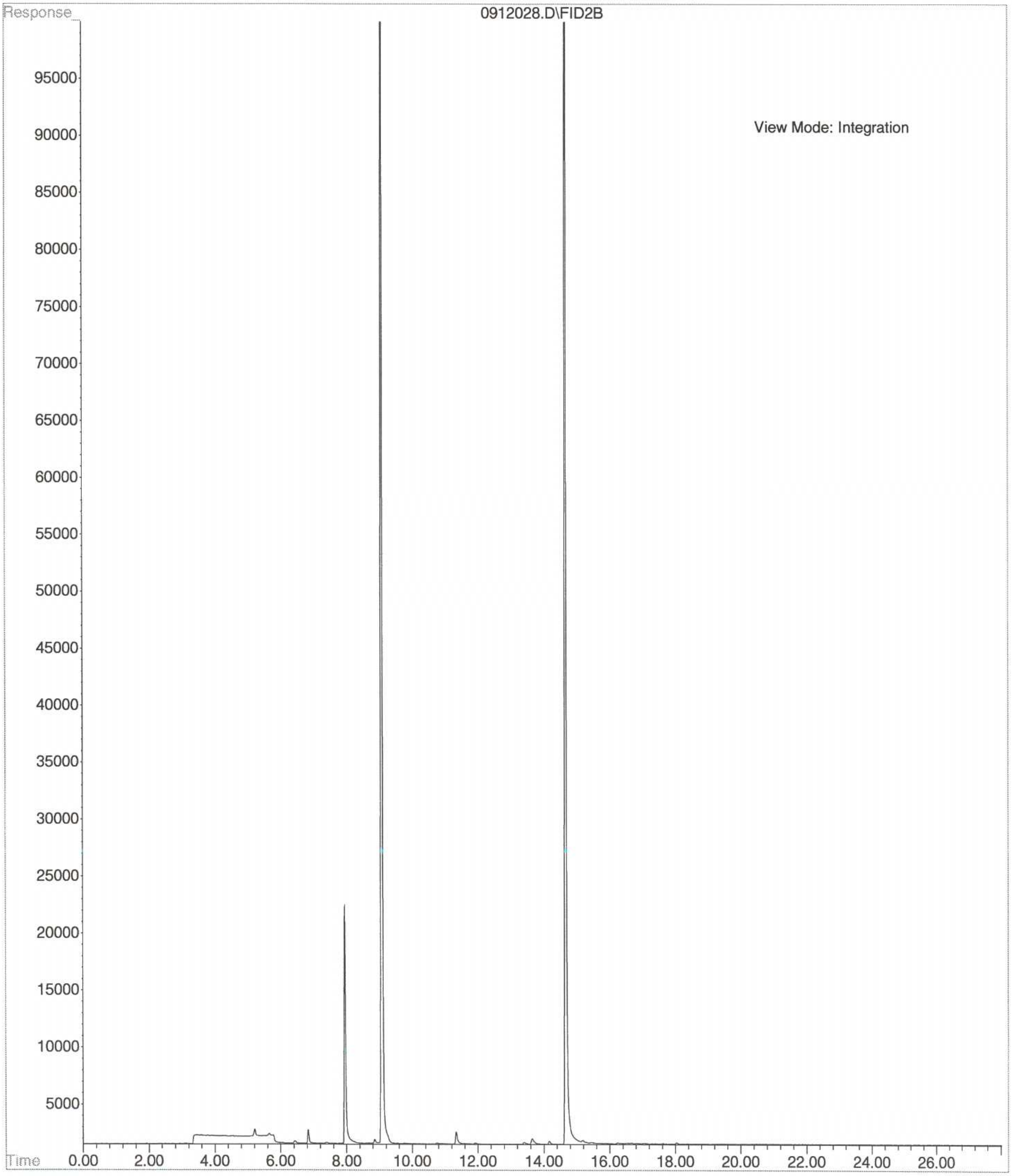

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Operator    :
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Instrument :   HOPE
Sample Name: 09-107-04f
Misc Info  : V2-35-19
Vial Number: 27
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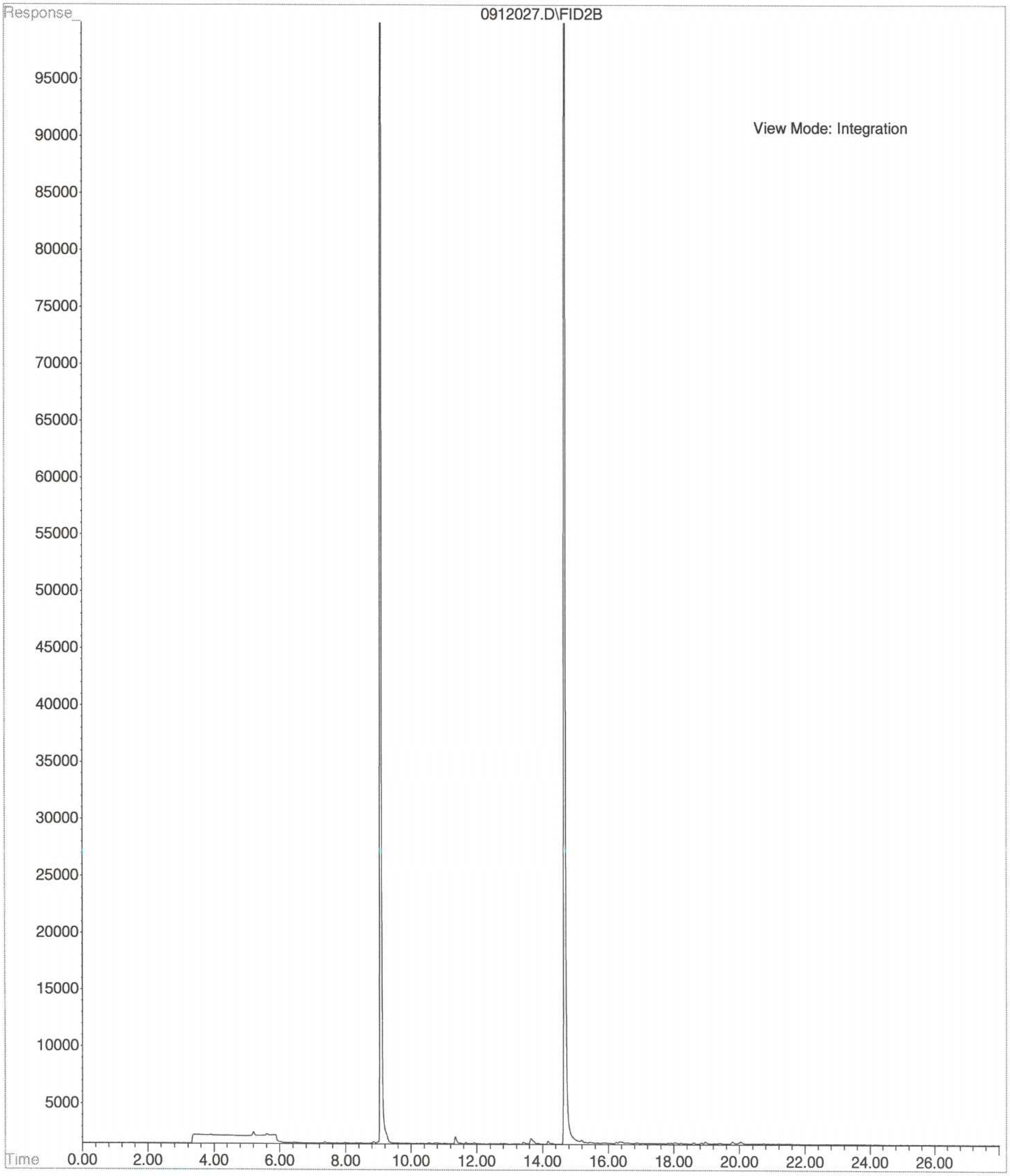

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Operator    :
Acquired    : 12 Sep 2014  21:18      using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-05f
Misc Info  : V2-35-19
Vial Number: 19
```

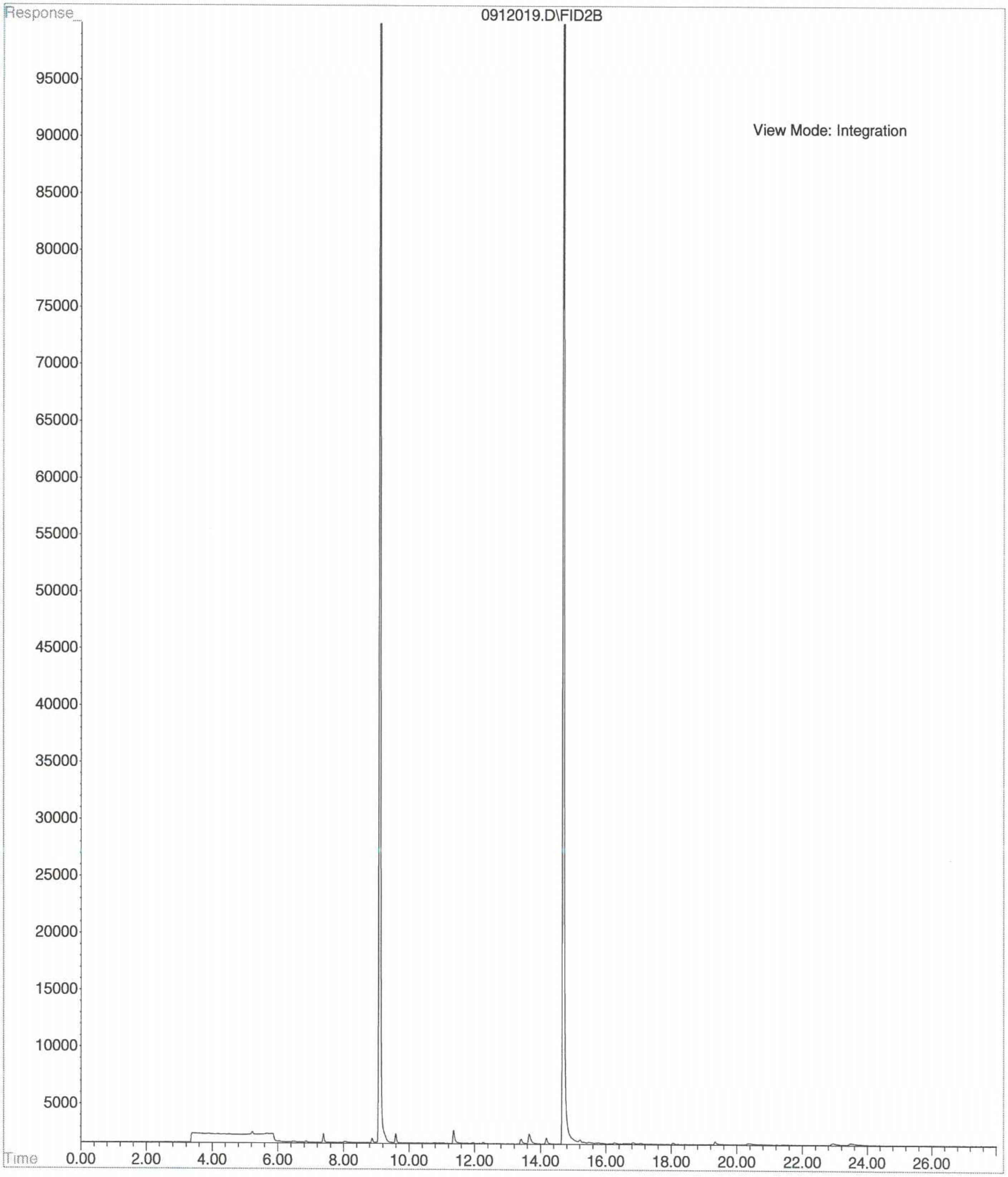

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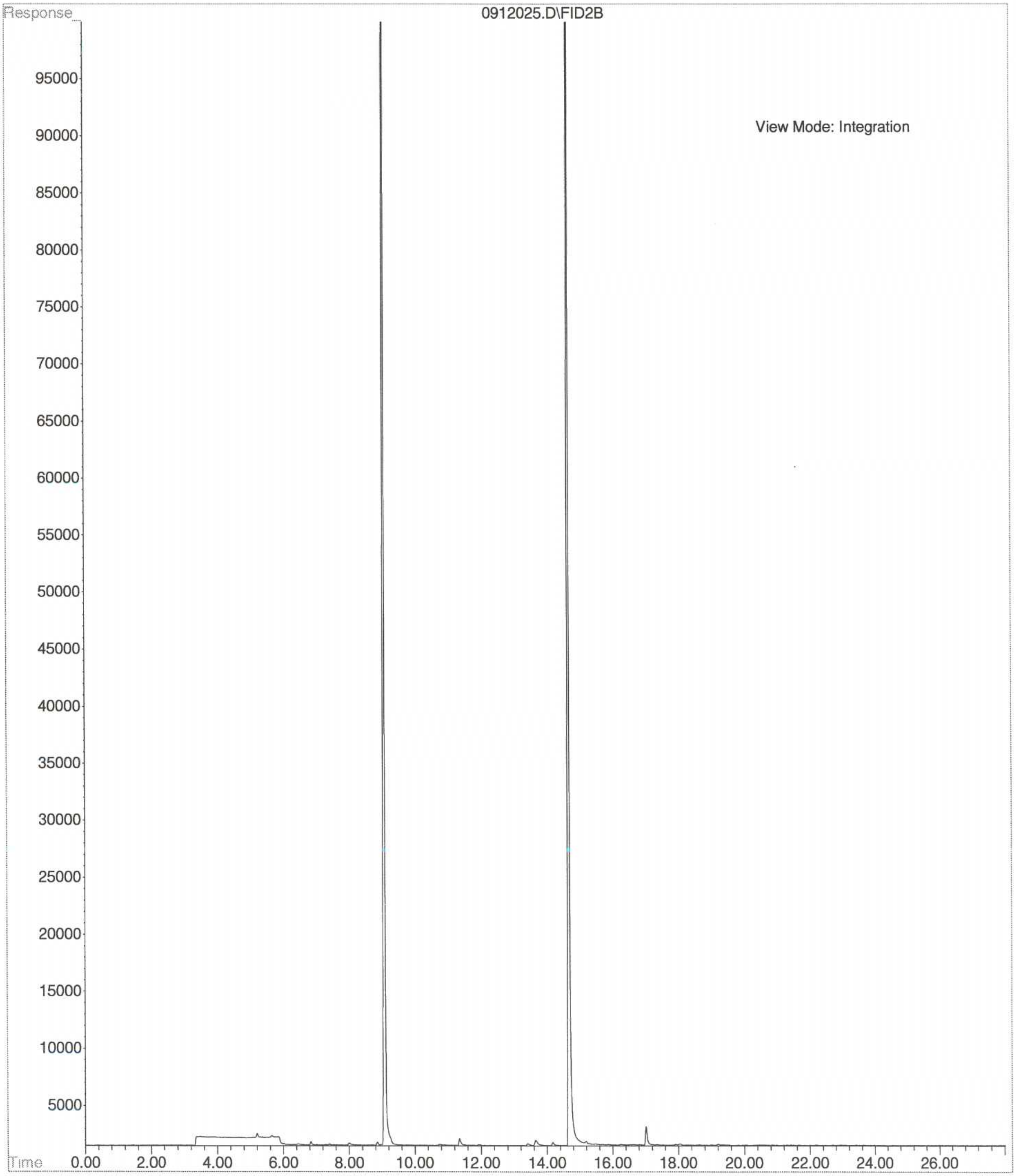
Operator   :
Acquired   : 13 Sep 2014  00:38     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-06f
Misc Info  : V2-35-19
Vial Number: 25
```



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File       : X:\BTEX\HOPE\DATA\H140912\0912020.D
Operator   :
Acquired   : 12 Sep 2014  21:52     using AcqMethod 140822B.M
Instrument :    HOPE
Sample Name: 09-107-07f
Misc Info  : V2-35-19
Vial Number: 20
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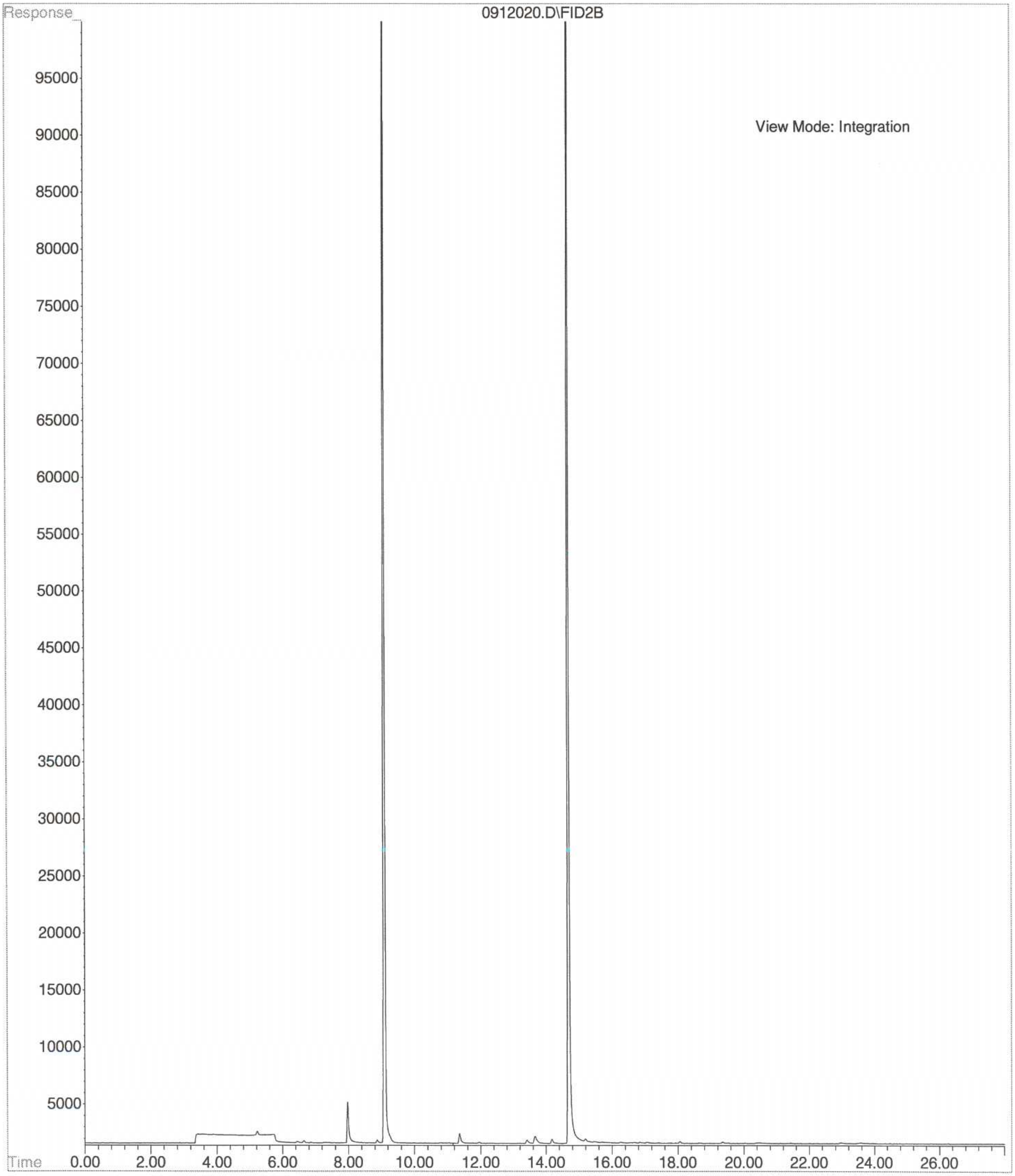

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Operator    :
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Instrument :   Vigo
Sample Name: 09-107-01
Misc Info   :
Vial Number: 13
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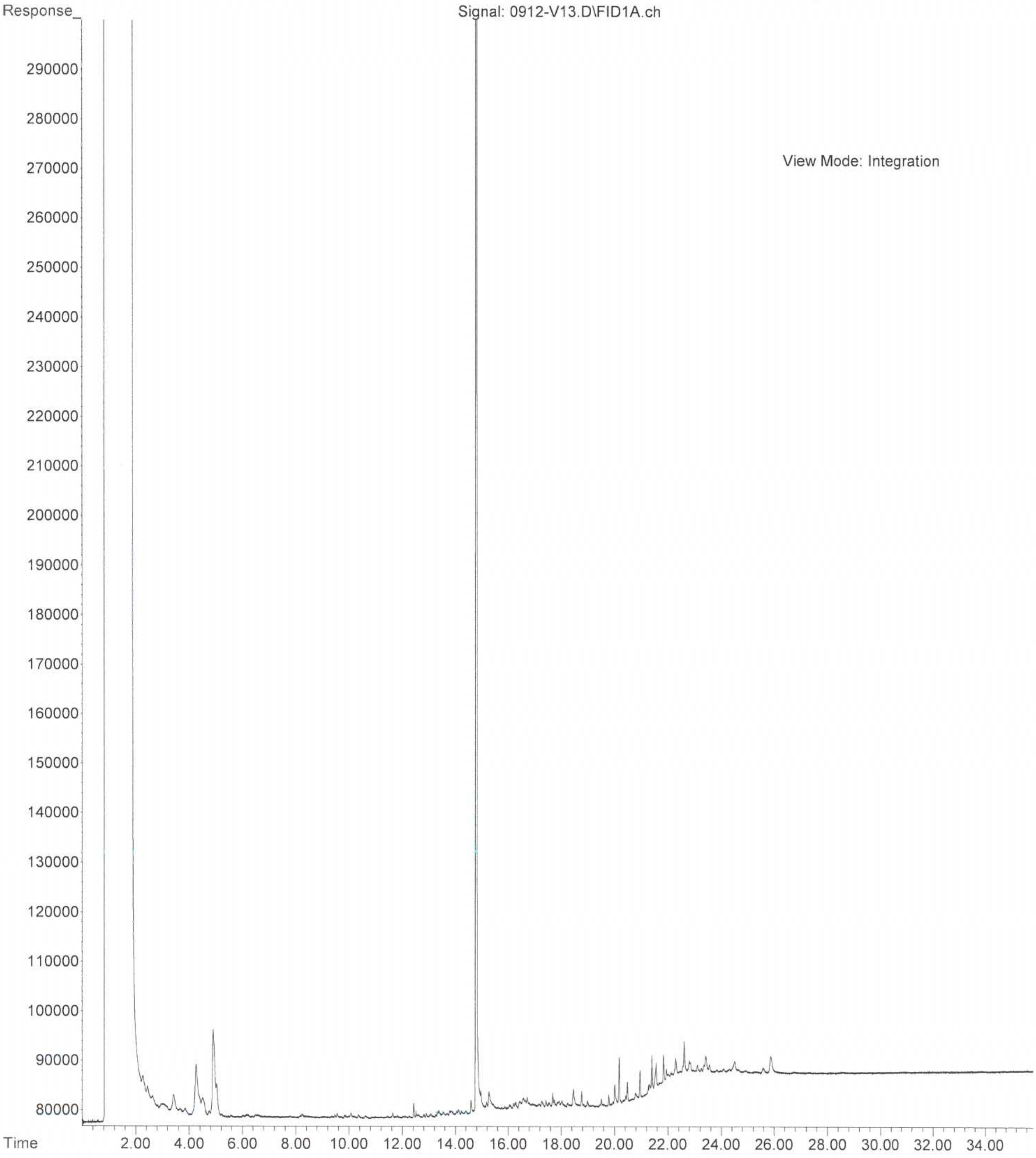

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File        :C:\msdchem\2\DATA\V140912\0912-V15.D
Operator    :
Acquired    : 12 Sep 2014  20:30     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-02
Misc Info   :
Vial Number: 15
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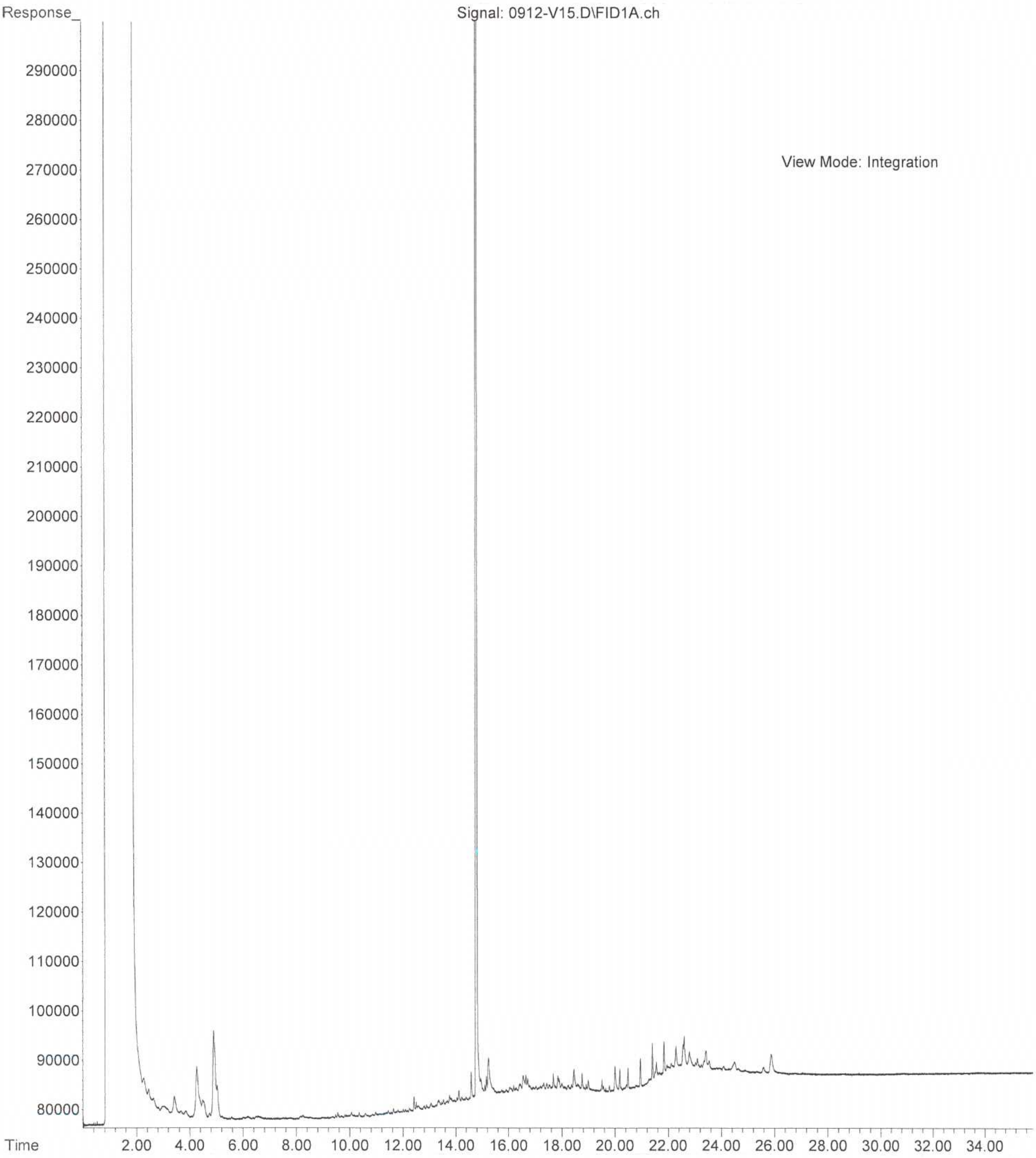

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Operator    :
Acquired    : 12 Sep 2014  21:11     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-03
Misc Info   :
Vial Number: 16
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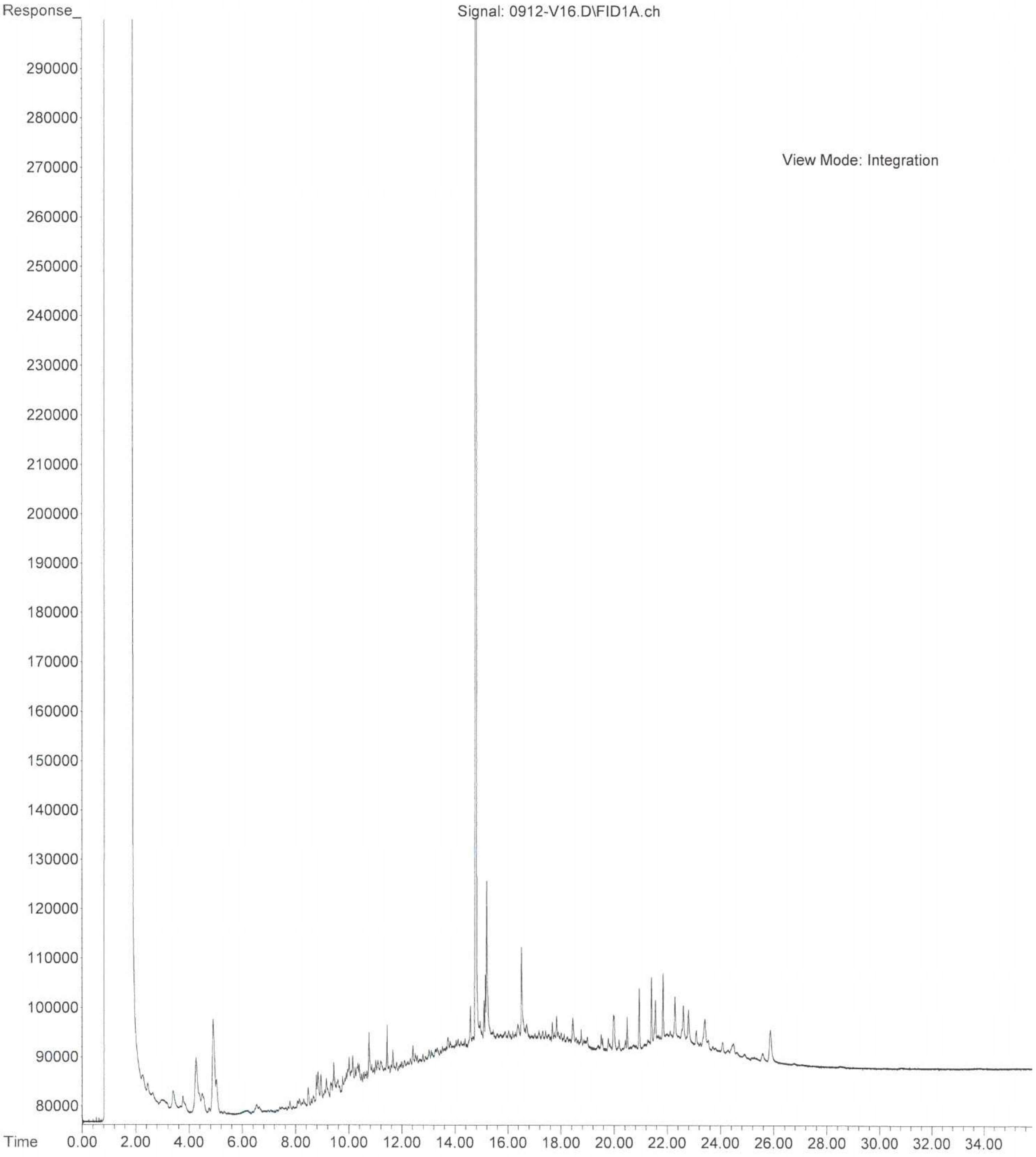

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Operator   :
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Instrument :   Vigo
Sample Name: 09-107-04
Misc Info  :
Vial Number: 17
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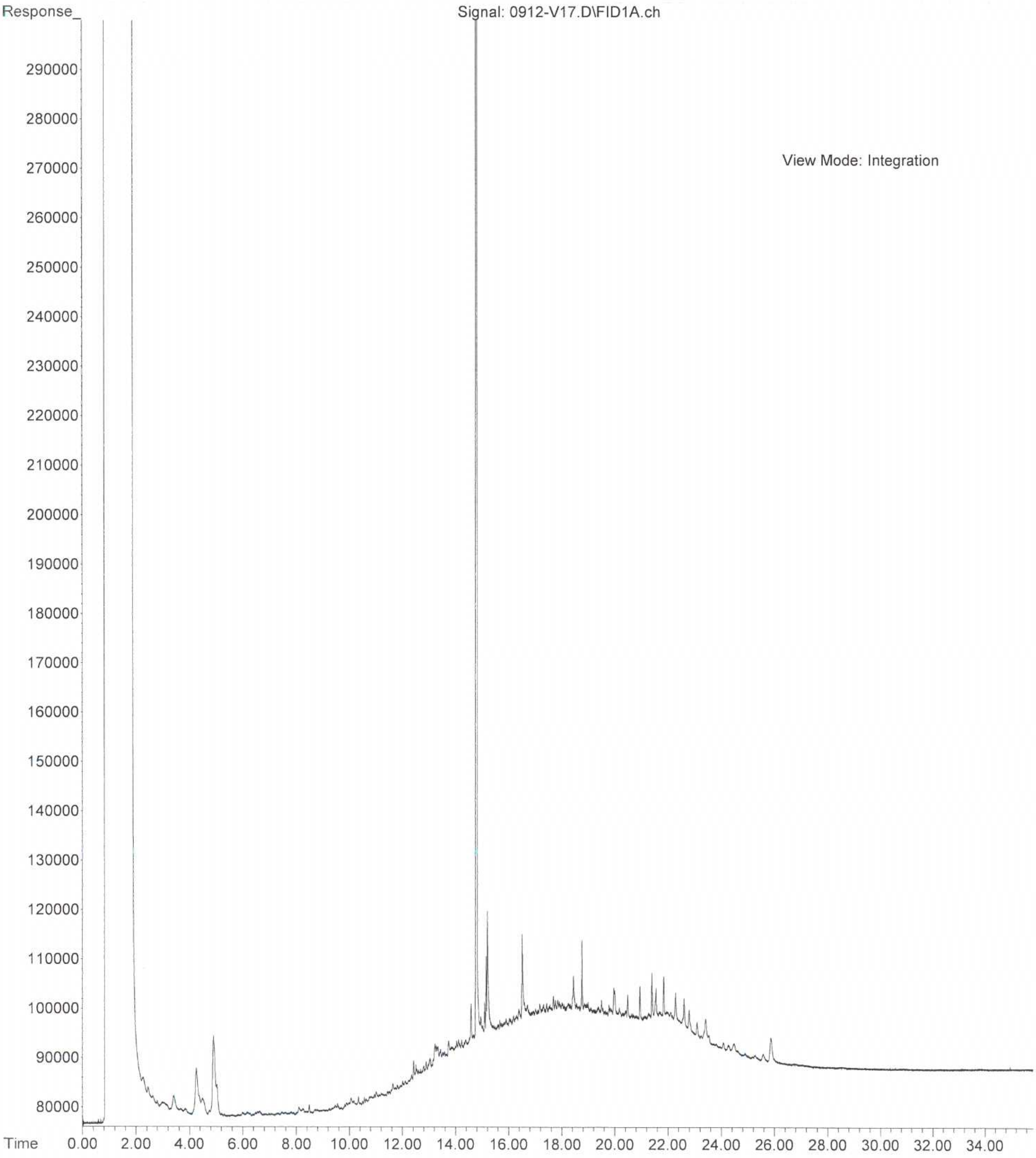

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Operator    :
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Instrument :   Vigo
Sample Name: 09-107-05
Misc Info   :
Vial Number: 18
```

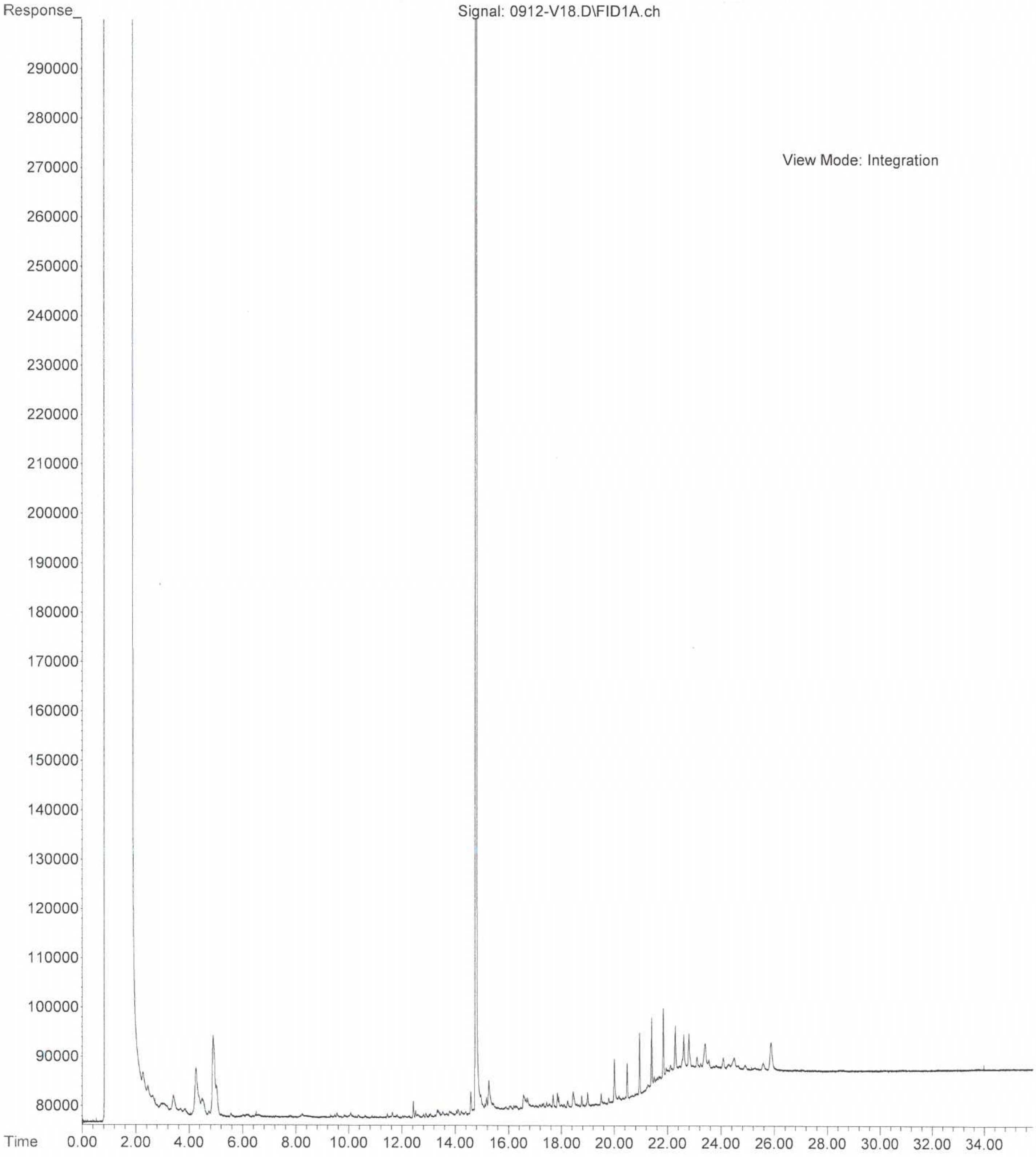

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Operator    :
Acquired    : 12 Sep 2014  23:15     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-06
Misc Info   :
Vial Number: 19
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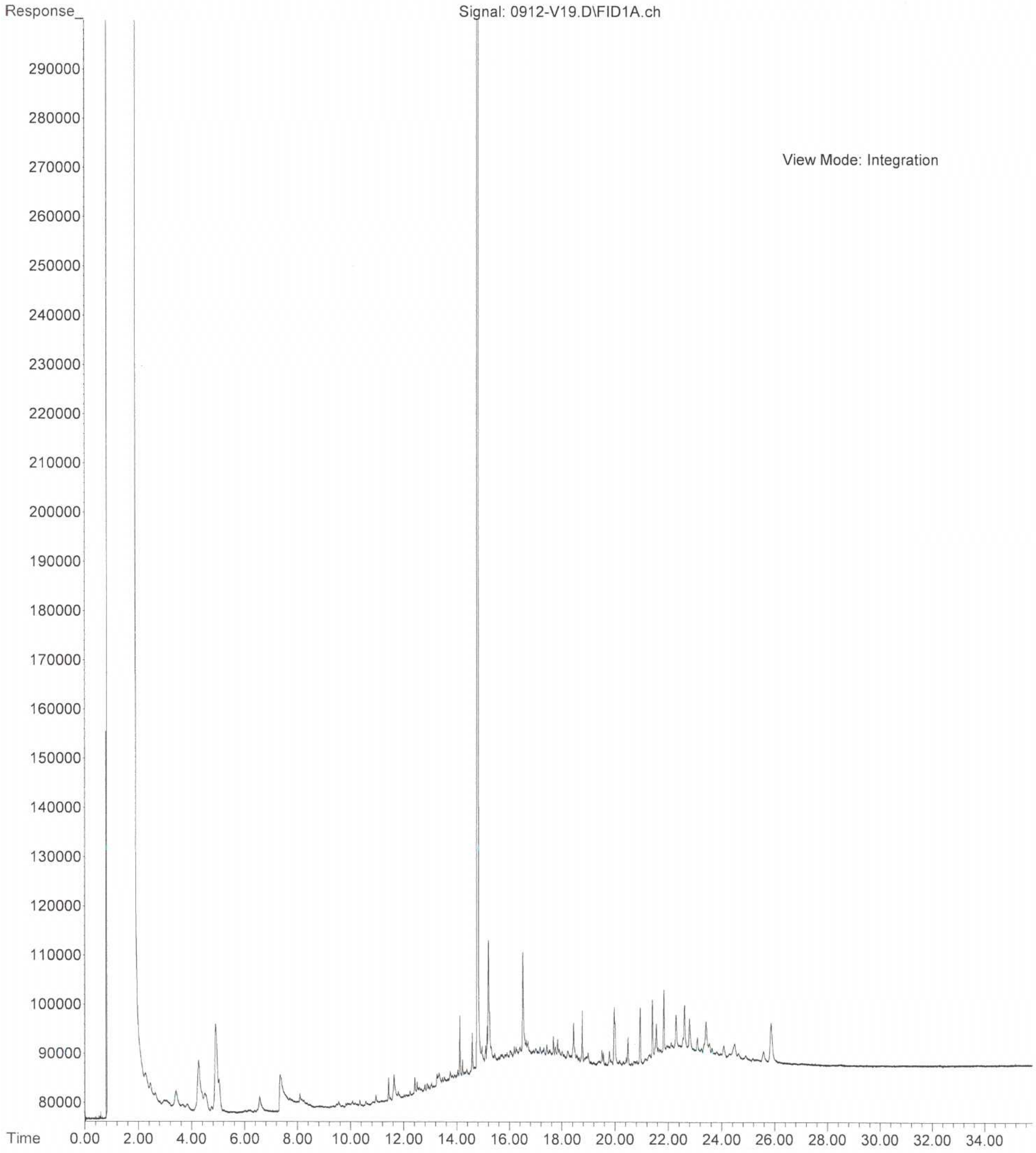

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Operator    :
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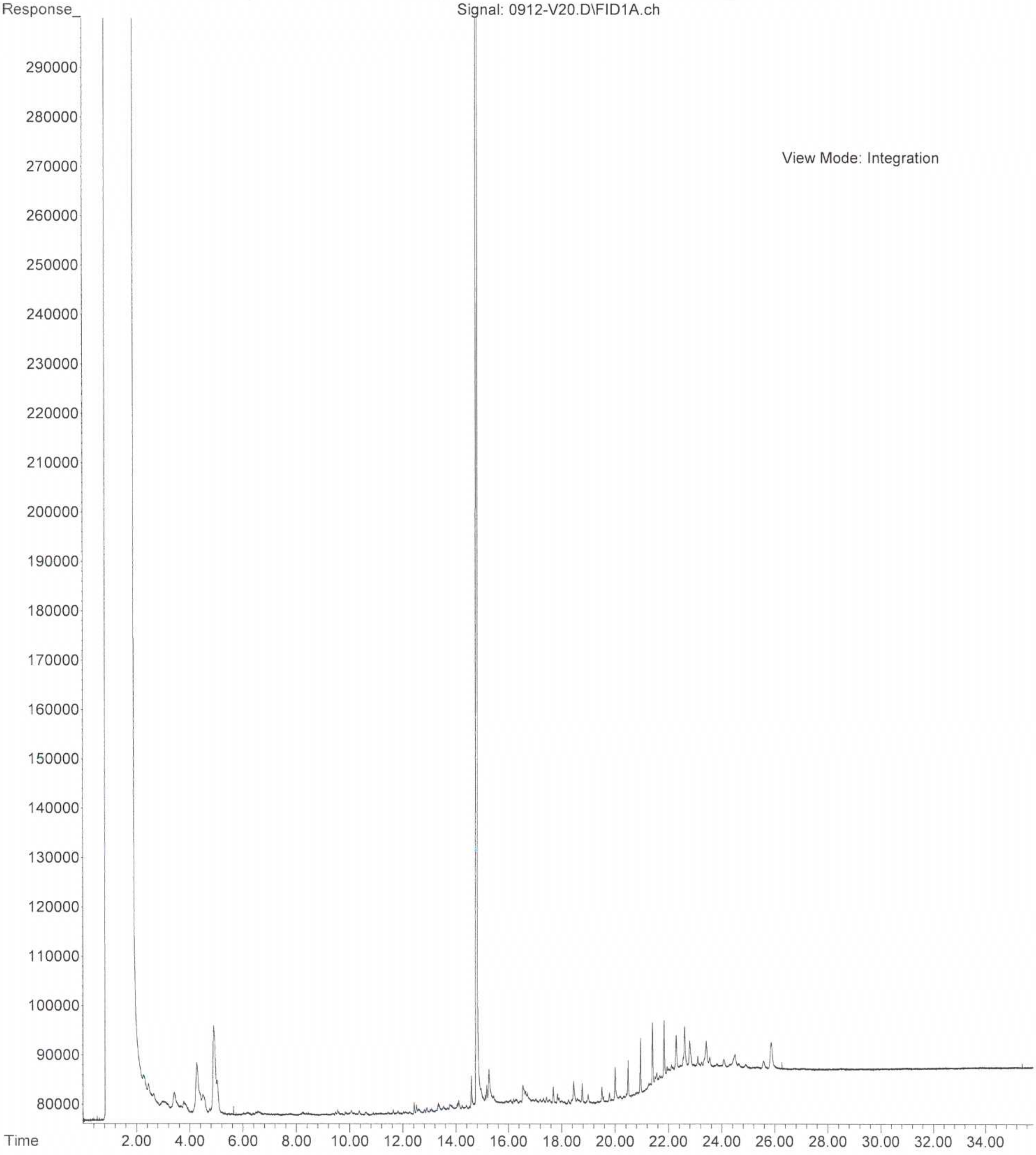
Instrument :    Vigo
Sample Name: 09-107-07
Misc Info   :
Vial Number: 20
```



OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 25, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007098998
Laboratory Reference No. 1409-148

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on September 15, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

Case Narrative

Samples were collected on September 10 and 11, 2014 and received by the laboratory on September 15, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Dissolved Metals by EPA 200.8 Analysis

The dissolved field filter sample MW-1(09-148-03) was received containing solid material. The samples were digested according to OnSite Environmental standard operating procedure.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-10**					
Laboratory ID:	09-148-01					
Benzene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
Toluene	**ND**	5.0	EPA 8021B	9-17-14	9-17-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
m,p-Xylene	**ND**	5.0	EPA 8021B	9-17-14	9-17-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
Gasoline	**ND**	100	NWTPH-Gx	9-17-14	9-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*71-112*				
Client ID:	**BLMW-9**					
Laboratory ID:	09-148-02					
Benzene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
Toluene	**ND**	5.0	EPA 8021B	9-17-14	9-17-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
m,p-Xylene	**ND**	5.0	EPA 8021B	9-17-14	9-17-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
Gasoline	**ND**	100	NWTPH-Gx	9-17-14	9-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*71-112*				
Client ID:	**MW-1**					
Laboratory ID:	09-148-03					
Benzene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
Toluene	**ND**	5.0	EPA 8021B	9-17-14	9-17-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
m,p-Xylene	**ND**	5.0	EPA 8021B	9-17-14	9-17-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
Gasoline	**ND**	100	NWTPH-Gx	9-17-14	9-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*71-112*				

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BC-11**					
Laboratory ID:	09-148-04					
Benzene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
Toluene	**ND**	5.0	EPA 8021B	9-17-14	9-17-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
m,p-Xylene	**ND**	5.0	EPA 8021B	9-17-14	9-17-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
Gasoline	**ND**	100	NWTPH-Gx	9-17-14	9-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*71-112*				
Client ID:	**BLMW-12**					
Laboratory ID:	09-148-05					
Benzene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
Toluene	**ND**	5.0	EPA 8021B	9-17-14	9-17-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
m,p-Xylene	**ND**	5.0	EPA 8021B	9-17-14	9-17-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
Gasoline	**ND**	100	NWTPH-Gx	9-17-14	9-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-112*				

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0917W1					
Benzene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
Toluene	**ND**	5.0	EPA 8021B	9-17-14	9-17-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
m,p-Xylene	**ND**	5.0	EPA 8021B	9-17-14	9-17-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-17-14	9-17-14	
Gasoline	**ND**	100	NWTPH-Gx	9-17-14	9-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*71-112*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-148-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*92*	*90*	*71-112*			
MATRIX SPIKES											
Laboratory ID:	08-138-09										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**51.0**	**51.5**	50.0	50.0	ND	**102**	**103**	78-120	1	12	
Toluene	**50.7**	**50.8**	50.0	50.0	ND	**101**	**102**	80-121	0	12	
Ethyl Benzene	**48.5**	**48.3**	50.0	50.0	ND	**97**	**97**	81-120	0	13	
m,p-Xylene	**49.1**	**49.1**	50.0	50.0	ND	**98**	**98**	81-119	0	13	
o-Xylene	**50.1**	**50.2**	50.0	50.0	ND	**100**	**100**	79-117	0	13	
Surrogate:											
Fluorobenzene						*92*	*99*	*71-112*			

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-10**					
Laboratory ID:	09-148-01					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-18-14	9-18-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**BLMW-9**					
Laboratory ID:	09-148-02					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-18-14	9-18-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**MW-1**					
Laboratory ID:	09-148-03					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-18-14	9-18-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				
Client ID:	**BC-11**					
Laboratory ID:	09-148-04					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-18-14	9-18-14	
Lube Oil Range Organics	**0.42**	0.41	NWTPH-Dx	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**BLMW-12**					
Laboratory ID:	09-148-05					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	9-18-14	9-18-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*81*	*50-150*				

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0918W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	9-18-14	9-18-14	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-148-01										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*88*	*90*	*50-150*			

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-10**					
Laboratory ID:	09-148-01					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-10**					
Laboratory ID:	09-148-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	3.0	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*105*	*62-122*				
Toluene-d8	*106*	*70-120*				
4-Bromofluorobenzene	*104*	*71-120*				

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**BLMW-9**					
Laboratory ID:	09-148-02					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-9**					
Laboratory ID:	09-148-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*100*	*62-122*				
Toluene-d8	*99*	*70-120*				
4-Bromofluorobenzene	*94*	*71-120*				

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1**					
Laboratory ID:	09-148-03					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**MW-1**					
Laboratory ID:	09-148-03					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*100*	*62-122*				
Toluene-d8	*99*	*70-120*				
4-Bromofluorobenzene	*98*	*71-120*				

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**BC-11**					
Laboratory ID:	09-148-04					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**BC-11**					
Laboratory ID:	09-148-04					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*107*	*62-122*				
Toluene-d8	*99*	*70-120*				
4-Bromofluorobenzene	*99*	*71-120*				

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-12**					
Laboratory ID:	09-148-05					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

HALOGENATED VOLATILES EPA 8260C

page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-12**					
Laboratory ID:	09-148-05					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	14	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*100*	*62-122*				
Toluene-d8	*99*	*70-120*				
4-Bromofluorobenzene	*95*	*71-120*				

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0918W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloromethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Iodomethane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chloroform	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Trichloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromomethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	9-18-14	9-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	9-18-14	9-18-14	

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0918W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Bromoform	ND	1.0	EPA 8260C	9-18-14	9-18-14	
Bromobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	9-18-14	9-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	9-18-14	9-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	9-18-14	9-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*102*	*62-122*				
Toluene-d8	*101*	*70-120*				
4-Bromofluorobenzene	*97*	*71-120*				

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

HALOGENATED VOLATILES EPA 8260C
MS/MSD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-148-02										
	MS	MSD	MS	MSD		MS	MSD				
1,1-Dichloroethene	**8.07**	**8.44**	10.0	10.0	ND	81	84	57-133	4	15	
Benzene	**8.37**	**8.89**	10.0	10.0	ND	84	89	75-117	6	15	
Trichloroethene	**7.56**	**7.74**	10.0	10.0	ND	76	77	75-120	2	15	
Toluene	**7.67**	**8.11**	10.0	10.0	ND	77	81	75-115	6	15	
Chlorobenzene	**8.23**	**8.21**	10.0	10.0	ND	82	82	75-122	0	15	
Surrogate:											
Dibromofluoromethane						*96*	*105*	*62-122*			
Toluene-d8						*93*	*101*	*70-120*			
4-Bromofluorobenzene						*93*	*95*	*71-120*			

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-148-01					
Client ID:	**BLMW-10**					
Arsenic	**ND**	3.0	200.8		9-22-14	
Cadmium	**ND**	4.0	200.8		9-22-14	
Chromium	**ND**	10	200.8		9-22-14	
Lead	**ND**	1.0	200.8		9-22-14	
Lab ID:	09-148-02					
Client ID:	**BLMW-9**					
Arsenic	**6.1**	3.0	200.8		9-22-14	
Cadmium	**ND**	4.0	200.8		9-22-14	
Chromium	**ND**	10	200.8		9-22-14	
Lead	**ND**	1.0	200.8		9-22-14	
Lab ID:	09-148-03					
Client ID:	**MW-1**					
Arsenic	**30**	3.3	200.8		9-22-14	
Cadmium	**ND**	4.4	200.8		9-22-14	
Chromium	**86**	11	200.8		9-22-14	
Lead	**74**	1.1	200.8		9-22-14	
Lab ID:	09-148-04					
Client ID:	**BC-11**					
Arsenic	**9.7**	3.0	200.8		9-22-14	
Cadmium	**ND**	4.0	200.8		9-22-14	
Chromium	**ND**	10	200.8		9-22-14	
Lead	**ND**	1.0	200.8		9-22-14	

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-148-05					
Client ID:	**BLMW-12**					
Arsenic	**77**	3.0	200.8		9-22-14	
Cadmium	**ND**	4.0	200.8		9-22-14	
Chromium	**ND**	10	200.8		9-22-14	
Lead	**ND**	1.0	200.8		9-22-14	

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed:	9-22-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0922D1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Lead	200.8	**ND**	1.0

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-22-14
Date Analyzed:	9-22-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0922WM1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Lead	200.8	**ND**	1.1

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed: 9-22-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-149-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 9-22-14
Date Analyzed: 9-22-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-180-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Lead	**2.77**	**3.33**	18	1.0	

Date of Report: September 25, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148
Project: 2007098998

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed: 9-22-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-149-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**216**	108	**216**	108	0	
Cadmium	200	**222**	111	**221**	111	0	
Chromium	200	**197**	98	**202**	101	3	
Lead	200	**198**	99	**204**	102	3	

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 9-22-14
Date Analyzed: 9-22-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-180-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	111	**105**	95	**113**	102	7	
Cadmium	111	**97.5**	88	**103**	93	6	
Chromium	111	**91.5**	82	**98**	88	7	
Lead	111	**93.5**	82	**100**	88	7	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.

21312 30th Drive SE, Suite 110, Bothell, Washington 98021-7010
Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

09-148

Chain of Custody and Laboratory Anaylsis Request

DATE:
PAGE: 1 of 1

PROJECT NAME: Bothell Landing #: 2007098 ~~2008~~ 1998
SAMPLERS NAME: K Stilson PHONE:
SAMPLERS SIGNATURE: K Stilson DATE: 9/13/14
HWA CONTACT: Arnie Sugar PHONE:

TURNAROUND TIME
☐ DAYS
☐ STANDARD

ANALYSIS REQUESTED

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH-G	Dx	BTEX	HVOCs	Total Metal	Diss Metals	EDD	REMARKS
BLMW-10	9/10/14	530	W	1	9	✓	✓	✓	✓	✓	✓		Run D initially
BLMW-9	9/11/14	800	W	2	9	✓	✓	✓	✓	✓	✓		Archive T
MW-1		930	W	3	9	✓	✓	✓	✓	✓	✓		
BC-11		1100	W	4	~~9~~ 7	✓	✓	✓	✓	✓	✓		Metals
BLMW-12		345	W	5	9	✓	✓	✓	✓	✓	✓		As, Cd
													Cr, Pd

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: K Stilson		HWA	9/15/14	1200	
Received by: Van	Van	Speedy	"	345	
Relinquished by: "	"	"	"	1615	
Received by: M. Vovan		COSE	9/15/14	1615	

DISTRIBUTION: WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler

```
File       : X:\BTEX\HOPE\DATA\H140917\0917008.D
Operator   :
Acquired   : 17 Sep 2014  13:43     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-148-01F
Misc Info  :
Vial Number: 8
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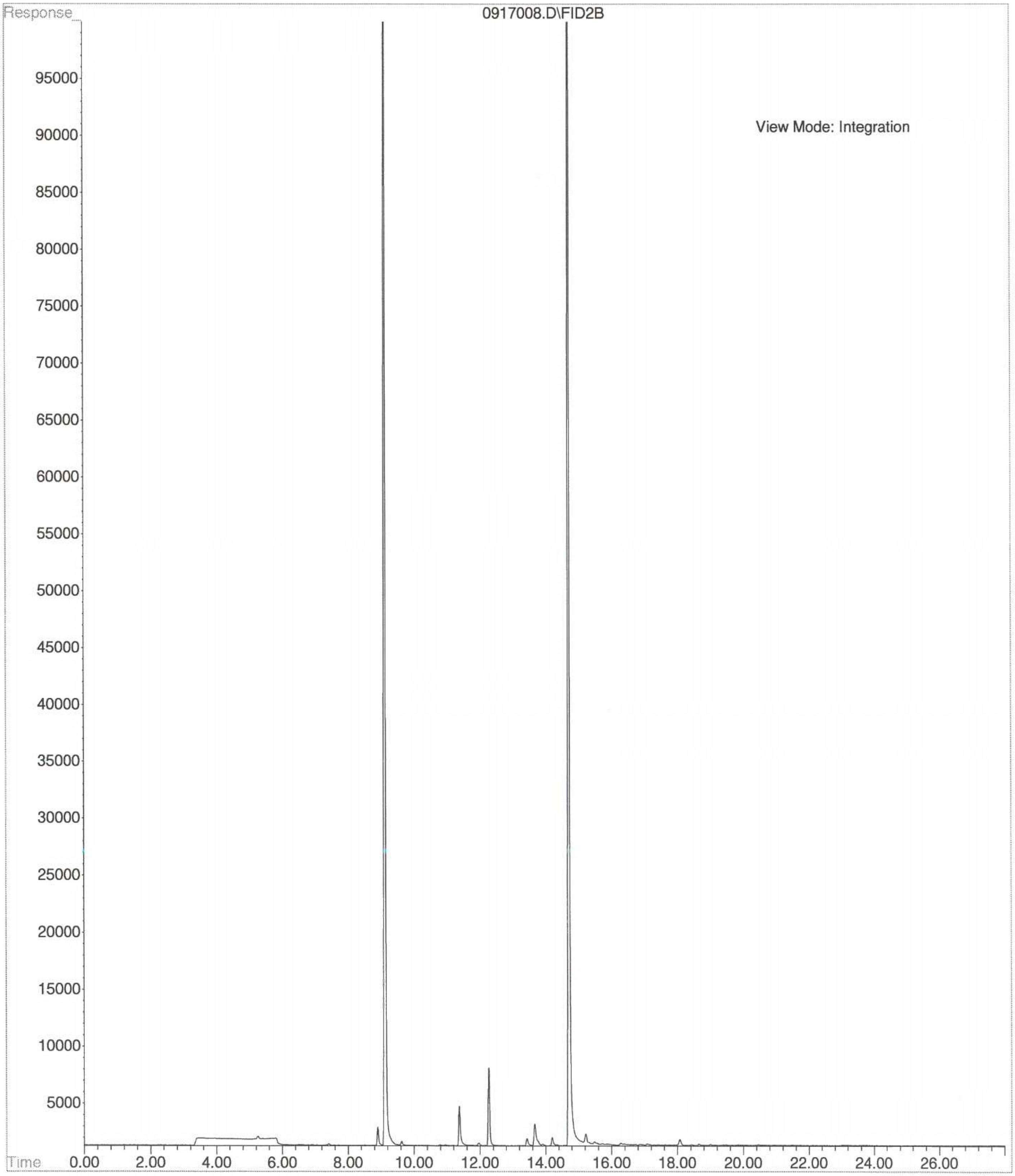

```
File       : X:\BTEX\HOPE\DATA\H140917\0917010.D
Operator   :
Acquired   : 17 Sep 2014  14:52     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-148-02F
Misc Info  :
Vial Number: 10
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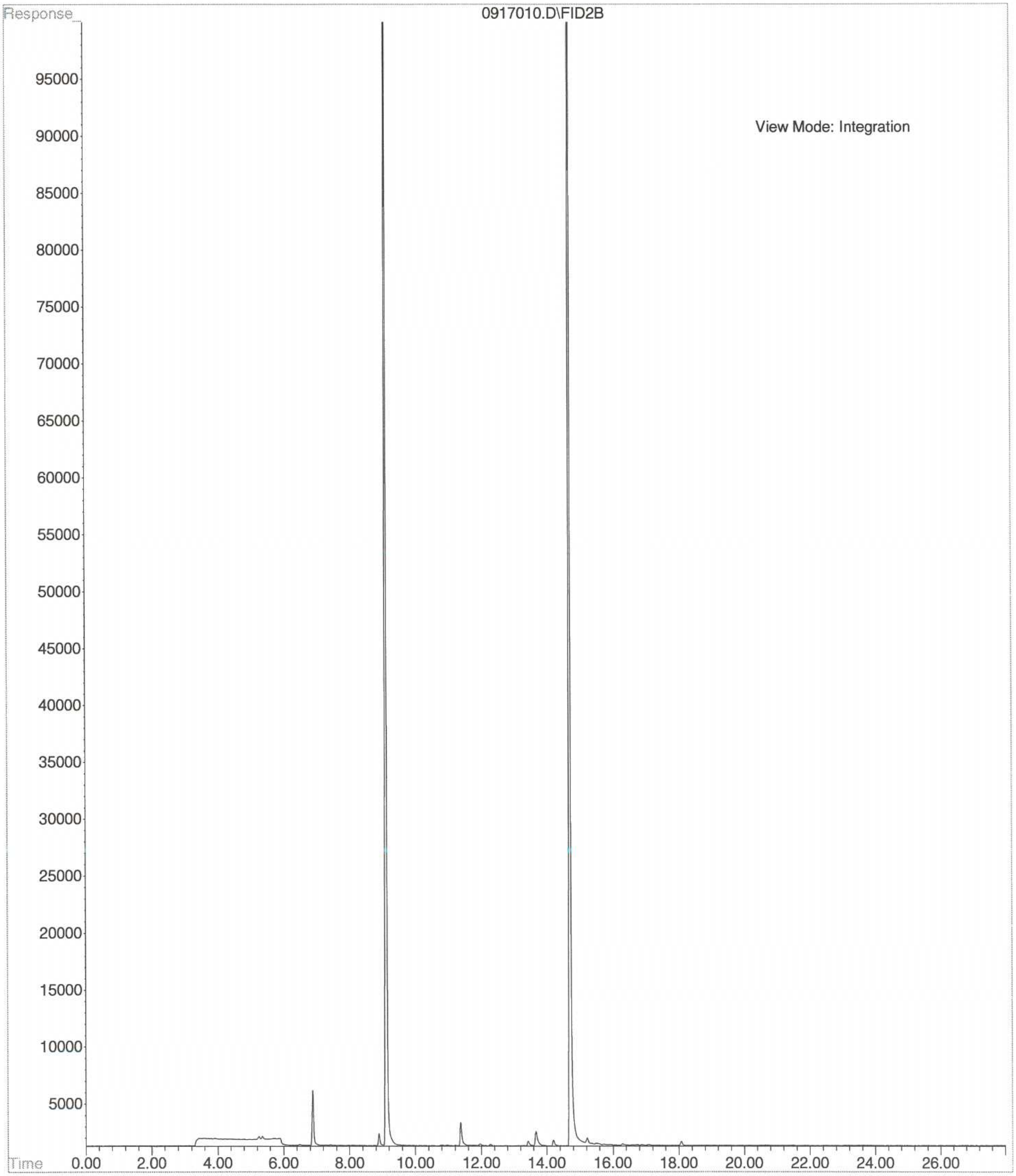
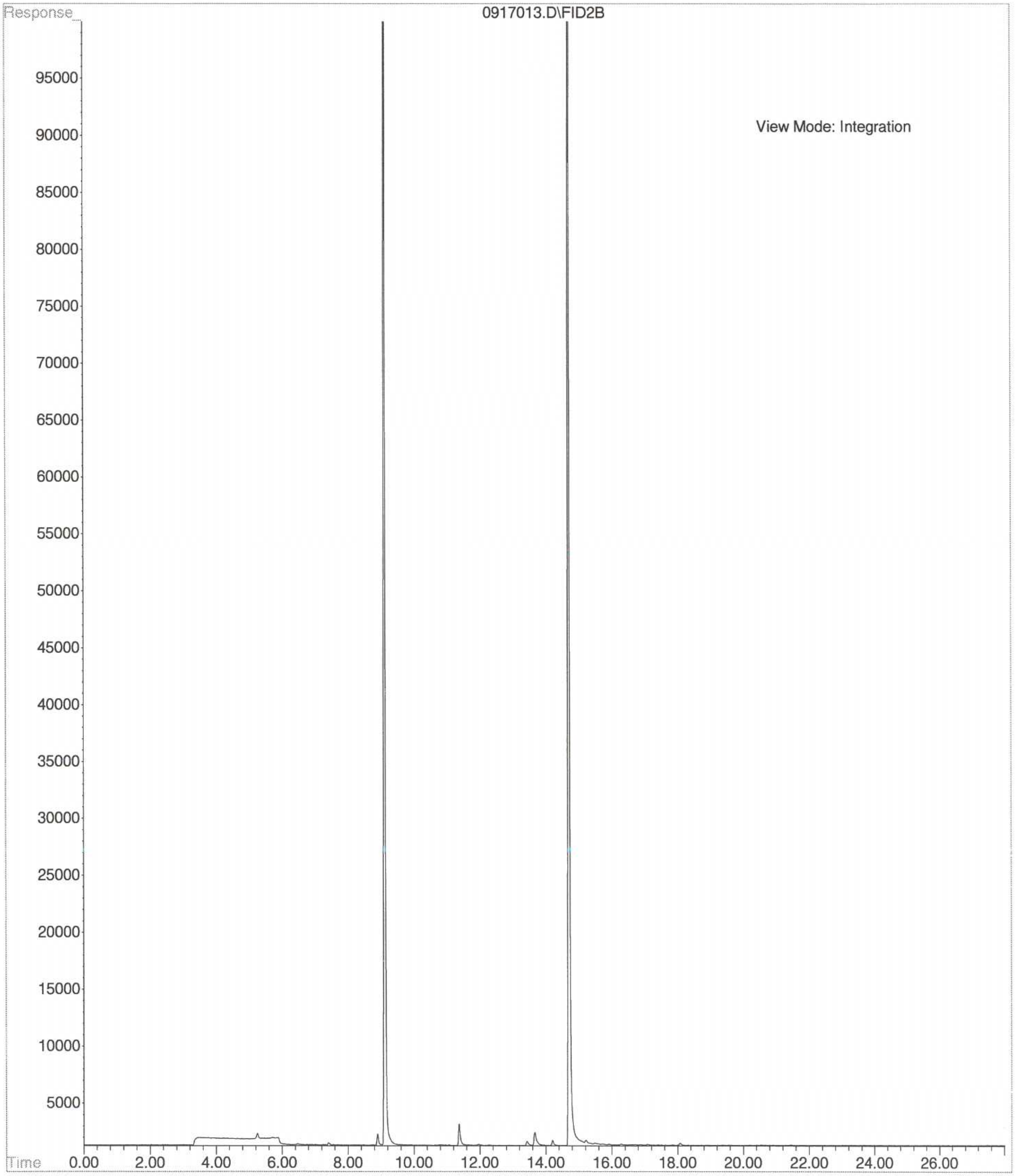


```
File       : X:\BTEX\HOPE\DATA\H140917\0917013.D
Operator   :
Acquired   : 17 Sep 2014  16:35     using AcqMethod 140822B.M
Instrument :    HOPE
Sample Name: 09-148-03f
Misc Info  :
Vial Number: 13
```



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File       : X:\BTEX\HOPE\DATA\H140917\0917014.D
Operator   :
Acquired   : 17 Sep 2014  17:09     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-148-04f
Misc Info  :
Vial Number: 14
```
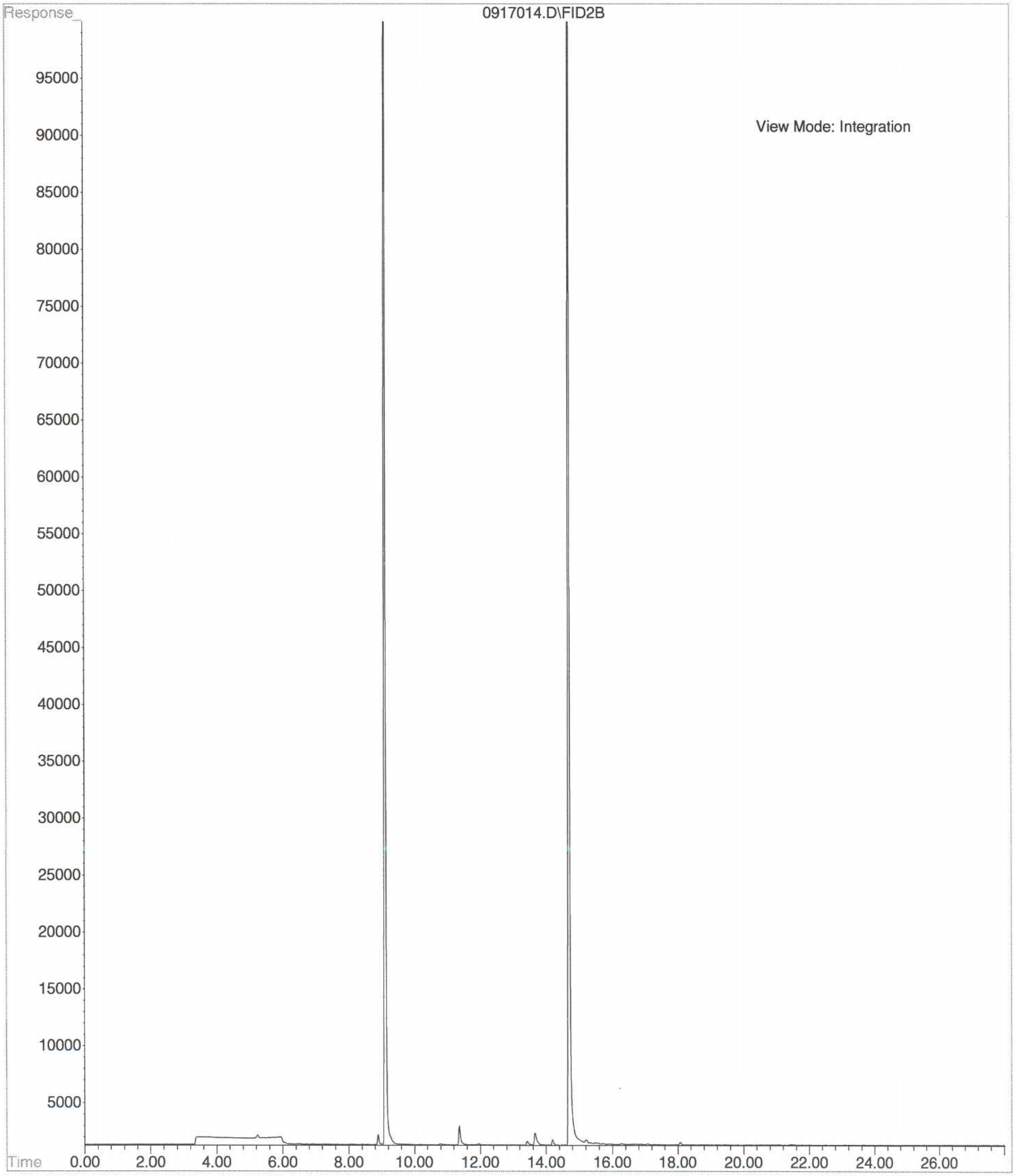
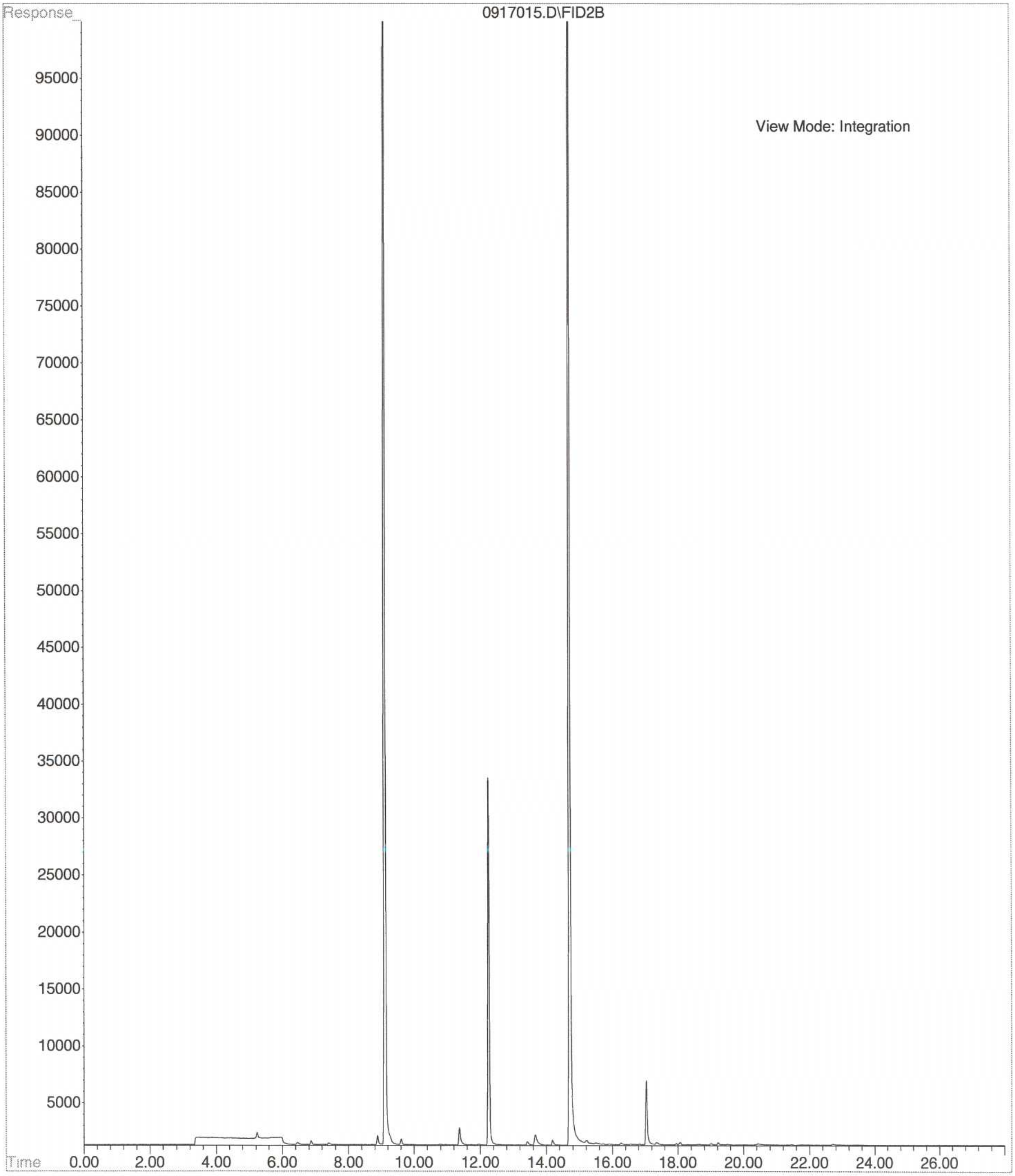
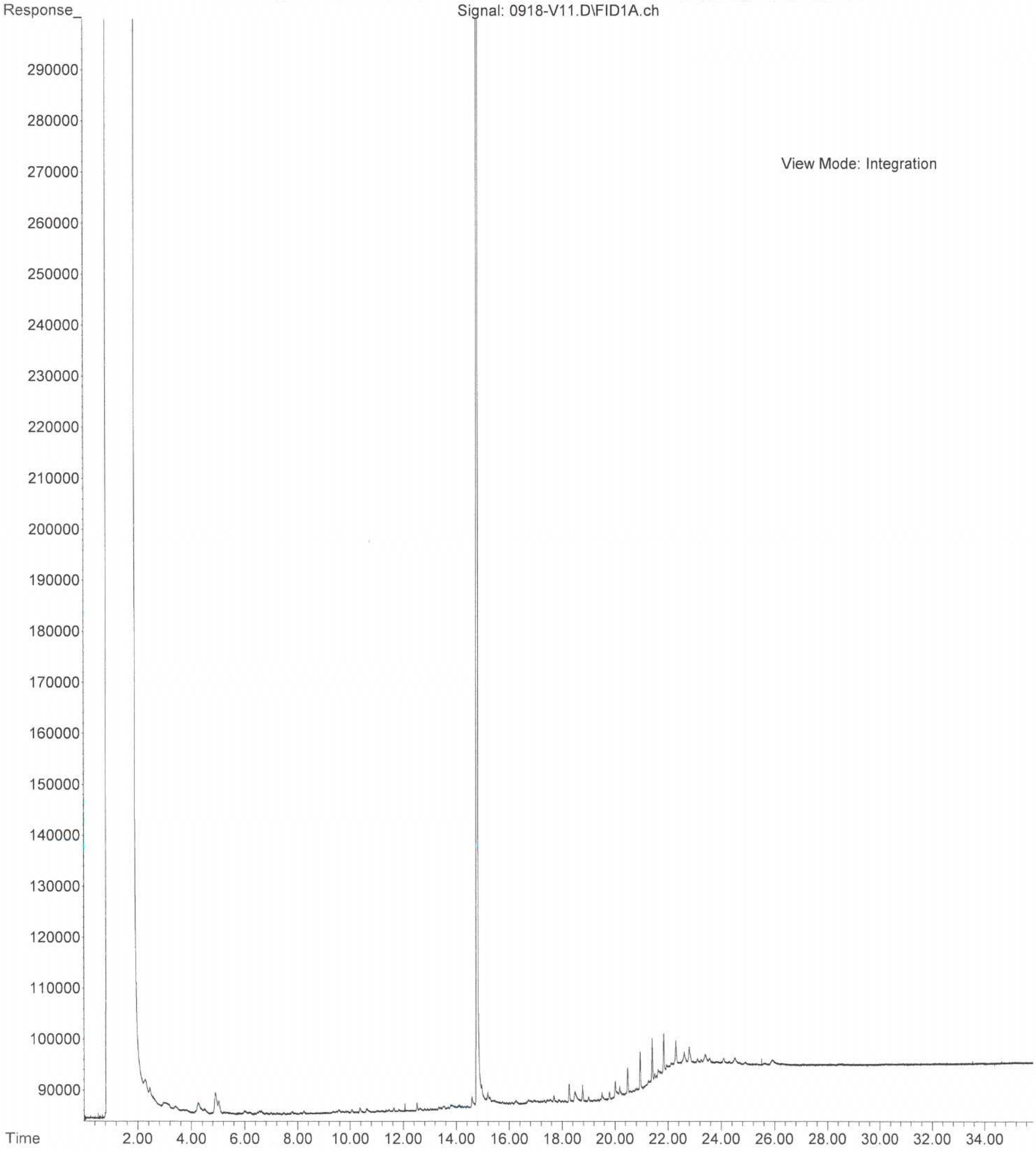



```
File       : X:\BTEX\HOPE\DATA\H140917\0917015.D
Operator   :
Acquired   : 17 Sep 2014  17:43     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-148-05f
Misc Info  :
Vial Number: 15
```



File   :C:\msdchem\2\DATA\V140918\0918-V11.D
Operator   :
Acquired   : 18 Sep 2014 17:46   using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-148-01
Misc Info   :
Vial Number: 11



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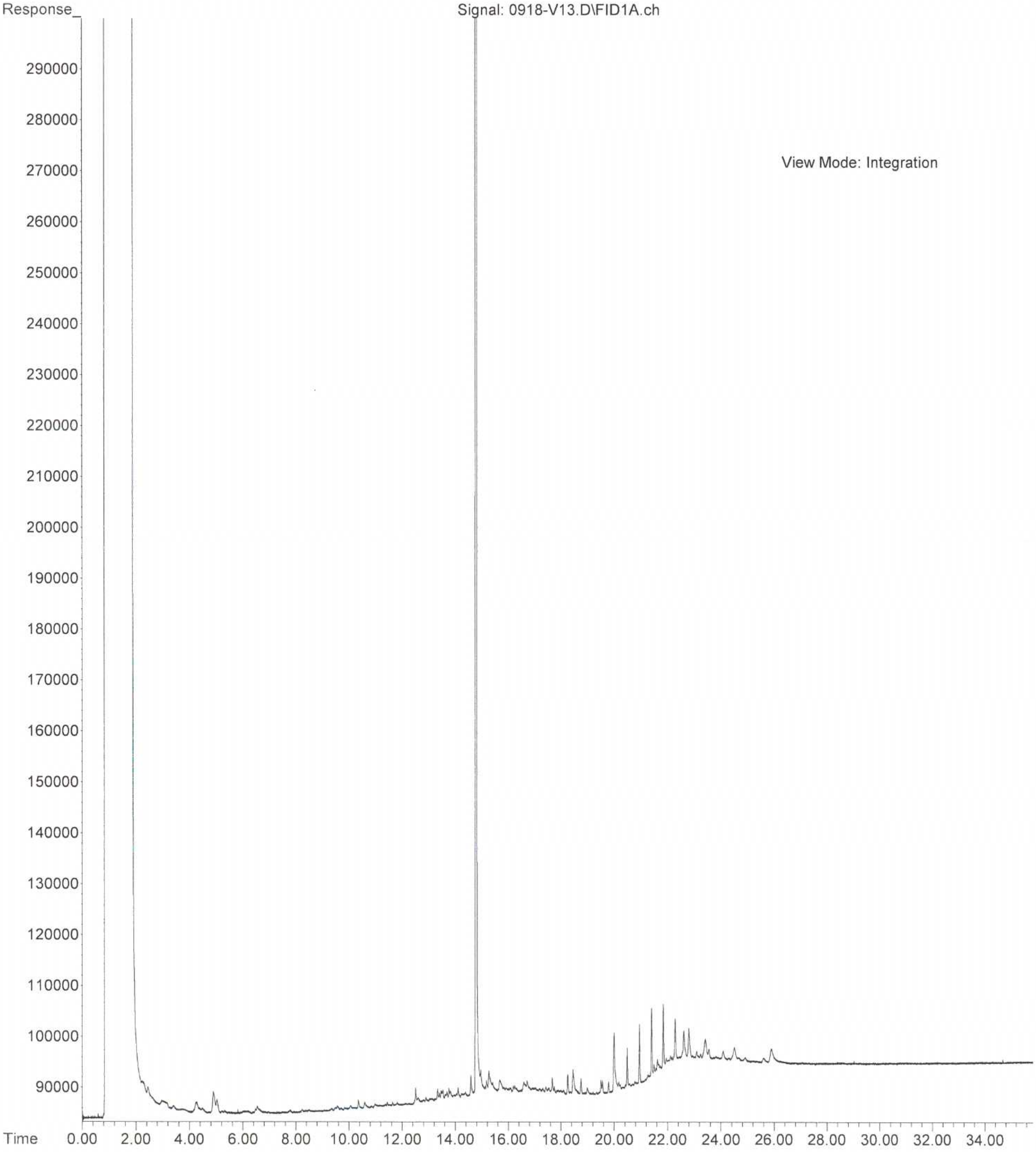
File        :C:\msdchem\2\DATA\V140918\0918-V13.D
Operator    :
Acquired    : 18 Sep 2014  19:08     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-148-02
Misc Info   :
Vial Number: 13
```



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File        :C:\msdchem\2\DATA\V140918.SEC\0918-V70.D
Operator    :
Acquired    : 18 Sep 2014  23:55     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-148-03
Misc Info   :
Vial Number: 70
```

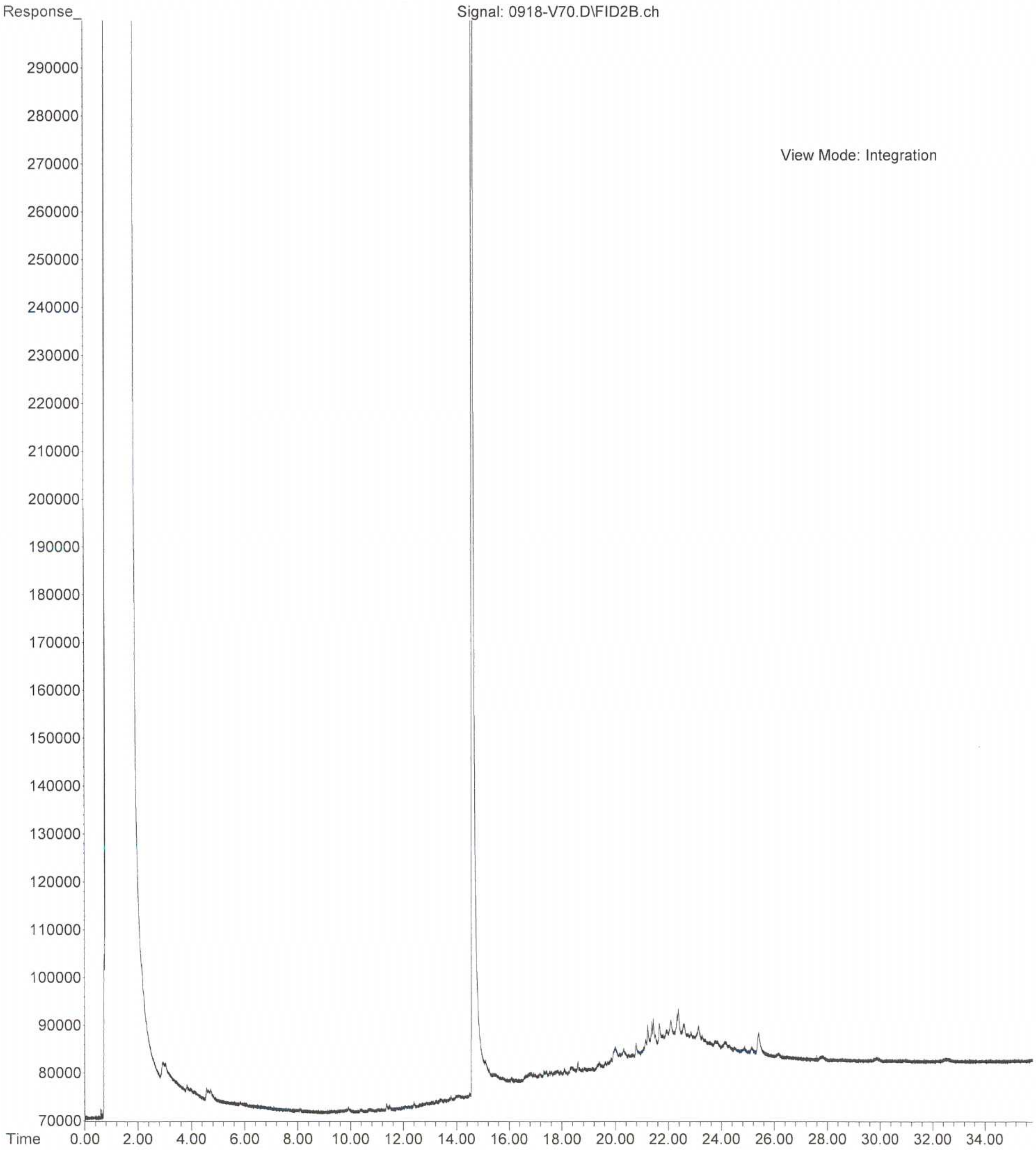

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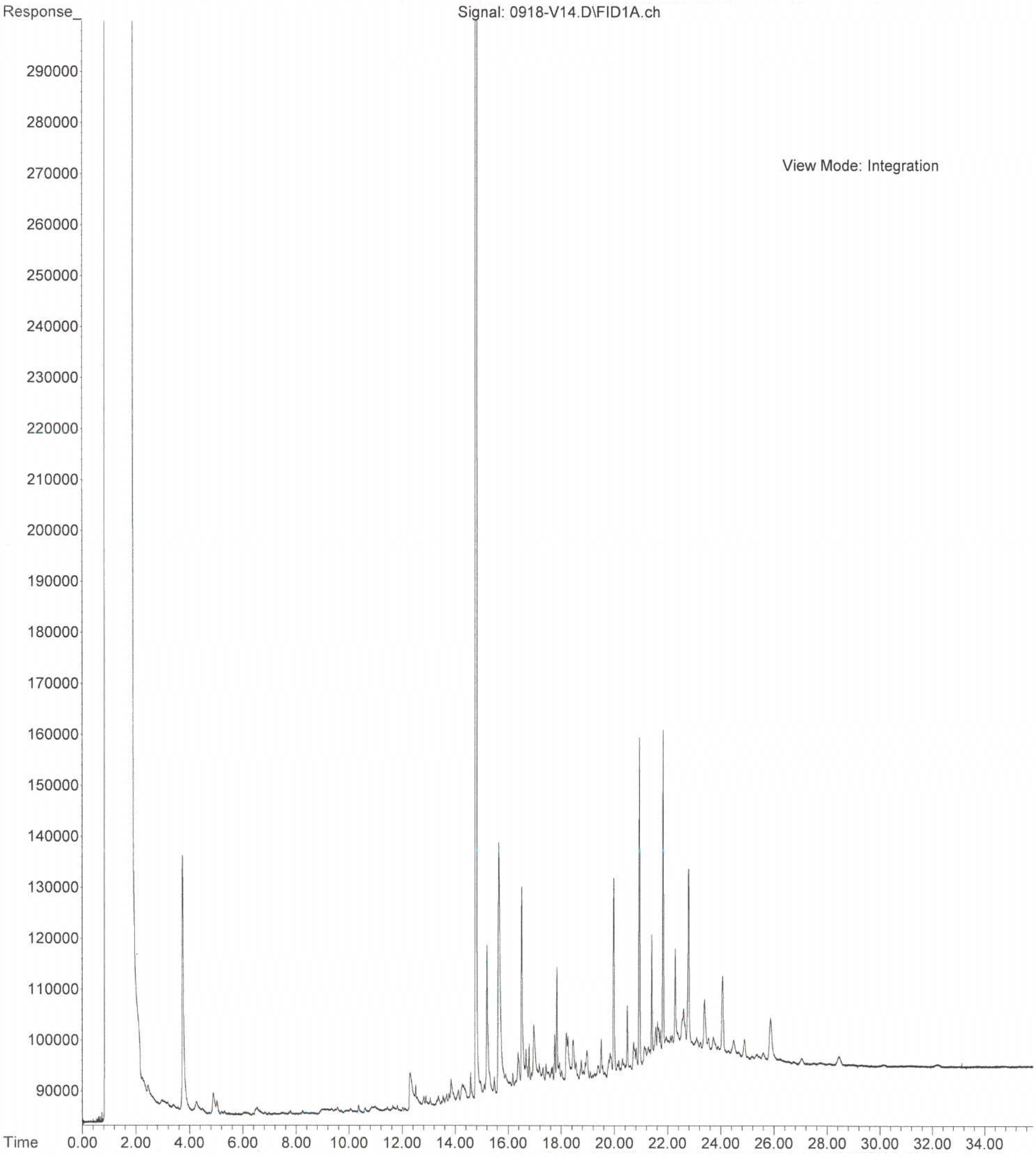
File        :C:\msdchem\2\DATA\V140918\0918-V14.D
Operator    :
Acquired    : 18 Sep 2014  19:49     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-148-04
Misc Info   :
Vial Number: 14
```



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File        :C:\msdchem\2\DATA\V140918\0918-V15.D
Operator    :
Acquired    : 18 Sep 2014  20:30     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-148-05
Misc Info  :
Vial Number: 15
```

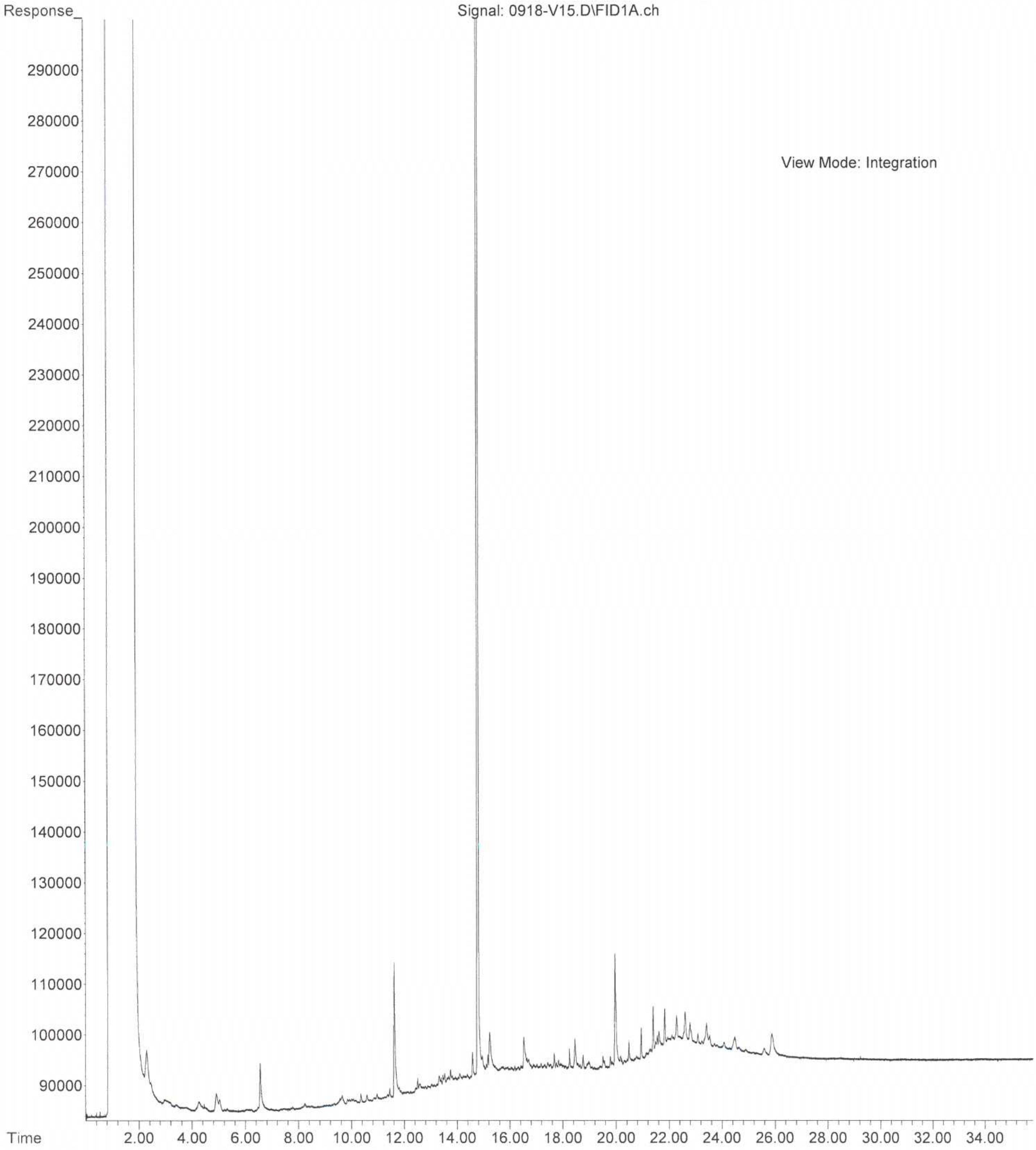

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 6, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007098998
Laboratory Reference No. 1409-148B

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on September 15, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 6, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148B
Project: 2007098998

Case Narrative

Samples were collected on September 10 and 11, 2014 and received by the laboratory on September 15, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: October 6, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148B
Project: 2007098998

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-148-02					
Client ID:	**BLMW-9**					
Arsenic	**6.3**	3.3	200.8	10-2-14	10-2-14	
Lab ID:	09-148-03					
Client ID:	**MW-1**					
Arsenic	**17**	3.3	200.8	10-2-14	10-2-14	
Chromium	**22**	11	200.8	10-2-14	10-2-14	
Lead	**36**	1.1	200.8	10-2-14	10-2-14	
Lab ID:	09-148-04					
Client ID:	**BC-11**					
Arsenic	**11**	3.3	200.8	10-2-14	10-2-14	
Lab ID:	09-148-05					
Client ID:	**BLMW-12**					
Arsenic	**88**	3.3	200.8	10-2-14	10-2-14	

Date of Report: October 6, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148B
Project: 2007098998

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	10-2-14
Date Analyzed:	10-2-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB1002WM1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3
Chromium	200.8	**ND**	11
Lead	200.8	**ND**	1.1

Date of Report: October 6, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148B
Project: 2007098998

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted:	10-2-14
Date Analyzed:	10-2-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	09-148-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**6.27**	**6.07**	3	3.3	
Chromium	**ND**	**ND**	NA	11	
Lead	**ND**	**ND**	NA	1.1	

Date of Report: October 6, 2014
Samples Submitted: September 15, 2014
Laboratory Reference: 1409-148B
Project: 2007098998

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 10-2-14
Date Analyzed: 10-2-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-148-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	111	**130**	112	**129**	111	1	
Chromium	111	**114**	103	**116**	105	2	
Lead	111	**120**	108	**121**	109	0	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.

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Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

Chain of Custody and Laboratory Anaylsis Request

09 - 148

DATE:
PAGE: 1 of 1

PROJECT NAME: Bothell Landing #: 2007098~~2005~~ 1998
SAMPLERS NAME: KStilson PHONE:
SAMPLERS SIGNATURE: KStilson DATE: 9/13/14
HWA CONTACT: Arnie Sugar PHONE:

ANALYSIS REQUESTED

TURNAROUND TIME
☐ DAYS
☐ STANDARD

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH-G	Dx	BTEX	HVOCs	Total Metal*	Diss Metals		TOTAL Arsenic	Total Cr, Pb							EDD	REMARKS
BLMW-10	9/10/14	530	W	1	9	\	\	\	\	\	\											Run D initially
BLMW-9	9/11/14	800	W	2	9	\	\	\	\	\	\		Ⓧ									*Archive T
MW-1	|	930	W	3	9	\	\	\	\	\	\		Ⓧ	Ⓧ								
BC-11	|	1100	W	4	~~9~~ 7	\	\	\	\	\	\		Ⓧ									Metals
BLMW-12	|	345	W	5	9	\	\	\	\	\	\		Ⓧ									As, Cd Cr, Pd

Ⓧ Added 9/26/14. DB (STA)

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: K Stilson		HWA	9/15/14	1200	
Received by: Van	Van	Spdy	"	345	
Relinquished by: "	"	"	"	1615	
Received by: M. Vow		CO&E	9/15/14	1615	

DISTRIBUTION: **WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler**

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 3, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-998
Laboratory Reference No. 1409-215

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on September 23, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

Case Narrative

Samples were collected on September 18, 2014 and received by the laboratory on September 23, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BC10**					
Laboratory ID:	09-215-01					
Benzene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Toluene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Gasoline	**ND**	100	NWTPH-Gx	9-24-14	9-24-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*71-112*				
Client ID:	**TB**					
Laboratory ID:	09-215-02					
Benzene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Toluene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Gasoline	**ND**	100	NWTPH-Gx	9-24-14	9-24-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-112*				

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0924W1					
Benzene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Toluene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Gasoline	**ND**	100	NWTPH-Gx	9-24-14	9-24-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*71-112*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-214-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*88*	*88*	*71-112*			
MATRIX SPIKES											
Laboratory ID:	09-214-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**56.9**	**56.9**	50.0	50.0	ND	**114**	**114**	78-120	0	12	
Toluene	**56.5**	**56.1**	50.0	50.0	ND	**113**	**112**	80-121	1	12	
Ethyl Benzene	**54.9**	**54.6**	50.0	50.0	ND	**110**	**109**	81-120	1	13	
m,p-Xylene	**54.9**	**54.2**	50.0	50.0	ND	**110**	**108**	81-119	1	13	
o-Xylene	**54.8**	**54.3**	50.0	50.0	ND	**110**	**109**	79-117	1	13	
Surrogate:											
Fluorobenzene						*90*	*96*	*71-112*			

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BC10**					
Laboratory ID:	09-215-01					
Diesel Range Organics	**0.55**	0.26	NWTPH-Dx	9-25-14	9-25-14	
Lube Oil Range Organics	**0.70**	0.41	NWTPH-Dx	9-25-14	9-25-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0925W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	9-25-14	9-25-14	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	9-25-14	9-25-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-215-01										
	ORIG	DUP									
Diesel Range Organics	**0.552**	**0.377**	NA	NA		NA		NA	38	NA	
Lube Oil Range Organics	**0.697**	**0.506**	NA	NA		NA		NA	32	NA	
Surrogate:											
o-Terphenyl						*77*	*77*	*50-150*			

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8

Matrix:	Water
Units:	ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-215-01					
Client ID:	**BC10**					
Arsenic	**ND**	3.0	200.8		9-27-14	

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed:	9-27-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0927D1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0

DISSOLVED ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed: 9-27-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-215-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed: 9-27-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-215-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**198**	99	**197**	99	1	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.

21312 30th Drive SE, Suite 110, Bothell, Washington 98021-7010
Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

09-215

Chain of Custody and Laboratory Anaylsis Request

DATE: 9/22/14
PAGE: 1 of 1

PROJECT NAME: Bothell Point #: 2007098998
SAMPLERS NAME: KStilson PHONE:
SAMPLERS SIGNATURE: DATE: 9/22/14
HWA CONTACT: Arnie Sugars PHONE:

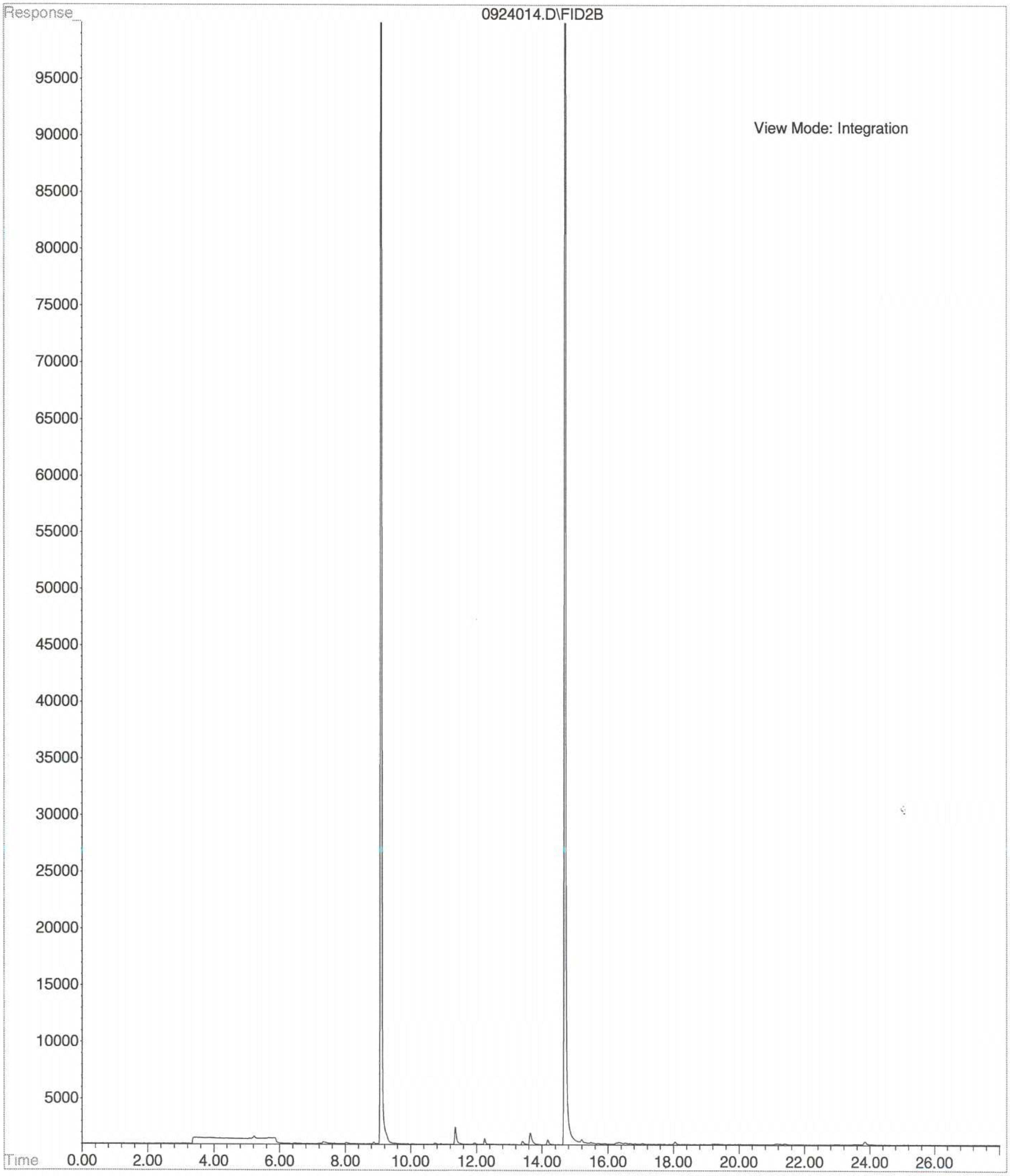
HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPHG	Dx	BTEX	*Total Arsenic	Diss Arsenic										EDD	REMARKS
BC10	9/18/14	1215	W	1	9	/	/	/	/	/											
TB	9/18/14		W	2	3	/		/													
																					* HOLD TOTAL ARSENIC

TURNAROUND TIME
☐ DAYS
☑ STANDARD

PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	KStilson		HWA	9/25/14	1200	
Received by:	Cliff Nale		HWA	9/23/14	1206	
Relinquished by:	Cliff Nale		HWA	9/23/14	1242	
Received by:	M.VOUN		OSE	9/23/14	1242	

DISTRIBUTION: **WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler**

```
File       : X:\BTEX\HOPE\DATA\H140924\0924014.D
Operator   :
Acquired   : 24 Sep 2014  19:07     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-215-01c
Misc Info  : V2-36-06
Vial Number: 14
```



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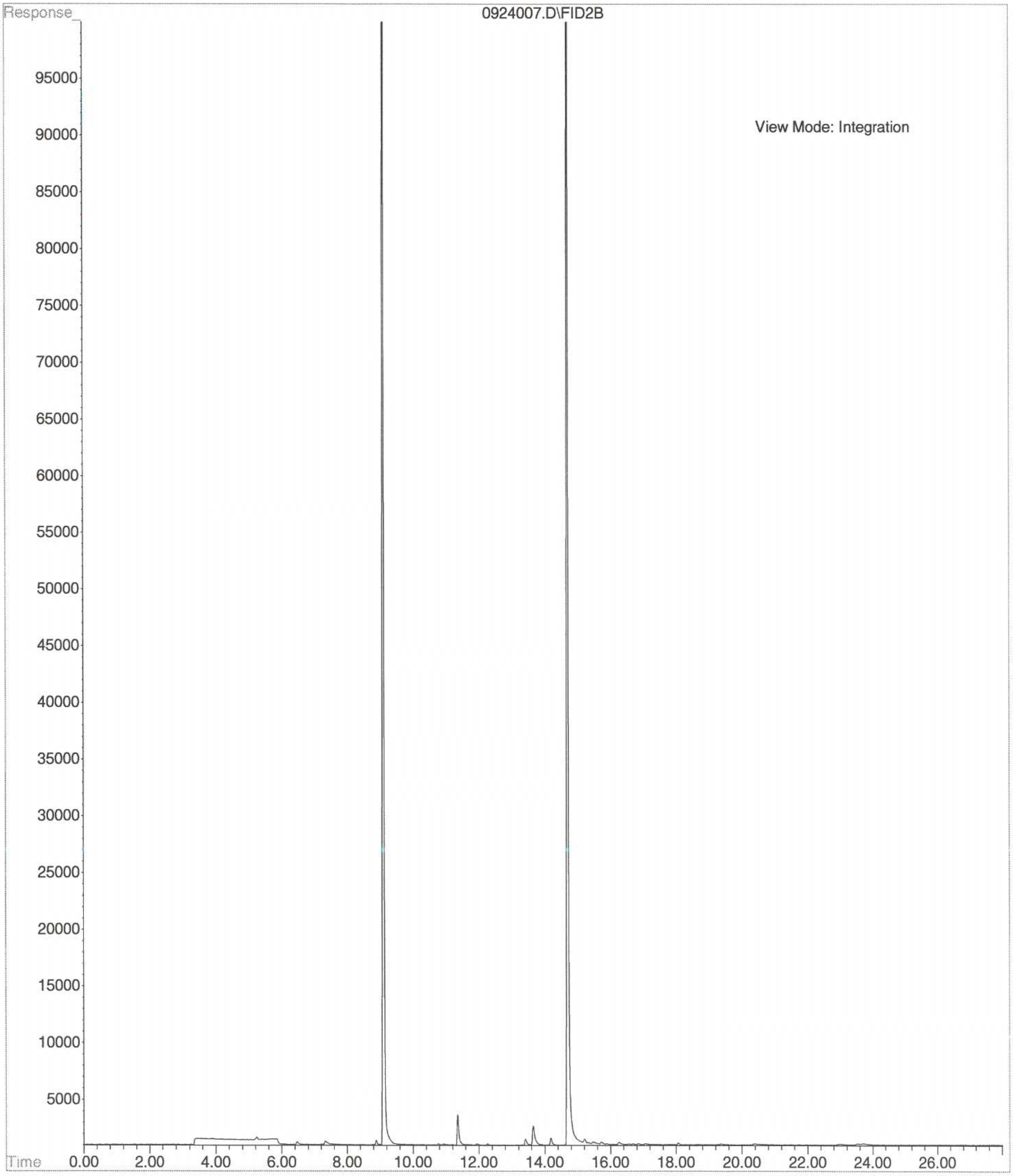
File        : X:\BTEX\HOPE\DATA\H140924\0924007.D
Operator    :
Acquired    : 24 Sep 2014  15:10     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-215-02a
Misc Info  : V2-36-06
Vial Number: 7
```



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File       :C:\msdchem\1\DATA\T140925.SEC\0925-T54.D
Operator   : ZT
Acquired   : 25 Sep 2014  12:43     using AcqMethod T140401F.M
Instrument :   Teri
Sample Name: 09-215-01
Misc Info  :
Vial Number: 54
```
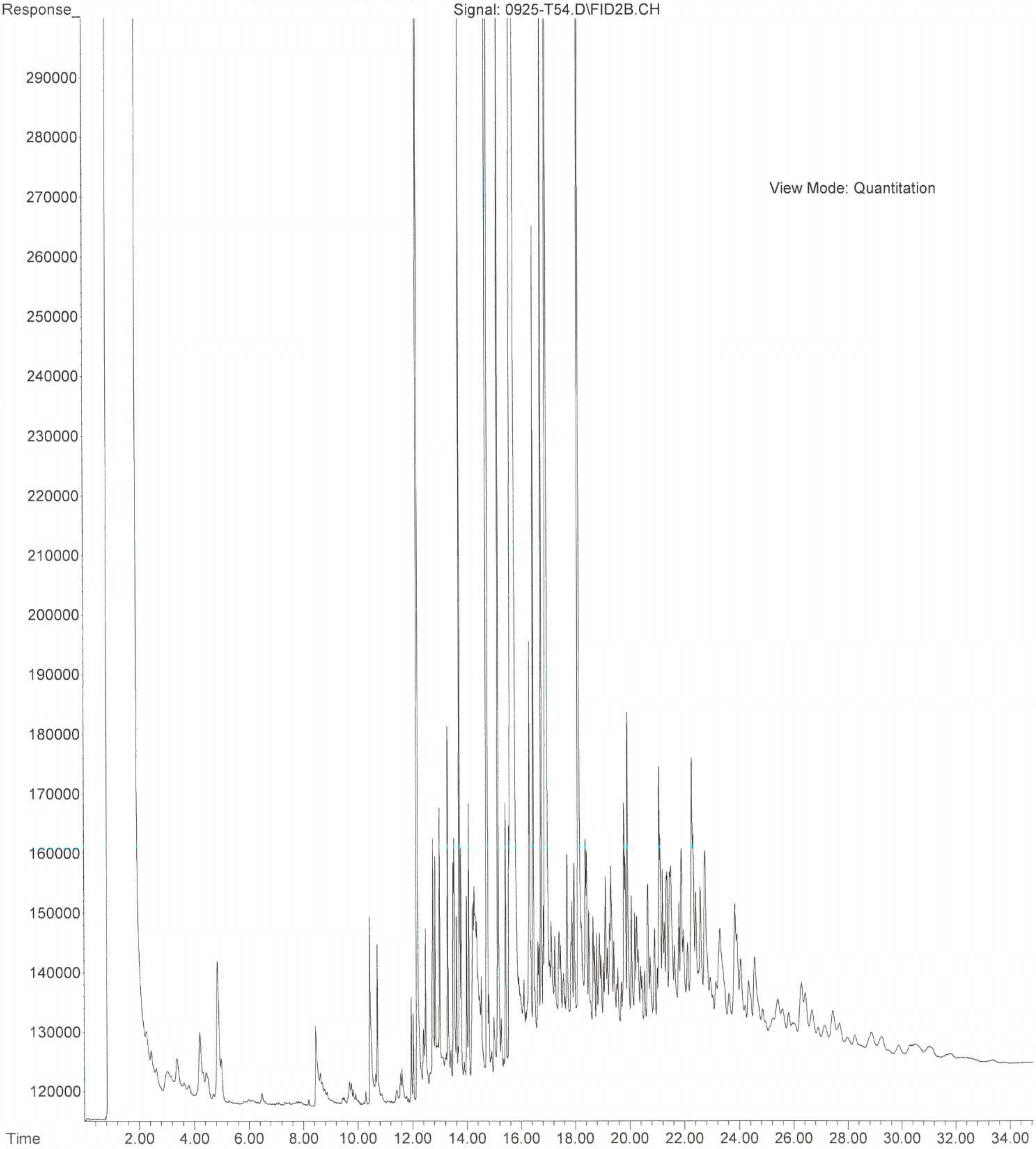



OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 3, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-998
Laboratory Reference No. 1409-215

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on September 23, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

Case Narrative

Samples were collected on September 18, 2014 and received by the laboratory on September 23, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BC10**					
Laboratory ID:	09-215-01					
Benzene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Toluene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Gasoline	**ND**	100	NWTPH-Gx	9-24-14	9-24-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*71-112*				
Client ID:	**TB**					
Laboratory ID:	09-215-02					
Benzene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Toluene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Gasoline	**ND**	100	NWTPH-Gx	9-24-14	9-24-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-112*				

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0924W1					
Benzene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Toluene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-24-14	9-24-14	
Gasoline	**ND**	100	NWTPH-Gx	9-24-14	9-24-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*71-112*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-214-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*88*	*88*	*71-112*			
MATRIX SPIKES											
Laboratory ID:	09-214-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**56.9**	**56.9**	50.0	50.0	ND	**114**	**114**	78-120	0	12	
Toluene	**56.5**	**56.1**	50.0	50.0	ND	**113**	**112**	80-121	1	12	
Ethyl Benzene	**54.9**	**54.6**	50.0	50.0	ND	**110**	**109**	81-120	1	13	
m,p-Xylene	**54.9**	**54.2**	50.0	50.0	ND	**110**	**108**	81-119	1	13	
o-Xylene	**54.8**	**54.3**	50.0	50.0	ND	**110**	**109**	79-117	1	13	
Surrogate:											
Fluorobenzene						*90*	*96*	*71-112*			

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BC10**					
Laboratory ID:	09-215-01					
Diesel Range Organics	**0.55**	0.26	NWTPH-Dx	9-25-14	9-25-14	
Lube Oil Range Organics	**0.70**	0.41	NWTPH-Dx	9-25-14	9-25-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0925W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	9-25-14	9-25-14	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	9-25-14	9-25-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-215-01										
	ORIG	DUP									
Diesel Range Organics	**0.552**	**0.377**	NA	NA		NA		NA	38	NA	
Lube Oil Range Organics	**0.697**	**0.506**	NA	NA		NA		NA	32	NA	
Surrogate:											
o-Terphenyl						*77*	*77*	*50-150*			

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-215-01					
Client ID:	**BC10**					
Arsenic	**ND**	3.0	200.8		9-27-14	

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed:	9-27-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0927D1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed:	9-27-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	09-215-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	

Date of Report: October 3, 2014
Samples Submitted: September 23, 2014
Laboratory Reference: 1409-215
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed:	9-27-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	09-215-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**198**	99	**197**	99	1	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
21312 30th Drive SE, Suite 110, Bothell, Washington 98021-7010
Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

09-215

Chain of Custody and Laboratory Anaylsis Request

DATE: 9/22/14
PAGE: 1 of 1

PROJECT NAME: Bothell Rent #: 2001098998
SAMPLERS NAME: KStilson PHONE:
SAMPLERS SIGNATURE: KAtten DATE: 9/22/14
HWA CONTACT: Arnie Sugars PHONE:

ANALYSIS REQUESTED

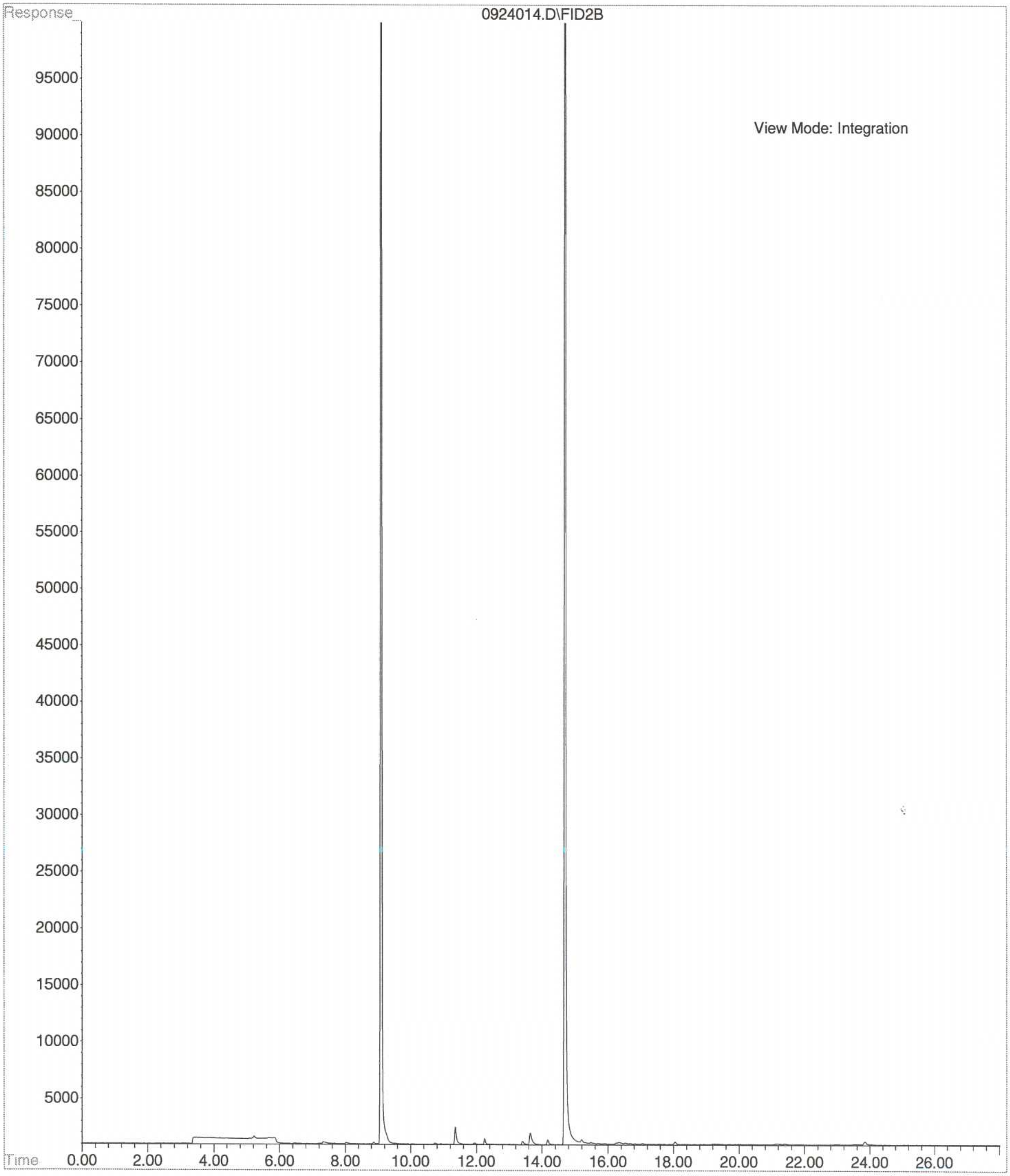
TURNAROUND TIME
☐ DAYS
☒ STANDARD

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPHG	Dx	BTEX	Total Arsenic*	Diss Arsenic										EDD	REMARKS
BC10	9/18/14	1215	W	1	9	/	/	/	/	/											
TB	9/18/14		W	2	3	/		/													
																					* HOLD TOTAL ARSENIC

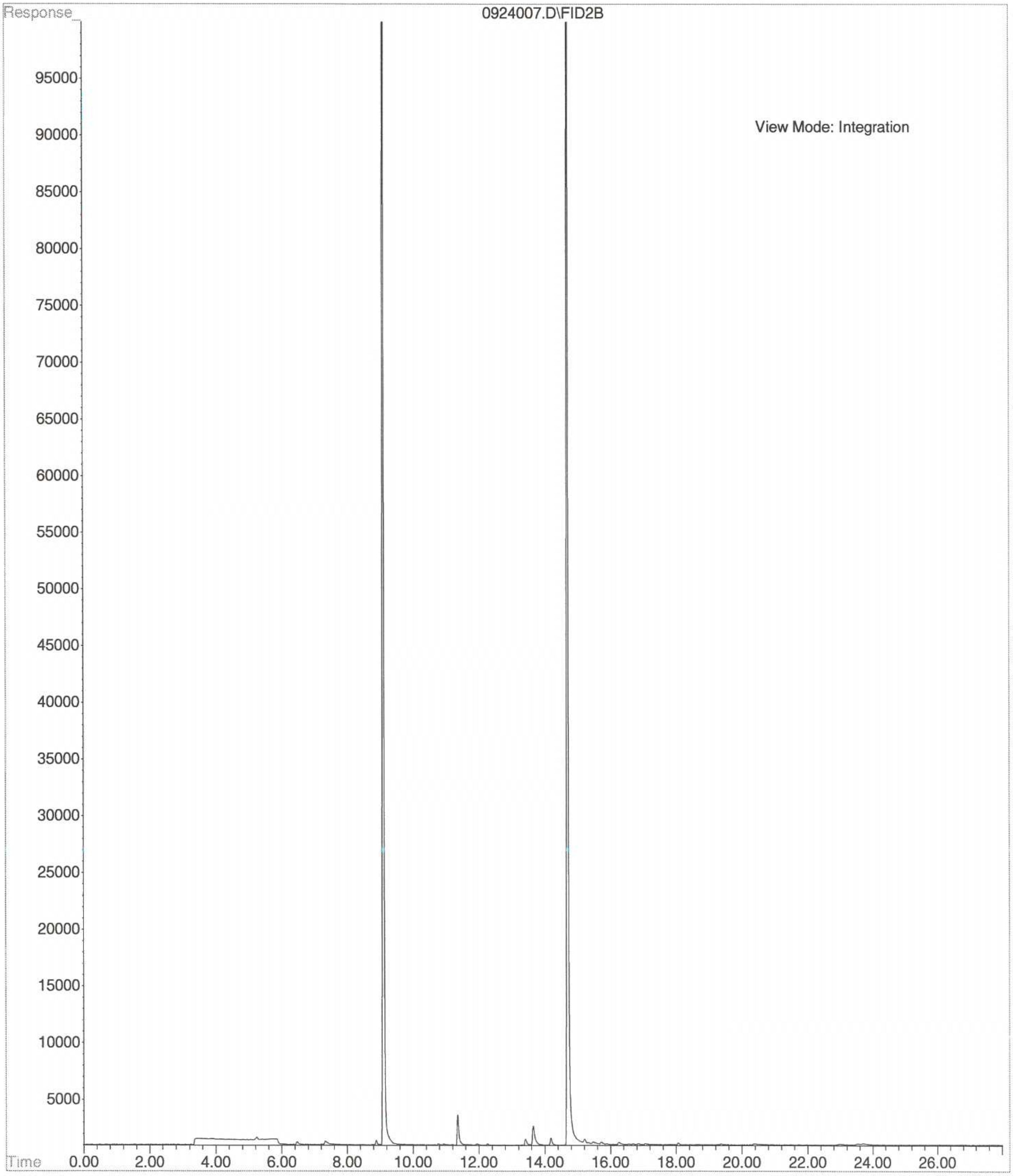
PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	KStilson		HWA	9/25/14	1200	
Received by:	Cliff Nale	Cliff Nale	HWA	9/23/14	1206	
Relinquished by:	Cliff Nale	Cliff Nale	HWA	9/23/14	1242	
Received by:	M.VOUN		OSE	9/23/14	1242	

DISTRIBUTION: WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler

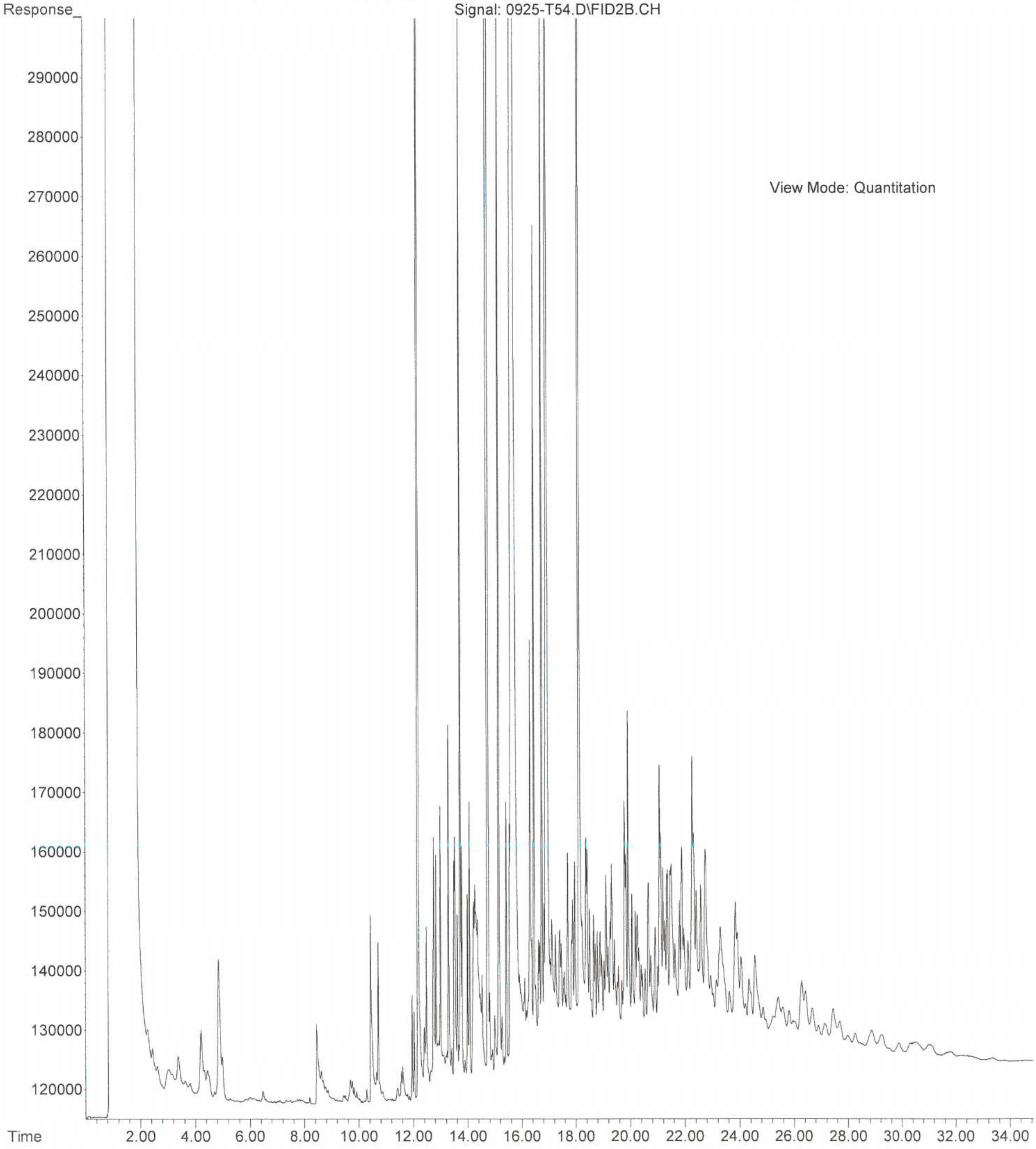
```
File       : X:\BTEX\HOPE\DATA\H140924\0924014.D
Operator   :
Acquired   : 24 Sep 2014  19:07     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-215-01c
Misc Info  : V2-36-06
Vial Number: 14
```



```
File       : X:\BTEX\HOPE\DATA\H140924\0924007.D
Operator   :
Acquired   : 24 Sep 2014  15:10     using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-215-02a
Misc Info  : V2-36-06
Vial Number: 7
```



File   :C:\msdchem\1\DATA\T140925.SEC\0925-T54.D
Operator   : ZT
Acquired   : 25 Sep 2014 12:43   using AcqMethod T140401F.M
Instrument :   Teri
Sample Name: 09-215-01
Misc Info   :
Vial Number: 54



OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 22, 2014

Kim Stilson
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-998
Laboratory Reference No. 1412-133

Dear Kim:

Enclosed are the analytical results and associated quality control data for samples submitted on December 11, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: December 22, 2014
Samples Submitted: December 11, 2014
Laboratory Reference: 1412-133
Project: 2007-098-998

Case Narrative

Samples were collected on December 10 and 11, 2014 and received by the laboratory on December 11, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: December 22, 2014
Samples Submitted: December 11, 2014
Laboratory Reference: 1412-133
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW-5**					
Laboratory ID:	12-133-01					
Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Toluene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Gasoline	**ND**	100	NWTPH-Gx	12-16-14	12-16-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*79*	*71-113*				
Client ID:	**DUP**					
Laboratory ID:	12-133-02					
Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Toluene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Gasoline	**ND**	100	NWTPH-Gx	12-16-14	12-16-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*71-113*				
Client ID:	**BPMW-4**					
Laboratory ID:	12-133-03					
Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Toluene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Gasoline	**ND**	100	NWTPH-Gx	12-16-14	12-16-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*84*	*71-113*				

Date of Report: December 22, 2014
Samples Submitted: December 11, 2014
Laboratory Reference: 1412-133
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW-1**					
Laboratory ID:	12-133-04					
Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Toluene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Gasoline	**ND**	100	NWTPH-Gx	12-16-14	12-16-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-113*				
Client ID:	**BC-11**					
Laboratory ID:	12-133-05					
Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Toluene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Gasoline	**ND**	100	NWTPH-Gx	12-16-14	12-16-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*79*	*71-113*				
Client ID:	**TB**					
Laboratory ID:	12-133-06					
Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Toluene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Gasoline	**ND**	100	NWTPH-Gx	12-17-14	12-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*82*	*71-113*				

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**BC-10**					
Laboratory ID:	12-133-07					
Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Toluene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Gasoline	**ND**	100	NWTPH-Gx	12-16-14	12-16-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-113*				

Date of Report: December 22, 2014
Samples Submitted: December 11, 2014
Laboratory Reference: 1412-133
Project: 2007-098-998

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1216W1					
Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Toluene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-16-14	12-16-14	
Gasoline	**ND**	100	NWTPH-Gx	12-16-14	12-16-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*81*	*71-113*				
Laboratory ID:	MB1217W1					
Benzene	**ND**	1.0	EPA 8021B	12-17-14	12-17-14	
Toluene	**ND**	1.0	EPA 8021B	12-17-14	12-17-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-17-14	12-17-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-17-14	12-17-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-17-14	12-17-14	
Gasoline	**ND**	100	NWTPH-Gx	12-17-14	12-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*71-113*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	12-133-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*79*	*86*	*71-113*			
MATRIX SPIKES											
Laboratory ID:	12-133-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**52.8**	**48.9**	50.0	50.0	ND	**106**	**98**	82-120	8	14	
Toluene	**51.6**	**48.2**	50.0	50.0	ND	**103**	**96**	83-120	7	14	
Ethyl Benzene	**51.6**	**48.0**	50.0	50.0	ND	**103**	**96**	83-120	7	15	
m,p-Xylene	**51.4**	**47.9**	50.0	50.0	ND	**103**	**96**	81-123	7	15	
o-Xylene	**50.4**	**47.4**	50.0	50.0	ND	**101**	**95**	80-120	6	16	
Surrogate:											
Fluorobenzene						*103*	*90*	*71-113*			

Date of Report: December 22, 2014
Samples Submitted: December 11, 2014
Laboratory Reference: 1412-133
Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW-5**					
Laboratory ID:	12-133-01					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	12-18-14	12-18-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-18-14	12-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*87*	*50-150*				
Client ID:	**DUP**					
Laboratory ID:	12-133-02					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-18-14	12-18-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-18-14	12-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				
Client ID:	**BPMW-4**					
Laboratory ID:	12-133-03					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-18-14	12-18-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-18-14	12-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**BPMW-1**					
Laboratory ID:	12-133-04					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-18-14	12-18-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-18-14	12-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				
Client ID:	**BC-11**					
Laboratory ID:	12-133-05					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-18-14	12-18-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-18-14	12-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				
Client ID:	**BC-10**					
Laboratory ID:	12-133-07					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-18-14	12-18-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-18-14	12-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				

Date of Report: December 22, 2014
Samples Submitted: December 11, 2014
Laboratory Reference: 1412-133
Project: 2007-098-998

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1218W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	12-18-14	12-18-14	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	12-18-14	12-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*84*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	12-180-03										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*81*	*86*	*50-150*			

Date of Report: December 22, 2014
Samples Submitted: December 11, 2014
Laboratory Reference: 1412-133
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	12-133-01					
Client ID:	**BPMW-5**					
Arsenic	**ND**	3.3	200.8	12-18-14	12-18-14	
Lab ID:	12-133-02					
Client ID:	**DUP**					
Arsenic	**ND**	3.3	200.8	12-18-14	12-18-14	
Lab ID:	12-133-03					
Client ID:	**BPMW-4**					
Arsenic	**4.3**	3.3	200.8	12-18-14	12-18-14	
Lab ID:	12-133-04					
Client ID:	**BPMW-1**					
Arsenic	**19**	3.3	200.8	12-18-14	12-18-14	
Lab ID:	12-133-05					
Client ID:	**BC-11**					
Arsenic	**8.9**	3.3	200.8	12-18-14	12-18-14	
Lab ID:	12-133-07					
Client ID:	**BC-10**					
Arsenic	**ND**	3.3	200.8	12-18-14	12-18-14	

Date of Report: December 22, 2014
Samples Submitted: December 11, 2014
Laboratory Reference: 1412-133
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	12-18-14
Date Analyzed:	12-18-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB1218WM1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3

Date of Report: December 22, 2014
Samples Submitted: December 11, 2014
Laboratory Reference: 1412-133
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted:	12-18-14
Date Analyzed:	12-18-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	12-133-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**19.5**	**20.0**	3	3.3	

Date of Report: December 22, 2014
Samples Submitted: December 11, 2014
Laboratory Reference: 1412-133
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 12-18-14
Date Analyzed: 12-18-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-133-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	110	**134**	104	**131**	101	3	

Date of Report: December 22, 2014
Samples Submitted: December 11, 2014
Laboratory Reference: 1412-133
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	12-133-01					
Client ID:	**BPMW-5**					
Arsenic	**ND**	3.0	200.8		12-16-14	
Lab ID:	12-133-02					
Client ID:	**DUP**					
Arsenic	**ND**	3.0	200.8		12-16-14	
Lab ID:	12-133-03					
Client ID:	**BPMW-4**					
Arsenic	**ND**	3.0	200.8		12-16-14	
Lab ID:	12-133-04					
Client ID:	**BPMW-1**					
Arsenic	**12**	3.0	200.8		12-16-14	
Lab ID:	12-133-05					
Client ID:	**BC-11**					
Arsenic	**8.9**	3.0	200.8		12-16-14	
Lab ID:	12-133-07					
Client ID:	**BC-10**					
Arsenic	**ND**	3.0	200.8		12-16-14	

Date of Report: December 22, 2014
Samples Submitted: December 11, 2014
Laboratory Reference: 1412-133
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed:	12-16-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB1209F1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0

Date of Report: December 22, 2014
Samples Submitted: December 11, 2014
Laboratory Reference: 1412-133
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed:	12-16-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	12-085-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	

Date of Report: December 22, 2014
Samples Submitted: December 11, 2014
Laboratory Reference: 1412-133
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed: 12-16-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-085-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	80.0	**88.2**	110	**88.3**	110	0	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
21312 30th Drive SE, Suite 110, Bothell, Washington 98021-7010
Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

12-133

Chain of Custody and Laboratory Anaylsis Request

DATE: 12/11/14
PAGE: ___ of ___

PROJECT NAME: Bothell Paint #: 2007-098-998
SAMPLERS NAME: Kim Stilson PHONE: ___
SAMPLERS SIGNATURE: ___ DATE: 12/10/14
HWA CONTACT: K Stilson PHONE: ___

TURNAROUND TIME
☐ DAYS
☒ STANDARD

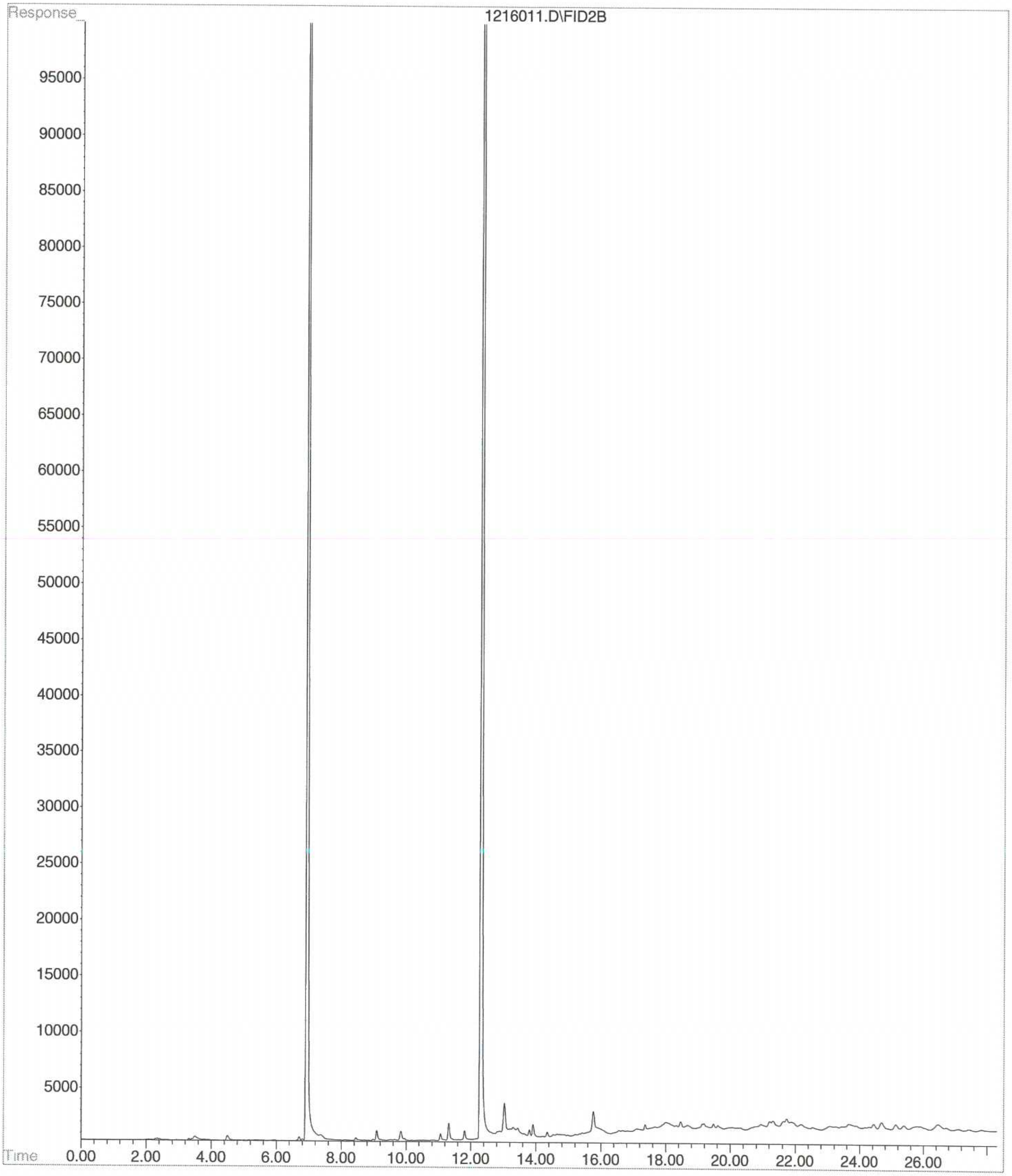
ANALYSIS REQUESTED

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH-G	Dx	BTEX	* Metals (1)											EDD	REMARKS
BPMW-5	12-10-14	1200	W	1	10	✓	✓	✓	✓												
DUP	|	1215	|	2	10	✓	✓	✓	✓												
BPMW-4	|	130	|	3	10	✓	✓	✓	✓												Metals(1) - Total + Diss Arsenic
BPMW-1	|	230	|	4	10	✓	✓	✓	✓												
BC-11	|	400	|	5	10	✓	✓	✓	✓												
TB	12-10-14		W	6	3	✓		✓													
BC-10	12-11-14	145	W	7	10	✓	✓	✓	✓												

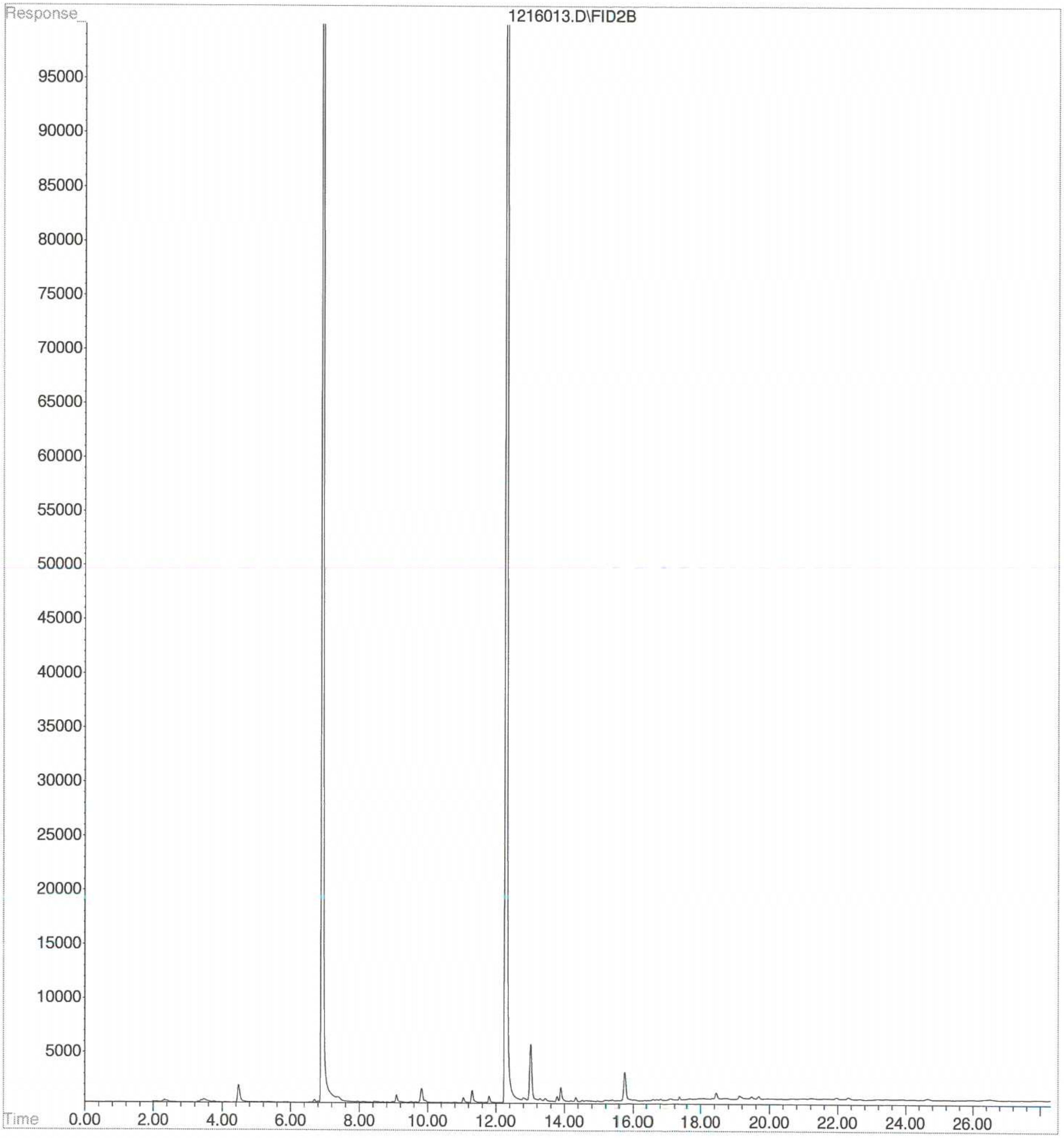
PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: K Stilson		HWA Geo	12/11/14	230	
Received by: Randall S. Trickler		Speedy	12/11/14	3:57pm	
Relinquished by: Randall S. Trickler		Speedy	12/11/14	4:45pm	
Received by: MVOUN		OSE	12/11/14	1645	

DISTRIBUTION: WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler

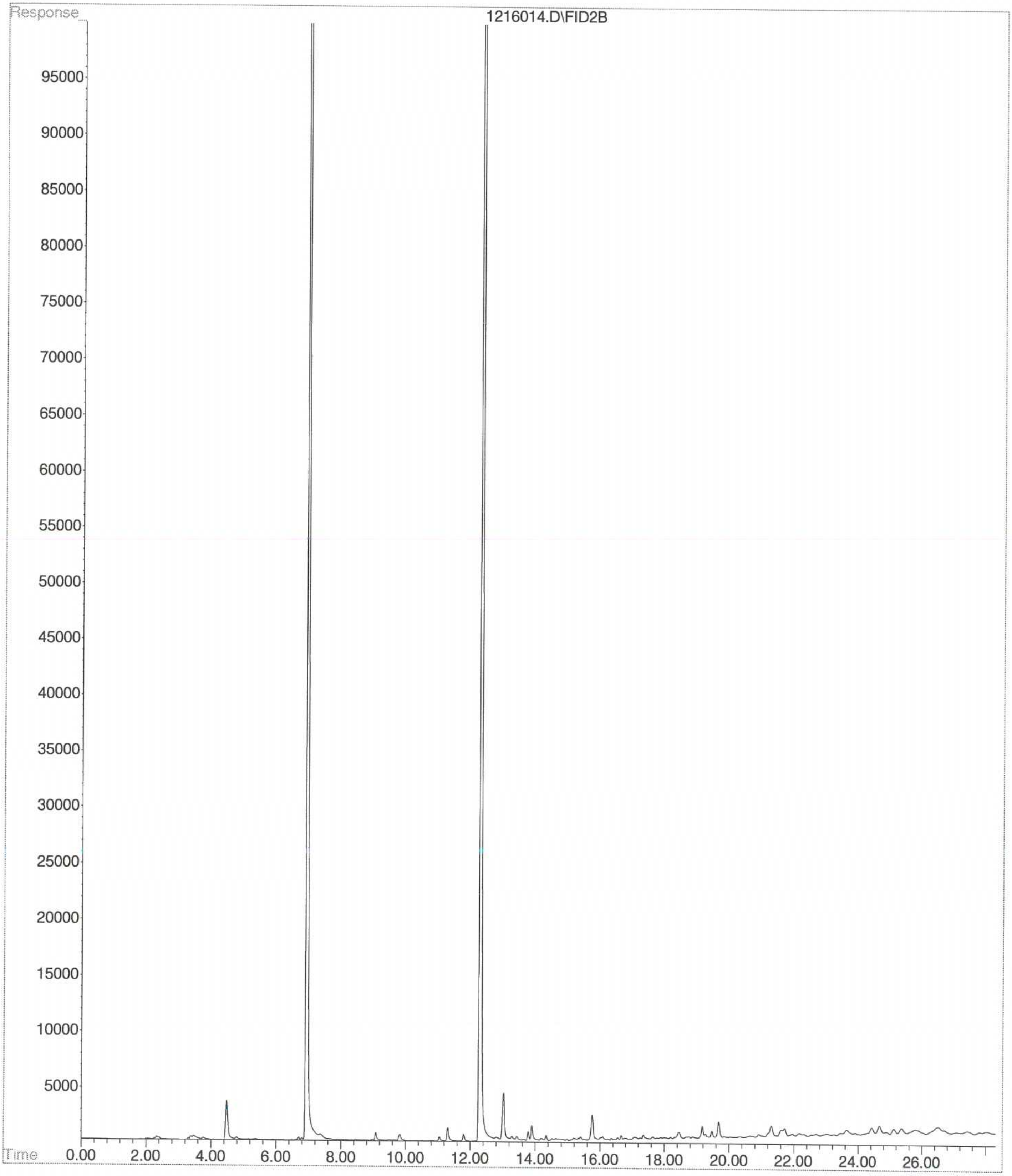
```
File       : X:\BTEX\DARYL\DATA\D141216\1216011.D
Operator   :
Acquired   : 16 Dec 2014  19:05     using AcqMethod 141012DB.M
Instrument :    Daryl
Sample Name: 12-133-01e
Misc Info  : V2-36-11
Vial Number: 11
```



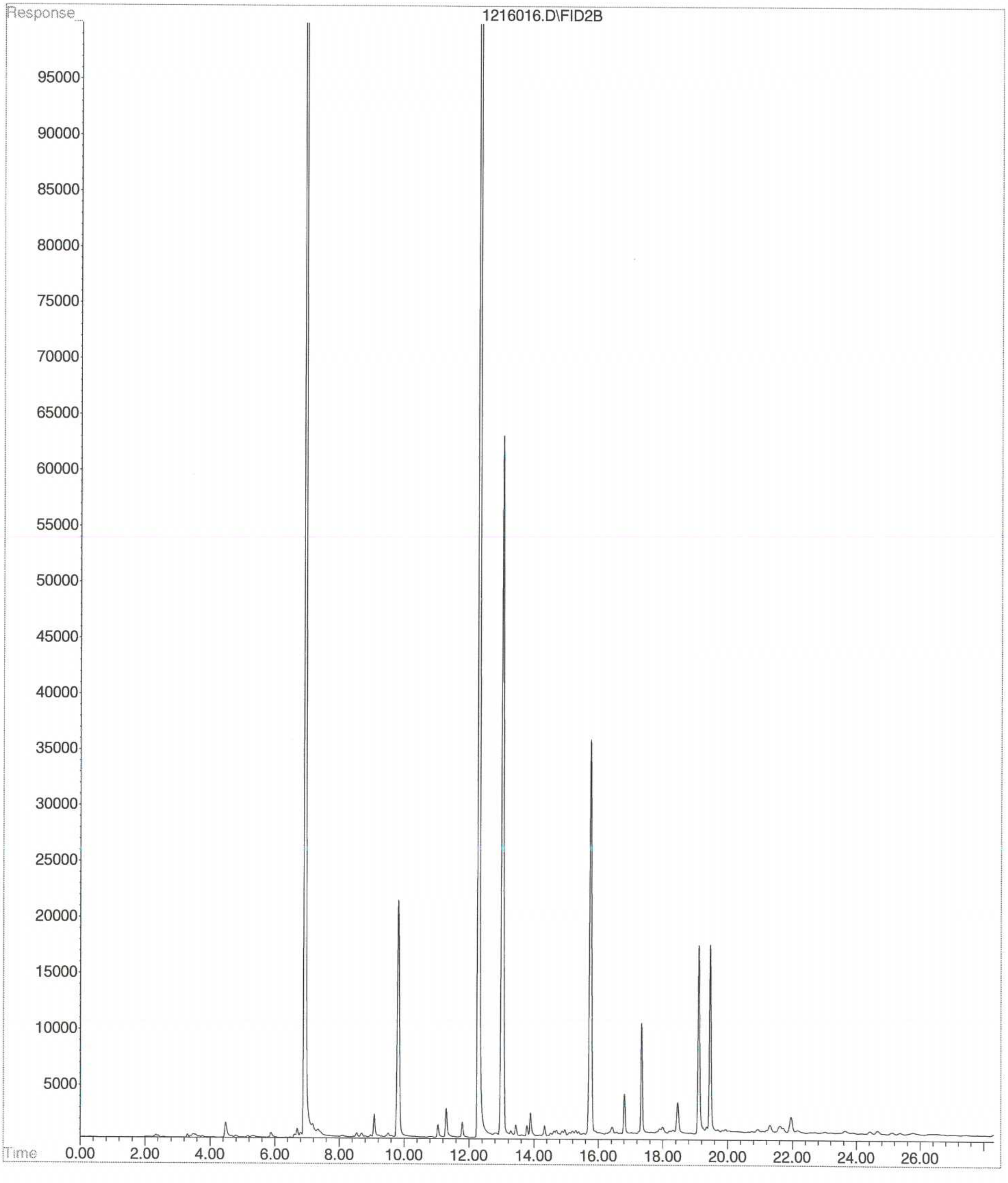
```
File        : X:\BTEX\DARYL\DATA\D141216\1216013.D
Operator    :
Acquired    : 16 Dec 2014  20:11     using AcqMethod 141012DB.M
Instrument :   Daryl
Sample Name: 12-133-02e
Misc Info  : V2-36-11
Vial Number: 13
```



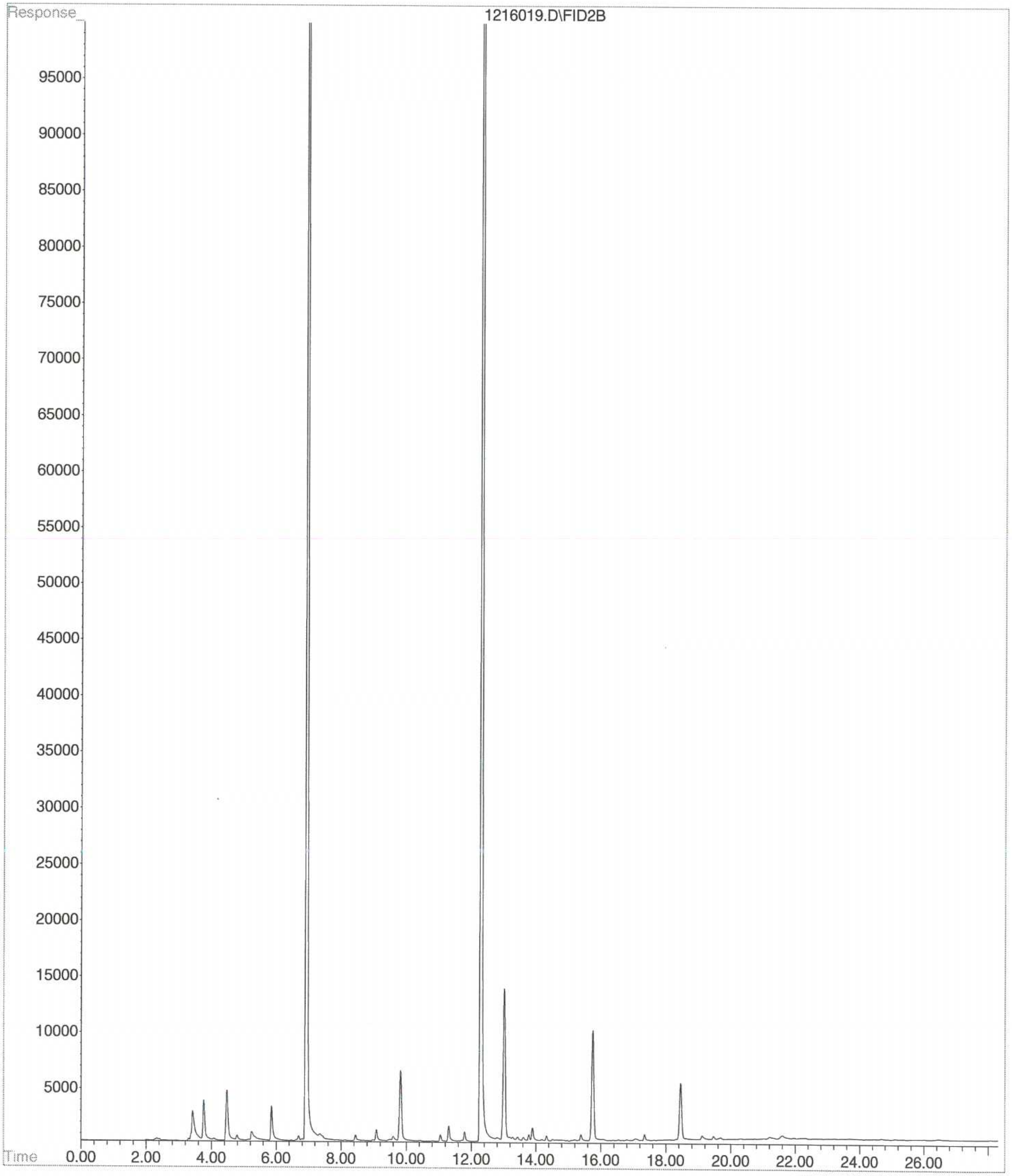
```
File        : X:\BTEX\DARYL\DATA\D141216\1216014.D
Operator    :
Acquired    : 16 Dec 2014  20:45     using AcqMethod 141012DB.M
Instrument  :   Daryl
Sample Name: 12-133-03e
Misc Info   : V2-36-11
Vial Number: 14
```



```
File        : X:\BTEX\DARYL\DATA\D141216\1216016.D
Operator    :
Acquired    : 16 Dec 2014  21:51     using AcqMethod 141012DB.M
Instrument :   Daryl
Sample Name: 12-133-04e
Misc Info  : V2-36-11
Vial Number: 16
```



```
File        : X:\BTEX\DARYL\DATA\D141216\1216019.D
Operator    :
Acquired    : 16 Dec 2014  23:31     using AcqMethod 141012DB.M
Instrument :   Daryl
Sample Name: 12-133-05e
Misc Info   : V2-36-11
Vial Number: 19
```



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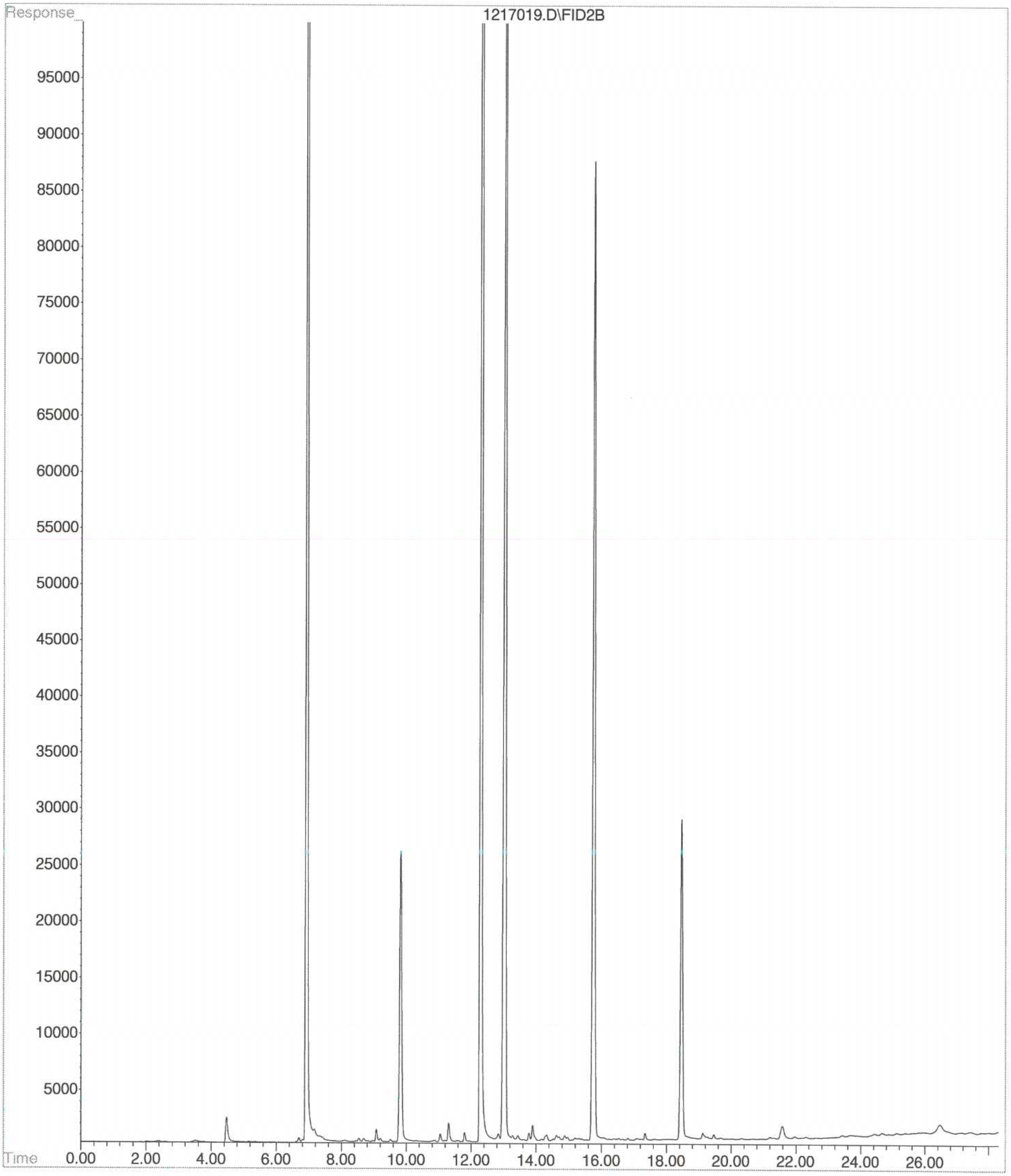
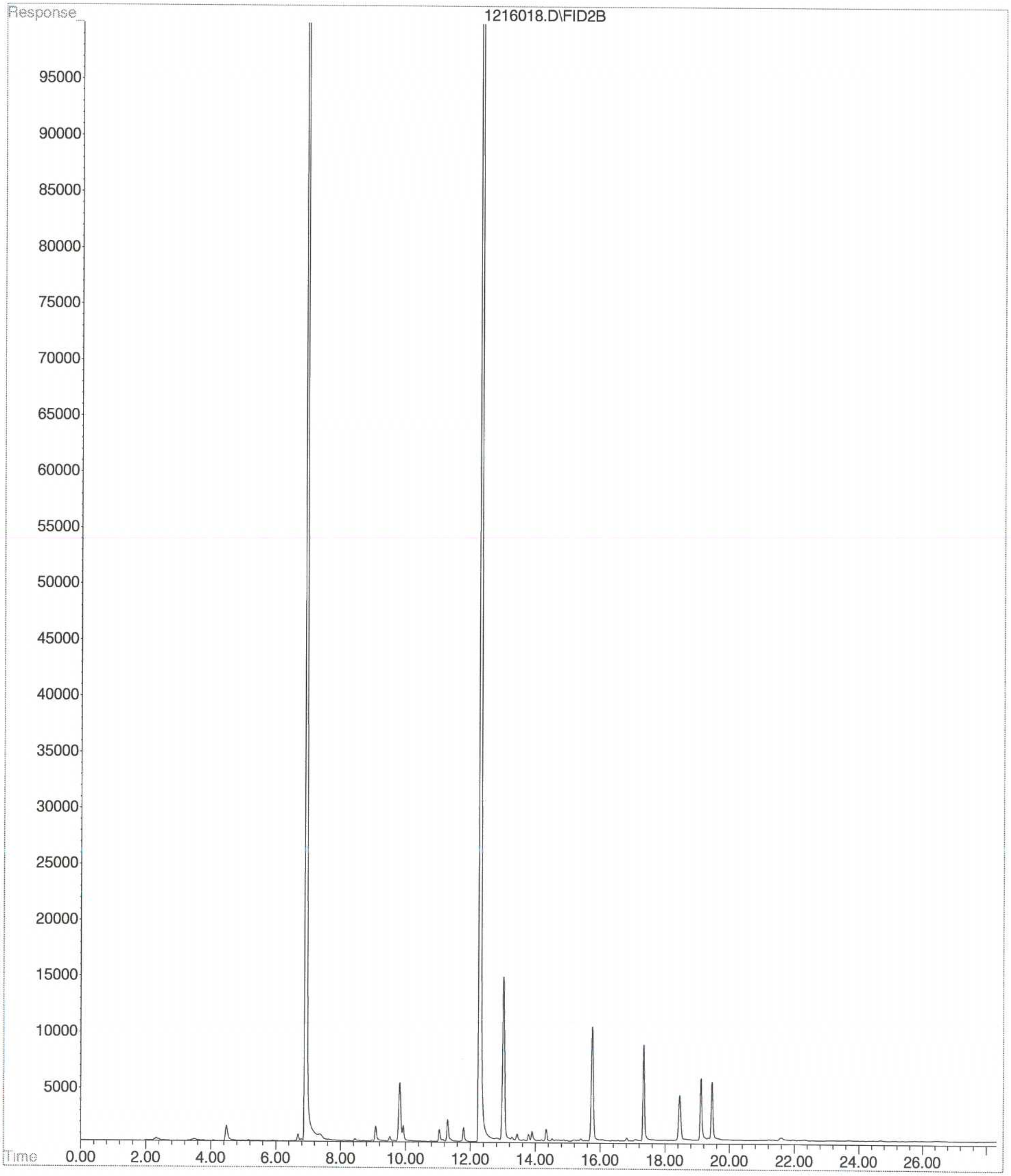
File       : X:\BTEX\DARYL\DATA\D141217\1217019.D
Operator   :
Acquired   : 17 Dec 2014  22:23     using AcqMethod 141012DB.M
Instrument :   Daryl
Sample Name: 12-133-06b RR
Misc Info  : V2-36-23
Vial Number: 19
```



```
File        : X:\BTEX\DARYL\DATA\D141216\1216018.D
Operator    :
Acquired    : 16 Dec 2014  22:58     using AcqMethod 141012DB.M
Instrument :   Daryl
Sample Name: 12-133-07e
Misc Info  : V2-36-11
Vial Number: 18
```



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File         :X:\DIESELS\VIGO\DATA\V141218.SEC\1218-V73.D
Operator     :
Acquired     : 19 Dec 2014   2:27     using AcqMethod V141218F.M
Instrument :    Vigo
Sample Name: 12-133-01
Misc Info   :
Vial Number: 73
```
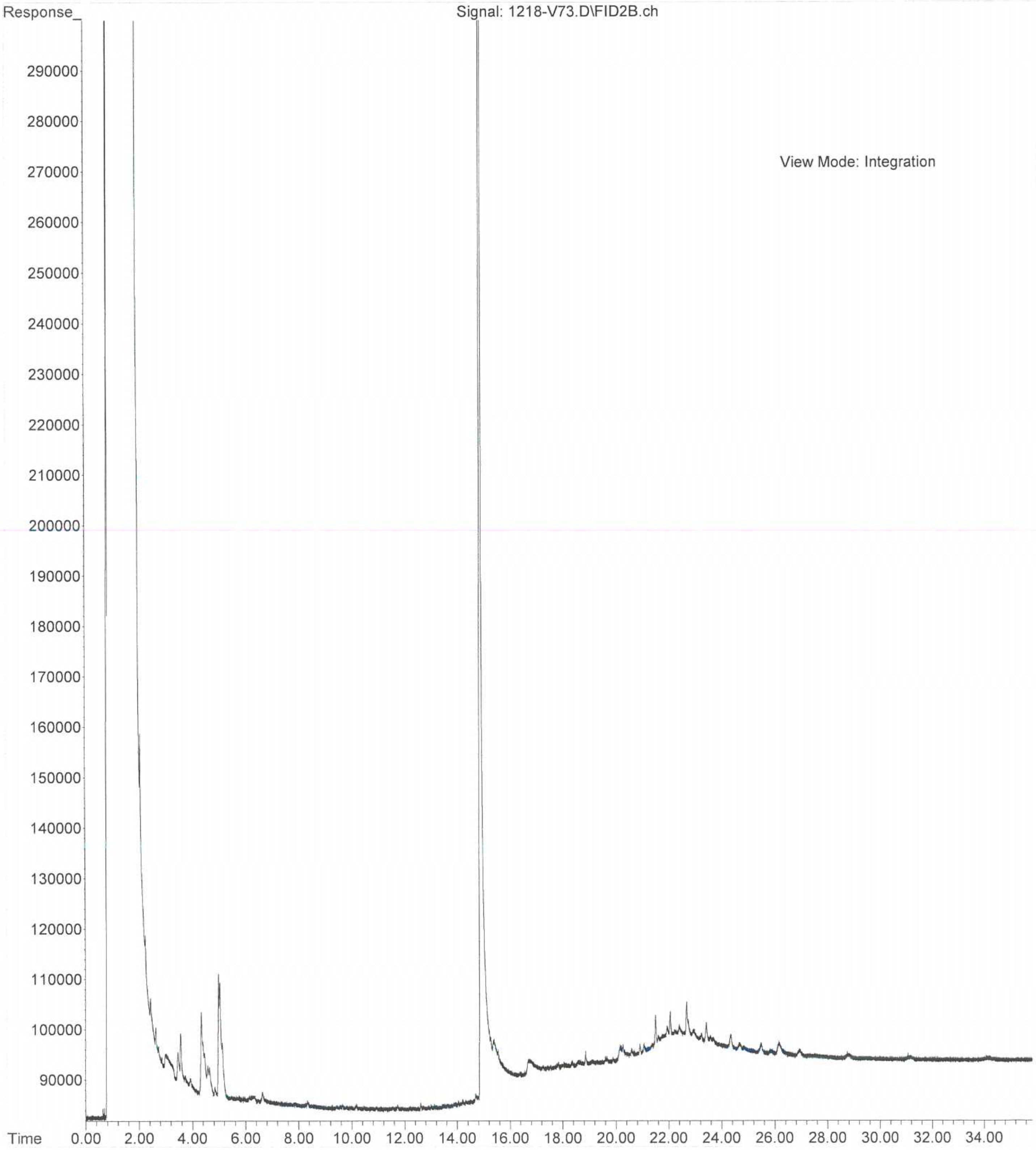
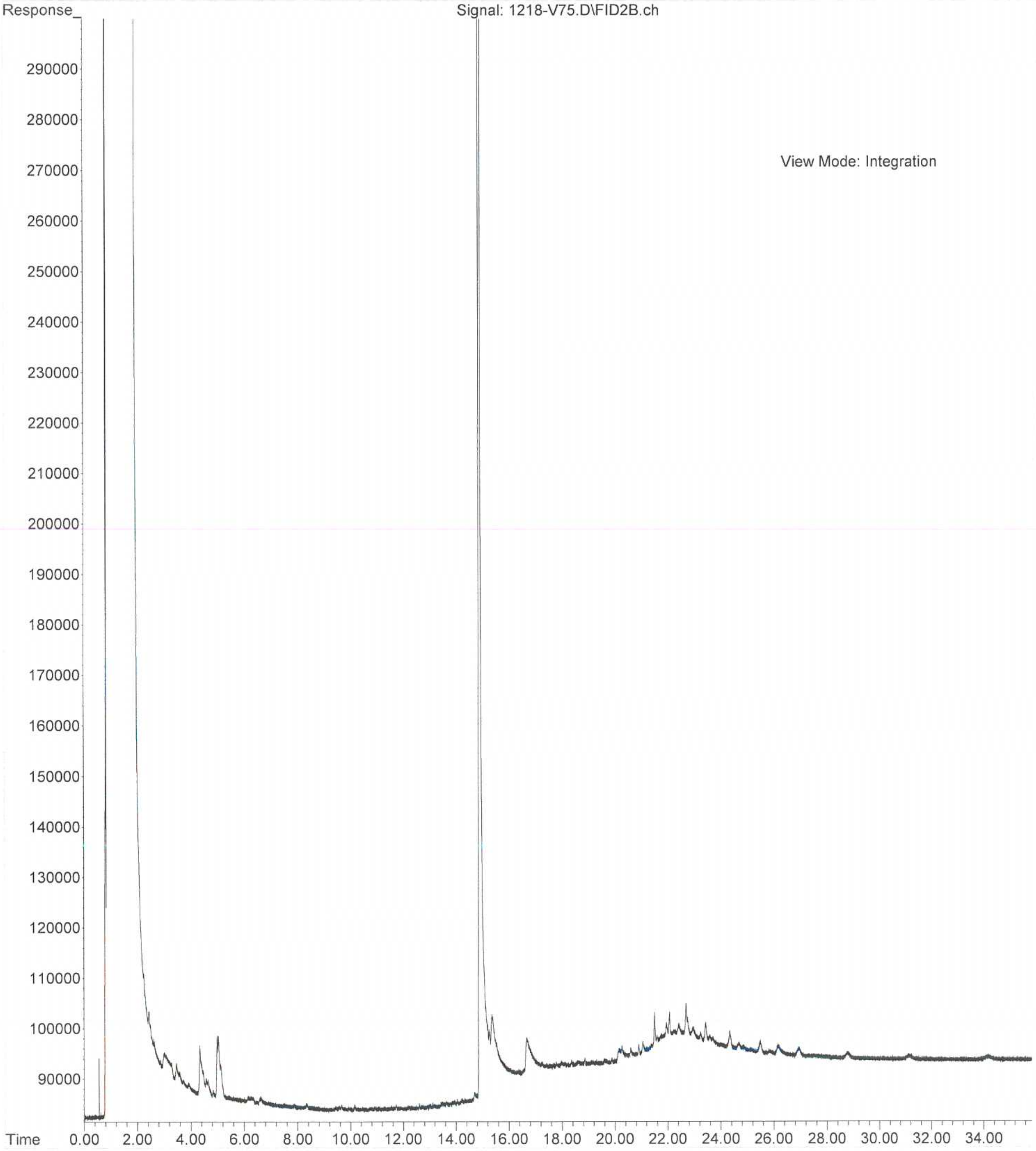
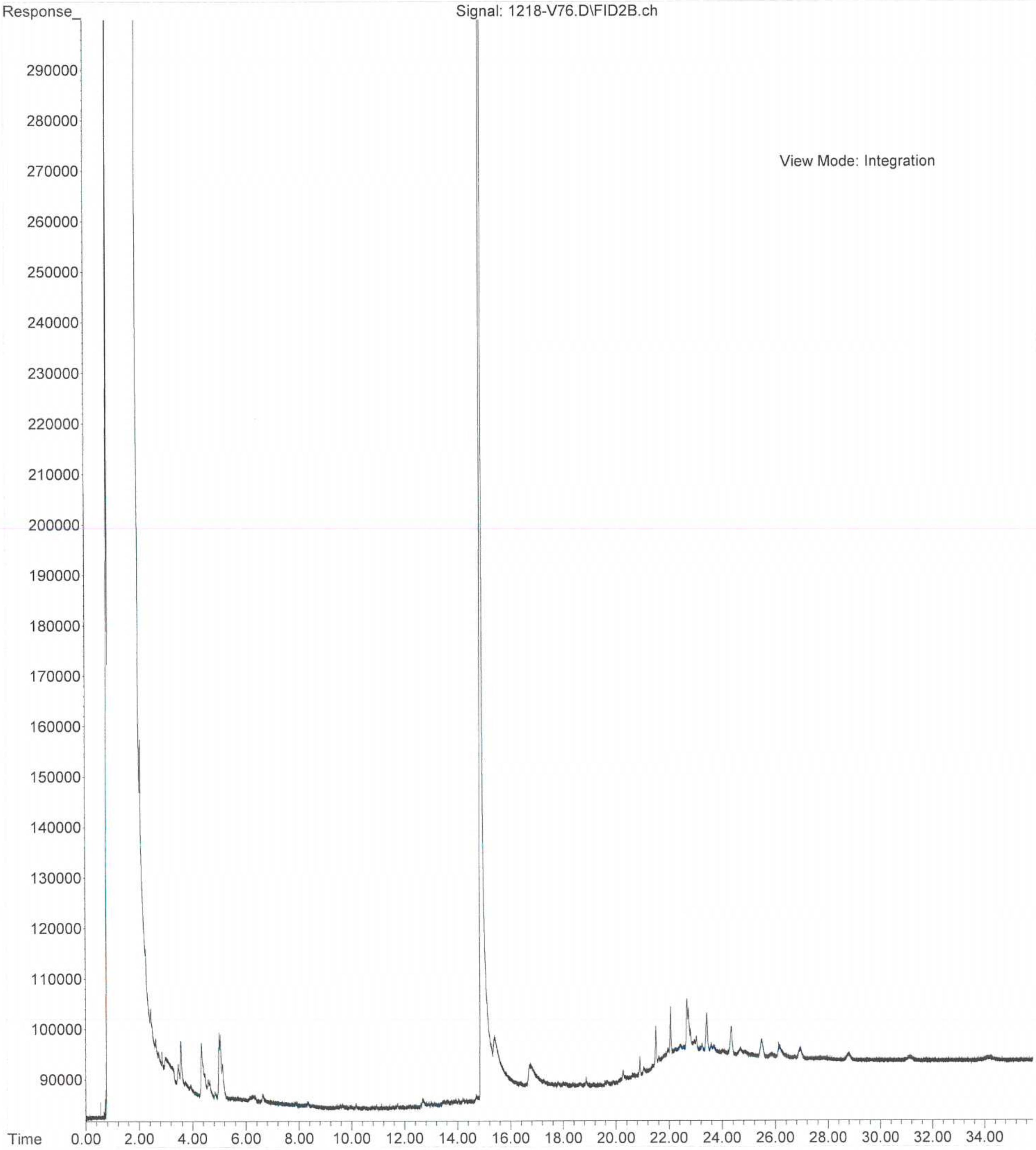



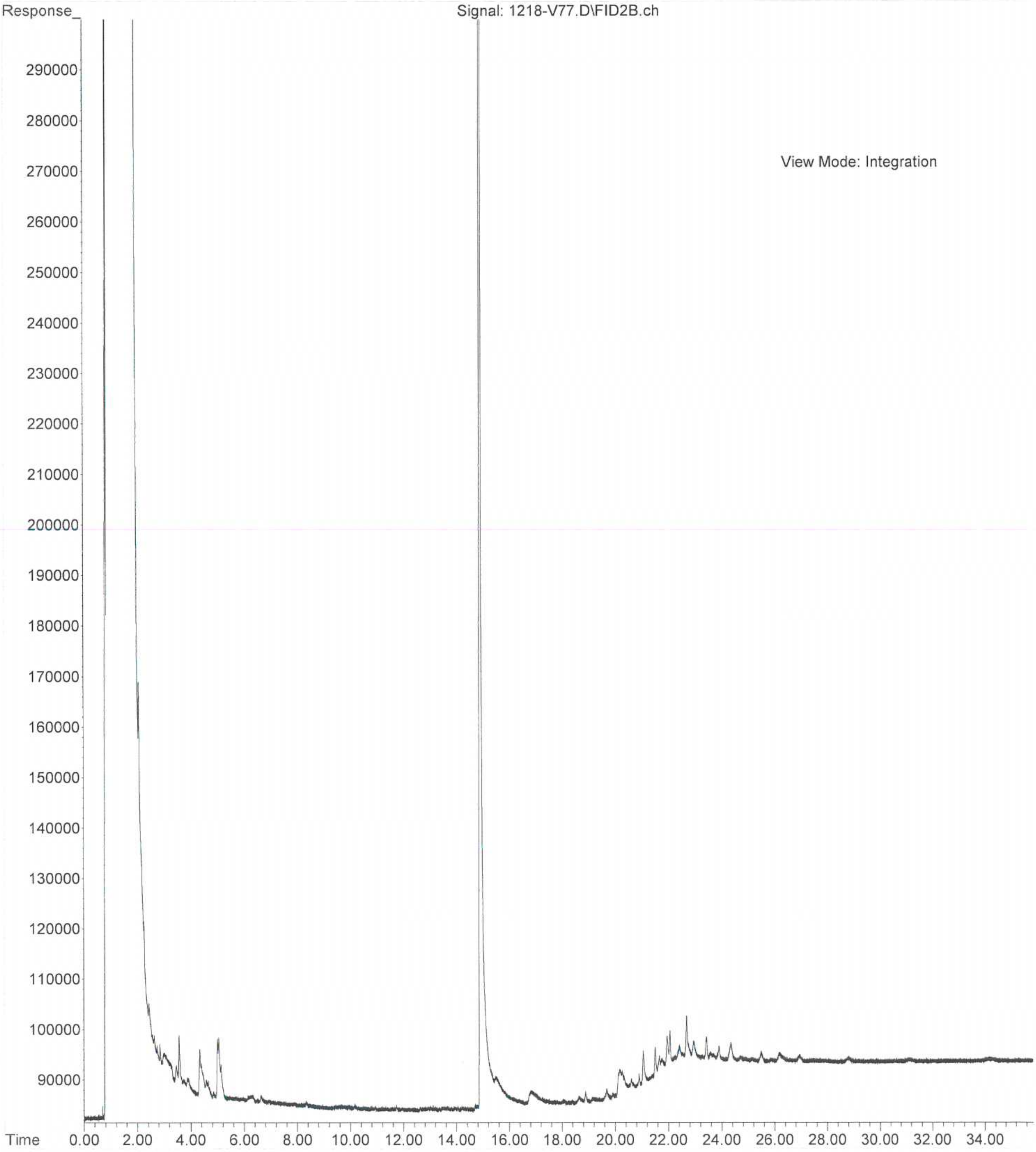
```
File       :X:\DIESELS\VIGO\DATA\V141218.SEC\1218-V75.D
Operator   :
Acquired   : 19 Dec 2014   3:48     using AcqMethod V141218F.M
Instrument :   Vigo
Sample Name: 12-133-02
Misc Info  :
Vial Number: 75
```



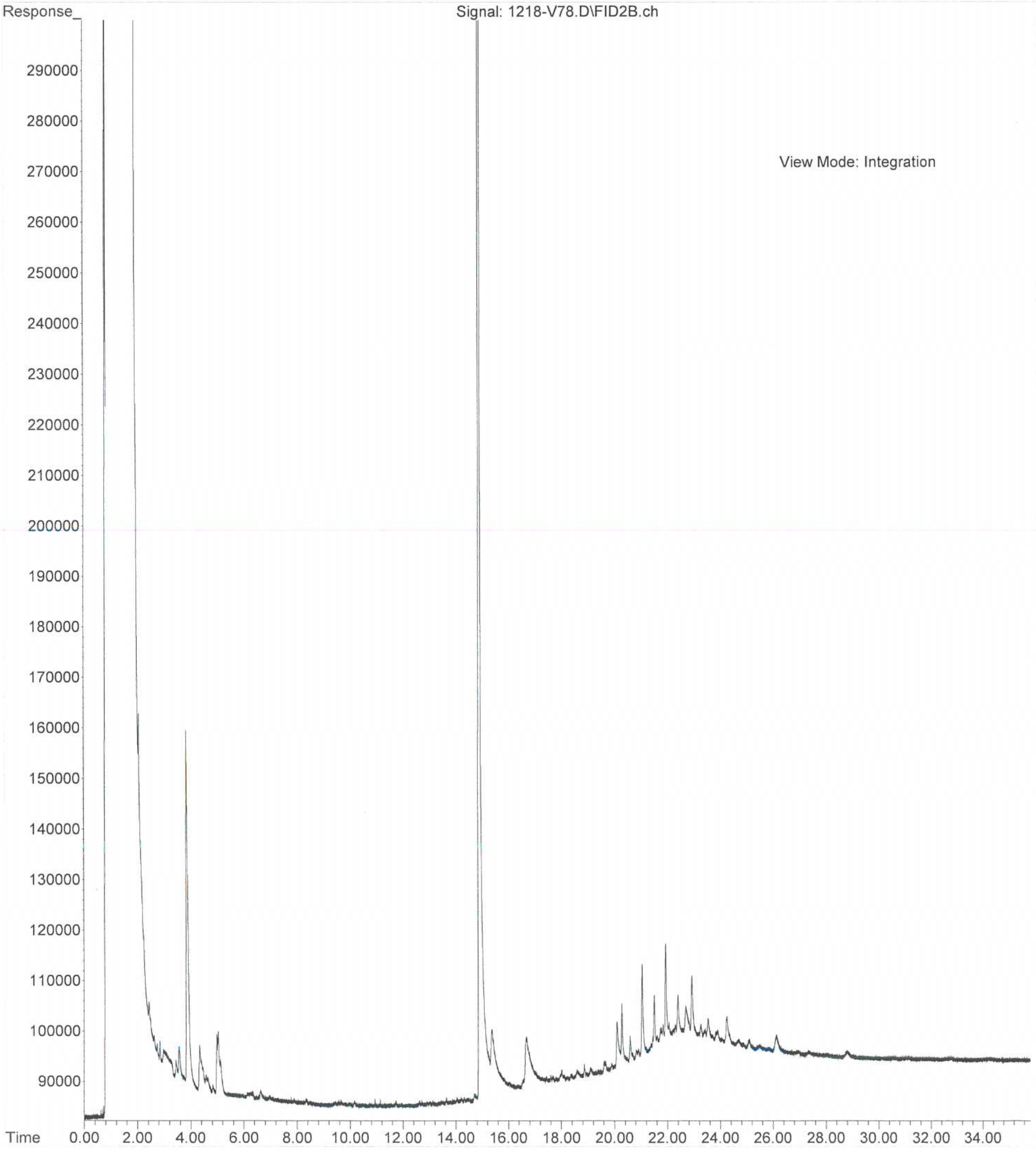
```
File        :X:\DIESELS\VIGO\DATA\V141218.SEC\1218-V76.D
Operator    :
Acquired    : 19 Dec 2014   4:29     using AcqMethod V141218F.M
Instrument :    Vigo
Sample Name: 12-133-03
Misc Info   :
Vial Number: 76
```



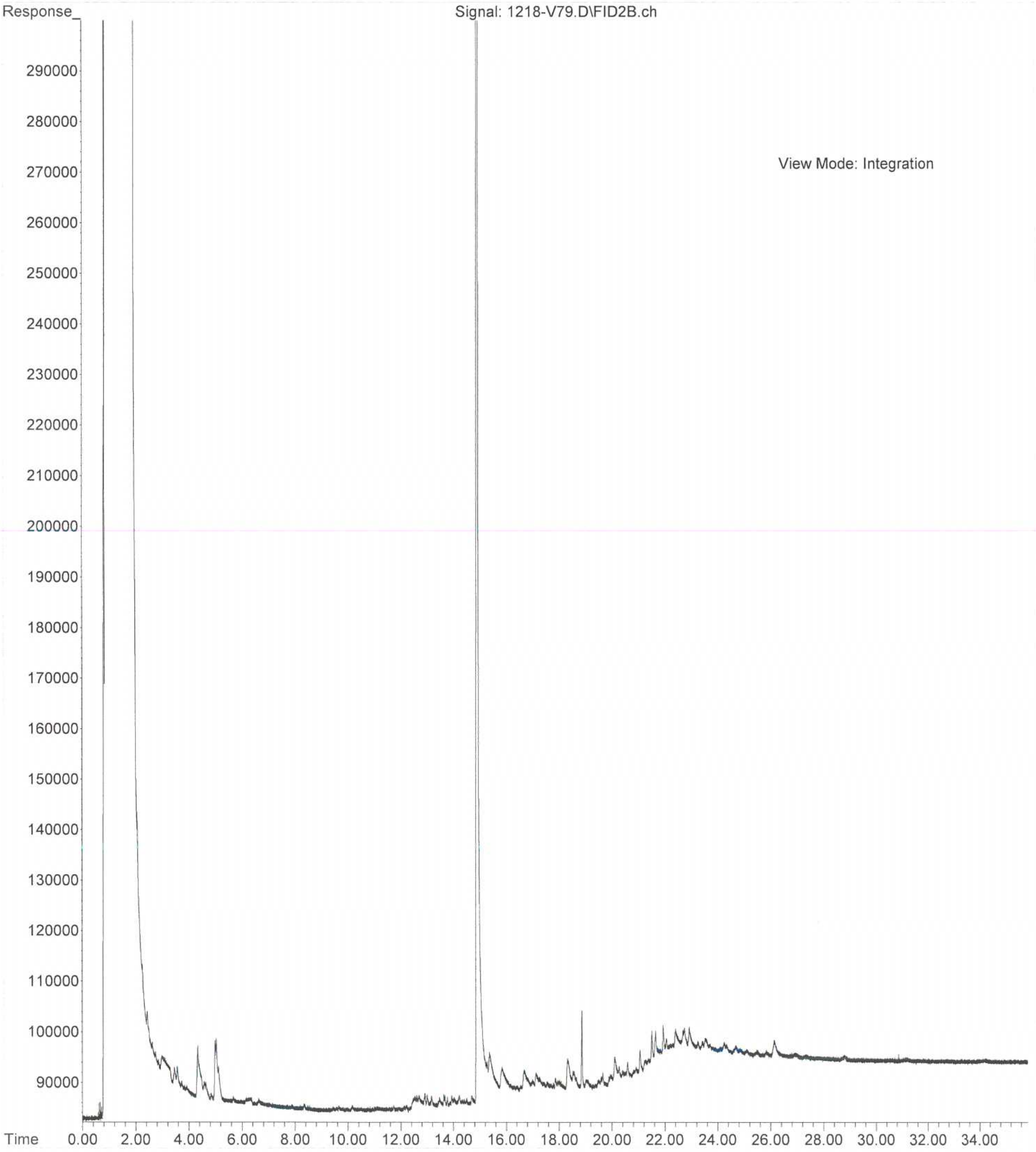
```
File        :X:\DIESELS\VIGO\DATA\V141218.SEC\1218-V77.D
Operator    :
Acquired    : 19 Dec 2014   5:09     using AcqMethod V141218F.M
Instrument :   Vigo
Sample Name: 12-133-04
Misc Info  :
Vial Number: 77
```



File   :X:\DIESELS\VIGO\DATA\V141218.SEC\1218-V78.D
Operator   :
Acquired   : 19 Dec 2014   5:50   using AcqMethod V141218F.M
Instrument :   Vigo
Sample Name: 12-133-05
Misc Info   :
Vial Number: 78



```
File        :X:\DIESELS\VIGO\DATA\V141218.SEC\1218-V79.D
Operator    :
Acquired    : 19 Dec 2014   6:31     using AcqMethod V141218F.M
Instrument :   Vigo
Sample Name: 12-133-07
Misc Info   :
Vial Number: 79
```



OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 31, 2014

Kim Stilson
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-998
Laboratory Reference No. 1412-251

Dear Kim:

Enclosed are the analytical results and associated quality control data for samples submitted on December 20, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: December 31, 2014
Samples Submitted: December 20, 2014
Laboratory Reference: 1412-251
Project: 2007-098-998

Case Narrative

Samples were collected on December 19, 2014 and received by the laboratory on December 20, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH-Dx Analysis

Due to a difficult sample matrix, the extraction for sample BPMW6 yielded low surrogate recovery. This was confirmed by the sample duplicate which also showed a low surrogate recovery.

Dissolved Metals by EPA 200.8 Analysis

The dissolved field filter sample was received containing solid material. The sample was digested according to OnSite Environmental standard operating procedure.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: December 31, 2014
Samples Submitted: December 20, 2014
Laboratory Reference: 1412-251
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW6**					
Laboratory ID:	12-251-01					
Benzene	**ND**	4.0	EPA 8021B	12-22-14	12-22-14	
Toluene	**ND**	4.0	EPA 8021B	12-22-14	12-22-14	
Ethyl Benzene	**ND**	4.0	EPA 8021B	12-22-14	12-22-14	
m,p-Xylene	**ND**	4.0	EPA 8021B	12-22-14	12-22-14	
o-Xylene	**ND**	4.0	EPA 8021B	12-22-14	12-22-14	
Gasoline	**ND**	400	NWTPH-Gx	12-22-14	12-22-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*71-113*				

Date of Report: December 31, 2014
Samples Submitted: December 20, 2014
Laboratory Reference: 1412-251
Project: 2007-098-998

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1222W1					
Benzene	**ND**	1.0	EPA 8021B	12-22-14	12-22-14	
Toluene	**ND**	1.0	EPA 8021B	12-22-14	12-22-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-22-14	12-22-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-22-14	12-22-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-22-14	12-22-14	
Gasoline	**ND**	100	NWTPH-Gx	12-22-14	12-22-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*71-113*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	12-251-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*103*	*97*	*71-113*			
MATRIX SPIKES											
Laboratory ID:	12-238-06										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**51.7**	**52.2**	50.0	50.0	ND	**103**	**104**	82-120	1	14	
Toluene	**51.0**	**51.0**	50.0	50.0	ND	**102**	**102**	83-120	0	14	
Ethyl Benzene	**49.8**	**50.3**	50.0	50.0	ND	**100**	**101**	83-120	1	15	
m,p-Xylene	**50.6**	**50.5**	50.0	50.0	ND	**101**	**101**	81-123	0	15	
o-Xylene	**48.8**	**48.6**	50.0	50.0	ND	**98**	**97**	80-120	0	16	
Surrogate:											
Fluorobenzene						*103*	*103*	*71-113*			

Date of Report: December 31, 2014
Samples Submitted: December 20, 2014
Laboratory Reference: 1412-251
Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW6**					
Laboratory ID:	12-251-01					
Diesel Range Organics	**5.8**	0.26	NWTPH-Dx	12-23-14	12-23-14	
Lube Oil Range Organics	**5.0**	0.41	NWTPH-Dx	12-23-14	12-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*52*	*50-150*				

Date of Report: December 31, 2014
Samples Submitted: December 20, 2014
Laboratory Reference: 1412-251
Project: 2007-098-998

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1223W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	12-23-14	12-23-14	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	12-23-14	12-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*81*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	12-251-01										
	ORIG	DUP									
Diesel Range Organics	**5.84**	**5.05**	NA	NA		NA		NA	15	NA	
Lube Oil Range Organics	**5.04**	**4.43**	NA	NA		NA		NA	13	NA	
Surrogate:											
o-Terphenyl						*52*	*48*	*50-150*			Q

Date of Report: December 31, 2014
Samples Submitted: December 20, 2014
Laboratory Reference: 1412-251
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	12-251-01					
Client ID:	**BPMW6**					
Arsenic	**60**	6.7	200.8		12-24-14	
Cadmium	**ND**	4.4	200.8		12-24-14	
Chromium	**18**	11	200.8		12-24-14	
Lead	**27**	2.2	200.8		12-24-14	

Date of Report: December 31, 2014
Samples Submitted: December 20, 2014
Laboratory Reference: 1412-251
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed: 12-24-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1224WM1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3
Cadmium	200.8	**ND**	2.2
Chromium	200.8	**ND**	6
Lead	200.8	**ND**	1.1

Date of Report: December 31, 2014
Samples Submitted: December 20, 2014
Laboratory Reference: 1412-251
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed: 12-24-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-191-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	
Cadmium	**ND**	**ND**	NA	2.0	
Chromium	**ND**	**ND**	NA	5	
Lead	**1.30**	**1.42**	9	1.0	

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed: 12-24-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-191-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	111	**115**	104	**113**	102	2	
Cadmium	111	**119**	107	**115**	104	4	
Chromium	111	**113**	102	**112**	101	1	
Lead	111	**111**	99	**111**	99	0	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

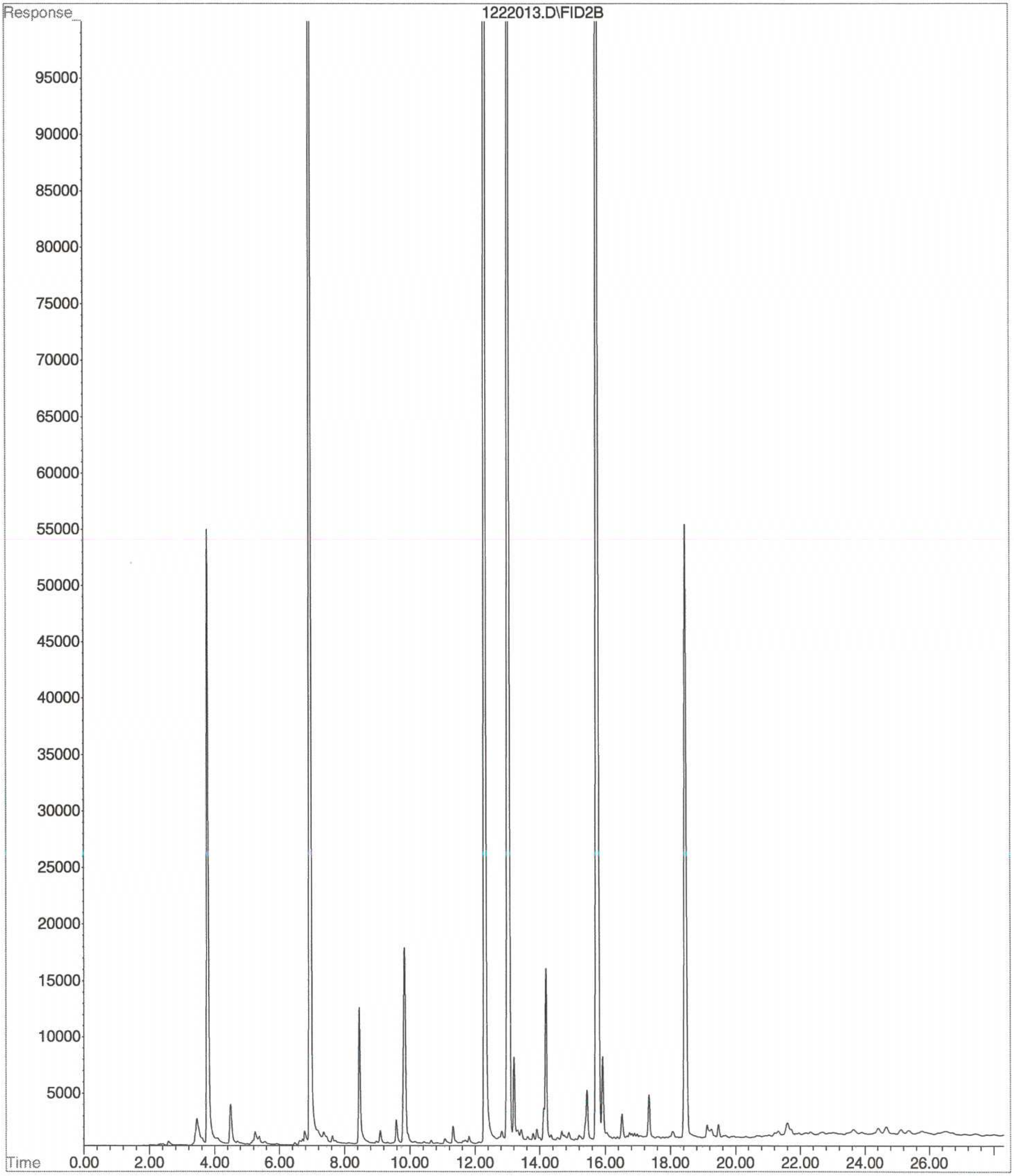
X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

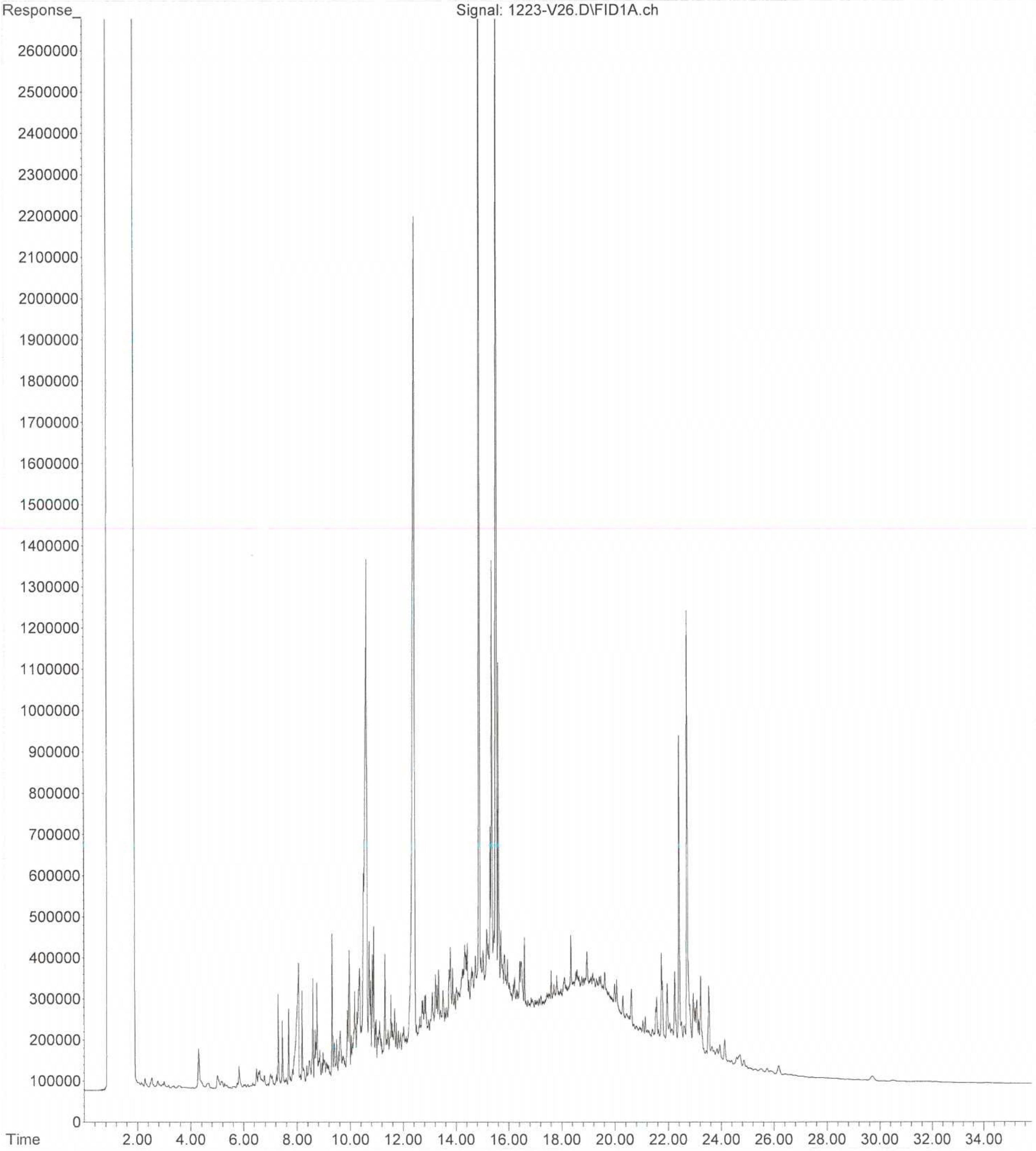
Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

```
File       : X:\BTEX\DARYL\DATA\D141222\1222013.D
Operator   :
Acquired   : 22 Dec 2014  17:05     using AcqMethod 141012DB.M
Instrument :   Daryl
Sample Name: 12-251-01e 1:4
Misc Info  : V2-36-23
Vial Number: 13
```



File   :X:\DIESELS\VIGO\DATA\V141223\1223-V26.D
Operator   :
Acquired   : 24 Dec 2014   3:56   using AcqMethod V141218F.M
Instrument :   Vigo
Sample Name: 12-251-01
Misc Info   :
Vial Number: 26



12-251

HWA GEOSCIENCES INC.

21312 30th Drive SE, Suite 110, Bothell, Washington 98021-7010
Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

Chain of Custody and Laboratory Anaylsis Request

DATE: 12/20/14
PAGE: 1 of 1

PROJECT NAME: Bothell Paint #: 2007-098-998
SAMPLERS NAME: K Stilson PHONE:
SAMPLERS SIGNATURE: K Stilson DATE: 12/20/14
HWA CONTACT: K Stilson PHONE:

TURNAROUND TIME
☐ DAYS
[✓ ☐ STANDARD]

						ANALYSIS REQUESTED															
HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH-G	Dx	BTEX	Total Metal*	Dissolved Metal										EDD	REMARKS
BPMW6	12/19/14	430	W	1	10	/	/	/	/	/											
																					Metals
																					As, Cd, Cr, Pb
																					* HOLD TOTAL

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: K Stilson	K	HWA Geo	12/1		
Received by:		OSE	12/20	9:20	
Relinquished by:					
Received by:					

DISTRIBUTION: WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

January 15, 2015

Kim Stilson
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-998
Laboratory Reference No. 1412-251B

Dear Kim:

Enclosed are the analytical results and associated quality control data for samples submitted on December 20, 2014.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: January 15, 2015
Samples Submitted: December 20, 2014
Laboratory Reference: 1412-251B
Project: 2007-098-998

Case Narrative

Samples were collected on December 19, 2014 and received by the laboratory on December 20, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: January 15, 2015
Samples Submitted: December 20, 2014
Laboratory Reference: 1412-251B
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	12-251-01					
Client ID:	**BPMW6**					
Arsenic	**64**	3.3	200.8	1-14-15	1-14-15	

Date of Report: January 15, 2015
Samples Submitted: December 20, 2014
Laboratory Reference: 1412-251B
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	1-14-15
Date Analyzed:	1-14-15
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0114WM1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3

Date of Report: January 15, 2015
Samples Submitted: December 20, 2014
Laboratory Reference: 1412-251B
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted:	1-14-15
Date Analyzed:	1-14-15
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	12-192-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**197**	**187**	5	3.3	

Date of Report: January 15, 2015
Samples Submitted: December 20, 2014
Laboratory Reference: 1412-251B
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted:	1-14-15
Date Analyzed:	1-14-15
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	12-192-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	110	**295**	90	**301**	95	2	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

12-251

HWA GEOSCIENCES INC.
21312 30th Drive SE, Suite 110, Bothell, Washington 98021-7010
Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

Chain of Custody and Laboratory Anaylsis Request

DATE: 12/20/14
PAGE: 1 of 1

PROJECT NAME: Bothell Paint #: 2007-098-998
SAMPLERS NAME: K Stilson PHONE:
SAMPLERS SIGNATURE: K Stilson DATE: 12/20/14
HWA CONTACT: K Stilson PHONE:

ANALYSIS REQUESTED

TURNAROUND TIME
☐ DAYS
☑ STANDARD

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH-G	Dx	BTEX	Total Metal*	Dissolved Metals		TOTAL ARSENIC								EDD	REMARKS
BPMW6	12/19/14	430	W	1	10	\	\	\	\	(		⊗									
																					Metals
																					As, Cd, Cr, Pb
																					* HOLD TOTAL
																					⊗ added 1/12/15. DB
																					(3 day TAT)

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: K Stilson		HWA Geo	12/1		
Received by:		OSE	12/20	9:20	
Relinquished by:					
Received by:					

DISTRIBUTION: WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

April 8, 2015

Kim Stilson
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-2021
Laboratory Reference No. 1503-292

Dear Kim:

Enclosed are the analytical results and associated quality control data for samples submitted on March 27, 2015.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

Case Narrative

Samples were collected on March 26, 2015 and received by the laboratory on March 27, 2015. They were maintained at the laboratory at a temperature of 2^oC to 6^oC.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW1**					
Laboratory ID:	03-292-01					
Benzene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Toluene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
o-Xylene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Gasoline	**ND**	100	NWTPH-Gx	4-1-15	4-1-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*71-113*				
Client ID:	**BC11**					
Laboratory ID:	03-292-02					
Benzene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Toluene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
o-Xylene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Gasoline	**ND**	100	NWTPH-Gx	4-1-15	4-1-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*71-113*				
Client ID:	**BPMW6**					
Laboratory ID:	03-292-03					
Benzene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Toluene	**2.0**	1.0	EPA 8021B	4-1-15	4-1-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
o-Xylene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Gasoline	**ND**	100	NWTPH-Gx	4-1-15	4-1-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*71-113*				

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0401W1					
Benzene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Toluene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
o-Xylene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Gasoline	**ND**	100	NWTPH-Gx	4-1-15	4-1-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-113*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-292-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*90*	*89*	*71-113*			
MATRIX SPIKES											
Laboratory ID:	03-292-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**50.6**	**50.2**	50.0	50.0	ND	**101**	**100**	82-120	1	14	
Toluene	**51.1**	**50.3**	50.0	50.0	ND	**102**	**101**	83-120	2	14	
Ethyl Benzene	**50.7**	**50.1**	50.0	50.0	ND	**101**	**100**	83-120	1	15	
m,p-Xylene	**51.1**	**50.2**	50.0	50.0	ND	**102**	**100**	81-123	2	15	
o-Xylene	**50.5**	**50.1**	50.0	50.0	ND	**101**	**100**	80-120	1	16	
Surrogate:											
Fluorobenzene						*93*	*98*	*71-113*			

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW1**					
Laboratory ID:	03-292-01					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	3-30-15	3-30-15	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				
Client ID:	**BC11**					
Laboratory ID:	03-292-02					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	3-30-15	3-30-15	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**BPMW6**					
Laboratory ID:	03-292-03					
Diesel Range Organics	**1.6**	0.26	NWTPH-Dx	3-30-15	3-30-15	
Lube Oil Range Organics	**2.3**	0.41	NWTPH-Dx	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*68*	*50-150*				

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0330W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	3-30-15	3-30-15	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	03-291-01										
	ORIG	DUP									
Diesel Range Organics	**0.464**	**0.443**	NA	NA		NA		NA	5	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*83*	*86*	*50-150*			

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-292-01					
Client ID:	**BPMW1**					
Arsenic	**15**	3.3	200.8	3-27-15	3-30-15	
Lab ID:	03-292-02					
Client ID:	**BC11**					
Arsenic	**7.7**	3.3	200.8	3-27-15	3-30-15	
Lab ID:	03-292-03					
Client ID:	**BPMW6**					
Arsenic	**52**	3.3	200.8	3-27-15	3-30-15	
Cadmium	**ND**	4.4	200.8	3-27-15	3-30-15	
Chromium	**ND**	11	200.8	3-27-15	3-30-15	
Lead	**5.1**	1.1	200.8	3-27-15	3-30-15	

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	3-27-15
Date Analyzed:	3-30-15
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0327WM1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Lead	200.8	**ND**	1.1

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 3-27-15
Date Analyzed: 3-30-15

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-215-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**8.94**	**8.92**	0	3.3	
Cadmium	**ND**	**ND**	NA	4.4	
Chromium	**ND**	**ND**	NA	11	
Lead	**2.04**	**1.79**	13	1.1	

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 3-27-15
Date Analyzed: 3-30-15

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-215-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	111	**131**	110	**132**	110	1	
Cadmium	111	**121**	109	**120**	108	1	
Chromium	111	**119**	107	**121**	109	2	
Lead	111	**124**	110	**125**	110	0	

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-292-01					
Client ID:	**BPMW1**					
Arsenic	**9.9**	3.0	200.8		3-30-15	
Manganese	**560**	20	200.8		3-30-15	
Lab ID:	03-292-02					
Client ID:	**BC11**					
Arsenic	**6.3**	3.0	200.8		3-30-15	
Lab ID:	03-292-03					
Client ID:	**BPMW6**					
Arsenic	**54**	3.0	200.8		3-30-15	
Cadmium	**ND**	4.0	200.8		3-30-15	
Chromium	**ND**	10	200.8		3-30-15	
Lead	**3.2**	1.0	200.8		3-30-15	

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed:	3-30-15
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0330D1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Manganese	200.8	**ND**	10

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed: 3-30-15

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-290-10

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	
Manganese	**ND**	**ND**	NA	10	

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed: 3-30-15

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-290-10

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**192**	96	**194**	97	1	
Cadmium	200	**191**	96	**190**	95	1	
Chromium	200	**188**	94	**197**	99	5	
Lead	200	**184**	92	**190**	95	4	
Manganese	200	**184**	92	**189**	95	3	

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

NITRATE (as Nitrogen)
EPA 353.2

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW1**					
Laboratory ID:	03-292-01					
Nitrate	**0.21**	0.050	EPA 353.2	3-31-15	3-31-15	

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

NITRATE (as Nitrogen)
EPA 353.2
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0331W1					
Nitrate	**ND**	0.050	EPA 353.2	3-31-15	3-31-15	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	03-306-01								
	ORIG	DUP							
Nitrate	**3.10**	**3.08**	NA	NA	NA	NA	1	13	
MATRIX SPIKE									
Laboratory ID:	03-306-01								
	MS		MS		MS				
Nitrate	**7.56**		4.00	3.10	112	90-123	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0331W1								
	SB		SB		SB				
Nitrate	**2.14**		2.00	NA	107	88-121	NA	NA	

SULFATE
ASTM D516-07

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW1**					
Laboratory ID:	03-292-01					
Sulfate	**ND**	5.0	ASTM D516-07	3-27-15	3-27-15	

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

SULFATE
ASTM D516-07
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0327W1					
Sulfate	**ND**	5.0	ASTM D516-07	3-27-15	3-27-15	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	03-265-05								
	ORIG	DUP							
Sulfate	**29.5**	**31.5**	NA	NA	NA	NA	7	10	
MATRIX SPIKE									
Laboratory ID:	03-265-05								
	MS		MS		MS				
Sulfate	**84.7**		50.0	29.5	110	82-121	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0327W1								
	SB		SB		SB				
Sulfate	**9.96**		10.0	NA	100	90-114	NA	NA	

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

DISSOLVED METHANE
RSK 175

Matrix: Water
Units: ug/L (ppb)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**BPMW1**					
Laboratory ID:	03-292-01					
Methane	**6300**	500	RSK 175	4-8-15	4-8-15	

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

DISSOLVED METHANE
RSK 175
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0408W1					
Methane	**ND**	0.50	RSK 175	4-8-15	4-8-15	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0408W1										
	SB	SBD	SB	SBD		SB	SBD				
Methane	**3.72**	**3.65**	4.42	4.42	N/A	**84**	**83**	75-125	2	25	

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

TOTAL ALKALINITY
SM 2320B

Matrix: Water
Units: mg CaCO3/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW1**					
Laboratory ID:	03-292-01					
Total Alkalinity	**220**	10	SM 2320B	3-27-15	3-27-15	

Date of Report: April 8, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-292
Project: 2007-098-2021

TOTAL ALKALINITY
SM 2320B
QUALITY CONTROL

Matrix: Water
Units: mg CaCO3/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0327W1					
Total Alkalinity	**ND**	10	SM 2320B	3-27-15	3-27-15	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	03-291-02								
	ORIG	DUP							
Total Alkalinity	**540**	**540**	NA	NA	NA	NA	0	10	
SPIKE BLANK									
Laboratory ID:	SB0327W1								
	SB		SB		SB				
Total Alkalinity	**100**		100	NA	100	88-114	NA	NA	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
21312 30th Drive SE, Suite 110, Bothell, Washington 98021-7010
Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

03-292

Chain of Custody and Laboratory Anaylsis Request

DATE:
PAGE: 1 of 1

PROJECT NAME: Bothell Paint #: 2007-098 2021
SAMPLERS NAME: KS PHONE:
SAMPLERS SIGNATURE: KS DATE:
HWA CONTACT: KS/AS PHONE:

TURNAROUND TIME
☐ DAYS
☑ STANDARD

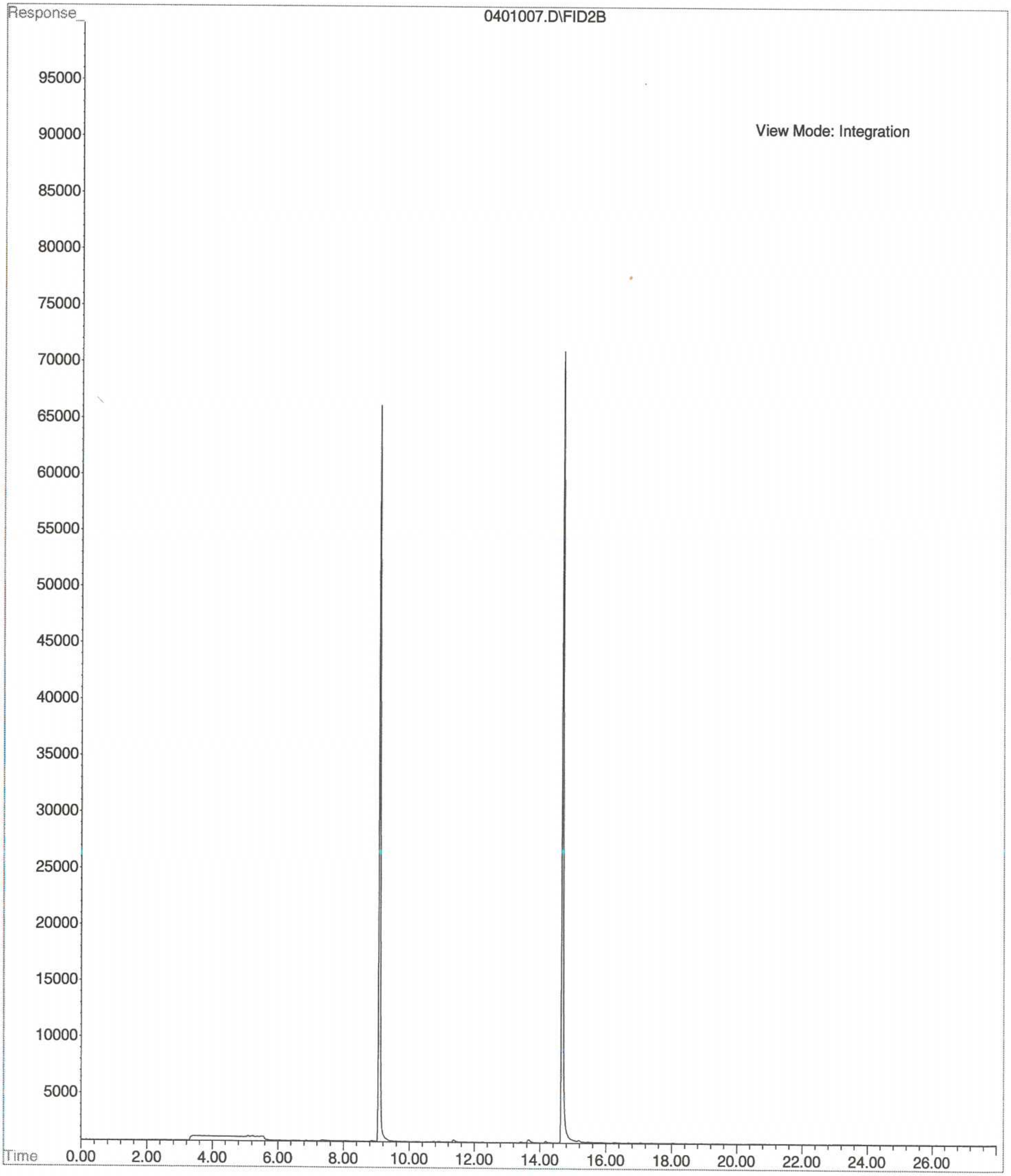
ANALYSIS REQUESTED

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH-G	DX	BTEX	Metals Tot	Metal Diss	Nitrate	Sulfate	Methane	Alkalinity						EDD	REMARKS
BPMW1	3/26	245	W	1	14	\	\	\	\	\	\	\	\	\	> Arsenic T+D						Manganese - Dis. only
BC11	3/26	400	W	2	9	\	\	\	\	\					> Arsenic T+D						
BPMW6	3/26	530	W	3	9	\	\	\	\	\					> As, Cd, Cr, Pb T+D						
						&															

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: KS		HWA Geo	3/27	1010	
Received by: M. VOUN		OSE	3/27/15	1010	
Relinquished by:					
Received by: MVOUN		OSE	3/31/15	1040	

DISTRIBUTION: WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler

```
File       : X:\BTEX\HOPE\DATA\H150401\0401007.D
Operator   :
Acquired   :  1 Apr 2015  20:11     using AcqMethod 150312B.M
Instrument :   HOPE
Sample Name: 03-292-01e
Misc Info  : V2-36-17
Vial Number: 7
```



```
File       : X:\BTEX\HOPE\DATA\H150401\0401009.D
Operator   :
Acquired   :  1 Apr 2015  21:17     using AcqMethod 150312B.M
Instrument :   HOPE
Sample Name: 03-292-02e
Misc Info  : V2-36-17
Vial Number: 9
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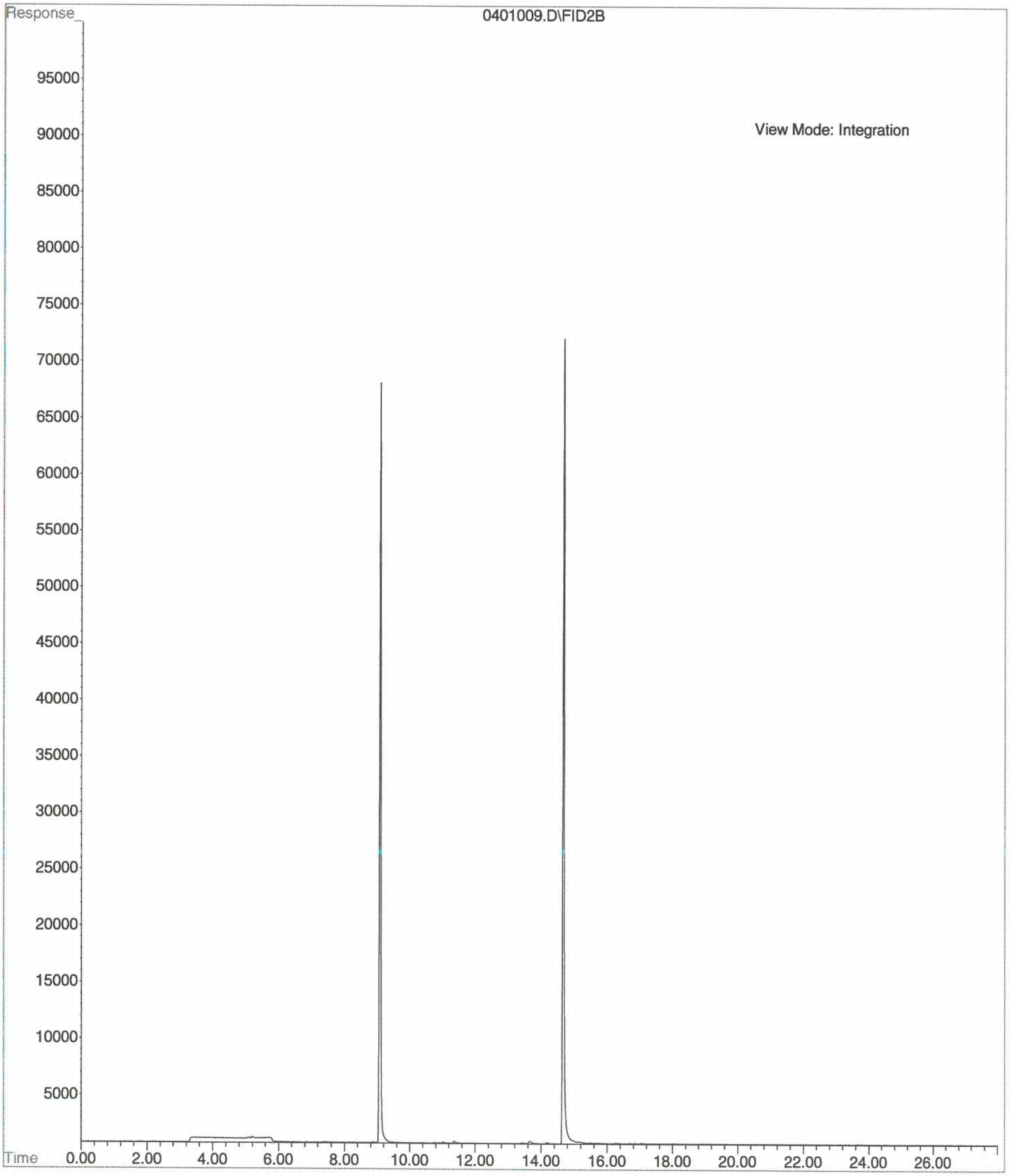

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File        : X:\BTEX\DARYL\DATA\D150401\0401009.D
Operator    :
Acquired    :  1 Apr 2015  17:26     using AcqMethod 150327M.M
Instrument  :   Daryl
Sample Name: 03-292-03e
Misc Info   : V2-36-23
Vial Number: 9
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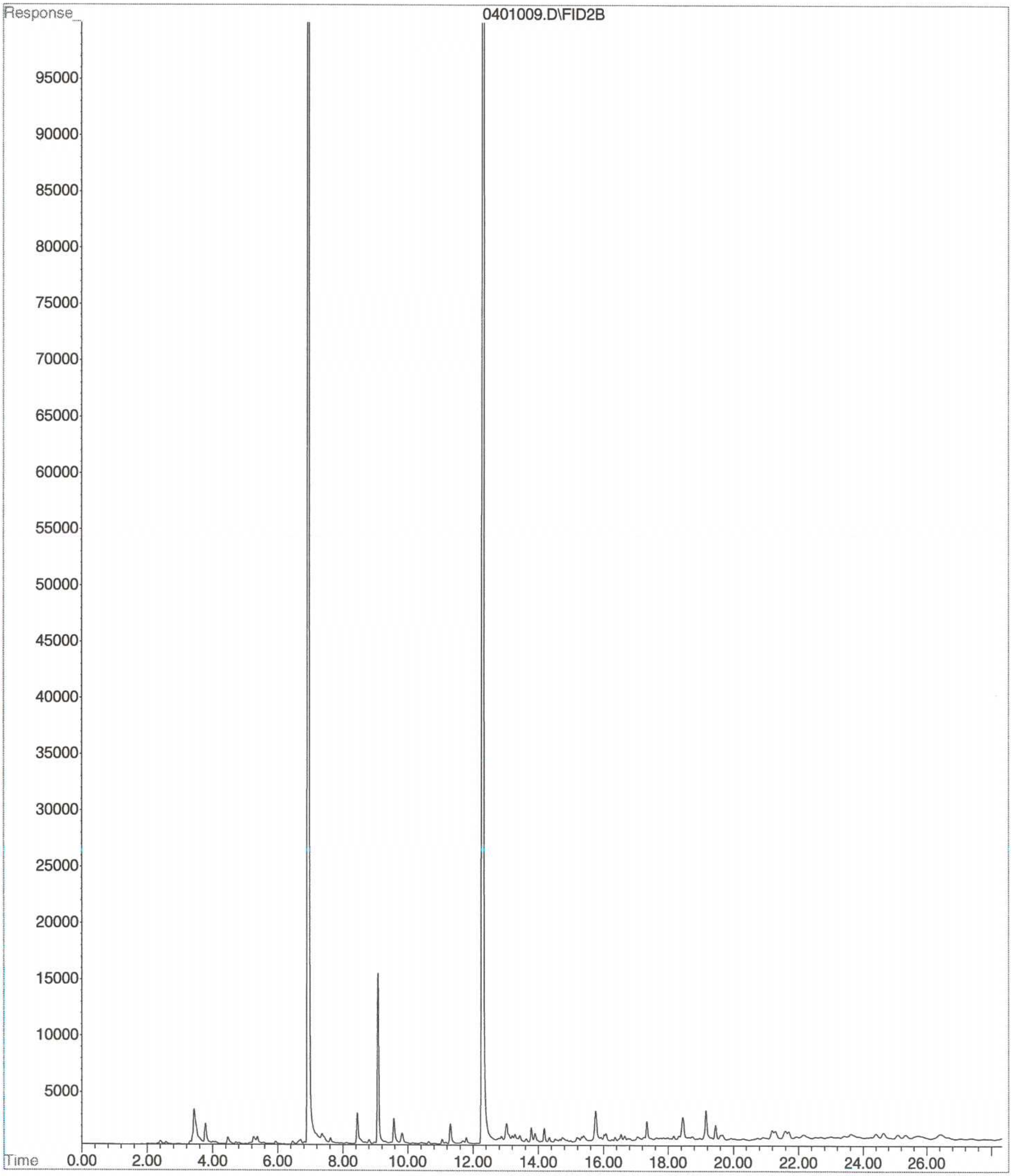

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File         :X:\DIESELS\VIGO\DATA\V150330.SEC\0330-V57.D
Operator     :
Acquired     : 30 Mar 2015  16:58     using AcqMethod V150209F.M
Instrument :    Vigo
Sample Name: 03-292-01
Misc Info  :
Vial Number: 57
```

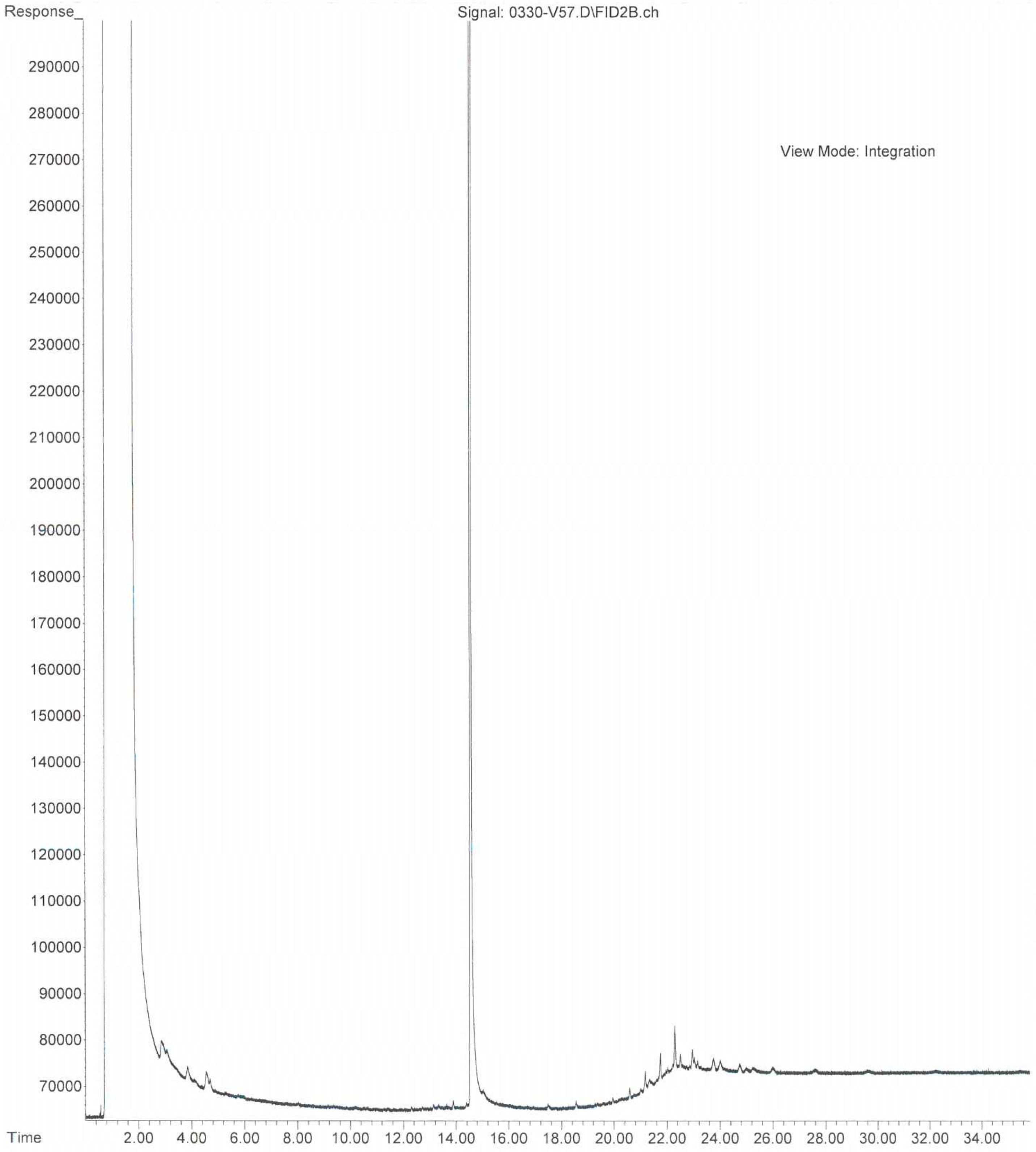

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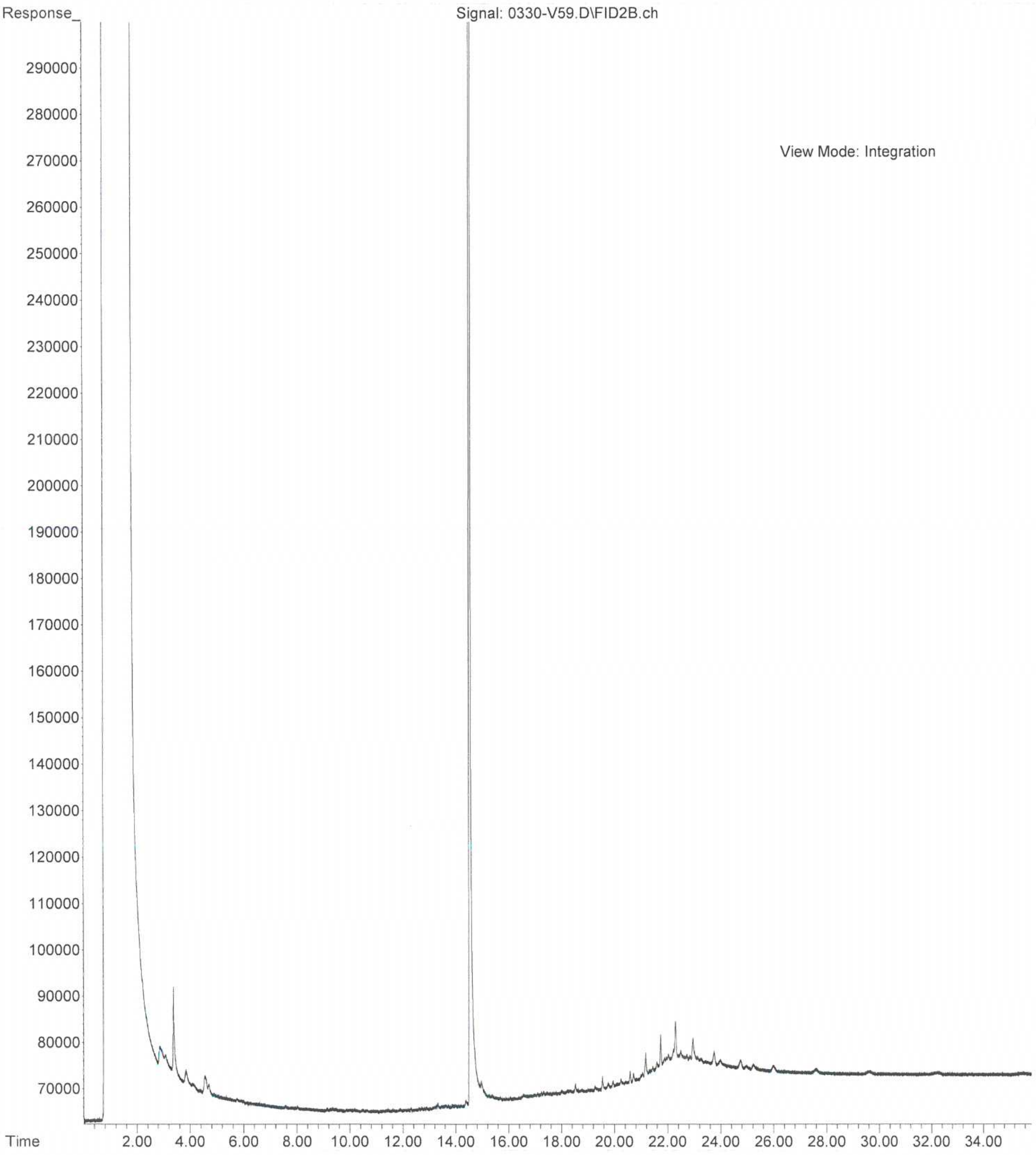
File       :X:\DIESELS\VIGO\DATA\V150330.SEC\0330-V59.D
Operator   :
Acquired   : 30 Mar 2015  18:20     using AcqMethod V150209F.M
Instrument :    Vigo
Sample Name: 03-292-02
Misc Info  :
Vial Number: 59
```



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File        :X:\DIESELS\VIGO\DATA\V150330.SEC\0330-V60.D
Operator    :
Acquired    : 30 Mar 2015  19:01     using AcqMethod V150209F.M
Instrument :    Vigo
Sample Name: 03-292-03
Misc Info   :
Vial Number: 60
```
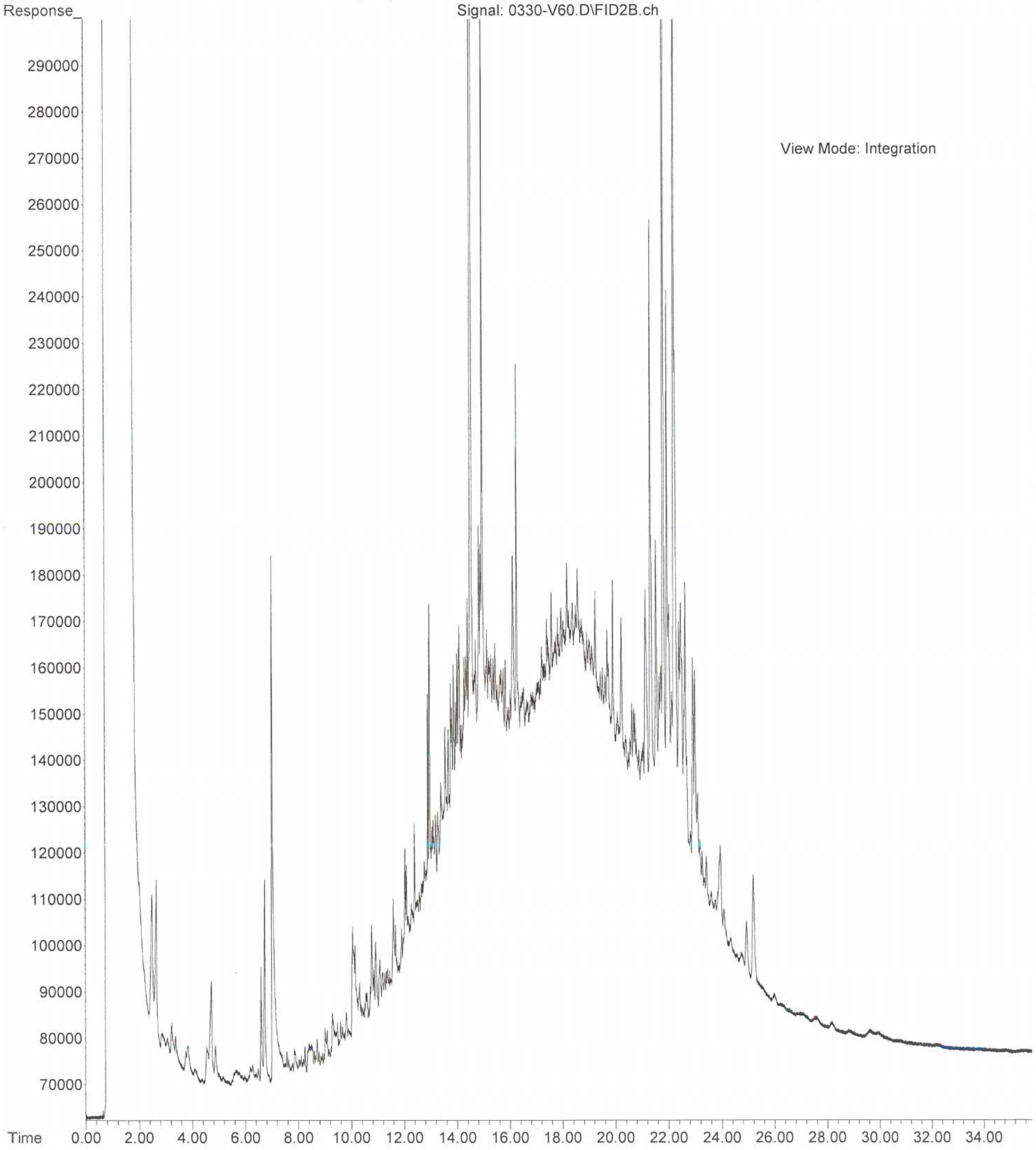



OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

April 8, 2015

Kim Stilson
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-998
Laboratory Reference No. 1503-305

Dear Kim:

Enclosed are the analytical results and associated quality control data for samples submitted on March 31, 2015.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-305
Project: 2007-098-998

Case Narrative

Samples were collected on March 30, 2015 and received by the laboratory on March 31, 2015. They were maintained at the laboratory at a temperature of 2^{o}C to 6^{o}C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-305
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW-4**					
Laboratory ID:	03-305-01					
Benzene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Toluene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
o-Xylene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Gasoline	**ND**	100	NWTPH-Gx	4-1-15	4-1-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-113*				
Client ID:	**TB**					
Laboratory ID:	03-305-02					
Benzene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Toluene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
o-Xylene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Gasoline	**ND**	100	NWTPH-Gx	4-1-15	4-1-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-113*				

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-305
Project: 2007-098-998

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0401W1					
Benzene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Toluene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
o-Xylene	**ND**	1.0	EPA 8021B	4-1-15	4-1-15	
Gasoline	**ND**	100	NWTPH-Gx	4-1-15	4-1-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-113*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-292-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*90*	*89*	*71-113*			
MATRIX SPIKES											
Laboratory ID:	03-292-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**50.6**	**50.2**	50.0	50.0	ND	**101**	**100**	82-120	1	14	
Toluene	**51.1**	**50.3**	50.0	50.0	ND	**102**	**101**	83-120	2	14	
Ethyl Benzene	**50.7**	**50.1**	50.0	50.0	ND	**101**	**100**	83-120	1	15	
m,p-Xylene	**51.1**	**50.2**	50.0	50.0	ND	**102**	**100**	81-123	2	15	
o-Xylene	**50.5**	**50.1**	50.0	50.0	ND	**101**	**100**	80-120	1	16	
Surrogate:											
Fluorobenzene						*93*	*98*	*71-113*			

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-305
Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BPMW-4**					
Laboratory ID:	03-305-01					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	3-31-15	3-31-15	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	3-31-15	3-31-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*84*	*50-150*				

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-305
Project: 2007-098-998

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0331W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	3-31-15	3-31-15	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	3-31-15	3-31-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*76*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-305-01										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*84*	*82*	*50-150*			

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-305
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	03-305-01					
Client ID:	**BPMW-4**					
Arsenic	**4.5**	3.3	200.8	4-6-15	4-6-15	

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-305
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	4-6-15
Date Analyzed:	4-6-15
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0406WM1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-305
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted:	4-6-15
Date Analyzed:	4-6-15
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	04-030-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.3	

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-305
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted:	4-6-15
Date Analyzed:	4-6-15
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	04-030-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	111	**128**	116	**128**	115	1	

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-305
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-305-01					
Client ID:	**BPMW-4**					
Arsenic	**ND**	3.0	200.8		4-6-15	

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-305
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed:	4-6-15
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0401F1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0

DISSOLVED ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed: 4-6-15

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-030-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-305
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed: 4-6-15

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-030-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**201**	100	**201**	100	0	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.

21312 30th Drive SE, Suite 110, Bothell, Washington 98021-7010
Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

03-305

Chain of Custody and Laboratory Anaylsis Request

DATE: 3/31/15
PAGE: 1 of 1

PROJECT NAME: Bothell Paint #: 2007-098-498
SAMPLERS NAME: KS PHONE:
SAMPLERS SIGNATURE: KS DATE: 3/30/15
HWA CONTACT: KS + AS PHONE:

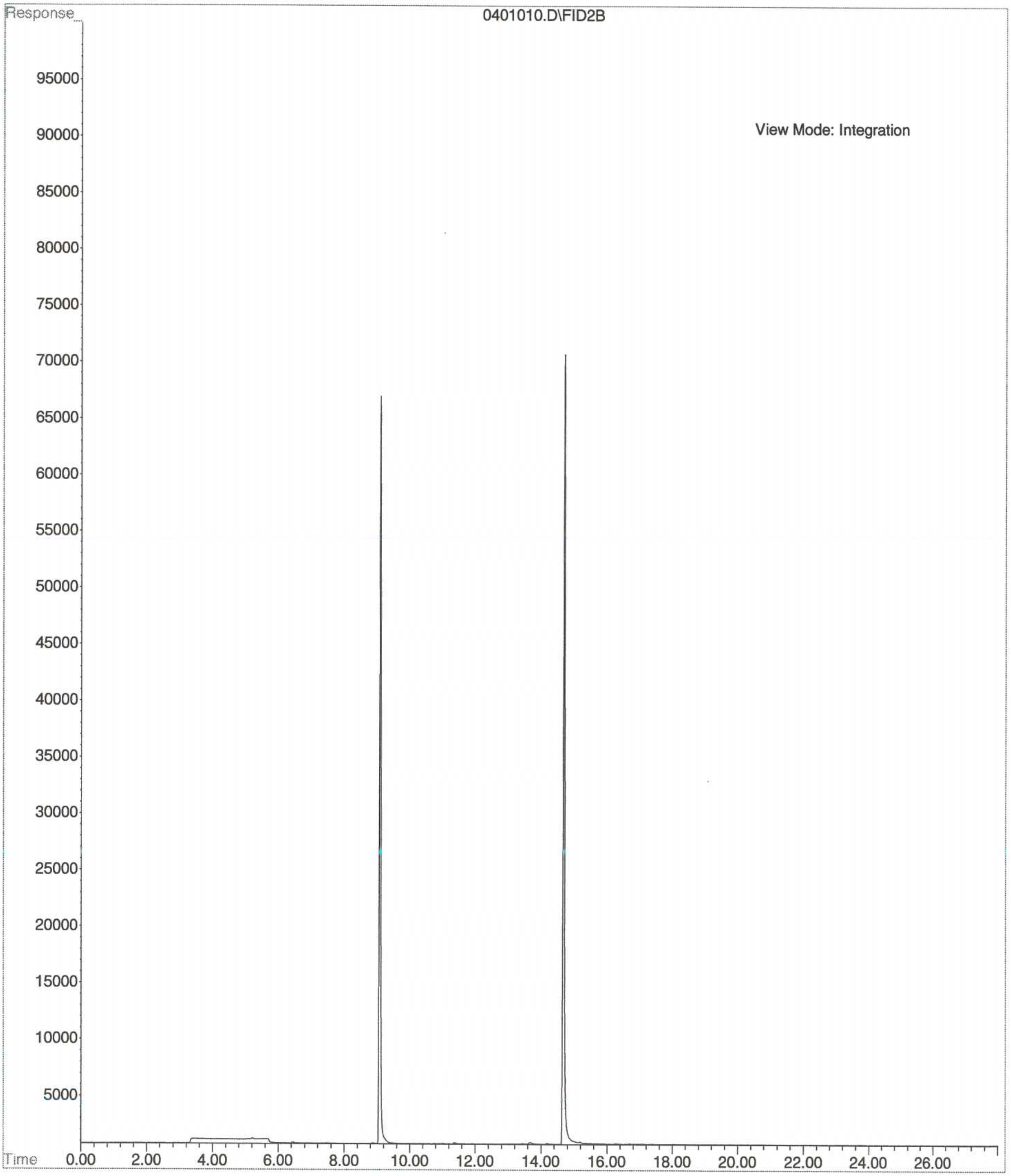
TURNAROUND TIME
☐ DAYS
☑ STANDARD

						ANALYSIS REQUESTED						
HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH-G	Dx	BTEX	Total Metals	Diss Metals	EDD	REMARKS
BPMW-4	3/30/15	~~[illegible]~~	W	1	9	✓	✓	✓	✓	✓		
TB	3/30/15	1030	W	2	3	✓		✓				
												Metals:
												Arsenic
												Field Filtered

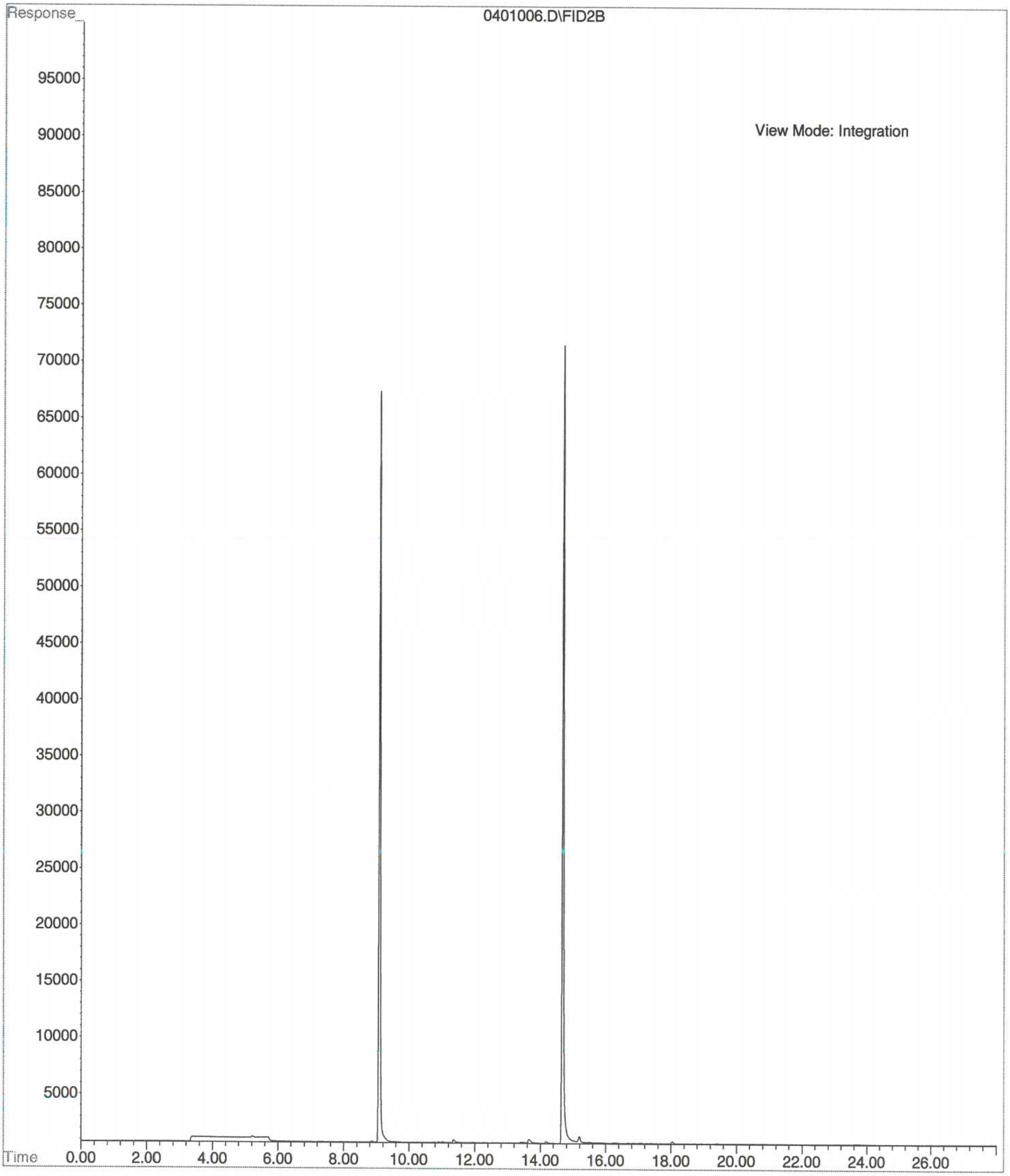
PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	KS		HWA Geo	3/31/15	915	
Received by:	Pat Mill		Speedy	"	10:07	
Relinquished by:	Pat Miller		"	"	10:47	
Received by:	MVOUN			3/31/15	1047	

DISTRIBUTION: WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler

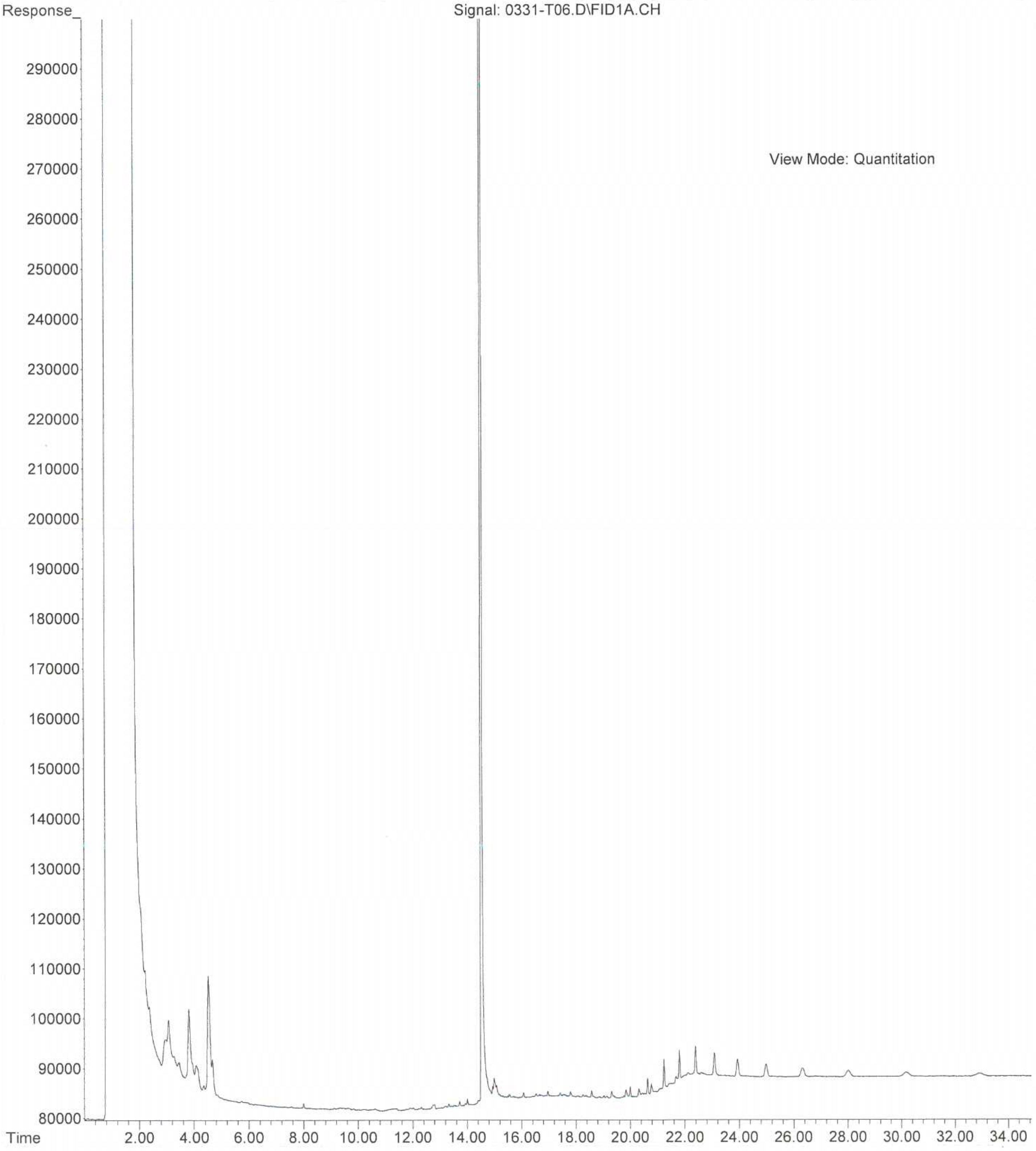
```
File       : X:\BTEX\HOPE\DATA\H150401\0401010.D
Operator   :
Acquired   :  1 Apr 2015  21:50     using AcqMethod 150312B.M
Instrument :   HOPE
Sample Name: 03-305-01a
Misc Info  : V2-36-17
Vial Number: 10
```



```
File        : X:\BTEX\HOPE\DATA\H150401\0401006.D
Operator    :
Acquired    :  1 Apr 2015  19:38     using AcqMethod 150312B.M
Instrument  :   HOPE
Sample Name: 03-305-02a
Misc Info   : V2-36-17
Vial Number: 6
```



```
File        :X:\DIESELS\TERI\DATA\T150331\0331-T06.D
Operator    : ZT
Acquired    : 31 Mar 2015  15:51     using AcqMethod T150310F.M
Instrument :   Teri
Sample Name: 03-305-01
Misc Info   :
Vial Number: 6
```



OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

April 13, 2015

Kim Stilson
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-998
Laboratory Reference No. 1504-030

Dear Kim:

Enclosed are the analytical results and associated quality control data for samples submitted on April 3, 2015.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

Case Narrative

Samples were collected on April 2, 2015 and received by the laboratory on April 3, 2015. They were maintained at the laboratory at a temperature of 2^{o}C to 6^{o}C.

Please note that all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**BC-10**					
Laboratory ID:	04-030-01					
Benzene	**ND**	1.0	EPA 8021B	4-6-15	4-6-15	
Toluene	**ND**	1.0	EPA 8021B	4-6-15	4-6-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-6-15	4-6-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-6-15	4-6-15	
o-Xylene	**ND**	1.0	EPA 8021B	4-6-15	4-6-15	
Gasoline	**ND**	100	NWTPH-Gx	4-6-15	4-6-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*71-113*				

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0406W1					
Benzene	**ND**	1.0	EPA 8021B	4-6-15	4-6-15	
Toluene	**ND**	1.0	EPA 8021B	4-6-15	4-6-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-6-15	4-6-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-6-15	4-6-15	
o-Xylene	**ND**	1.0	EPA 8021B	4-6-15	4-6-15	
Gasoline	**ND**	100	NWTPH-Gx	4-6-15	4-6-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-113*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-030-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*90*	*85*	*71-113*			
MATRIX SPIKES											
Laboratory ID:	04-030-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**49.0**	**50.7**	50.0	50.0	ND	**98**	**101**	82-120	3	14	
Toluene	**48.6**	**50.4**	50.0	50.0	ND	**97**	**101**	83-120	4	14	
Ethyl Benzene	**48.8**	**50.6**	50.0	50.0	ND	**98**	**101**	83-120	4	15	
m,p-Xylene	**48.8**	**50.6**	50.0	50.0	ND	**98**	**101**	81-123	4	15	
o-Xylene	**48.3**	**50.3**	50.0	50.0	ND	**97**	**101**	80-120	4	16	
Surrogate:											
Fluorobenzene						*95*	*90*	*71-113*			

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BC-10**					
Laboratory ID:	04-030-01					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	4-7-15	4-7-15	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	4-7-15	4-7-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0407W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	4-7-15	4-7-15	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	4-7-15	4-7-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				

Analyte	Result	Result	Spike Level	Spike Level	Source Result	Percent Recovery	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-030-01										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*83*	*92*	*50-150*			

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	**Result**	**PQL**	**EPA Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Lab ID:	04-030-01					
Client ID:	**BC-10**					
Arsenic	**ND**	3.3	200.8	4-6-15	4-6-15	

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	4-6-15
Date Analyzed:	4-6-15
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0406WM1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 4-6-15
Date Analyzed: 4-6-15

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-030-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.3	

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted:	4-6-15
Date Analyzed:	4-6-15
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	04-030-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	111	**128**	116	**128**	115	1	

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-030-01					
Client ID:	**BC-10**					
Arsenic	**ND**	3.0	200.8		4-6-15	
Manganese	**160**	10	200.8		4-6-15	

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed: 4-6-15

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0401F1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0
Manganese	200.8	**ND**	10

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed:	4-6-15
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	04-030-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	
Manganese	**161**	**159**	1	10	

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed:	4-6-15
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	04-030-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**201**	100	**201**	100	0	
Manganese	200	**344**	92	**356**	97	3	

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

NITRATE (as Nitrogen)
EPA 353.2

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BC-10**					
Laboratory ID:	04-030-01					
Nitrate	**0.39**	0.050	EPA 353.2	4-3-15	4-3-15	

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

NITRATE (as Nitrogen)
EPA 353.2
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0403W1					
Nitrate	**ND**	0.050	EPA 353.2	4-3-15	4-3-15	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	04-031-04								
	ORIG	DUP							
Nitrate	**2.44**	**2.49**	NA	NA	NA	NA	2	13	
MATRIX SPIKE									
Laboratory ID:	04-031-04								
	MS		MS		MS				
Nitrate	**4.58**		2.00	2.44	107	90-123	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0403W1								
	SB		SB		SB				
Nitrate	**2.18**		2.00	NA	109	88-121	NA	NA	

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

SULFATE
ASTM D516-07

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BC-10**					
Laboratory ID:	04-030-01					
Sulfate	**ND**	5.0	ASTM D516-07	4-6-15	4-6-15	

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

SULFATE
ASTM D516-07
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0406W1					
Sulfate	**ND**	5.0	ASTM D516-07	4-6-15	4-6-15	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	04-031-04								
	ORIG	DUP							
Sulfate	**66.9**	**62.3**	NA	NA	NA	NA	7	10	
MATRIX SPIKE									
Laboratory ID:	04-031-04								
	MS		MS		MS				
Sulfate	**164**		100	66.9	97	82-121	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0406W1								
	SB		SB		SB				
Sulfate	**10.4**		10.0	NA	104	90-114	NA	NA	

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

DISSOLVED GASES
RSK 175

Matrix: Water
Units: ug/L (ppb)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**BC-10**					
Laboratory ID:	04-030-01					
Methane	**220**	30	RSK 175	4-8-15	4-8-15	

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

DISSOLVED GASES
RSK 175
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0408W1					
Methane	**ND**	0.50	RSK 175	4-8-15	4-8-15	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0408W1										
	SB	SBD	SB	SBD		SB	SBD				
Methane	**3.72**	**3.65**	4.42	4.42	N/A	**84**	**83**	75-125	2	25	

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

TOTAL ALKALINITY
SM 2320B

Matrix: Water
Units: mg CaCO3/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BC-10**					
Laboratory ID:	04-030-01					
Total Alkalinity	**190**	2.0	SM 2320B	4-7-15	4-7-15	

Date of Report: April 13, 2015
Samples Submitted: April 3, 2015
Laboratory Reference: 1504-030
Project: 2007-098-998

TOTAL ALKALINITY
SM 2320B
QUALITY CONTROL

Matrix: Water
Units: mg CaCO3/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0407W1					
Total Alkalinity	**ND**	2.0	SM 2320B	4-7-15	4-7-15	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	04-030-01								
	ORIG	DUP							
Total Alkalinity	**188**	**184**	NA	NA	NA	NA	2	10	
SPIKE BLANK									
Laboratory ID:	SB0407W1								
	SB		SB		SB				
Total Alkalinity	**100**		100	NA	100	88-114	NA	NA	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

HWA GEOSCIENCES INC.
21312 30th Drive SE, Suite 110, Bothell, Washington 98021-7010
Tel 425.774.0106 Fax 425.774.2714 www.hwageo.com

04-030

Chain of Custody and Laboratory Anaylsis Request

DATE: 4/2/15
PAGE: 1 of 1

PROJECT NAME: Bothell Paint #: 2007-098-998
SAMPLERS NAME: KStilson PHONE:
SAMPLERS SIGNATURE: KStilson DATE: 4/2/15
HWA CONTACT: KS + AS PHONE:

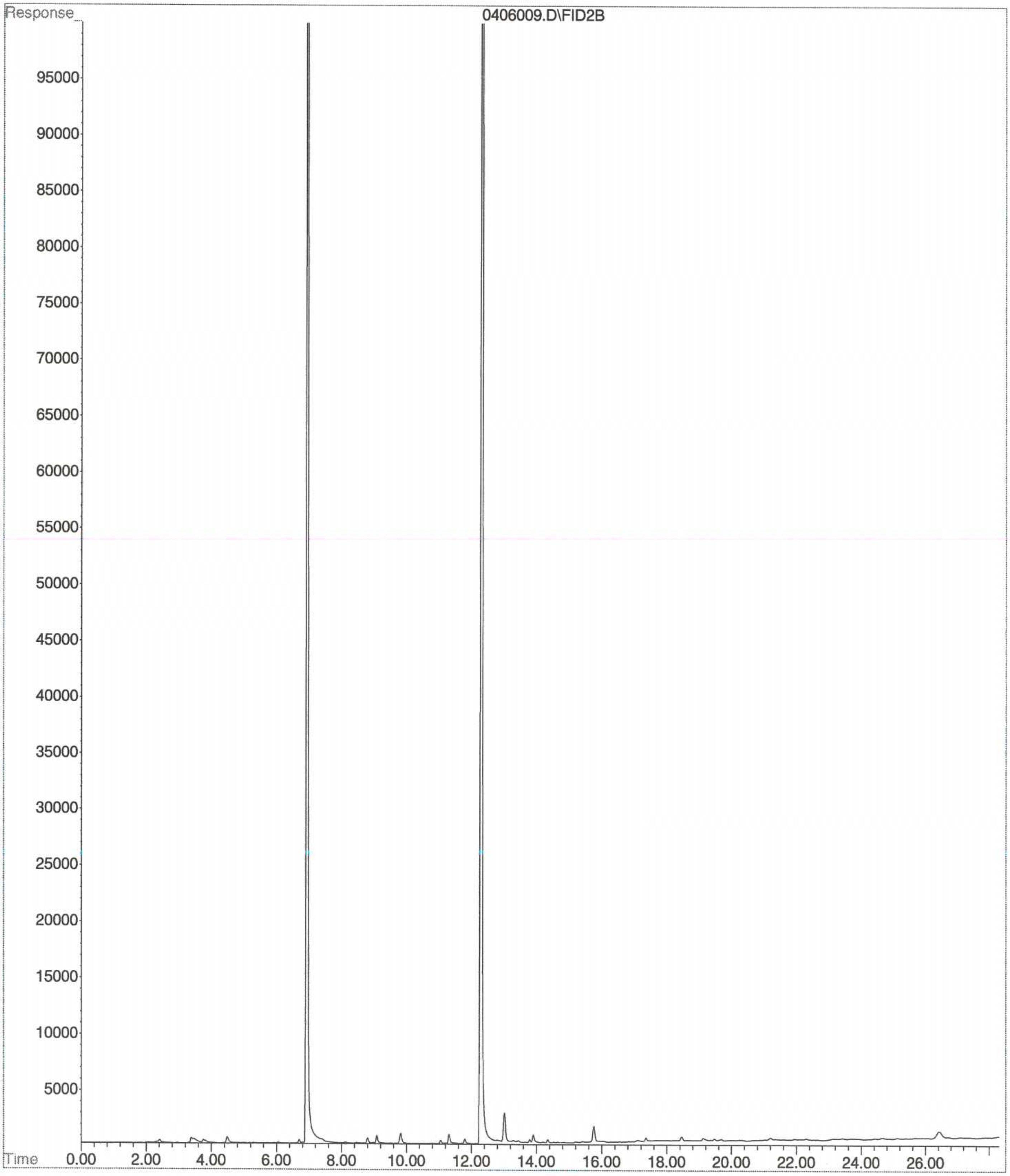
TURNAROUND TIME
☐ DAYS
☑ STANDARD

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH-G	Dx	BTEX	Total Met	Diss Met	Nitrate	Sulfate	Methane	Alkalinity						EDD	REMARKS
BC-10	4/2/15	130	W	1	11	/	/	/	/	/	/	/	/	/							
																					Field Filtered
																					Total: Arsenic
																					Diss: Arsenic
																					& Manganese

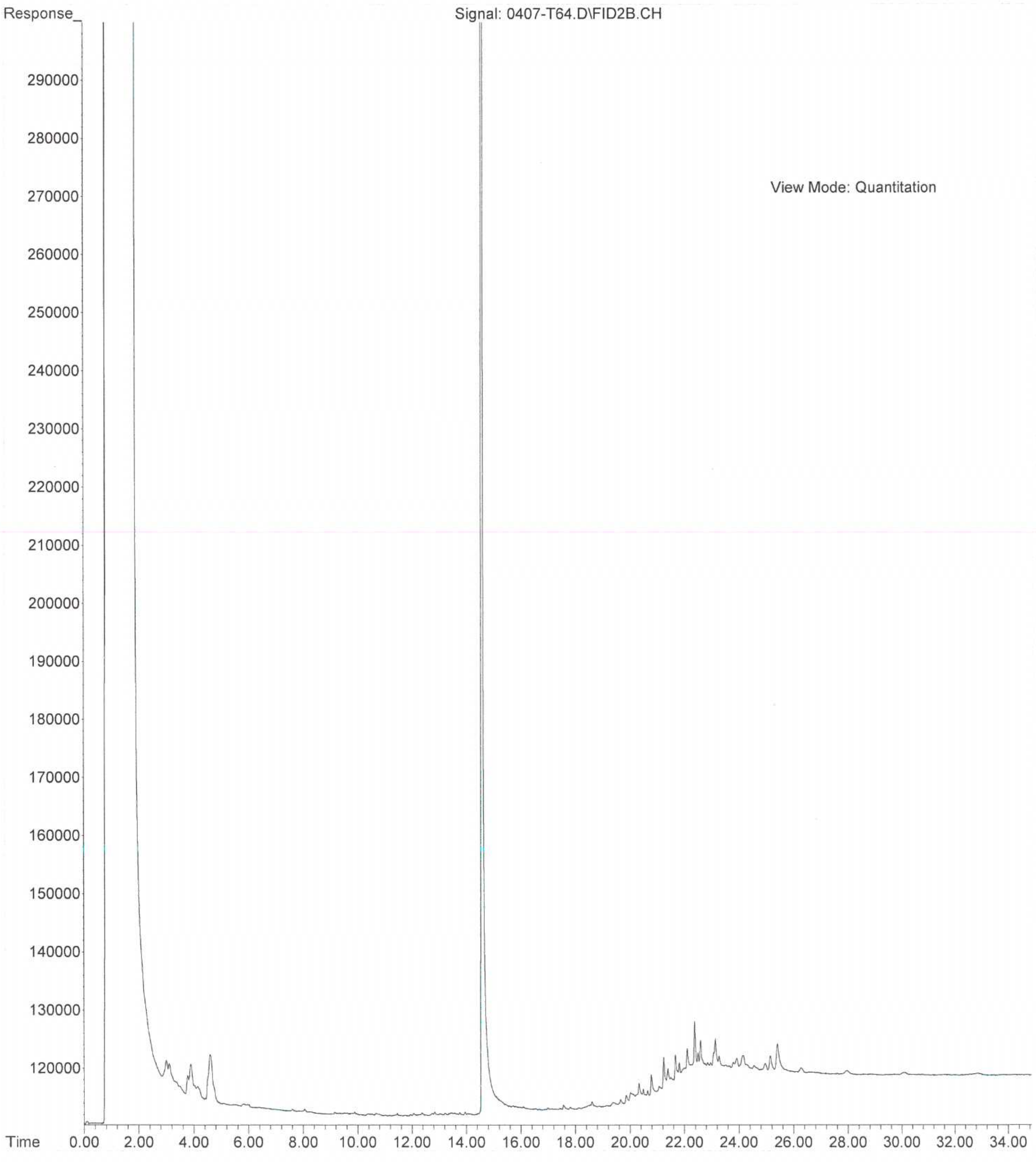
PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: KStilson		HWA Geo	4/3/15	800	
Received by: S. Williams		Alpha	4/3/15	1037	
Relinquished by: S. Williams		Alpha	4/3/15	1033	
Received by: MVOUN		OSE	4/3/15	1105	

DISTRIBUTION: **WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler**

```
File        : X:\BTEX\DARYL\DATA\D150406\0406009.D
Operator    :
Acquired    :  6 Apr 2015  18:56     using AcqMethod 150327B.M
Instrument :   Daryl
Sample Name: 04-030-01g
Misc Info   : V2-36-23
Vial Number: 9
```



```
File        :X:\DIESELS\TERI\DATA\T150407.SEC\0407-T64.D
Operator    : ZT
Acquired    : 07 Apr 2015  20:56     using AcqMethod T150310F.M
Instrument :   Teri
Sample Name: 04-030-01
Misc Info  :
Vial Number: 64
```



APPENDIX K

ECOLOGY LETTER, FEBRUARY 15, 2013 – SEPTEMBER 14, 2012 RESPONSE BY CITY OF BOTHELL ON CONCERNS WITH REMEDIAL INVESTIGATION / FEASIBILITY STUDY, AND INTERIM ACTIONS ON BOTHELL PAINT & DECORATING, BOTHELL FORMER HERTZ, AND BOTHELL LANDING SITES

1889

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • 3190 160th Ave SE • Bellevue, WA 98008-5452 • 425-649-7000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

February 15, 2013

Nduta Mbuthia
Project Engineer (PLP Technical Contact)
City of Bothell, Public Works Department
9654 NE 182nd Street
Bothell, WA 98011

Re: September 14, 2012 response by City of Bothell on concerns with remedial investigation/feasibility study, and interim actions on Bothell Paint & Decorating, Bothell Former Hertz, and Bothell Landing sites

Dear Ms. Mbuthia:

This letter addresses the City of Bothell's recent letter dated September 14, 2012 responding to Ecology's concerns and standing issues with site investigation, characterization, and interim action work at the Bothell Landing, Bothell Paint & Decorating, and Bothell Former Hertz MTCA cleanup sites.

BOTHELL PAINT & DECORATING (Agreed Order No. DE 6296)

1) Summary Concern

Ecology does not consider screening level geoprobe groundwater samples from 2008 and 2009 sufficient to demonstrate that petroleum hydrocarbons and their compounds are not contaminants of concern at the site. Ecology prefers data taken over 4 quarters from a revised network (provided in an attachment) rather than the screening level direct probe results from composited past limited investigations. Eighty percent of this network is estimated to already contain wells agreed upon for the area wide network. The rest of these monitoring wells will resolve concerns and satisfy the RI/FS.

City of Bothell's Reply

The RI/FS work plan, RI/FS report, Interim Action Work plan, and soil cleanup report all document TPH as a COC (please see comments to Landing Attachment A at the end). The RI/FS work plan approved by Ecology in 2009 resulted in 3 new wells being installed and 24 push borings completed. The Interim Action work plan later approved by Ecology stated that 4 rounds of quartering [*sic*] would follow completion of the interim action. The City's intent is to follow through with implementing the requirements set forth in these approved work plans (Ecology letter dated August 9, 2009), by sampling the existing wells on the Paint site upon completion of the interim action. It is not clear to the City why Ecology is now showing more wells on the graphic in Attachment A, while it is evident that the RI/FS work plan deliverable was completed in 2009.

Ecology Response

The site characterization is not complete and the 2009 RI report was not approved (see Ecology's letter of January 12, 2010). To remedy the situation, follow up compliance groundwater monitoring and investigation of adjoining plumes or contaminated groundwater upgradient of the site using a revised monitoring network is needed. The existing well network is not adequate to address the standard and minimum requirements for demonstrating compliance under MTCA.

The interim action work plan being cited does not clarify the questions being raised on the appropriate well network and analytes for this site. In fact, as seen in Figure 5-1, it confuses things further by proposing 5 new monitoring wells south and east of the parcel boundaries. On page 5-1 of this interim action work plan, it states:

> "In order to adequately monitor the area, five downgradient wells would be installed and a total of seven wells would be monitored quarterly for 1 year. The appropriateness of further groundwater monitoring for the IA will be evaluated following completion of the four rounds of quarterly monitoring."

In contrast, an email on September 26, 2012 from Ms. Mbuthia states that Bothell intends to sample 4 existing site wells. The interim action plan includes sampling well BPMW-3, yet the email stated that BPMW-3 was decommissioned during the 2010 interim cleanup excavation.

Clearly, the groundwater network remains ambiguous. Ecology has been attempting to clarify Bothell's groundwater investigation and monitoring plans.

Ecology has offered what it considers the appropriate final network to fulfill the requirements of the scope of work for groundwater in the Agreed Order (see Attachment 1).

For the Paint & Decorating site, Ecology's suggested additional wells are labeled letters S to Z, and AA. The rationale for each well is provided in the accompanying table under the column "Ecology Comments". Wells V,W, and X were placed based on the Parametrix DCAP document revision 1 and the interim work plan, apparently initially designed as confirmational wells downgradient from the interim remedial action areas. Ecology recommends using the existing wells on the map and installing wells S, T, U, Y, and Z. Some technical clarification may be needed for the existing wells near Z and Y if they were originally meant to be used as part of the monitoring network.

Ecology recommends that the City of Bothell prepare for Ecology review and approval a groundwater monitoring work plan after the results are available from the Phase 2 interim remediation.

The groundwater monitoring work plan recommended by Ecology will help demonstrate that the Paint & Decorating site is a separate groundwater area from the rest of the Bothell sites. These wells will provide water level elevations and contaminant chemistry. The water level elevation contoured to show the piezometric surface, groundwater gradients, and flow direction. Contaminant chemistry to be analyzed for previously known or documented contaminants, as well as nearby contaminants that are from sites upgradient, such as the areas near wells S,T, and U.

----

2) Summary Concern

Monitoring well network needs to establish if off-property impacts exist from Unocal (Haynes site) to the west, and possible HVOC and TPH impacts from Bothell Service Center from the north and northwest. Monitoring must also address historical TPH impacts and confirmed metals contamination (confirmation and compliance monitoring).

City of Bothell's Reply

As discussed at various meetings between City and Ecology, the Paint site is not part of the area-wide monitoring well network. The reason being that multiple past investigations have determined that there is no evidence of comingling with solvent plumes from up-gradient sources. However, the City does concur that if during the interim action that is currently underway, it is determined that there are off-property impacts from the up-gradient Unocal/Haynes, further evaluation of well placement to determine such impacts would need to occur. Further determination will be made upon the completion of the second phase of the interim action

Ecology Response

As indicated in Ecology's response in Summary Concern 1), Ecology recommends additional wells S to Z, and AA in addition to existing three wells to help identify any impacts from upgradient sources.

----

3) Summary Concern

Ecology will agree to separate the Bothell Paint & Decorating monitoring program from the area-wide study unless preliminary data show solvent plume is commingled or bigger than previously thought.

City of Bothell's Reply

The City believes that there is already an abundance of data available to demonstrate that no commingling of HVOCs from Bothell Service Center or other known sites, with the Bothell Paint Site.

Ecology Response

Please see previous responses 1) and 2) for Ecology's recommendation for a groundwater monitoring work plan.

----

4) Summary Concern

Second amendment to RI/FS Work Plan must be submitted to finalize RI/FS work plan. This was promised in the City of Bothell's July 5, 2011, letter (page 4, item b).

City of Bothell's Reply

Maps with test pit locations and project specifications have been previously submitted. The second amendment to the Bothell Paint RI/FS Work Plan is attached to this letter.

Ecology Response
Ecology finds locations of additional soil samples in second amendment acceptable.

----

5) Summary Concern
The arsenic memo by HWA does not provide convincing arguments that the arsenic in groundwater in the area (background) is naturally high. Exceedances correlate with sandblast material and petroleum hydrocarbon-impacted areas found at the site. Much of the arsenic data points used in the memorandum to demonstrate a high background were below cleanup levels, and little if any data points were from areas not impacted by contamination.

City of Bothell's Reply
According to the memo, this is the only site with a known arsenic source not attributed to background causes. As such, the concern raised does not apply to this site in particular.

Ecology Response
Since the Paint & Decorating site is in downtown Bothell and part of the scope of the memo, Ecology would like to underscore that arsenic remains a contaminant of concern for groundwater and that a sufficient demonstration of high natural background of groundwater arsenic has not been made for this site as well, despite its incorporation in the memo. An appropriate natural background for arsenic will have bearing on the possible cleanup level for this contaminant at these sites, including Paint & Decorating.

With this in mind, Ecology refers to its letter of July 30, 2012 on its recommendation for measuring natural background concentrations for arsenic in groundwater.

----

6) Summary Concern
Metal exceedances may be expected to decrease following the interim soil remediation. Therefore, the local (Paint & Decorating) monitoring wells in Attachment 1 may be used in conjunction with the other property wells to demonstrate compliance.

City of Bothell's Reply
The City agrees with the above statement; however, as stated previously, the City believes that it has already completed the required well installation per the approval provided by Ecology's letter dated August 9, 2009.

Ecology Response
Ecology recommends the installation of additional wells as detailed in Ecology's response to Summary Concern 1) and in Attachment 1.

----

7) Summary Concern
If metals do not disappear from the site, remediation of metals should be part of the cleanup action plan.

City of Bothell's Reply
Remediation of metals will be addressed in the dCAP based on concentrations detected, cleanup levels and points of compliance established, per MTCA.

Ecology Response
Ecology agrees with the statement.

----

8) Summary Concern
Other areas of potential soil contamination. Gasoline range petroleum hydrocarbons initially detected in soil at the vicinity of the former LUST (removed in 1988) near VB-6 does not appear to have been adequately characterized or remediated. Same observation applies for area south of this location, near P-TP-5-1 in the interim cleanup action report (Oil = 720 ppm, Gasoline = 480 ppm. MTCA Method A = 100 ppm for gasoline. It would appear that the result for P-TP-5-3 shows that it was over excavated (is this the case?). Are the limits delineated here (near P-TP-24 and P-TP-25 because sampling stopped at the rock wall and former building slab? Note that the July 5, 2011, letter from the City of Bothell (page 5, letter d) states that in the interim cleanup report, some samples were mislocated and that samples will be collected during Phase III potholing. Can the potholing results help confirm compliance in this area? If the City no longer wishes to address this concern, we can either assume contamination remains and put this in an environmental covenant or revisit this issue in the final RI/FS report when it is submitted.

City of Bothell's Reply
Soil near VB-6 will be sampled in test pits during Phase III construction (work plan amendment to be submitted)

- P-TP5-1 was excavated, lower sample at 3' in same location was below cleanup levels
- P-TP24 and 25 area will be resampled

Ecology Response
Ecology finds locations of additional soil samples in second amendment acceptable.

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9) Summary Concern
The 2009 RI/FS report by Parametrix documents SVOC (cPAH) exceedance in soil in BP-26. It concludes that further investigation is required to determine the possible source of the cPAHs. Ecology agrees with this conclusion. This also has yet to be addressed in detail in the remedial investigation.

City of Bothell's Reply
cPAHs detected in BP-26 will also be sampled in test pits during Phase III construction (see attached work plan amendment 2)

Ecology Response
Ecology will wait for the results of cPAH sampling.

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10) Summary Concern
Soil exceedances from recent utility line potholing still needs to be reported. An entry in a progress report will be acceptable, aside from final RI/FS report.

City of Bothell's Reply

The City agrees with the above statement. Based on the data available, there have been no exceedances in the pothole sampling to date at this site.

Ecology Response
Ecology will wait for the results of utility line pothole sampling

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11) Summary Concern

Ecology cannot conclude at this time that Bothell's statistical approach to demonstrating soil compliance for arsenic is sufficient for the following reasons:

I. Bothell's approach does not step through the Ecology statistical guidance especially with regard to using censored data. Although Ecology may approve alternate statistical procedures, Bothell has not provided sufficient justification for choosing an alternative approach different from what is provided in the Ecology Statistical Guidance for Ecology Site Managers (August 1992 92-54 and Supplement S-6). The dataset contains more than 50% censored values at multiple detection limits. If we follow the procedure for calculation of an upper 95% confidence limit *(UCL)* on the site mean, (Case 3 - More than 50% of the data are censored values, see page 8 Supplement S-6), it recommends using the maximum value in the data set as the upper 95% confidence limit. See also WAC 173-340-740(7)(f)(iv). The largest value in this case would be 21 ppm, above the cleanup level.

II. Samples at or above cleanup levels may be indicative of hot spots. P-TP-19-7 and P-TP-25-6 are located at the northwest limits of the excavation (see attached Figure 6), very close to the edges of SR522 where contamination remains (PPEX-9, P-PEX-I0, and P-PEX-12), Soil arsenic contamination may extend west of the area in question. Two samples west of the area (VB-4 and BP-7) are not sufficient to delimit the contamination because VB-4 was not analyzed for soil arsenic and BP-7, although nondetect for arsenic, were taken at the surface (0 to 0.5 feet) and not at comparable depths for P-TP-19-7 and P-TP-25-6 (4-7 feet).

III. Therefore, Ecology reiterates its recommendation to postpone evaluations on soil compliance based on a statistical analysis until the interim action soil remediation and RI/FS is complete and cleanup levels and risks are evaluated. If Bothell wishes to pursue its alternative statistical approach, the evaluation will be forwarded to Ecology Headquarters for review.

City of Bothell's Reply

I. The City believes that this item has already been addressed by the letter dated July 5, 2011. The City's response is reprinted below:

Using the largest detected value to establish compliance when >50% of the data are censored is overly conservative and not mathematically sound. The MTCA requirement to use ½ of the DL for all non-detects is for estimating background concentrations, not compliance data (173 340 709). For soil and ground water compliance monitoring (173 340 720 and 740), MTCA states use ½ DL only when less than 15% of samples are ND. Supplement S6 in the guidance does not provide a method where >50% are ND. Actually it lists two methods, then states that they are not likely valid and not to use them. This is only a guidance, and not a requirement.

The City proposes an alternate method which has been successfully implemented for other projects at various locations elsewhere. For example, Ecology may consider two hypothetical sets of cleanup data of 10 samples each:

- Group A: Arsenic = 12, 13, 14, 15, 16, 17, 18, 19, 20, 21. Distribution = lognormal, 95%UCL = 18.6
- Group B: Arsenic = <10, <10, <10, <10, <10, <10, <10, <10, <10, 21. There is no way to establish a distribution. The assumption of lognormal is justifiable and mentioned in the Guidance. This data set is obviously "cleaner" than A. It seems counter intuitive to assume the compliance value (95% UCL) = 21 (the highest value). In other words, if arsenic is added to the soil to obtain some detects, the cleanup level could be met. Using the simple proxy method (assigning ordered or random values to the non-detects) the UCL = around 13.

II. P-TP 19-7 is located at the southeast, not northwest limits of the excavation, and is below cleanup level. There is no Figure 6 attached to the Ecology letter. PTP-25 is at the northwest limits of the excavation, and is above the cleanup level for TPH-G, and AT (not exceeding) the cleanup level for arsenic. Therefore, it will be over excavated and resampled during construction. Neither of these is near P-PEX 9, 10 or 12, where contamination remains at the edge of the roadway.

III. The City agrees that final compliance will be established after the cleanups are completed. Having said that, the City would like to seek Ecology's concurrence with the methods implemented to establish compliance to date in the areas which have already been cleaned-up.

Ecology Response

Given the distribution of confirmation samples and suspected hot spots, Ecology's conclusion at this point is to consider the soil footprint within the outline in the attached figure to be in compliance for arsenic, except for the area toward the west and northwest of the west and northwest excavation margin. As stated before, this is the area west of P-TP-25-6, BP-7, P-PEX-9, and P-PEX-10. As noted before for this site, the presence of contaminated fill and residual soil contamination going into SR522 may indicate the presence of hot spots for arsenic and other contaminants like petroleum hydrocarbons.

What follows is a detailed response to the City's request to Ecology for its determination of the validity of the City's statistical approach.

- In past communications, Ecology has indicated that the statistical analysis proposed by HWA to calculate the Upper 95% Confidence Limit did not follow recommended guidelines in Ecology's compliance rule (WAC 173-340-740(7)(f)(iv) and guidance "Statistical Guidance for Ecology Site Managers, Supplement S-6, August, 1993" when greater than 50% of the data are censored. Instead, the methodology proposed by HWA employed proxy or substitution, using randomly generated numbers between 0.0 and 16 mg/kg for non-detect data to calculate the UCL under WAC 173-340-740(7)(f)(v).
- After consulting with Ecology Headquarters, it was concluded that Ecology cannot either accept or reject HWA's approach without clear statistical decision criteria being used. Although the HWA approach characterizes the Ecology guidance as overly conservative, it also does not offer an equally compelling argument that soil compliance has been

established given the possibility of hot spots (see below) and remaining areas of confirmed soil exceedances. Furthermore, HWA's methodology forces a solution to calculating a guaranteed low UCL result (below cleanup levels) using an artificially created and intentionally limited dataset without an appropriate Power Analysis for testing null hypothesis to evaluate type I and II error. Without lengthy statistical Power Analysis, this kind of statistical inference method would not address the uncertainty associated with risks from sample results above cleanup levels within the data population.

- Instead, the spatial or geographic distribution – or multiple decision units at a site - of soil arsenic results may allow some resolution. Based on Ecology's previous communications, some soil hotspots may remain. This would appear to be at the western margin of the excavation footprint, west of P-TP-25-6, BP-7, P-PEX-9, and P-PEX-10. In Ecology's letter of 7/30/2012, P-TP 19-7 was incorrectly included in the comments and a figure depicting the area in question (identified as "Figure 6") was not included. This is now attached to this letter as Attachment 2. It is Ecology's understanding that these areas will be resampled according to Amendment 2 of the work plan.

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12) Summary Concern

Bothell has also requested Ecology's concurrence on the sufficiency of cleanup levels in their report "Documentation of Interim Action at Bothell Paint & Decorating" (HWA, January 2011).

- Ecology concurs with the calculations, except for gasoline. Ecology will use most stringent cleanup level (30 ppm, from Method A calculation for gasoline where soil was found to contain benzene).

City of Bothell's Reply

The "Documentation of Interim Action at Bothell Paint & Decorating" (HWA, January 2011, Table 1) specifies the TPH-G cleanup level of 30 mg/kg. Benzene was detected in only one soil sample out of 12 samples collected. BP-26, collected at grade (1 foot depth) not near the former UST or any other apparent historical or current petroleum sources was likely from an automobile. Benzene has never been detected in ground water, in 19 groundwater samples collected at the site.

Ecology Response

Benzene remains a contaminant of concern at the site due to its documented soil exceedance at the area at BP-26 and possible benzene and BTEX impacts in groundwater. The 2011 HWA report, "Documentation of Interim Action at Former Bothell Paint And Decorating Site Bothell, Washington", recommended on page 6 including benzene to the list of chemicals of potential concern (COPCs) in soil and groundwater at this site, for future site RI activities.

Ecology concurs that benzene has never been detected in the historical groundwater sample record for this site. However, Ecology is not convinced the characterization for this and related petroleum hydrocarbons has been sufficiently carried out. Ecology requests that BTEX be included for testing in the groundwater monitoring work plan.

BOTHELL FORMER HERTZ (Agreed Order No. DE 8375)

1) Summary Concern
Final revision to RI/FS Work Plan to be submitted as agreed upon in our meeting last March 12, 2012.

City of Bothell's Reply
The City has agreed to provide the revisions to the RI/FS work plan. HWA GeoSciences, INC. has been instructed to provide the additional data as requested to complete the Work Plan. It is scheduled to be submitted to Ecology for review and approval by the middle of September 2012.

Ecology Response
Ecology has accepted the revisions and will provide a letter approving the final version of the RI/FS work plan and Addendum #1.

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2) Summary Concern
Work Plan must contain two conceptual hydrostratigraphic cross sections along groundwater flow paths from to guide locations of new monitoring wells.

City of Bothell's Reply
Yes, the City has agreed to do so as part of the revisions to RI/FS for Bothell Hertz.

Ecology Response
Concerns have been addressed.

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3) Summary Concern
Work plan must contain locations for two shallow and two deep wells across the street from Bothell Service Center and Schuck's sites. This in order to investigate off-property migrations in 2nd water bearing zone (approx. 25-40 feet below ground surface). Added as part of Phase 1 activities.

City of Bothell's Reply
Yes, again the City has agreed to do so as part of the revisions to RI/FS for Bothell Hertz.

Ecology Response
Concerns have been addressed.

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4) Summary Concern
Install other wells (H & I) afterwards after evaluating results from Phase 1.

City of Bothell's Reply
Yes, the City will consider doing so after SR 522 construction is completed.

Ecology Response
Discussion will resume at a later time.

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5) Summary Concern
City indicated in June meeting that it will request CDM (King County Brownfields Grant) to do final revisions to work plan, and well installation (not HW A). It is unclear how this will be implemented according to Ecology's expectations.

City of Bothell's Reply
As stated previously, HWA is currently preparing a supplemental work plan addendum to include supporting materials for wells at north end of Hertz property at SR 522. The work plan will address the Ecology's additional request.

Ecology Response
No response needed.

BOTHELL LANDING (Agreed Order No. DE 6294)

1) Summary Concern
Clarify monitoring network and concerns. Ecology is providing the attached map of existing and proposed monitoring wells and a table of screen depths and rationale for each well (Attachment A-I). The network will be sampled for a minimum of four quarters as required in the RI work plans and will address concerns that must be met in order to satisfy the RI/FS.

City of Bothell's Reply
Ecology and City agreed to a monitoring well network after going through multiple iterations in summer last year – see attached correspondence. In July, an addendum to the RI/Work plan was submitted to Ecology, showing the agreed-upon network. It is unclear to the City why this issue is being re-visited after a concurrence between both parties had been reached. Contrary to what has been discussed in the past, the graphic that was attached to your letter shows 9 new wells on Bothell Paint, which was not to be a part of the area-wide network. City has agreed to the new wells down-gradient of Bothell Service Center, but the 2 new wells are on Grease Monkey and Landing sites which have never been previously discussed. As such, City will implement the monitoring well network that was previously agreed to (see attached)

Ecology Response
Subsequent conversations with the City of Bothell have clarified the issue of additional wells. The correspondence cited by the City of Bothell does not finalize agreement for a final area wide well sampling network, evinced by recent discussions for wells north of the Former Hertz site. However, the City of Bothell has expressed in recent conversations that it may install the additional wells if the results of the interim action (excavation, confirmation sampling), and preliminary well sampling results show that additional wells are necessary for adequate delineation of contaminants.

Ecology provided its recommended final network and rationale in the letter dated July 30, 2012.

Ecology shares with the City of Bothell the goal of accomplishing cleanup under the Model Toxics Control and establishing regulatory compliance that will allow the City to develop the respective properties in accordance with its downtown revitalization plans.

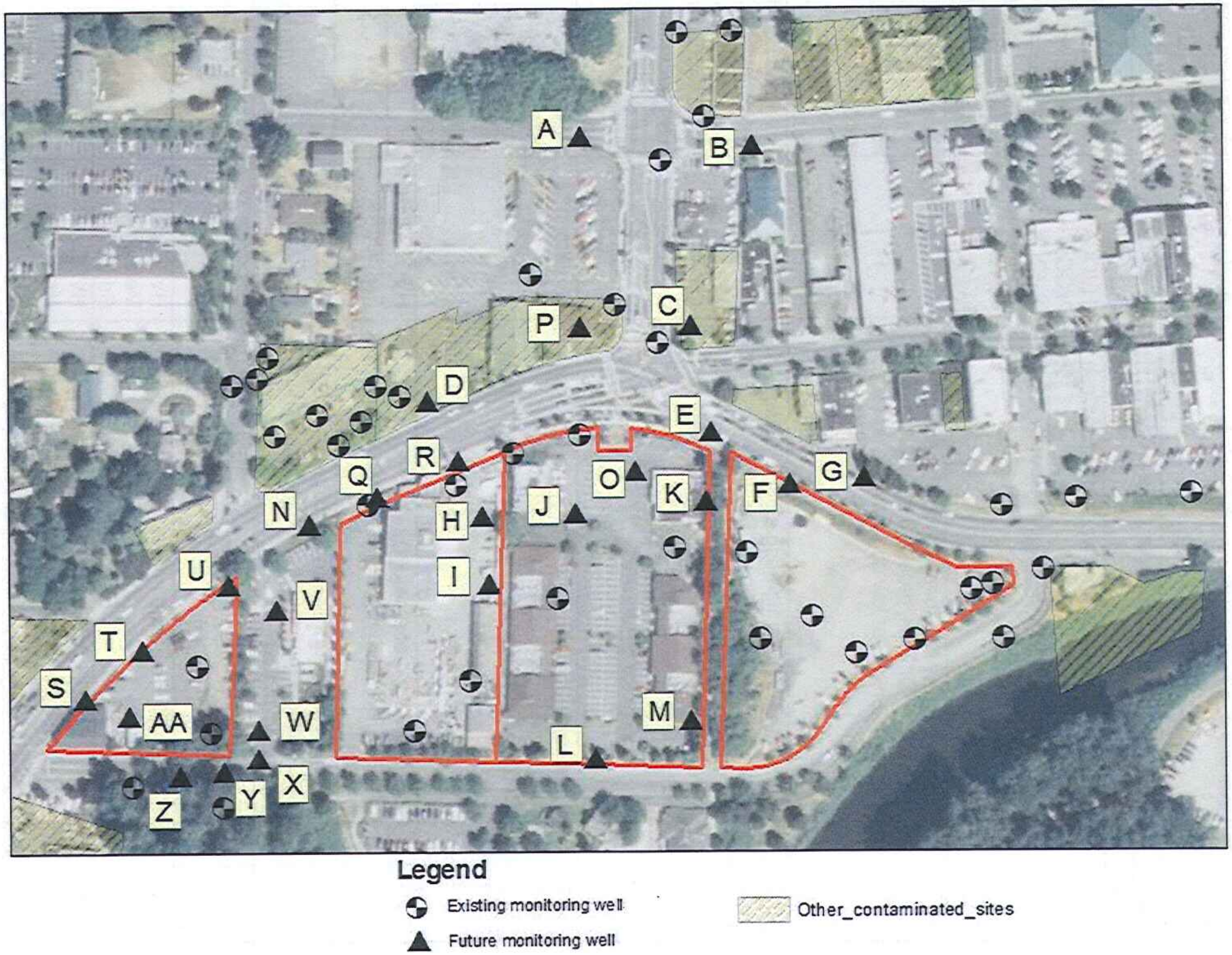
If you have any questions you may reach me at 425-648-7094.

Sincerely,

Jerome B. Cruz
Site Manager
NWRO - Toxic Cleanup Program

cc: Steven Morikawa, City of Bothell Capital Program Manager
Robert Warren, Dept. of Ecology Toxics Cleanup Program, Section Manager
Ching-Pi Wang, Dept. of Ecology Toxics Cleanup Program, Uplands Unit Manager

Preliminary Monitoring Network Bothell MTCA Sites



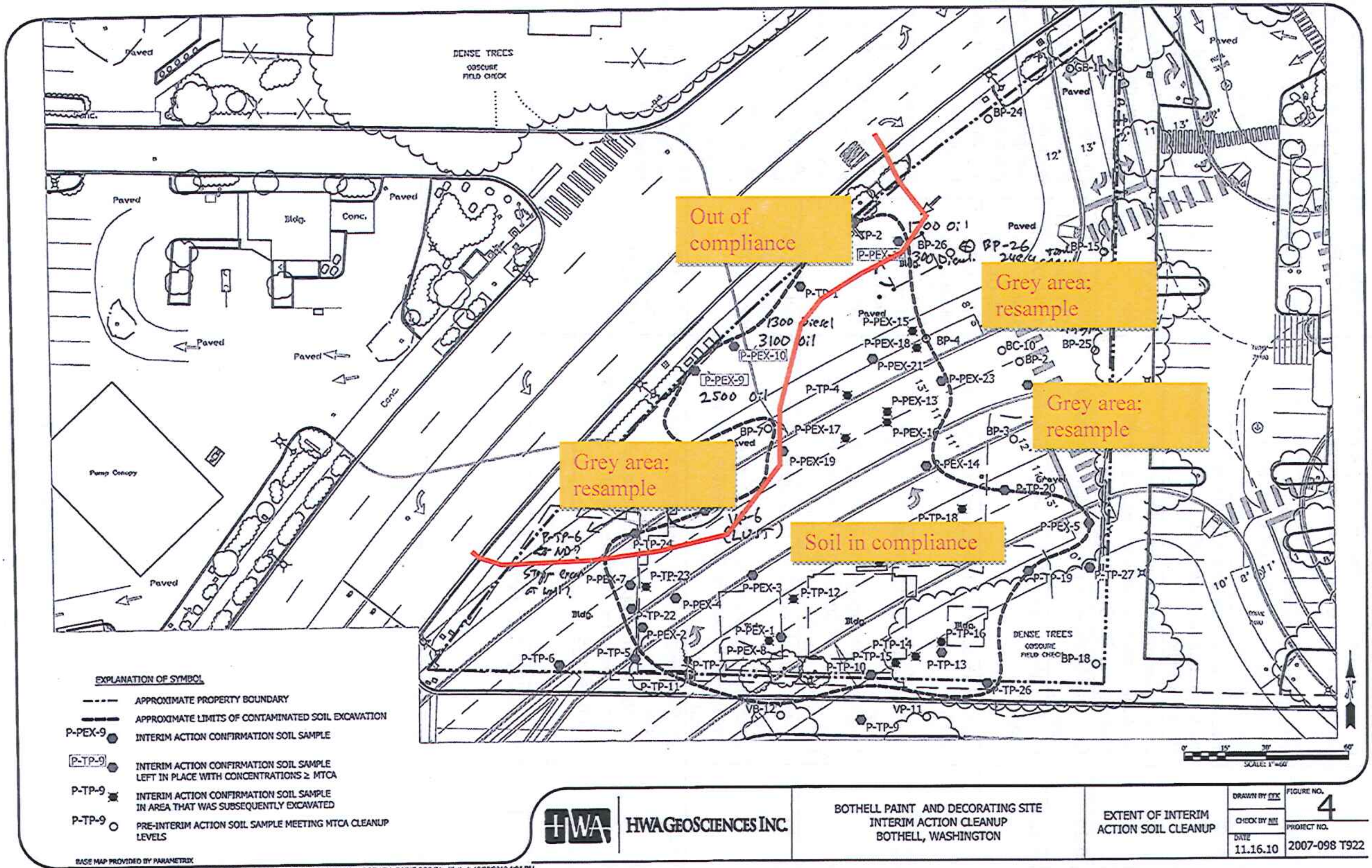
ATTACHMENT 1

Information and Rationale for Wells to be Installed

Well	Screened Depth (feet)*	Rationale	Analytical	ECOLOGY COMMENTS
A	15-25	Define edges of plume near Case property	HVOCs	
B	15-25			
C	15-25	Define edges of plume downgradient of Case property Also check for TPH detected at Speedy Auto Glass	HVOCs TPH VOCs SVOCs, Metals	Location should be downgradient of Speedy Auto LUST near sidewalk. Unknown nature of LUSTshould require broader analytical suite
D	10-20	Define edges / relationship of both plumes. Also check for TPH, detected at Schucks and Grease Monkey, at low concentrations	HVOCs TPH	Location should be in area of known impacts, which from archival review appears to be in the recovery trench area at south portion of property.
E	10-20	Delineate HVOCs migrating along roadway – may include completions within utility trenches, after roadway is vacated Also check for TPH from Bothell Landing and detected in roadway by CDM	HVOCs TPH Metals (As, Cd, Cr, Pb)	This does not include any additional wells that might be installed to supplement the solvent source investigation or expedited remedial action to address plume discharge into the river.
F	10-20			
G	10-20			
H	5-20 30-50	Delineate edge of BSC plume Delineate vertical extent of solvent plume Confirm TPH cleanup in ground water at Hertz	HVOCs TPH As	Shallow and deep wells to assess vertical extent of solvent plume(s)
I	5-20			Two existing wells at south half should also be sampled and analyzed similarly.
J	5-20	Delineate edge of plume(s) Confirm TPH cleanup in ground water at Bothell Landing	HVOCs TPH Metals (As, Cd, Cr, Pb)	
K	5-20			
L	10-20	Delineate downgradient edge of plume(s) – if HVOCs > cleanup levels, will need to monitor further downgradient	HVOCs	
M	10-20 30-50			
N	10-20 30-50	Delineate edge of BSC plume	HVOCs	
O	5-20	Confirm TPH cleanup in ground water at Bothell Landing	HVOCs TPH Metals (As, Cd, Cr, Pb)	
P	5-20	Check for TPH detected at Grease Monkey within footprint of former gas station building	HVOCs TPH Metals (As, Cd, Cr, Pb)	
Q	5-20 30-50	Investigate off-property migrations of contaminants in shallow and deeper confined aquifers at the Former Hertz property	HVOCs TPH Metals (As, Cd, Cr, Pb)	Dissolved HVOC plume and possible DNAPL migration from BSC site. TPH and associated impacts from Schucks site.

R	5-20 30-50	Investigate off-property migrations of contaminants in shallow and deeper confined aquifers at the Former Hertz property	HVOCs TPH Metals (As, Cd, Cr, Pb)	Dissolved HVOC plume and possible DNAPL from BSC site. TPH and associated impacts from Schucks site.
S	5-20	Investigate off-property migrations of contaminants from Bothell Chevron (Haynes Union 76) site	TPH, VOCs As	• Groundwater monitoring at the Paint & Decorating site may be a separate program from the other sites to the E/NE, unless subsequent monitoring shows that the plumes are larger than expected or that commingled plumes overlap on this property, or if the decision is made to make the sampling program part of the area-wide study for logistical or economic purposes. • Existing wells also to be sampled for agreed upon contaminants. From document review, these would be TPH, Metals (As, Cd, Cr, Pb). • Wells V, W, X were suggested in DCAP rev. 1 (Parametrix 2009) apparently as downgradient confirmation wells from IA excavation areas.
T	3-18	Investigate off-property migrations of contaminants from Bothell Chevron (Haynes Union 76) site	TPH, VOCs, SVOCs, As	
U	5-20	Investigate off-property migrations of contaminants from MPI Insurance (Mobil Station) and BSC	TPH, VOCs, As	
V	5-20	Confirm Metals and TPH cleanup in ground water	VOCs, SVOCs, TPH	
W	3-13	Confirm Metals and TPH cleanup in ground water	TPH, VOCs Metals (As, Cd, Cr, Pb)	
X	2-12	Confirm Metals and TPH cleanup in ground water	TPH, VOCs Metals (As, Cd, Cr, Pb)	
Y	2-12	Confirm Metals and TPH cleanup in ground water Investigate off-property migrations of contaminants from Bothell Chevron (Haynes Union 76) site and 116th Group	TPH, VOCs Metals (As, Cd, Cr, Pb)	
Z	2-12	Confirm Metals and TPH cleanup in ground water Investigate off-property migrations of contaminants from Bothell Chevron (Haynes Union 76) site and 116th Group	TPH, VOCs Metals (As, Cd, Cr, Pb)	
AA	5-20	Confirm Metals and TPH cleanup in ground water Investigate off-property migrations of contaminants from Bothell Chevron (Haynes Union 76) site	TPH, VOCs Metals (As, Cd, Cr, Pb)	

TPH = TPH-Gx/BTEX, TPH-Dx, TPH-Oil



EXPLANATION OF SYMBOL

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LIMITS OF CONTAMINATED SOIL EXCAVATION
- P-PEX-9 ● INTERIM ACTION CONFIRMATION SOIL SAMPLE
- [P-TP-9] ● INTERIM ACTION CONFIRMATION SOIL SAMPLE LEFT IN PLACE WITH CONCENTRATIONS ≥ MTCA
- P-TP-9 ✕ INTERIM ACTION CONFIRMATION SOIL SAMPLE IN AREA THAT WAS SUBSEQUENTLY EXCAVATED
- P-TP-9 ○ PRE-INTERIM ACTION SOIL SAMPLE MEETING MTCA CLEANUP LEVELS

BASE MAP PROVIDED BY PARAMETRIX

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T210.DWG <BOTHELL PAINT GPS F4> Plotted: 12/20/2010 1:04 PM

HWA GEOSCIENCES INC.

BOTHELL PAINT AND DECORATING SITE
INTERIM ACTION CLEANUP
BOTHELL, WASHINGTON

EXTENT OF INTERIM
ACTION SOIL CLEANUP

DRAWN BY EEK
CHECK BY NH
DATE 11.16.10
FIGURE NO. 4
PROJECT NO. 2007-098 T922

APPENDIX L

DATA QUALITY ASSESSMENT

(ON CD)

INTRODUCTION

This appendix presents a data quality assessment for the former Bothell Paint and Decorating site remedial investigation soil and ground water samples collected between the winter of 2014 and spring 2015. A data quality assessment of soil samples collected during interim action soil cleanups is presented in HWA (2011 and 2014).

Quality is the degree to which a set of inherent characteristics fulfills project requirements. Quality assurance (QA) is the processes of auditing the project's quality requirements and the results from quality control measurements to ensure appropriate quality standards are used. Quality control (QC) is the process of monitoring and recording results of executing the project quality activities to assess performance and to recommend necessary changes (PMI, 2008).

The principal ingredients that make up suitable data quality or "good data" are (Flory, 2000):

1. **Clearly stated measurement purposes:** Must include the chemical compounds to be analyzed; the sample matrices to be submitted; the intended use of the data, and the associated detection limits, accuracy, and precision required.
2. **Data management:** Refers to sample tracking (chain-of-custody) and associated activities that guarantee the laboratory results are associated with the correct sample.
3. **Sampling:** Includes a technically valid sampling plan that is correctly implemented to properly collect, identify, preserve, store and prepare samples for analysis.
4. **Analytical method:** Must have sufficient selectivity, detection limits, accuracy and precision to be technically valid.
5. **Quality control samples:** Must include sufficient quality control samples to support the necessary statements of accuracy, precision, and detection limits. These include blanks (field, trip, laboratory, reagent), duplicate measurements, matrix spikes, laboratory control samples, and performance evaluation samples.
6. **Quality control limits:** Includes clearly stated acceptable limits for quality control samples such as allowable blank contamination; precision of duplicate samples; and accuracy of matrix spikes, performance evaluation samples and laboratory control samples. Calibration frequency and linearity may also be included.
7. **Documentation:** Must be comprehensive enough to allow a third party evaluator to independently verify the suitability of the sample data.

The process of verifying the suitability of the data is termed data quality assessment. Data quality assessment is a determination of the suitability of the data for the intended use. It includes the four major tasks of (a) data management, (b) data validation, (c) data qualification/review (flagging), and (d) the determination of suitability. Data management includes determining the completeness of the data documentation. Environmental data validation primarily entails checking to see if the quality control requirements of the method have been met. Data qualification is the application of flags to the data that reflect the failures found during validation. The final determination of suitability must consider the technical validity of the data as well as the data qualifiers and be consistent with the intended use of the analytical data (Flory, 2000).

There were two components to the data quality program for the former Bothell Paint and Decorating site remedial investigation: field and laboratory. Both components followed Washington Department of Ecology guidance (Ecology, 2004). Also, the remedial investigation work plan (HWA, 2009) specified the sample collection procedures and analysis, and defined the data quality objectives (DQOs) and criteria for the independent action cleanup.

FIELD QC METHODS

Assessment of field QC methods and data revealed no deviations from the remedial investigation work plan (HWA, 2009). Field QC included proper documentation of field activities in a field log book and daily field reports that provided a daily record of significant events, observations, deviations from the sampling plan and measurements collected during the field activities. Field personnel followed standard QC procedures to collect and transport samples including collection of duplicate samples, decontamination of reusable sampling equipment between samples, labeling samples, and following chain of custody procedures to transport samples to the laboratory. Field personnel photographically documented significant events and observations during the independent action cleanup.

LABORATORY QC METHODS

OnSite Environmental Inc. of Redmond, Washington performed all sample analyses. OnSite Environmental is accredited by the Washington Department of Ecology (Accreditation #C591-14) for all analyses performed for the remedial investigation.

Specific laboratory QC consisted of the following (OnSite Environmental, 2012; Ecology, 2004):

- **Sample Batching.** A batch consisted of up to twenty samples in addition to any quality control samples that were required. Samples in a batch may have been collected at different sites by different clients of OnSite Environmental. The samples were extracted, digested, and prepared for analysis within a twelve-hour window. If more than twenty samples were to be extracted, a second batch of quality control samples was generated.
- **Method Blanks.** Method blanks were used to ensure that the extraction and analysis procedures did not contribute contamination to the analysis. Method blanks were prepared and analyzed in the laboratory to document the response of the measurement system to a sample containing effectively none of the analyte of interest. A positive blank response can be due to a variety of factors related to the procedure, equipment, or

reagents. Unusually high blank responses indicate laboratory contamination. The method blank response becomes very important when the analyte concentration is near the detection limit.

- **Spike Blanks.** A spike blank is a laboratory QC sample prepared by adding a known amount of the target analyte(s) to a laboratory blank sample. This is a measure of the accuracy of the test procedure. If an analyte for any spike blank was outside of quality control criteria, then that particular analyte was evaluated and actions were taken to bring the analysis into control.
- **Duplicate Samples.** Duplicate samples were used to ensure that sample results could be reproduced in a precise manner.
- **Surrogates.** Surrogate compounds are compounds similar to the analytes of interest that were added to the sample at a known concentration in order to track the accuracy of the sample extraction and analysis. Some methods for organics analyses specify that all samples, including QC samples, be spiked with surrogate compounds at the start of the procedure. Because surrogate compounds are not expected to be present in the samples, they give analytical responses that can be distinguished from those of the analytes of interest. Surrogate percent recoveries (defined below) provided an estimate of accuracy for the entire analytical procedure. The standard deviations of surrogate results provided an estimate of analytical precision, while the mean percent recoveries indicated whether or not the sample results were biased.
- **Spiked Blank Duplicates.** These were a second laboratory spiked blank laboratory QC sample. The difference in the laboratory's recovery of the spiked blank and spiked blank duplicate was a measure of analytical precision, and was reported as relative percent difference (RPD) as defined below.
- **Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples.** Matrix spike samples were used to ensure the analytes of interest could be accurately recovered from the sample matrix. The matrix spike duplicate was also used to ensure the analytes could be repeatedly recovered in an accurate and precise manner.

Analytical Accuracy and Precision

Routine laboratory QC analyses provided information about accuracy and precision. The types of quality control samples differed depending on the method specifications. Analytical accuracy was assessed through the surrogate, spike blank, and matrix spike analysis as specified by the analytical method. Accuracy was expressed as percent recovery:

$$\text{Percent Recovery (\%R)} = 100*(X_s/C_t)$$

Where X_s was the observed concentration of the analyte, and C_t was the true concentration of the analyte. The acceptable range for accuracy was determined by the method or by control charting of actual laboratory samples. A control chart is a graphical representation of the precision of QC results showing whether the measurement system is in statistical control. The laboratory analyst was responsible for verifying that the surrogate, spike blank and MS/MSD percent recoveries meet the quality control limits.

Analytical precision was assessed through analysis of the sample duplicates or matrix spike duplicates as specified by the analytical method. Precision was expressed as relative percent difference:

$$\text{Relative Percent Difference (RPD)} = 100*(X_1-X_2)/((X_1+X_2)/2)$$

Where: X_1 was the concentration in the first duplicate sample and X_2 was the concentration in the second duplicate sample. The acceptable range for precision was determined by the method or by control charting of actual laboratory samples. The analyst was responsible for verifying that the duplicate or MS/MSD recoveries meet the quality control limits.

Practical Quantitation Limits and Method Detection Limits

OnSite Environmental reported all analytical results for the remedial investigation as practical quantitation limits (PQLs). PQLs are the lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. OnSite Environmental’s routine PQLs for all independent action analyses were lower than regulatory ground water cleanup levels thus ensuring confirmation of successful cleanup. OnSite Environmental conducts studies annually for all accredited test methods to determine its PQLs.

Method detection limits (MDLs) are the lowest concentration that can be detected by an instrument with correction for the effects of sample matrix and method-specific parameters such as sample preparation. OnSite Environmental conducts studies annually for all accredited test methods to determine its method detection limits. MDLs are defined at 40 CFR Part 136 as three times the standard deviation of replicate spiked analyses. An analytical PQL is generally 5-10 times the MDL. MDLs are only a measure of the ability of the test procedure to generate a positive response and have nothing to do with the accuracy of that response (Quality Assurance Associates, 2010).

DATA VERIFICATION

The analyses performed for the remedial investigation included:

- NWTPH-Gx - Gasoline range petroleum hydrocarbons using Ecology Method NWTPH-Gx
- NWTPH-Dx - Diesel and oil range petroleum hydrocarbons using Ecology Method NWTPH-Dx

- BTEX - Benzene, toluene, ethylbenzene, and xylenes using EPA Method 8021
- RCRA 8 Metals - Arsenic, barium, cadmium, chromium, lead, selenium, silver using EPA Method 6010B and 6020; and mercury using EPA Method 7471A

For the remedial investigation three soil analyses were performed (BPMW-4-14, BPMW-5-5, and BPMW-6-10) and 27 ground water analyses. Soil analytical data are summarized in Table 2 and ground water analytical data in Table 3 of the main body of the RI/FS/DCAP. Verification of the data included checking holding times, checking that the laboratory performed the analyses requested on the chain of custody form, and that the laboratory's QC results were within established control limits. Holding times, surrogate percent recoveries, method blank analytical results, lab duplicate RPDs, matrix spike/matrix spike duplicate percent recoveries and RPDs, and spiked blank/spiked blank duplicate percent recoveries and RPDs were all within control limits with the following exception:

- **Ground water sample BPMW-6 collected 12/19/14:** The dissolved metals field filter sample for the EPA 200.8 analysis was received containing solid material. The sample was digested according to OnSite Environmental standard operating procedure. HWA thinks that this QC issue may have resulted in elevated arsenic and lead concentrations in this sample compared to other ground water samples collected from this well. In particular, the dissolved lead concentration (27 µg/L) was much higher than the concentrations reported for other samples collected from well BPMW-6 and also exceeded the MTCA ground water cleanup level of 15 µg/L for lead.

EVALUATION OF FIELD DUPLICATE SAMPLE RESULTS

Field duplicate samples were collected at an approximate frequency of one duplicate per 27 ground water samples – a frequency slightly less than the ratio of one duplicate per 20 samples specified in the remedial investigation work plan (HWA, 2009). Duplicate samples were collected from three adjacent Agreed Order sites (Bothell Hertz, Landing, and Riverside) at a frequency greater than one per 20, resulting in a net duplicate frequency still better than one per 20. Inspection of Table 3 indicates good agreement between duplicate sample and primary sample results.

TRIP BLANK RESULTS

Trip blanks are VOA vials filled with deionized water that were transported, stored, and handled in the same manner as VOA vials for BTEX analyses. Volatile organic compounds being detected in the analysis of a trip blank indicates poor sample handling techniques in the field. Inspection of Table 3 indicates no volatile organic compounds were detected in any of the trip blank samples.

PROJECT DOCUMENTATION AND DATA MANAGEMENT

Field personnel used bound waterproof field notebooks to record significant events and observations during the remedial investigation. Entries were made in waterproof ink or pencil, signed, and dated. Field personnel also completed daily field reports and forwarded copies of the field report to City of Bothell representatives. All field logs, figures, and records are retained in project files at HWA's office.

Digital photographs taken of field activities and significant events are stored on HWA's computer system with the following information noted:

- Date, time, and location of photograph taken
- Description of photograph taken
- Reasons photograph was taken
- Viewing direction

Original laboratory certificates containing analytical results and laboratory QC data are documented in Appendix C of the RI/FS/DCAP. An electronic copy of each laboratory certificate is stored on HWA's computer network server as PDF files in the project folder. In addition, OnSite Environmental's Electronic Data Deliverables (EDD) packages for all analytical results are stored on HWA's computer network server as Microsoft Excel spreadsheets in the project folder. HWA routinely backs up its network servers.

SUMMARY

- Field QC procedures were followed.
- The voluminous field and laboratory data generated during the remedial investigation are technically complete, accessible, and efficiently handled.
- The one quality control issue noted above appears to have compromised the analytical accuracy of the dissolved lead data for the ground water sample collected from well BPMW-6 on 12/19/14 and the result qualified as being biased high.
- All reported data should be considered valid as qualified and acceptable for further use.

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APPENDIX M

COST ESTIMATES

Bothell Paint and Decorating FS
Opinion of Probable Construction Cost
Source Removal

Item No.	Description		Unit	Plan Quantity	Unit Cost	Total Amount
1	Mobilization, H&S, etc.		LS	1	$5,000	$5,000
2	Site prep		LS	1	$2,500	$2,500
3	Excavate & dispose contaminated soils		Ton	100	$90	$9,000
4	Import, place and compact clean fill		Ton	100	$50	$5,000
5	Shoring		LS	1	$20,000	$20,000
6	Traffic control, roadway closure		LS	1	$20,000	$20,000
7	Premium for weekend and night work		LS	1	$20,000	$20,000
8	Dewatering		LS	1	$10,000	$10,000
9	Repair SR 522 roadway		LS	1	$15,000	$15,000
	Sub-Total					**$106,500**
10	Engineering, PS&E, permitting, construction monitoring	10%	EST	1	$10,650	$10,650
11	WSST	9.6%	EST	1	$10,224	$10,224
12	Contingency	10%	EST	1	$10,650	$10,650
	Total					**$138,024**

Bothell Paint and Decorating FS
Opinion of Probable Construction Cost
In Situ bioremediation

Item No.	Description		Unit	Plan Quantity	Unit Cost	Total Amount
1	Mobilization, H&S, etc.		LS	1	$2,500	$2,500
2	Utilities, prep, etc.		LS	1	$2,500	$2,500
3	In situ injections		EA	10	$1,500	$15,000
4	Confirmation monitoring		LS	1	$5,000	$5,000
5						$0
6						$0
7						$0
	Sub-Total					**$25,000**
8	Engineering, PS&E, permitting, construction monitoring	10%	EST	1	$2,500	$2,500
9	WSST	9.6%	EST	1	$2,400	$2,400
10	Contingency	10%	EST	1	$2,500	$2,500
	Total					**$32,400**

Bothell Paint and Decorating FS
Opinion of Probable Construction Cost
Engineering & Institutional Controls

Item No.	Description		Unit	Plan Quantity	Unit Cost	Total Amount
1	Environmental covenant / legal		LS	1	$5,000	$5,000
2	Monitoring, reporting		YR	2	$16,000	$32,000
3			EA	10		$0
4			LS	1		$0
5						$0
6						$0
7						$0
	Sub-Total					**$37,000**
8	Engineering, PS&E, permitting, construction monitoring	0%	EST	1	$0	$0
9	WSST	0.0%	EST	1	$0	$0
10	Contingency	10%	EST	1	$3,700	$3,700
	Total					**$40,700**

Bothell Service Center FS
Opinion of Probable Construction Cost
Monitored Natural Attenuation

Item No.	Description		Unit	Plan Quantity	Unit Cost	Total Amount
1	Monitoring, reporting		YR	2	$16,000	$32,000
2						$0
3						$0
4						$0
5						$0
6						$0
7						$0
	Sub-Total					**$32,000**
8	Engineering, PS&E, permitting, construction monitoring	0%	EST	1	$0	$0
9	WSST	0.0%	EST	1	$0	$0
10	Contingency	10%	EST	1	$3,200	$3,200
	Total					**$35,200**