FINAL REMEDIAL INVESTIGATION / FEASIBILITY STUDY REPORT BOTHELL LANDING SITE BOTHELL, WASHINGTON

HWA Project No. 2007-098-2020

Prepared for
City of Bothell

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HWA GEOSCIENCES INC.

- *Geotechnical Engineering*
- *Hydrogeology*
- *Geoenvironmental Services*
- *Inspection & Testing*

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1. INTRODUCTION

This final Remedial Investigation/Feasibility Study Report (RI/FS) has been prepared for the Bothell Landing site (Site) located in Bothell, Washington. General Site location and vicinity are illustrated on Figure 1. The RI/FS was conducted under Agreed Order DE 6294, dated February 3, 2009 as amended by Amendment No. 1 to Agreed Order No. DE 6294, 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 preparation of an RI/FS report, followed by the development of a Cleanup Action Plan (CAP) after approval of the final RI/FS report.

The Bothell Landing property was entered in to the Voluntary Cleanup program (VCP) prior to the City's ownership around 1999. The property owners at the time filed a restrictive covenant in January 2002 acknowledging that impacted soils and ground water remained at the property. Ecology issued an interim No Further Action (NFA) determination for the Site in 2002 for soils only. The Site was removed from the VCP in 2006 due to the lack of activity, and the NFA determination rescinded due to cleanup exceedances.

The City acquired the Bothell Landing 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, 2013/2014, 2015, and 2017 at the Site.

RI activities were performed between February 2013 and March 2015 following Ecology's approval of the final RI/FS Work Plan and Amendment No. 1, and in accordance with the Ecology-approved project work plans (HWA 2009a, HWA 2011b). A copy of the final RI/FS Work Plan and Amendment No. 1 are included in Appendix A. Due to accessibility issues, Ecology approved a phased approach to conduct limited RI's whose results would ultimately be incorporated in this final RI/FS report. This report documents the results of the RI and interim action soil cleanups conducted in 2010, 2013/2014, 2015, and 2017 at the Site. The City owns the Site, a portion of which accommodates the newly realigned State Route (SR) 522 and the southward extension of Bothell Way NE. Figure 2a depicts the alignment of SR 522 and Bothell Way NE through the Site and adjacent properties.

The Ecology project coordinator is Jerome Cruz, 3190 160th Ave SE, Bellevue, WA 98008, (425) 649-7094. The Project Coordinator for the City of Bothell is Steven Morikawa, 9654 NE 182nd Street, Bothell, WA 98011, (425) 486-2768, ext. 4443.

The interim action total petroleum hydrocarbon (TPH) soil cleanups conducted prior to and concurrent with this RI were completed in several phases; the first one in 2010, before the roadway realignment, the second one in 2013/2014 after the roadway realignment, one in 2015 to address limited soils that were not previously accessible, and one in 2017 to address limited soils tat were discovered in 2016.

Phasing of the first two cleanups was necessary in order to effectively manage access to TPH 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 pursuant to the terms and conditions of Amendment No. 1 to Agreed Order Number DE 6294 as amended on June 9, 2010 between Ecology and the City. Tasks performed to date include:

1. Preparation and submittal to Ecology of the *draft 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 Landing Remedial Investigation/Feasibility Study,* and associated *Draft Cleanup Action Plan* which have not been finalized or approved pending completion of interim actions and monitoring (Parametrix, 2009a, b)
5. Preparation and submittal to Ecology of an *Interim Action Work Plan* (Parametrix, 2010b)
6. Completion of the 2010 initial phase of interim action soil cleanup and subsequent reporting (*Documentation of Interim Action at Bothell Landing Site*, HWA, 2011a)
7. Preparation and submittal to Ecology of the *Remedial Investigation Feasibility Study Final Work Plan, Bothell Landing Site Bothell, Washington*, September 19, 2011 (HWA, 2011b) containing Amendment No. 1 to the Agreed Order adopting the approved area-wide network (dated September 19, 2011)
8. Preparation and submittal to Ecology of a Letter Report: *Bothell Landing Interim Action Status Report, January – March 2014, Bothell, WA* dated April 7, 2014 (HWA, 2014a)
9. Completion of the 2013 and 2014 phase of interim action soil cleanups
10. Preparation and submittal to Ecology of *Interim Action Cleanup Action Report, Bothell Landing Site, Bothell, WA* dated September 2, 2014 (HWA, 2014d)
11. Completion of four Quarterly Ground Water Letter Reports submitted as part of the area-wide ground water monitoring task being performed under the Bothell Landing Agreed Order (HWA, 2014c, e; 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 Bothell Landing 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 at a location generally south of the intersection of SR 522 and SR 527 as they existed at the time the Agreed Order was signed, see Figure 2c. The Site is in the vicinity of a former 2.8-acre property where petroleum hydrocarbon impacts were discovered. The legal description of the former 2.8-acre property is:

> Lot A, City of Bothell Short Plat No. D-80-079, recorded under King County recording number 8201120582, being a portion of Tracts 2 and 3, Wilson Gardens Tracts, according to the plat thereof recorded in Volume 22 of Plats, page 91, in King County, Washington, AND, Lot B, City of Bothell short plat No. D-80-079, recorded under King County recording number 8201120582, being a portion of Tracts 2, 3, and 4, Wilson Gardens Tracts, according to the plat thereof recorded in Volume 22 of Plats, page 91, in King County, Washington.

The 2.8-acre parcel no longer exists in its original configuration, although the City currently owns that land, which includes public rights-of-way for the newly constructed and re-aligned SR 522 and Bothell Way NE, and portions of three newly formed parcels on the east, west, and south sides of the new "T" intersection, two of which include portions of the now vacated, former SR 522 roadway. Current City-owned parcels that now contain a portion of the former 2.8-acre Bothell Landing parcel are:

- Northeast corner – Lot E, F, G
- Northwest corner – Lot D
- South part – City park land (Park at Bothell Landing)

Former addresses on the original 2.8-acre parcel where the intersection now lies include 18120, 18126, and 18132 Bothell Way, and 10001 Woodinville Drive, Bothell, Washington. Ecology's Facility Site ID for the Site is # 73975762. The Site is noted as a Brownfields Site in Ecology's Integrated Site Information System (ISIS) database. The latitude of the site is generally 47.7591 and the longitude is -122.2077.

The City acquired the original 2.8-acre Bothell Landing property through two property purchases, 1) in 1998 for roadway widening and construction of a small park (Rotunda Park), and 2) in 2008 for construction of the SR 522 realignment. A 48-inch diameter concrete culvert conveys Horse Creek through the northern and eastern portion of the property, and daylights just beyond the east property boundary. Flow to this drainage will be largely re-routed to a new drainage system (consisting of pipes and open channel segments) constructed some 300 feet west of the old Horse Creek channel, sometime in 2016. Figure 2a shows the former and new locations of the Horse Creek Channel.

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

- Downtown Core - residential uses allowed
- 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.

Prior to the new roadway construction and interim actions, the property was occupied by two, single-story restaurants in the northeast and northwest corners of the property and two, multi-tenant retail and office buildings in the southern portion of the property. The remainder of the property was covered with asphalt-paved parking and landscaping. The buildings were demolished in May 2010 in advance of the soil cleanup work and subsequent construction of the new roadway. The remnant portions of the property and vacated former SR 522 roadway have been conjugated into new City parcels and are being sold to private parties for redevelopment; the southern portion of the property will become a part of the expanded park.

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*." Information about Site boundaries is obtained and evaluated through the RI process. Whereas the Site was originally defined as a 2.8-acre property (which no longer exists due to re-platting of parcels and construction of the new roadways) the findings of this RI demonstrate that hazardous substances at the Bothell Landing Site have come to be located in the area identified on Figure 2a. This boundary includes the area of petroleum impacts which has largely been cleaned up, and the area within the former 2.8-acre Bothell Landing property which contains arsenic in ground water exceeding cleanup levels. Adjoining areas which also contain arsenic in ground water exceeding cleanup levels, although contiguous with the Bothell Landing Site, will be included in other Agreed Order sites, for administrative purposes.

1.2 OBJECTIVES

The objective of this RI/FS report is to meet the requirements of the Model Toxics Control Act (MTCA) Cleanup Regulation (Washington Administrative Code [WAC] 173-340) to characterize the Site and evaluate 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, and 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 a FS, 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 proposed cleanup alternatives will then be detailed in a final dCAP.

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 Kleinfelder (1999), Riley Group (2007), ECOSS (2008), HWA (2007, 2009a), and Parametrix (2009a). The following is a summary of those assessments. \

Past owners of the former 2.8 acre Bothell Landing property include the following:

- Richfield Oil (ARCO) – 1936 to 1954
- Signal Brand Petroleum – 1954 to 1974
- Vintage Sambo's Restaurant – 1976
- Beta Holdings Limited Partnership / Beta Commercial Properties – ca. 1998 - 2009
- City of Bothell – 2009 to present

Two service stations were previously located at the northeast and northwest corners of the Site between the 1930's and 1970's. The stations were demolished during site reconstruction in the 1970's and the underground storage tanks (USTs) associated with the stations were reported to have been removed (Riley Group, 2007).

Prior to 2009, the former 2.8 acre Bothell Landing property was occupied by two, single-story restaurants in the northeast and northwest corners of the property and two, multi-tenant retail and office buildings in the southern portion of the property. The remainder of the property was covered with asphalt-paved parking and landscaping. The buildings were demolished in May 2010 in advance of soil cleanup work and subsequent construction of the new roadway. The remnant portions of the property and vacated former SR 522 roadway have been conjugated into new City parcels and are being sold to private parties for redevelopment; the southern portion of the property will become a part of the expanded park. The restaurants and retail buildings were excluded as possible sources of contamination, whereas the service stations were not. Extensive subsequent RI explorations confirmed this.

In 1998, the City purchased the north-central portion of the site at 10001 Woodinville Way as part of a roadway widening and the Rotunda Park project. In the course of site excavation, five USTs and associated petroleum-affected soils were discovered. The USTs were assumed to have been associated with one of the former service stations. The City removed approximately 385 tons of petroleum-affected soils from the Site. Petroleum hydrocarbon and aromatic hydrocarbon concentrations remaining in the excavation sidewalls exceeded Ecology's Model Toxics Cleanup Act (MTCA) cleanup levels. The excavation was backfilled with clean imported soils. A plastic sheeting barrier was placed around the excavation limits to minimize recontamination of soil from adjacent impacted soils.

The remaining (non-City owned at the time) parcels comprising the site were investigated by Kleinfelder (1999) who identified gasoline, diesel, oil, and benzene in soil and ground water at the Site. The property owners at the time filed a restrictive covenant in January 2002 acknowledging that impacted soils and ground water remained at the property. Ecology issued an interim No Further Action (NFA) determination for the Site in 2002 for soils only. The Site was later removed from the Voluntary Cleanup Program in 2006 due to the lack of further activity, such as monitoring or remediation. The 2002 NFA determination was also rescinded at this time due to cleanup exceedances.

HWA performed a Phase II environmental site assessment in 2007. The assessment identified soils in the northern portion of the property (vicinity of the known UST releases) containing petroleum-related compounds (petroleum hydrocarbons, aromatic hydrocarbons, and semi-volatile organic compounds) exceeding Ecology MTCA Method A cleanup levels (Table 740-1 in WAC 173-340-900). Ground water at the Site apparently was affected by multiple sources. Petroleum hydrocarbon impacts to ground water from historic UST releases at the property appeared to be limited. Chlorinated solvents were detected in ground water samples at the northwest and northeast portions of the property. These detections appeared to be from an upgradient source located north-northeast of the Site (the Ultra Custom Care Cleaners site, which is under a separate Agreed Order between the City and Ecology.)

Parametrix's 2009 remedial investigation concluded that petroleum contamination in soil and ground water at the former gas station area (described in Section 1.4) was relatively well defined within the Site boundaries; however, soil contamination extended into the SR 522 right-of-way where it was less well defined. The extent of the petroleum-contaminated ground water plume was limited to the vicinity of the Rotunda Park (described in Section 1.1). The backfill around the Horse Creek culvert (see Figure 2a) did not appear to be a preferential pathway for contaminated ground water. Surface water in the open channel portion of Horse Creek did not appear to be significantly affecting nearby surface soils or ground water. Halogenated volatile organic compounds (HVOCs) including tetrachloroethene (PCE), trichloroethene (TCE), and breakdown products, were present in ground water throughout the central and northern portions of the Site with concentrations generally below MTCA Method A cleanup levels (Table 720-1 in WAC 173-340-900). One location at the southeast corner of the Rotunda Park area contained vinyl chloride in ground water exceeding the MTCA cleanup level. Concentration distributions indicated that the HVOCs were migrating to the Site from an upgradient source (the Ultra Custom Care Cleaners site).

The 2011 Final RI Work Plan identified additional data gaps associated with defining the nature and extent of HVOC impacts from the upgradient HVOC plume, other potential off property sources of TPH impacts, and on-property TPH impacts. The 2011 Final RI Work Plan and subsequent discussions and correspondence with Ecology also defined an area-wide ground water monitoring well network to address the Bothell Landing and several other nearby sites under Agreed Orders.

1.4 CURRENT AND PLANNED SITE USE

. Currently, the Site is occupied by existing and new roadways, and vacant land which is unpaved and hydroseeded. The land not under the roadway will be redeveloped as part of the City's overall Downtown Revitalization Plan. Future use of portions of the Site not under the new roadways is expected to be mixed use (possibly retail, parking, and/or park amenities) under the City's Downtown Revitalization Plan (Parametrix, 2010b).

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

- North of SR522: Downtown Core - residential uses allowed
- 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.

No changes to the current zoning are anticipated.

A 48-inch diameter concrete culvert conveys Horse Creek through the northern and eastern portion of the former 2.8 acre Bothell Landing property. 1n 2016, Horse Creek flows were re-routed to a new open channel drainage system (consisting of pipes and open channel segments) constructed some 300 feet west of the old Horse Creek alignment Figure 2a shows the former and new locations of the Horse Creek Channel.

2. ENVIRONMENTAL SETTING

2.1 PHYSICAL CONDITIONS / TOPOGRAPHY

The Site is predominantly flat. The west property boundary adjoins the Former Bothell Hertz Facility that was previously occupied by a commercial rental business with documented and suspected hazardous material releases to soil and ground water (HWA, 2008). The east property boundary consists of vegetated/landscaped ground sloping down to Horse Creek. Horse Creek is an urban, active, fish-bearing stream discharging to the Sammamish River just beyond the southern boundary of the Site, although flows to this outfall have largely been re-routed to a new drainage system (consisting of pipes and open channel segments) constructed some 300 feet west of the old Horse Creek channel. Figure 2a shows the former and new locations of the Horse Creek Channel. The creek is conveyed through storm drain pipes upgradient of the Site. A 48-inch diameter concrete culvert conveys Horse Creek through the northern and eastern portion of the Site, daylighting just beyond the east property boundary. The Sammamish River is between 175 and 250 feet south of the Site and separated from the property by NE 180th Street and the Park at Bothell Landing, a City park (Parametrix, 2009a).

Surface water and sediment sampling of Horse Creek (the Horse Creek located on and adjacent to the Site and referred to in the preceding paragraph) were not conducted as part of this RI, and were not included in any of the RI work plans submitted to Ecology, because Site history and exploration results did not suggest any surface water or sediment impacts related to Site sources (Parametrix, 2010a). Neither petroleum or HVOCs contamination was detected in the three wells/borings located closest to the original Horse Creek (BLBH-24, MW-1, and BLMW-5), indicating that ground water from the Site potentially discharging to Horse Creek is not contaminated. Horse Creek is an urban drainage and as such, likely contains a certain level of petroleum hydrocarbons, metals, and other contaminants from sources throughout the entire drainage basin. These are the result of runoff from pollution generating surfaces such as roadways and parking lots. Prior to 2010, petroleum hydrocarbons and solvents were detected seasonally and sporadically at the outfall of the Horse Creek culvert into the Sammamish River, located south of the Bothell Landing Site. The source of the releases was never positively identified, but was suspected to originate at the former Northshore School District property located several hundred feet north of the Bothell Landing Site. After cleanup of the Northshore School District property in 2010, the releases stopped, confirming this theory.

2.2 GEOLOGY

Site-specific stratigraphy typically consists of approximately 5 to 8 feet of silty sand fill over alluvial soil consisting of interbedded silt and peat. Much of the fill material is likely dredged spoils placed on the property from realignment of the Sammamish River in the 1960s (HWA, 2008). Interbedded alluvial sand and silt was encountered between 8 and 20 feet below ground surface (bgs). Peat or silt beds with high organic content up to 2 feet thick are present within the alluvial soil, generally at depths greater than 10 feet bgs. These compressible, organic-rich beds appear to underlie much of the Site but may not represent a contiguous layer (Parametrix, 2009). Boring logs for various investigations are included in Appendix B.

2.3 HYDROGEOLOGY

Ground water in monitoring wells was encountered between approximately 3 and 9 feet bgs. The inferred direction of ground water flow is to the east-southeast toward the Sammamish River at a gradient, i, of 0.011 to 0.046 feet per foot. Ground water flow direction and contours are illustrated on Figure 3. Appendix C contains ground water gradient maps prepared on various dates, when more wells were present on the Site. The horizontal hydraulic conductivity, K, for the water-bearing zone was estimated to be 2.0 x 10-3 to 5.6 x 10-3 feet per minute (2.9 to 8.1 feet/day) using slug testing data collected during the remedial investigation field activities (HWA, 2009b). Assuming an effective porosity, ne, 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 / ne are estimated to range from:

2.9 ft/d x 0.011 / 0.2 = 0.16 feet/day = 58 feet/year to
8.1 ft/d x 0.046 / 0.2 = 1.9 feet/day = 677 feet/year.

3. INTERIM ACTION SOIL CLEANUPS

The interim actions were performed in order to allow for the construction of the realigned SR 522 roadway in newly remediated areas. These interim actions for contaminated soil at the Site included excavation and off-site disposal of all accessible impacted soils as documented in soil cleanup documents submitted to Ecology (refer to Section 1). The following sections describe the cleanup. The confirmation sampling results and findings obtained during the interim cleanups are included in this RI/FS report in Appendix D and E (on CD).

2010 Interim Action – The City engaged a construction contractor, Hos Brothers Construction of Woodinville, Washington to perform the first interim action soil cleanup in September and October of 2010. HWA monitored the cleanup activities and collected confirmation samples at the final limits of excavation. Prior to cleanup, the contractor demolished all the building slabs and parking lots and cleared and grubbed the former 2.8 acre property in preparation for the soil cleanup and subsequent construction of the SR 522/Bothell Way NE realignment.

2013/2014 Interim Action – The City engaged a construction contractor, Guy F. Atkinson Construction, LLC, (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 monitored the cleanup activities and collected confirmation samples at the final limits of excavation.

2015 Interim Action – The 2015 interim action soil cleanup removed a small amount of soil on private property which was not accessible during the prior cleanups.

2017 Interim Action – Due to discovery of one area with TPH in soil exceeding Site cleanup levels, the City engaged a construction contractor, Interwest Construction Inc. (Interwest) of Burlington, Washington to perform the last round of interim action soil cleanup. HWA monitored the cleanup activities and collected confirmation samples at the final limits of excavation.

3.1 PRE-CLEANUP CHARACTERIZATION

Prior to large scale excavation activities, HWA personnel conducted test pit characterization (i.e., "pot holing") to delineate clean overburden soils, and to assess the lateral and vertical extent of TPH and metals impacted soils with respect to previous investigations.

2010 Interim Action – HWA's 2010 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 Method B risk analysis are presented in Appendix F and summarized in Table 1.

Sixteen test pits were excavated between September 2nd and 20th 2010 using a rubber-tired backhoe operated by the Contractor. Test pits TP-17 through TP-21 were excavated on October 1, 2010 to investigate whether TPH contamination had migrated onto the Site from the adjacent Bothell Former Hertz Facility, in an area where the Contractor reported suspect soils in a utility trench. Figure 4 shows test pit locations. Test pits were excavated to a maximum depth of 8 feet bgs. HWA personnel collected a total of 38 representative soil samples at various depths within the test pits for chemical analysis.

2013/2014 Interim Action – Seven test pits were excavated in August, 2013 using a tracked excavator operated by the Contractor. Test pits TP-L1 through TP-L7 were excavated to investigate and delineate TPH contamination north of the former Rotunda Park location and within the former SR 522 / Bothell Way NE intersection. During utility work in 2012, an underground storage tank had been discovered in the north edge of the SR 522 roadway southeast of the former Grease Monkey property (HWA, 2012). Although a release was not documented in HWA's UST site assessment report, there was the potential for historical releases from the former service station located at that site (ECOSS, 2008; HWA, 2007a). Figure 4 shows test pit locations. Test pits were excavated to a maximum depth of ten feet bgs. HWA personnel collected a total of 16 representative soil samples at various depths within the test pits for chemical analysis.

Seven additional test pits were excavated in January, 2014 using a tracked excavator operated by Atkinson. Test pits TP-L8 through TP-L14 were excavated to investigate and delineate TPH contamination within the former SR 522 right-of way. Additionally, three test pits were completed in the City's 'Triangle Park' (the small triangular area between Main Street and the former SR 522 roadway at their intersection) to assess soil conditions at that location. Figure 4 shows test pit locations. Test pits were excavated to a maximum depth of nine feet bgs. HWA personnel collected a total of 21 representative soil samples at various depths within the test pits for chemical analysis.

HWA also collected nine soil samples during water line installation in February 2014. The water line was installed in Main Street and Triangle Park. Soil samples were collected between depths of four and 7.5 feet.

2015 Interim Action – The City completed the interim action soil cleanups in 2015 after obtaining access to a private property (which housed a Baskin Robbins Ice Cream shop) containing a small amount of impacted soil not accessible during the prior cleanups. Approximately 9 tons of soil were excavated from the area surrounding sample location L-PEX-85 and disposed of off site at the Republic/Rabanco landfill. Confirmation samples were all below cleanup levels.

2017 Interim Action – In July 2016, the City informed Ecology that as part of their due diligence, a prospective developer represented by Farallon Consulting (Farallon) had encountered petroleum contaminated soils during a Limited Subsurface Investigation on the on the eastern portion of the Bothell Landing Site. The City subsequently met with Ecology and submitted a “Residual Soil Excavation Work Plan” (October 12, 2016), thereafter receiving Ecology’s concurrence to implement the remediation work. The work consisted of excavation and off-site disposal of all impacted soils.

3.2 Soil Excavation

2010 Interim Action – The Contractor excavated contaminated soil at the Site between September 2 and 27, 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 or stockpiled met the preliminary 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 east to west during the 2010 cleanup. Approximately 784 cubic yards of clean overburden soil were excavated and stockpiled (and segregated to prevent cross-contamination using plastic sheeting) for later reuse. Contaminated soil was excavated approximately down to the contact with a peat horizon underlying the impacted soils, which was found to meet the cleanup levels. The approximate limits of 2010 soil excavation are shown on Figure 4. The final excavation was approximately 50 by 160 feet in its maximum width and length. The depth of the excavation ranged from approximately 5 to 14 feet bgs.

In 2010 along the northern property boundary, contaminated soil was left in place adjacent to the (then active) SR 522 roadway to protect the structural integrity of the active roadway and associated sidewalk and underground utilities. An abandoned 12-inch concrete storm drain pipe that apparently connected to the Horse Creek culvert was unearthed in the eastern extent of the excavation (Photo 2). This storm drain pipe was not identified on City utility plans, and appeared to have been abandoned as it did not convey flowing water or have stained interior sidewalls. The Contractor capped the storm drain pipe with quick setting concrete where it was exposed in the northeastern and southeastern sidewalls of the excavation.

In 2010 scattered buried debris in the soil (e.g., tires, rubber hose, broken concrete, bricks, lumber, metal, and glass) was unearthed in the western half of the excavation from about 8 to 10 feet bgs and lying immediately above the peat horizon. The soil associated with the buried debris had high TPH concentrations, primarily in the gasoline range.

In 2010 an 8-inch diameter concrete storm drain pipe was unearthed in the western sidewall of the excavation at 5 feet bgs in the vicinity of the Horse Creek culvert (Photo 5). This storm drain pipe apparently had never been put into service, as it was capped when unearthed. Because the original cap was inadvertently broken when uncovered, the Contractor capped the storm drain pipe again with quick setting concrete.

In 2010 the Contractor utilized a vactor truck and compressed air to excavate explorations along the Horse Creek culvert. This effort better defined the location of the culvert and its manhole access on the Bothell Landing site (Photo 7). As discussed in the following section (4.3), HWA also utilized the vactor truck explorations to evaluate potential impacts in the backfill surrounding the culvert.

For the 2010 cleanup the Contractor transported contaminated soil and debris to the CEMEX USA (formerly Rinker) Inert Materials Landfill facility in Everett, Washington for thermal desorption treatment followed by permitted landfill disposal. A total of 3,556.5 tons of soil were excavated and transported to the CEMEX facility.

2013/2014 Interim Action – The 2013 and 2014 interim action soil cleanups completed excavation of the remnant contaminated soils left in place adjacent to SR 522 in 2010 to protect the structural integrity of the active roadway and associated sidewalk and underground utilities. The Contractor excavated contaminated soil at the Site between October 2013 and May 2014. Soil remediation activities took place in several stages as roadways were abandoned and access was scheduled around realignments and other construction activities. Remediation west of Bothell Way NE took place in October, 2013, and remediation east of Bothell Way NE took place between January and May 2014.

During the 2013 and 2014 cleanups clean overburden soils were excavated and stockpiled on site for later reuse. Contaminated soil was excavated approximately down to the contact with a peat horizon and sandy silts underlying the site, which was found to meet the cleanup levels. The approximate limits of the 2013 and 2014 soil excavations are shown on Figure 4. The final excavation west of Bothell Way NE was approximately 50 by 50 feet in the vicinity of the former Rotunda Park location and extended northward approximately 20 feet wide and 80 feet long. Test pit and soil borings in the center of Bothell Way NE did not identify petroleum-affected soils, so the roadway was not excavated.

Additional excavation was completed along the east side of the Bothell Way NE roadway underlying the former SR-522 roadway and former Triangle Park. An area of approximately 100 by 100 feet was excavated between Bothell Way NE and Main Street, with an additional area under the former SR-522 excavated to the east, extending approximately 40 feet wide by 80 feet long. The depth of the excavations ranged from approximately six to 12 feet bgs.

For the 2013 and 2014 cleanups the Contractor transported contaminated soil and debris to the Cowlitz County Landfill in Longview, Washington. A total of 3,317.95 tons of contaminated soil were excavated and transported to the Cowlitz County Landfill permitted landfill disposal.

2015 Interim Action – The 2015 interim action soil cleanup removed a small amount of soil on private property which was not accessible during the prior cleanups. Approximately 9 tons of soil were excavated from the area surrounding sample location L-PEX-85 and disposed of off site at the Republic/Rabanco landfill. Figure 4 shows this location.

2017 Interim Action – After discovery of the area with remaining soil above cleanup levels, the City engaged Interwest Construction Inc. of Burlington, Washington to perform the interim action soil cleanup in January 2017. HWA personnel monitored the cleanup activities and sampled soil to confirm successful cleanup.

Interwest excavated contaminated soil at the Site on January 11 and 13, 2017. Confirmation soil samples were collected from the bottom of the remedial excavation on January 17, 2017. HWA personnel directed the cleanup based upon prior investigations and remedial excavation activities, 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.

Contaminated soil was generally excavated to depths ranging between 8.5 and 11 feet below ground surface (bgs), which was found to meet the cleanup levels. The approximate limits of soil excavation are shown on Figure 2. The apparent overlap of the 2017 excavation boundary with the former 2010 excavation boundary on the figure is due to the sloped excavations. The dashed lines represent top of sloped sidewalls. Impacted soils excavated in 2017 within the apparent 2010 excavation boundary were generally below the 2010 excavation limits.

Interwest excavated and transported 391.2 tons of soil to the CEMEX USA (formerly Rinker) Inert Materials Landfill facility in Everett, Washington for thermal desorption treatment followed by permitted landfill disposal.

3.2.1 UST Removal

On April 30, 2014, the Contractor uncovered a UST during excavation of contaminated soils near the former Triangle Park at the southeast corner of the roadway intersection. The UST contained no product or water, but did contain some soil. The UST was 300 gallons in capacity, and was of welded steel construction. Rust was observed on the surface of the UST, and evidence of small holes was observed. Vent, fill and distribution lines associated with the UST were not present at the time of the UST removal.

An HWA Washington Licensed Geologist/Certified UST Site Assessor observed the Contractor excavate soils around the tank, exposing the UST. The UST was removed and stored on site due to the ongoing soil excavation activities.

Clearcreek Contractors of Marysville, Washington (Clearcreek), a licensed UST decommissioning supervisor, removed the UST on May 2, 2014 with the assistance of the Contractor using a track-mounted excavator. The UST was heavily damaged during removal. Bothell Fire Department personnel inspected the UST prior to its removal from the site for off-site cleaning and disposal by Clearcreek. Figure 5 shows a detail of the UST area.

HWA performed a UST Site Assessment after the UST removal, and documented the soil conditions. Staining and odors were noted in the soils adjoining and immediately underlying the UST. Soils underlying the UST were excavated to a depth of approximately eight feet bgs as part of remedial activities. HWA collected two soil samples along the UST end and side and below the UST for characterization purposes (see Figure 4).

Table 2 presents the analytical results for the UST Site Assessment. Gasoline-range petroleum hydrocarbons and benzene exceeding MTCA Method A cleanup levels (Ecology, 2007) were detected in the soil sample immediately underlying the UST (L-TANK-BOT-8). The end and sidewall samples (L-TANK-E and L-TANK-S) contained diesel-range petroleum hydrocarbons at concentration below the MTCA Method A cleanup level of 2,000 mg/kg. Lead was detected in all three samples, but at concentrations below the MTCA Method A cleanup level of 250 mg/kg.

Additional soil excavation was completed in the vicinity of the UST as part of the remedial excavation, with all soils exceeding cleanup levels subsequently removed.

3.3 CONFIRMATION SAMPLING

2010 Interim Action – Twelve excavation sidewall and seven excavation bottom samples were collected to confirm the 2010 soil cleanup (Table 2). Figure 4 depicts 2010 confirmation sample locations. Twenty-five, 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 contaminants of concern (COCs) at concentrations exceeding Site cleanup levels.

Five 2010 confirmation samples included contaminated soil left in place under the (then) active SR 522 roadway, to protect the structural integrity of the road and associated sidewalk and underground utilities. This area and the soil represented by those samples was subsequently cleaned up in the 2013/2014 cleanup.

Soil samples collected in test pits TP-17 through TP-21 in 2010, excavated near a utility trench to investigate potential impacts from the adjacent Bothell Former Hertz Facility, did not contain COCs at concentrations exceeding Site cleanup levels (Table 2).

Contaminated soil was left in place in 2010 at location L-PEX-8-10 (see Figure 4) to protect the structural integrity of the 48-inch concrete Horse Creek culvert. Although this culvert is slated for decommissioning in the near future, it will not be removed, and impacted soils will not be accessible for removal. At vactor truck exploration L-PEX-14 (see Figure 4) on the west side of the Horse Creek culvert, HWA personnel used a clean stainless steel hand auger to sample the culvert backfill below the bottom of the vactor truck exploration. This sample, L-PEX-14-9, had COC concentrations below MTCA Method A cleanup levels indicating that the culvert backfill is not contaminated or a preferred pathway for contaminated ground water, and the volume of impacted soil in this location is small.

2013/2014 Interim Action – In the course of the 2013 and 2014 cleanups 34 excavation sidewall and 28 five excavation bottom samples were collected from the cleanup areas to confirm soil cleanup (Table 2). Ten soil samples confirmed cleanup along the water line, and 17 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 COCs at concentrations exceeding site cleanup levels. (Table 2). Figure 4 depicts confirmation sample locations. Other than the soil left at the property boundary at the east edge of the former SR 522 roadway at the limit of the City right-of-way (not accessible because City did not have property owner's permission to extend excavation onto private property) (sample location L-PEX-85, see Figure 4), the 2013 and 2014 cleanups achieved the site cleanup levels.

2015 Interim Action – The City obtained access to the private property (which houses a Baskin Robbins ice cream shop) adjoining sample location L-PEX-85 in 2015, and conducted soil cleanup in this area in September 2015 (HWA, 2015c). Approximately 9 tons of soil were excavated and disposed of off site at a permitted facility from the area surrounding sample location L-PEX-85. Three confirmation samples were collected from the north, east and west sides of the excavation at approximately 5 feet below ground surface (corresponding to the depth of former sample L-PEX-85), and were all below laboratory reporting limits or preliminary Site cleanup levels (MTCA Method A). Figure 4 shows all interim action soil cleanup limits and samples. Appendix E contains the report documenting the 2015 cleanup.

2017 Interim Action – HWA collected a total of 16 excavation sidewall and 5 excavation bottom samples to confirm soil cleanup (Table 1). Of the 16 sidewall samples, 2 of the sample locations were over-excavated due to laboratory results indicating contaminants of concern (COCs) were above Site cleanup levels. Figure 4 and 4B depict confirmation sample locations. Appendix E contains the report documenting the 2017 cleanup.

3.4 GROUND WATER MANAGEMENT

Minor ground water seepage was present at approximately 8 to 10 feet below original grade at the Site. Ground water flow into the excavations was managed by creating sumps and ponding the water behind soil berms. Accumulated water was removed with either a gasoline powered ‘trash’ pump or an electric submersible dewatering 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 a sanitary sewer, for treatment at King County’s wastewater treatment plant.

3.5 ORC PLACEMENT

2010 interim action – To facilitate bioremediation following soil removal in 2010, the Contractor applied 1,834 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. The Contractor applied the slurry to the side of the excavation along SR 522 at the elevation of ground water.

2013/2014 Interim Action – For the 2013 and 2014 cleanup the Contractor applied 1,500 pounds of ORC along the upgradient excavation sidewalls to address contamination left in place.

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 will reduce the possibility of re-contamination of clean fill south of the impacted soils.

3.6 WELL DECOMMISSIONING

Monitoring wells MW-3 and MW-4 were decommissioned in 2010 because of their location within the cleanup excavation. Decommissioning was performed by excavation and removal under HWA’s supervision, as the depth of the excavation was greater than the well depths. Prior to remedial activities, Slead Construction Inc., a Washington State licensed well drilling contractor under subcontract to the Contractor, decommissioned ground water monitoring well BC-8 in accordance with WAC 173-160-381. Although not within the cleanup excavation footprint, well BC-8 was decommissioned because it was located under the new roadway.

3.7 SITE RESTORATION

In 2010 after excavation of contaminated soil and receipt of confirmation sample analytical results, the Contractor backfilled and compacted the excavation with a combination of clean imported structural fill soils meeting the requirements of Select Borrow, per WSDOT Standard

Specification 2-03.3(14)K, and 784 cubic yards of previously excavated soils from the Site that were tested and found to meet Site cleanup levels. Select borrow only was placed under the new roadway; a combination of select borrow and clean native soils was placed outside the roadway footprint. 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. The remediation area was then hydro-seeded for erosion control.

Backfill in all interim action cleanups was performed to similar specifications, with cleanup areas paved or otherwise developed in areas under the new roadway, and hydro-seeded or graveled in other areas.

4. REMEDIAL INVESTIGATION

RI activities were performed between February 2013 and March 2015 following Ecology's approval of the final RI/FS Work Plan and Addendum#1 (Ecology letter dated December 16, 2011), and the subsequent completion of the roadway realignment. These activities were conducted pursuant to the Ecology-approved project work plans (HWA 2011). Due to accessibility issues, Ecology approved a phased approach to conduct limited RI's whose results are now incorporated in this RI/FS report. The RI activities were performed or planned in phases as follows:

Phase 1

- Remaining petroleum hydrocarbon soil cleanup, including test pit sampling prior to and during the soil cleanup; and,
- Confirmation sampling during and following cleanup.

Phase 2

- Monitoring well installation and sampling for an area-wide ground water study, at accessible locations following Phase 1 activities; and,
- Hydrogeologic measurements of ground water elevations and aquifer characteristics.

Phase 3

- One year of quarterly ground water monitoring, following completion of the interim action soil cleanup.

Phase 4

- Vapor intrusion assessment, if needed

Phase 5

- Chlorinated VOC source delineation at the Ultra Custom Care Cleaners property and other properties, if found to be part of the Bothell Landing Site (addressed in this report see Section 4.3).

Phase 6

- Investigations necessary to evaluate potential source control options and to close any outstanding data gaps; and,
- Preparation of a complete RIFS report (this report).

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 4 before and during the interim action cleanups. Soil sampling results are summarized in Table 2. Laboratory reports are included in the interim action cleanup reports (HWA, 2011a; HWA, 2014d, 2107) (see Appendices D and E [on CD] and in Appendix G (for soil samples collected subsequent to the interim action cleanup reports). The limits of excavation during the interim action cleanups (see Figure 4) illustrate the extent of soil contamination prior to the cleanups (see Section 3.3).

For ground water, RI activities consisted of quarterly ground water monitoring performed between February 2013 and March 2015 following Ecology's approval of the final RI/FS Work Plan and Addendum #1 (Ecology letter dated December 16, 2011, Appendix H), and the subsequent completion of the roadway realignment. A copy of the final RI/FS Work Plan and Addendum #1 are included in Appendix H (on CD). Due to accessibility issues, Ecology approved a phased approach to conduct limited RI's whose results are now incorporated in this RI/FS report. The approved phases are:

1. Bothell Landing property / SR 522 petroleum-impacted soil cleanup and confirmation soil sampling
2. Monitoring well installation and sampling at accessible locations identified following Phase 1 tasks
3. Monitoring well installation and Quarterly ground water monitoring at Bothell Landing property and well network in place at this time
4. Vapor intrusion studies / modeling
5. Chlorinated VOC source delineation at Ultra Custom Care Cleaners site
6. Investigations necessary to evaluate potential source control options and to close any outstanding data gaps followed by a complete a RI report

4.1 Area Wide Ground Water Monitoring

One year (four quarters) of ground water monitoring for this site was conducted as part of the area wide ground water network (see Figures 3, 9), and as established by Ecology under the Bothell Landing Agreed Order (Re: Phase 3 RI activities in Section 5 of the approved Bothell Landing RI Work Plan (HWA, 2011a [see Appendix A]).

The monitoring activities were conducted for four quarters between May 2014 and March 2015, with letter reports documenting the test results submitted to Ecology on a quarterly basis (HWA, 2014c, e; HWA, 2015a, b, Appendix I). Some wells identified in the Ecology-approved ground water monitoring network for this site were retained and sampled for the duration of the one-year monitoring event; and with Ecology's concurrence, one well was added to the network (HWA Letter Report, Addendum 2 to August 20, 2014 Letter Re: Area Wide Ground Water Monitoring Network). A copy of this report is included in Appendix I.

Ground water at the Site has been investigated for petroleum since 1999 at which time the former gas station area was targeted for environmental assessment. HVOC ground water contamination has been an ongoing concern, primarily due to contaminant migration from the north. 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 (2009a) and are presented in Appendix C. Post-soil-cleanup ground water analytical data collected by HWA are presented in Table 3. Monitoring well locations are shown on Figure 2, which shows Ecology's approved, area-wide, ground water monitoring network. Monitoring well logs are included in Appendix B. Copies of laboratory reports are included in Appendix G. A data quality assessment for the laboratory reports is included in Appendix J.

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 Landing site (Agreed order No. 6294)* (Appendix L);
- Ecology letter, July 30, 2012 – *Agreed Order Amendments for Bothell Paint & Decorating, Former Hertz, and Landing sites* (Appendix L); 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 L)

4.2 PETROLEUM HYDROCARBONS (INCLUDING BTEX)

Prior to the soil cleanups, benzene in well MW-3 was the only petroleum hydrocarbon detected above cleanup levels in ground water. This well and surrounding soils were excavated during the 2010 soil cleanup.

Oil-range petroleum hydrocarbons were detected in well BLMW-8 subsequent to the soil cleanups at concentrations above the cleanup level. This well is located at the west edge of the former 2.8 acre Bothell Landing property, up- or side-gradient of the originally reported UST and petroleum impacted area, and does not appear related to those impacts. BLMW-8 is now located on a new parcel of land associated with the Former Hertz Facility Site, which the City also owns and is under a separate Agreed Order with Ecology. The BLMW-8 area is therefore not considered part of the Bothell Landing Site, and impacts to this well will be addressed under the Former Hertz Facility Agreed Order.

Well UCCMW-10, which was installed north of the Site in Main Street as part of the Ultra Custom Care Cleaners site, was tested for petroleum hydrocarbons in addition to HVOCs (the primary COCs for the Ultra site), due to its location relative to suspected petroleum impacts associated with an upgradient, off-Site property (Speedy Auto Glass). Ground water from UCCMW-10 did not contain any petroleum hydrocarbons above laboratory reporting limits in three of four quarterly monitoring rounds, but contained diesel and oil range petroleum hydrocarbons during one round (September 2014). The isolated occurrence suggests petroleum hydrocarbon impacts to ground water in this area are either 1) of a limited or sporadic nature, 2) represent a temporal condition in ground water which is no longer present, or 3) were the result of sample contamination resulting in a detection that was a "false positive". In any case, the isolated detection of petroleum concentrations at UCCMW-10 does not appear to be linked to the Bothell Landing Site.

Petroleum hydrocarbon concentrations in other monitoring wells were below cleanup levels.

4.3 HVOCs

Historical and current results indicate that the source of HVOCs in ground water at the Site is the Ultra Custom Care Cleaners site, located 200 feet north and upgradient of the Site. PCE, trichloroethene (TCE), vinyl chloride (VC), and cis-1,2-dichloroethene (1,2-DCE) were detected at concentrations exceeding MTCA cleanup levels in several Site wells and numerous upgradient wells leading to the source area at the Ultra Custom Care Cleaners site. The Ultra Custom Care Cleaners site is also owned by the City, and is undergoing cleanup under a separate Agreed Order with Ecology.

HVOC cleanup level exceedances in ground water at the Site include the following:

- VC was detected once at a concentration exceeding the MTCA Method A cleanup level in MW-3. This well and surrounding soils were excavated out during the 2010 soil cleanup. Existing wells BLMW-9 and BLMW-10 monitor the ground water immediately downgradient of where MW-3 was located. Neither of these wells had any HVOC exceeding cleanup levels in the four rounds of monitoring conducted after the soil cleanups.
- PCE was detected after the soil cleanups once at a concentration exceeding the MTCA Method A cleanup level in BLMW-12. No PCE above laboratory reporting limits was detected during the other three rounds, suggesting the detection was an outlier or quality control issue. This well is not located near any known source of PCE.
- A well installed northeast of the Site as part of the Ultra Custom Care Cleaners site, UCCMW-26, had HVOCs in ground water exceeding cleanup levels. The Ultra site is under a separate Agreed Order between the City and Ecology, and is currently undergoing cleanup action.

4.4 Metals

Historical data from 2007 compiled by HWA (Appendix C) showed cleanup level exceedances of arsenic in ground water in a direct push boring BH-15. Post-soil-cleanup ground water samples from wells MW-1, BLMW-9, BLMW-11, and BLMW-12 had total and dissolved arsenic concentrations exceeding the MTCA Method A cleanup level of 5 micrograms per liter (µg/L). In addition, dissolved chromium and total and dissolved lead concentrations in well MW-1 exceeded cleanup levels during the first two rounds sampled, but were below reporting limits during the second two rounds. In November 2014, HWA redeveloped monitoring well MW-1 and removed some sediment that had entered the well during roadway construction. No metals were detected for the December 2014 and March 2015 sampling events (Table 3), suggesting that prior elevated concentrations were due to the recent construction activities and sediment being introduced into the well.

The elevated arsenic concentrations in monitoring wells BLMW-9, BLMW-11, and BLMW-12 may in part be naturally occurring and related to the extensive peat deposits underlying the area south of the Site. Elevated arsenic concentrations in alluvial aquifers of Snohomish and King Counties have been well documented as a regional issue (HWA, 2007b, included as Appendix N). 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 area south of the Site. However, since peat was not noted in the well logs for BLMW-11 & BL-MW12, arsenic in ground water may also be attributed to fill imported to the southern part of the site (see HWA, 2007b). Elevated RCRA metals in soil are also found here (such as barium, cadmium, chromium, and lead), and may be contributing to the high arsenic.

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.

However, the cause of elevated arsenic concentrations observed in wells BLMW-9, BLMW-11, and BLMW-12 is not well established. They may be a result of the dissolution of naturally occurring arsenic compounds associated with the peat deposits underlying the Site or contamination from imported fill material containing elevated metals, or upgradient ground water impacts from previous petroleum hydrocarbon releases or HVOC impacts. Given this uncertainty, Ecology has determined that ground water arsenic remains as a COC requiring remedial action.

The elevated concentrations in ground water may also be due to reducing conditions created by other contamination (e.g., petroleum hydrocarbons) 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 Maximum Contaminant Level (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.

4.5 DATA QUALITY ASSESSMENT

Copies of laboratory reports are included in Appendix G. A data quality assessment for the laboratory reports is included in Appendix J.

A data quality issue was identified for ground water sample MW-1 collected on September 11, 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 chromium and lead concentrations in this sample compared to other quarterly ground water samples collected from this well which were below laboratory reporting limits. This quality control issue appears to have compromised the analytical accuracy of the dissolved chromium and lead data for the ground water sample collected from well MW-1 on September 11, 2014 and the result should be qualified as being biased high.

Following the soil cleanups, concentrations of PCE in ground water at monitoring well BLMW-12 in the south portion of the Site exceeded the MTCA cleanup level in one of three quarterly samples (see Table 3), which is thought to be an outlier or QC issue, as this well is not located near any known HVOC source or other detections.

Following the soil cleanups, diesel- and oil-range petroleum hydrocarbons were detected at concentrations exceeding MTCA Method A cleanup levels in the second of four quarterly ground water samples collected at well UCCMW-10. These detections appear to be an outlier or quality control issue because diesel and oil concentrations in the other three quarterly ground water samples from well UCCMW-10 were below laboratory reporting limits.

No other quality control issues were identified and 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:

- HVOCs (primarily PCE, TCE, (cis)-1,2-DCE, and vinyl chloride)
- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX (benzene, toluene, ethylbenzene, and xylenes)
- Lead
- Polycyclic aromatic hydrocarbons (PAHs) (including naphthalenes)

The *Interim Action Work Plan* (Parametrix, 2010b) also included other metals (arsenic, cadmium, chromium, mercury, selenium, and silver) and polychlorinated biphenyls (PCBs) as COPCs. Because PCBs, HVOCs, arsenic, barium, cadmium, chromium, lead, mercury, selenium, or silver were never detected in Site soil at concentrations exceeding MTCA Method A or B cleanup levels or natural background concentrations during the Phase II ESA, RI, or the two initial interim action cleanups, they were dropped as COPCs during subsequent cleanup and RI activity.

Following the interim action soil cleanups, only one area had soils remaining on Site with cleanup level exceedances, namely the area of L-PEX-8-10 (under the Horse Creek culvert). The sample had gasoline and benzene concentrations exceeding Site cleanup levels (Table 2).

Thus soil chemicals of concern (COCs) remaining on Site are:

- Total petroleum hydrocarbons, gasoline-range
- Benzene

5.1.2 Ground Water COCs

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

- HVOCs
- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX
- Metals (arsenic, cadmium, chromium, and lead)

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

- Arsenic

The HVOC contamination originating from an off Site source is not considered to be a COC at the Site requiring site-specific remediation because cleanup at the Ultra Cleaners Agreed Order Site will remedy HVOC ground water contamination at the Bothell Landing site.

5.2 EXTENT OF CONTAMINATION

COCs are summarized in the preceding section (5.1). Based on the additional explorations and four rounds of quarterly ground water monitoring, TPH impacts from the Bothell Landing Site and HVOC impacts from the Ultra Cleaners site are no longer collocated. The HVOC contamination originating from an off Site source is not considered to be a COC at the Site requiring site-specific remediation because cleanup at the Ultra Cleaners will remedy HVOC ground water contamination at the Landing site. Figure 2 shows the Site boundaries as indicated by this RI.

Soil - The 2010, 2013, 2014, and 2015 cleanups achieved the site soil cleanup levels save for one small area under the Horse Creek culvert (sample L-PEX-8-10) which had gasoline and benzene concentrations exceeding Site cleanup levels.

Ground water - Prior to the soil cleanups petroleum-contaminated ground water occurred only in the vicinity of Rotunda Park. Based on prior investigations, the backfill around the Horse Creek culvert does not appear to be a preferential pathway for contaminated ground water. Horse Creek surface water does not appear to be significantly affecting nearby surface soils or ground water. HVOCs migrating onto the Site from an upgradient source were present in ground water in the north portions of the Site at concentrations less than MTCA Method A cleanup levels. Arsenic was present in direct push boring BH-15 in concentrations exceeding MTCA cleanup levels.

Following the soil cleanups, dissolved chromium and dissolved lead concentrations in well MW-1 exceeded MTCA Method A cleanup levels in the second of four quarterly ground water samples. As discussed in Section 4.5 above, the MTCA exceedances are thought to be a quality control issue related to sediment in the field-filtered sample, as chromium and lead concentrations in the three other quarterly ground water samples from well MW-1 were below laboratory reporting limits.

After the soil cleanups, arsenic was detected at concentrations greater than the Site cleanup level of 10 µg/L in wells MW-1, BLMW-11, and BLMW-12. Elevated arsenic concentrations may be a combination of several factors, including contamination from imported fill and regionally elevated natural concentrations documented in alluvial aquifers of Snohomish and King Counties (HWA, 2007b, Appendix N). Due to the high concentrations above Ecology's natural background cleanup level for the area (Puget Sound Lowlands), arsenic is considered to be a COC at the Site.

5.3 RECOMMENDATIONS

Based on the discussion above, HWA and the City recommend that, for administrative purposes, that Ecology redefine the Site per the definition of "site" in WAC 173-340-200 (see Section 1.1 of this report).

Current Site boundaries would be changed to those shown in red on Figure 2a. The new Site boundaries will accomplish the following:

- It will accurately distinguish the Site from the original property configuration, which no longer exists (see Section 1.1);
- It will more accurately define the nature and extent of environmental impacts associated with the Site and concentrate remedial efforts. ; and,
- It will allow for the Site to be distinguished from HVOC concentrations migrating to south from the Ultra Custom Care Cleaners site, which is currently undergoing interim action under a separate Agreed Order in response to HVOC concentrations in ground water.

The redefined Site boundaries will be implemented with approval of this report, and allow HWA and the City to refocus remedial efforts with the start of the next phase of work (the Cleanup Action Plan [CAP] phase). The dCAP will be prepared and submitted to Ecology for its review and approval using the new Site boundaries.

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 prior to completion of the Interim Actions were used to develop the model shown on Figure 6.

6.2 PRIMARY SOURCES OF CONTAMINATION AND PRIMARY RELEASE MECHANISMS

The primary contaminant source is the former gasoline service stations, including potential releases from tanks, dispensers, piping, and spilled products. The primary contaminants associated with the gasoline service stations include petroleum hydrocarbons, aromatic hydrocarbons, and semi-volatile organic carbon compounds (SVOCs).

Section 5.1 describes the COCs, which are:

Soil:
- Total petroleum hydrocarbons, gasoline-range
- Benzene

Ground water:
- Arsenic

The primary potential release mechanisms for contaminants associated with the gasoline service station include leaks from fuel or lubricant storage systems (e.g., USTs, containers, piping, dispensers, etc.); accidental spills and leaks; and spills from discarded containers of automotive fluid products such as motor oil, transmission fluid, and antifreeze.

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. Ground water contaminated with HVOCs from an upgradient source (the Ultra Custom Care Cleaners site) represents a secondary contaminant source.

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 the Horse Creek culvert under an active roadway, therefore the only potential receptors are future construction workers.

Ground water - 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 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.

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 the Horse Creek culvert 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 (including BTEX) - 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 suggest that petroleum constituents are transported only a short distance at concentrations of concern. Dissolved petroleum constituents are typically subject to biodegradation by naturally occurring aerobic soil bacteria.

HVOCs - HVOCs are subject to both aerobic and anaerobic degradation although measured dissolved oxygen levels suggest an anaerobic condition. An indication that anaerobic biodegradation is occurring is the presence of breakdown (daughter) products of PCE. Daughter products, including VC, 1,1-DCE, cis-1,2-DCE, and trans-1,2-DCE, are not commonly manufactured and would only be present as daughter products. Cis-1,2-DCE and VC were detected in several Site monitoring wells, indicating that biodegradation of HVOCs is occurring. The HVOC contamination originating from an off Site source is not considered to be a COC at the Site requiring site-specific remediation because cleanup at the Ultra Cleaners Agreed Order Site will remedy HVOC ground water contamination at the Bothell Landing site.

Arsenic - Arsenic in ground water is likely derived from native alluvial sediments, or imported fill soils, although no arsenic in soil above cleanup levels has ever been detected at the Site. 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.

Chromium, lead - Chromium and lead concentrations in well MW-1 exceeded cleanup levels during the first two rounds sampled, but were below reporting limits during the second two rounds. In November 2014, HWA redeveloped monitoring well MW-1 and removed some sediment that had entered the well during roadway construction. No metals were detected for the December 2014 and March 2015 sampling events (Table 3), suggesting that prior elevated concentrations were due to the recent construction activities and sediment being introduced into the well.

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 the Horse Creek culvert 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 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 the Horse Creek culvert 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).

6.8.1 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.

6.8.1.1 Soil

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

6.8.1.2 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 TPH, arsenic, and PCE impacts, i.e., ground water throughout the Site.

6.8.2 Proposed Cleanup Levels

Proposed cleanup levels are described below.

6.8.2.1 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 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, 2010b). 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 input into Ecology's MTCA TPH 11.1 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 included in Appendix F. Table 1 summarizes the results of the analysis. The calculated Method B cleanup levels for gasoline-range petroleum hydrocarbons at the Site range between 84 and 246 milligrams per kilogram (mg/kg) depending on the mixture of hydrocarbon fractions and specific compounds such as benzene. The Method B TPH cleanup level of 84 mg/kg is a calculated value for protection of potable ground water from contamination by benzene 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 with detectible benzene in soil is 30 mg/kg. The calculated Method B cleanup levels for diesel- and oil-range petroleum hydrocarbons at the Site range between 3,130 and 5,225 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.

6.8.2.2 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 µg/L will be used based on the drinking water standard.

6.8.3 Terrestrial Ecological Evaluation

Petroleum – Remaining petroleum contaminated soils in the area of sample L-PEX-8-10 (beneath the former Horse Creek Culvert) are or now located beneath a roadway. Therefore, the Site qualifies for an exclusion due to an incomplete pathway caused by the paved surfaces being a physical barrier. If the barriers become altered in the future (i.e., if the conditions stated in the current report were not met), the terrestrial ecological evaluation would need to be redone or updated.

Arsenic – Arsenic is not a COC in soil at the Site, therefore there are no terrestrial ecological impacts or concerns with respect to arsenic.

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 with volatile contaminants (gasoline-range petroleum hydrocarbons and benzene) are limited to one small area under the old Horse Creek culvert (estimated at 10 cubic yards) that will be capped under the widened Bothell Way NE roadway planned for 2016, therefore no buildings are present or possible in this one spot (see Figure 2a, yellow triangle in southbound lane of Bothell Way NE north of SR522). Bothell Way will be widened to the west, Figure 2d shows the current roadway configuration while Figure 2a shows the ultimate roadway footprint. New utilities will be added under the new roadway, while previously installed utilities constructed in 2013/2014 will remain in place. There are no plans to remove the roadway again after the final phase of construction is completed in 2017.

Ground water - Remaining HVOC impacts from the upgradient Ultra Custom Care Cleaners site are undergoing cleanup under a separate Agreed Order DE 9704 with Ecology. There are currently no buildings over the affected areas at the Site. If buildings are planned prior to cleanup in those areas, VI assessment will be conducted under the Ultra Custom Care Cleaners Agreed Order and appropriate vapor mitigation measures implemented for the buildings (e.g., vapor barriers, sub-slab depressurization systems, etc.). These measures are relatively easy and inexpensive to implement for new buildings.

6.10 REMEDIAL ACTION OBJECTIVES

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

- 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 and HVOC contaminated ground water plume is stable or shrinking due to 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 the contaminated ground water that has migrated 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(s) of compliance.

6.11 DISCUSSION & RECOMMENDATIONS

Based on the discussion in the preceding sections, and Interim Actions conducted at the Site, RI activities performed for the Site conclude that the Ultra Custom Care Cleaners HVOC plume is discrete and separate from any remaining TPH impacts on the Bothell Landing Site, as described in Sections 1.3 and 4.3. Table 8 summarizes the information discussed in this RI. Cleanup remedies discussed herein are therefore only for TPH, benzene, and arsenic impacts on the Bothell Landing Site. HVOC RI and future cleanup activities at the Ultra Custom Care Cleaners site are being addressed via another Ecology Agreed Order, DE 9704.

7. FEASIBILITY STUDY

7.1 IDENTIFICATION OF CONTAMINATION TO BE REMEDIATED

Section 5.2 (above) describes the current status of soil and ground water contamination at the Site, and is summarized below:

Soil - The excavation and removal performed as interim actions addressed TPH-contaminated soils at the Site. They are described in the following reports:

1. *Documentation of Interim Action at Bothell Landing Site, Bothell, Washington.* (HWA, 2011a); Appendix D,
2. *Interim Action Cleanup Action Report, Bothell Landing Site, Bothell, Washington*. (HWA, 2014d). Appendix E, and
3. *Addendum No. 1 to* the *Interim Action Cleanup Action Report, Bothell Landing Site, Bothell, Washington* – in process

These interim action cleanup reports are included in Appendix D and E, respectively, and the results are summarized in Section 3 of this report.

Petroleum and benzene contaminated soil remains in one areas of the Site, under the Horse Creek culvert (see sample L-PEX-8-10 on Figure 4). The Horse Creek culvert area is not currently accessible for excavation as it is still an active fish-bearing stream.

Ground water - Referring to Table 3, remaining ground water impacts are:

- PCE contaminated ground water at monitoring well UCCMW-26, in the northeast area of the Site. PCE ground water cleanup is being addressed under a separate Agreed Order for the Ultra Custom Care Cleaners site; and,
- Elevated arsenic in wells BLMW-11, BLMW-12, and MW-1.

As discussed in Sections 1.4 and 4.3, RI activities performed for the Landing site indicate that the Ultra Cleaners HVOC plume is discrete and separate from any TPH impacts on the Landing Site. Cleanup remedies discussed herein are therefore only for TPH and benzene in soil, and arsenic in ground water on the Landing Site. HVOC Interim Actions, RI and future cleanup activities at the Ultra Cleaners site are being addressed via the existing Ultra Cleaners Agreed Order, DE 9704.

7.2 SCREENING OF REMEDIAL TECHNOLOGIES

This section describes technologies capable of meeting cleanup objectives for screening and assembling 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 contaminated soil under the Horse Creek culvert 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 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 the evaluation of remediation alternatives (Section 9).

7.3 Remediation Technologies – Petroleum Impacts

The following remediation alternatives have been selected for consideration as appropriate technologies to treat the small amount of residual soil under the Horse Creek culvert contaminated with petroleum hydrocarbons.

7.3.1 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 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 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

DESCRIPTION / ENGINEERING DISCUSSION

In-situ bioremediation for petroleum hydrocarbon contamination 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 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 (petroleum hydrocarbons) present 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

DESCRIPTION

Monitored natural attenuation to remediate petroleum hydrocarbon contamination in ground water 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.

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.

7.3.4 Engineering and Institutional Controls

Engineering controls typically include barriers between site contaminants and potential receptors, and are often combined with institutional controls at sites with contaminants remaining after cleanup.

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 future planned roadway over the petroleum impacted soil area, the most likely access-restricting cap would consist of, pavement. There will not be any buildings or park spaces where the remnant soil contamination has been left in place..

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.

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.

7.4 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 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:

- No apparent soil source of arsenic has ever been identified at the Site
- 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 no apparent soil source of arsenic has ever been identified at the Site.

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 ground water cleanup alternatives that meet MTCA threshold and other requirements for selection of remedy:

Petroleum in soil
- Excavation and removal with monitored natural attenuation
- In-situ bioremediation with monitored natural attenuation and engineering / institutional controls
- 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 Impacts

For soil, the interim actions implemented excavation and removal as the selected remediation alternative. For remaining soil 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 Horse Creek culvert are summarized below:

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

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

8.1.1 Excavation and Removal with Monitored Natural Attenuation

Impacted soils containing TPH-related COCs exceeding Site cleanup levels can 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 will be sampled to assure compliance with cleanup standards. Monitoring for natural attenuation will not be required since ground water at the Site is already in compliance for TPH-related COCs.

Due to the existing active roadways and utilities, shoring of the excavation will be required, as well as likely traffic closures. Total estimated cost of this option is approximately $72,000. Cost estimates for this and other potential remedial alternatives (described below) are included in Appendix K.

8.1.2 In-Situ Bioremediation with Monitored Natural Attenuation and Engineering and Institutional Controls

In-situ bioremediation may be implemented for impacted soil by introducing oxygen-releasing compounds into the ground in the vicinity of the impacted soils 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 TPH left in the ground. The oxygen-releasing material creates a zone of increased biological activity in those soils, biodegrading the hydrocarbons. If confirmation borings indicates TPH concentrations exceeding cleanup levels, additional oxygen-releasing material can be injected into the ground via direct push borings.

Ground water monitoring for natural attenuation will not be required since ground water at the Site is already in compliance for TPH-related COCs, although soil borings to confirm soil cleanup levels are met will be sampled. The engineering and institutional controls for soil at the Site could include access restrictions, covering the impacted soils with an access-restricting cap, and/or controlling recharge and infiltration of storm water.

Estimated cost of this option is as follows.

In-Situ bioremediation	$ 32,400
Institutional controls	$ 5,500
Total	$ 37,900

Cost estimates for this and other potential remedial alternatives (described below) are included in Appendix K.

8.1.3 Engineered and Institutional Controls

The Engineered and Institutional Controls remedial alternative could potentially be applied to the remaining petroleum contaminated soil in a limited area now under the reconstructed Bothell Way NE.. The main components would be 1) the roadway capping the impacted soils, and 2) an environmental covenant restricting access to the soils

Total estimated cost of this option is approximately $5,500. Cost estimates for this and other potential remedial alternatives (described below) are included in Appendix K.

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:

- In-situ chemical fixation with institutional controls
- Institutional controls

8.2.1 In-Situ Chemical Fixation with Institutional Controls

In-Situ Chemical Fixation of arsenic at the site would likely consist of injecting reducing agents 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.

Institutional Controls could be applied during treatment, or if cleanup levels are not met, and to limit exposure to the chemical fixation chemicals. The main component would be an environmental covenant restricting access to ground water.

Estimated cost of this option is as follows.

In-Situ Chemical Fixation	$1,353,024
Institutional controls	$ 5,500
Ground water monitoring	$ 30,560
Total	$1,389,084

Cost estimates for this and other potential remedial alternatives (described below) are included in Appendix K.

8.2.2 Institutional Controls

Institutional Controls could potentially be applied to the arsenic ground water impacts. The main component would be an environmental covenant restricting access to ground water.

Institutional Controls could apply to ground water, documenting arsenic contamination in ground water. An environmental covenant could prohibit ground water withdrawal and use for any purpose other than monitoring, and/or site investigation. Ground water withdrawal and disposal for construction-related activities could require notification and approval by Ecology. A request to lift the covenant could be made to Ecology if compliance monitoring from the Site shows that the arsenic persists after historical ground water contamination and the petroleum hydrocarbon contamination has not been detected for an appropriate period of time (eight quarters of 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 could be used to demonstrate that the elevated concentrations represents a locally high natural background for arsenic. Based on this evidence, a request could be made to remove the institutional controls for ground water at the site.

A Compliance Monitoring Plan will be submitted as part of the Cleanup Action Plan to address this component of the cleanup.] . Estimated cost of this option is as follows.

Institutional controls	$	5,500
Ground water monitoring	$	30,560
Total	$	36,060

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 TPH soil impacts under Horse Creek culvert are:

- Excavation and removal with MNA
- In-situ bioremediation with MNA and engineering and institutional controls
- Engineering and institutional controls

The proposed alternatives for arsenic in ground water are:

- In-situ chemical fixation with institutional controls
- Institutional controls

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 and also MTCA's other requirements in WAC 173-340-360(2)(b).

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 must 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 TPH 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 is most likely naturally occurring, but will be evaluated after two 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 TPH 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, relevant and appropriate requirements (ARARs). ARARs for this site are summarized in Table 4. All alternative remedies for TPH and arsenic impacts meet ARARs to the same relative degree.

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
- Compliance monitoring to monitor the long-term effectiveness of the remedy after completion of the alternative

Petroleum In Soil - All alternative remedies for TPH impacts provide compliance monitoring. The source removal and bioremediation alternatives include protection, performance, and compliance monitoring, whereas engineered containment and institutional controls would provide compliance monitoring in the form of periodic inspection of the engineered cap. No ground water monitoring would be required because ground water is already in compliance.

Arsenic in Ground Water - The institutional control remedy for arsenic in ground water provides for compliance monitoring by quarterly ground water monitoring for two years.

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 carried forward for evaluation are:

Petroleum In Soil

- Excavation and removal with MNA
- In-situ bioremediation with MNA and engineering and institutional controls
- Engineering and institutional controls

Arsenic in ground water

- In-situ chemical fixation with institutional controls
- Institutional controls

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

9.4.1 Petroleum In Soil

A Disproportionate Cost Analysis (DCA) is presented herein for the 1) petroleum impacted soils remaining under the Horse Creek culvert 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/MNA/ engineering and institutional controls 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 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 most permanent alternative. Costs are disproportionate to benefits if the incremental costs of the alternative over that of a lower cost alternative exceed the incremental degree of benefits achieved by the alternative 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)).

9.4.1.1 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.

9.4.1.2 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 baseline 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*.

Remove Soils Under Horse Creek Culvert + MNA + In situ fixation

- Overall protectiveness of human health and environment – 'Remove Soils/MNA/In situ fixation' is the most protective, because impacted soils would be removed from the Site, therefore was scored the highest (5); 'In-situ Bioremediation/MNA/In situ fixation' was scored lower, at 4, due to some level of active treatment; and 'Engineering/Institutional Controls' was scored the lowest, at 3.

- Permanent reduction of toxicity, mobility and volume – 'Remove Soils/MNA/In situ fixation' 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; 'In-situ Bioremediation/MNA/In situ fixation' was scored lower, at 4, due to the presumed low level of treatment with respect to the Site; and 'Engineering/Institutional Controls' was scored the lowest, at 3.

- Long term effectiveness – 'Remove Soils/ MNA/In situ fixation' was scored the highest (5), due to the removal of soils; 'In-situ Bioremediation/MNA/In situ fixation' was scored lower, at 3, due to slower treatment time frame; and 'Engineering/Institutional Controls' was scored the lowest, at 2, due to the slowest cleanup time frame.

- Short term risks – ‘Remove Soils/MNA/In situ fixation’ was scored the lowest (3), because open soil excavation and utility work carries the most short term risk; ‘In-situ Bioremediation/In situ fixation’ was scored higher, (4) due to some limited construction activity required to implement it, and ‘Engineering/Institutional Controls’ was ranked the highest, (5) due to no 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 (Remove Soil/MNA/In situ fixation) would rank lowest due to 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.

9.4.1.3 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/MNA/In situ fixation 4.4
- In-situ Bioremediation/MNA/Eng and Inst Controls/In situ fixation 3.7
- Eng & Inst Controls 3.2
- No Action 1

Table 7 summarized estimated costs, with additional detail provided in Appendix K. 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 and bioremediation alternatives had benefit-to-cost ratios of 0.003 and 0.05, 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 Figure 8. The soil removal and bioremediation alternatives had incremental benefit to incremental cost ratios of 0.001 and 0.015 respectively. The 'Engineering/Institutional Controls' alternative has a larger incremental benefit-to-cost ratio of 0.054, again due to its relatively low cost and similar benefit compared with the other options.

9.4.1.4 Sensitivity Analysis

Due to the large cost differential, the analysis is not sensitive to variations in scoring of the alternatives. For example, if Remove Soils was scored 5 for each criteria, the incremental cost effectiveness of Engineering/Institutional Controls would still exceed that of removal by around 50 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 alternative at the Site (developed in accordance with WAC 173-340-350 through 173-340-390) includes:

1. Contaminated soil – adopt interim actions as the final cleanup
2. Remnant contaminated soil under Horse Creek culvert— leave in place and implement:
   - Engineering controls - paved Bothell Way NE roadway over impacted soils
   - Institutional controls - implement a new environmental covenant that would replace the existing one (Recording No. 20020104001469, Appendix M) which currently covers the whole former Bothell Landing property (old property lines)
3. 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 compliance monitoring from the site shows that the arsenic persists after historical ground water contamination and the petroleum hydrocarbon contamination has not been detected for an appropriate period of time (eight quarters of 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.

Figure 2a shows the proposed institutional control areas for TPH in soil and arsenic in ground water.

10.2 Rationale for Selecting Proposed Alternative

The proposed 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

For ground water, the HVOC issues will be addressed under the Ultra Custom Care Cleaners Agreed Order. Due to the uncertainty associated with the cause of highly elevated ground water arsenic (natural or release- related, or both), impracticability of engineered remediation, and contiguity with adjacent Bothell MTCA sites, the remediation alternative for ground water arsenic will need to maintain consistency with adjacent sites. Therefore, it will be addressed through institutional controls and monitoring.

For remnant petroleum contaminated soils, a range of other cleanup alternatives was evaluated, as detailed in Section 6.0, and includes:

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

10.4 Schedule for Implementation

TPH in Soil - The interim actions were completed in 2017. In the dCAP, the final cleanup recommendation will be that Ecology adopt the interim actions 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.

For remnant TPH-contaminated soils located under the portion of the Site lying under the Horse Creek culvert and planned widening of the Bothell Way NE roadway, the engineering controls will be implemented during final roadway construction, in 2016. Institutional controls (environmental covenant) are anticipated to be implemented after the engineering controls are in place.

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

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 diesel- and oil-range petroleum hydrocarbons in soil and arsenic in ground water. The volume of impacted soil estimated to remain on Site is around 100 tons, and likely far 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 & CONCLUSIONS

The Bothell Landing Site boundaries are identified on Figure 2a .

Petroleum contaminated soil was excavated and removed from the Site in several interim actions from 2010 to 2017. Remaining impacts at the Site are petroleum in soil at one small area (under the Horse Creek culvert), and arsenic in ground water at the southern part of the Site.

Site cleanup levels for soil are selected as MTCA Method A or natural background. 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:

- 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
- Ground water
  - The standard ground water point of compliance is proposed, i.e., ground water throughout the Site

After the soil cleanups arsenic was detected at concentrations greater than the MTCA Method A cleanup level of 5 µg/L in wells MW-1, BLMW-9, BLMW-11, and BLMW-12.
Elevated arsenic concentrations may be a combination of several factors, including imported fill and regionally elevated natural concentrations documented in alluvial aquifers of Snohomish and King Counties (HWA, 2007b, Appendix N). Due to the high concentrations above Ecology's natural background cleanup level of 6.6 µg/L or the area (Puget Sound Lowlands) and a cleanup level of 10.0 µg/L based on the drinking water MCL, arsenic is considered to be a COC at the Site.

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 alternative at the Site (developed in accordance with WAC 173-340-350 through 173-340-390) includes:

1. Ground water impacts from HVOCs – address this under the Ultra Custom Care Cleaners Agreed Order
2. TPH Contaminated soil – adopt interim actions as the final cleanup
3. Remnant TPH contaminated soil – leave in place and implement
   - Engineering controls - paved Bothell Way NE roadway over impacted soils

- Institutional controls - implement a new environmental covenant that would replace the existing one (Recording No. 20020104001469, Appendix M) which currently covers the whole Landing property (old property lines)

4. Ground water arsenic – include institutional controls in new environmental covenant. Compliance monitoring with option to remove ground water restriction from the covenant based on monitoring results at the Site.

12. 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.

Ecology, 2015, Natural Background Groundwater Arsenic Concentrations in Washington State. Unpublished draft. June 2015.

ECOSS (Environmental Coalition of South Seattle), 2008, *City of Bothell Revenue Development Area, Report on Tax Parcel History Through 1972*. Prepared for The King County Brownfields Program, King County Solid Waste Division, and King County Department of Natural Resources and Parks, January 2008.

HWA GeoSciences, 2007a, *Arsenic In Ground Water, Bothell Downtown Redevelopment Projects Area, Bothell, Washington,* March 7, 2011.

HWA GeoSciences, 2007b, *Phase II Environmental Site Assessment Beta Bothell Landing Property, Bothell, Washington*. Prepared for City of Bothell, November 1, 2007.

HWA GeoSciences, 2008, *Phase II Environmental Site Assessment, Hertz Rentals Property, Bothell Washington.* Prepared for City of Bothell. October 10, 2008.

HWA GeoSciences, 2009a, *Remedial Investigation and Feasibility Study Work Plan, Bothell Landing Property, Bothell, Washington*. Prepared for City of Bothell, August 26, 2009.

HWA GeoSciences, 2009b, *Aquifer Testing and Permeability Estimates, Bothell Crossroads RI/FS, Bothell, Washington*. Prepared for City of Bothell, October 6, 2009.

HWA GeoSciences, 2011a, *Documentation of Interim Action at Bothell Landing Site, Bothell, Washington.* Prepared for City of Bothell, February 2, 2011.

HWA GeoSciences, 2011b, *Remedial Investigation Feasibility Study Final Work Plan, Bothell Landing Site Bothell, Washington*, September 19, 2011. Includes Ecology Amendment No. 1 to Agreed Order.

HWA GeoSciences, 2012, *City of Bothell Storm Drainage Improvements UST Site Assessment Report, Bothell, Washington.* Prepared for City of Bothell, August 2, 2012.

HWA GeoSciences, 2014a, *Letter Report: Bothell Landing Interim Action Status Report, January – March 2014, Bothell, WA,* dated April 7, 2014.

HWA GeoSciences, 2014b, Addendum 2 to August 20, 2014 Letter Re: Area Wide Ground Water Monitoring Network, Bothell Agreed Order Sites, Bothell, Washington. Letter dated August 27, 2014.

HWA GeoSciences, 2014c, Area Wide Ground Water Monitoring Network, Bothell Agreed Order Sites, Bothell, WA. Letter Dated August 22, 2014.

HWA GeoSciences, 2014d, *Interim Action Cleanup Action Report, Bothell Landing Site, Bothell, WA*, Dated September 2, 2014.

HWA GeoSciences, 2014e, Area Wide Ground Water Monitoring, Second Round Results, Bothell Agreed Order Sites, Bothell, WA. Letter Dated October 17, 2014.

HWA GeoSciences, 2015a Area Wide Ground Water Monitoring, Third Round Results, Bothell Agreed Order Sites, Bothell, WA. Letter Dated January 16, 2015.

HWA GeoSciences, 2015b, Area Wide Ground Water Monitoring, Fourth Round Results, Bothell Agreed Order Sites, Bothell, WA. Letter Dated April 16 2015.

HWA GeoSciences, 2015c, *Addendum No. 1 to Interim Action Cleanup Report, (HWA, 9/1/14) Bothell Landing Site, Bothell, WA,* Dated November 6, 2015.

HWA GeoSciences, 2017, *Bothell Landing Site Residual Soil Excavation Report, Bothell, WA,* Dated March 14, 2107.

Kleinfelder, 1999, *Phase II Soil and Ground water Exploration, Bothell Landing Shopping Plaza, Bothell, Washington*. Prepared for Buck & Gordon, LLP, Seattle, WA, September 8, 1999.

Parametrix, 2009a, *Bothell Landing Remedial Investigation/Feasibility Study, Revision No. 0.* Prepared for City of Bothell, November 2009.

Parametrix, 2009b, *Bothell Landing Draft Cleanup Action Plan, Revision No. 1,* Prepared for City of Bothell, December 2009.

Parametrix, 2010a, *Technical Memorandum, Responses to Ecology Comments: Bothell Landing Draft RI/FS and CAP,* dated March 10, 2010.

Parametrix, 2010b, *Interim Action Work Plan, Bothell Landing Site, Revision No.2,* Prepared for City of Bothell, April 2010.

Riley Group, *Draft Phase I Environmental Site Assessment, Bothell Landing Property #1*, May 29, 2007.

U.S. EPA, 1989, *Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final,* Office of Emergency and Remedial Response, Washington, D.C. EPA/540/1-89/002. July 1989.

U.S. EPA, 2001, *EPA Technology Screening Matrix and Reference Guide, Version 4.0*, see http://www.frtr.gov/scrntools.htm.

U.S. EPA, 2002, *Arsenic Treatment Technologies for Soil, Waste, and Water Solid Waste,* Publication EPA-542-R-02-004, September 2002, see http://www.epa.gov/tio/download/remed/542r02004/arsenic_report.pdf.

Washington Department of Ecology, 1994, *Natural Background Soil Metals Concentrations in Washington State*. Ecology Publication 94-115, October 1994.

Washington Department of Ecology, 2005, *Guidance on Remediation of Petroleum-Contaminated Ground Water By Natural Attenuation,* Washington State Department of Ecology, Toxics Cleanup Program, Publication no. 05-09-091, July 2005.

Washington Department of Ecology, 2009, *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*, Washington State Department of Ecology, Toxics Cleanup Program, Publication no. 09-09-047, Review DRAFT, October 2009.

Washington Department of Ecology, 2011, *Final Bothell Landing RI/FS Work Plan Submittal and Notice to Proceed with Phase I RI/FS Work.*

Washington Department of Ecology, 2011, *Summary of Cleanup Status for Bothell Landing site (Agreed order No. 6294).*

Washington Department of Ecology, 2012, *Agreed Order Amendments for Bothell Paint & Decorating, Former Hertz, and Landing sites.*

Washington Department of Ecology, 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.*

Table 1
Summary of Method B Soil TPH Risk Calculations
Bothell Landing Site

Release area	Former east USTs	Former west USTs		
TPH Type	**Gasoline and diesel**	**Gasoline and diesel**		
Sample	**L-TP-13-8**	**L-TP-14-3**	**L-TP-15-7**	**L-TP-16-8**
Calculated Method B TPH cleanup level for direct skin contact (mg/Kg)	3,740	3,130	5,225	3,908
Most stringent soil risk criterion for direct skin contact	Hazard Index	Hazard Index	Hazard Index	Hazard Index
Method B soil TPH concentration protective of ground water (mg/Kg)	246	145	84	149
Most stringent soil risk criterion for protection of ground water	Hazard Index	Hazard Index	Benzene MCL Risk 1E-6	Hazard Index
Method A soil cleanup levels (mg/Kg)	30[1] (G) 2000 (D) 2000 (O) 0.03 (Benzene) 7 (Toluene) 6 (Ethylbenzene) 9 (Xylenes) 5 (Naphthalenes)[2] 0.10 (cPAHs TEC)[3]			

Notes:
1 - Cleanup level for gasoline mixtures with benzene
2 - Sum of Naphthalene + 1-Methylnaphthalene + 2-Methylnaphthalene
3 - Toxic Equivalent Concentration of carcinogenic polynuclear aromatic hydrocarbons (cPAHs) per WAC 173-340-708(e)

TABLE 2
SOIL CLEANUP ANALYTICAL RESULTS
BOTHELL LANDING SITE
(all results in milligrams per kilogram (mg/kg))

Sample Location	Sample Depth ft bgs	Confirmation Samples[1] Sidewall	Bottom	Diesel	Oil	Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes	Total Naphthalenes[2]	cPAHs TEC[3]	PCBs	HVOCs	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	NOTES
2010 Cleanup																							
L-TP-1-2	2			**340**	**420**	**300**	<0.023	<0.12	<0.12	**0.20**	**0.076**	0.000											
L-TP-1-8	8			**6300**	<530	**1200**	**0.34**	<.29	**1.3**	**1.5**	**70.91**	0.000											
L-TP-2-3	3	X		<27	<53	<5.5	<0.020	<0.055	<0.055	<0.055													
L-TP-2-8	8		X	<31	<61	<6.7	<0.020	<0.067	<0.067	<0.067													
L-TP-3-4	4	X		<28	<55	<6.1	<0.020	<0.061	<0.061	<0.061													
L-TP-3-7	7		X	<31	<62	<6.5	<0.020	<0.065	<0.065	<0.065													
L-TP-4-4	4	X		<27	<55	<5.7	<0.020	<0.057	<0.057	<0.057	<0.022	0.000											
L-TP-4-7	7		X	<28	<56	<5.5	<0.020	<0.055	<0.055	<0.055	<0.023	0.000											
L-TP-5-2	2	X		<28	<56	**8.1**	<0.020	<0.065	<0.065	<0.065	<0.022	0.000											
L-TP-5-6	6		X	**200**	<61	<6.0	<0.020	<0.060	<0.30	**0.23**	**0.118**	0.000											
L-TP-6-3	3			<76	**550**	**67**	<0.025	<0.13	<0.13	<0.13	**0.279**	**0.001**											
L-TP-6-7	7			<34	<57	**42**	<0.025	<0.12	<0.12	<0.12	**0.219**	0.000											
L-TP-7-2	2			<43	**160**	**120**	**0.29**	<0.11	**0.68**	**0.29**	**1.63**	**0.001**											
L-TP-7-7	7			<1000	**4200**	**11**	**0.088**	<0.055	<0.055	<0.055	**7.58**	**0.018**											
L-TP-8-2	2			**32**	**130**	<5.4	<0.020	<0.054	<0.054	<0.054	<0.022	0.000											
L-TP-8-7	7			<850	<59	**7800**	**5.8**	**3.6**	**35**	**40**	**2.17**	0.000											
L-TP-9-4	4	X		<27	<54	<5.3	<0.020	<0.053	<0.053	<0.053													
L-TP-9-8	8		X	<30	<59	<7.2	<0.020	<0.072	<0.072	<0.072													
L-TP-10-4	4	X		**77**	**470**	**8.6**	<0.020	<0.061	<0.061	<0.061													
L-TP-10-8	8		X	<29	<57	<5.4	<0.020	<0.054	<0.054	<0.054													
L-TP-11-4	4	X		<47	**350**	<6.0	<0.020	<0.060	<0.060	<0.060													
L-TP-11-8	8		X	<30	<60	<6.8	<0.020	<0.068	<0.068	<0.068													
L-TP-12-4	4	X		<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054													
L-TP-12-8	8		X	<35	**280**	<8.4	<0.020	<0.084	<0.084	<0.084													
L-TP-13-8	8		X	<30	<60						<0.024	0.000											
L-TP-14-3	3			<28	<55						**0.202**	0.000											
L-TP-15-7	7			<540	**2500**						**12.29**	**0.019**											
L-TP-16-8	8		X	<37	**100**						**0.46**	0.000											
L-TP-17-1	1			<29	**110**																		Contractor was concerned about possible contam from Hertz site
L-TP-17-3	3	X		<27	<55																		Contractor was concerned about possible contam from Hertz site
L-TP-17-6	6		X	<77	**160**																		Contractor was concerned about possible contam from Hertz site
L-TP-18-1	1			<31	**140**																		Contractor was concerned about possible contam from Hertz site
L-TP-18-3	3	X		<31	<61																		Contractor was concerned about possible contam from Hertz site
L-TP-19-1	1			<33	**160**																		Contractor was concerned about possible contam from Hertz site
L-TP-19-3	3	X		<29	<58																		Contractor was concerned about possible contam from Hertz site
L-TP-20-2	2	X		<86	**370**																		Contractor was concerned about possible contam from Hertz site
L-TP-21-2	2	X		<30	<61																		Contractor was concerned about possible contam from Hertz site
L-TP-21-5	5		X	<73	**180**																		
L-PEX-1-6	6		X	<28	<57	**13**	<0.020	<0.067	<0.067	<0.067	**0.491**	**0.020**	All <0.057	All <0.0059	<11	**50**	<0.57	**29**	**6.4**	<0.28	<11	<0.57	Northeast sidewall
L-PEX-2-10	10		X	<38	**120**	<10	<0.020	<0.10	<0.10	<0.10	<0.03	0.000			<15	**61**	<0.76	**28**	**10**	<0.38	<15	<0.76	
L-PEX-3-6	6	X		<31	<63	<7.1	<0.020	<0.071	<0.071	<0.071	<0.025	0.000			<13	**37**	<0.63	**19**	<6.3	<0.31	<13	<0.63	
L-PEX-4-6	6	X		<30	<59	<7.3	<0.020	<0.073	<0.073	<0.073	<0.024	0.000			<12	**58**	<0.59	**40**	<5.9	<0.29	<12	<0.59	
L-PEX-5-6	6	X		**360**	**310**	**140**	<0.020	<0.087	**0.13**	**0.44**	**4.61**	**0.001**			<14	**86**	<0.68	**9.5**	**29**	<0.34	<14	<0.68	
L-PEX-6-11	11		X	<40	<80	<11	<0.023	<0.11	<0.11	<0.11	<0.033	0.000	All <0.080	All <0.0076	<16	**39**	<0.80	**24**	<8.0	<0.40	<16	<0.80	
L-PEX-7-11	11		X	<33	<66	<8.5	<0.020	<0.085	<0.085	<0.085	<0.026	0.000			<13	**100**	<0.66	**34**	<6.6	<0.33	<13	<0.66	
L-PEX-8-10	10	X		<96	**330**	**130**	**0.21**	**0.082**	**0.47**	**0.87**	**0.092**	**0.001**			<12	**36**	<0.58	**23**	**31**	<0.29	<12	<0.58	
L-PEX-9-10	10	X		<29	<58	<5.7	<0.020	<0.057	<0.057	<0.057	**0.108**	0.000			<12	**44**	<0.58	**29**	<5.8	<.29	<12	<0.58	
L-PEX-10-8	8	X		<1800	**2700**	**3100**	**23**	**2.6**	**43**	**165**													
L-PEX-11-8	8	X		<31	**80**	**32**	<0.020	<0.079	**0.083**	**0.15**	**0.059**	0.002			<12	**31**	<0.61	**15**	**9.6**	<0.31	<12	<0.61	
L-PEX-12-6	6	X		<29	<57	<5.3	<0.020	<0.053	<0.053	<0.053	<0.023	0.000			<11	**66**	<0.57	**14**	<5.7	<0.29	<11	<0.57	
L-PEX-13-14	14		X	<34	<68	<8.3	<0.020	<0.083	<0.083	<0.083	<0.027	0.000	All <0.068	All <0.0063	<14	**41**	<0.68	**29**	<6.8	<0.34	<14	<0.68	
L-PEX-14-9	9	X		<28	<56	**15**	<0.020	<0.051	**0.055**	**0.098**	<0.022	0.000			<11	**31**	<0.56	**20**	**7.6**	<0.28	<11	<0.56	Sample of backfill on west side of Horse Creek culvert
L-PEX-15-9.5	9.5	X		<40	**170**	<5.2	<0.020	<0.052	<0.052	<0.052	<0.024	0.000			<12	**22**	<0.60	**10**	**8.1**	<0.30	<12	<0.60	West sidewall at limit of excavation near Horse Creek culvert
L-PEX-16-11	11		X	<31	<62	<7.0	<0.020	<0.070	<0.070	<0.070	<0.025	0.000			<12	**30**	<0.62	**26**	<6.2	<0.31	<12	<0.62	
L-PEX-17-9	9	X		<32	<64	<7.8	<0.020	<0.078	<0.078	<0.078	<0.025	0.000	All <0.064	All <0.0060	<13	**67**	<0.64	**3.6**	<6.4	<0.32	<13	<0.64	
L-PEX-18-14	14		X	<33	**94**	<8.6	<0.020	<0.086	<0.086	<0.086	**0.062**	0.000			<13	**43**	<0.67	**19**	<6.7	<0.33	<13	<0.067	
L-PEX-19-10	10	X		<28	<56	<5.2	<0.020	<0.052	<0.052	<0.052	<0.022	0.000			<11	**43**	<0.56	**22**	**11**	<0.28	<11	<0.56	
Stockpile																							
L-TP-4-4	4			<27	<55	<5.7	<0.020	<0.057	<0.057	<0.057	<0.022	0.000											
L-TP-11-4	4			<47	**350**	<6.0	<0.020	<0.060	<0.060	<0.060													
L-TP-12-4	4			<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054													
L-TP-14-3	3			<28	<55						**0.202**	0.000											
PH-3	7			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-3	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-8	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-8	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-9	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-9	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-11	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-12	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-12	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-14	2.5			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													

2013-2014 Cleanup																							
West Side 527 Excavation																							
August 2013 Test Pits																							
TP-L1-4	4			110	160	8.6	<0.020	<0.061	<0.061	<0.061				ND	<11	67	<0.56	50	45	<0.28	<11	<1..1	Characterization only, soils left in place
TP-L1-7	7			<29	130	<5.2	<0.020	<0.052	<0.052	<0.052				ND	<11	52	<0.57	41	26	<0.29	<11	<1..1	Characterization only, soils left in place
TP-L1-10	10			<37	<75	<9.8	<0.020	<0.098	<0.098	<0.098				ND	<15	60	<0.75	41	<7.5	<0.37	<15	<1..5	Characterization only, soils left in place
TP-L2-5	5			<59	290	<4.9	<0.020	<0.049	<0.049	<0.049				ND	<11	50	<0.57	36	20	<0.28	<11	<1..1	
TP-L2-8	8			73	180	60	<0.020	<0.075	0.12	0.16				ND	<13	61	<0.65	34	18	<0.33	<13	<1.3	
TP-L3-5	5			<37	160	<9.3	<0.020	<0.093	<0.093	<0.093				ND	<15	65	<0.73	35	<7.3	<0.36	<15	<1.5	Characterization only, soils left in place
TP-L3-10	10			<31	<62	<5.9	<0.020	<0.059	<0.059	<0.059				ND	<12	61	<0.62	19	<6.2	<0.31	<12	<1.2	Characterization only, soils left in place
TP-L4-5	5			<31	<62	<6	<0.020	<0.060	<0.060	<0.060				ND	<12	62	<0.62	32	<6.2	<0.31	<12	<1.2	
TP-L4-8	8			<41	<81	<11	0.079	<0.11	<0.11	<0.11				0.0017 Chlorobenzene	<16	130	<0.81	57	12	<0.41	<16	<1.6	
TP-L5-4	4	X		<28	<55	<6.2	<0.020	<0.062	<0.062	<0.062				ND	<11	35	<0.55	26	<5.5	<0.28	<11	<1.1	
TP-L5-8	8			<41	<81	<10	0.0025	<0.1	<0.1	<0.1				ND	<16	95	<0.81	43	15	<0.40	<16	<1.6	Characterization only, soils left in place
TP-L6-4	4	X		<29	76	<6.1	<0.020	<0.061	<0.061	<0.061				0.00099 PCE	<12	65	<0.58	41	12	<0.29	<12	<1.2	
TP-L6-9	9			<34	75	<8.2	<0.020	<0.082	<0.082	<0.082				ND	<14	71	<0.68	33	11	<0.34	<14	<1.4	Characterization only, soils left in place
TP-L7-4	4			<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054				ND	<11	55	<0.55	30	12	<0.28	<11	<1.1	
TP-L7-7	7			<54	180	290	0.056	<0.17	1.3	1.4				ND	<11	180	<1.1	25	37	<0.54	<22	<2.2	
TP-L7-8	8			<48	<92	17	<0.020	<0.13	<0.13	<0.13				ND	<18	30	<0.92	14	<9.2	<0.46	<18	<1.8	
October 2013 Soil Excavation																							
L-PEX-20-11	11		X			<7.9	<0.020	<0.079	<0.079	<0.079													
L-PEX-21-9	9	X				<10	<0.020	<0.10	<0.10	<0.10													
L-PEX-22-9	9			<81	150	210	<0.020	<0.076	<0.076	<0.076					<13	80	<0.66	42	19	<0.33	<13	<1.3	
L-PEX-23-11	11		X			<6	<0.020	<0.060	<0.060	<0.060													
L-PEX-24-9	9	X				<8	<0.020	<0.080	<0.080	<0.080													
L-PEX-25-8	8	X				<24	<0.048	<0.24	<0.24	<0.24													
L-PEX-26-9	9	X				<7.5	<0.020	<0.075	<0.075	<0.075													
L-PEX-27-12	12		X	<35	<70	<8.3	<0.020	<0.083	<0.083	<0.083					<14	99	<0.70	62	<7.0	<0.35	<14	<1.4	
L-PEX-28-9	9	X		<39	170	<10	<0.020	<0.10	<0.10	<0.10					<16	54	<0.78	39	<7.8	<0.39	<16	<1.6	
L-PEX-29-7	7	X				6.4	<0.020	<0.056	<0.056	<0.056													
L-PEX-30-11	11					42	<0.020	<0.1	<0.1	0.13													
L-PEX-31-9	9	X				<5.9	<0.020	<0.059	<0.059	<0.059													
L-PEX-32-9	9	X				<5.5	<0.020	<0.055	<0.055	<0.055													
L-PEX-33-8	8		X	<28	110	<5.2	<0.020	<0.052	<0.052	<0.052					<11	42	<0.57	46	17	<0.28	<11	<1.1	
L-PEX-34-9	9	X				<16	<0.033	<0.16	<0.16	<0.16													
L-PEX-35-7	7	X				<6.1	<0.020	<0.061	<0.061	<0.061													
L-PEX-36-12	12		X			<6.9	<0.020	<0.069	<0.069	<0.069													
East Side 527 Excavation																							
January 2014 Test Pits																							
TP-L8-4	4			<540	82	1800	0.023	0.081	0.81	4.7									<5.9				
TP-L8-8	8		X	<30	<60	<6.6	<0.02	<0.066	<0.066	<0.066									<6				
TP-L9-4	4			<120	170	54	0.02	<0.072	<0.072	<0.072									<6.4				
TP-L9-8	8			<36	<72	360	0.15	0.13	0.3	<0.89									<7.2				
TP-L10-4	4			<1500	72	8100	1.7	2	6.2	28									<6.1				
TP-L10-9	9		X	<29	<58	<5.5	<0.02	<0.055	<0.055	<0.055									<5.7				
TP-L11-4	4			<1500	460	2000	<0.024	<0.12	0.73	2.7									<9.2				
TP-L11-9	9		X	<33	<65	<7.2	<0.02	<0.075	<0.075	<0.075									<6.5				
TP-L12-4	4			<160	110	1000	0.059	0.19	0.68	0.3									<6.9				
TP-L12-9	9		X	<32	<63	<7	<0.02	<0.007	<0.007	<0.007									<6.3				
TP-L13-4	4			<32	<65	<6.6	<0.02	<0.066	<0.066	<0.066									13				Characterization only, soils left in place
TP-L13-7	7			<33	<66	<8.1	<0.02	<0.081	<0.081	<0.081									<6.6				Characterization only, soils left in place
TP-L14-4	4	X		<31	<62	<6.1	<0.02	<0.061	<0.061	<0.061									<6.2				
TP-L14-8	8			<30	<61	<6.4	<0.02	<0.064	<0.064	<0.064									<6.1				
January 22, 2014 Test Pits, Triangle Park																							
Triangle-W5	5			<49	<58	270	<0.026	<0.13	1	0.93									<6.1				
Triangle-W8	8		X			<11	<0.021	<0.11	<0.11	<0.11									<5.6				
Triangle-E5	5			<110	<58	1200	0.6	0.3	6.5	4.7									<5.8				
Triangle-E8	8		X			<7.1	<0.02	<0.071	<0.071	<0.071									<6.2				
Triangle-N4	4			<1600	5200	410	<0.02	<0.097	0.7	1									120				
Triangle-N6	6			<29	<58	16	<0.02	<0.10	<0.10	<0.10									<5.7				
Triangle-N7	7		X			<4.8	<0.02	<0.048	<0.048	<0.048									<5.7				
February, 2014 Water Line Characterization Samples																							
Water Line-1-6	6			<30	<59	<6.3	<0.02	<0.063	<0.063	<0.063									<5.9				Characterization only, soils left in place
Water Line-2-4	4			<30	<60	<6.2	<0.02	<0.062	<0.062	<0.062									<6.0				Characterization only, soils left in place
Water Line-2-7 1/2	7.5			<32	<65	<7.4	<0.02	<0.074	<0.074	<0.074									<6.5				Characterization only, soils left in place
Water Line-3-4	4			45	260	<5.7	<0.02	<0.057	<0.057	<0.057									22				Characterization only, soils left in place
Water Line-3-6	6			<40	<81	<11	<0.02	<0.11	<0.11	<0.11									<8.0				Characterization only, soils left in place
Water Line-4-4	4			<39	<71	<8.7	<0.02	<0.087	<0.087	<0.087									<7.1				Characterization only, soils left in place
Water Line-4-6	6			<31	<63	<6.7	<0.02	<0.064	<0.064	<0.064									<6.3				Characterization only, soils left in place
Water Line-5-4	4			<44	250	<7.2	<0.02	<0.072	<0.072	<0.072									33				Characterization only, soils left in place
Water Line-5-6	6			<42	85	<11	<0.02	<0.11	<0.11	<0.11									12				Characterization only, soils left in place
January-April 2014 Soil Excavations																							
L-PEX-35E-11	11		X			<6.4	<0.02	<0.064	<0.064	<0.064	<0.024	<0.012							<6				
L-PEX-36E-6	6	X		<32	<64	<6.5	<0.02	<0.065	<0.065	<0.065	<0.026	<0.013											
L-PEX-37-6	6	X		<30	<61	<12	<0.024	<0.12	<0.12	<0.12	0.011	<0.012											
L-PEX-38-6	6			<36	76	150	<0.02	<0.084	0.3	0.54													
L-PEX-39-4	4			<890	81	1700	<0.029	<0.15	3	3.8													
L-PEX-40-4	4	X		<33	<67	<8.2	<0.02	<0.082	<0.082	<0.082									7.7				
L-PEX-41-8	8	X		<32	<64	<6.2	<0.02	<0.062	<0.062	<0.062									<6.4				
L-PEX-42-5	5			<180	<67	510	<0.02	<0.080	0.4	0.88									8.2				
L-PEX-43-7	7	X		<62	<31	<6.2	<0.02	<0.062	<0.062	<0.062		<0.012							<6.2				

L-PEX-44-8	8		X	<37	<73	<9.3	<0.02	<0.093	<0.093	<0.093									<7.3				
L-PEX-45-9	9		X	<40	<80	<10	<0.021	<0.10	<0.10	<0.10									<8.0				
L-PEX-46-10	10		X	<39	<78	<9.8	<0.02	<0.098	<0.098	<0.098		<0.015							<7.8				
L-PEX-47-7	7	X		<29	<58	**17**	<0.02	<0.049	<0.049	<0.049									<5.8				
L-PEX-48-7	7	X		<40	**100**	<11	<0.022	<0.11	<0.11	<0.11									<8.0				
L-PEX-49-10	10		X	<29	<58	<5.4	<0.02	<0.054	<0.054	<0.054									<5.8				
L-PEX-50-8	8	X		<34	<68	<7.3	<0.02	<0.073	<0.073	<0.073									<6.8				
L-PEX-51-10	10		X	<31	<62	<6.5	<0.02	<0.065	<0.065	<0.065									<6.1				
L-PEX-52-7	7	X		<31	**210**	<7.3	<0.02	<0.073	<0.073	<0.073									**24**				
L-PEX-53-6	6	X		<30	**220**	<6.4	<0.02	<0.064	<0.064	<0.064									**25**				
L-PEX-54-9	9		X	<36	**80**	<7.7	<0.02	<0.077	<0.077	<0.077		<0.014							**55**				
L-PEX-55-9	9		X	<32	<65	<6.2	<0.02	<0.062	<0.062	<0.062									<6.5				
L-PEX-56-9	9		X	<31	<63	<7.2	<0.02	<0.072	<0.072	<0.072									<6.3				
L-PEX-57-11	11		X	<32	<63	<6.6	<0.02	<0.066	<0.066	<0.066									<6.3				
L-PEX-58-8	8		X	<28	<56	<5.3	<0.02	<0.053	<0.053	<0.053									<5.6				
L-PEX-59-8	8		X	<31	<62	<9.9	<0.02	<0.099	<0.099	<0.099		<0.012							<6.2				
L-PEX-60-5	5			<360	**260**	**4400**	**0.61**	**1.1**	**2.8**	**19.5**									**120**				
L-PEX-61-5	5			<2900	**830**	**4000**	**0.38**	<0.08	**1.8**	**15.94**									**250**				
L-PEX-62-10	10		X	<31	<63	<3.9	<0.02	<0.039	<0.039	<0.039		<0.013							<6.3				
L-PEX-63-7	7	X		<27	<54	<2.1	<0.02	<0.021	<0.021	<0.021									<5.4				
L-PEX-64-7	7	X		<29	<57	<5.8	<0.02	<0.058	<0.058	<0.058									<5.7				
L-PEX-65-7	7			<31	<62	**440**	**0.32**	**0.16**	**2.4**	**2.177**									<6.2				
L-PEX-66-7	7	X		<29	<59	<5.9	<0.02	<0.059	<0.059	<0.059									<5.9				
L-PEX-67-9	9		X	<35	<71	<9.5	<0.02	<0.095	<0.095	<0.095									<7.1				
L-PEX-68-8	8		X	<31	<62	<6.4	<0.02	<0.064	<0.064	<0.064									<6.2				
L-PEX-69-6	6	X		<31	<63	<6.2	<0.02	<0.062	<0.062	<0.062									<6.3				
L-PEX-70-5	5			<32	<64	**110**	**0.048**	<0.071	**0.35**	**0.47**									<6.4				
L-PEX-71-6	6	X		<29	<58	<4.9	<0.02	<0.049	<0.049	<0.049									<5.8				
L-PEX-72-6	6	X		<30	<59	<4.8	<0.02	<0.048	<0.048	<0.048									<5.9				
L-PEX-73-6	6	X		<30	<59	<5.6	<0.02	<0.056	<0.056	<0.056		<0.012							<5.9				
L-PEX-74-5	5	X		<160	**800**	**9.8**	<0.02	<0.06	<0.06	<0.06									**67**				
L-PEX-75-7	7		X	<36	<71	<9	<0.02	<0.09	<0.09	<0.09									**29**				
L-PEX-76-7	7			<100	<200	**130**	<0.072	<0.36	<0.36	**1.2**		<0.041							<20				
L-PEX-77-7	7	X		<32	<63	<6.2	<0.02	<0.062	<0.062	<0.062									<6.3				
L-PEX-78-10	10		X	<31	<61	<6.7	<0.02	<0.067	<0.067	<0.067									<6.1				
L-PEX-79-6	6	X		<1110	**65**	**730**	**0.26**	**0.21**	**0.4**	**2.9**									<6.0				
L-PEX-80-8	8		X	<32	<65	<7.6	<0.02	<0.076	<0.076	<0.076		<0.013							<6.5				
L-PEX-81-6	6	X		<30	<60	<6.6	<0.02	<0.066	<0.066	<0.066									<6.0				
L-PEX-82-9	9		X	<36	<73	<9.1	<0.02	<0.091	<0.091	<0.091									<7.3				
L-PEX-83-6	6	X		<29	<58	<6.5	<0.02	<0.065	<0.065	<0.065									<5.8				
L-PEX-84-6	6	X		<31	<62	<6	<0.02	<0.06	<0.06	<0.06									<6.2				
L-PEX-85-5	5	X		<49	<59	**480**	**0.17**	**<0.12**	**0.53**	**2.3**									<5.9				
L-PEX-86-5	5	X		<30	<60	<6.8	<0.02	<0.068	<0.068	<0.068									<6.0				
L-PEX-87-7	7		X	<32	<63	<7.6	<0.02	<0.076	<0.076	<0.076									<6.3				
April 30, 2014 UST Site Assessment Samples																							
L-TANK-BOT	8			<27	<54	**420**	**0.39**	**0.09**	**1.5**	**1.5**									**16**				
L-TANK-E	5			<29	**89**	<5.8	<0.2	<0.058	<0.058	<0.058									**57**				
L-TANK-S	5			<28	**290**	<5.7	<0.02	<0.057	<0.057	<0.057									**44**				
2017 Residual Soil Cleanup																							
L-PEX-88-7.5	7.5	X		<4800	**8100**	**2500**	**0.075**	<0.32	**3.2**	**5.3**													
L-PEX-89-7.5	7.5	X		<96	**140**	**170**	<0.02	<0.064	<0.064	**0.215**													
L-PEX-90-5	5	X		<26	**71**	<5.1	<0.020	<0.051	<0.051	<0.051													
L-PEX-91-8	8	X		<31	<62	<6.7	<0.020	<0.067	<0.067	<0.067													
L-PEX-92-5	5	X		**33**	**210**	<5.2	<0.020	<0.052	<0.052	<0.052													
L-PEX-93-8	8	X		<29	**80**	<5.5	<0.020	<0.055	<0.055	<0.055													
L-PEX-94-5	5	X		<27	**240**	<4.9	<0.020	<0.049	<0.049	<0.049													
L-PEX-95-8	8	X		<30	<61	<6.5	<0.020	<0.065	<0.065	<0.065													
L-PEX-96-8.5	8.5		X	<89	**1100**	**22**	<0.030	<0.15	<0.15	**0.19**													
L-PEX-97-8.5	8.5		X	<100	**1400**	<17	<0.034	<0.17	<0.17	<0.17													
L-PEX-98-5	5	X		<32	<63	<7.4	<0.020	<0.074	<0.074	<0.074													
L-PEX-99-8	8	X		<31	**120**	<6.6	<0.020	<0.066	<0.066	<0.066													
L-PEX-100-8	8	X		<28	<56	<5.5	<0.020	<0.055	<0.055	<0.055													
L-PEX-101-8	8	X		<29	<58	<5.8	<0.020	<0.058	<0.058	<0.058													
L-PEX-102-5	5	X		<27	**230**	<5.1	<0.020	<0.051	<0.051	<0.051													
L-PEX-103-5	5	X		<27	**230**	<5.6	<0.020	<0.056	<0.056	<0.056													
L-PEX-104-9	9		X	<44	**140**	<11	<0.023	<0.11	<0.11	<0.11													
L-PEX-105-5	5	X		<28	**88**	<5.0	<0.020	<0.050	<0.050	<0.050													
L-PEX-106-8	8	X		<28	**190**	<5.1	<0.020	<0.051	<0.051	<0.051													
L-PEX-107-11	11		X	<40	**100**	<10	<0.020	<0.10	<0.10	<0.10													
L-PEX-108-11	11		X	<39	<78	<9.5	<0.020	<0.095	<0.095	<0.095													
2017 Residual Soil Cleanup Backfill																							
Backfill #2	NA	NA	NA	<27	<55	<4.3	<0.020	<0.043	<0.043	<0.043													
Monitoring Wells																							
BLMW-11	14					<13	<0.020	<0.13	<0.13	<0.13													
BLMW-12	9					<11	<0.022	<0.11	<0.11	<0.11													
BLMW-12	11					<6.4	<0.020	<0.064	<0.064	<0.064													
MTCA Method A Cleanup Level[4]				2000		100/30[5]	0.03	7	6	9	5	0.100	1	0.03[6]	20	NA	2	2000/19[7]	250	2	NA	NA	
MTCA Method B Cleanup Level[8]				3130		84	18	6,400	800	160,000			0.5		24	16,000	80	120,000	NA	24	400	400	
Background[9]				NA		NA	NA	NA	NA	NA	NA	NA	NA		7	255	1	48	24	0.07	0.78	0.61	

Notes:
< - Not detected at laboratory's reporting limit
Blank - Sample was not analyzed for this constituent
NA - Not applicable
Bold - Analyte Detected
- Sample in area that was subsequently excavated
Bold/Highlighted - Analyte detected above MTCA Method A soil cleanup level in sample left in place following excavation
Analytical data for stockpile samples PH-3 through PH-14 are from Kleinfelder (1999)
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
6 - The MTCA Method A soil cleanup level is 0.03 mg/kg for TCE, 0.05 mg/kg for PCE, and 2 mg/kg for TCA
7 - 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
8 - 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
9 - Background metals concentrations per *Natural Background Soil Metals Concentrations in Washington State* (Ecology, 1994) for the Puget Sound area

Table 3
Bothell Landing Site
Ground Water Analytical Results

Sample Location	Screened Depth, (ft bgs)	Sample Date	Depth to Water (ft bgs)	pH (units)	Conductivity (mS)	Temperature (°C)	Dissolved Oxygen (mg/L)	(cis) 1,2-Dichloroethene (µg/L)	Trichloroethene (µg/L)	Tetrachloroethene (µg/L)	Vinyl Chloride (µg/L)	WTPH-Gx (µg/L)	WTPH-Dx Diesel (µg/L)	WTPH-Dx Oil (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (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)	NOTES
			FIELD PARAMETERS					LABORATORY RESULTS																			
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)								**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**10***	**10***	**5**	**5**	**50**	**50**	**15**	**15**	
MW-1	5-15	6/11/2014	8.68	6.57	1410	19.6	0.06	<0.20	<0.20	<0.20	<0.20	<100	<280	<450	<1.0	<1.0	<1.0	<1.0	**10**	**6.6**	<4.4	<4.0	**19**	<10	**20**	<1.0	
		9/11/2014	8.03	6.60	739	19.2	0.78	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0	**17**	**30**		<4.4	**22**	**86**	**36**	**74**	
		12/8/2014	6.58	6.65	714	13.4	0.66	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		3/25/2015	6.46	6.06	500	11.47	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-5R	5-15	9/10/2014	10.48	6.88	465	18.5	2.20	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		12/8/2014	10.11	4.5	6.82	15.0	0.36	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		3/25/2015	9.73	6.8	409	12.4	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-6R	5-15	9/10/2014	8.91	6.41	574	18.9	0.46	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		**4.7**		<4.0		<10		<1.0	
		12/8/2014	8.17	6.65	745	15.0	0.35	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		3/25/2015	8	6.5	477	12.1	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-7	5-10	6/11/2014																									Well cannot be accessed
		9/10/2014	8.70	5.90	273	18.4	0.63	<0.20	**0.22**	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		12/8/2014	8.30	6.77	562	13.1	2.91	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		3/25/2015	8.00	6.42	397	12.12	3.84	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-9	5-15	6/16/2014	7.07	6.49	555	14.5	0.17	<0.20	<0.20	<0.20	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		9/11/2014	7.64	6.48	599	19.7	0.40	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0	**6.3**	**6.1**		<4.0		<10		<1.0	
		12/8/2014	6.7	6.77	815	13.4	0.69	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		3/25/2015	6.63	6.49	565	12.01	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		3.2		<4.0		<10		<1.0	
BLMW-10	5-10	6/13/2014	6.78	6.09	747	13.6	1.01	<0.20	<0.20	**4.0**	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		9/10/2014	6.63	6.66	414	18.1	0.45	<0.20	<0.20	**3.0**	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0		<3.0		<4.0		<10		<1.0	
		12/8/2014	5.71	6.86	695	13.6	0.53	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		3/25/2015	5.68	6.22	400	12.6	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-11	5-15	6/11/2014	9.08	6.38	2800	14.1	0.07	<0.20	<0.20	<0.20	<0.20	<100	<280	<470	<1.0	<1.0	<1.0	<1.0	**150**	**150**	<4.4	<4.0	<11	<10	<1.1	<1.0	
		9/10/2014	9.54	6.40	1565	17.0	0.23	<0.20	<0.20	<0.20	<0.20	<100	**320**	**430**	<1.0	<1.0	<1.0	<1.0	**120**	**110**		<4.0		<10		<1.0	
		12/8/2014	7.63	6.56	1156	15.0	0.50	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**32**	**30**		<4.0		<10		<1.0	
		3/26/2015	6.4	6.20	634	13.2	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		**27**		<4.0		<10		<1.0	
BLMW-12	5-15	6/12/2014	9.10	6.58	2380	13.4	0.20	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**130**	**120**	<4.4	<4.0	<11	<10	**1.3**	<1.0	
		9/11/2014	9.36	6.52	1010	18.5	0.28	<0.20	<0.20	**14**	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0	**88**	**77**		<4.0		<10		<1.0	
		12/8/2014	7.85	6.32	1102	14.7	0.66	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**200**	**180**		<4.0		<10		<1.0	Dissolved metals sampled 12/16/14
		3/26/2015	7.65	5.96	827	12.8	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	**430**	<1.0	<1.0	<1.0	<1.0		**63**		<4.0		<<10		<1.0	
UCCMW-10	5-15	6/13/2014	6.15	5.70	736	17.0	0.60	<0.20	<0.20	**0.90**	<0.20	<100	<300	<480	<1.0	<1.0	<1.0	<1.0									
		9/18/2014	6.02	5.75	414	21.6	0.37	<0.20	<0.20	**0.29**	<0.20	<100	**1600**	**3100**	<1.0	<1.0	<1.0	<1.0									
		12/11/2014	5.2	5.65	469	14.0	0.49	<0.20	<0.20	**1.3**	<0.20																
		1/28/2015										<100	<250	<410	<1.0	<1.0	<1.0	<1.0									
		4/2/2015	5.56	6.34	352	12.5	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**3.8**	<3	<4.4	<4	**19**	<10	**1.5**	<1	
		7/9/2015	6.91	5.27	297	22.3	0.19					<100	<300	<490	<1.0	<1.0	<1.0	<1.0									
		10/26/2015										<100	<250	<410	<1.0	<1.0	<1.0	<1.0									
UCCMW-26	5-15	3/23/2015	5.43	5.72	574	12.3	4.73	**21**	**10**	**81**	**0.74**																
UCCMW-27	5-15	3/23/2015	5.30	7.38	923	12.4	0.23	<0.20	<0.20	**3.8**	<0.20																
QC Samples																											
Dup 6/13/14		6/16/2014						<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		**3.2**		<4.0		<10		<1.0	Duplicate of BLMW-9 6/16/14
Dup 12/8/14		12/8/2014						<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	Dupicate of BLMW-7 12/8/14
DUP326		3/26/2015						<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		24.0		<4.0		<10		<1.0	Dupicate of BLMW-11 3/26/15
Trip Blank		6/12/2014						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0										
Trip Blank		12/8/2014						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0	<1.0									
Trip Blank		3/25/2015						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0	<1.0									

* 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
Blank – Not analyzed

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 5a
Cleanup Alternatives Evaluation
Soil - TPH

	Soil Removal + MNA	**In-situ Bioremediation + MNA + Engineering Institutional Controls**	**Engineering Institutional Controls**
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	Yes*
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		

* 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 several criteria are met (see Section 9.1.2).

Table 5b
Cleanup Alternatives Evaluation
Ground water – Arsenic

	In-situ chemical fixation with Institutional controls	**Institutional Controls**
Threshold requirements		
Protect human health and the environment	This alternative, if successful and implementable, would reduce COCs	Human health and the environment would still be protected
Comply with cleanup standards	Yes	Yes*
Complies with applicable state and federal laws	All alternatives would comply with applicable state and federal laws	
Provide for compliance monitoring	Yes	Yes
Other requirements		
Use permanent solutions to maximum extent practicable	This alternative if successful and implementable, is the most permanent	The institutional controls would be permanent
Provide for a reasonable restoration time frame	This alternative, if successful and implementable, has the shortest timeframe.	No
Consider public concerns	All alternatives would Consider public concerns	

* 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 several criteria are met (see Section 9.1.2).

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

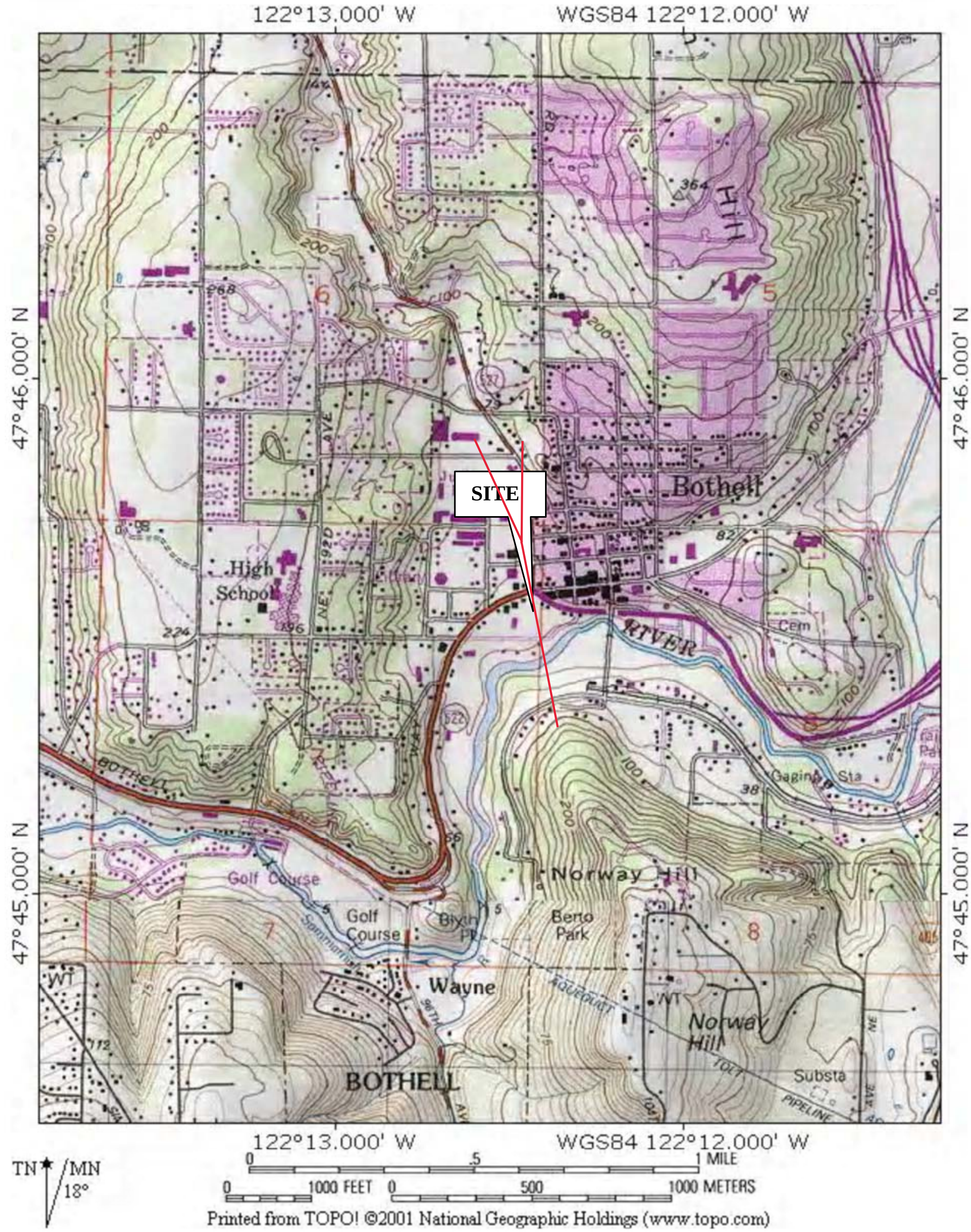
		Remove Soils Under Pipe +MNA+ In situ fixation		**In Situ Bioremediation+MNA+E&IC+ In situ fixation**		**Eng & Inst Controls**		**No Action**	
	weight	score	value	score	value	score	value	score	value
Overall protectiveness of human health & environment	30%	5	1.5	4	1.2	3	0.9	0	0
Permanent reduction of 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

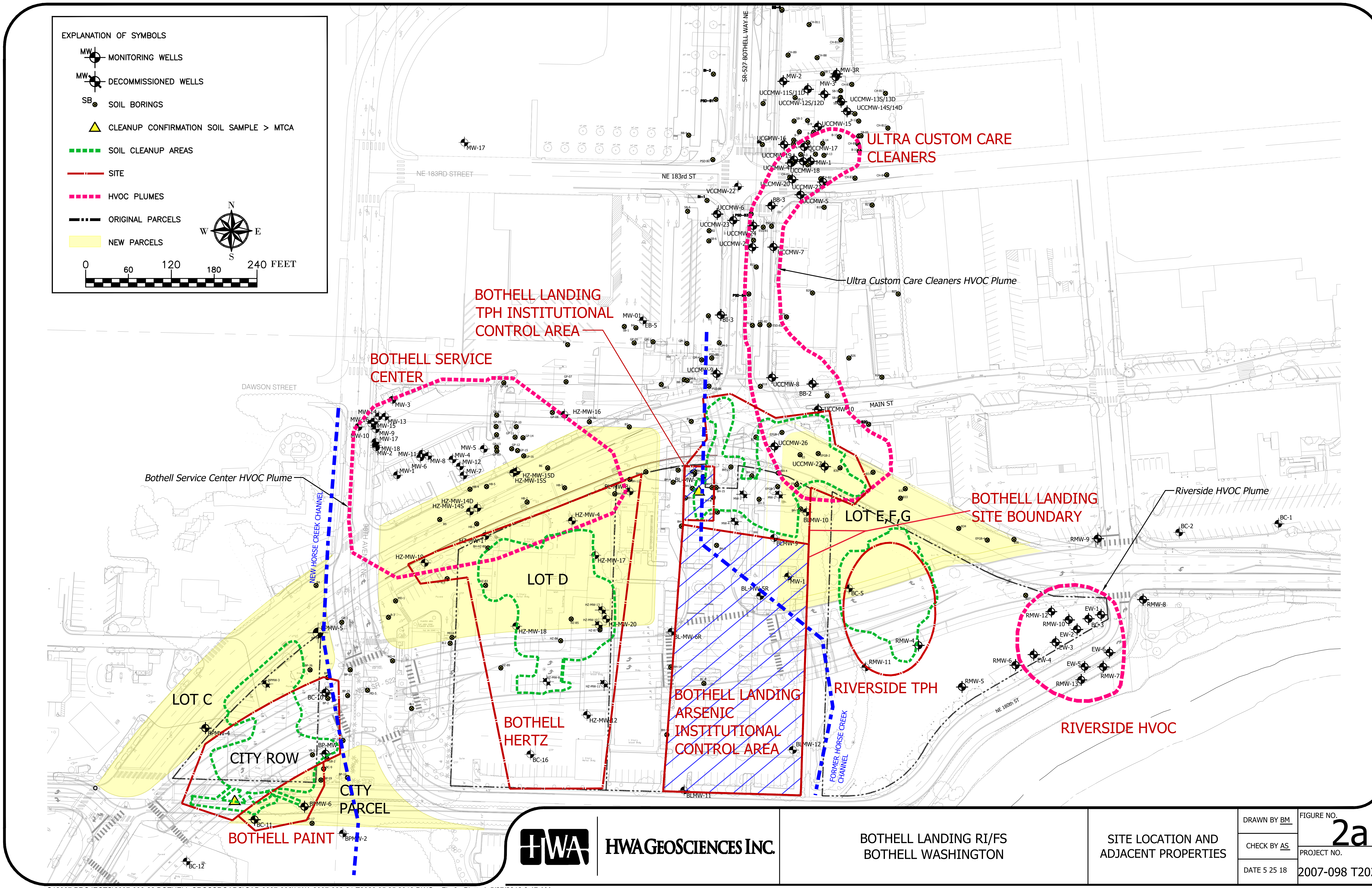
	Remove Soils Under Pipe +MNA+ In situ fixation	**In Situ Bioremediation+MNA+E&IC+ In situ fixation**	**Eng & Inst Controls**	**No Action**
Disproportionate cost analysis				
Estimated cleanup cost ($k)	1434.5	73.10	40.70	0
Net Benefit	4.40	3.70	3.20	1.00
Incremental benefit	0.70	0.50	2.20	0
Benefit : cost (cost-effectiveness)	0.003	0.051	0.079	
Incremental cost	1361.45	32.40	40.70	0
Incremental benefit : incremental cost	0.001	0.015	0.054	

Table 8
RI Summary

	Soil	Ground Water		Sediment	Surface Water	Air
COCs	**TPH-Gas, benzene**	**TPH-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, Horse Creek	Human, ecological, Horse Creek	Human, ecological, Horse Creek			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	After interim actions, all ground water on site meets cleanup standards	Proposed remedy is institutional controls and ground water monitoring	No sediment impacts identified	No surface water impacts identified	No buildings present or planned in area with potential air impacts



HWA GEOSCIENCES INC.	SITE VICINITY	FIGURE NO. 1
	BOTHELL LANDING SITE RI/FS BOTHELL, WASHINGTON	PROJECT NO. 2007-098-920



HWA GEOSCIENCES INC.

BOTHELL LANDING RI/FS
BOTHELL WASHINGTON

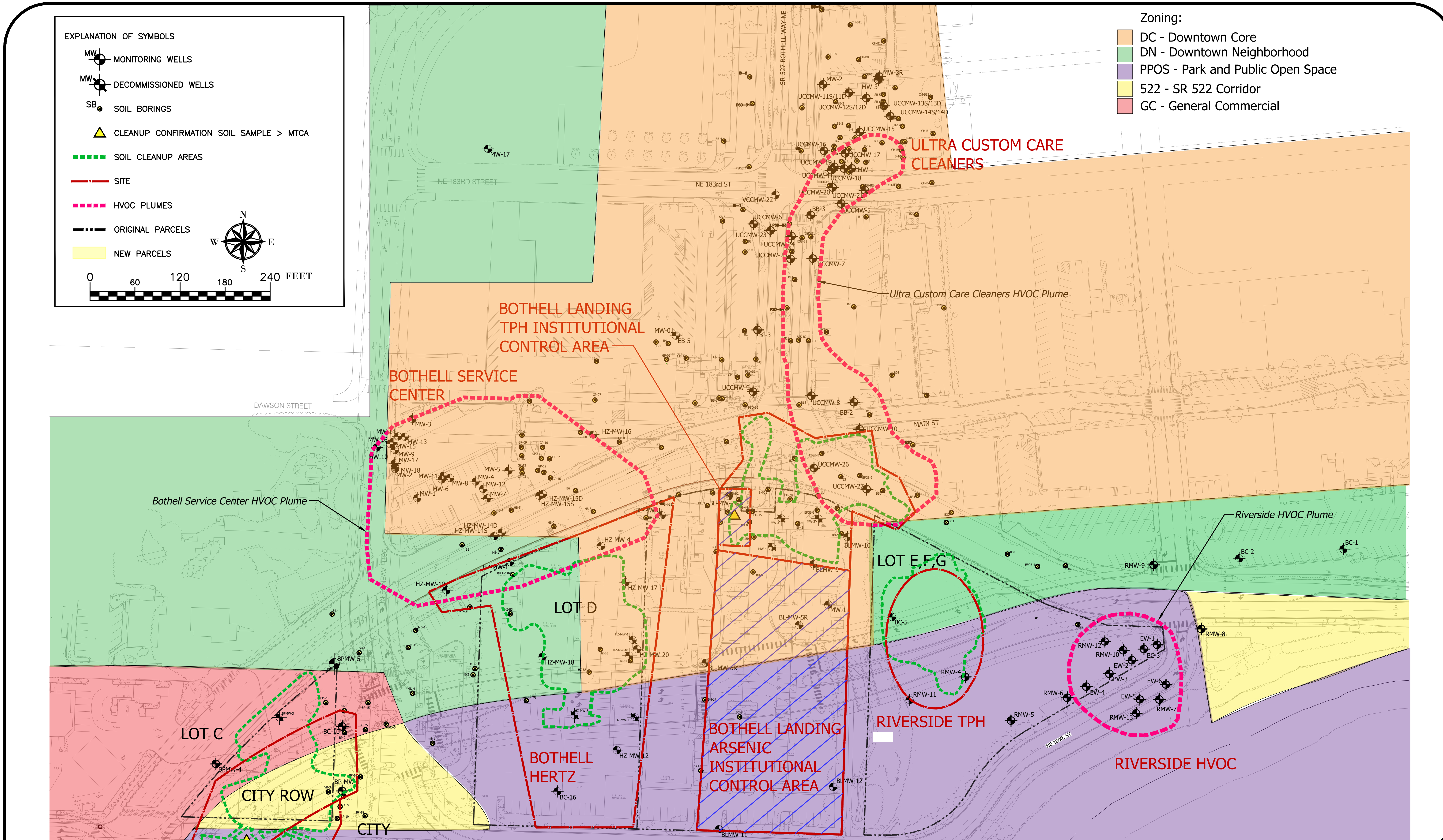
SITE LOCATION AND ADJACENT PROPERTIES

DRAWN BY BM
CHECK BY AS
DATE 5 25 18

FIGURE NO. 2a

PROJECT NO. 2007-098 T2020

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD 2007-098\HWA 2007-098-21 T2020 05.25.2018.DWG <Fig 2> Plotted: 5/27/2018 9:47 AM



HWA GEOSCIENCES INC.

BOTHELL LANDING RI/FS
BOTHELL WASHINGTON

SITE LOCATION AND ADJACENT PROPERTIES

DRAWN BY EFK

CHECK BY NN

DATE

FIGURE NO. 2B

PROJECT NO. 2007-098 T2020

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD 2007-098\HWA 2007-098-21 T2020 05.25.2018.DWG <Fig 2b> Plotted: 5/28/2018 11:36 AM

Agreed Order No. 6294
Exhibit A

EXHIBIT A

Site Diagram

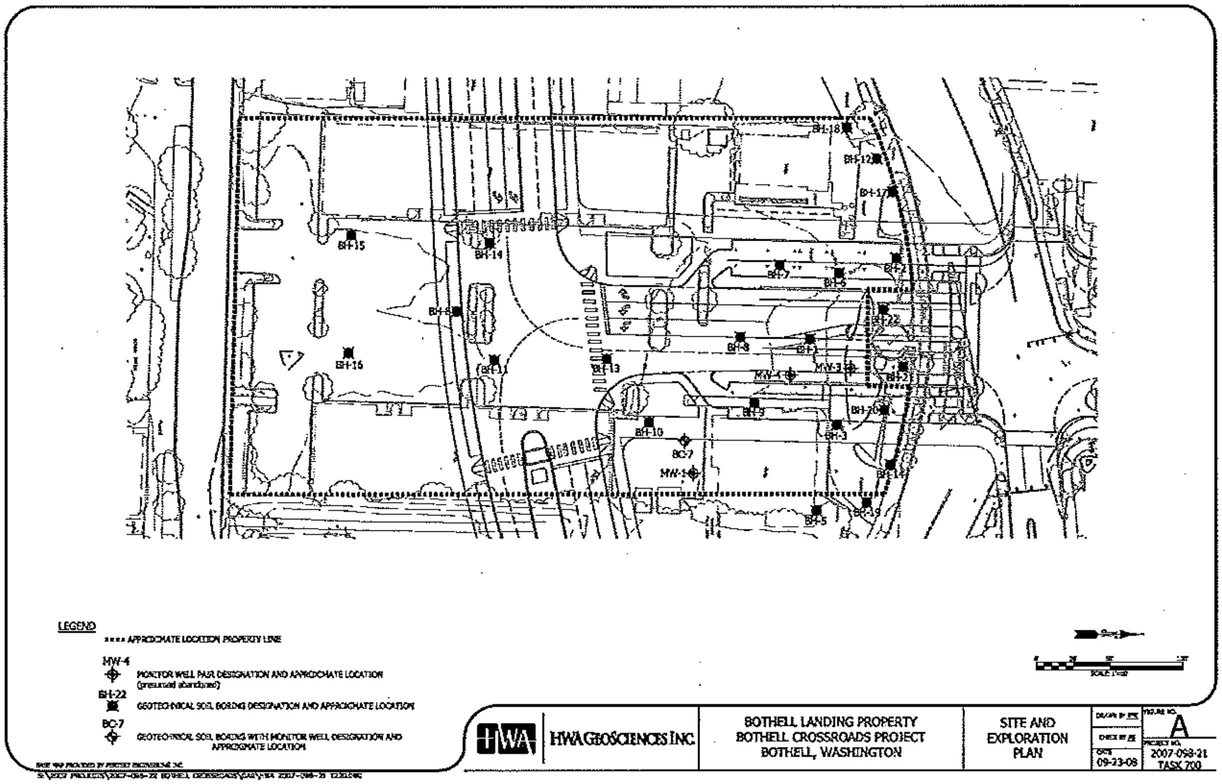


FIGURE 2C
SITE DIAGRAM FROM 2009
AGREED ORDER

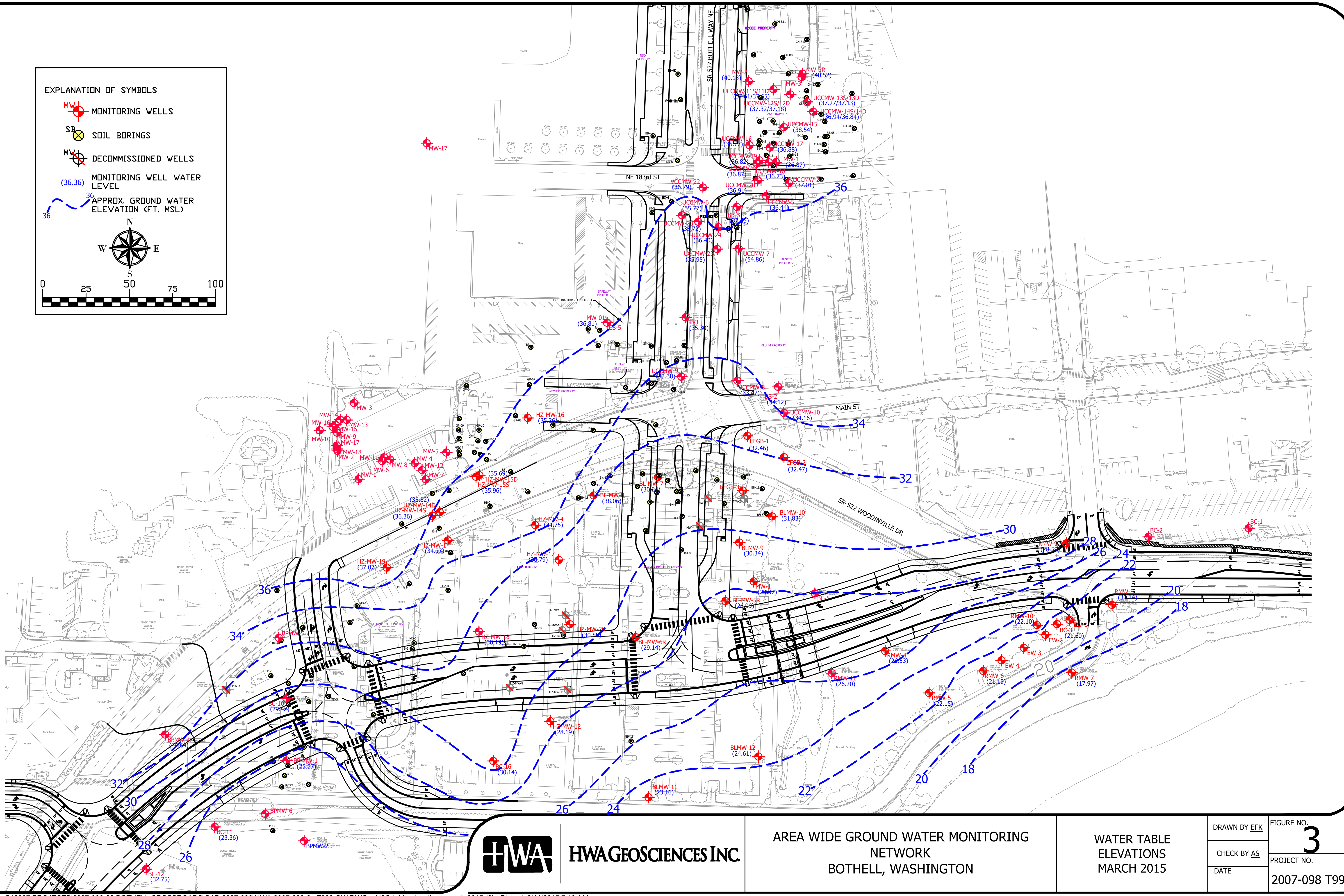
AERIAL PHOTOGRAPH - CURRENT ROADWAY

BOTHELL LANDING RI/FS
BOTHELL, WASHINGTON

HWA GEOSCIENCES INC.

FIGURE NO.
2d

PROJECT NO.
2007-098



HWA GEOSCIENCES INC.

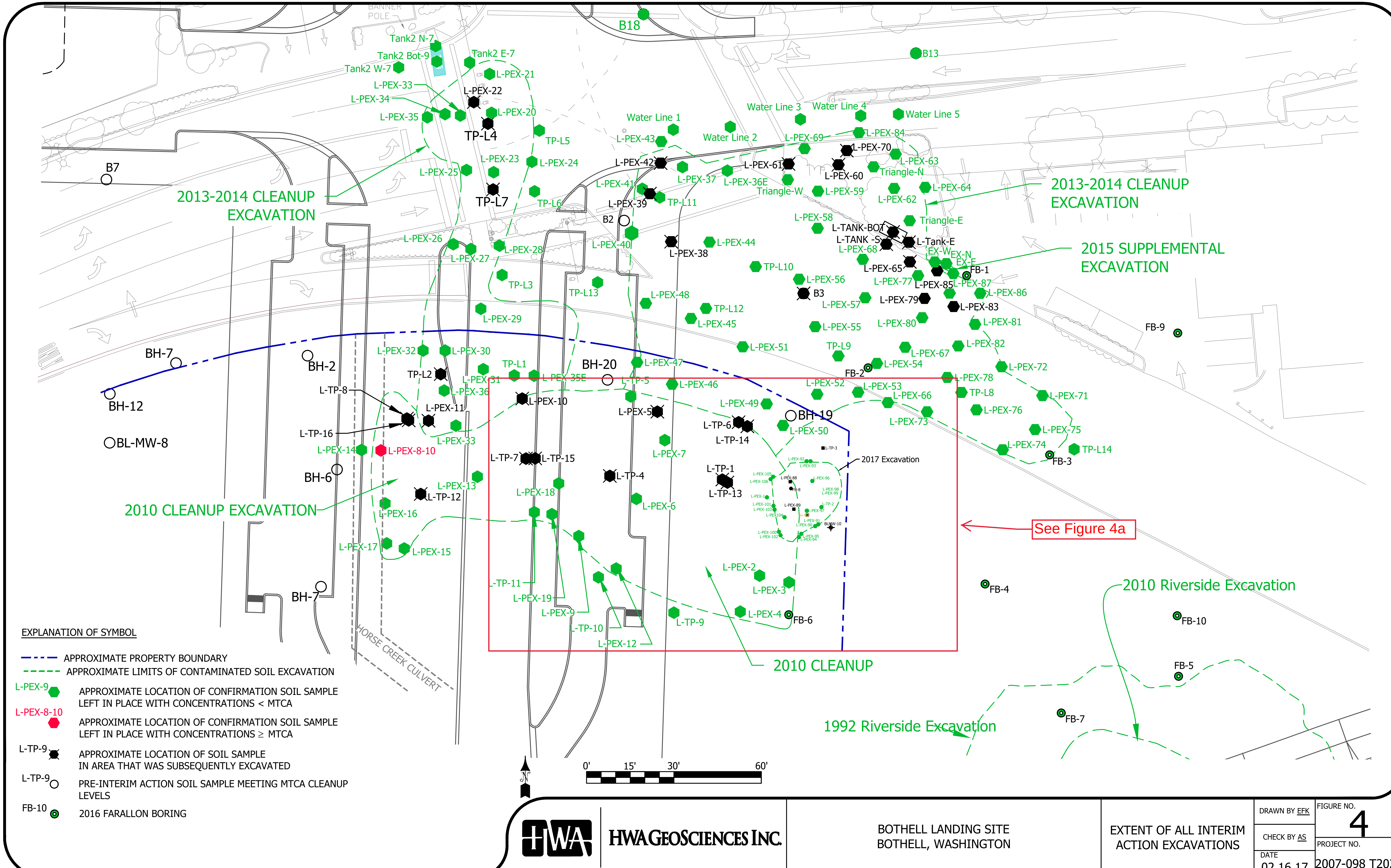
AREA WIDE GROUND WATER MONITORING NETWORK
BOTHELL, WASHINGTON

WATER TABLE ELEVATIONS
MARCH 2015

DRAWN BY EFK
CHECK BY AS
DATE

FIGURE NO. 3
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



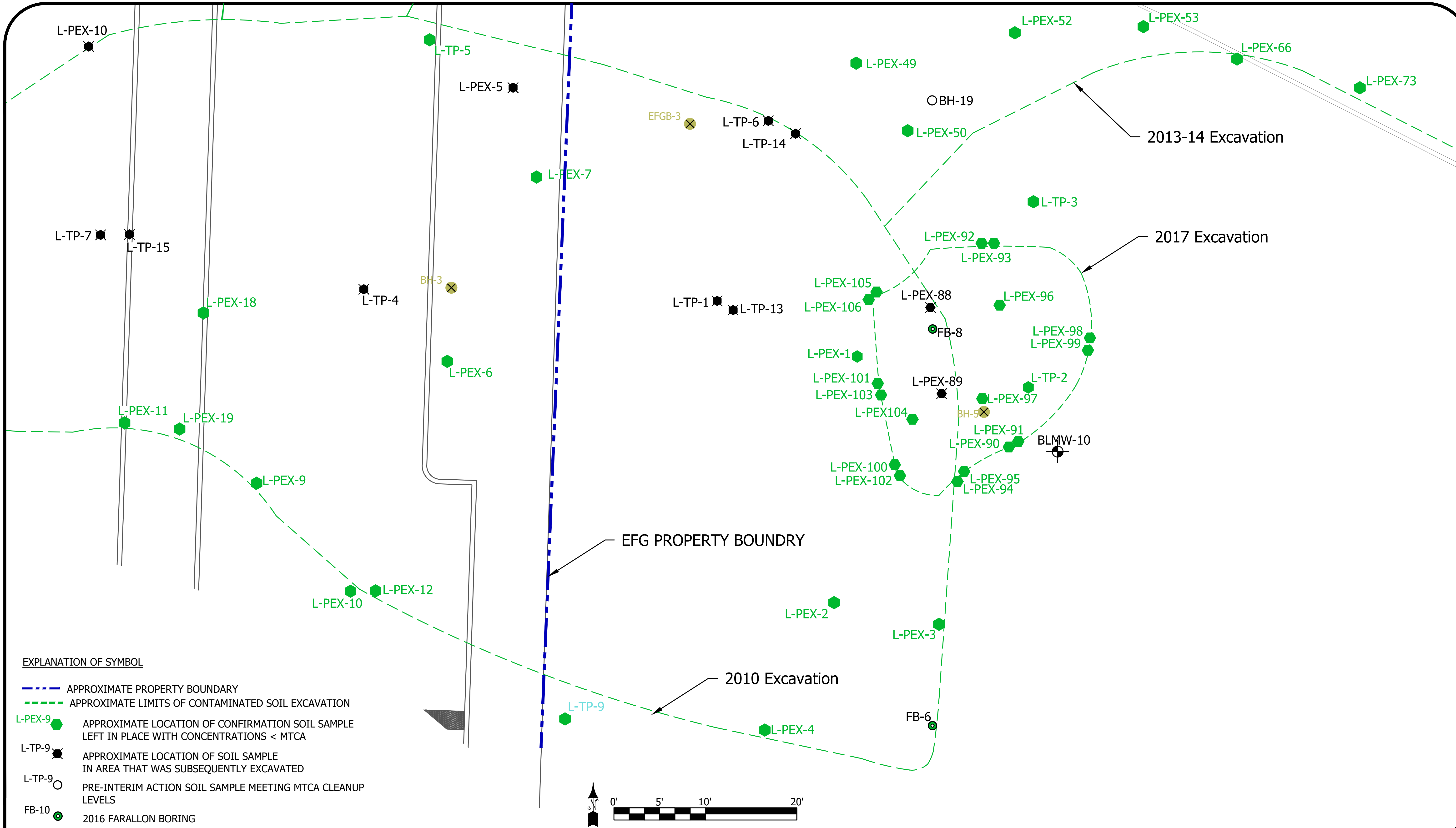
HWA GEOSCIENCES INC.

BOTHELL LANDING SITE
BOTHELL, WASHINGTON

EXTENT OF ALL INTERIM ACTION EXCAVATIONS

DRAWN BY EFK	FIGURE NO. 4
CHECK BY AS	PROJECT NO.
DATE 02.16.17	2007-098 T2020

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD 2007-098\HWA 2007-098-21 T2043.DWG <BOTHELL LANDING ONLY FIG 4 (19)> Plotted: 3/8/2017 2:57 PM



BASE MAP PROVIDED BY PARAMETRIX

HWA GEOSCIENCES INC.

BOTHELL LANDING SITE
BOTHELL, WASHINGTON

EXTENT OF 2017
INTERIM ACTION
EXCAVATION

DRAWN BY EFK

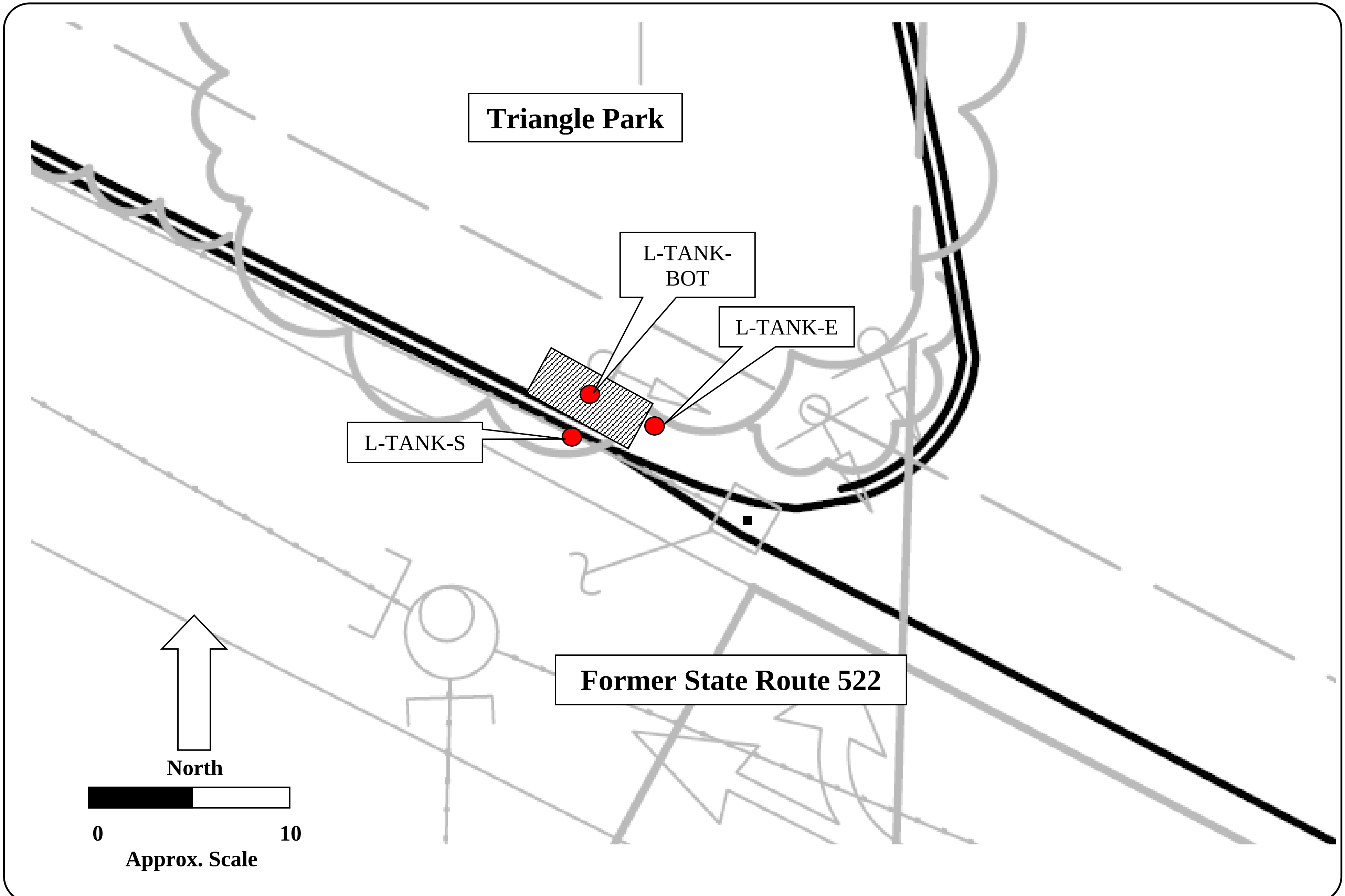
CHECK BY AS/NK/AY

DATE 02.16.17

FIGURE NO. 4A

PROJECT NO. 2007-098 T2043

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD 2007-098\HWA 2007-098-21 T2043.DWG <RiverSide 2017 FIG 4> Plotted: 3/8/2017 2:50 PM



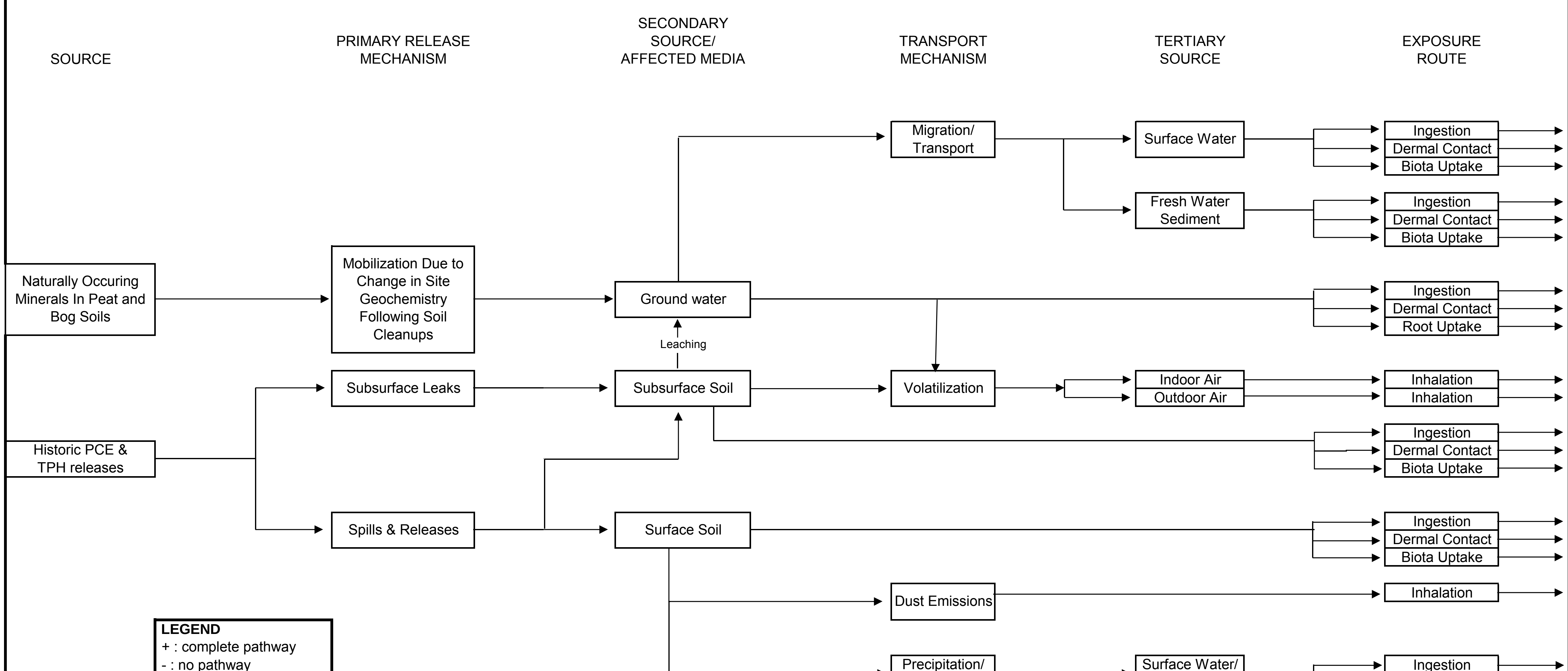
HWA GEOSCIENCES INC.

UST DETAIL MAP

TRIANGLE PARK
UST SITE ASSESSMENT
BOTHELL, WASHINGTON

FIGURE NO. 5

PROJECT NO. 2007-098-994



POTENTIAL RECEPTORS

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

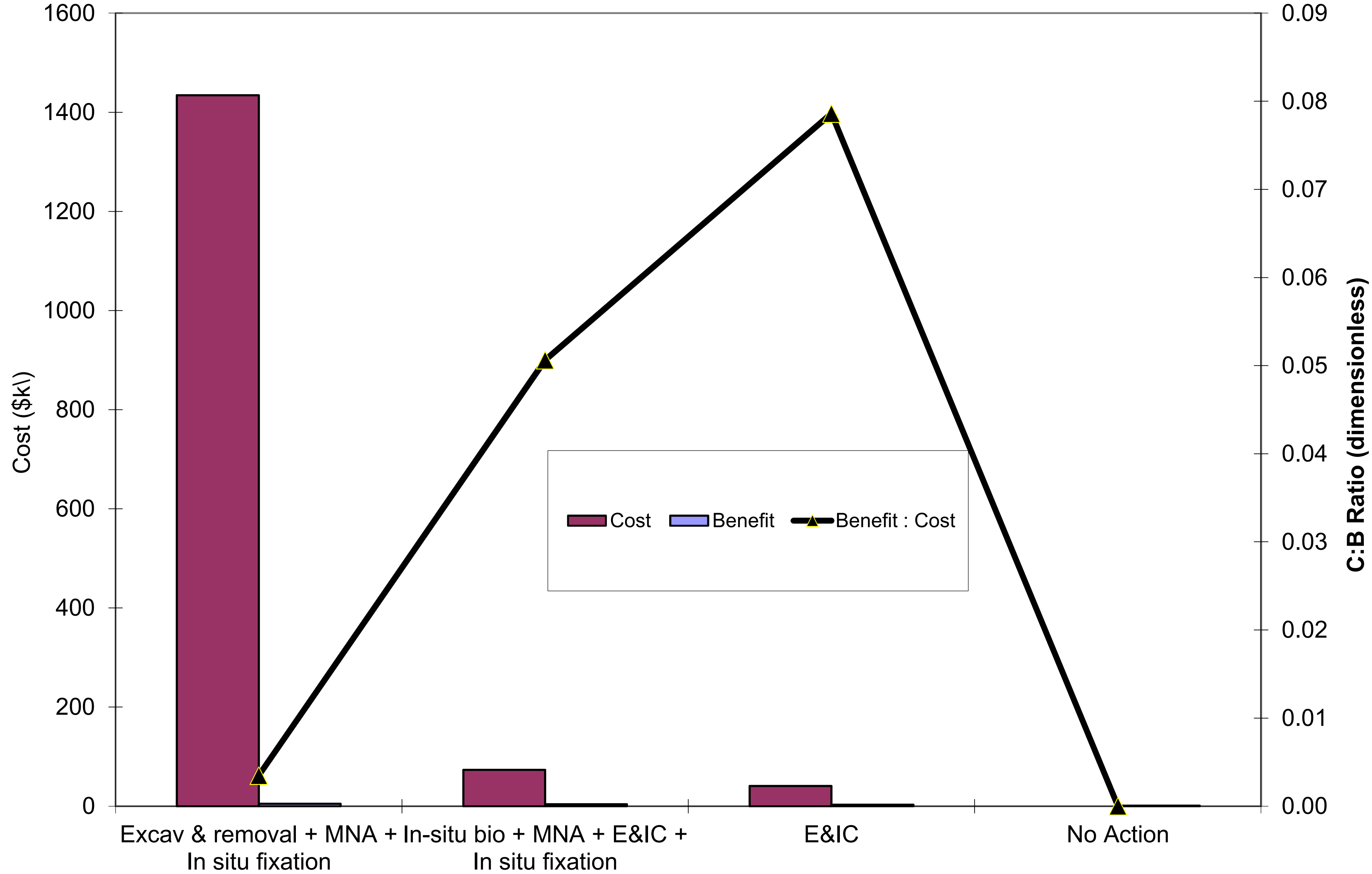
HWA GEOSCIENCES INC.

CONCEPTUAL SITE MODEL

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION / FEASIBILITY STUDY
BOTHELL, WASHINGTON

FIGURE NO. 6

PROJECT NO. 2007-098-2020



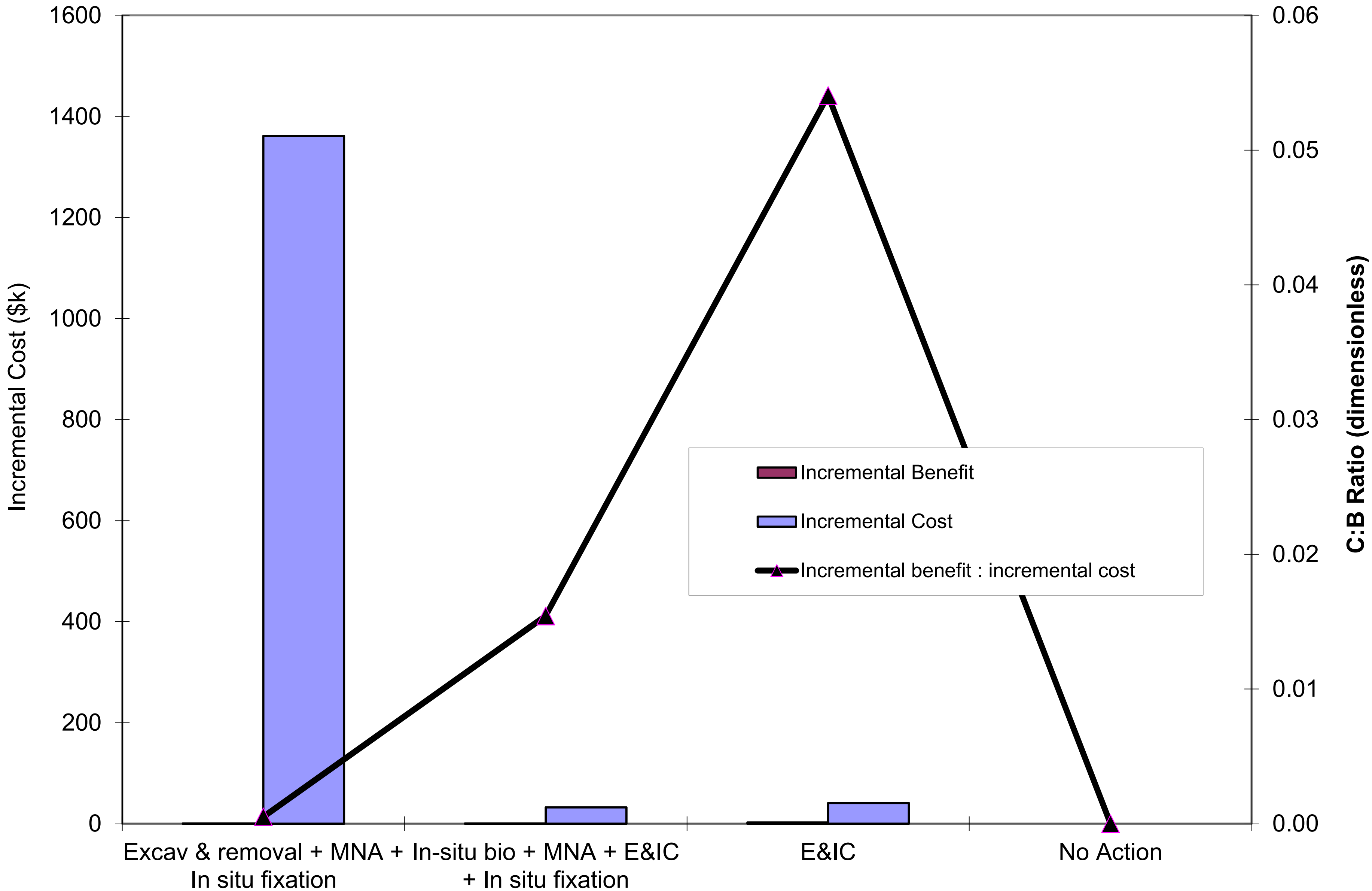
DCA - COST : BENEFIT

BOTHELL LANDING SITE
RI/FS
BOTHELL, WASHINGTON

HWA GEOSCIENCES INC.

FIGURE NO.
7

PROJECT NO.
2007 098 -



HWA GEOSCIENCES INC.

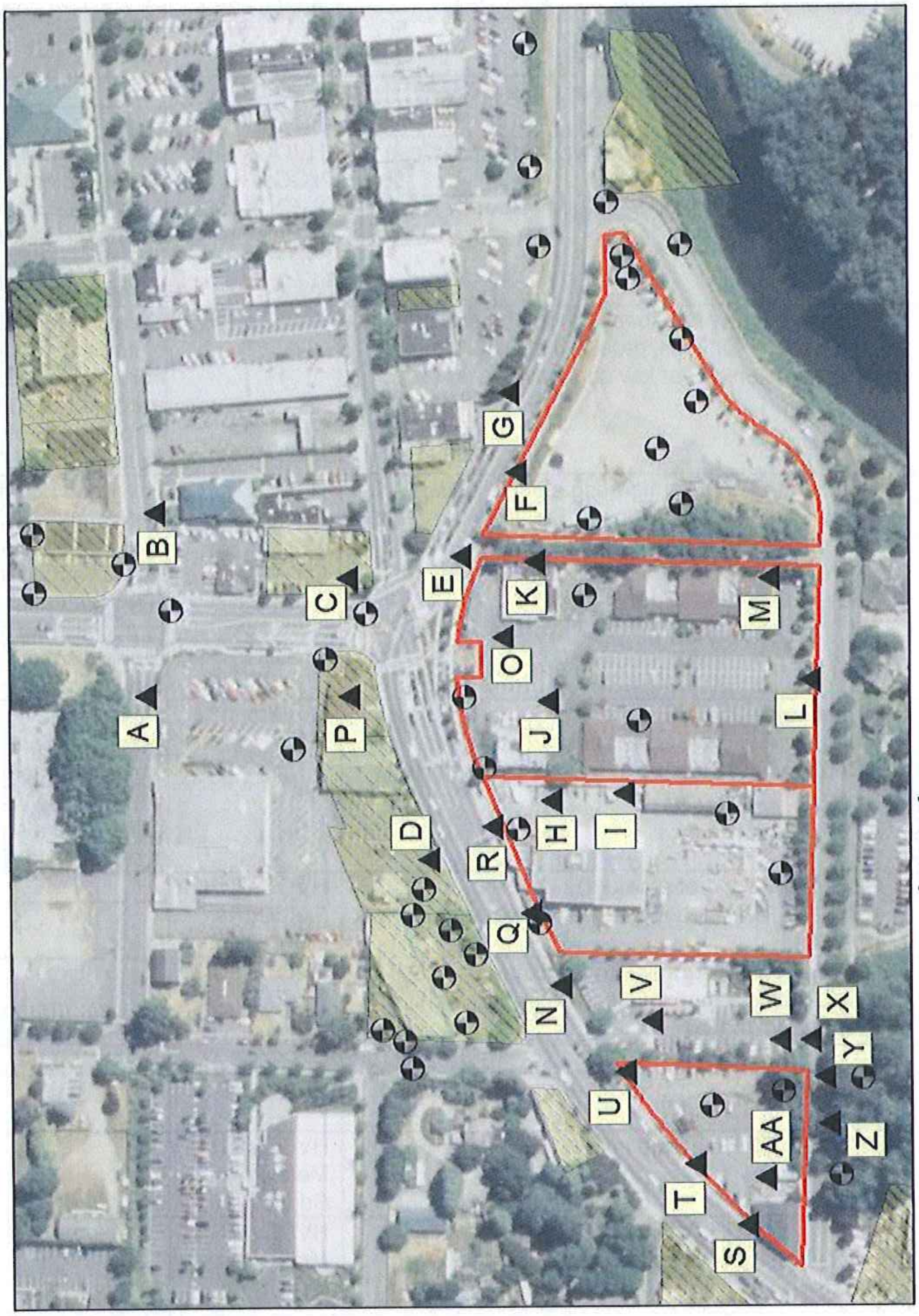
DCA - INCREMENTAL COST : INCREMENTAL BENEFIT

BOTHELL LANDING SITE
RI/FS
BOTHELL, WASHINGTON

FIGURE NO.
8

PROJECT NO.
2007 098 -

Preliminary Monitoring Network Bothell MTCA Sites



Legend

Existing monitoring well

Future monitoring well

Other_contaminated_sites

ATTACHMENT 1

Figure 9
Area-wide Ground Water Monitoring Network
From Februarty 15, 2013 Letter to City of Bothell
from Jerome Cruz, Dept of Ecology

APPENDIX A

APPROVED FINAL BOTHELL LANDING RI/FS WORK PLAN AND AMENDMENT NO. 1 TO AGREED ORDER (HWA, SEPTEMBER 19, 2011)

(ON CD)

REMEDIAL INVESTIGATION FEASIBILITY STUDY
FINAL WORK PLAN
BOTHELL LANDING SITE
BOTHELL, WASHINGTON

Project No. 2007-098-929

Prepared for
City of Bothell

September 19, 2011

HWA GEOSCIENCES INC.

- Geotechnical Engineering
- Hydrogeology
- Geoenvironmental Services
- Inspection & Testing

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REMEDIAL INVESTIGATION FEASIBILITY STUDY
FINAL WORK PLAN
BOTHELL LANDING SITE
BOTHELL, WASHINGTON

1.0 INTRODUCTION

This remedial investigation / feasibility study (RI/FS) work plan describes the collection of data and information necessary to further define the extent of contamination and to characterize the Bothell Landing Site (Site) in Bothell, Washington (the City). The City owns the approximately 2.8-acre Bothell Landing property located at 18120, 18126, and 18132 Bothell Way, and 10001 Woodinville Drive, Bothell, Washington, however final determination of the Site boundaries (i.e., the area where hazardous substances have come to be located) will be established during the RI process. Ecology's Facility Site ID is # 73975762; it is noted as a Brownfields Site in Ecology's Integrated Site Information System (ISIS) database.

HWA prepared this RI/FS work plan as part of the actions specified in Agreed Order number DE 6294, as amended on June 9, 2010, between the City of Bothell and the Washington State Department of Ecology (Ecology). Copies of the Agreed Order and the June 9, 2010 amendment are presented in Appendix A.

Figure 1 is a vicinity map and Figures 2 and 3 show the Bothell Landing Site and other properties in the Bothell Crossroads area relevant to this work plan. Figure 4 shows the approximate extent of the RI study area.

1.1 BACKGROUND

The general direction of ground water flow in the vicinity of the Bothell Landing Site is from north to south. Hydraulically upgradient of the Bothell Landing Site are several properties having possible or recognized environmental conditions (Figure 3) because of historic use of petroleum products or dry cleaning solvents.

Within the Bothell Landing Site, there are dissolved metals and petroleum hydrocarbon concentrations in ground water that exceed MTCA Method A cleanup levels (Table 720-1 in WAC 173-340-900). An interim action soil cleanup performed in September 2010 through the Bothell Crossroads project area removed 3,556.5 tons (approximately 2,222 cubic yards) of petroleum-impacted soil that was a source of the petroleum hydrocarbons occurring in Bothell Landing Site ground water. An interim action cleanup report (HWA, 2011) documents the 2010 interim action soil cleanup within the Bothell Landing parcel. The 2010 interim action cleanup was confined within the parcel boundaries, due to lack of access to areas beneath the heavily-used SR 522 state highway. The cleanup is therefore being conducted over a period spanning two construction seasons because contaminated soil known to be present under the active SR 522 roadway was left in place in the northern extent of the Bothell Landing parcel. Contaminated soil remaining under the SR 522 roadway will be addressed after the roadway realignment during Crossroads Phase III construction, which is scheduled to commence in the summer of 2012, and be completed in 2013. Following the soil cleanup under the existing roadway, the City will conduct one year of quarterly monitoring to confirm successful cleanup of petroleum-impacted ground water, in accordance with the interim action scope of work described in the amended Agreed Order. Section 5 of this RI work plan addresses the quarterly monitoring to be conducted at the Bothell Landing Site.

In addition to petroleum-impacted ground water at the Bothell Landing Site, previous investigations (e.g., HWA, 2007; CDM, 2009; and Parametrix, 2009) identified an upgradient chlorinated volatile organic carbon (VOC) plume apparently originating from the Ultra Custom Care Cleaners property located at 18300 – 18304 Bothell Way NE (along State Route 527, also known as the Bothell-Everett Highway) (Figures 2 and 3) that has migrated onto and commingled with contaminants in the Bothell Landing Site ground water. The Ultra Custom Care Cleaners property is listed as facility number 379891 on the Department of Ecology's Confirmed and Suspected Contaminated Sites List (CSCSL) for chlorinated solvent contamination in soil and ground water.

Another known chlorinated solvent site that is up-gradient of the Bothell Landing property is the Bothell Service Center / Simon & Son Fine Dry Cleaning site, 18107 Bothell Way Northeast. This site is listed as a state cleanup site, Voluntary Cleanup Program, facility identification number 33215922. The site has a documented release of chlorinated solvents to ground water, and contamination has migrated off-site; however, it is unknown at this time whether the Bothell Service Center plume has migrated onto Bothell Landing and commingled.

A third former cleaners/laundry business, the Bothell Cleaners, was located at 10029 Main Street, although no release has been reported for this site, or is apparent based on sampling results (CDM, 2011). The former Bothell Cleaners is located a block northeast of the Bothell Landing property.

One of the goals of the RI will be to determine the source of chlorinated solvents detected at the Bothell Landing property, and delineate the extents (vertical and horizontal) of the plume(s) impacting the property. The chlorinated VOCs detected in Bothell Landing Site ground water have not yet been completely addressed to date, pending a RI for these contaminants that includes identification of the source area (or areas) and delineation of the entire plume. Figure 4 illustrates the available data on the nature and extent of chlorinated VOC occurrences in ground water in the vicinity of the Bothell Landing Site. The data are insufficient to adequately characterize the extent of the chlorinated VOC plume(s) for RI purposes. The approximate extent of the RI study area addressed in this work plan is shown on Figure 4.

Petroleum hydrocarbons also occur in ground water upgradient of the Bothell Landing property line in addition to chlorinated VOCs. For example, ground water samples collected at CDM's 2009 push-probe locations B-3 and B-18 (Figure 5) had benzene concentrations exceeding the MTCA Method A cleanup level of 5.0 micrograms per liter (µg/L). The extent of the petroleum hydrocarbon plume upgradient of the northern property line, and the relationship of these detections to the Site, is currently not well characterized with respect to area or temporal variation.

Because it may not be possible to a complete the RI in one phase due to property access and ownership issues, a phased approach to completing the work will be utilized, with the goal of populating the final RI with data collected during the four RI phases outlined in Section 5.0. Phased RI work will be conducted whenever access to unexplored properties of interest becomes available.

1.2 OBJECTIVE

The objective of this RI/FS work plan is to meet the requirements of the Agreed Order as amended on June 9, 2010 in accordance with the Model Toxics Control Act (MTCA) Cleanup Regulation (Washington Administrative Code (WAC) 173-340). The RI work plan is designed to collect additional data on chlorinated VOC and petroleum hydrocarbon impacts in selected areas that are currently accessible, and ultimately characterize site conditions in order to complete a FS and select a cleanup action as described in WAC 173-340-360 through 173-340-390.

1.3 WORK PLAN ORGANIZATION

This Work Plan is prepared using the U.S. Environmental Protection Agency's (EPA's) *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (OSWER Directive 9355.3-01) (EPA, 1988) as a reference for work plan organization and content. The scope of work described in the work plan is designed to gather information required for a RI study as described in WAC 173-340-350. The organization of this Work Plan is:

- Section 1: Introduction – background, objective, work plan organization, and regulatory framework

- Section 2: Site Background and Physical Setting – description and history of operations and environmental setting

- Section 3: Initial Evaluation – summary of previous investigations, known and expected contaminants, and the conceptual site model

- Section 4: Work Plan Rationale – data quality objective needs and general approach

- Section 5: Remedial Investigation Tasks – project planning, sample collection and analysis, data validation and evaluation, and assessment of risks

- Section 6: Project Management – schedule and project management staff

1.4 REGULATORY FRAMEWORK

The RI will be conducted under the provisions of the Agreed Order with Ecology as amended on June 9, 2010. In Washington State, the administrative process and standards for investigating and cleaning up facilities impacted by hazardous substances are regulated under the Model Toxics Control Act (MTCA) regulations at WAC 173- 340 (Ecology, 2007). Under MTCA, a site cleanup is typically preceded by a complete remedial investigation (RI) and a feasibility study (FS). The RI/FS focuses on collecting, developing, and evaluating enough information to select a cleanup action under WAC 173-340-360 through 390.

2.0 SITE BACKGROUNDS AND PHYSICAL SETTING

2.1 SITE BACKGROUNDS

In the following sections, properties within the RI study area, as depicted in Figure 3, are described from north to south beginning with the apparent source area for the chlorinated VOC plume at the Ultra Custom Care Cleaners site.

2.1.1 Ultra Custom Care Cleaners Site

The Ultra Custom Care Cleaners property is listed as facility number 379891 on the Department of Ecology's Confirmed and Suspected Contaminated Sites List (CSCSL) for chlorinated solvent contamination in soil and ground water. This 0.25-acre property is comprised of a west-facing single story commercial building and associated parking lot at 181300 – 18304 Bothell Way NE/SR 527, with Ultra Custom Care Cleaners occupying the northernmost portion of the building and Frank's Hair Design hair salon and the Laundry Basket Laundromat the central and southern portions. Historically, three dry cleaners operated on this parcel. Raincheck Cleaners and Laundry (1950s through 1967) occupied a building formerly located at the southwest corner of the parcel (current parking lot). Following demolition of the Raincheck Cleaners and Laundry building in 1967, a new building was constructed that was occupied first by NuLife Cleaners and later by Ultra Custom Care Cleaners.

Several investigations have been performed at this site. Figure 6 depicts the approximate locations of the soil and ground water explorations to date at this site. Sampling results indicated that soil and ground water at the property contained chlorinated VOCs, primarily the dry cleaning solvent tetrachloroethene (a.k.a., perchloroethene or PCE), and also associated degradation compounds trichloroethene (TCE), and (cis)-1,2-dichloroethene ((cis)-1,2-DCE).

EHS International completed a Phase I Environmental Site Assessment (ESA) of the site in June 2001 (EHS International, 2001a); CDM completed a Phase I ESA in 2008 (CDM, 2008). At the time of the 2008 Phase I ESA, Ultra Custom Care Cleaners was (and presumably still is) using PCE as a dry cleaning solvent. A Phase II ESA performed in August 2001 by EHS International (2001b) identified chlorinated VOCs, including PCE, in soil and ground water in the immediate vicinity of Ultra Custom Care Cleaners' facility, but not at concentrations exceeding MTCA Method A cleanup levels. EHS International also identified PCE-contaminated water in two stormwater catch basins next to Ultra Custom Care Cleaners' facility (SS-1 and SS-2 on Figure 6). A subsequent site investigation (Farallon, 2002) found PCE concentrations exceeding MTCA Method A cleanup levels (as high as 800 μg/L) in ground water at the southern edge of the property, close to the former location of the Raincheck Cleaners and Laundry. In addition, a ground water sample from upgradient monitoring well MW-2 contained gasoline-range petroleum hydrocarbons at a concentration exceeding the MTCA Method A cleanup level, which was attributed by Farallon Consulting (2002) to a cleaning compound similar to Pine-Sol.

Additional subsurface investigation performed by Environmental Partners Inc. in 2004 identified PCE and its associated degradation compounds in soil and ground water in the vicinity of the former Raincheck Cleaners and Laundry building. Environmental Partners reported PCE concentrations in ground water ranging from 5 to 6,400 µg/L and PCE concentrations in soils ranging from 0.012 to 0.020 milligrams per kilogram (mg/Kg). The highest PCE concentration was identified between 8 and 12 feet below grade in borehole B-1 located at the southern edge of the property (Figure 7). The Environmental Partners Inc. (2004) investigation included three direct-push (i.e., Geoprobe®) soil borings located on the western edge of the adjacent City Municipal Shop and Garage property (B-10, B-11, and B-12 on Figure 7). The Environmental Partners report stated that no chlorinated VOCs were detected in three soil samples collected just above the water table at these locations. Ground water samples collected from the three direct-push borings contained PCE in concentrations exceeding the MTCA Method A cleanup level of 5 µg/L.

The EHS International (2001a, b), Farallon Consulting (2002), and Environmental Partners (2004) site investigations all concluded that the source of the PCE and related degradation products in soil and ground water in the vicinity of the Ultra Custom Care Cleaners property was the former Raincheck Cleaners and Laundry facility. The estimated ground water flow direction at the Ultra Custom Care property is southerly at a gradient of 0.026 feet/foot (Farallon, 2002). Based on this information, PCE and other chlorinated VOCs in ground water originating from this property appear to be migrating into Bothell Way NE/SR 527, NE 183rd Street, and other properties to the south (see Figures 4 and 7).

2.1.2 Bothell Service Center

Bothell Service Center/Simon & Sons Dry Cleaning (18107 Bothell Way NE) is a listed Confirmed or Suspected Contaminated Sites List (CSCSL) site to the northwest of the Bothell Landing property. The site has a documented release of chlorinated solvents to ground water, and contamination has migrated off-site.

The Bothell Service Center site included a dry cleaning facility (Simon & Son Fine Dry Cleaning) from 1989 to 1999. Previous site use included farming until the late 1940s and an auto dealership in the 1960s. In 1988 it was developed commercially as a small retail strip, with the former dry cleaner located at the west end of the building. A release of chlorinated solvents to ground water was detected by ERM in 1999 and 2000 (ERM, 2001). Three soil borings were initially completed through the floor of the building near dry cleaning equipment. Subsequently, additional borings for soil and ground water sampling were completed in the building after removal of the dry cleaning equipment. Three monitoring wells and several soil borings were completed outside of the building in 2001. ERM's measurement of ground water elevations in several on site monitoring wells indicates a ground water gradient to the east. The chlorinated solvents tetrachloroethylene (PCE), trichloroethylene (TCE), and dichloroethylene (DCE) were detected in site soil and ground water, including the easternmost monitoring well (MW-5), less than 20 feet from the property boundary with the adjoining property (Schuck's). PCE ground water concentrations ranging from 1,300 to 2,650 µg/L were detected in MW-5 from 7/13/01 to 2/12/02. PCE concentrations as high as 30,000 µg/L were detected in other wells.

Remediation via in situ chemical oxidation by potassium permanganate was attempted in 2001(ERM, 2002). PCE concentrations initially decreased in monitoring wells adjacent to and downgradient of injection points. However, ground water concentrations increased in three monitoring wells. ERM attributed the increase to seasonal variations in ground water levels mobilizing PCE from source areas, such as contaminated soils or dense non-aqueous phase liquids (DNAPL) and recommended further injection events and ground water monitoring. Anecdotal reports by City staff describe permanganate discharging to the Sammamish River with a resultant fish kill during this event.

A soil vapor extraction (SVE) system has been in operation at the site since September 2004 (Farallon, 2008a). Periodic operations and maintenance monitoring at the SVE system indicated that vapor concentrations decreased significantly between system startup and 2007. Recent vapor monitoring at the system did not detect solvent vapors. Farallon also completed a hydrogen peroxide injection event in May 2005. The injection resulted in the temporary increase in PCE concentrations in groundwater at the site; however, subsequent ground water monitoring in 2006 and 2007 indicated that PCE concentrations had decreased to pre-injection levels. Chemical oxidation cells (sodium persulfate) were installed in site monitoring wells in 2006 and 2007 for additional remedial activity. This method was found to have limited effectiveness due to the high ground water velocity, as well as limited access to the release source area.

Farallon also implemented an additional interim remedial action at the site including slug tests and additional monitoring wells. Enhanced bioremediation though a combination of nutrient and bacterial injection was initiated in February 2008. Farallon reported groundwater flow direction to the southeast at the site. As of August, 2008, PCE and TCE concentrations remained in the thousand to low tens of thousands of µg/L throughout the site.

In 2010 a limited remedial investigation was conducted on Al's Auto Bothell Wexler (a.k.a., Schuck's), an adjacent the property to the east, which is listed in Ecology's LUST database as site # 5294, facility identification number 63618231. Sixteen direct push borings, sampling and analysis of soil and ground water samples confirmed the presence of PCE, TCE, DCE, and vinyl chloride (VC) in ground water at the western portion of the property, originating from the adjacent Bothell Service Center property, as well as localized petroleum hydrocarbon impacts to soil and ground water in the vicinity of the former on-site USTs and cleanup area, in the southwestern portion of the property (Floyd | Snider, 2010).

2.1.3 City Properties

The City properties comprise approximately 1.68 acres bounded to the north, east, and south by NE 185th Street, 101st Avenue NE, and NE 183rd Street (Figure 6). Private commercial properties bound the site to the west, notably the Ultra Custom Care Cleaners site. On the City properties there are four structures including: two single family residences converted to office space (built in 1920 and 1956), the City Hall building (11,682 square feet constructed in 1939), and the Municipal Shop and Garage building (3,160 square feet constructed in 1954) (Parametrix, 2010). The remaining parcels without structures are primarily utilized for parking and are covered with asphalt pavement.

A records review investigation was initiated in 2007 by the City to identify parcels located within the downtown Bothell revitalization area that contained potential environmental conditions (ECOSS, 2008; Parametrix, 2010). The records review identified a potential environmental condition on the City's Municipal Shop and Garage site (Figure 6). State records show that unleaded gasoline underground storage tanks (USTs) were removed from the site; the site is not on Ecology's Confirmed and Suspected Contaminated Sites List (CSCSL) or Leaking Underground Storage Tank (LUST) list. A UST closure report for the site (SEACOR, 1990) describes the closure in 1990 of two former gasoline USTs and a gasoline dispenser located just north of the shop building. According to the report, all contaminated soils were successfully removed along with the USTs. In the spring of 2010, Parametrix performed an environmental site assessment of the ten City parcels to the east and northeast of the Ultra Custom Care Cleaners site. Parametrix advanced five soil borings on the City properties (see Figure 6) from which they collected ground water samples at all five boreholes; however, only two of the ground water samples, SB-02 and SB-05, were analyzed for chlorinated VOCs. One of these contained PCE in ground water below the MTCA cleanup level. From the analytical data Parametrix concluded that no significant soil contamination is present at the City's properties (i.e., no petroleum hydrocarbons or VOCs detected in soils above MTCA Method cleanup levels); similarly, the ground water samples did not contain contaminants at concentrations above MTCA Method A cleanup levels.

2.1.4 City Right-of-Ways

City right-of-ways are publicly owned streets, alleyways, and sidewalks within the RI study area. Several explorations have been advanced to date in these right-of-ways to collect soil and ground water samples. Figures 5 and 7 show these locations. CDM (2009) and HWA (2008) reported chlorinated VOCs in ground water apparently migrating south toward the Bothell Landing property along utility corridors in the Bothell Way NE/SR 527 right-of-way (see Figure 7). CDM

(2009) also reported chlorinated VOCs and petroleum hydrocarbons in ground water beneath the SR 522 right-of-way at push-probe explorations (from west to east) B6, B1, B2, B3, B14, B15, and B16 (Figure 5). Potential petroleum hydrocarbon contamination sources (i.e., the former Associated, Union Oil, and Mobil gas station sites shown on Figure 3) located north of the Bothell Landing property at the intersection of SR 527 and Main Street are largely uninvestigated (CDM, 2009).

2.1.5 Bothell Landing

The City owns the approximately 2.8-acre Bothell Landing parcel located at 18120, 18126, and 18132 Bothell Way, and 10001 Woodinville Drive, Bothell, Washington (King County Tax Parcel Nos. 9457200015 and 9457200020). Ecology's Facility Site ID is # 73975762; it is noted as a Brownfields Site in Ecology's Integrated Site Information System (ISIS) database.

Details of historic property use and the several site assessments performed to date at Bothell Landing can be found in Kleinfelder (1999), Riley Group (2007), ECOSS (2008), HWA (2007), Parametrix (2009), and HWA (2011). The following is a summary of those assessments.

Two service stations were previously located at the northeast and northwest corners of the Bothell Landing parcel between the 1930's and 1970's at the approximate locations shown on Figure 8. The stations were demolished during site reconstruction in the 1970's and the underground storage tanks (USTs) associated with the stations were reported to have been removed (Riley Group, 2007). However, in 1998 the City purchased the north central portion of the site at 10001 Woodinville Way as part of a roadway widening and the Rotunda Park project. In the course of site excavation, five USTs and associated petroleum-affected soils were discovered. The USTs were assumed to have been associated with one of the former service stations. Petroleum hydrocarbon concentrations remaining in the excavation sidewalls exceeded MTCA cleanup levels.

HWA performed a Phase II environmental site assessment in 2007 that identified soils in the northern portion Bothell Landing property (vicinity of the known UST releases) containing petroleum-related compounds (petroleum hydrocarbons, aromatic hydrocarbons, and semi-volatile organic compounds) exceeding Ecology MTCA Method A soil cleanup levels (Table 740-1 in WAC 173-340-900). Ground water at the Bothell Landing Site apparently was affected by multiple sources. Petroleum hydrocarbon impacts to ground water from historic UST releases at the property appeared to be limited. Chlorinated VOCs were detected in ground water samples at the northwest and northeast portions of the property. The Phase II report concluded that these detections appeared to be either from an unknown historic on-site source, or from suspected upgradient sources to the north-northeast and/or north-northwest of the subject property.

Parametrix's 2009 remedial investigation concluded that petroleum contamination in soil and ground water at the former gas station area was relatively well defined within the Bothell Landing Site boundaries; however, soil contamination extended into the SR 522 right-of-way where it was less defined. The extent of the petroleum-contaminated ground water plume south of SR522 was limited to the vicinity of Rotunda Park. The backfill around the Horse Creek culvert (Figure 8) did not appear to be a preferential pathway for contaminated ground water. Surface water in the open channel portion of Horse Creek immediately east of the Bothell Landing Site did not appear to be significantly affecting nearby surface soils or ground water. Chlorinated VOCs including PCE, TCE, and breakdown products, were present in ground water throughout the central and northern portions of the Bothell Landing Site with concentrations generally below MTCA Method A cleanup levels, based on multiple investigations over several years (PSI, 1998; Kleinfelder, 1999; HWA, 2007; Parametrix, 2010). Parametrix concluded that concentration distributions indicated that the chlorinated VOCs were migrating onto the Bothell Landing Site from an upgradient source.

An interim action soil cleanup performed in September 2010 through the Bothell Crossroads project area removed 3,556.5 tons (approximately 2,222 cubic yards) of petroleum-impacted soil that was a source of the petroleum hydrocarbons occurring in Bothell Landing property ground water. HWA's interim action cleanup report (HWA, 2011) documents the 2010 interim action soil cleanup within the Bothell Landing parcel. The 2010 interim action cleanup was confined within the parcel boundaries, due to lack of access to areas beneath the heavily-used SR 522 state highway. The interim action soil cleanup is therefore being conducted over a period spanning multiple construction seasons because contaminated soil known to be present under the active SR 522 roadway was left in place in the northern extent of the Bothell Landing parcel.

Contaminated soil remaining under the SR 522 roadway will be addressed after the roadway realignment during Crossroads Phase III construction, which is scheduled to commence in the summer of 2012, and be completed in 2013. Contamination not under City property or public right-of-way, if discovered, will not be addressed in this phase. Following the soil cleanup under the existing roadway, the City will conduct one year of quarterly monitoring to confirm successful cleanup of petroleum-impacted ground water, in accordance with the scope of work described in the amended Agreed Order and Interim Action work plans. Section 5 of this RI work plan addresses the quarterly monitoring to be conducted at the Bothell Landing Site. Other components of the RI, to address other COCs and impacts, will also be addressed and are discussed in Sections 3 and 4 of this work plan.

2.2 Physical Setting

The RI study area is within the Horse Creek valley; Horse Creek is a southerly flowing tributary to the Sammamish River. The general topography of the RI study area slopes down from north to south towards the westerly flowing Sammamish River (Figure 1). Elevations in the RI study area range between about 30 to 60 feet above mean sea level.

The RI study area is located within the Puget Sound Lowland, a north-south trending structural and topographic depression bordered on the west by the Olympic Mountains and on the east by the Cascade Mountains. The area is characterized by gently rolling glacial drift plains covered with small ridges, hills, and depressions formed by the continental ice sheet that covered the area during the Pleistocene Epoch and retreated approximately 12,500 years ago. Most of northwestern King County is mantled by glacial deposits (including gravel, sand, silt, clay, boulders), which are commonly over 150 feet thick (Liesch and others, 1963).

The subsurface geology in the RI study area is very complex and subject to interpretation. Information obtained from borehole logs in the RI study area indicate that soils consist mainly of loose to medium dense silty sand/sandy silt and fine- to medium-sand with varying percentages of gravel; individual soil horizons do not appear to be laterally continuous over more than a few hundred feet. HWA (2008) interpreted the near-surface strata underlying the RI study area as being Vashon age recessional outwash deposits. The recessional outwash sediments were deposited by meltwater flowing from the receding Vashon glacier, and were not overridden by the glacier. Overlying the recessional outwash deposits in most exploration locations is fill consisting predominantly of silty sand.

The ground water table in the RI study area occurs approximately 5 to 18 feet below ground surface (bgs), with shallower ground water occurring in the western extents. The general direction of ground water flow in the RI study area is south-to-southeasterly toward the Sammamish River, following the trend of the Horse Creek valley. Horse Creek is the historic drainage in the area, but now flows through downtown Bothell in a concrete culvert that daylights immediately east of the Bothell Landing property in an open channel that discharges into the Sammamish River (Figures 4, 8). The City's storm drain system in the area connects to the Horse Creek culvert. The original creek location west of SR 527 (Figure 4), potentially creates a hydraulic divide to the west of the RI study area.

2.2.1 Ultra Custom Care Cleaners Site

The Ultra Custom Care Cleaners site is generally flat. The site consists of a 0.25 acre rectangular lot and a single building. There is no significant elevation change over this property, (CDM, 2008). The elevation of the site is approximately 40 feet above mean sea level.

Environmental Partners Inc. (2004) described subsurface conditions at the Ultra Custom Care Cleaners site as consisting of intermittent intervals of sand, silt and/or gravel mixtures to their maximum depth of exploration of 44 feet below grade. Environmental Partners Inc. observed a sandy silt with gravel horizon beginning at 36 to 40 feet bgs in eight direct-push explorations advanced in the southwest area of this property; one direct-push exploration, B-1 (Figure 7), penetrated four feet of the sandy silt with gravel horizon before the exploration was terminated so its total thickness is unknown. Environmental Partners Inc. stated that the sandy silt with gravel horizon serves to limit the potential downward migration of denser-than-water PCE and its degradation products. However, this statement cannot be confirmed because none of the Environmental Partners or Parametrix explorations on the City's adjacent property were advanced deep enough to determine if the sandy silt horizon is laterally continuous to the east. From water level measurements taken at the three on-site monitoring wells, ground water beneath this site appears to flow approximately to the south-southwest.

2.2.2 City Properties

The City properties are generally flat with an elevation of approximately 50 to 60 feet above mean sea level sloping gently to the south and southeast. The City properties are approximately 10 feet higher in elevation than the adjacent Ultra Custom Care Cleaners site immediately to the west. This grade difference is supported by the Ultra Custom Care Cleaners building and a retaining wall north of the building in the parking lot area.

Five Parametrix soil borings advanced across the City properties encountered interbedded silt, silty sand, and sand with gravel to the depths explored (11 to 20 feet bgs). Ground water was encountered in four of the borings between 17 and 18 feet bgs. The fifth boring was not extended to the ground water table.

2.2.3 City Right of Ways

The City right-of-ways are at an elevation between approximately 30 to 60 feet above mean sea level. The land surface along SR 522 is generally flat. On 101st Avenue Northeast, south of Main Street, the topography slopes more steeply down towards the south. The land surface along SR 527 slopes gently down to the south.

Per CDM (2009), the area of SR 522 in the RI study area appears to be underlain by approximately 4 to 8 feet of silty sand and gravel material characterized as fill overlying alluvial soil consisting of interbedded silt and sand. Alluvial soils extended to the maximum explored depth of 19 feet bgs. An approximately 2-foot thick layer of marsh deposits consisting of silt and black organic material overlying alluvial sediments occurred at approximately 4 to 6 feet bgs in push-probe explorations B2, B3, B15, and B18 (Figure 5) . There was no recovery at B14, located between B3 and B15. The marsh deposit appears to extend along SR 522 from the SR 527 intersection east, ending just before 101st Avenue NE. Extending farther north on SR 527, subsurface deposits appear to be the recessional outwash materials identified in published documents.

2.2.4 Bothell Landing

The Bothell Landing parcel is predominantly flat. The west property boundary adjoins the Former Bothell Hertz Facility that previously was occupied by a commercial rental business with documented and suspected hazardous material releases to soil and ground water (HWA, 2008). The east property boundary consists of vegetated/landscaped ground sloping down to a public footpath and the open channel of Horse Creek. Horse Creek is an urban stream discharging to the Sammamish River just beyond the southern boundary of the property. The creek is conveyed through storm drain pipes upgradient of Bothell Landing. A 54-inch diameter concrete culvert conveys Horse Creek through the northern and eastern portion of Bothell Landing, daylighting just beyond the east property boundary (Figure 8). The Sammamish River is between 175 and 250 feet south of Bothell Landing and separated from the property by NE 180th Street and the Park at Bothell Landing, a City park (Parametrix, 2009).

Site-specific stratigraphy typically consists of approximately 5 to 8 feet of silty sand fill over alluvial soil consisting of interbedded silt and peat. Much of the fill material is likely dredged spoils placed on the property from realignment of the Sammamish River in the 1960s (HWA, 2008). Interbedded alluvial sand and silt was encountered between 8 and 20 feet below ground surface (bgs). Peat or silt beds with high organic content up to 2 feet thick are present within the alluvial soil, generally at depths greater than 10 feet bgs. These compressible, organic-rich beds appear to underlie much of the Bothell Landing parcel but may not represent a contiguous layer (Parametrix, 2009).

3.0 INITIAL EVALUATION

3.1 SUMMARY OF PREVIOUS CHLORINATED VOC INVESTIGATIONS

Ground water in the RI study area has been affected by chlorinated VOCs. The dry-cleaning solvent PCE, as well as its breakdown products, TCE, (cis)-1,2-DCE, and vinyl chloride have been detected in multiple ground water samples throughout the area. In the progression of natural biodegradation by reductive dechlorination, PCE (four chlorine atoms), degrades to TCE (three chlorine atoms), to DCE (two chlorine atoms), then to vinyl chloride (one chlorine atom). Upon complete dechlorination (under ideal conditions), vinyl chloride can degrade to ethene. The apparent source of these chlorinated VOCs is the Ultra Custom Care Cleaners facility located at the northeast corner of Bothell Way NE and NE 183rd Street until 1967. Another potential source is the Bothell Service Center / Simon & Son Fine Dry Cleaning site. Another former cleaners business (Bothell Cleaners) is located northeast of the Bothell Landing property, although based on four reconnaissance ground water samples collected adjacent south and downgradient of the former Bothell Cleaners property, former business operations on the property do not appear to be a source of HVOCs (CDM, 2011). Tables 1 and 2 summarize historic detections of chlorinated VOCs in soil and ground water in the RI area.

3.1.1 Ultra Custom Care Cleaners Site

Chlorinated VOCs detected at the Ultra Custom Care Cleaners site primarily include PCE in several ground water samples at concentrations up to 6,400 µg/L in a sample collected between 8 and 12 feet bgs in direct-push exploration B-1 (Figure 7); ground water samples collected at greater depths had PCE concentrations at or less than the MTCA Method A cleanup level of 5 µg/L. Concentrations of TCE and (cis)-1,2-DCE between 18 and 210 µg/L were found in ground water samples collected at monitoring well MW-1 and direct-push explorations B-1 and B-4 at intervals between 4 and 14 feet bgs. Vinyl chloride was not detected in any ground water samples collected to date at the Ultra Custom Care Cleaners site. In addition, PCE was detected in the water in storm drain catch basins SS-1 and SS-2 (Figures 6 and 7) at concentrations of 500 and 25 µg/L respectively.

3.1.2 City Properties

The Environmental Partners Inc. (2004) site investigation included three direct-push soil borings located on the western edge of the City properties (B-10, B-11, and B-12 on Figure 7). The Environmental Partners report states that no chlorinated VOCs were detected in three soil samples collected just above the water table at these locations; however, the Environmental Partners Inc. report does not contain the laboratory reports for these three soil samples so this cannot be verified. Ground water samples collected from these three direct-push borings contained PCE at concentrations between 8 and 23 µg/L. In late spring 2010, Parametrix advanced five soil borings on the City properties using a truck-mounted hollow-stem auger drill rig. Parametrix collected ground water samples at all five boreholes; however, only two of the ground water samples, SB-02 and SB-05 (Figure 7), were analyzed for chlorinated VOCs. The ground water sample from SB-05, located immediately east of the Ultra Custom Care building, contained PCE at a concentration below the MTCA Method A cleanup level; the other boring (SB-02) in the center of the City property did not contain any chlorinated VOCs above laboratory reporting limits.

3.1.3 City Right-of-Ways

CDM (2009) performed a Phase II Environmental Site Assessment of the City's Crossroads Redevelopment Project area. To evaluate chlorinated VOC distribution in the area, CDM used a direct-push rig to collect soil and ground water samples along Bothell Way NE/SR 527 adjacent to and south of the Ultra Custom Care Cleaners site (locations B2, B3, B8, B10, B11, B12, and B18 on Figure 7). CDM concluded that PCE contaminated ground water that apparently originates at the Ultra Custom Care Cleaners site is migrating south along utility corridors in Bothell Way NE/SR 527, in addition to normal ground water flow through the aquifer.

A ground water sample collected in September 2008 at HWA geotechnical exploration/monitoring well BB-3 at the southeast corner of the intersection of NE 183rd Street and Bothell Way NE/SR 527 (Figure 7) contained chlorinated VOCs at concentrations below MTCA Method A cleanup levels. However, a HWA ground water sample collected in September 2008 at monitoring well BB-2 at the northeast corner of SR 527 and Main Street (Figure 7) had a PCE in concentration above the MTCA Method A cleanup level.

Ground water samples collected at CDM direct-push explorations B1, B2, B3, B6, and B14 along the SR 522 right-of-way (see Figure 5 for locations) had one or more chlorinated VOC occurring at concentrations above the MTCA Method A cleanup level.

3.1.4 Bothell Landing

Contaminants of potential concern (COPCs) in the Bothell Landing soils, per the RI/FS report (Parametrix, 2009) and Interim Action Cleanup Report, HWA (2011) include:

- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX (benzene, toluene, ethylbenzene, and xylenes)
- Lead, barium
- Polycyclic Aromatic Hydrocarbons (PAHs) (including naphthalenes)

These COPCs are all related to historic petroleum releases to soil. Following the 2010 Bothell Landing soil cleanup, soil samples containing these COPCs above MTCA cleanup levels occurred only in the northeast corner of the property at depths ranging from 6 to 12 feet below ground surface (bgs). CDM borehole data (location B3 on Figures 7 and 8) indicated that gasoline- and heavy oil-impacted soil extends from the Bothell Landing parcel to the northeast beneath SR 522 (CDM, 2009). Impacts north of SR522 are not known. Remaining soils under the existing roadway will be addressed under a subsequent construction phase, i.e., after roadway realignment during Crossroads Phase III which is scheduled to commence in the summer of 2012, and be completed in 2013.

HWA (2011) concluded that ground water COPCs at the Bothell Landing Site include:

- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX
- Chlorinated VOCs
- Metals (arsenic, cadmium, chromium, and lead)

Petroleum-contaminated ground water south of SR522 occurred only in the vicinity of Rotunda Park at the north end of the Bothell Landing parcel. The backfill around the Horse Creek culvert does not appear to be a preferential pathway for contaminated ground water, based on borings advanced and sampled within the backfill. Horse Creek surface water does not appear to be significantly affecting nearby surface soils or ground water. Chlorinated VOCs migrating onto Bothell Landing from an upgradient source or sources are present in ground water throughout the northern portions of Bothell Landing (Figure 4) at concentrations exceeding MTCA Method A cleanup levels, particularly in the vicinity of Rotunda Park (Parametrix, 2009).

Regarding arsenic, cadmium, chromium, and lead as ground water COPCs at the Bothell Landing Site, data reported by HWA (2007) showed total arsenic, cadmium, chromium, and lead concentrations exceeding MTCA Method A cleanup levels in ground water samples collected at direct-push explorations BH-11 and BH-15 in July 2007 (Table 2D). Dissolved arsenic and lead concentrations in the ground water sample collected at direct-push exploration BH-15 also exceeded their respective MTCA Method A cleanup levels. The source of lead in the RI study area ground water may be related to historic released of leaded gasoline. Elevated arsenic concentrations in alluvial aquifers of Snohomish and King Counties have been well documented as a regional issue (HWA, 2007), and may not be associated with a specific source in the RI area. Additional sampling during the RI will help establish if arsenic is a natural or area-wide background condition, and at what concentrations. The elevated concentrations of total cadmium and chromium in the July 2007 ground water samples collected at direct-push explorations BH-11 and BH-15 apparently resulted from suspended sediments in the unfiltered samples and not from a specific source or sources in Site soil.

3.1.5 Bothell Service Center

High concentrations of PCE (up to 38,000 µg/L), TCE, and DCE have been detected in ground water at this site. PCE ground water concentrations at the property boundary range up to 21,000 µg/L. PCE ground water concentrations up to 140,000 µg/L, were detected near the source area at depths of 45 to 50 feet, and were interpreted to indicate the presence of DNAPL. PCE, TCE, DCE , and VC have also been detected at concentrations of up to 2,100 µg/L at the western end of Al's Auto Bothell Wexler Property (a.k.a., Schuck's) property, originating from the adjacent Bothell Service Center site.

3.2 KNOWN AND EXPECTED CONTAMINANTS

Based on background information and analytical data from the previous studies presented in Section 3.1, COPCs either known or expected to be found in soils in the RI study area are:

- Chlorinated VOCs (primarily PCE, TCE, (cis)-1,2-DCE, and vinyl chloride)
- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX (benzene, toluene, ethylbenzene, and xylenes)
- Lead, barium
- Polycyclic Aromatic Hydrocarbons (PAHs) (including naphthalenes)

COPCs either known or expected to be found in ground water in the RI area are:

- Chlorinated VOCs
- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX
- Metals (arsenic, cadmium, chromium, and lead)

3.3 CONCEPTUAL SITE MODEL

The conceptual site model for the chlorinated VOC and hydrocarbon plume 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.

These data were used to identify the additional data needs described in this Work Plan. The model first identifies the primary contaminant sources and then describes the release mechanism from the sources into environmental media. Then, the migration of potential contaminants through media and the subsequent release mechanisms are summarized. This results in the identification of potentially contaminated media to which receptors are most likely to be exposed (exposure media). Once the exposure media are identified, the specific human and ecological receptors are incorporated into the model, completing the exposure pathway.

Figure 9 shows the conceptual site model for the chlorinated VOC and petroleum hydrocarbon plumes upgradient of Bothell Landing. Each component of the conceptual site model is described below.

The conceptual site model brings together multiple environmental and anthropogenic variables to formulate an understanding of the potential pathways of contaminant movement that may exist at the site. The model also brings together the physical descriptions of the environment, the extent of the potential contamination, the fate and transport processes, and the potential routes by which human and ecological receptors are exposed to contaminants. In general, the site model consists of sequential steps that trace potential contaminants from the primary sources to the final receptors (human and ecological).

3.3.1 Primary Contaminant Sources

The primary contaminant source of ground water in the RI study area is the dry cleaning solvent release most likely from the Ultra Custom Care Cleaners site. The primary contaminant associated with this release is PCE, with associated breakdown products TCE, (cis)-1,2-DCE, and vinyl chloride. Ethylene dichloride (EDC) (a.k.a, 1,2-dichloroethane (DCA)) has also been detected sporadically in ground water at low concentrations. DCA is not a breakdown product of PCE, but may be a breakdown product of 1,1,1-trichloroethane (TCA) or may be associated with gasoline additives. Other contaminants known or suspected to exist in the RI study area include petroleum hydrocarbons released at former gas station locations. The source of lead in RI study area soils is likely related to historic releases of leaded gasoline.

3.3.2 Primary Release Mechanisms

The primary potential release mechanisms for contaminants in the RI study area include leaks from USTs and related equipment (e.g., pipes and dispensers), or discharges (accidental or intentional) to floor drains, storm drains, or ground.

3.3.3 Transport Mechanisms

Transport mechanisms in the RI study area for chlorinated VOCs and petroleum hydrocarbons include the following:

- Contaminant leaching from soils above and below the water table
- Leaching from separate phase liquids, e.g., a dense non-aqueous phase liquid (DNAPL) mass of PCE within soil pore spaces
- Volatilization from the vadose zone and water table
- Ground water discharges to surface water

The degree of contaminant leaching is controlled by chemical properties of the contaminants, ground water geochemical properties (e.g., oxidation/reduction potential), 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 (e.g., porosity and organic carbon content), and soil gas characteristics. Ground water discharges to surface water are controlled by the physical and geochemical characteristics of both the ground water and surface water flow systems.

3.3.4 Secondary Sources

Chlorinated VOC and petroleum hydrocarbon impacted ground water from upgradient sites (e.g., Ultra Custom Care Cleaners, former Hertz, or possibly the Bothell Service Center) as well as former gas station locations represents secondary contaminant sources at the Bothell Landing Site. However, since the plumes have not been delineated, at this time, it has not been determined, whether commingling has occurred. This ground water flows from north to south onto the Bothell Landing parcel. Ground water migration is controlled by the aquifer's hydraulic conductivity (i.e., permeability), the hydraulic gradient, and the aquifer porosity. Chlorinated VOC and petroleum hydrocarbon migration is affected by the concentrations present in ground water, and other conditions in the aquifer that impact the fate and transport of contaminants, such as percentage of naturally occurring organic carbon, contaminant-degrading bacteria in the soil, and oxidation conditions. The contaminants can potentially partition from ground water onto soil and organic particles as ground water flows across the RI study area, although soil analytical data from the City properties and other downgradient sites do not indicate this is occurring to an appreciable degree. Contaminants may also partition from ground water into vadose zone soil gas. Investigation findings to date suggest that most chlorinated VOCs and petroleum hydrocarbons in ground water flowing onto the City right-of-ways and other downgradient properties remain in the dissolved phase as contaminated ground water flows across the RI study area.

3.3.5 Potential Pathway and Exposure Routes

Complete exposure pathways have the following components: 1) a chemical source, 2) a transport pathway, 3) an exposure point where contact can occur, and 4) an intake mechanism. 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 (Parametrix, 2009):

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 (e.g., voles) 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.

The following section describes specific exposure pathways of primary concern.

3.3.6 Exposure Pathways of Concern

Potentially complete exposure pathways in the RI area by which chemicals may reach potential receptors include the following:

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

4.0 WORK PLAN RATIONALE

The following section describes the general approach to the RI. A discussion of data quality objectives, a discussion of identified data gaps, and approaches to collect the data necessary to fill those gaps are presented in this section. Each subsequent section provides an overview of data gaps by media type, and the approach to collecting the necessary information in the remedial investigation. Specific sampling locations, analytes, and methods are documented in the Sampling and Analysis Plan (SAP) presented in Appendix B.

4.1 DATA QUALITY OBJECTIVES

Data quality objectives (DQOs) are qualitative and quantitative statements that specify the characteristics of the data necessary to support decisions and the required quality of the data collected (EPA, 2006). Through the development of DQOs, the objectives and methods to be used in the field investigations are defined.

The objective of this RI work plan is to meet the requirements of the Agreed Order (as amended in June 2010) in accordance with the MTCA regulations for RI studies. The RI is designed to characterize site conditions in order to complete a FS and select a cleanup action as described in WAC 173-340-360 through 173-340-390. To meet the RI objective, site data will be collected that are of known, acceptable, and documented quality. To ensure that Site data meet these criteria the following Quality Assurance objectives are established for the RI work:

- Implement procedures described in this work plan and the SAP for field sampling, sample custody, equipment operation and calibration, laboratory analysis, and data reporting that will facilitate consistency and thoroughness of generated data.
- Achieve the acceptable level of confidence and quality required so that data generated are scientifically valid and of known and documented quality. This will be performed by establishing criteria for precision, accuracy, representativeness, completeness, and comparability, and by testing data against these criteria.

Specific DQOs to evaluate data quality and usability are provided in the sections below.

4.1.1 Detection Limits

Analytical methods have quantitative limitations at a given statistical level of confidence that are often expressed as the method detection limit (MDL). Individual instruments often can detect but not accurately quantify compounds at concentrations lower than the MDL, referred to as the instrument detection limit (IDL). Although results reported near the MDL or IDL provide insight to site conditions, quality assurance dictates that analytical methods achieve a consistently reliable level of detection known as the practical quantitation limit (PQL). The PQL is the lowest concentration level that can be reliably achieved within the specified limits of precision and accuracy, and is typically several times the MDL.

4.1.2 Precision

Precision is the measure of mutual agreement among replicate or duplicate measurements of an analyte from the same sample and applies to field duplicate or split samples, laboratory replicate analyses, and duplicate spiked environmental samples (matrix spike duplicates). The closer the measured values are to each other, the more precise the measurement process. Precision error may affect data usefulness. Good precision is indicative of relative consistency and comparability between different samples. Precision will be expressed as the relative percent difference (RPD) for spike sample comparisons of various matrices and field duplicate comparisons for water samples. This value is the difference between two measurements divided by the average, calculated by:

RPD = ((D1-D2) / (D1+D2)/2)*100

Where:
D1 = Concentration of analyte in sample, and
D2 = Concentration of analyte in duplicate sample.

The calculation applies to split samples, replicate analyses, duplicate spiked samples (matrix or blank spike duplicates), and laboratory control duplicates. The RPD will be calculated for samples and compared to the applicable criteria. Precision can also be expressed as the percent difference (%D) between replicate analyses. Acceptable precision values (QC limits) vary according to the analyte, analytical method, and specific laboratory conditions (e.g., calibration results, etc).

4.1.3 Accuracy

Accuracy is a measure of bias in the analytic process. The closer the measurement value is to the true value, the greater the accuracy. This measure is defined as the difference between the reported value versus the actual value and is often measured with the addition of a known compound to a sample. The amount of known compound reported in the sample, or percent recovery, assists in determining the performance of the analytical system in correctly quantifying the compounds of interest. Since most environmental data collected represent one point spatially and temporally rather than an average of values, accuracy plays a greater role than precision in assessing the results. In general, if the percent recovery is low, non-detect results may indicate that compounds of interest are not present when in fact these compounds are present. Detected compounds may be biased low or reported at a value less than actual environmental conditions. The reverse is true when recoveries are high. Non-detect values are considered accurate while detected results may be higher than the true value. Accuracy will be expressed as the percent recovery of a surrogate compound (also know as “system monitoring compound”), a blank or matrix spike result, or from a standard reference material. The recovery percent is the measured amount divided by the known amount, or:

(D1-D2) / D3 x 100

Where

D1 = amount of compound detected in spiked sample
D2 = amount of compound in sample (i.e., detected before spiking)
D3 = amount of spike compound added

Accuracy criteria for surrogate spikes, matrix spikes, and laboratory control spikes are found in the SAP.

4.1.4 Representativeness, Completeness and Comparability

Representativeness expresses the degree to which data accurately and precisely represent the actual site conditions. The determination of the representativeness of the data will be performed by completing the following:

- Comparing actual sampling procedures to those delineated within the SAP and this work plan.
- Comparing analytical results of field duplicates to determine the variations in the analytical results.
- Invalidating non-representative data or identifying data to be classified as questionable or qualitative. Only representative data will be used in subsequent data reduction, validation, and reporting activities.

Completeness establishes whether a sufficient amount of valid measurements were obtained to meet project objectives. The number of samples and results expected establishes the comparative basis for completeness. Completeness goals are 90 percent useable data for samples/analyses planned. If the completeness goal is not achieved an evaluation will be made to determine if the data are adequate to meet study objectives.

Comparability expresses the confidence with which one set of data can be compared to another. Although numeric goals do not exist for comparability, a statement on comparability will be prepared to determine overall usefulness of data sets, following the determination of both precision and accuracy.

4.1.5 Holding Times

Holding times are defined as the time between sample collection and extraction, sample collection and analysis, or sample extraction and analysis. Some analytical methods specify a holding time for analysis only. For many methods, holding times may be extended by sample preservation techniques in the field. If a sample exceeds a holding time, then the results may be biased low. For example, if the extraction holding time for volatile analysis of soil sample is exceeded, then the possibility exists that some of the organic constituents have volatilized from the sample or degraded. Results for that analysis will be qualified as estimated to indicate that the reported results may be lower than actual site conditions. Holding times are presented in the SAP.

4.1.6 Blanks

According to the *National Functional Guidelines for Organic Data Review* (EPA, 1999), "The purpose of laboratory (or field) blank analysis is to determine the existence and magnitude of contamination resulting from laboratory (or field) activities. The criteria for evaluation of blanks apply to any blank associated with the samples (e.g., method blanks, instrument blanks, trip blanks, and equipment blanks)." Trip blanks are placed with samples during shipment; method blanks are created during sample preparation and follow samples throughout the analysis process. Analytical results for blanks will be interpreted in general accordance with *National Functional Guidelines for Organic Data Review* and professional judgment.

4.2 Data Gap Analysis

Previous site characterization data exist for the Bothell Landing Site, the Ultra Custom Care Cleaners site, the Bothell Service Center site ,the City properties to the east, as well as explorations in the City right-of-ways and other nearby sites. The scopes of previous site characterizations were not designed to create a data set for a RI/FS study of the chlorinated VOC and petroleum hydrocarbon plume. This section describes data gaps in the existing data set and the rationale for collecting data necessary to fill those gaps. Previous data will be combined with data collected as part of the RI study, as well as during Bothell Crossroads Phase III interim action soil cleanup scheduled for 2013 at and north of the Bothell Landing Site (e.g., confirmation sampling) after which further data gaps will be identified and further RI work conducted. This phased approach is required due to exploration access issues, including 1) areas under the existing SR 522 roadway which will be accessible for exploration and cleanup only after the new roadway is completed and the old roadway is abandoned, and 2) areas on private property which are not currently accessible for exploration but might be in the future.

4.2.1 Sources of Existing Data

Most existing site data are described in the following reports:

- CDM. 2008. *Phase I Environmental Site Assessment, Former Raincheck Cleaners and Laundry Site, 18304 Bothell Way NE, Bothell, Washington.* Prepared for King County Solid Waste Division. January 2, 2008.

- CDM, 2009, *Draft Phase II Environmental Site Assessment, City of Bothell Crossroads Redevelopment Project, Bothell, Washington*, May 2009

- CDM, 2011, Supplemental *Phase II Environmental Site Assessment, Former Raincheck Cleaner – Offsite Area, 18304 Bothell Way NE, Bothell, Washington*, August 17, 2011.

- Environmental Partners Inc., 2004, *Chlorinated VOC Nature and Extent Investigation Letter Report, Case Property 18300-18304 Bothell Way NE, Bothell, WA.* EPI Project No. 46101.0, November 30, 2004.

- EHS International, 2001a, *Phase I Environmental Site Assessment*, June 12, 2001 report to Bothell Police Department.

- EHS International, 2001b, *Phase II Environmental Site Assessment and Limited hazardous Materials Survey*, August 15, 2001 report to Bothell Police Department.

- ERM, 2001, Letter to Norman L. Olsen. Interim Site Characterization Summary Report, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington, October 17, 2001.A

- ERM, 2002, Letter to Norman L. Olsen. Interim Site Remediation Summary Report, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington, March 25, 2002.

- Farallon Consulting, 2002, *Subsurface Investigation Report, Ultra Custom Care Cleaners Property 18300 – 18304 Bothell Way Northeast, Bothell, Washington, Farallon PN: 733-001*, April 19, 2002.

- Farallon Consulting, 2008a, Cleanup Action Progress Report, June 2006 Through June 2007, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington, Farallon PN: 801-001, March 12, 2008.

- Farallon, 2008b, Interim Action Status Report, November 2007 through August 2008, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington. November 4, 2008.
- Floyd | Snider, 2010, *Schuck's Auto Supply, Bothell, Washington, Phase II Environmental Site Assessment*, September 10, 2010.
- HWA GeoSciences, 2007, *Phase II Environmental Site Assessment Beta Bothell Landing Property, Bothell, Washington*. Prepared for City of Bothell, November 1, 2007.
- HWA GeoSciences, 2008, *Draft Geotechnical Report, SR 527 – Bothell Multi-Way Boulevard Project, Bothell, Washington.* HWA Project No. 2007-098-22 Task 600, December 5, 2008
- HWA GeoSciences, 2009, *Phase II Environmental Site Assessment Grease Monkey Property, 18131 Bothell Way NE Bothell, Washington,* June 4, 2009.
- HWA GeoSciences, 2011, *Documentation of Interim Action at Bothell Landing Site, Bothell Washington*. Prepared for City of Bothell, February 2, 2011.
- Parametrix, 2009, *Draft Bothell Landing Remedial Investigation/Feasibility Study, Revision No. 0*. Prepared for City of Bothell, November 2009.
- Parametrix, 2010, *Draft City Hall Site Environmental Site Assessment*. Prepared for City of Bothell. May 2010.
- PSI. 1998, *Underground Storage Tank Removal and Site Assessment Report, Intersection of SR 522, SR 527, and Main Street, Bothell, Washington,* Prepared for City of Bothell Department of Public Works. May 20, 1998.
- SEACOR. 1990, *Underground Storage Tank Closure, Bothell City Hall, 18305 101st Ave NE, Bothell, Washington.* Letter report to Mr. Warren Gray, Director of Public Works, August 24, 1990.

4.2.2 Existing Exploration and Sampling Locations

Exploration and sampling locations, as described in the above-listed references, are shown on Figures 5, 6, 7, and 8.

4.2.3 Known or Suspected Impacts to Soil and Ground Water

Based on previous investigation findings, known or suspected impacts include:

Soil:

- Chlorinated VOCs in soil at the Ultra Custom Care Cleaners site, Bothell Way NE/SR 527 roadway, and SR 522 roadway, near and downgradient of the original Raincheck Cleaners and Laundry release area (on the Ultra Custom Care Cleaners property).
- Petroleum hydrocarbons and benzene in soil in the SR 522 right-of-way northeast of the site at CDM push-probe location B3.
- Petroleum hydrocarbons remaining in soil in the northern extent of the Bothell Landing parcel left in place during the summer 2010 interim action soil cleanup work to protect the structural integrity of the active SR 522 and related utilities.

Ground Water:

- Unidentified gasoline-range petroleum hydrocarbons in ground water attributed by Farallon Consulting (2002) to cleaning products (Pine-Sol) in monitoring well MW-2 at the Ultra Custom Care Cleaners site.
- Chlorinated VOCs (primarily PCE, TCE, (cis)-1,2-DCE, and vinyl chloride) at the Ultra Custom Care Cleaners site and south along utility corridors in the Bothell Way NE/SR 527 and SR 522 roadways extending onto the Bothell Landing Site, and possible impacts from the Bothell Service Center site.
- Gasoline-, diesel-, and oil-range petroleum hydrocarbons apparently originating from gas stations formerly located north of the Bothell Landing parcel at the intersection of Bothell Way NE/SR 527 and Main Street (see Figure 3).

4.2.4 Data Gaps

Numerous previous environmental and geotechnical investigations and explorations, including soil borings, monitoring wells, large cleanup excavations with confirmational sampling data, aquifer testing, time series ground water measurements, soil physical property testing, and approximately 100 soil and 105 ground water analytical samples, have provided a robust data set, which have helped define:

- Site geology, including soil types and physical properties
- Site hydrogeology, including aquifer properties, ground water gradients, seasonal variations

The following remaining data gaps are identified for the eventual completion of the RI:

1. **Ultra Custom Care Cleaners site**
    a. Ground water plume extent – The extent of the chlorinated VOC plume has not been completely delineated. The first phase of the RI work will help delineate the extents of the plume to the south, and southeast of the Ultra Custom Care Cleaners site, both horizontally and vertically. Future RI activities at accessible properties will be aimed at delineating the remainder of the plume.
    b. Soil source area – prior to development of a cleanup plan for the Ultra Custom Care Cleaners site, the nature and extent (vertical and horizontal) of impacts to soil on the property that might be acting as a source for the ground water plume must be delineated, in addition to characterizing the geology and hydrogeology of the property with respect to confining layers and vertical distribution of contaminants.

2. **Bothell Service Center site**
    a. Ground water plume extent – The extent of the chlorinated VOC plume from this site will also be delineated, with respect to (i.e., if it is determined to be a part of) the Bothell Landing Site and the Ultra Custom Care Cleaners plume.

3. **Other sites, North of SR522**
    a. Other potential sources of TPH impacts, e.g., from former gas stations north of SR522, will be characterized if initial RI data indicate a need, and as they relate to (i.e., are a part of) the Bothell Landing Site.

4. **Bothell Landing Site**
    a. Soil impacts – Contaminated soil remaining under the SR 522 roadway will be addressed after roadway realignment (Crossroads Phase III construction) scheduled to be completed in 2013. Confirmation soil sampling during and after cleanup will help define the extent of soil impacts, and if any impacts remain outside of the SR522 roadway footprint.
    b. Ground water – The extent of petroleum hydrocarbon impacted ground water has not been completely delineated. Future phases of the RI work will help delineate the extents of the petroleum hydrocarbon plume both horizontally and vertically. For example, areas under the existing SR 522 roadway will be accessible for exploration after construction of the new roadway and abandonment of the existing SR 522 roadway. Impacts to ground water from selected metals will also be assessed, along with a statistical evaluation of natural or area-wide background ground water conditions for arsenic.

5. **Collect treatability information**, i.e., chemical and aquifer properties needed to select and design ground water remediation methods.

The field sampling plan presented in the next section describes the type and location of data that will be collected to close these data gaps.

5.0 REMEDIAL INVESTIGATION AND FEASIIBILITY STUDY TASKS

The scope of work for the remedial investigation/feasibility study investigation is described in the Agreed Order. The scope of work includes the following tasks:

1. Develop a RI/FS project plan
2. Conduct a remedial investigation (RI) study
3. Conduct a feasibility study
4. Complete an RI/FS report

Tasks 1 and 2 above will be completed using the approach described in this section. The RI activities specific to this work plan will be performed in phases as follows:

Phase 1 RI activities include

- The remaining petroleum hydrocarbon soil cleanup at Bothell Landing and under SR 522, including test pit sampling immediately prior to and during the soil cleanup, for purposes of cleanup characterization and confirmation (i.e., to define the limits of soil contamination and quality of soils left in place).
- Confirmation sampling of soil during and following cleanup.

Phase 2 RI activities include

- Monitoring well installation and sampling for an area-wide ground water study, at accessible locations following Phase 1 activities at potential locations shown on Figure 10 that are accessible. These wells may be installed in several phases, depending on access, construction, and development schedules. Locations shown on Figure 10 are general, and may be modified based on access issues and results of prior RI activities, after consultation with Ecology.
- Hydrogeologic measurements of ground water elevations and aquifer characteristics to determine flow directions and velocities.

Phase 3 RI activities include

- One year of quarterly ground water monitoring at the Bothell Landing property and the off-property monitoring well network in place at that time, following completion of the interim action soil cleanup of areas north of the Bothell Landing parcel. Quarterly monitoring at the Bothell Landing property should begin in 2014.

Phase 4 RI activities include

- Investigations and modeling necessary to evaluate subsurface vapor intrusion of chlorinated VOCs and petroleum hydrocarbons into buildings.

Phase 5 RI activities include

- Chlorinated VOC source delineation at the Ultra Custom Care Cleaners property, and other properties, if found to be part of the Bothell Landing Site.

Phase 6 RI activities include

- Investigations necessary to evaluate potential source control options and to close any outstanding data gaps.
- Preparation of a complete RI report.

5.1 Project Planning

The project plan for the RI study consists of this work plan, the SAP (Sampling and Analysis Plan, including the Quality Assurance Project Plan) included in Appendix B, the Health and Safety Plan (HASP) in Appendix C, and a Public Participation Plan. The Public Participation Plan is issued as a separate document, and is included in the Agreed Order. These documents will be revised as needed through the iterative process of regulatory interaction and public participation.

5.2 Field Sampling Plan and RI activities

The field sampling plan and associated RI activities described below are designed to meet investigation objectives described in the Agreed Order and this work plan. The sampling strategy and rationale are described in this section. Detailed sampling methodology is described in the SAP.

5.2.1 RI Phase 1 Soil Sampling

Phase 1 RI activities will include confirmation sampling of soil following soil cleanup of petroleum-affected soil at Bothell Landing and SR 522, after roadway realignment scheduled to begin in 2012, and be completed in 2013. Specific sample collection and chemical analytical methodologies are presented in the SAP.

5.2.2 RI Phase 2 Monitoring Well Installation

Phase 2 RI activities will include additional explorations for an area-wide groundwater study, to further define the ground water plume (and close data gaps). This phase is anticipated to include direct push borings, small diameter monitoring wells, hollow stem auger, and 2-inch diameter ground water monitoring wells, at selected accessible locations in the RI study area. Reconnaissance ground water samples will be collected at various depths during drilling to evaluate the vertical extents of the chlorinated VOC and petroleum hydrocarbon plume. Monitoring wells will be completed in select boreholes.

Three existing Ultra Custom Care monitoring wells (MW-1, MW-2, and MW-3), and monitoring well BB-3 located across NE 183rd Street immediately south of the Ultra Custom Care Cleaners will be sampled, depending on site access. Other existing and new monitoring wells (see Figure 10) will be sampled and analyzed for COPCs. The location and measuring point elevation of each monitoring well will be surveyed with respect to a common datum so that the direction of ground water flow can be accurately assessed.

During borehole drilling, soil samples will be collected in selected intervals above and below the water table. These samples will be tested for several physical and chemical parameters necessary to evaluate subsurface vapor intrusion into buildings and the transport and fate of contaminants in ground water. These parameters include:

- Weight Fraction Organic Carbon
- Dry Bulk Density
- Total Porosity
- Air-Filled Porosity
- Volumetric Moisture Content
- Cation Exchange Capacity

5.2.3 RI Phase 3 Ground Water Sampling of Wells in the Monitoring Well Network

Phase 3 RI activities will begin by replacing selected Bothell Landing property monitoring wells that were decommissioned during the 2010 soil cleanup, and possibly installing new wells based on the results of the 2013 soil cleanup and confirmation sampling. Following that, one year of quarterly ground water monitoring will be performed at the Bothell Landing property and the off-property monitoring well network in place at that time, following completion of the soil cleanup of areas under the vacated roadway following the roadway realignment. Quarterly monitoring at the Bothell Landing property should begin upon completion of the interim action and installation of any new or replacement monitoring wells. Quarterly ground water sampling at the Bothell Landing Site is a specific requirement of the Agreed Order.

Depending on the results of the RI Phase 1 and 2 RI activities, other selected monitoring wells may also be sampled quarterly during RI Phase 3 work.

5.2.4 RI Phase 4 Vapor Intrusion Studies and Modeling

Potential indoor air concentrations of chlorinated VOCs and petroleum hydrocarbons will be evaluated using the *Johnson and Ettinger Model for Subsurface Vapor Intrusion Into Buildings* (Environmental Quality Management, 2000) and current Ecology guidance (currently in draft form: Ecology, 2009). Analytical data plus the soil physical and chemical parameters tested for during RI Phase 2 and 3 activities will be used as input to the Johnson and Ettinger Model.

5.2.5 RI Phase 5 Chlorinated VOC Source Delineation

RI Phase 5 activities are contingent upon access to the Ultra Custom Care Cleaners parcel. If access is available, soil borings will be advanced to define the vertical and horizontal extent of chlorinated VOC contaminated soil. TPH impacts in will also be investigated and delineated.

5.2.6 RI Phase 6 RI Source Control Evaluation and RI Reporting

RI Phase 6 activities will entail investigations necessary to evaluate potential source control options and to close any outstanding data gaps. Bench or pilot scale testing may be conducted for remedial options developed during preparation of the draft Feasibility Study, likely concurrent with this phase. RI Phase 6 will conclude with the preparation of a complete RI report.

5.3 Feasibility Study

A FS will be conducted as stipulated in the Agreed Order. The study will be conducted in accordance with WAC 173-340-350 (8). This regulation describes the elements that must be included in the FS. The study will identify remedial alternatives to achieve cleanup levels as set forth in MTCA regulations.

5.4 Remedial Investigation and Feasibility Study Report

A RI/FS report will be prepared after field data have been collected and the FS is complete. The report will transmit information described in the Agreed Order consistent with MTCA for RI/FS reports.

The completion of the report will allow the selection of a cleanup alternative, production of a draft cleanup action plan (dCAP), and implementation of the cleanup alternative to reduce or remove site hazardous substances posing unacceptable risks to human health and the environment.

5.5 Data Validation and Evaluation

Data management and documentation will include checking all QA parameters, including holding times, method blanks, surrogate recoveries, spike recoveries, field and laboratory duplicates, completeness, detection limits, laboratory control samples, and Chain-of-Custody forms. After the data have been checked, they will be entered into the project database with any assigned data qualifiers.

The project electronic database will be in a format compatible with the Ecology Environmental Information Management (EIM) system, and all analytical data will be entered into the EIM system.

Results of the sampling and laboratory testing will be summarized in a spreadsheet, plotted on a site map, and the data compared to established site cleanup levels. A report will describe any significant field sampling issues, laboratory QA/QC testing, water level monitoring data and water quality testing results.

6.0 PROJECT MANAGEMENT

6.1 SCHEDULE

The proposed RI/FS schedule is presented in Table 5. Initial RI activities are scheduled for 2012. Additional investigations will be conducted after construction of the SR 522 realignment, scheduled to be completed in 2013.

6.2 PROJECT MANAGEMENT STAFF

Project management staff for the RI are presented in the SAP. Progress reports will be submitted to Ecology every three months as required by the Agreed Order.

7.0 REFERENCES

CDM. 2008. *Phase I Environmental Site Assessment, Former Raincheck Cleaners and Laundry Site, 18304 Bothell Way NE, Bothell, Washington.* Prepared for King County Solid Waste Division. January 2, 2008.

CDM, 2009, *Draft Phase II Environmental Site Assessment, City of Bothell Crossroads Redevelopment Project, Bothell, Washington*, May 2009

CDM, 2011, Supplemental *Phase II Environmental Site Assessment, Former Raincheck Cleaner – Offsite Area, 18304 Bothell Way NE, Bothell, Washington*, August 17, 2011.

Ecology, Washington State Department of, 2009, *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action* Publication no. 09-09-047, Review DRAFT, October 2009.

ECOSS (Environmental Coalition of South Seattle), 2008, *City of Bothell Revenue Development Area*, *Report on Tax Parcel History Through 1972*. Prepared for The King County Brownfields Program, King County Solid Waste Division, and King County Department of Natural Resources and Parks, January 2008.

Environmental Partners Inc., 2004, *Chlorinated VOC Nature and Extent Investigation Letter Report, Case Property 18300-18304 Bothell Way NE, Bothell, WA.* EPI Project No. 46101.0, November 30, 2004.

Environmental Quality Management Inc., 2000, *User's Guide for the Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings (Revised).* Prepared for U.S. EPA Office of Emergency and Remedial Response, December 2000.

EPA, 1988, *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*, EPA/540/G-89/004 (OSWER Directive 9355.3-01).

EPA, 1999, *Contract Laboratory Program National Functional Guidelines for Organic Data Review*, EPA 540/R-99/008.

EPA, 2006, *Guidance on Systematic Planning Using the Data Quality Objectives Process*, EPA QA/G4.

EHS International, 2001a, *Phase I Environmental Site Assessment*, June 12, 2001 report to Bothell Police Department.

EHS International, 2001b, *Phase II Environmental Site Assessment and Limited hazardous Materials Survey*, August 15, 2001 report to Bothell Police Department.

ERM, 2001, Letter to Norman L. Olsen. *Interim Site Characterization Summary Report, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington*, October 17, 2001.

ERM, 2002, Letter to Norman L. Olsen. *Interim Site Remediation Summary Report, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington*, March 25, 2002.

Farallon Consulting, 2002, *Subsurface Investigation Report, Ultra Custom Care Cleaners Property 18300 – 18304 Bothell Way Northeast, Bothell, Washington, Farallon PN: 733-001,* April 19, 2002.

Farallon Consulting, 2008a, *Cleanup Action Progress Report, June 2006 Through June 2007, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington*, Farallon PN: 801-001, March 12, 2008.

Farallon, 2008b, *Interim Action Status Report, November 2007 through August 2008, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington*. November 4, 2008.

Floyd | Snider, 2010, Schuck's Auto Supply, Bothell, Washington, Phase II Environmental Site Assessment, September 10, 2010.

HWA GeoSciences, 2007, *Phase II Environmental Site Assessment Beta Bothell Landing Property, Bothell, Washington*. Prepared for City of Bothell, November 1, 2007.

HWA GeoSciences, 2008, *Draft Geotechnical Report, SR 527 – Bothell Multi-Way Boulevard Project, Bothell, Washington.* HWA Project No. 2007-098-22 Task 600, December 5, 2008

HWA GeoSciences, 2009, Phase II Environmental Site Assessment Grease Monkey Property, 18131 Bothell Way NE Bothell, Washington, June 4, 2009.

HWA GeoSciences, 2010, *Arsenic In Ground Water Bothell Downtown Redevelopment Projects Area Bothell, Washington*. November 1, 2010 memorandum to City of Bothell Public Works.

HWA GeoSciences, 2011, *Documentation of Interim Action at Bothell Landing Site, Bothell Washington*. Report prepared for City of Bothell, February 2, 2011.

Kleinfelder, 1999, *Phase II Soil and Ground water Exploration, Bothell Landing Shopping Plaza, Bothell, Washington*. Prepared for Buck & Gordon, LLP, Seattle, WA, September 8, 1999.

Liesch, B.A., C.E. Price, and K. Walters. 1963. *Geology and Ground-Water Resources of Northwestern King County, Washington.* US Geological Survey.

Parametrix, 2009, *Bothell Landing Remedial Investigation/Feasibility Study, Revision No. 0*. Prepared for City of Bothell, November 2009.

Parametrix, 2010, *Draft City Hall Site Environmental Site Assessment*. Prepared for City of Bothell. May 2010.

PSI. 1998. *Underground Storage Tank Removal and Site Assessment Report, Intersection of SR 522, SR 527, and Main Street, Bothell, Washington*. Prepared for City of Bothell Department of Public Works. May 20, 1998.

Riley Group, *Draft Phase I Environmental Site Assessment*, *Bothell Landing Property #1*, May 29, 2007.

SEACOR. 1990, *Underground Storage Tank Closure*, *Bothell City Hall, 18305 101st Ave NE, Bothell, Washington.* Letter report to Mr. Warren Gray, Director of Public Works, August 24, 1990.

TABLE 1A
HISTORIC SOIL ANALYTICAL DATA
ULTRA CUSTOM CARE CLEANERS SITE
Source: Farallon Consulting, 2002
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		MW1-2.5-4	MW2-5.5-7	MW3-4.5-6	SB-1-4	SB-1-8	SB-2-4	SB-2-8	SB-3-4	SB-3-8	SB-4-4	SB-4-8	SB5-0.33-3	SB6-2-3	SB7-05-1.5	SS-2	MTCA A/B
Sample interval, ft bgs		2.5-4	5.5-7	4.5-6	4-5	8-9	4-5	8-9	4-5	8-9	4-5	8-9	0.33-3	2-3	0.5-1.5	Catch Basin Sediment	
Petroleum Hydrocarbons	Gasoline Range		1,800														100/30*
	Diesel Range																2000
	Oil Range																2000
VOCs	Tetrachloroethene	0.0022	0.015	0.005	0.0013	<0.0012	0.0012	<0.0011	0.0018	<0.0011	0.0019	<0.0023	0.0061	0.0013	0.0097	0.0019	0.03
	Trichloroethene	<0.0011	0.0019	<0.0013	<0.0011	<0.0012	<0.0011	<0.0011	<0.0013	<0.0011	<0.0011	<0.0012	<0.0011	<0.0011	<0.0011	0.012	7
	(cis) 1,2-Dichloroethene	<0.0011	<0.0011	<0.0013	<0.0011	<0.0012	<0.0011	<0.0011	<0.0013	<0.0011	<0.0011	<0.0012	<0.0011	<0.0011	<0.0011	0.0026	6
	Methylene Chloride	<0.0057	0.029**	<0.0063	<0.0054	0.0062**	<0.0054	<0.0057	<0.0063	<0.0055	<0.0054	0.0079**	<0.0056	<0.0053	<0.0054	<0.0060	9
	1,2-Dichlorobenzene	<0.0011	0.0012	<0.0013	<0.0011	<0.0012	<0.0011	<0.0011	<0.0013	<0.0011	<0.0011	<0.0012	<0.0011	<0.0011	<0.0011	<0.0012	8000 (B)

TABLE 1B
HISTORIC SOIL ANALYTICAL DATA
ULTRA CUSTOM CARE CLEANERS SITE
Source: Environmental Partners Inc., 2004
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-13	B-14	B-15	B-16	MTCA A/B
Sample interval, ft bgs		8	8	8	8	8	8	8	8	8	9.5	9.5	9.5	9.5	
Petroleum Hydrocarbons	Gasoline Range														100/30*
	Diesel Range														2000
	Oil Range														2000
VOCs	Tetrachloroethene	0.020	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.03
	Trichloroethene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	7
	(cis) 1,2-Dichloroethene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	6
	Methylene Chloride	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	9
	1,2-Dichlorobenzene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	8000 (B)

TABLE 1C
HISTORIC SOIL ANALYTICAL DATA
CITY PROPERTIES
Source: Parametrix, 2010
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		SB01	SB02	SB03	SB04	SB05	MTCA A/B
Sample interval, ft bgs		14	16	15	10	17	
Petroleum Hydrocarbons	Gasoline Range	<5.5	<5.9	<7.3	<5.4		100/30*
	Diesel Range	<27	<29		<27		2000
	Oil Range	<5.5	<5.9	<7.3	<5.4		2000
VOCs	Tetrachloroethene				<0.034	<0.0011	0.03
	Trichloroethene				<0.034	<0.0011	7
	(cis) 1,2-Dichloroethene				<0.034	<0.0011	6
	Vinyl Chloride				<0.034	<0.0011	670 (B)
	Methylene Chloride				<0.17	<0.0057	9
PAHs	Fluoranthene				0.0078		
	Pyrene				0.0075		
	Chrysene				0.0099		
	Benzo[b]fluoranthene				0.01		
	Benzo[g,h,i]perylene				0.0078		
Metals	Arsenic				<11		20
	Barium						5600 (B)
	Cadmium				<0.54		2
	Chromium				26		19/2000***
	Lead				140		250
	Mercury				<0.27		2
	Silver						400

TABLE 1D
HISTORIC SOIL ANALYTICAL DATA
CITY RIGHT-OF-WAYS
Source: CDM, 2009
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		B1	B2	B3	B4	B5	B6	B7	B8	B10	B11	B12	B13	B15	B16	B17	B18	MTCA A/B
Sample interval, ft bgs		**6**	7	9	6				7	6	6	5	6	10	13	44	7	
Petroleum Hydrocarbons	Gasoline Range		<30	**720**			<25	<24					<24					100/30*
	Diesel Range		<75	<46			<62	<61					<61					2000
	Oil Range		<150	**2400**			<120	<120					<120					2000
VOCs	Benzene			**6**														0.03
	Toluene			**1.1**														7
	Ethylbenzene			**12**														6
	Xylenes			**11.51**														9
	Tetrachloroethene	**0.0054**	<0.0016	<0.19	<0.0012	<0.0011	<0.0011	**0.0012**	**0.0017**	**0.016**	**0.0030**	**0.0011**	<0.0011	**0.027**	**0.0041**	<0.0011	<0.0013	0.03
	Trichloroethene	<0.00099	<0.0016	<0.19	<0.0012	**0.0086**	<0.0011	<0.0010	<0.0010	<0.00097	<0.0011	<0.0090	<0.0011	<0.0017	<0.0010	<0.0011	<0.0013	7
	(cis) 1,2-Dichloroethene	<0.00099	<0.0016	<0.19	<0.0012	**0.034**	**0.0027**	<0.0010	<0.0010	<0.00097	<0.0011	**0.0013**	<0.0011	<0.0017	<0.0010	<0.0011	<0.0013	6
	Vinyl Chloride	<0.00099	<0.0016	<0.19	<0.0012	<0.0011	<0.0011	<0.0010	<0.0010	<0.00097	<0.0011	<0.00090	<0.0011	<0.0017	<0.0010	<0.0011	<0.0013	670 (B)
	Methylene Chloride	<0.0049	<0.0079	<0.94	<0.0060	<0.0057	<0.0055	<0.0052	<0.0050	<0.0048	<0.0054	<0.0045	<0.0055	<0.0085	<0.0051	<0.0057	<0.0065	9

TABLE 1E
HISTORIC SOIL ANALYTICAL DATA
CITY RIGHT-OF-WAYS
Source: HWA GeoSciences, 2008
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		BB-2	BB-3	MTCA A/B
Sample interval, ft bgs		7.5	10	
Petroleum Hydrocarbons	Gasoline Range	<7.1	<6.6	100/30*
	Diesel Range	<31	<31	2000
	Lube Oil Range	<65	<61	2000
VOCs	Tetrachloroethene	<0.0011	**0.0055**	0.05
	Trichloroethene	<0.0011	<0.0011	0.03
	(cis) 1,2-Dichloroethene	<0.0011	<0.0011	800
	Acetone**	**0.029**	<0.0053	8000
	2-Butanone (MEK)	<0.0056	<0.0053	48000

TABLE 1F
BOTHELL SERVICE CENTER SOIL ANALYTICAL DATA
(all results in milligrams per kilogram (mg/kg))

Boring		MW-11	MW-12	MW-13			MTCA A/B
Approximate Depth (ft bgs)		21	32.5	17.5	32.5	55	
VOCs***	**Tetrachloroethylene**	**0.074**	**0.0053**	<0.00091	<0.00083	<0.00085	0.05

TABLE 1G
AL'S AUTO BOTHELL WEXLER PROPERTY SOIL ANALYTICAL DATA
Source: Floyd | Snider, 2010
(all results in milligrams per kilogram (mg/kg))

Boring		GP-02 (8/5/2010)	GP-05 (8/9/2010)	GP-06 (8/9/2010)	GP-07 8/9/2010	GP-08 (8/9/2010)	GP-09 (8/6/2010)	GP-10 8/6/2010	GP-11 (8/6/2010)	GP-12 (8/6/2010)	GP-13 (8/6/2010)	GP-15 (8/6/2010)	MTCA A/B
Sample depth (ft bgs)		**10'**	**7'-8'**	**8'**	**6'-7'**	**7'**	**9'**	**8'**	**8'**	**6'**	**10'**	**10'**	
Petroleum Hydrocarbons	Gasoline Range	<4.5	21	<5	<6.6	<5.7	<5.7	<5.5	<4.5	**5,900**	<5.1	<5.1	100/30*
	Diesel Range	-	<340	-	-	-	<34	-	-	<680	-	<32	2,000
	Lube Oil Range	-	1,800	-	-	-	<68	-	-	<60	-	<65	2,000
Volatile Organic Compounds**	1,2-Dichlorobenzene	<0.00068	**0.17**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	7,200
	1,3-Dichlorobenzene	<0.00068	**0.041**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	NE
	1,4-Dichlorobenzene	<0.00068	**0.23**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	42
	1,2,3-Trichlorobenzene	<0.00068	**0.0039**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	NE
	1,2,4-Trichlorobenzene	<0.00068	**0.01**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	800
	1,2,4-Trimethylbenzene	<0.00068	**0.0044**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**75**	<0.00076	<0.00075	4,000
	1,3,5-Trimethylbenzene	<0.00068	**0.06**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**23**	<0.00076	<0.00075	4,000
	(cis) 1,2-Dichloroethene	<0.00068	<0.00083	**0.0023**	<0.00079	**0.00087**	<0.00083	<0.00081	**0.039**	<1.5	<0.00076	**0.024**	800
	(trans) 1,2-Dichloroethene	<0.00068	<0.00083	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	**0.0011**	1,600
	sec-Butylbenzene	<0.00068	**0.0018**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**1.6**	<0.00076	<0.00075	NE
	tert-Butylbenzene	<0.00068	**0.0013**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	NE
	Ethylbenzene	<0.00068	**0.0015**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**9**	<0.00076	<0.00075	6
	Isopropylbenzene	<0.00068	**0.001**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**2.7**	<0.00076	**0.0016**	8,000
	Naphthalene	<0.00068	<0.00083	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**6.7**	<0.00076	<0.00075	5
	n-Propylbenzene	<0.00068	<0.00083	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**11**	<0.00076	<0.00075	NE
	p-Isopropyltoluene	<0.00068	**0.0031**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	NE
	Tetrachloroethene	<0.00068	**0.0045**	**0.012**	<0.00079	**0.0051**	**0.85**	**0.12**	**0.0066**	<1.5	<0.00076	0.00084	0.05
	Trichloroethene	<0.00068	<0.00083	**0.0015**	<0.00079	**0.0021**	**0.0015**	<0.00081	**0.0035**	<1.5	<0.00076	**0.006**	0.03
	m,p-Xylene	<0.0014	**0.0017**	0.0017	<0.0016	0.0017	0.0017	<0.0016	<0.0013	**42**	<0.0015	<0.0015	9
	o-Xylene	<0.00068	**0.008**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**9.8**	<0.00076	<0.00075	9
	Vinyl Chloride	<0.00068	<0.00083	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	0.67

TABLE 1H
HISTORIC SOIL ANALYTICAL DATA
BOTHELL LANDING PROPERTY
Source: HWA GeoSciences, 2007
(all results in milligrams per kilogram (mg/Kg) except as noted)

	Boring	BH-2-6	BH-3-6	BH-3-10	BH-4-6	BH-5-6	BH-5-10	BH-6-6	BH-13-6	BH-14-2	BH-14-6	BH-15-2	BH-15-6	BH-18-10	BH-19-6	BH-20-6	BH-21-6	MTCA A/B
	Sample interval, ft bgs	6-8	6-8	10-12	6-8	6-8	10-12	6-8	6-8	2-4	6-8	2-4	6-8	10-12	6-8	6-8	6-8	
Petroleum Hydrocarbons	Gasoline	<3	1200	<3	650	140	<3	<3		<3		<3		<6.3	<6.3	9.1	<4.9	100/30*
	Diesel	<25	9300	<25	670	<25		<25	<25	<25	<25	<25	<25		<30	<29	1500	2000
	Oil Range	<50	<1000	120	<50	<50		<50	65	<50	<50	<50	<50		270	<57	2500	2000
VOCs	Benzene	<0.03	0.39	<0.03	<0.03	0.05	<0.03	<0.03		<0.03		<0.03		<0.02	<0.02	<0.02	<0.049	0.03
	Toluene	<0.05	1.2	<0.05	<0.05	0.11	<0.05	<0.05		<0.05		<0.05		<0.063	<0.063	<0.059	<0.25	7
	Ethylbenzene	<0.05	1.3	<0.05	1	0.4	<0.05	<0.05		<0.05		<0.05		<0.063	<0.063	<0.059	<0.25	6
	Total Xylenes	<0.2	2.7	<0.2	<0.2	1.5	<0.2	<0.2		<0.2		<0.2		<0.063	<0.063	<0.059	0.3	9
	Tetrachloroethene		<0.1		<0.1	<0.1								<0.0013		<0.00061	<0.027	0.03
	Trichloroethene		<0.1		<0.1	<0.1								<0.0013		<0.00061	<0.027	7
	(cis)-1,2-Dichloroethene		<0.1		<0.1	<0.1								<0.0013		<0.00061	<0.027	6
	(trans)-1,2-Dichloroethene		<0.1		<0.1	<0.1								<0.0013		<0.00061	<0.027	
	Vinyl Chloride		<0.1		<0.1	<0.1								<0.0013		<0.00061	<0.027	
PAHs	1-Methylnapthalene		92															5
	2-Methylnapthalene		150															5
	Napthalene		0.97															
	Total Naphthalenes		243															5
	Benzo(a)anthracene		<0.040															
	Benzo(a)pyrene		<0.040															0.14
	Benzo(b)fluoranthene		<0.040															
	Benzo(k)fluoranthene		<0.040															
	Chrysene		<0.070															0.14
	Dibenz(a,h)anthracene		<0.040															
	Indeno(1,2,3-cd)pyrene		<0.040															
	Total cPAHs Using Tox. Equiv.		<0.070															0.10
Metals	Arsenic		<5.0						5.4	<5.0	<5.0	<5.0	<5.0					20
	Barium		44						98		140		62					5600 (B)
	Cadmium		<1.0						<1.0	<1.0	<1.0	<1.0	<1.0					2
	Chromium		31						22	40	30	32	37					19/2000**
	Lead		<5.0						110	<5.0	59	16	<5.0					250
	Selenium		<5.0						<5.0				<5.0					2
	Silver		<5.0						<5.0				<5.0					400
	Mercury		0.02						0.06	0.02	0.08	<0.02	0.08					2

TABLE 1I
HISTORIC SOIL ANALYTICAL DATA
BOTHELL LANDING PROPERTY
Source: Parametrix, 2009
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		BLBH-23-3	BLBH-23-15	BLMW-6-2.5	BLMW-6-7.5	BLSS-1 0-0.5	BLSS-2 0-0.5	HZMW-12-5	HZMW-13-2.5	HZMW-13-5	MTCA A/B
Sample interval, ft bgs		3	15	2.5	7.5	0-0.5	0-0.5	5	2.5	5	
Petroleum Hydrocarbons	Gasoline Range	<1.5	<1.6	<1.8	<2.2	<2.8	<2.8	<1.9	**8.8**	<1.6	100/30*
	Diesel Range	<130	<29	<30	<31	<170	<170	**130**	<45	<28	2000
	Oil Range	**1,700**	**140**	**120**	<62	**680**	**1,000**	**220**	**370**	**120**	2000
VOCs	Benzene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
	Toluene	<0.029	<0.032	<0.037	<0.044	<0.055	<0.057	<0.039	<0.03	<0.032	7
	Ethylbenzene	<0.029	<0.032	<0.037	<0.044	<0.055	<0.057	<0.039	<0.03	<0.032	6
	Xylenes	<0.029	<0.032	<0.037	<0.044	<0.055	<0.057	**0.109**	**0.122**	<0.032	9
	Tetrachloroethene			<0.00053	<0.0006	<0.0013	<0.001	<0.00052	<0.00046	<0.00062	0.03
	Trichloroethene			<0.00053	<0.0006	<0.0013	<0.001	<0.00052	<0.00046	<0.00062	7
	(cis)-1,2-Dichloroethene			<0.00053	<0.0006	<0.0013	<0.001	<0.00052	<0.00046	<0.00062	6
	Vinyl Chloride			<0.00053	<0.0006	<0.0013	<0.001	<0.00052	<0.00046	<0.00062	670 (B)
	Methylene Chloride			<0.0026	<0.003	<0.0067	<0.0052	<0.0026	<0.0023	<0.0031	9
PAHs	1-Methylnaphthalene	<0.0069	<0.0077	<0.0079	<0.0082			<0.0082	<0.0075	<0.0076	
	2-Methylnaphthalene	<0.0069	<0.0077	<0.0079	<0.0082			<0.0082	<0.0075	<0.0076	
	Naphthalene	<0.0069	<0.0077	<0.0079	<0.0082			<0.0082	<0.0075	<0.0076	
	Total Naphthalenes	<0.0069	<0.0077	<0.0079	<0.0082			<0.0082	<0.0075	<0.0076	5
Metals	Arsenic			<6	<6.2			<6.2	<5.6	<5.7	20
	Cadmium			<0.6	<0.62			<0.62	<0.56	<0.57	2
	Chromium			**31**	**45**			**60**	**35**	**41**	19/2000***
	Lead			<6	<6.2			**24**	**9.3**	<5.7	250
	Mercury			**0.026**	<0.025			**0.027**	<0.022	**0.027**	2

TABLE 1I (Continued)
HISTORIC SOIL ANALYTICAL DATA
BOTHELL LANDING PROPERTY
Source: Parametrix, 2009
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		B1-6	B2-7	B3-9	B7-9	BC-6-2.5	BC-7-7.5	BC-8-7.5	BH-2-6	BH-3-6	BH-3-10	BH-4-6	BH-5-6	MTCA A/B
Sample interval, ft bgs		6	7	9	9	2.5	7.5	7.5	6	6	10	6	6	
Petroleum Hydrocarbons	Gasoline			**720**		<6.7	<6.3	<8.5	<3	**1,200**	<3	**650**	**140**	100/30*
	Diesel			<46		<31	<29	<36	<25	**9,300**	<25	**670**	<25	2000
	Oil Range			**2,400**		<63	<57	<71	<50	<1000	<120	<50	<50	2000
VOCs	Benzene			**0.00001**		<0.00002	<0.0011	<0.00002	<0.03	**0.39**	<0.03	<0.3	**0.05**	0.03
	Toluene			**0.00000**		<0.000067	<0.0054	<0.000085	<0.05	**1.3**	<0.05	**1**	**0.4**	7
	Ethylbenzene			**0.00001**		<0.000067	<0.0011	<0.000085	<0.05	**1.2**	<0.05	<0.5	**0.11**	6
	Total Xylenes			**0.00001**		<0.000134	<0.0033	<0.00017	<0.2	**2.7**	<0.2	<2.0	**1.5**	9
	Tetrachloroethene	**0.005**	<0.002	<0.190	<0.001		<0.001			<0.10		<0.10	<0.10	0.03
	Trichloroethene	<0.001	<0.002	<0.190	<0.001		<0.001			<0.10		<0.10	<0.10	7
	(cis)-1,2-Dichloroethene	<0.001	<0.002	<0.190	<0.001		<0.001			<0.10		<0.10	<0.10	6
	(trans)-1,2-Dichloroethene	<0.001	<0.002	<0.190	<0.001		<0.001			<0.10		<0.10	<0.10	
	Vinyl Chloride	<0.001	<0.002	<0.190	<0.001		<0.005			<0.10		<0.10	<0.10	
PAHs	1-Methylnaphthalene									**92**				5
	2-Methylnaphthalene									**150**				5
	Naphthalene									**0.97**				
	Total Naphthalenes									**243**				5
	Benzo(a)anthracene									<0.04				
	Benzo(a)pyrene									<0.04				0.14
	Benzo(b)fluoranthene									<0.04				
	Benzo(k)fluoranthene									<0.04				
	Chrysene									**0.07**				0.14
	Dibenz(a,h)anthracene									<0.04				
	Indeno(1,2,3-cd)pyrene									<0.04				
	Total cPAHs Using Tox. Equiv.									**0.031**				0.10
Metals	Arsenic									<5				20
	Barium									**44**				5600 (B)
	Cadmium									<1				2
	Chromium									**31**				19/2000***
	Lead									<5				250
	Selenium									<5				2
	Silver									<5				400
	Mercury									**0.02**				2

TABLE 1I (Continued)
HISTORIC SOIL ANALYTICAL DATA
BOTHELL LANDING PROPERTY
Source: Parametrix, 2009
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		BH-5-10	BH-6-6	BH-13-6	BH-14-2	BH-14-6	BH-15-2	BH-15-6	BH-18-10	BH-19-6	BH-20-6	BH-21-6	MTCA A/B
Sample interval, ft bgs		10	6	6	2	6	2	6	10	6	6	6	
Petroleum Hydrocarbons	Gasoline	<3	<3		<3		<3		<6.3	<6.3	**9.1**	<4.9	100/30*
	Diesel		<25	<25	<25	<25	<25	<25		<30	29	**1,500**	2000
	Oil Range		<50	**65**	<50	<50	<50	<50		**270**	57	**2,500**	2000
VOCs	Benzene	<0.03	<0.03		<0.03		<0.03		<0.02	<0.02	<0.02	<0.049	0.03
	Toluene	<0.05	<0.05		<0.05		<0.05		<0.063	<0.063	<0.059	<0.25	7
	Ethylbenzene	<0.05	<0.05		<0.05		<0.05		<0.063	<0.063	<0.059	<0.25	6
	Total Xylenes	<0.2	<0.2		<0.2		<0.2		<0.063	<0.063	<0.059	**0.3**	9
	Tetrachloroethene								<0.001		<0.001	<0.027	0.03
	Trichloroethene								<0.001		<0.001	<0.027	7
	(cis)-1,2-Dichloroethene								<0.001		<0.001	<0.027	6
	(trans)-1,2-Dichloroethene								<0.001		<0.001	<0.027	
	Vinyl Chloride								<0.001		<0.001	<0.027	
PAHs	1-Methylnaphthalene												5
	2-Methylnaphthalene												5
	Naphthalene												
	Total Naphthalenes												5
	Benzo(a)anthracene												
	Benzo(a)pyrene												0.14
	Benzo(b)fluoranthene												
	Benzo(k)fluoranthene												
	Chrysene												0.14
	Dibenz(a,h)anthracene												
	Indeno(1,2,3-cd)pyrene												
	Total cPAHs Using Tox. Equiv.												0.10
Metals	Arsenic			**5.4**	<5	<5	<5	<5					20
	Barium			**98**		**140**		**62**					5600 (B)
	Cadmium			<1	<1	<1	<1	<1					2
	Chromium			**22**	**40**	**30**	**32**	**37**					19/2000***
	Lead			**110**	<5	**59**	**16**	<5					250
	Selenium			<5		<5		<5					2
	Silver			<5		<5		<5					400
	Mercury			**0.06**	**0.02**	**0.08**	<0.02	**0.08**					2

TABLE 1J
HISTORIC SOIL ANALYTICAL DATA
FORMER RAINCHECK CLEANERS SOLVENT PLUME DELINEATION
Source: CDM, 2011
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		RC-B20-6	RC-B29-6	MTCA A/B
Sample interval, ft bgs		6	6	
NWTPH-HCID	Gasoline Range Organics	ND	ND	
	Diesel Fuel #2	D	D	
	Lube Oil	D	D	
Petroleum Hydrocarbons	Gasoline			100/30*
	Diesel	780	200	2000
	Oil Range	530	1900	2000
VOCs	Acetone		0.11	72,000
	Methylene Chloride		0.12**	0.02
	Benzene		0.0016	0.03
	Total Xylenes		0.1222	9
	Isopropylbenzene		0.019	8000
	n-Propylbenzene		0.028	8000
	1,2,4-Trimethylbenzene		0.14	
	sec-Butylbenzene		0.014	
	p-Isopropyltoluene		0.0063	
	n-Butylbenzene		0.0077	
	Naphthalene		0.022	5
Metals	Lead		30	250

Table 1 Notes:

MTCA A / B – Ecology MTCA Method A / B soil cleanup levels, Chapter 173-340 WAC, shown for reference only. These cleanup levels may not apply at this site, and are provided as a screening level indication of the environmental quality of the site only.
< - not detected at listed reporting limit
Bold – Analyte Detected
Bold / highlighted – Analyte exceeds cleanup level
Blank – not analyzed
* - The Method A Soil cleanup levels for gasoline mixtures without benzene and the total of ethylbenzene, toluene, and xylenes are less than 1% of the gasoline mixture are 100 mg/kg/all other mixtures are 30 mg/kg
** - Common laboratory solvent that may have been introduced during sample preparation and affecting the analytical result
*** - The Method A soil cleanup levels for Chromium are 19 mg/kg for Cr VI and 2000 mg/kg for Cr III. Analyses are for total chromium.
All diesel range hydrocarbon sample extracts were treated with an acid/silica gel cleanup procedure.

TABLE 2A
HISTORIC GROUND WATER ANALYTICAL DATA
ULTRA CUSTOM CARE CLEANERS SITE
SOURCE: Farallon Consulting, 2002
(all results in micrograms per liter (µg/L) except as noted)

Boring		MW-1	MW1-26-29	MW-2	MW-3	SB-1	SB-2	SB-3	SB-4	SS-1	SS-2	MTCA A/B
Date Sampled		3/6/02	2/19/02	3/6/02	3/6/02	2/19/02	7/19/01	7/19/01	7/19/01	7/19/01	7/19/01	
Screened Interval (ft bgs)		5-15	26-29	2.5-12.5	3-13	4-5	4-5	4-5	4-5	Catch Basin Water	Catch Basin Water	
Approximate Depth to Water (ft bgs)		8.07		5.59	4.94							
Petroleum Hydrocarbons	Gasoline Range			<100								800/1000*
	Diesel Range											500
	Oil Range											500
VOCs	Tetrachloroethene	**880**	**29**	**0.41**	**4.7**	<0.20	<0.20	**0.37**	**6.1**	**500**	**25**	5
	Trichloroethene	**18**	**0.21**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	**300**	**7.6**	5
	(cis) 1,2- Dichloroethene	**36**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	**390**	**3.4**	16
	(trans) 1,2- Dichloroethene	**0.38**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<20	<0.20	160
	Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	**26**	<0.20	0.2
	Methylene Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**120****	<1.0	5
	Dichlorodifluoromethane	<0.20	<0.20	<0.20	<0.20	**0.22**	<0.20	<0.20	**0.2**	<20	<0.20	1600
	Chloroform	**2**	**2.30**	<0.20	**0.44**	**0.70**	**0.24**	<0.20	**0.39**	<20	<0.20	80

TABLE 2B
HISTORIC GROUND WATER ANALYTICAL DATA
ULTRA CUSTOM CARE CLEANERS SITE
Source: Environmental Partners Inc., 2004
(all results in micrograms per liter (µg/L) except as noted)

Boring		B-1	B-1	B-1	B-2	B-2	B-2	B-3	B-3	B-3	B-4	B-4	B-4	MTCA A/B
Date Sampled		7/22/04	7/22/04	7/22/04	7/26/04	7/26/04	7/26/04	7/26/04	7/26/04	7/26/04	7/23/04	7/23/04	7/23/04	
Screened Interval (ft bgs)		8-12	26-30	40-44	8-12	22-26	36-40	8-12	22-26	36-40	8-12	22-26	36-40	
Approximate Depth to Water (ft bgs)		9	9	9	9	9	9	9	9	9	9	9	9	
Petroleum Hydrocarbons	Gasoline Range													800/1000*
	Diesel Range													500
	Oil Range													500
VOCs	Tetrachloroethene	**6400**	**5**	**5**	**14**	<2	<2	**410**	<2	<2	**1900**	<2	<2	5
	Trichloroethene	**110**	<2	<2	<2	<2	<2	<2	<2	<2	**210**	<2	<2	5
	(cis) 1,2- Dichloroethene	**31**	<2	<2	<2	<2	<2	<2	<2	<2	**160**	<2	<2	16
	Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.2
	1,1,1-Trichloroethane	<2	<2	<2	**8**	<2	<2	<2	<2	<2	<2	<2	<2	200
	Chloroform	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	80

Boring		B-5	B-5	B-5	B-6	B-6	B-6	B-7	B-7	B-7	B-8	B-8	B-8	MTCA A/B
Date Sampled		7/26/04	7/26/04	7/26/04	7/22/04	7/22/04	7/22/04	7/23/04	7/23/04	7/23/04	7/23/04	7/23/04	7/23/04	
Screened Interval (ft bgs)		8-12	22-30	36-40	8-12	22-26	36-40	8-12	22-26	36-40	8-12	22-26	32-36	
Approximate Depth to Water (ft bgs)		9	9	9	9	9	9	9	9	9	9	9	9	
Petroleum Hydrocarbons	Gasoline Range													800/1000*
	Diesel Range													500
	Oil Range													500
VOCs	Tetrachloroethene	**4**	<2	**4**	**9**	<2	<2	**4**	<2	<2	**5**	<2	<2	5
	Trichloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	5
	(cis) 1,2- Dichloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	16
	Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.2
	1,1,1-Trichloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	200
	Chloroform	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	80

TABLE 2B (Continued)
HISTORIC GROUND WATER ANALYTICAL DATA
ULTRA CUSTOM CARE CLEANERS SITE
Source: Environmental Partners Inc., 2004
(all results in micrograms per liter (µg/L) except as noted)

Boring		B-9	B-9	B-9	B-10	B-11	B-12	B-13	B-14	B-16	MW-1	MTCA A/B
Date Sampled		7/23/04	7/23/04	7/23/04	10/25/04	10/25/04	10/25/04	10/25/04	7/23/04	10/26/04	7/22/04	
Screened Interval (ft bgs)		8-12	22-30	36-40	20-24	20-24	20-24	10-14	10-14	10-14	5-15	
Approximate Depth to Water (ft bgs)		9	9	9	19.5	20		11	11	11	9.56	
Petroleum Hydrocarbons	Gasoline Range											800/1000*
	Diesel Range											500
	Oil Range											500
VOCs	Tetrachloroethene	**3**	<2	<2	**23**	**18**	**8**	**18**	**16**	**30**	**4**	5
	Trichloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	5
	(cis) 1,2- Dichloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	16
	Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.2
	1,1,1-Trichloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	200
	Chloroform	<2	<2	<2	<2	**3**	<2	<2	<2	<2	<2	80

TABLE 2C
HISTORIC GROUND WATER ANALYTICAL DATA
CITY PROPERTIES
Source: Parametrix, 2010
(all results in micrograms per liter (µg/L) except as noted)

Boring		SB01	SB02	SB03	SB05	MTCA A/B
Date Sampled		4/1/10	3/31/10	3/31/10	4/1/10	
Screened Interval (ft bgs)		17-20	17-20	18-20	18-20	
Approximate Depth to Water (ft bgs)		17	17	18	18	
Petroleum Hydrocarbons	Gasoline Range	<100	<100	<100		800/1000*
	Diesel Range	<160	<310	<290		500
	Oil Range	<250	<490	<460		500
VOCs	Benzene	<1.0	<1.0	<1.0		5.0
	Toluene	<1.0	<1.0	<1.0		1000
	Ethylbenzene	<1.0	<1.0	<1.0		700
	Xylenes	<1.0	<1.0	<1.0		1000
	Tetrachloroethene		<0.20	<0.20	**3.7**	5
	Trichloroethene		<0.20	<0.20	<0.20	5
	(cis) 1,2- Dichloroethene		<0.20	<0.20	<0.20	16
	Vinyl Chloride		<0.20	<0.20	<0.20	0.2
	Chloroform		<0.20	<0.20	<0.20	80
	Chlorobenzene		<0.20	<0.20	<0.20	160
Metals	Mercury			<0.50		2
	Arsenic			<3.0		5
	Chromium			<10.00		50
	Lead			<1.00		15
	Cadmium			<4.00		5

TABLE 2D
HISTORIC GROUND WATER ANALYTICAL DATA
CITY RIGHT-OF-WAYS
Source: CDM, 2009
(all results in micrograms per liter (µg/L) except as noted)

Boring		B1	B2	B3	B4	B5	B6	B7	B8	B10	B11	B12	B13	B14	B15	B16	B17	B18	MTCA A/B
Date Sampled		4/6/09	4/2/09	4/3/09	4/2/09	4/2/09	4/1/09	4/1/09	4/6/09	4/7/09	4/7/09	4/7/09	4/2/09	4/3/09	4/3/09	4/3/09	4/2/09	4/6/09	
Screened Interval (ft bgs)		8-14	8-12	11-14	7-13	8-13	8-18	10-14	7-14	7-14	7-14	8-14	6-12	9-16	11-16	12-19	15-19	8-14	
Approximate Depth to Water (ft bgs)		8	8	11	7	8	8	10	7	7	7	8	6	9	11	12	15	8	
Petroleum Hydrocarbons	Gasoline Range	<110	**380**	**270**			<110	<110	<100			<100	<100					<400	800/1000*
	Diesel Range	<270	<260	<300			<270	<260	<270			<270	<250					<260	500
	Oil Range	<430	<420	<0.49			<440	<420	<410			<410	<400					<420	500
VOCs	Benzene		<1.0	**5.7**														**13**	5.0
	Toluene		<1.0	<1.0														<4.0	1000
	Ethylbenzene		<1.0	**3.5**														<4.0	700
	Xylenes		**1.5**	**4.1**														<4.0	1000
	Tetrachloroethene	**20**	**25**	**20**	<0.20	<0.20	**3.4**	<0.20	**0.37**	**54**	**49**	**57**	**1.2**	**5.9**	**3.9**			**57**	5
	Trichloroethene	**1.4**	**11**	<0.20	<0.20	<0.20	**6.4**	<0.20	<0.20	<0.40	<0.20	<0.40	<0.20	**0.54**	**1.8**			**9.9**	5
	(cis) 1,2- Dichloroethene	**1.6**	**5.0**	<0.20	<0.20	<0.20	**76**	<0.20	<0.20	<0.40	<0.20	<0.40	<0.20	**0.33**	**1.4**			**6.0**	16
	(trans) 1,2- Dichloroethene	<0.20	<0.20	<0.20	<0.20	<0.20	**0.66**	<0.20	<0.20	<0.40	<0.20	<0.40	<0.20	<0.20	<0.20			<0.40	160
	1,2-Dichloroethane	<0.20	<0.20	<0.20	<0.20	<0.20	**6.5**	<0.20	<0.20	<0.40	<0.20	<0.40	<0.20	<0.20	<0.20			<0.40	0.48
	Vinyl Chloride	<0.20	<0.20	<0.20	<0.20	<0.20	**0.89**	<0.20	<0.20	<0.40	<0.20	<0.40	<0.20	<0.20	<0.20			**2.7**	0.2
	Chloroform	<0.20	<0.20	<0.20	<0.20	<0.20	<0.40	<0.20	**0.22**	**1.6**	**1.5**	<0.40	<0.20	**0.72**	<0.20			<0.40	80
	Chlorobenzene	<0.20	**0.22**	<0.20	<0.20	<0.20	<0.40	<0.20	<0.20	<0.40	<0.20	<0.40	<0.20	<0.20	<0.20			**0.55**	160

TABLE 2E
HISTORIC GROUND WATER ANALYTICAL DATA
CITY RIGHT-OF-WAYS
Source: HWA GeoSciences, 2008
(all results in micrograms per liter (µg/L) except as noted)

Boring		BB-2	BB-3	MTCA A/B
Date Sampled		**9/5/08**	**9/5/08**	
Screened Interval (ft bgs)		9-19	10-20	
Approximate Depth to Water (ft bgs)		4.58	14.99	
Petroleum Hydrocarbons	Gasoline Range	**150**		800/1000*
	Diesel Range	<250		500
	Oil Range	<400		500
VOCs	Benzene	<0.40	<0.20	5.0
	Toluene	<2.0	<1.0	1000
	Ethylbenzene	<0.40	<0.20	700
	Xylenes	<0.80	<0.40	1000
	Tetrachloroethene	**94**	**0.51**	5
	Trichloroethene	<0.40	<0.20	5
	(cis) 1,2- Dichloroethene	<0.40	<0.20	16
	Vinyl Chloride	<0.40	<0.20	0.2
	Chloroform	<0.20	<0.20	80
	Chlorobenzene			160

TABLE 2F
BOTHELL SERVICE CENTER GROUND WATER ANALYTICAL DATA
(all results in micrograms per liter (µg/l) except as noted)

Boring		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	MW-17	MW-18	MTCA A/B
Most Recent Reported Sampling Date		8/2008	8/2008	8/2008	8/2008	8/2008	8/2008	8/2008	8/2008	8/2008	4/2005	8/2008	8/2008	11/2007	11/2007	11/2007	11/2007	11/2007	5//2008	
Screen interval (ft bgs)		5-20	5-20	5-20	10-25	10-25	10-25	10-25	45-50	45-50	5-25	25-33	25-33	40-55	22-32	22-32	40-55	40-50	22-30	
Approximate Depth to Water (ft bgs)		7.56	8	7	7.3	7.7	8.08	7.79	8.74	9.76	7.27	8.16	7.63	8.68	8.09	8.62	9.24	9.1	8.1	
Field Parameters	pH	6.32	6.38	5.9	6.22	6.02	6.09	6.52	6.33	7.19	5.32	6.26	6.34	7.07	6.96	6.81	7.85	7.65		
	Conductivity (µS/cm)	189	266	172	248	203	256	240	118	166	274	142	227	152	146	157	124	188		
	Temperature (C)	19.33	14.91	18.21	16.81	14.71	19.27	14	16.22	15.71	16.9	16.54	14.69	14.69	12.7	12.26	12.46	12.31		
	Dissolved Oxygen (mg/l)	1.87	2.26	2.88	2.91	3.29	2.34	2.74	2.07	1.17	0.62	1.46	2.12	1.35	3.96	4.02	4.02	0.49		
VOCs**	Tetrachloroethylene	**23000**	**500**	<20	**11000**	**21000**	**25000**	**4300**	**93**	**6000**	**3**	**27**	**1600**	<1	<0.2	<0.2	**10**	**6.5**	<0.25	5
	Trichloroethylene	<200	**200**	<20	**790**	**660**	**1200**	**43**	**4.8**	**3400**	<0.2	**0.53**	<10	<0.2	<0.2	<0.2	<0.2	<0.2	<0.25	5
	cis-1,2-Dichloroethylene	<200	**2300**	<20	**270**	**630**	**1200**	**43**	**4.4**	<50	<0.2	<0.2	<10	<0.2	<0.2	<0.2	<0.2	<0.2	<0.25	16
	Chloroform	<200	<20	<20	<50	<100	<200	<20	<1	<50	<0.2	<0.2	<10	<0.2	<0.2	**1.4**	**17**	**0.22**	<0.25	80

TABLE 2G
AL'S AUTO BOTHELL WEXLER PROPERTY GROUND WATER ANALYTICAL DATA
(all results in micrograms per liter (µg/l) except as noted)

Boring		RS-1	RP-1	RP-2	MTCA A/B
Approximate Depth to Water (ft bgs)		5.99	6.41	5.9	
Field Parameters	pH	7.2	6.7	7.5	
	Conductivity (µS/cm)	310	290	190	
VOCs**	Tetrachloroethylene	**31**	**1500**	<2	5
	Trichloroethylene	**19**	**600**	<2	5
	cis-1,2-Dichloroethylene	**160**	**2100**	<2	16
	trans-1,2-Dichloroethylene	**3**	**11**	<2	160

TABLE 2G (continued)
AL'S AUTO BOTHELL WEXLER PROPERTY GROUND WATER ANALYTICAL DATA
(all results in micrograms per liter (µg/l) except as noted)

Boring		GP-01 (8/5/2010)			GP-02 (8/5/2010)			GP-03 8/5/2010			GP-04 8/6/2010	GP-05 8/9/2010	GP-12 8/6/2010	GP-13 8/6/2010	GP-14 8/9/2010	GP-16 8/6/2010	MTCA A/B
Sample depth (ft bgs)		10'-15'	25'-30'	40'-42'	10'-15'	25'-30'	40'-45'	5'-9'	25'-30'	40'-43'	10'-15'	10'-15'	10'-15'	10'-15'	10'-14'	7'-12'	
Petroleum Hydrocarbons	Gasoline Range	<100 J	-	-	<100	-	-	<100	-	-	<100	<100	**940**	<100 J	<100	160	1000/800*
	Diesel Range	-	-	-	<260	-	-	-	-	-	-	-	<330	-	-	<260	500
	Lube Oil Range	-	-	-	<410	-	-	-	-	-	-	-	<420	-	-	<420	500
Volatile Organic Compounds**	1,2,4-Trimethylbenzene	<10	<1	<0.2	<0.4	<1	<0.2	<0.2	<2	<0.2	<0.2	<0.2	**19**	<10	<20	<1	400
	1,3,5-Trimethylbenzene	<10	<1	<0.2	<0.4	<1	<0.2	<0.2	<2	<0.2	<0.2	<0.2	**5**	<10	<20	<1	400
	(cis) 1,2-Dichloroethene	<10	<1	<0.2	**50**	**6.7**	**0.92**	**20**	**9.8**	**0.29**	<0.2	<0.2	**6.8**	**230**	**160**	**140**	16
	(trans) 1,2-Dichloroethene	<10	<1	<0.2	<0.4	<1	<0.2	**0.25**	<2	<0.2	<0.2	<0.2	<0.2	<10	<20	**2.6**	160
	Chloroform	<10	<1	<0.2	<0.4	<1	<0.2	<0.2	<2	<0.2	<0.2	<0.2	**0.82**	**15**	<20	<1	80
	Ethylbenzene	<10	<1	<0.2	<0.4	<1	<0.2	<0.2	<2	<0.2	<0.2	<0.2	**14**	<10	<20	<1	700
	Isopropylbenzene	<10	<1	<0.2	<0.4	<1	<0.2	<0.2	<2	<0.2	<0.2	<0.2	**0.94**	<10	<20	<1	800
	Naphthalene	<50	<5	<1	<2	<5	<1	<1	<10	<1	<1	<1	**5.8**	<50	<100	<5	160
	n-Propylbenzene	<10	<1	<0.2	<0.4	<1	<0.2	<0.2	<2	<0.2	<0.2	<0.2	2	<10	<20	<1	NE
	Tetrachloroethene	**1,900**	**31**	**2.2**	**17**	**91**	**7**	**0.38**	**290**	**15**	**22**	<0.2	**0.43**	**850**	**2,100**	**8.5**	5
	Trichloroethene	<103	<1	<0.2	**26**	**4.1**	**0.56**	**2.4**	**6.4**	0.44	<0.2	<0.2	**0.27**	**19**	**26**	**22**	5
	Vinyl Chloride	<103	<13	<0.2	<0.43	<13	<0.2	<0.2	<23	<0.2	<0.2	<0.2	<0.2	<103	<203	**1.5**	0.2
	m,p-Xylene	<20	<2	<0.4	<0.8	<2	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	**50**	<20	<40	<2	10,004
	o-Xylene	<10	<1	<0.2	<0.4	<1	<0.2	<0.2	<2	<0.2	<0.2	<0.2	**18**	<10	<20	<1	10,004

TABLE 2H
HISTORIC GROUND WATER ANALYTICAL DATA
BOTHELL LANDING PROPERTY
Source: HWA GeoSciences, 2007
(all results in micrograms per liter (µg/L) except as noted)

Boring		BH-2-W	BH-6-W	BH-8-W	BH-9-W	BH-11-W	BH-12-W	BH-15-W	BH-17-W	BH-18-W	BH-19-W	BH-20-W	BH-21-W	BH-22-W	BL-MW-1	BL-MW-2	BL-MW-3	BL-MW-4	MTCA A/B
Date Sampled		7/9/07	7/10/07	7/10/07	7/10/07	7/9/07	7/9/07	7/9/07	8/9/07	8/9/07	8/9/07	8/9/07	8/9/07	8/9/07	7/18/07	7/18/07	7/18/07	7/18/07	
Screened Interval (ft bgs)																			
Approximate Depth to Water (ft bgs)		6.5	7	8	7.5	4	8	8	7	7	10	6	7	8	6.88	9.58	5.54	6.92	
Petroleum Hydrocarbons	Gasoline Range	<50	<50	<50	<50	<50	**86**	<50	<100	<400	<100	<100	<100	<100	<50	<50	<50	<50	800/1000
	Diesel Range	<130	<130	<130	<130	**150**	<130	<130			<270	<280	<260	<270	<130	<130	<130	<130	500
	Oil Range	<250	<250	<250	<250	<250	<250	<250			<440	<450	<410	<440	<250	<250	<250	<250	500
VOCs	Benzene	<2	<1	<1	<1	<2	<2	<1	<1	<4	<1	<1	<1	<1	<2	<2	**17**	<2	5
	Toluene	<1	<1	<1	<1	<1	<1	<1	<1	<4	**1.1**	<1	**1.4**	**1.6**	<1	<1	<2	<1	1000
	Ethylbenzene	<1	<1	<1	<1	<1	<1	<1	<1	**12**	<1	<1	<1	<1	<1	<1	<2	<1	700
	Xylenes	<3	<3	<3	<3	<3	<3	<3	**1.3**	<4	**1.9**	<1	**1.8**	**2.6**	<3	<3	<2	<3	1000
	Tetrachloroethene	<2	<2	<2	<2	<2	<2		<0.2	<0.2	<0.2	**74**	**7.4**	<0.2	<2	**17**	<2	<2	5
	Trichloroethene	<2	<2	<2	<2	<2	<2		<0.2	<0.2	<0.2	**3.2**	**5.8**	**0.84**	<2	<2	<2	<2	5
	(cis) 1,2-Dichloroethene	<2	<2	<2	<2	<2	<2		<0.2	<0.2	<0.2	**0.83**	**1.8**	**3.2**	<2	<2	**2**	<2	16 (B)
	1,2-Dichloropropane	<2	<2	<2	<2	<2	<2		<0.2	**0.31**	<0.2	<0.4	<0.2	<0.2	<2	<2	<2	<2	
	1,2-Dichloroethane	<2	<2	<2	<2	<2	**4**		**0.51**	**16**	<0.2	<0.4	<0.2	<0.2	<2	<2	<2	<2	5
	Vinyl Chloride	<0.2	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2
Total Metals	Arsenic					**49**		**68**											5
	Barium					**1200**		**1000**											560 (B)
	Cadmium					**6**		**12**											5
	Chromium					**260**		**200**											50
	Lead					**95**		**25**											15
	Mercury					**0.41**		**0.16**											2
Dissolved Metals	Arsenic					**4**		**56**											5
	Barium					**240**		**380**											560 (B)
	Cadmium					**<5**		**<5**											5
	Chromium					**<7**		**<7**											50
	Lead					**<3**		**<3**											15
	Mercury					**<0.2**		**<0.2**											2

TABLE 2I
HISTORIC GROUND WATER ANALYTICAL DATA
BOTHELL LANDING PROPERTY
Source: Parametrix, 2009
(all results in micrograms per liter (µg/L) except as noted)

Boring		BI-3	D-BI-3	BB-2-17	BB-3-16	BLMW-1-10	BLMW-3-10	BLMW-4-10	BLMW-4-10-2	BLMW-5-8	BLMW-6-5	BLMW-7-8	BLMW-8-12	BLMW-8-25	BLBH-23-19	BLBH-24-12	HZMW-12-10	HZMW-13-10	MTCA A/B
Date Sampled		9/24/09	9/24/09	9/18/09	9/17/09	9/16/09	9/17/09	9/16/09	9/16/09	9/16/09	9/16/09	9/16/09	9/16/09	9/4/09	9/4/09	9/4/09	9/17/09	9/17/09	
Screened Interval (ft bgs)		5-12	5-12	7-19	9-20	4-15	4-15	4-15	4-15	3-11.5	3-16.5	3-11.5	3-21.5	3-21.5	17-20	10-15	8-20	3-16.5	
Approximate Depth to Water (ft bgs)																			
Petroleum Hydrocarbons	Gasoline Range					<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	**210**	800/1000*
	Diesel Range					<0.28	<0.28	<0.29	<0.28	<0.27	<0.25	<0.25	<0.32	<0.3	<0.32	<0.32	<0.27	<0.27	500
	Oil Range					<0.44	<0.44	<0.46	<0.45	<0.44	<0.4	<0.4	<0.5	<0.47	<0.51	<0.51	<0.43	<0.44	500
VOCs	Benzene					<1	**15**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	5.0
	Toluene					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1000
	Ethylbenzene					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	700
	Xylenes					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1000
	Tetrachloroethene	**6.8**	**6.9**	**79**	**0.52**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**0.96**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	5
	Trichloroethene	**1.2**	**1.2**	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	5
	(cis) 1,2- Dichloroethene	**5.3**	**5.1**	<0.4	<0.2	<0.2	**1.8**	**0.60**	**0.57**	<0.2	**0.69**	<0.2	<0.2	**0.61**	<0.2	<0.2	<0.2	**0.24**	16
	(trans) 1,2- Dichloroethene	**0.2**	**0.2**	**0.4**	**0.2**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**0.2**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	160
	1,2-Dichloroethane	<0.2	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**0.69**	**0.82**	<0.2	<0.2	<0.2	<0.2	0.48
	Vinyl Chloride	**1.3**	**1.4**	<0.4	<0.2	<0.2	**0.38**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2
	Chloroform	<0.2	<0.2	<0.4	**0.82**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**0.37**	<0.2	<0.2	<0.2	<0.2	80
	Chlorobenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	160
Total Metals	Arsenic					<3.3	<3.9	<3.3	<3.3	<3.3		<3.3	<3.3	<3.3	<3.3				5
	Cadmium																		5
	Chromium																		50
	Lead																		15
	Mercury																		2
Dissolved Metals	Arsenic					<3.0	<3.0	<3.0	<3.0	<3.0		<3.0	<3.0						5
	All Analytes					ND	ND	ND	ND	ND		ND	ND						

TABLE 2I (Continued)
HISTORIC GROUND WATER ANALYTICAL DATA
BOTHELL LANDING PROPERTY
Source: Parametrix, 2009
(all results in micrograms per liter (µg/L) except as noted)

Boring		BB-2-14	BB-3-18	BI-3-10	BLMW-1-12	BLMW-3-12	BLMW-4-12	BLMW-4-12Dup	BLMW-5-8	BLMW-6-10	BLMW-7-8	BLMW-8-12	HZMW12-15	HZMW13-10	MTCA A/B
Date Sampled		12/18/09	12/18/09	12/18/09	12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	12/16/09	12/16/09	
Screened Interval (ft bgs)		7-19	9-20	5-12	4-15	4-15	4-15	4-15	3-11.5	3-16.5	3-11.5	3-21.5	8-20	3-16.5	
Approximate Depth to Water (ft bgs)															
Petroleum Hydrocarbons	Gasoline Range				<100	<100	<100	<100	<100	<100	<100	<100	<100	**200**	800/1000*
	Diesel Range				<260	<260	<250	<260	<270	<260	<250	<250	<250	<250	500
	Oil Range				<410	<410	<400	<410	<430	<410	<400	<410	<400	<400	500
VOCs	Benzene				<1	**3.6**	<1	<1	<1	<1	<1	<1	<1	<1	5.0
	Toluene				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1000
	Ethylbenzene				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	700
	Xylenes				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1000
	Tetrachloroethene	100	**0.2**	**3.1**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**0.71**	<0.2	<0.2	<0.2	5
	Trichloroethene	<1	<0.2	**0.53**	<0.2	**0.24**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	5
	(cis) 1,2- Dichloroethene	<1	<0.2	**2.3**	<0.2	**2**	**0.46**	**0.46**	<0.2	**0.48**	<0.2	<0.2	<0.2	<0.2	16
	(trans) 1,2- Dichloroethene	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	160
	1,2-Dichloroethane	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**0.23**	<0.2	<0.2	0.48
	Vinyl Chloride	<1	<0.2	0.68	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2
	Chloroform	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	80
	Chlorobenzene	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	160
Total Metals	Arsenic				<3.3	<3.6	<3.4	<3.5	<3.3		<3.3	<4.2			5
	Cadmium														5
	Chromium														50
	Lead														15
	Mercury														2
Dissolved Metals	Arsenic				<3	<3	<3.5	<3.9	<3		<3	<3			5

TABLE 2J
HISTORIC GROUND WATER ANALYTICAL DATA
FORMER RAINCHECK CLEANERS SOLVENT PLUME DELINEATION
Source: CDM, 2011
(all results in micrograms per liter (µg/L) except as noted)

Sample	RC-B19-06/27	RC-B20-06/27	RC-B21-06/27	RC-B22-06/27	RC-B23-06/27	RC-B24-06/27	RC-B25-06/27	RC-B26-06/27
Date sampled	6/27/2011	6/27/2011	6/27/2011	6/27/2011	6/27/2011	6/27/2011	6/27/2011	6/27/2011
Vinyl Chloride	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,2-Dichloroethene	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	**2.4**	<0.20	**2.6**	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloroethane	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Tetrachloroethene	**1.4**	<0.20	<0.20	<0.20	<0.20	<0.20	**0.4**	<0.20

Sample	RC-B27-06/28	RC-B28-06/28*	RC-B0-06/28	RC-B29-06/28**	RC-B00-06/28	RC-BB2-06/27	RC-BB3-06/28	MTCA A/B
Date sampled	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/27/2011	6/28/2011	
Vinyl Chloride	<0.20	<0.20	<0.20	**2.7**	**2.3**	<0.40	<0.20	0.2
cis-1,2-Dichloroethene	<0.20	<0.20	<0.20	**0.32**	**0.3**	<0.40	<0.20	16
Chloroform	**0.82**	**1**	**1.1**	<0.20	<0.20	<0.40	**0.21**	80
1,2-Dichloroethane	<0.20	<0.20	<0.20	0.58	0.56	<0.40	<0.20	5
Tetrachloroethene	<0.20	2.1	2.7	<0.20	<0.20	**76**	<0.20	5

Table 2 Notes:

MTCA A / B – Ecology MTCA Method A / B ground water cleanup levels, Chapter 173-340 WAC, shown for reference only. These cleanup levels may not apply at this site, and are provided as a screening level indication of the environmental quality of the site only.
< - not detected at listed reporting limit
Bold – Analyte Detected
Bold / highlighted – Analyte exceeds cleanup level
Blank – not analyzed
* - The Method A ground water cleanup level for gasoline is 800 µg/L if benzene is detected above the laboratory's reporting limit and is 1,000 µg/L if benzene is not detected
** - Common laboratory solvent that may have been introduced during sample preparation and affecting the analytical result

Table 3
General Sample Analytes and Rationale (Soil and Ground Water)
See Figures 10 for Sampling Locations

Location	Depth (feet)	Analytes	Analytical Method	Rationale
Select Deep exploration points	Up to 50 feet	VOCs Diesel/Oil Range TPH Gasoline Range TPH PAHs	EPA 8260 NWTPH-Dx NWTPH-Gx EPA 8270D SIM	To delineate the horizontal and vertical extent of chlorinated VOCs and petroleum hydrocarbons downgradient of apparent source areas and to determine if there are strata present that limit the vertical migration of chlorinated VOCs
Select Shallow exploration points	10-25 feet			To delineate the horizontal extent of chlorinated VOCs and petroleum hydrocarbons up- and downgradient of apparent source areas
Select exploration points	Up to 50 feet	Total & Dissolved Arsenic, Cadmium, Chromium, & Lead	EPA 6010/7471A	To delineate potential metals contamination in soil and ground water throughout the RI area
Select shallow exploration points	Above water table	Weight Fraction Organic Carbon Dry Bulk Density Total Porosity Air-Filled Porosity Volumetric Moisture Content	ASTM D2974 ASTM D2937 Army COE EM1110-2-1906, Append. II Army COE EM1110-2-1906, Append. II ASTM D2216	To determine typical values of soil parameters used in Johnson and Ettinger subsurface vapor intrusion model (Environmental Quality Management, 2000) to be used to evaluate indoor air concentrations of VOCs in RI area
Select shallow exploration points	Below water table	Weight Fraction Organic Carbon Dry Bulk Density Total Porosity Grain Size Distribution Cation Exchange Capacity	ASTM D2974 ASTM D2937 Army COE EM1110-2-1906, Append. II ASTM D422 & ASTM D4464 EPA 9081	To determine typical values of soil parameters used in ground water transport model to be used to evaluate COPC concentrations at receptor points down gradient of source areas

Number of samples and/or analytes will be based on results of field screening activities during the field investigation.

Table 4
Sample Analytes and Rationale (Area Wide Ground Water Monitoring Network)
See Figure 10 for Sampling Locations

Well	Screened Depth (feet)*	Rationale	Analytical
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 (soil and water) Sample soils	HVOCs TPH** (incl soils)
D	10-20	Define edges / relationship of both plumes. Also check for TPH, detected at Schucks and Grease Monkey, at low concentrations	HVOCs TPH
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)
F	10-20		
G	10-20		
H	10-20 30-50	Delineate edge of BSC plume Confirm TPH cleanup in soil and ground water at Hertz	HVOCs TPH As
I	10-20	Delineate edge of BSC plume Confirm soil cleanup in this area, sample soils 12-15’ below clean backfill	HVOCs TPH (incl soils, 12-15’) As
J	10-20	Delineate edge of plume(s) Confirm TPH cleanup in ground water at Bothell Landing	HVOCs TPH Metals (As, Cd, Cr, Pb)
K	10-20		
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

* Approximate, 10-25’ indicates first encountered, non-perched ground water, 30-50’ indicates deeper, confined aquifer, as encountered in each location
** TPH = TPH-Gx/BTEX, TPH-Dx

Table 5
Proposed RI Schedule

Phase	Activity	Anticipated Completion	Reporting
1	Bothell Landing property / SR 522 petroleum-impacted soil cleanup and confirmation soil sampling	Begin Summer 2012, complete after roadway realignment is completed and the previously-used roadway is vacated (2013)	Soil cleanup report, early 2014
2	Monitoring well installation and sampling at accessible locations identified following Phase 1 tasks (potential locations shown on Figure 10)	After 2013, contingent on site access	Letter report/Technical Memorandum, following well installations
3	Monitoring well installation and Quarterly ground water monitoring at Bothell Landing property and well network in place at this time	Following completion of interim action, 2014	Quarterly monitoring reports, 2014 through 2015
4	Vapor intrusion studies / modeling	Following Phase 3	Included in draft RI/FS
5	Chlorinated VOC source delineation at Ultra Custom Care Cleaners site	Contingent on site access	Included in draft RI/FS
6	Investigations necessary to evaluate potential source control options and to close any outstanding data gaps followed by a complete a RI report	Contingent on prior tasks	Included in draft RI/FS

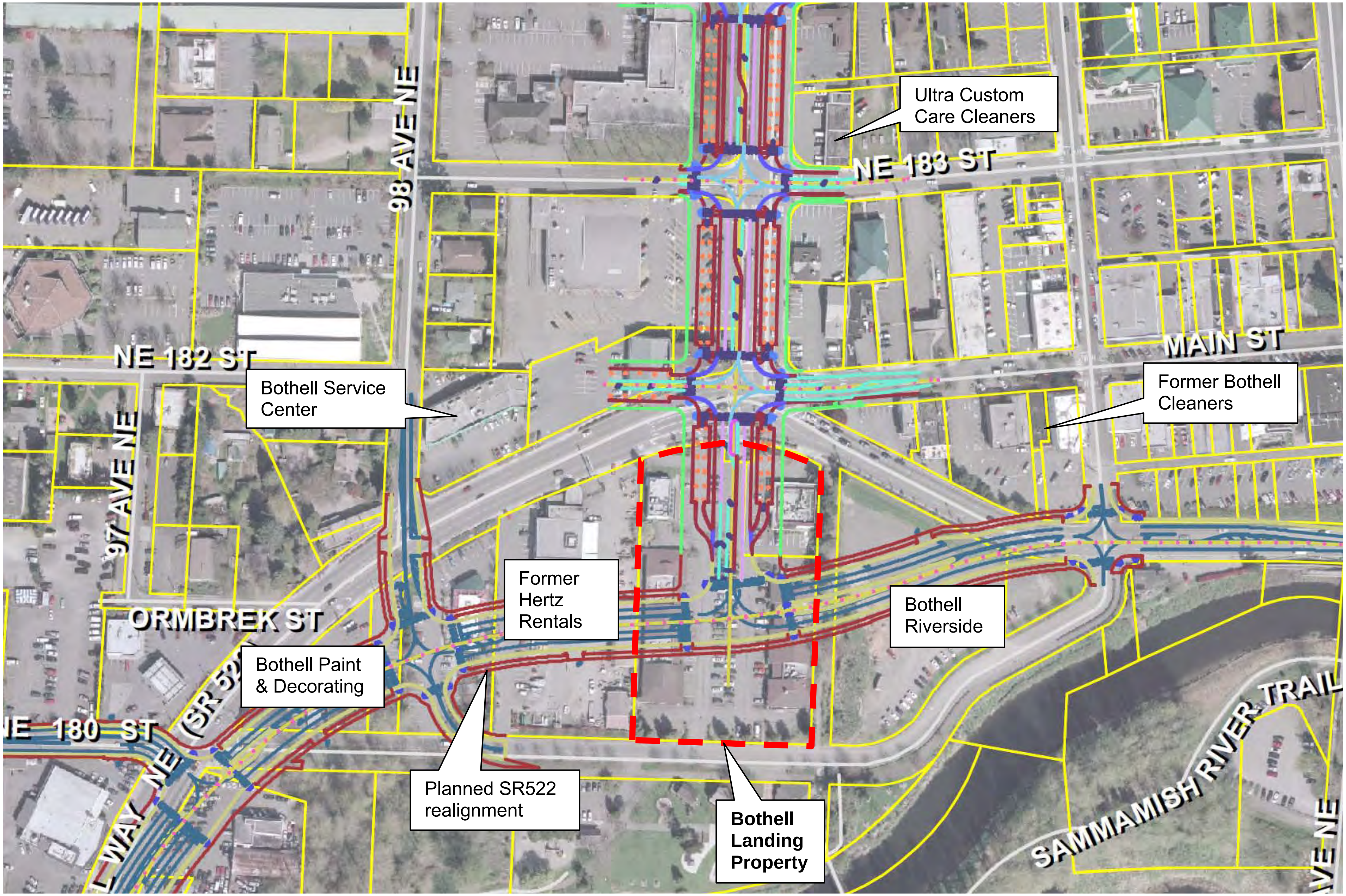
HWA GEOSCIENCES INC.

SITE VICINITY

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION WORK PLAN
BOTHELL, WASHINGTON

FIGURE NO.
1

PROJECT NO.
2007-098-929



HWA GEOSCIENCES INC.

SITE LOCATION & ADJACENT PROPERTIES

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION WORK PLAN
BOTHELL, WASHINGTON

FIGURE NO.
2

PROJECT NO.
2007-098-929

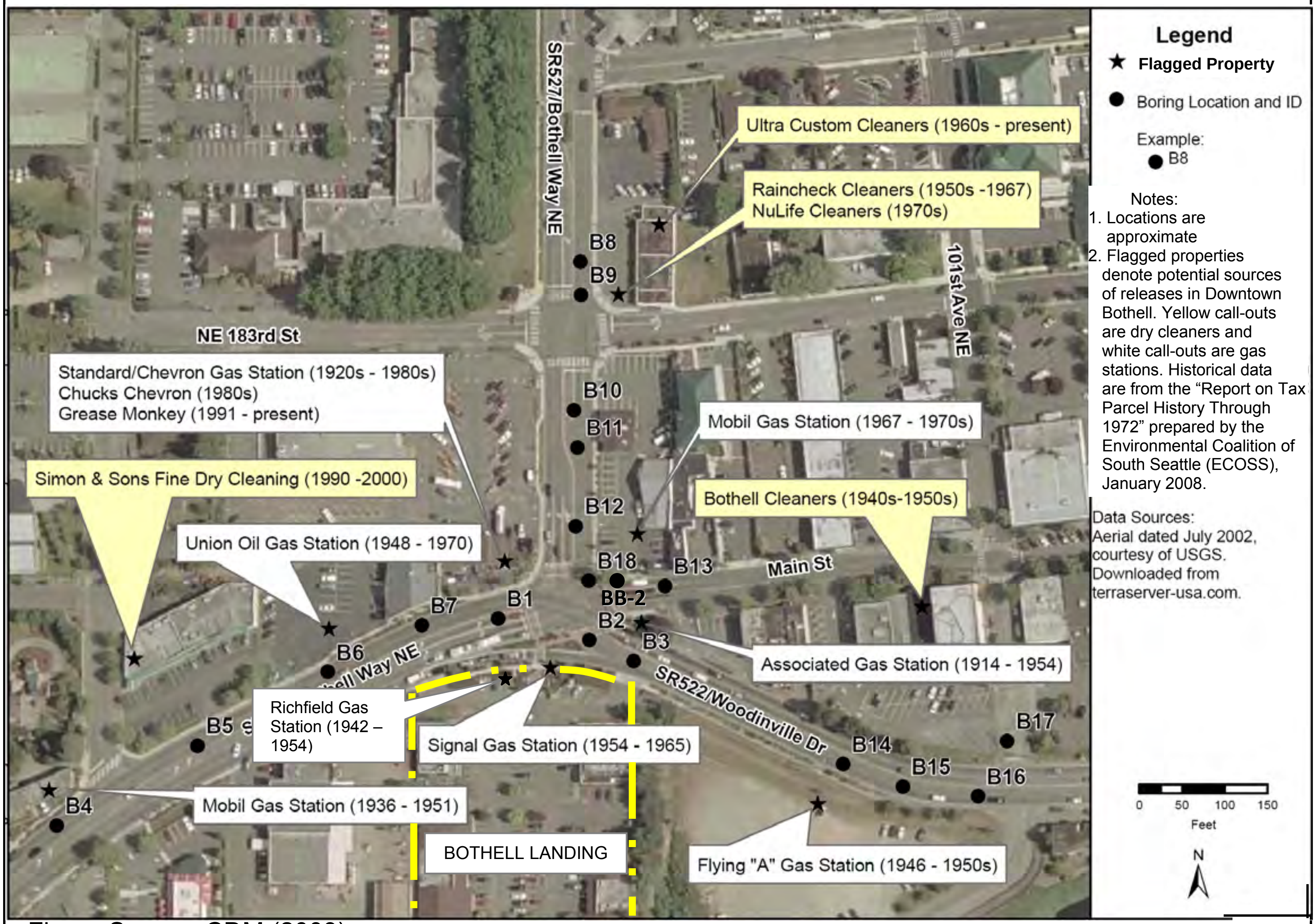
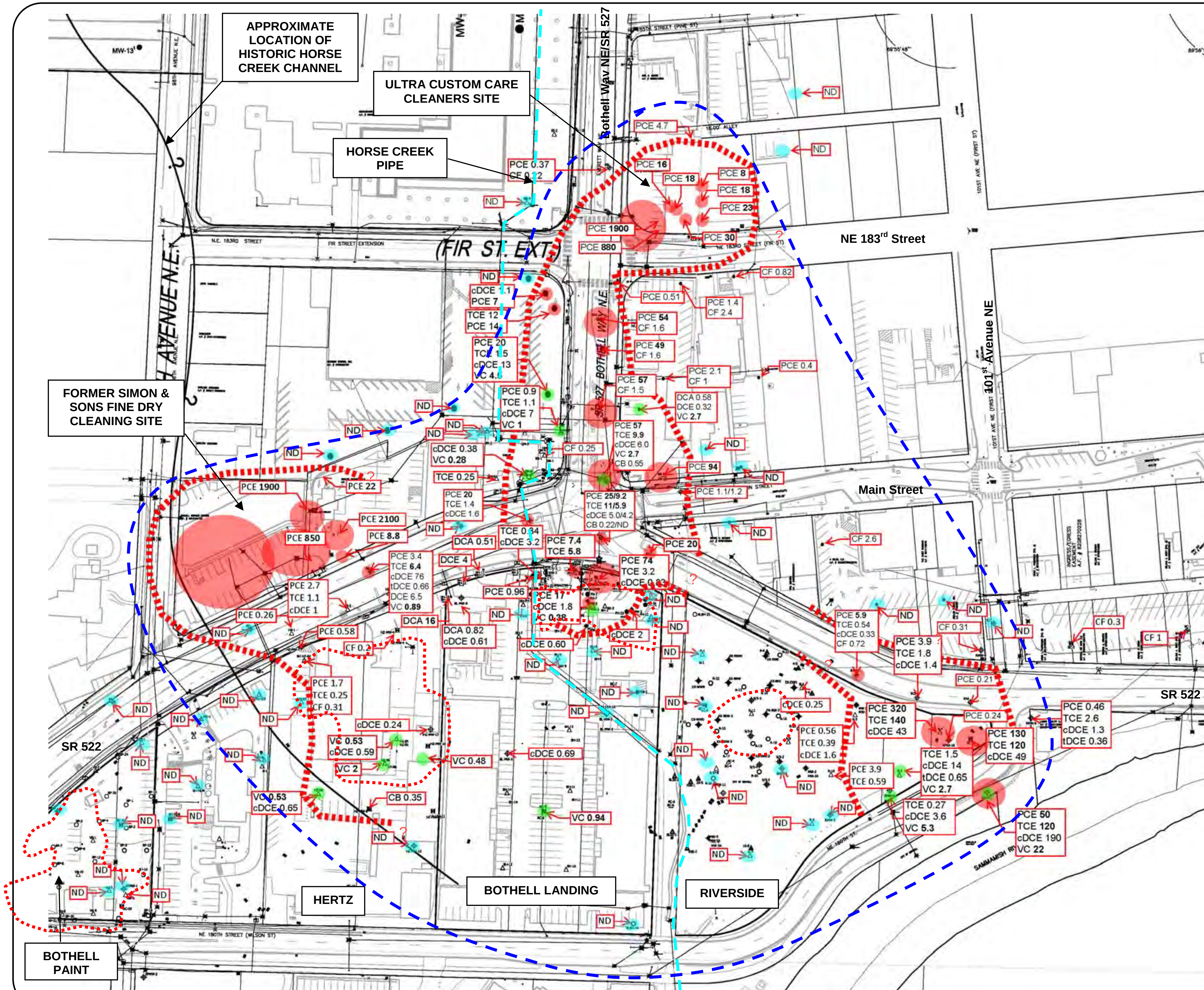


Figure Source: CDM (2009)

HWA GEOSCIENCES INC.

HISTORIC LOCATIONS OF DRY CLEANERS AND GAS STATIONS IN DOWNTOWN BOTHELL	FIGURE NO. 3
BOTHELL LANDING SITE REMEDIAL INVESTIGATION WORK PLAN BOTHELL, WASHINGTON	PROJECT NO. 2007-098-929



LEGEND

PCE > 50 ug/L

Any Chlorinated VOC > MTCA A

DCA Present

VC Present

All Chlorinated VOCs ND

Approximate Extent of Chlorinated VOC Plume in Ground Water

Approximate Extent of RI Study Area

2010 TPH Cleanup areas

ABBREVIATIONS

PCE	Tetrachloroethene
TCE	Trichloroethene
DCE	Dichloroethene
cDCE	(cis) 1,2-Dichloroethene
tDCE	(trans) 1,2-Dichloroethene
DCA	Dichloroethane
VC	Vinyl Chloride
CF	Chloroform
CB	Chlorobenzene
VOC	Volatile Organic Compound
ND	Not Detected At Laboratory's Reporting Limit
ug/L	Micrograms per Liter

NOTES

- Sample and chlorinated VOC plume boundary locations are approximate.
- Concentration values in **bold** exceed MTCA Method A ground water cleanup level.

MTCA METHOD A GROUND WATER CLEANUP LEVELS (ug/L)

PCE	5.0
TCE	5.0
DCE	Not Established
cDCE	Not Established
tDCE	Not Established
DCA	Not Established
VC	0.2
CF	Not Established
CB	Not Established

HWA GEOSCIENCES INC.

SUMMARY OF KNOWN CHLORINATED VOC OCCURRENCES IN GROUND WATER

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION WORK PLAN
BOTHELL, WASHINGTON

FIGURE NO.
4

PROJECT NO.
2007-098-929

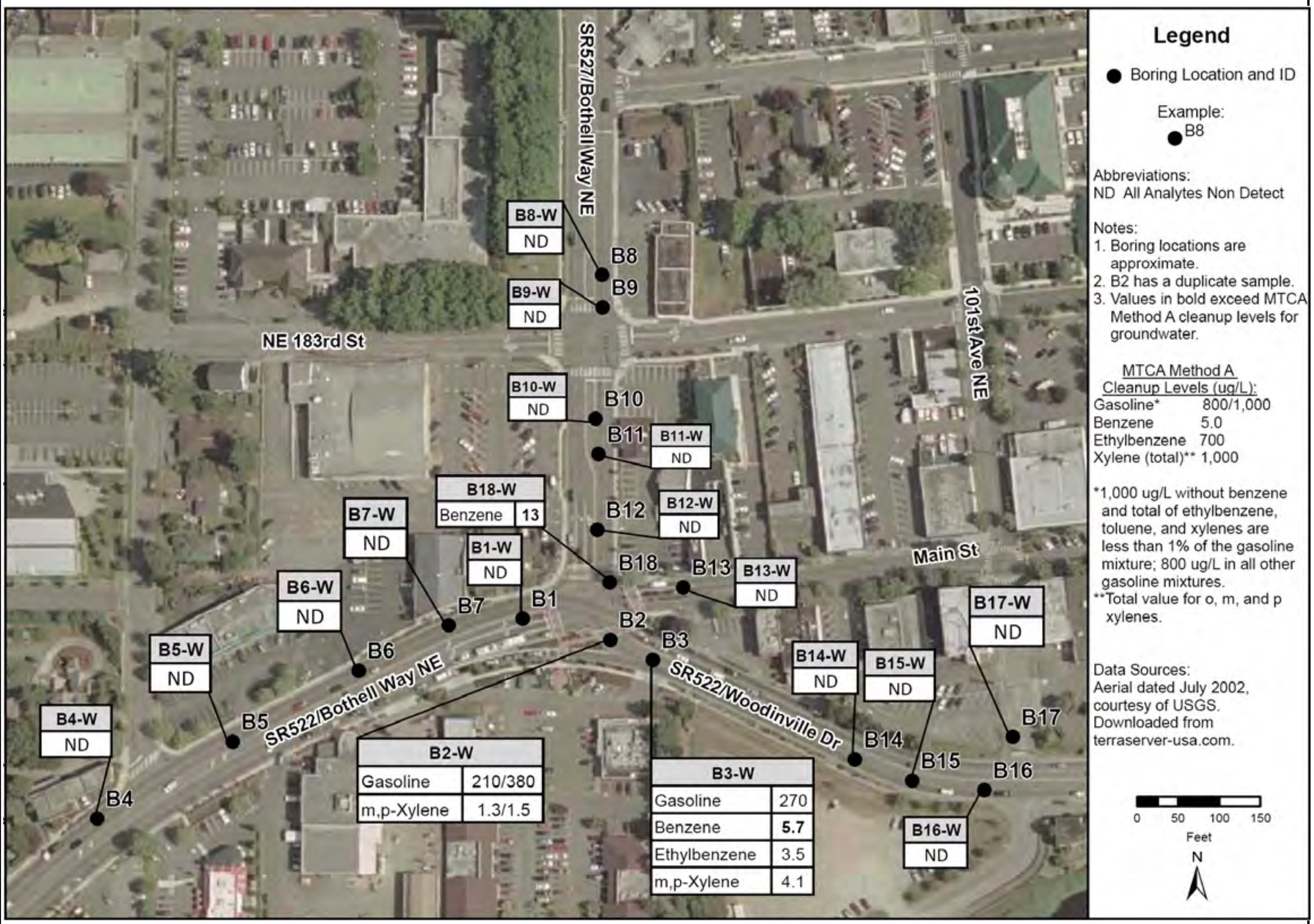


Figure Source: CDM (2009)

HWA GEOSCIENCES INC.

PETROLEUM HYDROCARBONS IN GROUND WATER SAMPLES COLLECTED IN CITY RIGHT-OF-WAYS

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION WORK PLAN
BOTHELL, WASHINGTON

FIGURE NO.
5

PROJECT NO.
2007-098-929

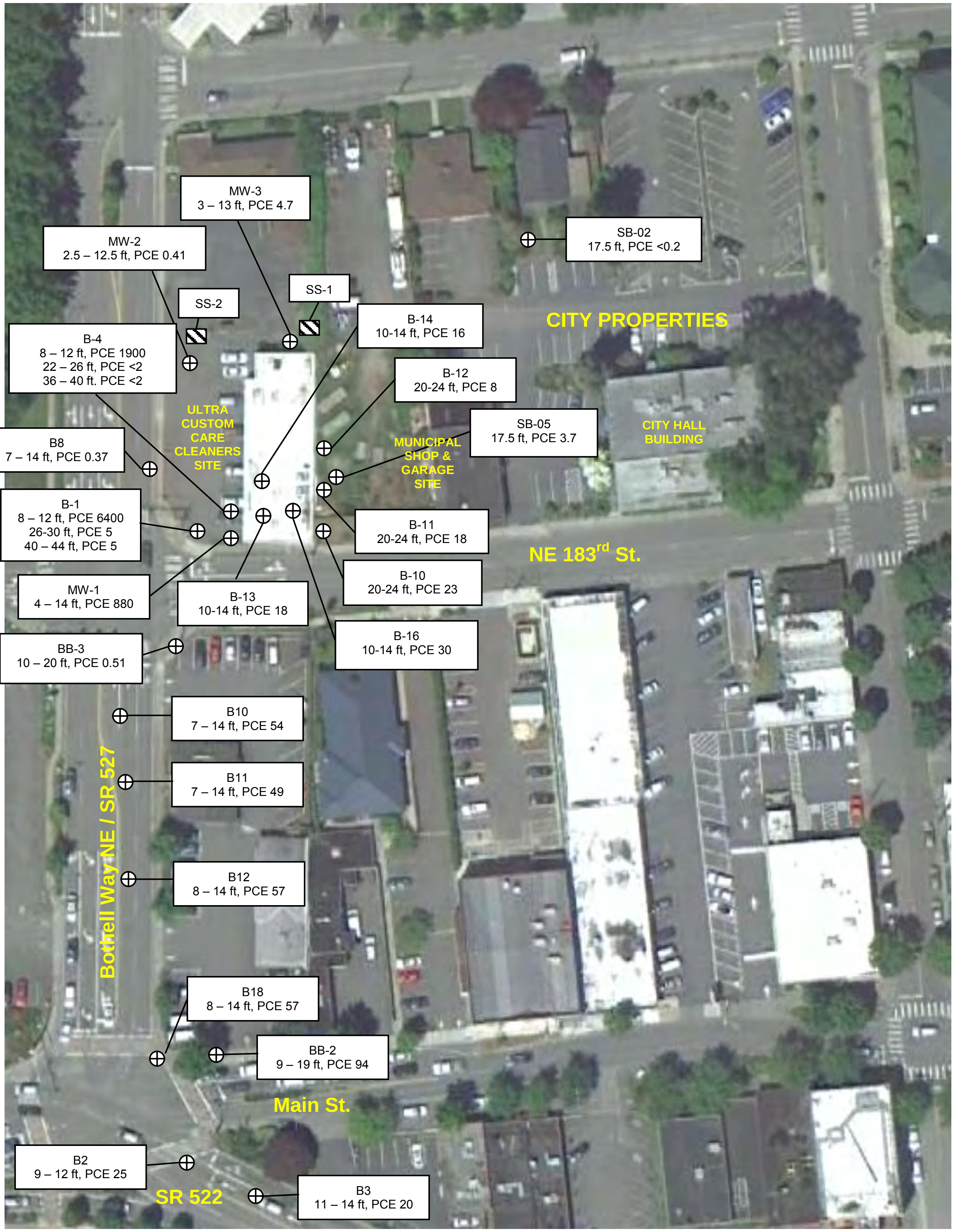
HWA GEOSCIENCES INC.

PREVIOUS INVESTIGATION LOCATIONS
ULTRA CUSTOM CARE CLEANERS AND CITY PROPERTIES

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION WORK PLAN
BOTHELL, WASHINGTON

FIGURE NO.
6

PROJECT NO.
2007-098-929

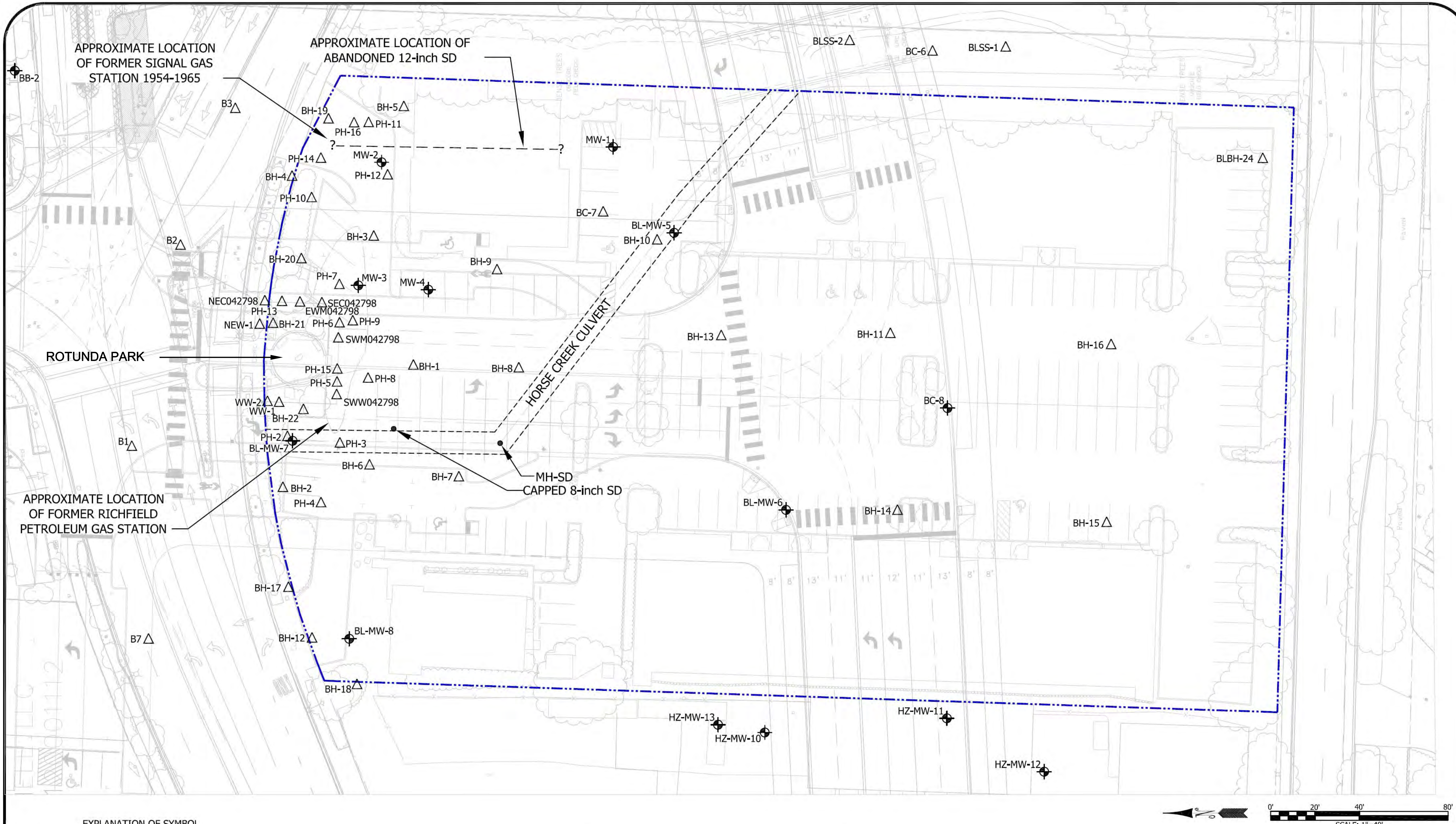


⊕ **Approximate Location of Monitoring Well, Borehole, or Direct-Push Exploration (Note: Not All Exploration Locations are Depicted)**

PCE 25 **Tetrachloroethene Concentration in Ground Water (Micrograms/Liter)**

HWA GEOSCIENCES INC.

HISTORIC PCE CONCENTRATIONS IN GROUND WATER SAMPLES	FIGURE NO.	7
BOTHELL LANDING SITE REMEDIAL INVESTIGATION WORK PLAN BOTHELL. WASHINGTON	PROJECT NO.	2007-098-929



EXPLANATION OF SYMBOL

APPROXIMATE PROPERTY BOUNDARY

BH-1 SOIL BORING LOCATIONS

BL-MW-1 MONITORING WELL LOCATIONS

BASE MAP PROVIDED BY PARAMETRIX

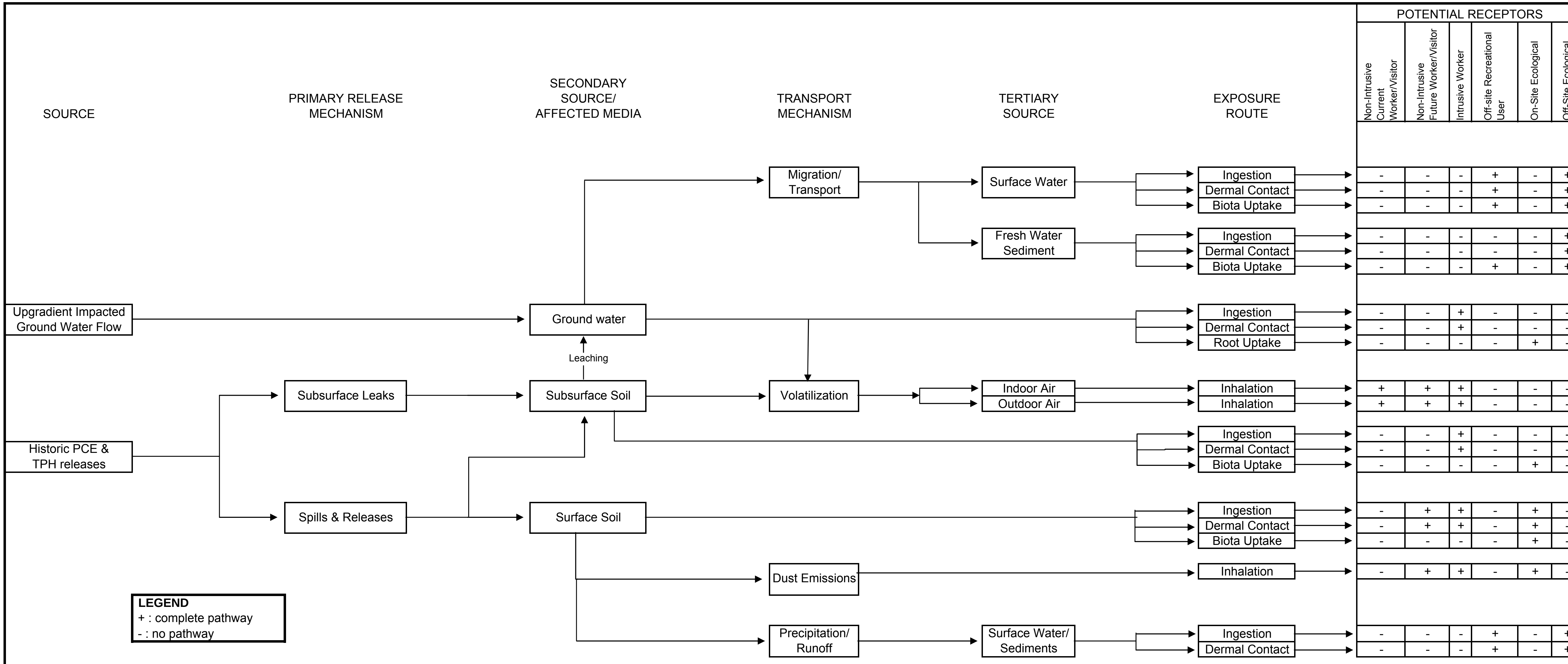
S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T920.DWG <PRE CLEAN UP FIG 3> Plotted: 1/25/2011 3:24 PM

HWA GEOSCIENCES INC.

BOTHELL LANDING SITE PLAN PRIOR TO 2010 CLEANUP

BOTHELL LANDING SITE REMEDIAL INVESTIGATION WORK PLAN BOTHELL, WASHINGTON

DRAWN BY EFK	FIGURE NO. 8
CHECK BY NN	PROJECT NO. 2007-098-929
DATE 01.18.11	



Exposure route	Non-Intrusive Current Worker/Visitor	Non-Intrusive Future Worker/Visitor	Intrusive Worker	Off-site Recreational User	On-Site Ecological	Off-Site Ecological
Ingestion	-	-	-	+	-	+
Dermal Contact	-	-	-	+	-	+
Biota Uptake	-	-	-	+	-	+
Ingestion	-	-	-	-	-	+
Dermal Contact	-	-	-	-	-	+
Biota Uptake	-	-	-	+	-	+
Ingestion	-	-	+	-	-	-
Dermal Contact	-	-	+	-	-	-
Root Uptake	-	-	-	-	+	-
Inhalation	+	+	+	-	-	-
Inhalation	+	+	+	-	-	-
Ingestion	-	-	+	-	-	-
Dermal Contact	-	-	+	-	-	-
Biota Uptake	-	-	-	-	+	-
Ingestion	-	+	+	-	+	-
Dermal Contact	-	+	+	-	+	-
Biota Uptake	-	-	-	-	+	-
Inhalation	-	+	+	-	+	-
Ingestion	-	-	-	+	-	+
Dermal Contact	-	-	-	+	-	+

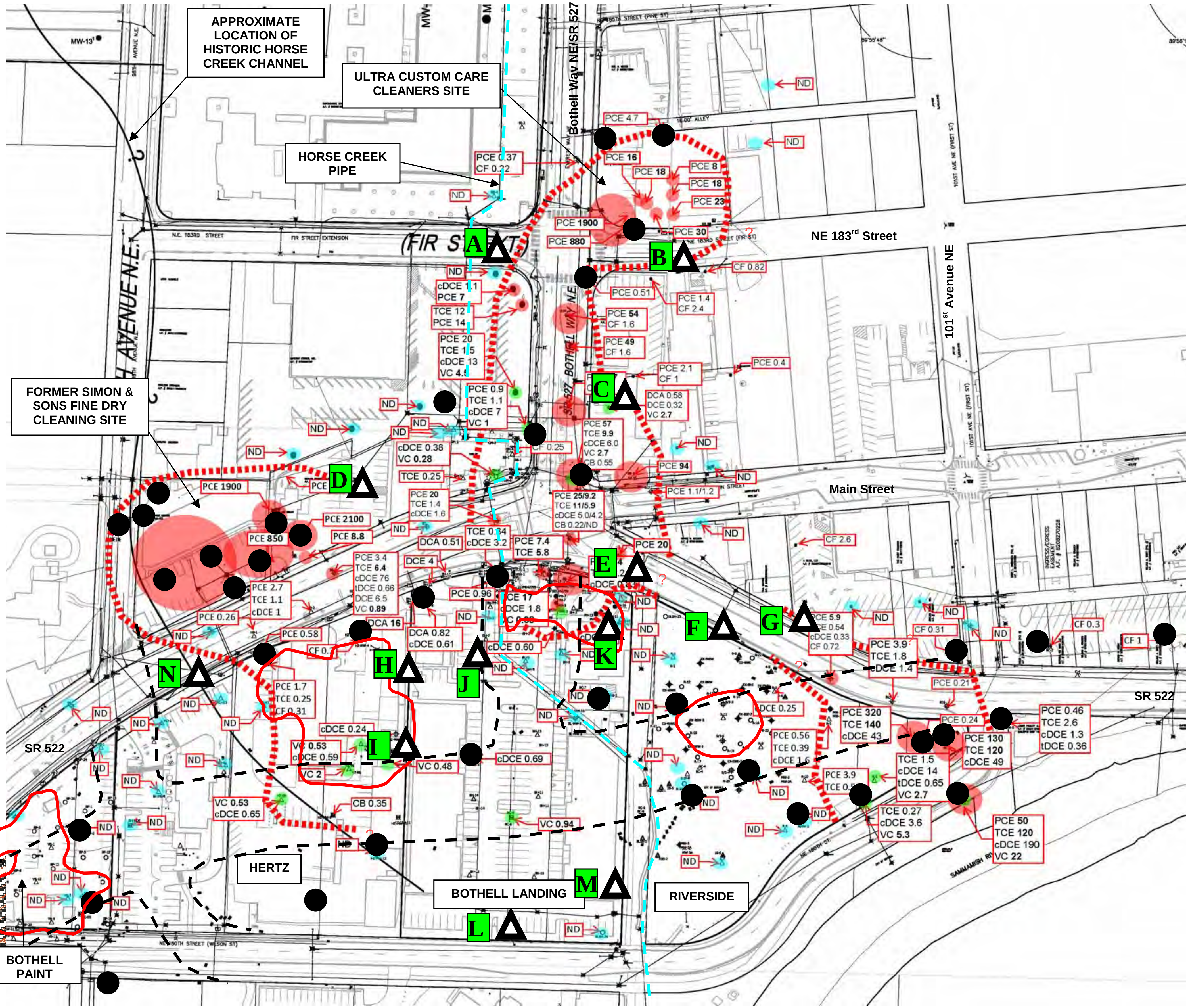
HWA GEOSCIENCES INC.

CONCEPTUAL SITE MODEL

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION WORK PLAN
BOTHELL, WASHINGTON

FIGURE NO.
9

PROJECT NO.
2007-098-
929



LEGEND

- PCE > 50 ug/L
- Any Chlorinated VOC > MTCA A
- Exisitng monitoring well
- Future monitoring well (typical)
- All Chlorinated VOCs ND
- Approximate Extent of HVOCPlume
- 2010 TPH Cleanup areas

ABBREVIATIONS

PCE	Tetrachloroethene
TCE	Trichloroethene
DCE	Dichloroethene
cDCE	(cis) 1,2-Dichloroethene
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DCA	Dichloroethane
VC	Vinyl Chloride
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CB	Chlorobenzene
VOC	Volatile Organic Compound
ND	Not Detected At Laboratory's Reporting Limit
ug/L	Micrograms per Liter

NOTES

- Sample and chlorinated VOC plume boundary locations are approximate.
- Concentration values in **bold** exceed MTCA Method A ground water cleanup level.

MTCA METHOD A GROUND WATER CLEANUP LEVELS (ug/L)

PCE	5.0
TCE	5.0
DCE	Not Established
cDCE	Not Established
tDCE	Not Established
DCA	Not Established
VC	0.2
CF	Method B = 80
CB	Not Established

N

HWA GEOSCIENCES INC.

PRELIMINARY MONITORING WELL NETWORK

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION WORK PLAN
BOTHELL, WASHINGTON

FIGURE NO.
10

PROJECT NO.
2007-098-929

APPENDIX A

Agreed Order

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

In the Matter of Remedial Action by: **City of Bothell**	Bothell Landing AMENDMENT NO. 1 TO AGREED ORDER No. DE 6294

TO: Robert S. Stowe
City Manager
City of Bothell
18305 101st Avenue NE
Bothell, WA 98011

I.

AMENDMENT

Agreed Order (Order) No. DE 6294 dated February 3, 2009, is hereby amended to incorporate the information and requirements contained in this Amendment. This amendment is issued pursuant to RCW 70.105D.050(1) and WAC 173-340-530(8)(b) and does not replace or change any of the existing requirements of the Order which shall remain in effect.

II.

FINDINGS OF FACT

Section V. Findings of Fact, Subsection G is amended to include the following report:

> Bothell Landing Draft Remedial Investigation/Feasibility Study, Revision No.1, by Parametrix, dated December 8, 2009. Subject to Ecology review and approval.

III.

ECOLOGY DETERMINATIONS

E. 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, remedial investigation/feasibility study or design of a cleanup action. Previous environmental and remedial investigations have identified an upgradient solvent plume that has migrated onto and commingled with contaminants on the site. Within the site, there are local dissolved metals and confirmed petroleum hydrocarbon impacts to groundwater that exceed MTCA Method A cleanup levels. The City of Bothell is planning the SR 522 Bothell Crossroads project that will realign SR 522 to the south of the current alignment, creating a new T- intersection with SR 527. The project, whose beginning construction phase is planned for summer 2010, will pass thorough the Bothell Landing site. Soils contaminated with chiefly oil range petroleum hydrocarbons are at the north eastern portion of the parcel where two former gasoline service stations were located. The contaminants of concern in soil on the site are: motor oil, diesel, gasoline, benzene, methylnaphthalene, arsenic, barium, and lead. The contaminants of concern in groundwater are: benzene, tetrachloroethene, trichloroethene, vinyl chloride, arsenic, barium, cadmium, chromium, lead, and 1,2-dichloroethane. Portions of the site will be affected by the SR 522 realignment and redevelopment,making post-construction remediation more difficult to implement if not done before the construction season. Therefore, it is beneficial to accomplish as much permanent soil source cleanup as possible within this construction schedule, while at the same time recognizing that work on the RI/FS and DCAP may extend past this construction schedule due to data gaps. Such circumstances warrant an interim action consistent with WAC 173-340-430.

III.

WORK TO BE PERFORMED

VII. WORK TO BE PERFORMED in the Order is amended to include:

C. Work Plans shall consist of a detailed description of site conditions, work to be performed, personnel requirements, and schedules for implementation and deliverables for the following:

TASK VI. Interim Actions

F. The City of Bothell shall submit to Ecology a Work Plan and Schedule for the Interim Action(s) and shall follow the submittal requirements for an interim remedial action as per WAC 173-340-430(7). Implementation of the interim action is contingent on formal Ecology approval of work plans for the interim action.

IV.

EXHIBIT B: SCOPE OF WORK

The existing Exhibit B Scope of Work to Agreed Order No. DE 6294 is amended to include:

Task VI: Interim Actions

A. Interim Action Work Plans

The PLPs will submit a draft and final Interim Action Work Plan for Ecology's review and approval. The draft Interim Action Work Plan will also include the design and implementation of interim actions to facilitate protection of human health and the environment. The scope of the interim action may include excavation and off site disposal, confirmational sampling, backfill with clean material, and groundwater monitoring in major areas of contamination at the site as identified in preliminary remedial investigative work. The Interim Action Work Plans shall include, as appropriate, submittal requirements in accordance with WAC 173-340-430(7).

The interim action shall be designed in a manner that will not foreclose reasonable alternatives for the final cleanup action in accordance with WAC 173-340-430(3)(b).

B. Implement Approved Interim Action

Implement approved interim action(s) after Ecology review and approval and public review and comment necessary under WAC 173-340-600(16) and the State Environmental Policy Act.

C. Interim Action Report

An Interim Action Report shall be prepared as a separate deliverable that includes the information listed in WAC 173-340-430(7). A draft and final Interim Action Report shall be submitted for Ecology review and approval.

V.

EXHIBIT C: SCHEDULE OF DELIVERABLES

The existing Exhibit C Schedule of Deliverables to Agreed Order No. DE 6294 is amended to include:

6. Interim Actions.	Draft Interim Action Work Plan submitted to Ecology in February 2010 for Ecology review and approval. Final Interim Action Work Plan submitted two weeks after Ecology approval of Draft Interim Action Work Plan. Public comment period for Interim Action and SEPA to be combined with Agreed Order Amendment comment period. Implementation of interim actions from approximately August 2010 to December 2011.
7. Draft Interim Action Report for Ecology review and approval.	60 days after completion of interim action.
8. Final Interim Action Report.	30 days after receipt of Ecology approval of Draft Interim Action Report.
9. One year of quarterly groundwater monitoring.	Following completion of the Interim Action. Quarterly monitoring reports to be submitted for Ecology review and approval.
10. PLP to submit Draft Final RI/FS Report from Ecology review and approval.	Within 60 days of completion of one year of groundwater monitoring.
11. PLP to submit Final RI/FS Report.	30 days after receipt of Ecology approval of Draft Final RI/FS Report.
12. PLP to submit draft Cleanup Action Plan for Ecology review and approval.	30 days after completion of final RI/FS Report.

Effective date of this Amendment: ______________________

CITY OF BOTHELL, WA

____
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APPENDIX B

Sampling and Analysis Plan

APPENDIX A
RI/FS SAMPLING & ANALYSIS PLAN
BOTHELL LANDING SITE
BOTHELL, WASHINGTON

Project No. 2007-098-929

Prepared for
City of Bothell

September 19, 2011

HWA GEOSCIENCES INC.

- Geotechnical Engineering
- Hydrogeology
- Geoenvironmental Services
- Inspection & Testing

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1.0 INTRODUCTION

This Sampling and Analysis Plan (SAP) provides the scope and rationale for field sampling efforts associated with a Remedial Investigation (RI) to be conducted for the City of Bothell (City) at the Bothell Landing Site in Bothell, Washington. The RI is planned as part of an Agreed Order number DE 6294, as amended in April 2010, between the City of Bothell and the Washington State Department of Ecology (Ecology)

This SAP was prepared in accordance with the Agreed Order and Chapter 173-340-820 WAC in the Washington State Model Toxics Control Act (MTCA) Cleanup Regulation. This SAP outlines our field investigation and laboratory analytical methods.

1.1 PURPOSE AND OBJECTIVES

The objective of the RI is to meet the requirements of the Agreed Order in accordance with the Model Toxics Control Act (MTCA) Cleanup Regulation (Washington Administrative Code [WAC] 173-340). The RI Work Plan is designed to collect additional data on chlorinated volatile organic carbon (VOC), petroleum hydrocarbon, and metals impacts. As discussed in the RI Work Plan, contaminants of potential concern (COPCs) either known or expected to be found in soils in the RI area are:

- Chlorinated VOCs (primarily PCE, TCE, (cis)-1,2-DCE, and vinyl chloride)
- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX (benzene, toluene, ethylbenzene, and xylenes)
- Lead, barium
- Polycyclic Aromatic Hydrocarbons (PAHs) (including naphthalenes)

COPCs either known or expected to be found in ground water in the RI area are:

- Chlorinated VOCs
- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX
- Metals (arsenic, cadmium, chromium, and lead)

1.2 PROJECT ORGANIZATION

Personnel involved with this project and roles are listed below:

- Jerome Cruz, Washington State Department of Ecology project manager (425) 649-7094
- Steven Morikawa, P.E., Capital Program Manager, City of Bothell (425) 486-2768, ext. 4443
- Nduta Mbuthia, City of Bothell project manager (425) 486-2768

- Arnie Sugar, HWA Project Manager (425) 774-0106
- David Baumeister, OnSite Environmental, Inc. Laboratory Project Manager (425) 883-3881
- Drilling Contractor – to be determined

1.3 PROJECT SCHEDULE

A proposed project schedule is provided in Table 4 of the Work Plan, assuming no delays due to site access issues.

1.4 SITE LOCATION

The City owns the approximately 2.8-acre Bothell Landing property located at 18120, 18126, and 18132 Bothell Way, and 10001 Woodinville Drive, Bothell, Washington, which will be referred to as the Site in this SAP, however final determination of the RI area boundaries (i.e., the area where hazardous substances have come to be located) will be established during the RI process. Ecology's Facility Site ID is # 73975762.

2.0 FIELD AND LABORATORY INVESTIGATION TASKS

There are four major field and laboratory investigation tasks in the RI Work Plan. These are:

1. Investigation and characterization of soil impacted by chlorinated VOCs and petroleum hydrocarbons.
2. Investigation and characterization of ground water impacted by chlorinated VOCs and petroleum hydrocarbons.
3. Investigation and characterization of ground water flow system properties.
4. Collection and testing of soil physical properties to determine parameters to be used to model the transport and fate of contaminants in ground water, in the vadose zone, and in the indoor air of buildings in the RI area.

Field and laboratory investigation methodologies to accomplish these major tasks are presented in the following subsections.

2.1 SOIL & RECONNAISSANCE GROUND WATER SAMPLING

Investigation tasks will consist of drilling exploration boreholes using a hollow stem auger or direct-push (e.g., Geoprobe®) rig , and sampling soil and ground water. Because a primary contaminant of concern is tetrachloroethene (PCE), which is denser than water, a focus of the drilling program is to delineate the vertical extent of the chlorinated VOC plume at the Site that apparently originates in the southwest corner of the Ultra Custom Care Cleaners property (RI Work Plan Figure 7). Thus reconnaissance ground water samples will be collected at discrete borehole intervals at the time of drilling using temporary “environmental investigation wells” (defined at WAC 173-160-410(1)) using the procedures described below in Sections 2.1.5 and 2.1.6. For this RI, a reconnaissance ground water sample is a screening-level sample not collected from a permanent monitoring well designed and constructed to obtain a representative ground water sample per Ecology regulations in WAC 173-160. The utility of a reconnaissance ground water sample is to evaluate whether COPCs are present in the sample, and if so, the general magnitude of the COPC concentrations.

2.1.1 Underground Utilities/Site Access

Underground utilities will be identified by calling the Utilities Underground Location Center before drilling. A subcontracted private locating service may also be employed attempt to locate and mark underground utilities at proposed borehole locations.

2.1.2 Hollow Stem Auger and Direct-Push Drilling

As access permits, hollow stem auger or direct-push boreholes will be advanced at the potential locations shown on Figure 11 of the RI Work Plan. Whether hollow stem auger or direct-push drilling techniques will be utilized at a potential location will depend on the nature and objective of the exploration location (e.g., preliminary plume definition, long term monitoring point, etc.) Borings will be advanced to depths of up to 50 feet below ground, depending on location and stratigraphy. All borings and wells will be drilled and installed according to Ecology Minimum Standards for Construction and Maintenance of Wells (Chapter 173-160 WAC).

Soil samples will be collected from each hollow stem auger (HSA) boring using standard penetration test (SPT) equipment consisting of a 2-inch outside-diameter split-spoon sampler driven by a 140-pound hammer with a 30-inch drop, or California-modified SPT equipment (3-inch outside-diameter sampler with 300-pound hammer). Soil samples will be collected at 2.5- to 5-foot intervals to depths up to 50 feet in each boring. All drilling tools will be decontaminated between borings.

Direct-push drilling rigs use hydraulic cylinders and a hydraulic hammer mounted on a pickup truck or tractor to advance a hollow core sampler to gather soil and ground water samples. Steel pipe (1.25 to 2 inch diameter) is driven into the ground, then withdrawn. Soil cores within a glycol modified polyethylene terephthalate (PETG) inner sleeve are then retrieved from the sampler and removed for logging and sampling. The speed and depth of penetration is largely dependent on the soil type, the size of the sampler, and the weight and power of the rig. Continuous soil samples will be collected to depths up to 50 feet in each direct-push boring. All drilling tools will be decontaminated between borings.

Direct push technology is a reliable and well accepted method for sampling soil and ground water, particularly for petroleum and chlorinated solvents. Numerous studies by regulatory agencies including USEPA, US NAVY, and the Interstate Technology & Regulatory Council, confirm the validity and usefulness of direct push methods (USEPA, 2005b; USEPA, 1998; Naval Facilities Engineering Command, 2001; Interstate Technology & Regulatory Council, 2006). Direct push is commonly used for collecting rapid, first level site characterization samples, and to determine where to place permanent monitoring wells.

2.1.3 Soil Sample Logging and Collection

At each sampling interval, field staff will log the soil samples and obtain and record pertinent information including soil sample depths, stratigraphy, ground water occurrence, and any visual or olfactory observations regarding the presence of contamination. Samples will be logged for lithology according to the Unified Soil Classification System (USCS), and field screened for organic vapors by headspace analysis using a photoionization detector (PID). Samples with elevated PID head space readings or discernible visual/olfactory contamination may be selected for laboratory chemical analysis, described in Sections 2.2 and 2.4 below. Soil samples collected above and below the water table at several boreholes will be tested for the physical properties described in Section 2.3.

2.1.4 Field Screening

Soil samples will be screened for organic vapors by photoionization detector (PID) headspace analysis. Although the PID is not capable of quantifying or identifying specific organic compounds, this instrument is capable of measuring relative concentrations of a variety of organic vapors. Field personnel collecting samples will place approximately two to sixteen ounces of soil in a resealable (e.g., Ziploc®) plastic bag with ample air headspace. After a minimum of five minutes at ambient temperature, the geologist/engineer will agitate the sample for ten seconds, insert the PID probe through a small opening in the plastic bag, and record the highest reading within ten seconds. Samples with the highest level of organic vapors and/or most discernible visual/olfactory contamination at each borehole location may be shipped to the laboratory for chemical analysis. In the absence of field screening indications, the sample immediately above the ground water table will be submitted for analysis.

2.1.5 Monitoring Well Installation in HSA Boreholes

After drilling and sampling each soil boring to its maximum depth, a temporary well will be installed to the bottom of the hollow stem auger borehole, 2 to 3 feet of filter pack installed, and then the augers will be pulled back to expose a short length of well screen and filter pack. The purpose of the temporary wells is to allow collection of a reconnaissance ground water sample at the bottom of the borehole using a pump. After collecting the reconnaissance ground water sample from the temporary well, the riser pipe and well screen will be pulled out of the auger, and the bottom of the hole will be grouted with hydrated granular bentonite to a depth determined during drilling based upon the field screening results and the encountered stratigraphy. A monitoring well will be installed in the remaining open borehole. Each monitoring well will be constructed of 2-inch diameter, Schedule 40 PVC with a 10-foot length of screen having 0.010-inch slots. A 10-20 silica sand filter pack will be placed from the bottom of the well screen to approximately 2 feet above the top of the screened interval. The drillers will place a bentonite seal from the top of the filter pack to just below grade, complete the well to grade with a flush-mounted steel wellhead monument set in concrete.

The drillers will develop each monitoring well by surging and then pumping sediment containing water into 55-gallon steel drums equipped with locking rings. The drums will be stored prior to transport and disposal at a temporary fenced storage location on City-owned property.

2.1.6 Monitoring Well Installation in Direct-Push Boreholes

An advantage of direct-push drilling technology is the capability to easily collect reconnaissance ground water samples at discrete intervals in undisturbed native aquifer materials using a point-in-time ground water sampler. Point-in-time ground water samplers are also known as “temporary samplers” or “grab samplers.” Direct-push methods will be used to advance point-in-time samplers below the static water level to collect reconnaissance ground water samples. Reconnaissance ground water samples will be collected by installing either a temporary retractable stainless-steel sampling screen or a temporary ¾-inch diameter PVC well screen (0.010-inch slot) in the borehole. Ground water will be collected using a peristaltic pump and polyethylene tubing lowered into the screen. New polyethylene tubing will be used for each ground water sample. Alternately, the point-in-time sampler may be retracted to the surface to obtain the reconnaissance ground water sample (USEPA, 2005). Sampling methods will be selected based on geologic conditions and ground water depths.

Permanent monitoring wells will be installed in direct-push boreholes by advancing an outer drive casing equipped with an expendable drive tip to the target depth. The well casing and screen are then assembled, lowered inside the drive casing, and anchored to the drive tip. The drive casing seals off the formations through which it has been advanced, protecting the well casing and screen from clogging and from passing through potentially contaminated intervals. A number of methods for installing filter packs adjacent to the well screen are available. Typical inside diameters of direct-push monitoring wells range from 0.5-inch to 2 inches (USEPA, 2005).

Alternatively, “sleeved” or “pre-packed” well screens may be installed depending on conditions encountered and the direct-push rig utilized. Pre-packed screens are generally composed of a rigid Type I PVC (low temperature) screen surrounded by a pre-sized filter pack. The filter pack is held in place by a stainless-steel wire mesh (for organic contaminants) that is anchored to the top and bottom of the screen (USEPA, 2005).

After setting a direct-push well screen, the driller will place an annular seal above the filter pack and then will place a bentonite seal to just below grade. Lastly, the direct-push monitoring wells will be completed to grade with a flush-mounted steel wellhead monument set in concrete. The drillers will develop each direct-push monitoring well by surging and then pumping sediment containing water into 55-gallon steel drums equipped with locking rings. The drums will be stored prior to transport and disposal at a temporary fenced storage location on City-owned property.

2.1.7 Drill Cuttings Disposal

Drill cuttings will be removed as each boring is advanced. A member of the drilling crew will shovel cuttings into Department of Transportation-approved, 55-gallon steel drums equipped with locking rings. The drums will be stored prior to transport and disposal at a temporary fenced storage location on City-owned property.

2.1.8 Equipment Decontamination

To prevent potential cross-contamination of samples during drilling, appropriate decontamination procedures will be employed. Between sampling intervals in each borehole all sampling devices will be washed in a strong anionic detergent solution (e.g., Alconox® or Liqui-nox®), rinsed with tap water, and then rinsed again with deionized water.

2.1.9 Well Surveying

The location and measuring point elevation of each new monitoring well and existing Ultra Custom Care Cleaners monitoring wells MW-1, MW-2, and MW-3 will be surveyed with respect to a City datum. Existing monitoring wells BB-2 and BB-3 in the City right-of-ways (RI Work Plan Figure 7) will also be surveyed with respect to a City datum.

2.2 Soil Chemical Analysis

This major investigation task consists of the collection and preservation of soil samples for chemical analysis. Field staff will determine the depth and number of samples for specific analytical testing based on visual, olfactory, and field screening results during borehole drilling.

The sample bottle and preservation requirements for soil samples are as follows:

Bottle Type	No. of Containers	Sample Volume	Sample Preservation	Analytical Method	Holding Time
Tared 40 mL VOA vials No stir bar	2	5 gms of sample per vial per EPA Method 5035A	Cool to 4^{o} C*	NWTPH-Gx/BTEX	14 days
4 oz. wide-mouth glass jar	1	Full jar	Cool to 4^{o} C	NWTPH-Dx PAHs by EPA Method 8270D SIM	14 days
Tared 40 mL VOA vial with stir bars	2	5 gms of sample per vial per EPA Method 5035A	Cool to 4^{o} C	Chlorinated VOCs by EPA 8260B	48 hours
4 oz. wide-mouth glass jar	1	Full jar	Cool to 4^{o} C	Metals by EPA Method 6010/7471A	6 months

* - If sample containers cannot be delivered to lab within 48 hours, the lab will provide methanol-preserved vials

After collection, the sample bottles will be labeled, placed in a cooler with ice, and submitted to a Washington Department of Ecology-accredited analytical laboratory for one or more analyses using the following test methods:

- Diesel and Oil-Range Hydrocarbons – Washington State Method NWTPH-Dx
- Gasoline-Range Hydrocarbons – Washington State Method NWTPH-Gx
- BTEX (benzene, toluene, ethylbenzene, and xylenes) – EPA Method 8021B
- Halogenated Volatile Organic Compounds (HVOCs) – EPA Method 8260B
- Polycyclic Aromatic Hydrocarbons (PAHs) – EPA Method 8270D SIM
- Arsenic, cadmium, chromium, and lead –EPA Method 6010/7471A

Samples will be submitted for standard turnaround time analysis (5-10 days). Follow-up analyses, based on initial analytical results may result in a total turnaround time of up to 4 weeks.

2.2.1 Soil Sampling Guidelines

<u>VOA vials are pre-weighed (tared) at the lab</u>

- Note the tare weight of each VOA vial on the chain-of-custody form
- Do not add any labels, tape, etc.

- Keep the same cap with each VOA vial
- Minimize methanol loss if used as a preservative for NWTPH-Gx/BTEX analyses. Check cap tightness, minimize open times, etc. Visually check for methanol loss - check all VOA vials prior to sampling for consistency, reference marks when full
- Discard any suspect VOAs, note weights (w/o soil) on COC, methanol levels, etc. in field notebook

<u>Collecting 5-gram core sample per USEPA Method 5035A</u>

- HSA split spoon samples – core immediately after opening split spoon; if using liners, core from middle liner or inside end of outer liners (top one is usually slough), avoid coring gravel or naturally occurring organic matter such as wood or roots
- Cohesive granular soils – use 5035A core device and extrude core into VOA vial
- Cemented (e.g. till) soils – break up soil in a clean stainless still bowl using a stainless steel spoon, core the soil in the bowl, extrude core into VOA vial, and cap the vial as soon as possible
- Non cohesive (won't stay in core) soils – place estimated 5 grams of soil in VOA vial and cap as soon as possible
- Wipe VOA vial threads with clean tissue or dry wipe
- Cap VOA vial
- Label the VOA vial using a ball point pen (e.g., write in the rain) only, do not use marker pens because these emit volatile organic vapors

<u>Note in field notebook:</u>

- Soil type, moisture
- Any bias e.g., gravels, naturally occurring organic matter such as wood or roots
- Weather (temp, humidity, wind)
- Coring method used
- Preservation and storage method used

<u>Note on Chain-of-Custody form:</u>

- Empty vial weight

<u>Health and safety issues</u>

- Methanol is toxic and flammable
- Avoid skin contact (use gloves) and inhalation hazards (ensure adequate ventilation)
- Check shipping restrictions

<u>Cross contamination issues</u>

- Methanol has a high affinity for VOCs (hence its use as a preservative and extraction solvent) and will adsorb VOCs from other sources such as exhaust gases, spray paint, sharpie, markers, etc. that should be avoided

2.3 Soil Physical Testing

Several tests of soil physical properties will be performed to determine representative input parameters for the contaminant transport and fate models to be used to evaluate chlorinated VOC (e.g., PCE) and petroleum-related VOC (e.g., benzene) concentrations in ground water, in vadose soil gas, and in the indoor air of buildings in the RI area. These parameters and the rationale for determining their representative values are discussed in the following sections.

2.3.1 Fraction Organic Carbon

Soil fraction organic carbon (FOC) is the fraction of the soil matrix in uncontaminated areas comprised of natural organic carbon. FOC affects the mobility of organic compounds and metals in the environment. An increase in FOC results in higher adsorption of dissolved constituents to soil and a thus decreases their mobility.

Soil FOC generally decreases with depth below ground surface (bgs). Thus soil sampling at three separate depth intervals will be performed at several borehole locations to characterize the vertical and lateral distribution of FOC across the RI area:

- Surface soils (extending from ground surface to 2 feet bgs)
- Subsurface soils (extending from 2 feet bgs to above the water table’s capillary fringe)
- Aquifer sediments below the water table

Soil FOC will be determined for uncontaminated soils. Samples collected from vadose zone soils (i.e., between the capillary fringe above the water table to ground surface) will characterize the FOC content of the major sediment types present. Samples collected from aquifer soils will be representative of the transmissive (sand and gravel) strata that are the primary routes for contaminant transport.

2.3.2 Dry Bulk Density and Moisture Content

Dry bulk density is the weight of oven dried soil solids per unit of total volume of soil mass. Soil dry bulk density is used to calculate total soil porosity which is the ratio (usually expressed as a percentage) of the volume of voids of a given soil mass to the total volume of the soil mass (US Army COE, 1986). Porosity directly affects the transport velocity of dissolved or colloidal COPCs in porous media. The measurement of soil moisture content is required to adjust field bulk density to dry bulk density. Soil density and moisture content will be measured in the major sediment types in surface and subsurface soils at several locations across the RI area.

2.3.3 pH

Soil pH affects the partitioning behavior and mobility of metals and ionizing organic compounds such as phenolic compounds. Although soil pH does not directly affect partitioning behavior of non-ionizing organic compounds (e.g., chlorinated VOCs and petroleum hydrocarbons), measurement of soil pH may be useful to assess site conditions that affecting biodegradation of COPCs in the RI area. Soil pH will be measured in the major sediment types in surface and subsurface soils at several locations across the RI area.

2.3.4 Grain Size

Grain size analysis is performed to quantify the distribution of soil particle sizes, estimate average soil moisture conditions, estimate hydraulic conductivity, and predict water percolation rates through the vadose zone (USEPA, 1996). The Standard Test Method for Particle-Size Analysis of Soils (ASTM D422-63, 2007) employs sieving and hydrometer procedures to quantify gravel, sand, silt, and clay fractions. Soil grain size will be measured in the major sediment types in surface and subsurface soils at several locations across the RI area.

2.3.5 Cation Exchange Capacity

Cation exchange capacity (CEC) is the capacity of a soil for ion exchange of positively charged cations between the soil and the soil solution. CEC affects the mobility of ionic compounds (typically metal ions) in the environment. An increase in CEC results in higher adsorption of dissolved cations to soil, and thus decreases the mobility of the cations. This is because soil particles and organic matter have negative charges on their surfaces to which cations can adsorb. Once adsorbed, the cations are not easily lost when the soil is leached by water. CEC is highly dependent upon soil texture and organic matter content. In general, the more clay and organic matter in the soil, the higher the CEC. The CEC of most soils increases with an increase in soil pH (WSU, 2011). Soil CEC will be measured in the major sediment types in surface and subsurface soils at the Site.

2.3.6 Soil and Ground Water Temperature

The temperature of soil and ground water affects the volatilization and mobility of VOCs. Therefore, soil and ground water temperature is a site-specific input parameter for soil gas models such as the Johnson and Ettinger model for subsurface vapor intrusion into buildings (Environmental Quality Management, 2000). Accurate measurement of soil temperatures from SPT or direct push samples is problematic, therefore shallow ground water temperature will be measured during ground water sampling and used to estimate soil temperatures.

2.3.7 Sample Requirements for Soil Physical Analyses

Parameter	Container	Sample Volume	Sample Preservation	Analytical Method	Holding Time
Fraction Organic Carbon	4 oz. wide-mouth glass jar	100 grams minimum	3 to 30^{o} C	ASTM D2974	28 days
Dry Bulk Density	Undisturbed core in sealed thin-walled, moisture-proof container	100 grams minimum	Per ASTM D4220-95 Group C 3 to 30^{o} C	ASTM D2937	28 days
Moisture Content	Undisturbed core in sealed thin-walled, moisture-proof container	100 grams minimum	Per ASTM D4220-95 Group C 3 to 30^{o} C	ASTM D2216	28 days
pH	4 oz. Wide-Mouth Glass Jar	10 grams minimum	3 to 30^{o} C	ASTM D4972 - 01(2007)	NA
Grain Size	1 quart Ziploc bag	115 grams minimum	NA	ASTM D422-63	NA
Cation Exchange Capacity	4 oz. wide-mouth glass jar	100 grams minimum	3 to 30^{o} C	EPA 8091	28 days
Temperature	Field test	NA	NA	Thermometer	NA

2.4 GROUND WATER SAMPLING

Except for the temporary monitoring wells installed at the time of drilling (see Sections 2.1.5 and 2.1.6 above), new monitoring wells will be allowed to stabilize for a minimum of 48 hours following development prior to sampling. To minimize potential cross-contamination between boreholes, wells up- and cross-gradient of the Ultra Custom Care Cleaners site will be sampled first because ground water in these wells should be less contaminated. Ground water will be sampled using low-flow purging methods. Sampling personnel will measure ground water levels to the nearest 0.01-foot using a decontaminated electronic well probe prior to collection of samples. The volume pumped will be determined in the field based on stabilization of field parameters: specific conductance, dissolved oxygen, and pH, if flow is sufficient to continuously measure field parameters in a flow-through cell. Sampling points will be purged by very slowly lowering semi-rigid polyethylene tubing to a depth corresponding to roughly the midpoint of the well screen, securing the tubing to prevent vertical movement, connecting it to a peristaltic pump, and then pumping at a rate not to exceed 0.5 liters/minute (0.13 gallons/minute). At a minimum, two pump and tubing volumes will be purged (1/2” I.D. tubing = 0.010 gallon/lineal foot, 0.17” I.D. tubing = 0.001 gallon/lineal foot = 5 ml/lineal foot). Samples will be collected once the parameter values have stabilized over the course of three sets of measurements as follows:

Specific Conductance	± 10 µS/cm
Dissolved Oxygen	± 2 mg/L
pH	± 0.1 unit

The bottle requirements for ground water samples are:

Bottle Type	No. of Bottles	Analytes	Preservative	Holding Time
1 liter amber glass	1	NWTPH-Dx	4° C	7 days
40 ml VOA with septum	2	NWTPH-Gx/BTEX	HCl to pH<2	14 days
40 ml VOA with septum	2	VOCs	HCl to pH<2	14 days
250 ml polyethylene	1	As, Cd, Cr, Pb	HNO_3 to pH<2	6 months

When filling the sample bottles, the following procedures and precautions will be adhered to:

1. To minimize potential loss of volatile compounds, first fill the VOA vials, then the 1 liter amber bottle, and lastly the polyethylene bottle.
2. Sample bottles will be filled directly from the pump discharge tubing with minimal air contact.
3. Bottle caps will be removed carefully so that the inside of the cap is not touched. Caps must never be put on the ground. Caps for volatile organic analyses (VOA) vials will contain a Teflon-lined septum. The Teflon side of the septum must be facing the sample to prevent contamination of the sample through the septum.
4. The sampling team will wear appropriate non-powdered latex or nitrile gloves (PVC or vinyl gloves can leave trace levels of phthalate or vinyl chloride). Gloves will be changed between wells or more often.

5. Tubing or hoses from the sampling systems must not touch or be placed in the sample bottles.
6. VOA vials must be filled so that they are headspace-free. These sample vials therefore need to be slightly overfilled (water tension will maintain a convex water surface in the bottle). The VOA vial caps will be replaced gently, to eliminate air bubbles in the sample. The vials must then be checked by inverting them and tapping them sharply with a finger. If air bubbles appear, open the vial, add more water, and repeat the process until all air bubbles are gone. Do not empty the vial and refill it, as VOA vials already contain preservatives.
7. Sample bottles, caps, or septums that fall on the ground before filling will be discarded.
8. Metals sampling will be conducted using the "clean technique." Bottles will be bagged in plastic and the cap placed in the bag during sampling.
9. After collection, the samples will be labeled, chilled in a cooler, and shipped to the laboratory for analyses on a standard laboratory turnaround time (5-10 days).

Samples collected for dissolved constituent analyses will be filtered through a 0.45-micron filter. The filters will attach directly to the discharge tube of the sampling pump. The filter will be changed between sample points, or more frequently if clogging occurs. Where in-line filtration is not possible, prefiltration bottles may be used to collect the samples. Prefiltration bottles must be obtained from the laboratory with the sample coolers and identified with the bottle request. Prefiltration bottles, used for vacuum or pressure filtering, will not be used for more than one well. The use of prefiltration bottles must be noted on the chain-of-custody form in the comments section. Samples that have been field-filtered or that require laboratory filtering must be noted on the chain-of-custody forms in the comments section. The laboratory will note which samples require filtering on the individual bottle labels.

If a monitoring well is pumped dry prior to reaching the desired purge volume, it will be allowed to recover prior to sampling, using the minimum time between purging and sampling that would allow collection of sufficient sample volume. Samples will be pumped directly into the appropriate containers, as provided by the laboratory. A Field Data Sampling Sheet (provided in Attachment A) will be filled out for each sample. New tubing will be used at each location.

2.4.1 Water Analyses

Water samples will be submitted to the analytical laboratory for one or more of the following analyses:

- Volatile Organic Compounds (VOCs) – EPA Method 8260

- Diesel and Oil-Range Hydrocarbons – Washington State Method NWTPH-Dx
- Gasoline-Range Hydrocarbons – Washington State Method NWTPH-Gx
- BTEX – EPA Method 8021
- Total and Dissolved Arsenic, Cadmium, Chromium, and Lead – EPA Method 6010/7470A

2.5 GROUND WATER FLOW SYSTEM PROPERTIES

This investigation task includes installing ground water monitoring wells, collecting and physical property testing of soil samples, time series ground water level measurements, aquifer testing, and hydrogeologic analysis of the data acquired.

2.5.1 Time Series Ground Water Level Measurements

Water level measurements will be collected quarterly during the RI. Water levels will be measured using a graduated electric water level meter equipped with a stainless steel probe. Water levels will be measured to the nearest 0.01 foot. To alleviate potential errors, previous water level data should be used for comparison during field activities. Water levels will be measured by slowly lowering the decontaminated probe into the monitoring well until the indicator (light, sound, and/or meter) shows water contact. At this time, the precise measurement will be determined by repeatedly raising and lowering the tape or cable to converge on the exact measurement. The tape and probe will be decontaminated between wells using distilled water. If non-aqueous phase liquid (NAPL) is suspected, NAPL thickness will be measured using a NAPL interface probe, low resistance clear bailer, or other means specific to the type of NAPL and well conditions.

2.5.2 Aquifer Testing

Slug tests will be conducted at selected wells. Slug tests are a single-well test used to determine approximate hydraulic conductivity values for formation materials immediately surrounding a well, and include rate-of-fall (falling head) and rate-of-rise (rising head) tests. Falling head tests entail placing a solid "slug", made of PVC, "instantaneously" below the water table and measuring the well response over time. After the well recovers to static conditions, "instantaneously" removing the slug from the water provides the rising head test. Water levels will be measured with transducers and back-up manual measurements. Tests where the water level crosses a change in effective well diameter (e.g., across the bentonite seal) are not valid and will not be used. Analysis of results will be described in the RI report. Slug tests will be conducted using the following steps:

1. Insert the transducer probe in the well approximately 0.5 feet off the bottom of the well. Secure the probe cable and turn on the data logger. Calibrate the data logger reading to an equivalent static-water level depth equal to that measured manually. Program the frequency of measurements and the density of the fluid into the data logger.

2. Start the logging program and take a final depth-to-water measurement just prior to starting the test. Note the measurement and clock time in the field notes. Start the test by smoothly removing or inserting the slug to avoid excessive water level oscillations and disturbing the transducer. A new section of cord will be used to lower the slug at each well. Make note of the start time in the field notes.
3. Measure water levels with a water level meter periodically and record time and value of measurement on the field notes. Monitor transducer readings to see if the initial water level or data logger reading is being approached and to correlate with manual measurements. Stop the test when at least 90 percent of the initial water displacement has recovered if several hours have elapsed since starting the test.
4. Decontaminate slug between wells by washing with a detergent solution followed by a tap water and distilled water rinse.

2.6 Quality Assurance/Quality Control

Samples will be collected and analyzed with sufficient quality assurance/quality control (QA/QC) to ensure representative and reliable results. The overall QA objective for the RI is to ensure that all laboratory and field data on which decisions are based are technically sound, statistically valid, and properly documented. There are two parts to the QA/QC program for this project: field and laboratory.

Field QA/QC includes proper documentation of field activities and sampling/handling procedures. Field QA/QC samples will consist of the following:

2.6.1 Soil Sampling QA/QC

- One equipment blank (a.k.a., rinsate blank) will be collected at a minimum frequency of 5 percent of soil samples collected – not needed if using disposable sample liners. Contaminant-free water is poured over sampling equipment and then collected for analysis. The presence of measurable concentrations of contaminants in an equipment blank indicates the potential for cross contamination between sampling locations when sample collection equipment is used to collect samples at more than one location. Because equipment blanks are a measure of cross contamination, they may be helpful in assessing the accuracy and representativeness of field measurements. The detection of measurable concentrations of contaminants in an equipment blank is indicative of the potential for the reported concentrations to be higher than the actual concentrations in the samples (false positives).

- One matrix spike/matrix spike duplicate (MS/MSD) will be collected at a minimum frequency of 5 percent of soil samples collected. MS/MSD samples will be selected by the field personnel, and three times the normal sample volume will be collected to accommodate the extra sample required for the lab to perform the MS/MSD analysis. It is critical that the sample submitted to the laboratory for MS evaluation is representative of the potentially contaminated matrix. The sample selected for MS/MSD evaluation should not contain significant concentrations of the contaminants as compared with the matrix spike concentrations as this may prevent accurate measurements of the spiked compound's recovery.

- One trip blank will be included in each cooler having samples for analysis of WTPH-Gx/BTEX and/or VOCs. For solid samples, trip blanks consist of a vial containing methanol. Trip blanks accompany the empty sample containers from the laboratory to the field and return with the collected samples from the field to the laboratory.

2.6.2 Ground Water Sampling QA/QC

- One field duplicate will be collected at a minimum frequency of 5 percent of water samples collected. Field duplicates are used to confirm analytical results from a given sample point. Duplicate samples are collected in the field using a matching set of laboratory-supplied bottles and sampling protocols from the selected well. Each duplicate should be sampled by alternating between the regular and the duplicate sample bottles, proceeding in the designated sampling order (VOCs first). The location where the duplicate is collected must be identified on the field sampling data sheet. All duplicates shall be blind-labeled (i.e., the well designation is not listed on the sample bottle or chain-of-custody form). Once a duplicate is collected, it is handled and shipped in the same manner as the rest of the samples. Duplicate results will be reported in the laboratory results as separate samples, using the designation DUP-(#).

- One trip blank will be included in each cooler having samples for analysis of WTPH-Gx/BTEX and/or VOCs. Trip blanks are used to detect contamination that may be introduced in bottle preparation, in transit to or from the sampling site, or in the field. Trip blanks are samples of volatile-organic-free, laboratory-quality water (Type II reagent grade) that are prepared at the laboratory. They remain with the sample bottles while in transit to the site, during sampling, and during the return trip to the laboratory. Trip blank sample bottles are not opened at any time during this process. Trip blanks are to be reported in the laboratory results as separate samples, using the designation TB-(#). Each sample cooler that includes bottles for VOC analysis must include a trip blank, whether it was requested or not.

- One equipment blank (a.k.a., rinsate blank) will be collected at a minimum frequency of 5 percent of water samples collected – not needed if using disposable peristaltic tubing. Equipment blanks are used to detect residue from decontaminated equipment. Equipment blanks are to be reported in the laboratory results as separate samples, using the designation EB-(#).

2.6.3 Laboratory QA/QC

Laboratory QA/QC analyses provide information about accuracy, precision, and detection limits. Method-specific QA/QC samples may include the following, depending on the analysis:

- Method blanks
- Duplicates
- Instrument calibration verification standards
- Laboratory control samples
- Surrogate spiked samples
- Performance evaluation QC check samples

2.6.4 Data Evaluation

Data evaluation will include checking holding times, method blank results, surrogate recovery results, field and laboratory duplicate results, completeness, detection limits, laboratory control sample results, and chain-of-custody forms.

2.7 FIELD DOCUMENTATION AND CHAIN-OF-CUSTODY

The following sections describe the recording system for documenting all site field activities, and the sample chain-of-custody program.

2.7.1 Field Log Book

An accurate chronological recording of all field activities is vital to the documentation of any environmental investigation. To accomplish this, field team members will maintain field log books providing a daily record of significant events, observations, deviations from the sampling plan and measurements collected during the field activities.

2.7.2 Sample Identification

Following sample collection, field personnel will affix labels to each sample container. Samplers will use waterproof ink (not marking pens containing volatile organics), plastic bags, or clear tape to ensure labels remain legible even when wet. Samplers will record the following information on the labels:

- Project name and number
- Sample identification number

- Date and time of collection
- Required test methods
- Name of sample collector

2.7.3 Chain-Of-Custody Record

The purpose of the chain-of-custody record is to allow the tracking of possession and handling of individual samples from the time of field collection through laboratory analysis. Once a sample is collected, it becomes part of the chain-of-custody process. A sample is "in custody" when (1) it is in someone's possession, (2) it is within visual proximity of that person, (3) it is in that person's possession, but locked up and sealed (e.g., during transport), or (4) it is in a designated secure sample storage area. Sampling staff will complete a chain-of-custody record (Attachment A) which will accompany each batch of samples. The record will contain the following information:

- Project name and number
- Names of sampling team members
- Requested testing program
- Required turnaround time
- Sample number
- Date and time collected
- Sample type
- Number of containers
- Tare weight of VOA vials
- Special Instructions
- Signatures of persons involved in the chain of possession

When sample custody is transferred to another individual, the samples must be relinquished by the present custodian and received by the new custodian. This will be recorded at the bottom of the chain-of-custody report where the persons involved will sign, date and note the time of transfer.

Sampling team members will keep sample coolers in locked vehicles while not in active use or visual range. If couriers are used to transport samples, chain-of-custody seals will be affixed to coolers.

2.7.4 Photographic Records

The field team leader will determine situations requiring photographic documentation. The field logbook will include the following information for each site photograph:

- Date, time, location photograph was taken
- Description of photograph taken

- Sequential number of the photograph
- Direction of photographic view

2.8 Preliminary ARARs and Detection Limits

The sampling, testing, and analytical methods specified in this SAP have been selected to provide accurate and precise data at reporting limits low enough to allow evaluation of the data with respect to applicable state and federal laws, legally applicable requirements, and requirements that are relevant and appropriate. These requirements are collectively referred to as ARARs which is an acronym for Applicable or Relevant and Appropriate Requirements.

According to MTCA (WAC-340-710), legally applicable requirements are cleanup standards, standards of control, and other environmental protection requirements, criteria, or limitations adopted under state or federal law that specifically address a hazardous substance, cleanup action, location or other circumstances at the site.

Relevant and appropriate requirements are those cleanup standards, standards of control, and other environmental requirements, criteria, or limitations established under state or federal law that, while not legally applicable to the hazardous substance, cleanup 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.

Potential ARARs for the Bothell Landing 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 (Parametrix, 2009).

Table 1 summarizes potential ARARs identified for the Bothell Landing RI with respect to laboratory detection, reporting, and practical quantitation limits. These ARARs were chosen based on a knowledge of Site contaminants, potential exposure pathways, and potentially applicable state and federal laws and rules. Other ARARs will be addressed in the RI/FS report.

3.0 QUALITY ASSURANCE PROJECT PLAN

The purpose of this Quality Assurance Project Plan (QAPP) is to ensure that all necessary steps are taken to acquire data of the type and quality needed. Quality is the degree to which a set of inherent characteristics fulfills project requirements. Quality assurance (QA) is the process 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, and 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.

To accomplish these purposes this QAPP for the Bothell Landing RI contains the following elements:

- Field QA/QC
- Chain-of-custody procedures
- Decontamination procedures
- Laboratory analysis and QA/QC methods
- Sample custody procedures including holding times, containers, and preservation

3.1 Field QA/QC Methods

Field QA/QC methods will include the collection of equipment blanks, MS/MSD samples, and trip blanks for soil samples. For ground water samples these methods include the collection of field duplicates, equipment blanks, and trip blanks. A detailed description of these QA/QC methods is provided in Sections 2.5.1 and 2.5.2.

Field QC will include proper documentation of field activities in a field log book and daily field reports that provide a daily record of significant events, observations, deviations from the sampling plan, and measurements collected during the field activities. Field personnel will follow 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 will photographically document significant events and observations during RI activities.

3.2 Chain-of-custody Procedures

Chain-of-custody procedures allow the tracking of possession and handling of individual samples from the time of field collection through laboratory analysis. Detailed chain-of-custody handling procedures are described in Section 2.6.3.

3.3 Decontamination Procedures

In order to mitigate the potential for cross-contamination, all sample-contacting, and downhole equipment used in the collection and sampling processes will be decontaminated before sample collection.

The following steps will constitute the decontamination procedure:

1. Wash items in a solution of strong anionic detergent (e.g., Alconox® or Liquinox®) and tap water
2. Rinse with tap water
3. Rinse with deionized water

4. Air dry in a clean environment

Decontaminated equipment will be stored and transported in clean containers or wrapping.

3.4 LABORATORY QA/QC METHODS

3.4.1 Chemical Analyses QA/QC

OnSite Environmental Inc. of Redmond, Washington will perform all sample analyses. OnSite Environmental is accredited by the Washington Department of Ecology (Accreditation #C591-10) for all analyses to be performed for the RI.

Specific laboratory QC will consist of the following:

- **Sample Batching.** A batch consists of up to twenty samples in addition to any quality control samples that were required. The samples will be 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 will be generated.
- **Method Blanks.** Method blanks will be used to ensure that the extraction and analysis procedures do not contribute contamination to the analysis. Method blanks will be 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 is outside of quality control criteria, then that particular analyte will be evaluated and actions taken to bring the analysis into control.
- **Duplicate Samples.** Duplicate lab samples will used to ensure that sample results can be reproduced in a precise manner.
- **Surrogates.** Surrogate compounds are compounds similar to the analytes of interest that are 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) provide 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 are a second laboratory spiked blank laboratory QC sample. The difference in the laboratory's recovery of the spiked blank and spiked blank duplicate is a measure of analytical precision, and is reported as relative percent difference (RPD):

  $$\text{Percent Recovery (\%R)} = 100*(X_s/C_t)$$

  Where X_s is the observed concentration of the analyte, and C_t is the true concentration of the analyte. The acceptable range for accuracy is 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 is responsible for verifying that the surrogate, spike blank and MS/MSD percent recoveries meet the quality control limits.

- **Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples.** Matrix spike samples are laboratory QC samples prepared by adding a known amount of the target analyte(s) to an actual sample, and used to ensure the analytes of interest can be accurately recovered from the sample matrix. The matrix spike duplicate is also used to ensure the analytes could be repeatedly recovered in an accurate and precise manner.

3.4.2 Physical Testing QA/QC

The physical testing of soil parameters described in Section 2.3 will be performed by HWA GeoSciences' materials testing laboratory. The policy of HWA is to maintain the quality level of its engineering testing laboratory in general compliance with industry standard QA/QC methods and practices, including those prescribed by:

- International Code Council (ICC)
- International Building Code (IBC)
- American Society for Testing and Materials (ASTM)
- American Concrete Institute (ACI)
- American Association of State Highway and Transportation Officials (AASHTO)
- Washington State Department of Transportation (WSDOT)

QA/QC methods vary by test, and are typically specified in the test method (e.g., ASTM). In addition, HWA's materials testing laboratory is accredited by and continually complies with requirements of the American Association for Laboratory

Accreditation (A2LA) and the American Association of State Highway and Transportation Officials (AASHTO), which include QA/QC audits, proficiency testing, calibrations, training, etc. HWA's materials testing laboratory meets the criteria defined in the following standards:

- ISO 17025 – General Requirements for the Competence of Testing Laboratories
- ASTM D 1077 – Practice for Laboratories Testing Concrete & Concrete Aggregates
- ASTM D 3666 – Minimum Requirements for Agencies Testing Paving Materials
- ASTM D 3740 – Minimum Requirements for Agencies Testing Soil and Rock
- ASTM E 329 – Specifications for Agencies Testing Materials Used in Construction

3.5 Sample Custody Procedures

Sample custody procedures for soil and water samples are described in Section 2.6.3 above.

4.0 HEALTH AND SAFETY

Personnel conducting this field program are required to follow the health and safety protocol presented in the site specific Health and Safety Plan (HASP). Subcontractors and other authorized visitors to the site are responsible for their own health and safety. The Health and Safety Plan will be made available to subcontractors and other site visitors who request it. Health and Safety precautions will be communicated to subcontractors by project personnel in site safety briefings at the beginning of each field day. To acknowledge review and comprehension of this plan, all field personnel must sign the appropriate section included in the back of the document. The Health and Safety Plan is included as a separate document in Appendix C of the Bothell Landing RI Work Plan.

5.0 REFERENCES

Environmental Quality Management Inc., 2000, *User's Guide for the Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings (Revised).* Prepared for U.S. EPA Office of Emergency and Remedial Response, December 2000.

Flory, D., 2000, *What is "Good" Data*, Quality Assurance Associates (www.qaallc.com/gooddata.html)

Interstate Technology & Regulatory Council Sampling, Characterization and Monitoring Team, 2006, The Use of Direct Push Well Technology for Long-term Environmental Monitoring in Groundwater Investigations, March 2006

Naval Facilities Engineering Command (NAVFAC), Kram, Mark, Lorenzana, Dale, and Lory, Ernest, 2001, Performance Comparison: Direct-Push Wells Versus Drilled Wells, NFESC Technical Report TR-2120-ENVIRONMENTAL, January 2001

PMI, 2008, *A Guide to the Project Management Body of Knowledge – Fourth Edition* (ANSI/PMI 99-001-2008), Project Management Institute (www.pmi.org).

Parametrix, 2009, *Bothell Landing Remedial Investigation/Feasibility Study, Revision No. 0*. Prepared for City of Bothell, November 2009.

U.S. Army Corps of Engineers, 1986, *Engineering and Design Laboratory Soils Testing*. EM 1110-2-1906 Change 2.

U.S. Environmental Protection Agency (EPA), 1996, *Soil Screening Guidance: User's Guide (Second Edition)*. EPA/540/R-96/018, July 1996.

U.S. Environmental Protection Agency (EPA), 1998, Innovative Technology Verification Report, Soil Sampling Technology, Geoprobe Systems, Inc. Large-Bore Soil Sampler, Office of Research and Development, EPA/600-R-98/092, August 1998

U.S. Environmental Protection Agency (EPA), 2005, *Ground water Sampling and Monitoring with Direct Push Technologies*. EPA 540/R-04/005, August 2005.

U.S. Environmental Protection Agency (EPA), 2005b, Groundwater Sampling and Monitoring with Direct Push Technologies Office of Solid Waste and Emergency Response, Solid Waste and Emergency Response (5204G) OSWER No. 9200.1-51 EPA 540/R-04/005 August 2005.

Washington State University, 2011, Cation-Exchange Capacity (http://soils.tfrec.wsu.edu/webnutritiongood/soilprops/04CEC.htm).

Table 1
Potential ARARs & Laboratory Reporting Limits

Compound	Ground Water ARAR - Federal Primary Maximum Contaminant Level (MCL) (mg/L)	Ground Water ARAR - State Primary Maximum Contaminant Level (MCL) (mg/L)	Soil, Method A, Unrestricted Land Use, Table Value (mg/kg)	Soil, Method B, Carcinogen, Standard Formula Value, Direct Contact (ingestion only), Unrestricted land use (mg/kg)	Soil, Method B, Non-carcinogen, Standard Formula Value, Direct Contact (ingestion only), Unrestricted land use (mg/kg)	Method Detection Limit (soil - mg/kg)	Laboratory Reporting Limit (soil - mg/kg)	Method Detection Limit (water - mg/L)	Laboratory Reporting Limit (water - mg/L)
1,2-DCA	5.0E-03	5.0E-03	NV	1.1E+01	1.6E+03	3.95E-04	1.0E-3	1.16E—4	2.0E-04
Arsenic	1.0E-02	1.0E-02	2.0E+01	6.7E-01	2.4E+01	1.22E+00	1.0E+01	6.11E-02	5.0E-3
Benzene	5.0E-03	5.0E-03	3.0E-02	1.8E+01	3.2E+02	2.20E-03	2.00E-02	6.28E-05	1.00E-03
Naphthalenes	NV	NV	5.0E+00	NV	1.6E+03	3.56E-04	6.7E-03	2.51E-5	1.0E-04
Tetrachloroethylene	5.0E-03	5.0E-03	5.0E-02	1.9E+00	8.0E+02	3.30E-04	1.00E-03	1.50E-04	2.00E-04
TPH, Diesel Range Organics	NV	NV	2.0E+03	NV	NV	5.74E+00	2.50E+01	5.09E-02	2.50E-01
TPH, Heavy Oils	NV	NV	2.0E+03	NV	NV	1.13E+01	5.00E+01	9.87E-02	4.00E-01
TPH: Gasoline Range Organics, Benzene Present	NV	NV	3.0E+01	NV	NV	9.15E-01	5.00E+00	1.55E-02	1.00E-01
TPH: Gasoline Range Organics, No Benzene	NV	NV	1.0E+02	NV	NV	9.15E-01	5.00E+00	1.55E-02	1.00E-01
Vinyl Chloride	2.0E-03	2.0E-03	NV	6.7E-01	2.4E+02	5.88E-04	1.00E-03	1.83E-04	2.00E-04
Trichloroethylene	5.0E-03	5.0E-03	3.0E-02	1.1E+01	2.4E+01	3.55E-04	1.00E-03	1.44E-04	2.00E-04

Note: MDL and RL values for TPH Gasoline are for PID instrument detector, NV – No established value

1,2-DCA = 1,2-Dichloroethane

ATTACHMENT 1

CHAIN-OF-CUSTODY FORM AND
FIELD SAMPLING DATA SHEET

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425)774-0106
4500 Kruse Way, Suite 300, Lake Oswego, OR 97035 (503)675-2424

Chain of Custody and Laboratory Analysis Request

DATE: ______________
PAGE: ______ of ______

PROJECT NAME: ____________________ #: ____________
SITE CODE: ______________________________
SAMPLERS NAME: ______________ PHONE: ____________
SAMPLERS SIGNATURE: ______________________
HWA CONTACT: ______________ PHONE: ____________

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	ANALYSIS REQUESTED															REMARKS

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:					
Received by:					
Relinquished by:					
Received by:					

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

HWA GEOSCIENCES INC.
19730 64th Avenue West, Suite 200 Lynnwood, WA 98036
Tel: 425-774-0106 / Fax: 425-774-2714 / E-Mail: hwa@hongwest.com

FIELD SAMPLING DATA SHEET

Project Name: ______________________
Project Number: ______________________
Project Location: ______________________
Client/Contact: ______________________

Well Number: ______________________
Sample Number: ______________________
Weather: ______________________
Date: ______________________

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature		

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered (Y/N)	Preservative	Iced (Y/N)

COMMENTS/NOTES:

(Include equipment used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

Total # of Bottles: ______ Sampler: ______________ Signature: ______________________

APPENDIX C

Health and Safety Plan

REMEDIAL INVESTIGATION
HEALTH AND SAFETY PLAN
BOTHELL LANDING SITE
BOTHELL, WASHINGTON

Project No. 2007-098-929

Prepared for
City of Bothell

February 28, 2011

HWA GEOSCIENCES INC.

- Geotechnical Engineering
- Hydrogeology
- Geoenvironmental Services
- Inspection & Testing

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SITE HEALTH AND SAFETY PLAN

SUMMARY INFORMATION

SITE LOCATION	Bothell Landing Site Along and around SR527 from NE 185th St. to SR 522 Site Telephone - None
NEAREST HOSPITAL	Care Plus Medical Ctr: 17511 68th Ave NE Kenmore, WA 98028 425-486-8300 The route from the facility to the hospital is depicted on Figure 1.
EMERGENCY RESPONDERS	Police Department .... 911 Fire Department... 911 Ambulance 911
EMERGENCY CONTACTS	HWA Bothell Office ....(425) 774-0106 HWA H&S Officer, Norm Nielsen (425) 774-0106 cellular. (206) 450 0552 HWA PM Arnie Sugar ....(425) 774-0106 cellular................... (206) 794 3130 National Response Center ....(800) 424-8802

In the event of an emergency, call for help as soon as possible.
Give the following information:

- WHERE the emergency is - use cross street or landmarks
- PHONE NUMBER - you are calling from
- WHAT HAPPENED - type of injury
- HOW MANY - persons need help
- WHAT - is being done for the victim(s)
- YOU HANG UP LAST - let the person you called hang up first

SITE HEALTH AND SAFETY PLAN SUMMARY

LOCATION: Along and around SR527 from NE 185th St. to SR 522, Bothell, WA and adjacent properties

PROPOSED DATES OF ACTIVITIES: 2011 - 2013

TYPE OF FACILITY: Active roadways, construction sites, commercial properties, dry cleaning facility, etc.

LAND USE OF AREA SURROUNDING FACILITY: Commercial

POTENTIAL SITE CONTAMINANTS: Petroleum, volatile organic compounds (VOCs), metals

POTENTIAL SITE HAZARDS:

1. Chemical - Exposure to site contaminants listed above
2. Physical – site traffic, drilling machinery, noise, overhead and underground utilities, heat/cold stress, slips, trips and falls, fire, explosion

ROUTES OF ENTRY: Airborne vapors and dust; skin contact with soil, free product, or groundwater; and incidental ingestion of soil.

PROTECTIVE MEASURES: Engineering controls, safety glasses, safety boots, hard hat, gloves, protective clothing, and respirators.

MONITORING EQUIPMENT: Photoionization detector

SITE ACTIVITIES: Subsurface investigation to assess the presence and/or extent of affected soils and ground water resulting from historic releases at the site.

1.0 INTRODUCTION

1.1 Purpose and Regulatory Compliance

This site-specific Health and Safety Plan (H&S Plan) addresses procedures to minimize the risk of chemical exposures and physical accidents to on-site workers, as described above. The H&S Plan covers each of the 11 required plan elements as specified in WAC 296-843-12005. To help the reader find this required information, Table 1 shows the major sections where each of these elements are discussed. Additional supporting information is presented throughout this plan, and the reader is advised to thoroughly review the entire plan. When used together with the HWA GeoSciences Inc. (HWA) Corporate H&S Plan, this site-specific plan meets applicable regulatory requirements.

Table 1 - Location of Required Health and Safety Plan Elements

Required Health and Safety Plan Elements *		Location in this Health and Safety Plan (Section number shown)
Required Elements		
(i)	Safety and hazard analysis	2.0 Hazard Evaluation and Control Measures (see also 2.7 Hazard Analysis by Task)
(ii)	Organization chart	1.3 Chain of Command
(iii)	Comprehensive work plan	1.4 Work Activities (and Site-Specific Sampling and Analysis Plan, by reference)
(iv)	Site control plan	Introduction. Health and Safety Plan Summary 1.5 Site Location and Description 5.0 Exclusion Areas 9.0 Site Security and Control
(v)	Personal protective equipment	3.0 Protective Equipment 4.0 Safety Equipment List
Additional Elements		
	Monitoring program	2.3 Air Monitoring and Action Levels
	Site Control Measures	9.0 Site Security and Control
	Decontamination	7.0 Decontamination
	Spill containment	10.0 Spill Containment
	Standard operating procedures for sampling, managing and handling drums and containers	Not Applicable, or Site-Specific Sampling and Analysis Plan, by reference
	Confined space entry	2.6 Confined Spaces
	Training, briefing and information	13.0 Training Requirements
	Medical surveillance	12.0 Medical Surveillance
	Emergency response plan	11.0 Emergency Response Plan
	Lighting	Corp H&S Plan Sec. 8.7
	Excavations	Corp H&S Plan Sec. 8.7

*Required H&S Plan elements are numbered according to their listing in WAC 296-843-12005

1.2 Distribution and Approval

This H&S Plan will be made available to all HWA personnel involved in field work on this project. It will also be made available to subcontractors and other non-employees who may need to work on the site. Subcontractors and non-employees will follow the provisions in this plan as minimum recommendations. Specific work activities of a subcontractor may require different or more stringent safety measures than contained in this plan. For non-HWA employees, it must be made clear that this plan represents minimum safety procedures and that they are responsible for their own health and safety and regulatory compliance while present on site.

The plan has been approved by the HWA Health and Safety (H&S) Manager. By signing the documentation form provided with this plan, project workers also certify their approval and agreement to comply with the plan.

1.3 Chain of Command

The chain of command for Health and Safety in HWA projects involves the following individuals: the Corporate H&S Manager, Project Manager, Project H&S Manager, and the Field H&S Manager. In some cases, based on the complexity of the project and level of staffing, the project and field related H&S positions may be combined. If the specified Field H&S Manager is unable to be present on-site during work activities, the Project H&S Officer will serve as the on-site safety officer or, alternatively, another Field H&S Manager will be named.

Project Manager: Arnie Sugar. The Project Manager is charged with overall responsibility for the successful outcome of the project. The Project Manager, in consultation with Corporate H&S Manager, makes decisions regarding the implementation of the Site H&S Plan. The Project Manager may delegate this authority and responsibility to the Project and /or Field H&S Managers

Corporate H&S Officer: Norm Nielsen. The HWA Corporate H&S Officer has overall responsibility for preparation and modification of this H&S Plan. In the event that health and safety issues arise during site operations, he will attempt to resolve them in discussion with the appropriate members of the project team.

Project H&S Officer: Vance Atkins. The Project H&S Manager has overall responsibility for health and safety on this project. This individual ensures that everyone working on this project understands this H&S Plan. He will maintain liaison with the HWA Project Manager so that all relevant safety and health issues are communicated effectively to project workers.

Field H&S Manager: Pete Pearson. The Field H&S Manager is responsible for implementing this H&S Plan in the field. This individual also observes subcontractors to verify that they are following these procedures, at a minimum. The Field H&S Manager will also assure that proper protective equipment is available and used in the correct manner, decontamination activities are carried out properly, and that employees have knowledge of the local emergency medical system should it be necessary.

1.4 Work Activities

Planned site work includes direct push drilling and sampling, hollow-stem auger soil boring, soil sampling, and ground water sampling

1.5 Site Location and Description

Sites potentially under investigation may include areas along and around SR527 from SR522 to NE 185th street and adjoining properties and rights of way, in, Bothell, Washington. This work is being performed under an Agreed Order between the City of Bothell and the Washington Department of Ecology.

2.0 HAZARD EVALUATION AND CONTROL MEASURES

2.1 Toxicity of Chemicals of Concern

Based on previous site information and knowledge of the types of activities conducted at this location, petroleum hydrocarbons, volatile organic compounds, halogenated volatile organic compounds, and metals may be present in the soils or ground water at several of the sampling locations.

Pertinent toxicological properties of these chemicals are discussed below. This information generally covers potential toxic effects which may occur from relatively significant acute and/or chronic exposures, and is not meant to indicate that such effects will occur from the planned site activities. In general, chemicals which may be encountered at this site are not expected to be present at concentrations which could produce significant exposures. The types of planned work activities should also limit potential exposures at this site. Furthermore, appropriate protective and monitoring equipment will be used as discussed below to further minimize any exposures which might occur.

As a point of reference, standards for occupational exposures to these chemicals are included where available. Site exposures are generally expected to be of short duration and well below the level of any of these exposure limits. These standards are presented using the terminology defined by the Washington State General Occupational Health Standards (WAC 296-62, Part H) as follows:

PEL - Permissible exposure limit.

TLV – Threshold Limit Value for any 8-hour work shift or 40-hour work week

TWA - Time-weighted average exposure limit for any 8-hour work shift or 40-hour work week.

STEL - Short term exposure limit expressed as a 15-minute time-weighted average and not to be exceeded at any time during a work day.

C - Ceiling exposure limit not to be exceeded at any time during a work day.

IDLH - The concentration at which a compound is considered immediately dangerous to life and health.

Total Petroleum Hydrocarbons. Total petroleum hydrocarbons (TPH) refers to a broad range of chemicals including those compounds reported under EPA method 418.1. TPH can include different hydrocarbon mixtures, such as gasoline, kerosene, diesel, fuel oil, motor oil, hydraulic oil, and asphalt. These materials may be toxic by ingestion, inhalation, and skin absorption. Typical symptoms include dizziness, central nervous system depression, and coma. TPH can have a defatting effect on the skin, and long-term exposure can result in liver and kidney damage. No PEL has been established for TPH. For comparison, the PEL-TWA for gasoline is 300 ppm, with 500 ppm as a 15-minute STEL.

Gasoline. Gasoline is a mixture of more than 100 alkane and aromatic hydrocarbon constituents with trace levels of additives. A typical gasoline is primarily 4 to 12-carbon hydrocarbons, with significant levels of aromatics including benzene, ethyl benzene, toluene, and xylene. Prolonged exposure to gasoline causes irritation of the skin, eyes, and mucous membranes, and can produce defatting and dermatitis. Inhalation of gasoline vapor can cause central nervous system depression, confusion, unconsciousness, coma, and death. Liver and kidney damage can also occur. The current PEL-TWA for gasoline is 300 ppm, with a 15-minute STEL of 500 ppm. The toxicity of gasoline can also be significantly affected by the amount of benzene, which typically ranges up to 3.5 percent in motor fuel. Benzene is recognized as a human carcinogen, and the current PEL-TWA is 1 ppm with an STEL of 5 ppm and a REL (recommended exposure limit) of 0.3 ppm.

Other potentially significant toxic materials present in association with gasoline may include the organic lead compounds tetraethyl (TEL) and tetramethyl lead (TML). These chemicals are colorless liquids which have been used principally as anti-knock compounds in gasoline. When used as such, they are generally mixed with soluble dyes for identification purposes. In the environment, TEL is reported to decompose under sunlight to form crystals of mono-, ki-, and triethyl lead compounds, which have a characteristic garlic-like odor.

TEL and TML can be toxic via inhalation, ingestion, percutaneous absorption, and skin and eye contact. Major target organs include the kidneys and the nervous, gastrointestinal, and cardiovascular systems. TEL is irritating to the eyes, and its decomposition products may be inhaled as dust, leading to irritation of upper respiratory tract and convulsive sneezing. The dust may also cause itching, burning, and redness of eyes and mucous membranes.

TEL and TML are also readily absorbed into the nervous system and are considerably more neurotoxic than inorganic lead. Minor intoxication by TEL or TML can result in nervous excitation, insomnia, and gastrointestinal symptoms. The most notable symptom of TEL poisoning and repeated exposure is encephalopathy (disease of the brain), characterized by symptoms of anxiety, delirium with hallucinations, delusions, convulsions, and acute psychosis. In contrast to inorganic lead intoxication, peripheral nerve damage is not observed. The current PEL-TWA for both TEL and TML is 0.075 mg/m^3 as lead.

Benzene. Benzene exposure can occur by inhalation, percutaneous absorption, ingestion, and skin and eye contact. Like other aliphatic and aromatic hydrocarbons, acute overexposure to benzene can cause central nervous system depression. Headache, dizziness, nausea, convulsion, coma, and death can result from elevated exposures. In some cases, acute exposure has resulted in death due to ventricular fibrillation. The odor threshold for benzene is variable, therefore there are no reliable warning properties. The principal chronic hazard associated with benzene exposures is its ability to cause changes in blood cells, including anemia and cell abnormalities. Benzene has been demonstrated to cause leukemia in epidemiological studies, and it is recognized as a human carcinogen by NIOSH and other agencies. The US EPA currently classifies benzene as a Group A, or confirmed, human carcinogen. The current PEL-TWA for benzene is 1 ppm with an STEL of 5 ppm (OSHA) and 0.1 ppm with an STEL of 1 ppm (NIOSH). Many petroleum companies maintain at least a recommended exposure limit of 0.3 ppm. Supplied air respiratory protection is required for potential benzene exposure.

Ethylbenzene. Ethylbenzene exposure can occur by inhalation, ingestion, and skin and eye contact. Like other aliphatic or aromatic hydrocarbons, acute overexposure to ethylbenzene can cause central nervous system depression. Headache, dizziness, nausea, convulsions, coma, and death can result from elevated exposures. Ethylbenzene can also cause skin drying and defatting, and eye and mucous membrane irritation can result from overexposure. The current PEL-TWA for ethylbenzene is 100 ppm with an STEL of 125 ppm.

Toluene. Toluene exposure can occur by inhalation, percutaneous absorption, ingestion, and skin and eye contact. Toluene can cause eye, respiratory, and skin irritation. Drying and defatting on the skin can occur with prolonged skin contact. The chief symptom of acute exposure to toluene vapor is depression of the central nervous system function. Symptoms include headache, dizziness, drowsiness, lack of coordination, and coma. The current PEL-TWA for toluene is 100 ppm with an STEL of 150 ppm.

Xylene. The major route of xylene toxicity is via inhalation of vapor, with percutaneous absorption and ingestion of liquid playing lesser roles. Xylene can cause irritation of the eyes, nose, and throat. Repeated skin contact may cause drying and defatting, and dermatitis. Acute exposure to vapors via inhalation may cause central nervous system depression, and liver and kidney damage. The current PEL-TWA for xylene is 100 ppm with an STEL of 150 ppm.

Polynuclear Aromatic Hydrocarbons. Polynuclear Aromatic Hydrocarbon (PAH) exposure can occur via inhalation of vapors, ingestion, and skin or eye contact. Skin contact can result in reddening or corrosion. Ingestion can cause nausea, vomiting, blood pressure fall, abdominal pain, convulsions, and coma. Damage to the central nervous system can also occur. The US Department of Health and Human Services (1989) has classified 15 PAH compounds as having sufficient evidence for carcinogenicity, while the US EPA (1990) has classified at least 5 of the identified PAHs as human carcinogens. There are no currently assigned PEL-TWAs for PAHs, but the closely related material coal tar is listed as coal tar pitch volatiles with a PEL-TWA of 0.2 mg/m^3**.**

Vinyl Chloride. Vinyl chloride is a colorless gas with a sweet odor. Vapors are heavier than air, and are flammable. If inhaled, it can cause irritation to the eyes, nose and throat. Inhalation can cause dizziness, difficult breathing, and in sufficient concentrations, asphyxiation by displacement of oxygen. Vinyl chloride is considered a NIOSH occupational carcinogen, and has a PEL-TWA of the lowest reliably detectable concentration. OSHA's PEL is 1 ppm, with a 15 minute ceiling of 5 ppm. Supplied air respiratory protection is required for potential vinyl chloride exposure.

Tetrachloroethene. Tetrachloroethene, also known as perchloroethylene, or PCE, is a commonly used solvent in dry cleaning and degreaser, and is a common environmental contaminant. PCE is a colorless liquid with a somewhat sweet odor. PCE vapor can be irritating to the eyes, nose and throat. Inhalation can cause nausea, sleepiness, dizziness, confusion, and loss of consciousness. PCE is a is a potential human carcinogen, with a PEL-TWA of 100 ppm (OSHA) and a STEL of 200 ppm.

Trichloroethylene. Trichloroethylene, also known as trichloroethene, or TCE, is a commonly used solvent and degreaser, and is one of the most common environmental contaminants. TCE vapor can be irritating to the eyes, nose and throat. Inhalation can cause nausea, difficult breathing, and loss of consciousness. TCE is a potential human carcinogen, with a PEL-TWA of 25 ppm (NIOSH), 50 ppm (OSHA) and a STEL of 200 ppm.

1,2-Dichloroethane. 1,2-Dichloroethane, also known as ethylene dichloride, EDC, or 1,2-DCA is used in the manufacturing of vinyl chloride, PCE, and TCE. It is also used as a solvent and as a gasoline additive. 1,2-DCA is a colorless liquid with a somewhat sweet odor. 1,2-DCA vapor can be irritating to the eyes, nose and throat. Inhalation can cause bronchitis, central nervous system depression, dizziness, vomiting, partial paralysis, and liver and kidney damage. 1,2-DCA is a is a potential human carcinogen, with a PEL-TWA of 1 ppm (4 mg/m^3) (NIOSH), 50 ppm (OSHA) and a STEL of 2 ppm (8 mg/m^3) (NIOSH).

Arsenic. Arsenic is toxic by inhalation and ingestion of dusts and fumes or by inhalation of arsine gas. Trivalent arsenic compounds are the most toxic to humans, with significant corrosive effects on the skin, eyes, and mucous membranes. Dermatitis also frequently occurs, and skin sensitization and contact dermatitis may result from arsenic trioxide or pentoxide. Trivalent arsenic interacts with a number of sulfhydryl proteins and enzymes, altering their normal biological function. Ingestion of arsenic can result in fever, anorexia, cardiac abnormalities, and neurological damage. Liver injury can accompany chronic exposure. Skin and inhalation exposure to arsenic has been associated with cancer in humans, particularly among workers in the arsenic-pesticide industry or copper smelters. Arsine is a highly toxic gaseous form of arsenic, causing nausea, vomiting, and hemolysis. The current PEL-TWA for organic and inorganic forms of arsenic is 0.2 mg/m^3. The PEL-TWA for inorganic arsenic under WAC 296-62-07346 is 10 μg/m^3. Arsenic is also regulated as a carcinogen under WAC 296-62-07347.

Cadmium. Cadmium is toxic via inhalation or ingestion of fumes or dust. Fumes are contacted normally during exposure to heated metals (plating operations, welding , etc.). Acute effects resulting from such exposure include respiratory distress irritation which may culminate in chronic emphysema. Chronic exposures to fumes or dust may result in emphysema and kidney damage. These effects may be worsened by smoking. Cadmium is considered to be a probable human carcinogen. The current PEL-TWA for cadmium is 0.05 mg/m^3 as cadmium dust as salts.

Chromium. Chromium metal and insoluble chromium salts can affect the body if inhaled or swallowed. Ferrochrome alloys have been associated with lung disease in humans. Certain forms of chromium (VI) compounds have been found to cause increased respiratory cancer among workers. Unless it can be demonstrated that no chromium (VI) compounds are present, it should be treated as a carcinogen. The PEL-TWA for chromium (III) compounds is 0.5 mg/m^3, and for chromic acids and chromates (chromium VI) the PEL is 0.1 mg/m^3.

Inorganic Lead. Inorganic lead and its compounds (excluding lead arsenate) can cause a disease known as lead poisoning. This disease is hard to diagnose, but may include symptoms of decreased physical fitness, fatigue, sleep disturbances, headaches, aching bones and muscles, digestive symptoms, abdominal pains, and decreased appetite. These symptoms are reversible and complete recovery is possible. Severe exposure could lead to anemia, pallor, a "lead-line" on the gums, and decreased hand-grip strength. Nerve damage may occur, with symptoms such as "wrist-drop". These symptoms may be irreversible. The PEL-TWA for lead is 0.05 mg/m^3.

2.2 Potential Exposure Routes

Inhalation. Exposure via this route could occur if volatile chemicals become airborne during site activities, especially upon exposure to open air, warm temperatures, and sunlight. Air monitoring and control measures specified in this plan will minimize the possibility for inhalation of site contaminants.

Skin Contact. Exposure via this route could occur if contaminated soil, water or product contacts the skin or clothing. Dusts generated during soil movement may also settle on exposed skin and clothing of site workers. Protective clothing and decontamination activities specified in this plan will minimize the potential for skin contact with the contaminants.

Ingestion. Exposure via this route could occur if individuals eat, drink, use tobacco products, or perform other hand-to-mouth contact in the contaminated (exclusion) zones. Decontamination procedures established in this plan will minimize the inadvertent ingestion of contaminants.

2.3 Air Monitoring and Action Levels

Air monitoring will be conducted to determine possible hazardous conditions and to confirm the adequacy of personal protection equipment. The results of the air monitoring will be used as the basis for specifying engineering controls, personnel protective equipment (PPE) and determining the need to upgrade protective measures. If possible, engineering controls should be implemented to meet air monitoring action levels before upgrading protective measures. Engineering controls include applying water for dust control, forced air ventilation (brush fans), and moving work activities upwind of contaminant sources.

All air monitoring equipment will be calibrated prior to use as specified by the instrument manuals and results will be documented in the instrument log. All equipment will be maintained as specified by the manufacturer or more frequently as required by use conditions, and repair records will be maintained with the instrument log.

PID Monitoring. Air monitoring will be conducted with a photoionization detector (PID) to measure organic vapor concentrations during site work activities. PID readings will be taken at the beginning of each day, at each new test pit or boring location, and whenever field personnel report or detect petroleum or other odors. If PID measurements are 5 ppm above ambient background levels in the worker's breathing zones for five consecutive minutes, then site workers exposed to these levels will use air purifying respirators with organic vapor cartridges. At this point, air monitoring downwind from the work site will also be initiated. If the downwind monitoring indicates potential for off-site exposure, work will cease pending re-evaluation of the task. If PID measurements exceed 100 ppm in the breathing zone, site work will cease pending re-evaluation of the situation by the H&S Manager.

Detector Tube Monitoring. Although volatile organic compounds are not anticipated at the site, specific detector tube monitoring for petroleum hydrocarbons will be performed if PID readings exceed the 5 ppm action level described above using a Sensidyne air pump and benzene detector tube model number 121L (or equivalent). This tube is capable of detecting benzene at levels below the PEL of 1 ppm and is also reported to be relatively specific and free from interference by other petroleum hydrocarbons. If benzene measurements exceed 1 ppm in the breathing zone, site work will cease pending re-evaluation of the situation by the H&S Manager.

Table 2 summarizes site action levels and response measures.

TABLE 2 - ACTION LEVELS (use engineering controls first)

PID* (BZ)	PID* (SB)	LEL (BZ)	OXYGEN (BZ)	ACTION
< 5 ppm		<10%	19.5 - 23.5%	Level D
5-50 ppm		<10%		Upgrade to level C or modified level D** Begin downwind air monitoring
>50 ppm	>5 ppm	>10%	<19.5% >23.5%	Cease Operations ***

* Concentrations above ambient background concentrations
** See Section 3.2 for conditions for respiratory protection
*** If <u>any</u> of the listed conditions are met
BZ - Breathing zone
SB - Site boundary

2.4 Fire and Explosion Hazard

Potentially explosive conditions may be encountered where petroleum hydrocarbons or other flammable gases or vapors have accumulated. Care will be exercised at all times during field activities where flammables are known or suspected to be present.

If flammable chemical products are encountered as a separate phase or as vapors, constant attention to readings obtained from the CGM will be necessary to avoid exceeding the lower explosive limit. Observe basic precautions such as no smoking or creation of sparks or open flames.

2.5 Heat and Cold Stress

Heat Stress. Use of impermeable clothing reduces the cooling ability of the body due to evaporation reduction. This may lead to heat stress. If such conditions occur during site activities, employees will maintain appropriate work-rest cycles and drink water or electrolyte-rich fluids (Gatorade or equivalent) to minimize heat stress effects. Water will be available either in capped bottles or dispensed into clean disposable cups. Refilling of open containers will not be permitted. Also, when ambient temperatures exceed 70^{o} F, employees will conduct monitoring of pulse rates. Personnel will plan for the weather and arrange to take breaks in the shade as much as possible.

Each employee will check his or her own pulse rate at the beginning of each break period. Take the pulse at the wrist for 6 seconds, and multiply by 10. If the pulse rate exceeds 110 beats per minute, then reduce the length of the next work period by one-third.

Example: After a one-hour work period at 80 degrees, a worker has a pulse rate of 120 beats per minute. The worker must therefore shorten the next work period by one-third, resulting in a work period of 40 minutes until the next break.

Hypothermia. Hypothermia can result from abnormal cooling of the core body temperature. It is caused by exposure to a cold environment, and wind-chill as well as wetness or water immersion can play a significant role. The following sections discuss signs and symptoms as well as treatment for hypothermia.

Signs of Hypothermia. Typical warning signs of hypothermia include fatigue, weakness, lack of coordination, apathy, and drowsiness. A confused state is a key symptom of hypothermia. Shivering and pallor are usually absent, and the face may appear puffy and pink. Body temperatures below 90^{o} F require immediate treatment to restore temperatures to normal.

Treatment of Hypothermia. Current medical practice recommends slow rewarming as treatment for hypothermia, followed by professional medical care. This can be accomplished by moving the person into a sheltered area and wrapping with blankets in a warm room. In emergency situations where body temperature falls below 90^{o} F and heated shelter is not available, use a sleeping bag, blankets and/or body heat from another individual to help restore normal body temperature.

2.6 Other Physical Hazards

Trips/Falls. As with all field work sites, caution will be exercised to prevent slips on wet surfaces, stepping on sharp objects, etc. Work will not be performed on elevated platforms without fall protection.

Confined Spaces. Confined space entry is not anticipated for this project. Personnel will not enter any confined space without specific approval of the Project Manager and H&S Manager. In addition, no entry into a confined space will be attempted until the atmosphere of the confined space is properly tested and documented by the Field H&S Manager or designated representative and a self contained breathing apparatus is available on-site. A confined space entry permit must also be issued and followed. All specified precautions must be carefully followed, including upgrading of personal protective equipment as directed by the Field H&S Manager or designated representative.

Noise. Appropriate hearing protection (ear muffs or ear plugs) will be used if high noise levels are generated. High noise is determined by having difficulty hearing or conversing in a normal tone of voice.

2.7 Hazard Analysis and Applicable Safety Procedures by Task

Drilling. Drilling activities will be conducted with appropriate splash protection as discussed under personnel protective equipment requirements. Noise protection must also be available and used whenever drilling activities are in progress. In addition, exclusion zones will be established for worker protection as discussed below.

Atmosphere Testing/Conditioning for Soil Borings. The following procedures are designed to address the atmosphere testing/conditioning procedures necessary for soil borings which may involve release of flammable and/or toxic gases .

1. If gas or vapor venting occurs from a soil boring or other source, immediately position upwind from the source. If necessary, use respiratory protection as discussed below.

   If the odor of natural gas is detected or if it is suspected that a pipeline has been hit, immediately stop work, evacuate the area, and contact the proper authorities.

2. Always keep the following points in mind when soil venting or other release of gas or vapor occurs:

   - Never work in an area which is above 10% of the combustible gas LEL or above the hydrogen sulfide warning limit, as discussed below.

   - Never continue to work in an area, even if LEL and hydrogen sulfide tests are acceptable, if you begin to notice strange odors or symptoms of overexposure (such as dizziness, nausea, tearing of the eyes, etc.). If this occurs, always stop work and evacuate the area pending further evaluation.

3. If natural gas or other pipeline material is not involved and the venting continues, stop work and perform appropriate testing using a combustible gas/hydrogen sulfide gas monitor (e.g., MSA 361 or equivalent). Proceed as follows:

   - If testing indicates no hazard, resume work and continue periodic testing.

- If testing indicates combustible gases present below 10% of the LEL, verify the absence of hydrogen sulfide and resume work with continued monitoring. If vapors are detected in the work area, use fans or other means to disperse as appropriate. Consult with the H&S Manager to determine whether other types of testing may be required to verify that exposure levels are within acceptable limits. Use respiratory protection as necessary, based on testing results and other site-specific information.

- If testing indicates combustible gases present above 10% of the LEL, assume that an explosion hazard exists. Do not resume work until testing shows the hazard had been removed. In some cases, this may be accomplished by allowing the gas to dissipate by natural or fan-forced ventilation. It also may be necessary or useful to inert a well or boring by introducing nitrogen or carbon dioxide through a non-conductive line. Water or drilling mud may be used to replace air in some bore holes and thereby eliminate the explosion risk. Verify the absence of hydrogen sulfide and resume work only when testing shows the explosion hazard has been removed. Continue to test on a regular basis to ensure that the atmosphere remains inert.

- If testing indicates presence of hydrogen sulfide, apply the same ventilation or inerting procedures as described above. Do not work in areas where the hydrogen sulfide concentration is above the applicable exposure level (the Washington State PEL-TWA for hydrogen sulfide is 10 ppm, with STEL of 15 ppm) without appropriate respiratory protection (supplied air). Resume work only when testing shows that the exposure level is within acceptable limits. Continue to monitor on a regular basis to ensure that the atmosphere remains safe.

4. Prior to any welding, cutting, or other hot work at the borehole, test the borehole atmosphere with a CGM. If the work area atmosphere exceeds 10 % LEL, do not proceed with the work until engineering controls can be implemented and the hot work area atmosphere reduced to below 10 % LEL. Test the work area continuously during hot work to ensure safe conditions for the duration of the work. Full-face shield welding masks will be worn during any welding or cutting at the borehole.

3.0 PROTECTIVE EQUIPMENT

In this plan, Level D is presented as a protection level, incorporating respiratory or skin contact protection only where required by site conditions or as specified under the previous discussion. Situations requiring Level A or B protection are not anticipated for this project. Should they occur, work will stop and the H&S Plan will be amended as required prior to resuming work

3.1 Level D Activities

Workers performing general site activities where skin contact with free product or contaminated materials is not likely and inhalation risks are not expected will wear regular work clothes, regular or polyethylene coated Tyvek coveralls if needed, eye protection and hard hat (as required) nitrile or neoprene coated work gloves (as required), and safety boots.

Workers performing site activities where skin contact with free product or contaminated materials is possible will wear chemical-resistant gloves (nitrile, neoprene, or other appropriate outer gloves, surgical inner gloves) and saranex or polyethylene coated Tyvek or other chemically-resistant suit. Make sure the protective clothing and gloves are suitable for the types of chemicals which may be encountered on site. Use face shields or goggles as necessary to avoid splashes in the eyes or face.

3.2 Level C Activities

Upgrading to Level C will occur if inhalation and skin contact hazards exist. Level C will consist of Level D equipment plus air purifying respirators (APRs) with organic vapor cartridges, surgical inner gloves, Nitrile outer gloves, rubber work boots or rubberized overboots, and saranex or polyethylene-coated Tyvek or other chemically-resistant suit. If inhalation hazards exist without skin contact hazards, a modified level D protection level can be used, consisting of level D protection plus APRs.

The following conditions must be met prior to any respirator use:

- Employee must be certified fit to use a respirator by the occupational physician, at least annually.
- Employee must be trained in proper respirator use, maintenance, selection, and limitations.
- Employee must have a current fit test for the respirator being used.
- Respirator must be in proper working order and inspected before use.
- In the event a positive pressure, supplied air breathing apparatus or positive pressure respirator becomes necessary, individual instructions detailing the need, use and limitations of these systems will be provided by the H&S officer.

An air purifying respirator (APR) should be used only if:

- Contaminants are known and measurable with proper monitoring equipment. APRs will not offer protection from hydrogen sulfide (H_2S), hydrogen cyanide (HCN), carbon monoxide (CO), other toxic gases, and oxygen deficient atmospheres.
- Contaminant has adequate warning properties.

- Concentrations are < IDLH (immediately dangerous to life and health).
- Ambient atmosphere contains 19.5 - 23.5 percent oxygen.
- Concentrations are < maximum use limit of the cartridge.
- Appropriate and fresh cartridges are used.
- Air monitoring is continued during APR use.
- Concentrations are < PF x PEL or TLV (see below).

	PF
1/4 or 1/2 mask APR	10*
1/4 or 1/2 mask PD SCBA	10
1/4 or 1/2 mask supplied air	10
full face APR	100*
full face PD SCBA	100
PP SCBA / supplied air	100

PF - Protection factor
PEL - Permissible exposure limit
TLV - Threshold limit value
SCBA - Self contained breathing apparatus
PD - Pressure demand
PP - Positive pressure
* or maximum use limit of cartridge, whichever is less

- If any of the following danger signals are sensed while using the respirator, immediate evacuation to fresh air is compulsory (the cartridge or filter may be spent and abnormal conditions may create vapor concentrations which are beyond the limit of the respirator):

    a. Smell or taste of chemicals.
    b. Irritation of the eyes, nose and/or throat.
    c. Difficulty in breathing.
    d. Temperature elevation of inspired air.
    e. Loss of equilibrium, nausea, and/or dizziness.

- Positive and negative pressure tests should be performed each time a respirator is used, and intermittently during use.
- Before and after entering an area of known exposure, cartridges should be discarded and replaced. If there is no known exposure, the maximum life of a cartridge is 15 working days, as long as preventative maintenance techniques are observed.

4.0 SAFETY EQUIPMENT LIST

The following Safety Equipment must be available on site:

- First Aid Kit
- Mobile Telephone
- Half or full face APR - Organic Vapor/HEPA Cartridge (MSA GMA or equivalent) or Combination Cartridge (MSA GMC-H or equivalent)

- Hard Hat
- Tyvek Coveralls/Polyethylene coated Tyvek Coveralls
- PVC (or similar) Rain suit
- Safety Boots (Steel-toe and shank)
- Nitrile Outer Gloves/Latex Inner Gloves
- Hearing protection

5.0 EXCLUSION AREAS

If migration of chemicals from the work area is a possibility, or as otherwise required by regulations or client specifications, site control will be maintained by establishing clearly identified work zones. These will include the exclusion zone, contaminant reduction zone, and support zone, as discussed below.

5.1 Exclusion Zone

Exclusion zones will be established as needed around each hazardous waste activity location. Only persons with appropriate training and authorization from the Field H&S Manager will enter this perimeter while work is being is being conducted there. Traffic cones, barrier tapes, and warning signs will be used as necessary to establish the zone boundary. Plastic stanchions or temporary fencing will be placed as required to prevent unauthorized access to within 10 feet from the sides of open excavations.

5.2 Contamination Reduction Zone

A contamination reduction zone will be established as needed just outside each temporary exclusion zone to decontaminate equipment and personnel as discussed below. This zone will be clearly delineated from the exclusion zone and support zone using the means noted above. Care will be taken to prevent the spread of contamination from this area.

5.3 Support Zone

A support zone will be established as needed outside the contamination reduction area to stage clean equipment, don protective clothing, take rest breaks, etc. This zone will be clearly delineated from the contaminant reduction zone using the means noted above.

6.0 MINIMIZATION OF CONTAMINATION

In order to make the work zone procedure function effectively, the amount of equipment and personnel allowed in contaminated areas must be minimized. In addition, the amounts of soil, water, or other media collected should not exceed what is needed for typical laboratory analysis. Do not kneel on contaminated ground, stir up unnecessary dust, or perform any practice that increases the probability of hand-to-mouth transfer of contaminated materials. Use plastic drop cloths and equipment covers where appropriate. Eating, drinking, chewing gum, smoking or using smokeless tobacco are forbidden in the exclusion and contamination reduction zones.

7.0 DECONTAMINATION

Decontamination is necessary to limit the migration of contaminants from the work zone(s) onto the site or from the site into the surrounding environment. Equipment and personnel decontamination are discussed in the following sections, and the following types of equipment may be used to perform these activities:

- Boot and Glove Wash Bucket
- Scrub Brushes - Long Handled
- Spray Rinse Applicator
- Plastic Garbage Bags
- 5-Gallon Container with Alconox Decontamination solution or household detergent and water.

7.1 Equipment Decontamination

Proper decontamination (decon) procedures will be employed to ensure that contaminated materials do not contact individuals and are not spread from the site. These procedures will also ensure that contaminated materials generated during site operations and during decontamination are managed appropriately.

All non-disposable equipment will be decontaminated in the contamination reduction zone. Prior to demobilization, all contaminated portions of heavy equipment should be thoroughly cleaned. Heavy equipment may require steam cleaning. Soil and water sampling instruments should be cleaned with detergent solutions in buckets.

7.2 Personnel Decontamination

If contamination of personnel or PPE is observed or suspected, personnel working in exclusion zones will perform a mini-decontamination in the contamination reduction zone prior to changing respirator cartridges (if worn), taking rest breaks, drinking liquids, etc. They will decontaminate fully before eating lunch or leaving the site. The following describes the procedures for mini-decon and full decon activities.

Mini-decon procedure:

1. In the contamination reduction zone, wash and rinse outer gloves and boots in buckets.
2. Inspect protective outer suit, if worn, for severe contamination, rips or tears.
3. If suit is highly contaminated or damaged, full decontamination as outlined below will be performed.

4. Remove outer gloves. Inspect and discard if ripped or damaged.
5. Remove respirator (if worn) and clean using premoistened towelettes. Deposit used cartridges in plastic bag.
6. Replace cartridges and outer gloves, and return to work.

Full decontamination procedure:

1. In the contamination reduction zone, wash and rinse outer gloves and boots in buckets.
2. Remove outer gloves and protective suit and deposit in labeled container for disposable clothing.
3. Remove respirator, and place used respirator cartridges (if end of day) in container for disposable clothing.
4. If end of day, thoroughly clean and dry respirator then store properly in a sealed container.
5. Remove inner gloves and discard into labeled container for disposable clothing.
6. Remove work boots without touching exposed surfaces, and put on street shoes. Put boots in individual plastic bag for later reuse.
7. Immediately wash hands and face using clean water and soap.
8. Shower as soon after work shift as possible.

8.0 DISPOSAL OF CONTAMINATED MATERIALS

All disposable sampling equipment and materials will be placed inside two plastic bags or other appropriate containers and placed in storage as directed by the client.

9.0 SITE SECURITY AND CONTROL

Site security and control will be the responsibility of the Project Manager, The "buddy-system" will be used when working in designated hazardous areas. Any security or control problems will be reported to appropriate authorities.

10.0 SPILL CONTAINMENT

Sources of bulk chemicals subject to spillage are not expected to be encountered in this project. Accordingly, a spill containment plan should not be needed for this project. The only chemicals likely to be on site are vehicle fuels kept in the vehicles. In the event of a spill, if it is safe to do so, personnel will put absorbent materials onto the spilled material and keep it from entering drains or water bodies. If the spill is large and a potential safety or environmental hazard personnel will call 911 as soon as possible. Only properly trained personnel will respond to an emergency or to a spill larger or more serious than what can easily be wiped up.

11.0 EMERGENCY RESPONSE PLAN

The HWA Emergency Response Plan outlines the steps necessary for appropriate response to emergency situations. The following paragraphs summarize the key Emergency Response Plan procedures for HWA projects.

11.1 Plan Content and Review

The principal hazards addressed by the Emergency Response Plan include the following: fire or explosion, medical emergencies, uncontrolled contaminant release, and situations such as the presence of chemicals above exposure guidelines or inadequate protective equipment for the hazards present. However, in order to help anticipate potential emergency situations, field personnel shall always exercise caution and look for signs of potentially hazardous situations, including the following as examples:

- visible or odorous chemical contaminants;
- drums or other containers;
- general physical hazards (traffic, moving equipment, sharp or hot surfaces, slippery or uneven surfaces, etc.);
- possible sources of radiation;
- live electrical wires or equipment;
- underground pipelines or cables; and
- poisonous plants or dangerous animals

These and other problems should be anticipated and steps taken to avert problems before they occur.

The Emergency Response Plan shall be reviewed and rehearsed, as necessary, during the on-site health and safety briefing. This ensures that all personnel will know what their duties shall be if an actual emergency occurs.

11.2 Plan Implementation

The Field H&S Manager shall act as the lead individual in the event of an emergency situation and evaluate the situation. He/she will determine the need to implement the emergency procedures, in concert with other resource personnel including client representatives, the Project Manager, and the Corporate H&S Manager. Other on-site field personnel will assist the Manager as required during the emergency.

In the event that the Emergency Response Plan is implemented, the Field H&S Manager or designee is responsible for alerting all personnel at the affected area by use of a signal device (such as a hand-held air horn) or visual or shouted instructions, as appropriate.

Emergency evacuation routes and safe assembly areas shall be identified and discussed in the on-site health and safety briefing, as appropriate. The buddy-system will be employed during evacuation to ensure safe escape, and the Field H&S Manager shall be responsible for roll-call to account for all personnel.

11.3 Emergency Response Contacts

Site personnel must know whom to notify in the event of Emergency Response Plan implementation. The following information will be readily available at the site in a location known to all workers:

- Emergency Telephone Numbers -- see list at the beginning of this plan;
- Route to Nearest Hospital -- see list at the beginning of this plan and route map at the end of this plan;
- Site Descriptions -- see the description at the beginning of this plan; and
- If significant environmental release of contaminants occurs, the federal, state, and local agencies noted in this plan must be immediately notified. If the release to the environment includes navigable waters also notify:

National Response Center	(800) 424-8802
EPA	(908) 321-6660

In the event of an emergency situation requiring implementation of the Emergency Response Plan (fire or explosion, serious injury, tank leak or other material spill, presence of chemicals above exposure guidelines, inadequate personnel protection equipment for hazards present, etc.), cease all work immediately. Offer whatever assistance is required, but do not enter work areas without proper protection equipment. Workers not needed for immediate assistance will decontaminate per normal procedures (if possible) and leave work area, pending approval by the Field Safety Manager for re-start of work. The following general emergency response safety procedures should be followed.

11.4 Fires

HWA personnel will attempt to control only very small fires if the person is comfortable doing so and only after 911 has been called. If an explosion appears likely, evacuate the area immediately. If a fire occurs which cannot be controlled, then immediate intervention by the local fire department or other appropriate agency is imperative. Use these steps:

- Evacuate the area to a previously agreed upon, upwind location
- Contact fire agency identified in the site specific plan; and
- Inform Project Manager or Field H&S Manager of the situation.

11.5 Medical Emergencies

Contact the agency listed in the site-specific plan if the medical emergency occurs. If a worker leaves the site to seek medical attention, another worker should accompany the patient. When in doubt about the severity of an accident or exposure, always seek medical attention as a conservative approach. Notify the Project Manager of the outcome or the medical evaluation as soon as possible. For minor cuts and bruises, an on-site first aid kit will be available.

- If a worker is seriously injured or becomes ill or unconscious, immediately request assistance from the emergency contact sources noted in the site-specific plan. Do not attempt to assist an unconscious worker in a confined space without applying confined space entry procedures. Do not attempt to assist an unconscious worker in an untested or known dangerous atmosphere area without using proper respiratory protection.

- In the event that a seriously injured person is also heavily contaminated, use clean plastic sheeting to prevent contamination of the inside of the emergency vehicle. Less severely injured individuals may also have their protective clothing carefully removed or cut off before transport to the hospital.

11.6 Uncontrolled Contaminant Release

In the event of a tank rupture or other material spill, attempt to stop and contain the flow of material using absorbents, booms, dirt, or other appropriate material, if it is safe to do so. Prevent migration of liquids into streams or other bodies of water by building trenches, dikes, etc. Drum the material for proper disposal or contact a spill removal firm for material cleanup and disposal, as required. Observe all fire and explosion precautions while dealing with spills.

11.7 Potential Chemical Exposure/Inadequate PPE

In some emergency situations, workers may encounter a localized work area where exposure to previously unidentified chemicals could occur. A similar hazard includes the situation where chemicals are present above permissible exposure levels and or/above the levels suitable for the personnel protective equipment at hand on-site. If these situations occur, immediately stop work and evacuate the work area. Do not reenter the area until appropriate help is available and/or appropriate personnel protective equipment is obtained. Do not attempt to rescue a downed worker from such areas without employing confined space entry procedures. Professional emergency response assistance (fire department, HAZMAT team, etc.) may be necessary to deal with this type of situation.

11.8 Other Emergencies

Depending on the type of project, other emergency scenarios may be important at a specific work site. These scenarios will be considered as part of the site-specific plan and will be discussed during the on-site safety briefing, as required.

11.9 Plan Documentation and Review

The Field H&S Manager will notify the Project H&S Manager as soon as possible after the emergency situation has been stabilized. The Project Manager or H&S Manager will notify the appropriate client contacts, and regulatory agencies, if applicable. If an individual is injured, the Field H&S Manager or designate will file a detailed Accident Report with the Corporate H&S Manager within 24 hours.

The Project Manager and the Field, Project, and Corporate H&S Managers will critique the emergency response action following the event. The results of the critique will be used in follow-up training exercises to improve the Emergency Response Plan.

12.0 MEDICAL SURVEILLANCE

A medical surveillance program has been instituted for HWA employees having exposure to hazardous substances. Exams are given before assignment, annually thereafter, and upon termination. Content of exams is determined by the Occupational Medicine physician in compliance with applicable regulations and is detailed in the General H&S Plan.

Each team member will have undergone a physical examination as noted above in order to verify that he/she is physically able to use protective equipment, work in hot environments, and not be predisposed to occupationally-induced disease. Additional exams may be needed to evaluate specific exposures or unexplainable illness.

13.0 TRAINING REQUIREMENTS

HWA employees who perform site work must understand potential health and safety hazards. All employees potentially exposed to hazardous substances, health hazards, or safety hazards will have completed 40 hours of off-site initial hazardous materials health and safety training or will possess equivalent training by past experience. They will also have a minimum of three days of actual field experience under the direct supervision of a trained supervisor. All employees will have in their possession evidence of completing this training. Employees will also complete annual refresher, supervisor, and other training as required by applicable regulations.

Prior to the start of each work day, the Field H&S Manager will review applicable health and safety issues with all employees and subcontractors working on the site, as appropriate. These briefings will also review the work to be accomplished, with an opportunity for questions to be asked.

14.0 REPORTING, REPORTS, AND DOCUMENTATION

HWA staff will sign the Acknowledgment of Understanding (Attachment 1), which will be kept on site during work activities and recorded in the project files. The Daily Safety Meeting Checklist (Attachment 2) will also be completed daily by the HWA Field Representative. In the event that accidents or injuries occur during site work, the Health and Safety Manager and the client shall be immediately notified.

Attachment 1

Employee Acknowledgment Form

February 28, 2011
Project 2007-098-929

HWA GeoSciences Inc.
EMPLOYEE ACKNOWLEDGMENT FORM

To be Executed by HWA GeoSciences Inc. Employees Following Their Review of:

Remedial Investigation
Health and safety plan
Bothell landing site
Bothell, WA

Health and Safety Plan

I hereby certify that I have read and understand the health and safety guidelines contained in the above referenced plan.

Employee Name: ____
Employee Signature: __________________________ Date: ___________________

In case of emergency, please contact:

1. Name: ____________________Relationship: _________ Telephone No.: __________

2. Name: ____________________Relationship: _________ Telephone No.: __________

Received By: ____

Site Safety Manager: ____

Signature: ________________________________ Date: _________________________

Attachment 2

Daily Safety Meeting Checklist

Daily Safety Meeting Checklist

_______________________________   ____________
Site Safety Manager   Date

Attendee Signatures:

Print Name___________________   Print Name___________________
Signature_____________________   Signature_____________________

Print Name___________________   Print Name___________________
Signature_____________________   Signature_____________________

Print Name___________________   Print Name___________________
Signature_____________________   Signature_____________________

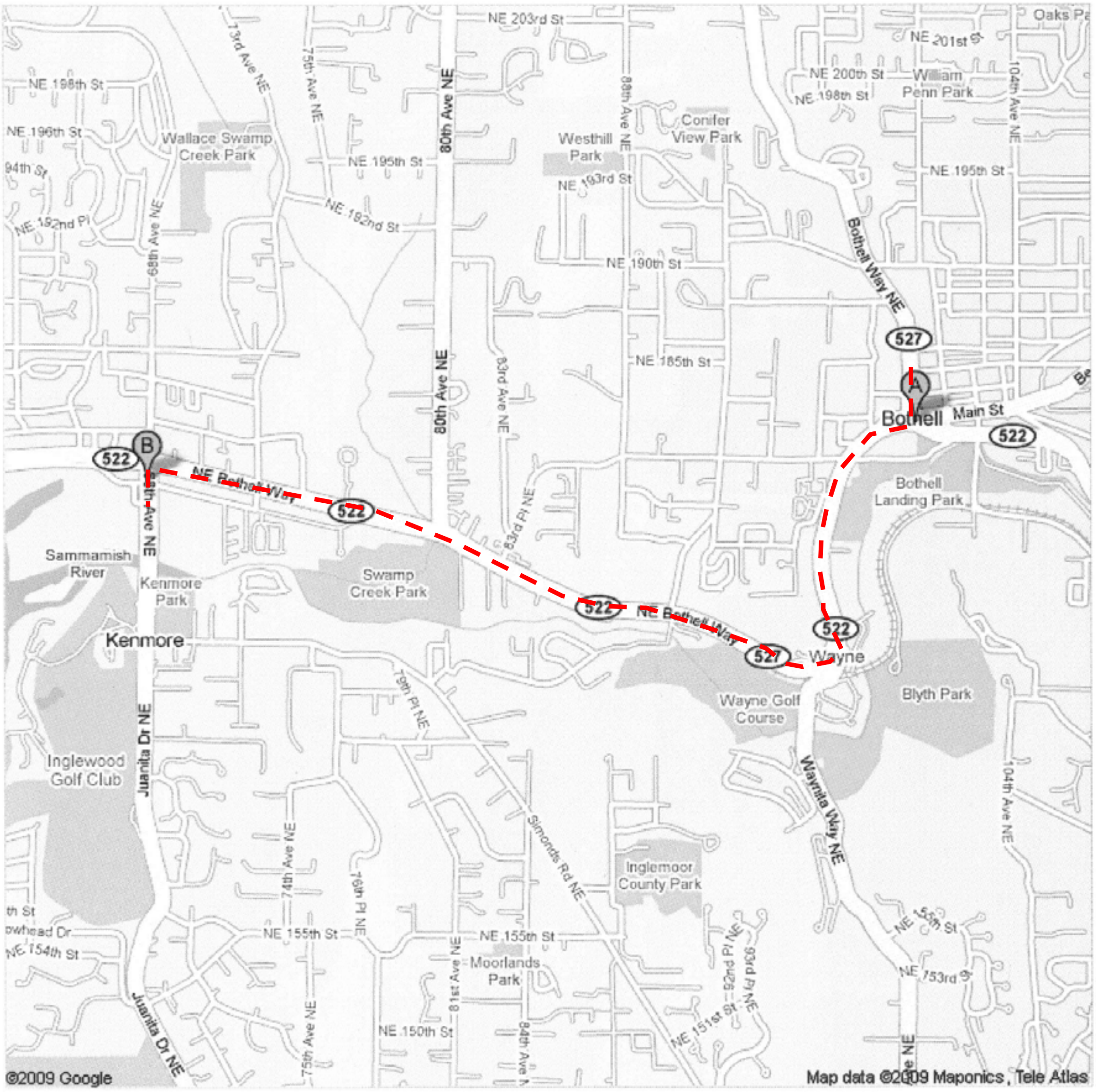
Print Name___________________   Print Name___________________
Signature_____________________   Signature_____________________

Meeting Topics

Topic	**Site Safety manager Initials**
Days planned work activities	
Site hazards	
Route to hospital	
Safety equipment and equipment operation	
Review assigned duties	
Confirm review of HSP	
Review site action levels	

Google Maps

Directions to 17511 68th Ave NE, Kenmore, WA 98028
2.8 mi – about **6 mins**



(A) 10001 Woodinville Dr, Bothell, WA 98011

522	1. Head **southeast** on **WA-522/Woodinville Dr** toward **NE 180th St**	go 492 ft total 492 ft
↱	2. Turn **right** at **NE 180th St** About 1 min	go 0.3 mi total 0.4 mi
522	3. Turn **left** at **NE Bothell Way/WA-522/WA-527** Continue to follow NE Bothell Way/WA-522 About 5 mins	go 2.4 mi total 2.8 mi
↰	4. Turn **left** at **68th Ave NE** Destination will be on the right	go 308 ft total 2.8 mi

(B) 17511 68th Ave NE, Kenmore, WA 98028

APPENDIX B

BORING LOGS

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)
- 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 GEOSCIENCES INC.

Bothell Landing
Bothell, Washington

LEGEND OF TERMS AND SYMBOLS USED ON EXPLORATION LOGS

PROJECT NO.: 2007-098-998 FIGURE: A-1

Boring Log B1

Other Tests	Sample No.	Moisture Content (%)	Dry Density (pcf)	PID (ppm) [reading/background]	Penetration Resistance (blows / 6 in.)	Depth (feet)	Sample	USCS	Symbol	DESCRIPTION	Elev. (feet)
						0				8" Asphalt.	
										8" Concrete.	
				0.5		2				Silty SAND (SM), olive-gray, with fine to coarse gravel (20%), rounded, diam. 1/4-1", medium dense, moist.	
	B1-6					4					
				0.8		6					
	B1-W					8 ▽		SM		Decreasing gravel (5-10%), becomes wet.	
				0.9		10					
						12					
						14				Boring terminated at 14 ft bgs. Groundwater encountered at 8 ft bgs.	
						16					
						18					
						20					

Station: ____
Surface Elevation: ____
Logged By: AW

Drill Rig: DPT
Equipment/Hammer: Continuous Core/
Date Completed: 4-6-09

King County
Bothell Crossroads Redevelopment Project
Bothell, Washington

Boring Log B1 — Figure: A-2
Project No: 19897.68445

CDM

Boring Log B2

Other Tests	Sample No.	Moisture Content (%)	Dry Density (pcf)	PID (ppm) [reading/background]	Penetration Resistance (blows / 6 in.)	Depth (feet)	Sample	USCS	Symbol	DESCRIPTION	Elev. (feet)
						0				8" Asphalt.	
										8" Concrete. Empty steel pipe in concrete at 13-14 inches bgs.	
						2		SM		Silty SAND (SM), tan, with fine gravel (20%).	
						4		ML		Sandy SILT (ML), black, some organic material (rootlets), moist (Marsh Deposit).	
						6		SM		Silty SAND (SM), tan, medium dense, wet, odor.	
	B2-7 B19-7										
						8 ∇				Becomes saturated.	
	B2-W B19-W										
						10					
						12				Boring terminated at 12 ft bgs. Groundwater encountered at 8 ft bgs.	
						14					
						16					
						18					
						20					

Station:
Surface Elevation:
Logged By: AW

Drill Rig: DPT
Equipment/Hammer: Continuous Core/
Date Completed: 4-2-09

King County
Bothell Crossroads Redevelopment Project
Bothell, Washington

CDM

Boring Log B2
Project No: 19897.68445
Figure: A-3

Boring Log B3

Other Tests	Sample No.	Moisture Content (%)	Dry Density (pcf)	PID (ppm) [reading/background]	Penetration Resistance (blows / 6 in.)	Depth (feet)	Sample	USCS	Symbol	DESCRIPTION	Elev. (feet)
						0				8" Asphalt.	
										8" Concrete.	
						2		SM		Silty SAND (SM), tan, with gravel (20%), medium dense, moist.	
										Becomes black, odor.	
						4					
										No recovery.	
						6		ML		Sandy SILT (ML), black, stiff, wet, odor (Marsh Deposit).	
						8					
	B3-9										
						10				Decreasing organics.	
						▽				Increasing sand, becomes saturated.	
										Decreasing sand, increasing silt.	
						12					
						14				Boring terminated at 14 ft bgs. Groundwater encountered at 11 ft bgs.	
						16					
						18					
						20					

Station:
Surface Elevation:
Logged By: AW

Drill Rig: DPT
Equipment/Hammer: Continuous Core/
Date Completed: 4-3-09

King County
Bothell Crossroads Redevelopment Project
Bothell, Washington

Boring Log B3 — Figure: A-4
Project No: 19897.68445

CDM

Boring Log B7

Other Tests	Sample No.	Moisture Content (%)	Dry Density (pcf)	PID (ppm) [reading/background]	Penetration Resistance (blows / 6 in.)	Depth (feet)	Sample	USCS	Symbol	DESCRIPTION	Elev. (feet)
										8" Asphalt.	
										8" Concrete.	
						2				Silty SAND (SM), yellow-red, with gravel (15%), gravel is subangular, medium dense, moist.	
				0.6		4				Increasing density, gravel becomes rounded.	
						6		SM			
				0.8		8				Decreasing gravel, sand becomes medium grained, becomes wet.	
	B7-9			0.8							
						▽10				Becomes saturated at 10 ft bgs.	
										SILT (ML), light gray, stiff, wet.	
						12		ML			
						14					
										Boring terminated at 14 ft bgs. Groundwater encountered at 10 ft bgs.	
						16					
						18					
						20					

Station:

Surface Elevation:

Logged By: AW

Drill Rig: DPT

Equipment/Hammer: Continuous Core/

Date Completed: 4-1-09

King County
Bothell Crossroads Redevelopment Project
Bothell, Washington

Boring Log B7 Figure: A-5

Project No: 19897.68445

CDM

DRILLING COMPANY: Holocene Drilling
DRILLING METHOD: Hollow-Stem Auger, Mobile B-61 truck rig
SAMPLING METHOD: SPT with Autohammer
LOCATION: See Figure 2

SURFACE ELEVATION: 39.00 ± feet
CASING ELEVATION ± feet

DATE STARTED: 6/4/2008
DATE COMPLETED: 6/4/2008
LOGGED BY: J. Speck

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)
0	SM	Surface comprised of approximately 5 inches of concrete (sidewalk). Loose, dark brown to gray, gravelly, silty fine to medium SAND with gravel, moist. Some cobbles near surface. **(FILL)**	S-1	2-2-1		0.2
5	ML	Very soft to stiff, olive gray to gray, very sandy SILT, moist to wet. **(ALLUVIUM)** Trace decomposing wood near 5 feet below ground surface (bgs). Olive gray to brown in sample at 7.5 feet bgs. Some lenses of fine to medium sand. One inch lense sandy silt with oxidation staining at 8.8 feet bgs.	S-2 S-3	0-1-1 2-3-6	GS	0.2 0.2
10	SP	Medium dense, gray, gravelly, fine to coarse SAND, wet. **(RECESSIONAL OUTWASH)** Washed appearance noted in sample at 10'.	S-4	7-13-7		0.2
	SM	Medium dense, yellow brown, silty, fine SAND, wet. Some coarse sand near bottom of sample at 12.5 feet bgs.	S-5	4-7-6		0.2
15	SP SM	Loose to dense, yellow brown to olive brown, slightly silty, fine SAND, wet. Two one inch lenses of sandy silt near 16 feet bgs. Lenses of olive gray, silty, fine sand and yellow brown, fine to coarse sand noted in sample at 17.5 feet bgs.	S-6 S-7	0-1-1 6-10-12		0.2 0.2
20	SP SM	Dense, yellow brown to olive brown, fine gravelly, slightly silty to silty fine to medium SAND, wet. **(ADVANCE OUTWASH)** Oxidation stains at 18.8' below ground surface.	S-8	5-15-19		0.2

Exploration completed at 21.5 feet below ground surface.

Ground water noted at 10 feet below ground surface during exploration. Ground water noted at 4.78 below ground surface on 06/09/08.

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 Crossroads
Bothell, Washington

MONITORING WELL:
BB- 2

PAGE: 1 of 1

PROJECT NO.: 2007-098-998 FIGURE: A-6

MWELL 2007-098-LANDING.GPJ 4/6/15

DRILLING COMPANY: ESN Northwest
DRILLING METHOD: Truck-mounted GeoProbe
SAMPLING METHOD: HDPE-lined Macrocore sampler
LOCATION: See Figure 2

SURFACE ELEVATION: 39.30 ± feet
CASING ELEVATION ± feet

DATE STARTED: 1/5/2009
DATE COMPLETED: 1/5/2009
LOGGED BY: J. Speck

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE NUMBER	OTHER TESTS	NOTES
0		Four inches of concrete.	S-1		
	SP	Yellow brown, fine to medium SAND, moist. Trace gravel. **(FILL)**	S-2		
	SM	Dark brown, gravelly, silty, fine to medium SAND, wet. Scattered cobbles noted. **(ALLUVIUM)** Color grades to dark yellow brown at 4 feet. Ground water observed at 5 feet below ground surface.	S-3		
5	SM	Gray, very silty, fine SAND, moist to wet. Interbedded with lenses of dark brown peat (less than 2 inches thick) in sample from 6 to 8 feet below ground surface.	S-4	GS	∇
	SM	Gray, very silty, fine SAND, moist to wet. **(RECESSIONAL OUTWASH)**	S-5		
10			S-6		
15					

Boring completed at 12 feet below ground surface.
Ground water encountered at 5.0 feet bgs.

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 Crossroads
Bothell, Washington

GEOPROBE:
BI- 3

PAGE: 1 of 1

PROJECT NO.: 2007-098-998 FIGURE: A-7

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 Landing property, adj. to Horse Creek culvert

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 9/4/2009
DATE COMPLETED: 9/4/2009
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)
0			ASPHALT							Cement surface seal and flush mount monument	0
		SM	Brown silty SAND and GRAVEL (FILL), dry grading moist.							2-inch Sch. 40 PVC casing	
										Hydrated bentonite seal	
										#2/12 filter sand	
5			Medium dense gray to brown silty SAND with gravel (FILL), moist grading wet.	▪		3/4/6		0		2-inch Sch. 40 PVC 10-slot screen	5
										⊽	
			Encounter large debris or foundation at 7.5 feet bgs. Move boring twice to avoid.								
10			Loose dark brown silty SAND, trace wood, wet.	▪		11/5/2		0			10
			Boring completed to 11.5 feet bgs. Ground water encountered at 7 feet bgs. Boring completed as monitoring well.								
15											15
20											20
25											25
30											30

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 Crossroads
Bothell, Washington

MONITORING WELL:
BLMW-5

PAGE: 1 of 1

PROJECT NO.: 2007-098-998 FIGURE: A-8

MWELL 2007-098-LANDING.GPJ 4/6/15

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 Landing property, west-central property

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 9/4/2009
DATE COMPLETED: 9/4/2009
LOGGED BY: V. Atkins

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)	NOTES
0		ASPHALT						Cement surface seal and flush mount monument
	SM	Brown silty SAND with gravel (FILL), dry grading moist.						2-inch Sch. 40 PVC casing
		Medium dense gray silty SAND with wood fragments, moist.	■		9/9/11		-	Hydrated bentonite seal
								#2/12 filter sand
5		As above, grading wet.	■		4/2/2		-	2-inch Sch. 40 PVC 10-slot screen
	OL	Dark brown organic SILT with peat fragments.						
	ML	Soft gray with yellow-orange mottling fine sandy SILT with peat seams, moist grading wet.						
	SM	Loose gray silty fine SAND with silt interbeds, trace peat and wood fragments, wet.	■		2/3/3		-	
10		Medium dense gray fine SAND with silt interbeds, wet.	■		5/8/13		-	
15		Dense gray silty SAND with wood fragments, wet.	■		20/24/18		-	

Boring completed to 16.5 feet bgs.
Ground water encountered at 6 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 Crossroads
Bothell, Washington

MONITORING WELL:
BLMW-6

PAGE: 1 of 1

PROJECT NO.: 2007-098-998 FIGURE: A-9

DRILLING COMPANY: Environmental Drilling Inc.
DRILLING METHOD: HSA
SAMPLING METHOD: SPT-18 Inches
LOCATION:

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 8/25/2014
DATE COMPLETED: 8/25/2014
LOGGED BY: K. Stilson

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)	NOTES
0		Concrete Slab					Cement surface seal and flush mount monument
	SM	Brown, fine to medium silty SAND, with gravel (FILL), dry, poorly graded.					2-inch Sch. 40 PVC casing; Hydrated bentonite seal; Filter sand
5			S-1	5-5-5			2-inch Sch. 40 PVC 0.010" slot screen
	ML	Soft, gray with yellow, fine sandy SILT, with peat seams, moist.					
	SM	Loose to dense, silty SAND, with wood fragments, wet.					
10			S-2	4-7-19			∇
15			S-3	4-9-12			

Boring completed to 16.5 feet bgs.
Groundwater encountered at 11 feet.
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 Crossroads
Bothell, Washington

MONITORING WELL:
BLMW-6R

PAGE: 1 of 1

PROJECT NO.: 2007-098-998 FIGURE: A-10

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 Landing property, adj. to Horse Creek culvert

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 9/4/2009
DATE COMPLETED: 9/4/2009
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)
0			ASPHALT							Cement surface seal and flush mount monument	0
		GM	Brown silty GRAVEL (FILL), dry.								
		SM	Loose brown silty SAND with gravel (FILL), dry grading moist.							2-inch Sch. 40 PVC casing	
										Hydrated bentonite seal	
										#2/12 filter sand	
5			As above, moist grading wet.	■		4/4/4		0.9		2-inch Sch. 40 PVC 10-slot screen	5
10			Medium dense brown silty SAND with gravel, wet.	■		6/7/4		0			10
		OL	Medium stiff dark brown organic SILT with gray medium sand interbeds and peat fragments, wet.								
			Boring completed to 11.5 feet bgs. Ground water encountered at 6 feet bgs. Boring completed as monitoring well.								
15											15
20											20
25											25
30											30

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 Crossroads
Bothell, Washington

MONITORING WELL:
BLMW-7

PAGE: 1 of 1

PROJECT NO.: 2007-098-998 FIGURE: A-11

MWELL 2007-098-LANDING.GPJ 4/6/15

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 Landing property, northwest property

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 9/4/2009
DATE COMPLETED: 9/4/2009
LOGGED BY: V. Atkins

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)	WELL COMPLETION SCHEMATIC	NOTES
0		Brown silty TOPSOIL with roots.							Cement surface seal and flush mount monument
	SM	Brown silty medium SAND with gravel (FILL), dry.							2-inch Sch. 40 PVC casing
									Hydrated bentonite seal
									#2/12 filter sand
5		Medium dense brown silty SAND with root material, dry grading moist.	■		10/11/12		0		2-inch Sch. 40 PVC 10-slot screen
10		Medium stiff brown grading gray SILT with sand, moist grading wet.	■		3/4/5		0.2		
15		Medium stiff brown sandy SILT, wet.	■		6/11/22		0		
20		Stiff brown sandy SILT, wet.	■		26/50-6"		0		

Boring completed to 21.5 feet bgs.
Ground water encountered at 10 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 Crossroads
Bothell, Washington

MONITORING WELL:
BLMW-8

PAGE: 1 of 1

PROJECT NO.: 2007-098-998 FIGURE: A-12

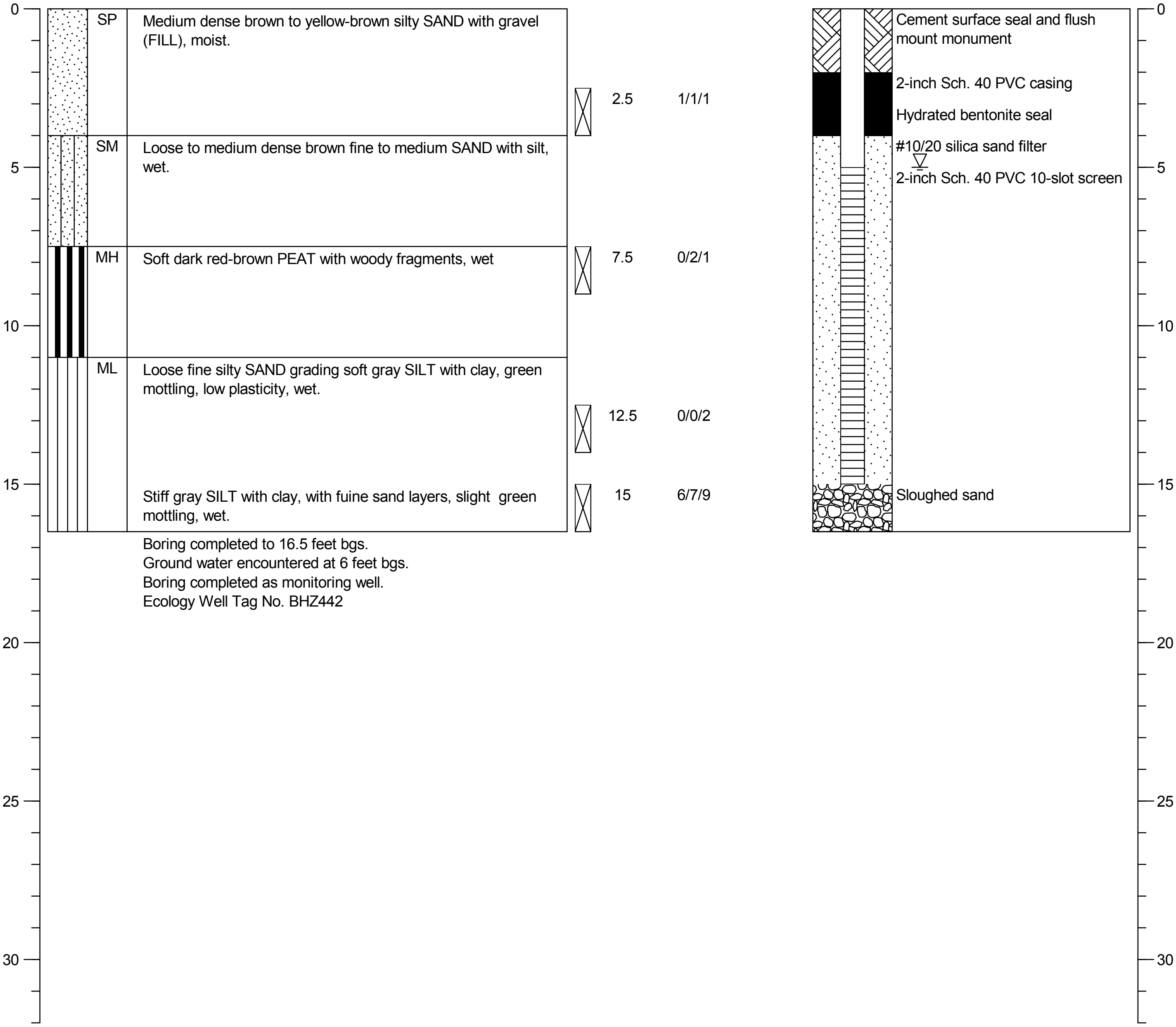
DRILLING COMPANY: Environmental Drilling Inc.
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Stainless steel split spoon
LOCATION: Bothell Landing property, north-central area

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 4/9/2014
DATE COMPLETED: 4/9/2014
LOGGED BY: V. Atkins

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)	NOTES
0	SP	Medium dense brown to yellow-brown silty SAND with gravel (FILL), moist.					Cement surface seal and flush mount monument
			2.5	1/1/1			2-inch Sch. 40 PVC casing
							Hydrated bentonite seal
	SM	Loose to medium dense brown fine to medium SAND with silt, wet.					#10/20 silica sand filter
5							2-inch Sch. 40 PVC 10-slot screen
	MH	Soft dark red-brown PEAT with woody fragments, wet	7.5	0/2/1			
10							
	ML	Loose fine silty SAND grading soft gray SILT with clay, green mottling, low plasticity, wet.					
			12.5	0/0/2			
15		Stiff gray SILT with clay, with fuine sand layers, slight green mottling, wet.	15	6/7/9			Sloughed sand

Boring completed to 16.5 feet bgs.
Ground water encountered at 6 feet bgs.
Boring completed as monitoring well.
Ecology Well Tag No. BHZ442



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 Crossroads
Bothell, Washington

MONITORING WELL:
BLMW-9

PAGE: 1 of 1

PROJECT NO.: 2007-098-998 FIGURE: A-13

DRILLING COMPANY: Environmental Drilling Inc.
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Stainless steel split spoon
LOCATION: Bothell Landing property, north-east area

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 4/9/2014
DATE COMPLETED: 4/9/2014
LOGGED BY: V. Atkins

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)	NOTES
0	SP	Medium dense brown to yellow-brown silty SAND with gravel (FILL), moist.	2.5	5/7/6			Cement surface seal and flush mount monument; 2-inch Sch. 40 PVC casing; Hydrated bentonite seal
4	SM	Loose to medium dense brown fine to medium SAND with silt, wet.	7.5	4/3/2			#10/20 silica sand filter; 2-inch Sch. 40 PVC 10-slot screen
8	MH	Soft dark red-brown PEAT with woody fragments, wet					
11	ML	Soft gray SILT with clay, low plasticity, wet.	12.5	0/3/4			
15		Stiff gray SILT with clay, slight orange mottling, wet.	15	8/10/22			Sloughed sand
16	SP	Medium-dense gray-brown SAND with fine gravel, orange oxidation, wet.					

Boring completed to 16.5 feet bgs.
Ground water encountered at 6 feet bgs.
Boring completed as monitoring well.
Ecology Well Tag No. BHZ441

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 Crossroads
Bothell, Washington

MONITORING WELL:
BLMW-10

PAGE: 1 of 1

PROJECT NO.: 2007-098-998 FIGURE: A-14

MWELL 2007-098-LANDING.GPJ 4/6/15

DRILLING COMPANY: Environmental Drilling Inc.
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Stainless steel split spoon
LOCATION: Bothell Landing property, south-west corner

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 1/13/2014
DATE COMPLETED: 1/13/2014
LOGGED BY: N.Nielsen

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)
0			Asphalt							Cement surface seal and flush mount monument	0
		GP	Loose, well graded brown gravelly silty SAND fill, moist								
		SP	Very loose gray-brown fine poorly graded SAND, slightly silty, slightly gravelly, moist							Hydrated bentonite seal	
					1	0-0-4		0		2-inch Sch. 40 PVC casing	
										#10/20 silica sand filter	
5											5
										2-inch Sch. 40 PVC 10-slot screen	
					2	0-1-1		0			
10			Grades to wet							▽	10
					3	0-1-1		0			
15											15
					4	0-0-2					
20											20
25											25
30											30

Boring completed to 19 feet bgs
Ground water encountered at 10 feet bgs
Boring completed as monitoring well
WA DOE well tag BHZ 406

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 Crossroads
Bothell, Washington

MONITORING WELL:
BLMW-11

PAGE: 1 of 1

PROJECT NO.: 2007-098-998 FIGURE: A-15

DRILLING COMPANY: Environmental Drilling Inc.
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Stainless steel split spoon
LOCATION: Bothell Landing property, south-east corner

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 1/8/2014
DATE COMPLETED: 1/8/2014
LOGGED BY: N.Nielsen

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)
0		GP	Loose, well graded brown gravelly silty SAND fill, moist							Cement surface seal and flush mount monument	0
										Hydrated bentonite seal	
					1	3-3-4		0		2-inch Sch. 40 PVC casing	
		SP	Very loose gray-brown fine poorly graded SAND, slightly silty, slightly gravelly, moist							#10/20 silica sand filter	
5										2-inch Sch. 40 PVC 10-slot screen	5
					2	0-2-0		0			
10										▽	10
			Grades to wet								
					3	0-0-0		0			
15					4	0-1-2		0		Sloughed sand	15

Boring completed to 16.5 feet bgs
Ground water encountered at 11 feet bgs
Boring completed as monitoring well
WA DOE well tag BHZ 401

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 Crossroads
Bothell, Washington

MONITORING WELL:
BLMW-12

PAGE: 1 of 1

PROJECT NO.:	2007-098-998	FIGURE:	A-16

DEPTH (feet)	WELL/PIEZO CONSTRUCTION	WATER LEVEL	MOISTURE CONTENT(%)	PLASTIC LIMIT(%)	LIQUID LIMIT(%)	% PASSING No. 200 SIEVE	OTHER TESTS	PID (ppm)	BLOWS/6 in** (uncorrected)	SAMPLER *	SAMPLE NUMBER	U.S.C.S. NAME	SOIL DESCRIPTION
													SURFACE: Asphalt
0	CONCRETE EMBEDDED FLUSH WELL MONUMENT (0-2')												2" Asphalt
	BENTONITE CHIP SEAL (2-4')											SP	SAND, light gray, moist, loose, poorly-graded, medium grained. (FILL)
5	BLANK 2" dia. PVC PIPE (2-5') 10/20 COLORADO SILICA SAND PACK (4-15')								7 12 17		S-1	SM	Silty SAND, lighty gray-brown, moist to wet, medium dense, trace fine gravel.
	2" dia. PVC WITH 0.01" SLOT SCREEN (5-15')	▽											- wet
10									4 3 5		S-2	ML	Sandy SILT, gray, wet, medium stiff, layered (1/2" with peat).
15													Bottom of boring at 15 feet on 11/17/99. Groundwater observed at 7 feet bgs.

DATE DRILLED: 11-17-99
LOGGED BY: T. Stott
REVIEWED BY: S. Dwyer

SURFACE ELEVATION (feet):
TOTAL DEPTH (feet): 15.0
DIAMETER OF BORING (in): 4 1/4

DRILLING METHOD: HSA Auger
DRILLER: Cascade Drilling
CASING SIZE:

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: ______ BY: ______

KLEINFELDER
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
SOILS AND MATERIALS TESTING

PROJECT NUMBER: 60-1995-01

Buck and Gordon
Bothell Landing

BORING LOG
MW-1

FIGURE
A-17

DEPTH (feet)	WELL/PIEZO CONSTRUCTION	WATER LEVEL	MOISTURE CONTENT(%)	PLASTIC LIMIT(%)	LIQUID LIMIT(%)	% PASSING No. 200 SIEVE	OTHER TESTS	PID (ppm)	BLOWS/6 in** (uncorrected)	SAMPLER *	SAMPLE NUMBER	U.S.C.S. NAME	U.S.C.S. SYMBOL	SOIL DESCRIPTION
														SURFACE: Asphalt
0	CONCRETE EMBEDDED FLUSH WELL MONUMENT (0-2')													2" Asphalt
	BENTONITE CHIP SEAL (2-4')											SP		SAND, light gray, moist to wet, loose, poorly-graded, moderate petroleum odor. (FILL)
5	BLANK 2" dia. PVC PIPE (2-5') 10/20 COLORADO SILICA SAND PACK (4-15')								3 2 3		S-1			
	2" dia. PVC WITH 0.01" SLOT SCREEN (5-15')													- wet
												SM		Silty SAND, gray, wet, medium dense.
10									6 12 16		S-2			
												SP		Fine SAND, gray, wet, poorly graded, dense.
15									13 19 21		S-3			
														Bottom of boring at 16 feet on 11/17/99. Groundwater observed at 7.5 feet bgs.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: _____ BY: _____

DATE DRILLED: 11-17-99
LOGGED BY: T. Stott
REVIEWED BY: S. Dwyer

SURFACE ELEVATION (feet):
TOTAL DEPTH (feet): 15.0
DIAMETER OF BORING (in): 4 1/4

DRILLING METHOD: HSA Auger
DRILLER: Cascade Drilling
CASING SIZE:

KLEINFELDER
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
SOILS AND MATERIALS TESTING
PROJECT NUMBER: 60-1995-01

Buck and Gordon
Bothell Landing

BORING LOG
MW-2

FIGURE
A-18

DEPTH (feet)	WELL/PIEZO CONSTRUCTION	WATER LEVEL	MOISTURE CONTENT(%)	PLASTIC LIMIT(%)	LIQUID LIMIT(%)	% PASSING No. 200 SIEVE	OTHER TESTS	PID (ppm)	BLOWS/6 in** (uncorrected)	SAMPLER *	SAMPLE NUMBER	U.S.C.S. NAME	SYMBOL	SOIL DESCRIPTION
														SURFACE: Asphalt
0	CONCRETE EMBEDDED FLUSH WELL MONUMENT (0-2')													2" Asphalt
	BENTONITE CHIP SEAL (2-4')											SM		Silty SAND, light gray-brown, moist to wet, medium dense, trace medium gravel, strong petroleum odor.
5	BLANK 2" dia. PVC PIPE (2-5')								5 5 13		S-1			
	10/20 COLORADO SILICA SAND PACK (4-15')													- layer of asphalt 1" thick
	2" dia. PVC WITH 0.01" SLOT SCREEN (5-15')	∇												- wet
10									9 10 12		S-2	SM/ ML		Silty SAND interbedded with SILT, gray, wet, medium dense, very stiff, moderate petroleum odor.
												SM		Silty SAND, gray, wet, medium dense.
15														Bottom of boring at 15 feet on 11/17/99. Groundwater observed at 7 feet bgs.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DATE DRILLED: 11-17-99
LOGGED BY: T. Stott
REVIEWED BY: S.Dwyer

SURFACE ELEVATION (feet):
TOTAL DEPTH (feet): 15.0
DIAMETER OF BORING (in): 4 1/4

DRILLING METHOD: HSA Auger
DRILLER: Cascade Drilling
CASING SIZE:

APPROV: ____ BY: ____

KLEINFELDER
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
SOILS AND MATERIALS TESTING
PROJECT NUMBER: 60-1995-01

Buck and Gordon
Bothell Landing

BORING LOG
MW-3

FIGURE
A-19

DEPTH (feet)	WELL/PIEZO CONSTRUCTION	WATER LEVEL	MOISTURE CONTENT(%)	PLASTIC LIMIT(%)	LIQUID LIMIT(%)	% PASSING No. 200 SIEVE	OTHER TESTS	PID (ppm)	BLOWS/6 in** (uncorrected)	SAMPLER *	SAMPLE NUMBER	U.S.C.S. NAME	SOIL DESCRIPTION
													SURFACE: Asphalt
0	CONCRETE EMBEDDED FLUSH WELL MONUMENT (0-2')												2" Asphalt
												GP/ GM	Sandy, silty, fine, GRAVEL, moist, medium dense. (FILL)
	BENTONITE CHIP SEAL (2-4')												
	BLANK 2" dia. PVC PIPE (2-5')												
5	10/20 COLORADO SILICA SAND PACK (4-15')								11 14 7		S-1	GP	Sandy fine GRAVEL, moist with wood and peat layers, medium dense.
	2" dia. PVC WITH 0.01" SLOT SCREEN (5-15')											SM	Silty SAND, gray-brown, moist to wet, medium dense.
10									4 7 9		S-2	GM	Silty SAND interbedded with SILT, gray, wet, medium dense, very stiff, moderate petroleum odor.
													Silty SAND, gray, wet, medium dense.
15													Bottom of boring at 15 feet on 11/17/99. Groundwater observed at 9 feet bgs.

TESTING PROGRAM: LABORATORY (Moisture Content, Plastic Limit, Liquid Limit, % Passing No. 200 Sieve, Other Tests); FIELD (PID)

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DATE DRILLED: 11-17-99	SURFACE ELEVATION (feet):	DRILLING METHOD: HSA Auger
LOGGED BY: T. Stott	TOTAL DEPTH (feet): 15.0	DRILLER: Cascade Drilling
REVIEWED BY: S. Dwyer	DIAMETER OF BORING (in): 4 1/4	CASING SIZE:

KLEINFELDER
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
SOILS AND MATERIALS TESTING

PROJECT NUMBER: 60-1995-01

Buck and Gordon
Bothell Landing

BORING LOG
MW-4

FIGURE
A-20

APPROV: ______ BY: ______

DRILLING COMPANY: Environmental Drilling Inc.
DRILLING METHOD: HSA
SAMPLING METHOD: SPT-18 Inches
LOCATION:

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 8/26/2014
DATE COMPLETED: 8/26/2014
LOGGED BY: K. Stilson

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)	NOTES
0		Topsoil						Cement surface seal and flush mount monument
	SM	Brown, fine to medium silty SAND, with gravel (FILL), dry, poorly graded.						2-inch Sch. 40 PVC casing
								Hydrated bentonite seal
								Filter sand
5				S-1	5-5-5			2-inch Sch. 40 PVC 0.010" slot screen
	SM	Medium dense, brown, silty SAND, trace wood, wet.						
10				S-2	4-7-19			
15				S-3	4-9-12			

Boring completed to 16.5 feet bgs.
Groundwater encountered at 14 feet.
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 Crossroads
Bothell, Washington

MONITORING WELL:
MW-5R

PAGE: 1 of 1

PROJECT NO.: 2007-098-998 FIGURE: A-21

APPENDIX C

HISTORICAL GROUND WATER DATA AND GRADIENT MAPS

Groundwater Analytical Results

PARAMETERS	Units	Analytical Method	MTCA A	Sample No.:	BI-3	D-BI-3	BB-2-17	BB-3-16	BLMW-1-10	BLMW-3-10	BLMW-4-10	BLMW-4-10-2	BLMW-5-8	BLMW-6-5
				Depth (ft):	6	6	17	16	10	10	10	10	8	5
				Date:	9/24/2009	9/24/2009	9/18/2009	9/17/2009	9/16/2009	9/17/2009	9/16/2009	9/16/2009	9/16/2009	9/16/2009
FIELD DATA														
Conductivity	mmhos/cm	Field			0.240	- -	0.259	0.329	0.263	0.367	0.382	- -	0.280	0.346
pH	std units	Field			6.72	- -	6.95	7.76	7.00	7.17	7.05	- -	7.01	7.22
Temperature	Celsius	Field			22.1	- -	17.9	18.5	17.9	20.9	19.4	- -	18.5	19.0
Dissolved Oxygen	mg/L	Field			2.37	- -	3.58	10.65	2.49	2.32	2.32	- -	2.47	2.37
PETROLEUM HYDROCARBONS														
Diesel Range Hydrocarbons	mg/L	NWTPH-Dx	1		- -	- -	- -	- -	0.28 U	0.28 U	0.29 U	0.28 U	0.27 U	0.25 U
Motor Oil	mg/L	NWTPH-Dx	1		- -	- -	- -	- -	0.44 U	0.44 U	0.46 U	0.45 U	0.44 U	0.4 U
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	0.100 U
Benzene	µg/L	SW8260	5		- -	- -	- -	- -	1 U	15	1 U	1 U	1 U	1 U
Toluene	µg/L	SW8260	1,000		- -	- -	- -	- -	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	µg/L	SW8260	700		- -	- -	- -	- -	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylene	µg/L	SW8260	1,000*XY		- -	- -	- -	- -	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	µg/L	SW8260	1,000*XY		- -	- -	- -	- -	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL METALS														
Arsenic	mg/L	200.8/6020	0.005		- -	- -	- -	- -	0.0033 U	0.0039	0.0033 U	0.0033 U	0.0033 U	- -
Cadmium	mg/L	200.8/6020	0.005		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Chromium	mg/L	200.8/6020			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Lead	mg/L	200.8/6020	0.015		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Mercury	mg/L	200.8/6020	0.002		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
DISSOLVED METALS														
Arsenic	mg/L	200.8/6020	0.005		- -	- -	- -	- -	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	- -
VOLATILE ORGANICS														
1,1,1,2-Tetrachloroethane	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane	µg/L	SW8260	200		0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2,2-Tetrachloroethane	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloroethane	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethane	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethene	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloropropene	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-Trichlorobenzene	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-Trichloropropane	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dibromo-3-chloropropane	µg/L	SW8260			1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichlorobenzene	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethane	µg/L	SW8260	5		0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloropropane	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichlorobenzene	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichloropropane	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,4-Dichlorobenzene	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,2-Dichloropropane	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Chloroethyl Vinyl Ether	µg/L	SW8260			1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Chlorotoluene	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-Chlorotoluene	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromobenzene	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromochloromethane	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

Groundwater Analytical Results

PARAMETERS	Units	Analytical Method	MTCA A	Sample No.: / Depth (ft): / Date:	BI-3 6 9/24/2009	D-BI-3 6 9/24/2009	BB-2-17 17 9/18/2009	BB-3-16 16 9/17/2009	BLMW-1-10 10 9/16/2009	BLMW-3-10 10 9/17/2009	BLMW-4-10 10 9/16/2009	BLMW-4-10-2 10 9/16/2009	BLMW-5-8 8 9/16/2009	BLMW-6-5 5 9/16/2009
VOLATILE ORGANICS (continued)														
Bromoform	µg/L	SW8260			1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon Tetrachloride	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chlorobenzene	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chloroethane	µg/L	SW8260			1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.82	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chloromethane	µg/L	SW8260			1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	µg/L	SW8260			5.3	5.1	0.4 U	0.2 U	0.2 U	1.8	0.60	0.57	0.2 U	0.69
cis-1,3-Dichloropropene	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Dibromochloromethane	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Dibromomethane	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Dichlorodifluoromethane	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Hexachlorobutadiene	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Methyl Iodide	µg/L	SW8260			1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	µg/L	SW8260	5		1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	µg/L	SW8260	5		6.8	6.9	79	0.52	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
trans-1,2-Dichloroethene	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 U	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			0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	µg/L	SW8260	5		1.2	1.2	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichlorofluoromethane	µg/L	SW8260			0.2 U	0.2 U	0.4 U	0.2 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		1.3	1.4	0.4 U	0.2 U	0.2 U	0.38	0.2 U	0.2 U	0.2 U	0.2 U

Groundwater Analytical Results

PARAMETERS	Units	Analytical Method	MTCA A	Sample No.: / Depth (ft): / Date:	BLMW-7-8 / 8 / 9/16/2009	BLMW-8-12 / 12 / 9/16/2009	BLMW-8-25 / 25 / 9/4/2009	BLBH-23-19 / 19 / 9/4/2009	BLBH-24-12 / 12 / 9/4/2009	HZMW-12-10 / 10 / 9/17/2009	HZMW-13-10 / 10 / 9/17/2009
FIELD DATA											
Conductivity	mmhos/cm	Field			0.188	0.568	- -	- -	- -	0.960	1.17
pH	std units	Field			6.67	6.85	- -	- -	- -	6.74	7.19
Temperature	Celsius	Field			17.9	18.2	- -	- -	- -	19.8	20.1
Dissolved Oxygen	mg/L	Field			2.60	2.78	- -	- -	- -	2.39	2.31
PETROLEUM HYDROCARBONS											
Diesel Range Hydrocarbons	mg/L	NWTPH-Dx	1		0.25 U	0.32 U	0.3 U	0.32 U	0.32 U	0.27 U	0.27 U
Motor Oil	mg/L	NWTPH-Dx	1		0.4 U	0.5 U	0.47 U	0.51 U	0.51 U	0.43 U	0.44 U
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	0.100 U	0.210
Benzene	µg/L	SW8260	5		1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	µg/L	SW8260	1,000		1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	µg/L	SW8260	700		1 U	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylene	µg/L	SW8260	1,000*XY		1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	µg/L	SW8260	1,000*XY		1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL METALS											
Arsenic	mg/L	200.8/6020	0.005		0.0033 U	0.0033 U	0.0033 U	0.0033 U	- -	- -	- -
Cadmium	mg/L	200.8/6020	0.005		- -	- -	- -	- -	- -	- -	- -
Chromium	mg/L	200.8/6020			- -	- -	- -	- -	- -	- -	- -
Lead	mg/L	200.8/6020	0.015		- -	- -	- -	- -	- -	- -	- -
Mercury	mg/L	200.8/6020	0.002		- -	- -	- -	- -	- -	- -	- -
DISSOLVED METALS											
Arsenic	mg/L	200.8/6020	0.005		0.003 U	0.003 U	- -	- -	- -	- -	- -
VOLATILE ORGANICS											
1,1,1,2-Tetrachloroethane	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane	µg/L	SW8260	200		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2,2-Tetrachloroethane	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloroethane	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethane	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethene	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloropropene	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-Trichlorobenzene	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-Trichloropropane	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dibromo-3-chloropropane	µg/L	SW8260			1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichlorobenzene	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethane	µg/L	SW8260	5		0.2 U	0.69	0.82	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloropropane	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichlorobenzene	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichloropropane	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,4-Dichlorobenzene	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,2-Dichloropropane	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Chloroethyl Vinyl Ether	µg/L	SW8260			1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Chlorotoluene	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-Chlorotoluene	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromobenzene	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromochloromethane	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

Groundwater Analytical Results

PARAMETERS	Units	Analytical Method	MTCA A	Sample No.: / Depth (ft): / Date:	BLMW-7-8 8 9/16/2009	BLMW-8-12 12 9/16/2009	BLMW-8-25 25 9/4/2009	BLBH-23-19 19 9/4/2009	BLBH-24-12 12 9/4/2009	HZMW-12-10 10 9/17/2009	HZMW-13-10 10 9/17/2009
VOLATILE ORGANICS (continued)											
Bromoform	µg/L	SW8260			1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon Tetrachloride	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chlorobenzene	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chloroethane	µg/L	SW8260			1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	µg/L	SW8260			0.2 U	0.2 U	0.37	0.2 U	0.2 U	0.2 U	0.2 U
Chloromethane	µg/L	SW8260			1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	µg/L	SW8260			0.2 U	0.2 U	0.61	0.2 U	0.2 U	0.2 U	0.24
cis-1,3-Dichloropropene	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Dibromochloromethane	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Dibromomethane	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Dichlorodifluoromethane	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Hexachlorobutadiene	µg/L	SW8260			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Methyl Iodide	µg/L	SW8260			1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	µg/L	SW8260	5		1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	µg/L	SW8260	5		0.96	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
trans-1,2-Dichloroethene	µg/L	SW8260			0.2 U	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			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	µg/L	SW8260	5		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichlorofluoromethane	µg/L	SW8260			0.2 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		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

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
- *XY = Applies to the sum of all xylenes
- Shaded values exceed MTCA A

SOURCES:
- Model Toxics Control Act (MTCA) from WA Administrative Code 173-340-900
  - MTCA Method A Cleanup Levels for Ground Water: Table 720-1

UNITS:
- ft = foot
- mmhos/cm = millimhos/centimeter
- mg/L = milligrams/liter
- µg/L = micrograms/liter

Historical Groundwater Analytical Results

PARAMETERS	Units	Analytical Method	Sample No.: MTCA A	B1-W 4/6/2009	B2-W 4/2/2009	B3-W 4/3/2009	B7-W 4/1/2009	BC-8-W 9/5/2008	BH-2-W 7/9/2007	BH-6-W 7/10/2007	BH-8-W 7/10/2007	BH-9-W 7/10/2007	BH-11-W 7/9/2007	BH-12-W 7/10/2007	BH-12-W DUP 7/10/2007
PETROLEUM HYDROCARBONS															
Diesel Range Hydrocarbons	mg/L	NWTPH-Dx	0.5	- -	- -	- -	- -	0.26 U	0.130 U	0.130 U	0.130 U	0.130 U	0.150	0.130 U	- -
Motor Oil	mg/L	NWTPH-Dx	0.5	- -	- -	- -	- -	0.41 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	- -
Gasoline Range Hydrocarbons	mg/L	NWTPH-Gx	0.8/1*G	- -	0.210	0.270	- -	0.100 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.086	- -
Benzene	µg/L	SW8260	5	- -	1.0 U	5.7	- -	0.2 U	2.00 U	1.00 U	1.00 U	1.00 U	1.00 U	2.00 U	2.00 U
Toluene	µg/L	SW8260	1,000	- -	1.0 U	1.0 U	- -	1 U	2.00 U	1.00 U	1.00 U	1.00 U	1.00 U	2.00 U	2.00 U
Ethylbenzene	µg/L	SW8260	700	- -	1.0 U	3.5	- -	0.2 U	2.00 U	1.00 U	1.00 U	1.00 U	1.00 U	2.00 U	2.00 U
m,p-Xylene	µg/L	SW8260	1,000*XY	- -	1.3	4.1	- -	0.4 U	4.00 U	- -	- -	- -	- -	4.00 U	4.00 U
o-Xylene	µg/L	SW8260	1,000*XY	- -	1.0 U	1.0 U	- -	0.2 U	2.00 U	- -	- -	- -	- -	2.00 U	2.00 U
Total Xylenes			1,000*XY	- -	- -	- -	- -	- -	- -	3.00 U	3.00 U	3.00 U	3.00 U	- -	- -
TOTAL METALS															
Arsenic	mg/L	SW7060	0.005	- -	- -	- -	- -	0.0033 U	- -	- -	- -	- -	0.049	- -	- -
Barium	mg/L	SW6010		- -	- -	- -	- -	0.045	- -	- -	- -	- -	1.200	- -	- -
Cadmium	mg/L	SW6010	0.005	- -	- -	- -	- -	0.0044 U	- -	- -	- -	- -	0.006	- -	- -
Chromium	mg/L	SW6010		- -	- -	- -	- -	0.011 U	- -	- -	- -	- -	0.260	- -	- -
Lead	mg/L	SW7421	0.015	- -	- -	- -	- -	0.0011 U	- -	- -	- -	- -	0.095	- -	- -
Mercury	mg/L	SW7471	0.002	- -	- -	- -	- -	0.0005 U	- -	- -	- -	- -	0.00041	- -	- -
Selenium	mg/L	SW6010		- -	- -	- -	- -	0.0056 U	- -	- -	- -	- -	0.040 U	- -	- -
Silver	mg/L	SW6010		- -	- -	- -	- -	0.011 U	- -	- -	- -	- -	0.030 U	- -	- -
DISSOLVED METALS															
Arsenic	mg/L	SW7060	0.005	- -	- -	- -	- -	0.003 U	- -	- -	- -	- -	0.004	- -	- -
Barium	mg/L	SW6010		- -	- -	- -	- -	0.028	- -	- -	- -	- -	0.24	- -	- -
Cadmium	mg/L	SW6010	0.005	- -	- -	- -	- -	0.004 U	- -	- -	- -	- -	0.005 U	- -	- -
Chromium	mg/L	SW6010	0.05	- -	- -	- -	- -	0.010 U	- -	- -	- -	- -	0.007 U	- -	- -
Lead	mg/L	SW7421	0.015	- -	- -	- -	- -	0.001 U	- -	- -	- -	- -	0.003 U	- -	- -
Mercury	mg/L	SW7471	0.002	- -	- -	- -	- -	0.0005 U	- -	- -	- -	- -	0.0002 U	- -	- -
Selenium	mg/L	SW6010		- -	- -	- -	- -	0.005 U	- -	- -	- -	- -	0.040 U	- -	- -
Silver	mg/L	SW6010		- -	- -	- -	- -	0.010 U	- -	- -	- -	- -	0.030 U	- -	- -
VOLATILE ORGANICS															
1,1,1,2-Tetrachloroethane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
1,1,1-Trichloroethane	µg/L	SW8260	200	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
1,1,2,2-Tetrachloroethane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
1,1,2-Trichloroethane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
1,1-Dichloroethane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
1,1-Dichloroethene	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
1,1-Dichloropropene	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
1,2,3-Trichlorobenzene	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
1,2,3-Trichloropropane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
1,2,4-Trichlorobenzene	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
1,2,4-Trimethylbenzene	µg/L	SW8260		- -	- -	- -	- -	0.2 U	2.00 U	- -	- -	- -	- -	2.00 U	2.00 U
1,2-Dibromo-3-chloropropane	µg/L	SW8260		1.0 U	1.0 U	1.0 U	1.0 U	1 U	10.00 U	10.00 U	10.00 U	10.00 U	- -	10.00 U	10.00 U
1,2-Dibromoethane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
1,2-Dichlorobenzene	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
1,2-Dichloroethane	µg/L	SW8260	5	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	4.00	2.00 U
1,2-Dichloropropane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
1,3,5-Trimethylbenzene	µg/L	SW8260		- -	- -	- -	- -	0.2 U	2.00 U	- -	- -	- -	- -	2.00 U	2.00 U
1,3-Dichlorobenzene	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
1,3-Dichloropropane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U

Historical Groundwater Analytical Results

PARAMETERS	Units	Analytical Method	Sample No.: MTCA A	B1-W 4/6/2009	B2-W 4/2/2009	B3-W 4/3/2009	B7-W 4/1/2009	BC-8-W 9/5/2008	BH-2-W 7/9/2007	BH-6-W 7/10/2007	BH-8-W 7/10/2007	BH-9-W 7/10/2007	BH-11-W 7/9/2007	BH-12-W 7/10/2007	BH-12-W DUP 7/10/2007
VOLATILE ORGANICS (continued)															
1,4-Dichlorobenzene	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
2,2-Dichloropropane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
2-Butanone	µg/L	SW8260		- -	- -	- -	- -	5 U	10.00 U	- -	- -	- -	- -	10.00 U	10.00 U
2-Chloroethylvinylether	µg/L	SW8260		1.0 U	1.0 U	1.0 U	1.0 U	1 U	- -	- -	- -	- -	- -	- -	- -
2-Chlorotoluene	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
2-Hexanone	µg/L	SW8260		- -	- -	- -	- -	2 U	10.00 U	- -	- -	- -	- -	10.00 U	10.00 U
4-Chlorotoluene	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
4-Methyl-2-Pentanone (MIBK)	µg/L	SW8260		- -	- -	- -	- -	- -	10.00 U	- -	- -	- -	- -	10.00 U	10.00 U
Acetone	µg/L	SW8260		- -	- -	- -	- -	5 U	25.00 U	- -	- -	- -	- -	25.00 U	25.00 U
Acrylonitrile	µg/L	SW8260		- -	- -	- -	- -	- -	10.00 U	- -	- -	- -	- -	10.00 U	10.00 U
Bromobenzene	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Bromochloromethane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Bromodichloromethane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Bromoform	µg/L	SW8260		1.0 U	1.0 U	1.0 U	1.0 U	1 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Bromomethane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Carbon Disulfide	µg/L	SW8260		- -	- -	- -	- -	0.2 U	- -	- -	- -	- -	- -	- -	- -
Carbon Tetrachloride	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Chlorobenzene	µg/L	SW8260		0.20 U	0.22	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Chloroethane	µg/L	SW8260		1.0 U	1.0 U	1.0 U	1.0 U	1 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Chloroform	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Chloromethane	µg/L	SW8260		1.0 U	1.0 U	1.0 U	1.0 U	1 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
cis-1,2-Dichloroethene	µg/L	SW8260		1.6	5.0	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
cis-1,3-Dichloropropene	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Dibromochloromethane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Dibromomethane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Dichlorodifluoromethane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Hexachlorobutadiene	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Isopropylbenzene (Cumene)	µg/L	SW8260		- -	- -	- -	- -	0.2 U	2.00 U	- -	- -	- -	- -	2.00 U	2.00 U
Methyl Iodide	µg/L	SW8260		1.0 U	1.0 U	1.0 U	1.0 U	1 U	- -	- -	- -	- -	- -	- -	- -
Methyl Isobutyl Ketone	µg/L	SW8260		- -	- -	- -	- -	2 U	- -	- -	- -	- -	- -	- -	- -
Methyl t-Butyl Ether	µg/L	SW8260	20	- -	- -	- -	- -	0.2 U	2.00 U	- -	- -	- -	- -	2.00 U	2.00 U
Methylene Chloride	µg/L	SW8260	5	2.0 U	2.0 U	2.0 U	2.0 U	1 U	5.00 U	5.00 U	5.00 U	5.00 U	- -	5.00 U	5.00 U
Naphthalene	µg/L	SW8260	160	- -	- -	- -	- -	1 U	2.00 U	- -	- -	- -	- -	2.00 U	2.00 U
n-Butylbenzene	µg/L	SW8260		- -	- -	- -	- -	0.2 U	2.00 U	- -	- -	- -	- -	2.00 U	2.00 U
n-Propylbenzene	µg/L	SW8260		- -	- -	- -	- -	0.2 U	2.00 U	- -	- -	- -	- -	2.00 U	2.00 U
p-Isopropyltoluene	µg/L	SW8260		- -	- -	- -	- -	0.2 U	2.00 U	- -	- -	- -	- -	2.00 U	2.00 U
sec-Butylbenzene	µg/L	SW8260		- -	- -	- -	- -	0.2 U	2.00 U	- -	- -	- -	- -	2.00 U	2.00 U
Styrene	µg/L	SW8260		- -	- -	- -	- -	0.2 U	2.00 U	- -	- -	- -	- -	2.00 U	2.00 U
tert-Butylbenzene	µg/L	SW8260		- -	- -	- -	- -	0.2 U	2.00 U	- -	- -	- -	- -	2.00 U	2.00 U
Tetrachloroethene	µg/L	SW8260	5	20	25	20	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
trans-1,2-Dichloroethene	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
trans-1,3-Dichloropropene	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Trichloroethene	µg/L	SW8260	5	1.4	11	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Trichlorofluoromethane	µg/L	SW8260		0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	2.00 U	2.00 U	2.00 U	2.00 U	- -	2.00 U	2.00 U
Vinyl Acetate	µg/L	SW8260		- -	- -	- -	- -	2 U	- -	- -	- -	- -	- -	- -	- -
Vinyl Chloride	µg/L	SW8260	0.2	0.20 U	0.20 U	0.20 U	0.20 U	0.94	0.20 U	0.20 U	0.20 U	0.20 U	- -	0.20 U	0.20 U

Historical Groundwater Analytical Results

PARAMETERS	Units	Analytical Method	Sample No.: MTCA A	B1-W 4/6/2009	B2-W 4/2/2009	B3-W 4/3/2009	B7-W 4/1/2009	BC-8-W 9/5/2008	BH-2-W 7/9/2007	BH-6-W 7/10/2007	BH-8-W 7/10/2007	BH-9-W 7/10/2007	BH-11-W 7/9/2007	BH-12-W 7/10/2007	BH-12-W DUP 7/10/2007
SEMIVOLATILE ORGANICS															
1-Methylnaphthalene	µg/L	SW8270D SIM		- -	- -	- -	- -	0.93	- -	- -	- -	- -	- -	- -	- -
2-Methylnaphthalene	µg/L	SW8270D SIM		- -	- -	- -	- -	0.18	- -	- -	- -	- -	- -	- -	- -
Acenaphthene	µg/L	SW8270D SIM		- -	- -	- -	- -	2.5	- -	- -	- -	- -	- -	- -	- -
Acenaphthylene	µg/L	SW8270D SIM		- -	- -	- -	- -	0.097 U	- -	- -	- -	- -	- -	- -	- -
Anthracene	µg/L	SW8270D SIM		- -	- -	- -	- -	0.097 U	- -	- -	- -	- -	- -	- -	- -
Benzo(a)anthracene	µg/L	SW8270D SIM		- -	- -	- -	- -	0.0097 U	- -	- -	- -	- -	- -	- -	- -
Benzo(a)pyrene	µg/L	SW8270D SIM	0.1	- -	- -	- -	- -	0.0097 U	- -	- -	- -	- -	- -	- -	- -
Benzo(b)fluoranthene	µg/L	SW8270D SIM		- -	- -	- -	- -	0.0097 U	- -	- -	- -	- -	- -	- -	- -
Benzo(g,h,i)perylene	µg/L	SW8270D SIM		- -	- -	- -	- -	0.0097 U	- -	- -	- -	- -	- -	- -	- -
Benzo(k)fluoranthene	µg/L	SW8270D SIM		- -	- -	- -	- -	0.0097 U	- -	- -	- -	- -	- -	- -	- -
Chrysene	µg/L	SW8270D SIM		- -	- -	- -	- -	0.0097 U	- -	- -	- -	- -	- -	- -	- -
Dibenz(a,h)anthracene	µg/L	SW8270D SIM		- -	- -	- -	- -	0.0097 U	- -	- -	- -	- -	- -	- -	- -
Fluoranthene	µg/L	SW8270D SIM		- -	- -	- -	- -	0.097 U	- -	- -	- -	- -	- -	- -	- -
Fluorene	µg/L	SW8270D SIM		- -	- -	- -	- -	0.097 U	- -	- -	- -	- -	- -	- -	- -
Indeno(1,2,3-cd)pyrene	µg/L	SW8270D SIM		- -	- -	- -	- -	0.0097 U	- -	- -	- -	- -	- -	- -	- -
Naphthalene	µg/L	SW8270D SIM	160	- -	- -	- -	- -	0.79	- -	- -	- -	- -	- -	- -	- -
Phenanthrene	µg/L	SW8270D SIM		- -	- -	- -	- -	0.097 U	- -	- -	- -	- -	- -	- -	- -
Pyrene	µg/L	SW8270D SIM		- -	- -	- -	- -	0.097 U	- -	- -	- -	- -	- -	- -	- -

Historical Groundwater Analytical Results

PARAMETERS	Units	Analytical Method	Sample No.: MTCA A	BH-15-W 7/10/2007	BH-17-W 8/9/2007	BH-18-W 8/9/2007	BH-19-W 8/9/2007	BH-20-W 8/9/2007	BH-21-W 8/9/2007	BH-22-W 8/9/2007	MW-1 7/18/2007	MW-2 7/18/2007	MW-3 7/18/2007	MW-4 7/18/2007
PETROLEUM HYDROCARBONS														
Diesel Range Hydrocarbons	mg/L	NWTPH-Dx	0.5	0.130 U	- -	- -	0.27 U	0.28 U	0.26 U	0.27 U	0.130 U	0.130 U	0.130 U	0.130 U
Motor Oil	mg/L	NWTPH-Dx	0.5	0.250 U	- -	- -	0.44 U	0.45 U	0.41 U	0.44 U	0.250 U	0.250 U	0.250 U	0.250 U
Gasoline Range Hydrocarbons	mg/L	NWTPH-Gx	0.8/1*G	0.050 U	0.100 U	0.400 U	0.100 U	0.100 U	0.100 U	0.100 U	0.050 U	0.050 U	0.050 U	0.050 U
Benzene	µg/L	SW8260	5	1.00 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2 U	2 U	17	2 U
Toluene	µg/L	SW8260	1,000	1.00 U	1.0 U	4.0 U	1.1	1.0 U	1.4	1.6	2 U	2 U	2 U	2 U
Ethylbenzene	µg/L	SW8260	700	1.00 U	1.0 U	12	1.0 U	1.0 U	1.0 U	1.0 U	2 U	2 U	2 U	2 U
m,p-Xylene	µg/L	SW8260	1,000*XY	- -	1.3	4.0 U	1.9	1.0 U	1.8	2.6	4 U	4 U	4 U	4 U
o-Xylene	µg/L	SW8260	1,000*XY	- -	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2 U	2 U	2 U	2 U
Total Xylenes			1,000*XY	3.00 U	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
TOTAL METALS														
Arsenic	mg/L	SW7060	0.005	0.068	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Barium	mg/L	SW6010		1.000	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Cadmium	mg/L	SW6010	0.005	0.012	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Chromium	mg/L	SW6010		0.200	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Lead	mg/L	SW7421	0.015	0.025	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Mercury	mg/L	SW7471	0.002	0.00016	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Selenium	mg/L	SW6010		0.040 U	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Silver	mg/L	SW6010		0.030 U	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
DISSOLVED METALS														
Arsenic	mg/L	SW7060	0.005	0.056	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Barium	mg/L	SW6010		0.38	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Cadmium	mg/L	SW6010	0.005	0.005 U	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Chromium	mg/L	SW6010	0.05	0.007 U	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Lead	mg/L	SW7421	0.015	0.025	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Mercury	mg/L	SW7471	0.002	0.00016	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Selenium	mg/L	SW6010		0.040 U	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Silver	mg/L	SW6010		0.030 U	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VOLATILE ORGANICS														
1,1,1,2-Tetrachloroethane	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
1,1,1-Trichloroethane	µg/L	SW8260	200	- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
1,1,2-Trichloroethane	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethane	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
1,1-Dichloropropene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
1,2,3-Trichlorobenzene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
1,2,3-Trichloropropane	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
1,2,4-Trichlorobenzene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
1,2,4-Trimethylbenzene	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	2 U	2 U	2 U	2 U
1,2-Dibromo-3-chloropropane	µg/L	SW8260		- -	1 U	1 U	1 U	2 U	1 U	1 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
1,2-Dichlorobenzene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
1,2-Dichloroethane	µg/L	SW8260	5	- -	0.51	16	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
1,2-Dichloropropane	µg/L	SW8260		- -	0.2 U	0.31	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
1,3,5-Trimethylbenzene	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	2 U	2 U	2 U	2 U
1,3-Dichlorobenzene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
1,3-Dichloropropane	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U

Historical Groundwater Analytical Results

PARAMETERS	Units	Analytical Method	Sample No.: MTCA A	BH-15-W 7/10/2007	BH-17-W 8/9/2007	BH-18-W 8/9/2007	BH-19-W 8/9/2007	BH-20-W 8/9/2007	BH-21-W 8/9/2007	BH-22-W 8/9/2007	MW-1 7/18/2007	MW-2 7/18/2007	MW-3 7/18/2007	MW-4 7/18/2007
VOLATILE ORGANICS (continued)														
1,4-Dichlorobenzene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
2,2-Dichloropropane	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
2-Butanone	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	10 U	10 U	10 U	10 U
2-Chloroethylvinylether	µg/L	SW8260		- -	1 U	1 U	1 U	2 U	1 U	1 U	- -	- -	- -	- -
2-Chlorotoluene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
2-Hexanone	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	10 U	10 U	10 U	10 U
4-Chlorotoluene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
4-Methyl-2-Pentanone (MIBK)	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	10 U	10 U	10 U	10 U
Acetone	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	25 U	25 U	25 U	25 U
Acrylonitrile	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	10 U	10 U	10 U	10 U
Bromobenzene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
Bromochloromethane	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
Bromodichloromethane	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
Bromoform	µg/L	SW8260		- -	1 U	1 U	1 U	2 U	1 U	1 U	2 U	2 U	2 U	2 U
Bromomethane	µg/L	SW8260		- -	1 U	1 U	1 U	2 U	1 U	1 U	2 U	2 U	2 U	2 U
Carbon Disulfide	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Carbon Tetrachloride	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
Chlorobenzene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
Chloroethane	µg/L	SW8260		- -	1 U	1 U	1 U	2 U	1 U	1 U	2 U	2 U	2 U	2 U
Chloroform	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
Chloromethane	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
cis-1,2-Dichloroethene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.83	1.8	3.2	2 U	2 U	2	2 U
cis-1,3-Dichloropropene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
Dibromochloromethane	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
Dibromomethane	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
Dichlorodifluoromethane	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
Hexachlorobutadiene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
Isopropylbenzene (Cumene)	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	2 U	2 U	2 U	2 U
Methyl Iodide	µg/L	SW8260		- -	1 U	1 U	1 U	2 U	1 U	1 U	- -	- -	- -	- -
Methyl Isobutyl Ketone	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Methyl t-Butyl Ether	µg/L	SW8260	20	- -	- -	- -	- -	- -	- -	- -	2 U	2 U	2 U	2 U
Methylene Chloride	µg/L	SW8260	5	- -	1 U	1 U	1 U	2 U	1 U	1 U	5 U	5 U	5 U	5 U
Naphthalene	µg/L	SW8260	160	- -	- -	- -	- -	- -	- -	- -	2 U	2 U	2 U	2 U
n-Butylbenzene	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	2 U	2 U	2 U	2 U
n-Propylbenzene	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	2 U	2 U	5	2 U
p-Isopropyltoluene	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	2 U	2 U	2 U	2 U
sec-Butylbenzene	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	2 U	2 U	2 U	2 U
Styrene	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	2 U	2 U	2 U	2 U
tert-Butylbenzene	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	2 U	2 U	2 U	2 U
Tetrachloroethene	µg/L	SW8260	5	- -	0.2 U	0.2 U	2.5	74	5.8	0.2 U	2 U	17	2 U	2 U
trans-1,2-Dichloroethene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	1.1	2 U	2 U	2 U	2 U
trans-1,3-Dichloropropene	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
Trichloroethene	µg/L	SW8260	5	- -	0.2 U	0.2 U	0.2 U	3.2	7.4	0.84	2 U	2 U	2 U	2 U
Trichlorofluoromethane	µg/L	SW8260		- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
Vinyl Acetate	µg/L	SW8260		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Vinyl Chloride	µg/L	SW8260	0.2	- -	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

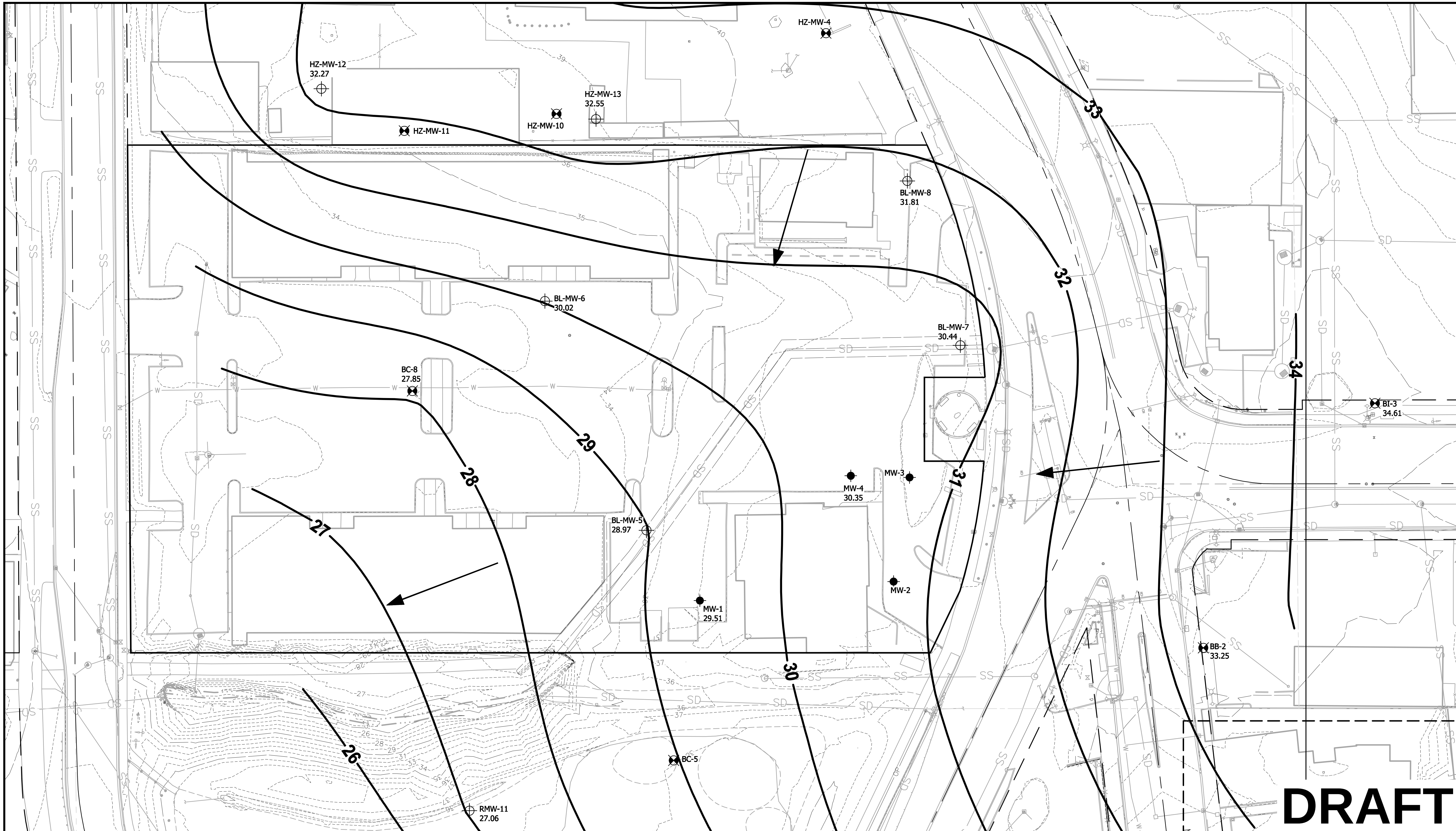
Historical Groundwater Analytical Results

PARAMETERS	Units	Analytical Method	Sample No.: MTCA A	BH-15-W 7/10/2007	BH-17-W 8/9/2007	BH-18-W 8/9/2007	BH-19-W 8/9/2007	BH-20-W 8/9/2007	BH-21-W 8/9/2007	BH-22-W 8/9/2007	MW-1 7/18/2007	MW-2 7/18/2007	MW-3 7/18/2007	MW-4 7/18/2007
SEMIVOLATILE ORGANICS														
1-Methylnaphthalene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
2-Methylnaphthalene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Acenaphthene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Acenaphthylene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Anthracene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(a)anthracene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(a)pyrene	µg/L	SW8270D SIM	0.1	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(b)fluoranthene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(g,h,i)perylene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Benzo(k)fluoranthene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Chrysene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Dibenz(a,h)anthracene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Fluoranthene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Fluorene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Indeno(1,2,3-cd)pyrene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Naphthalene	µg/L	SW8270D SIM	160	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Phenanthrene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Pyrene	µg/L	SW8270D SIM		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

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

SOURCES:
Model Toxics Control Act (MTCA) from WA Administrative Code 173-340-900
MTCA Method A Cleanup Levels for Ground Water: Table 720-1

UNITS:
mg/L = milligrams/liter
µg/L = micrograms/liter



Parametrix DATE: Nov 17, 2009 FILE: BR1647019P02T0210_F-02-2

N

0 50

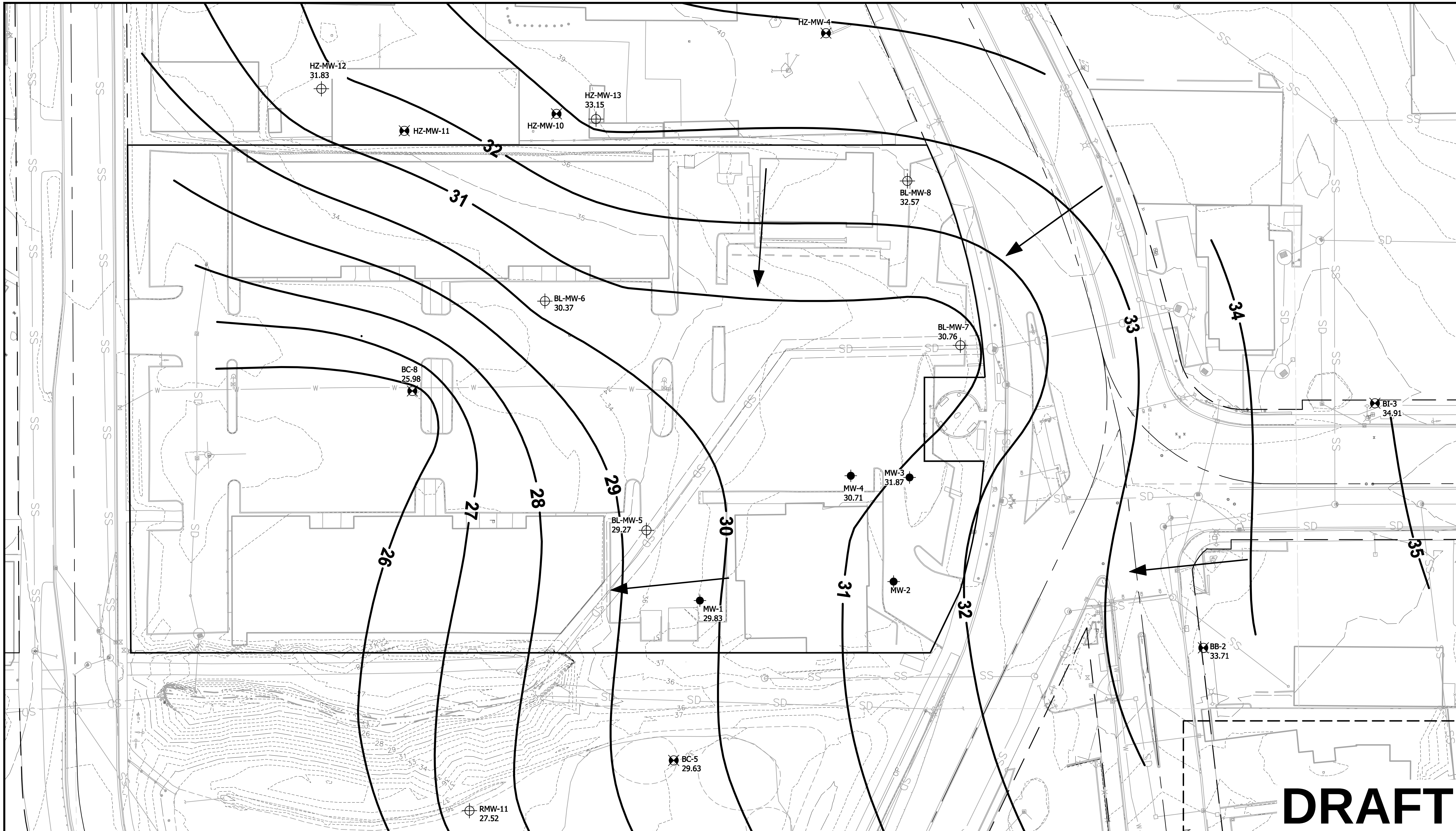
SCALE IN FEET

LEGEND

- HWA 2007 PHASE II ESA WELL LOCATIONS
- KLEINFELDER 1999 WELL LOCATIONS
- PMX 2009 RI/FS WELL LOCATIONS
- SITE BOUNDARY
- 27.06 GROUNDWATER TABLE ELEVATION MEASURED AT WELL ON 9/24/09
- 29 INFERRED POTENTIOMETRIC SURFACE ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION

NOTE:
CONTOUR DATUM: NAVD 88

Figure 2-2
City of Bothell
Bothell Landing Site
September 2009
Potentiometric Surface



Parametrix DATE: Nov 17, 2009 FILE: BR1647019P02T0210_F-02-3

N

0 50

SCALE IN FEET

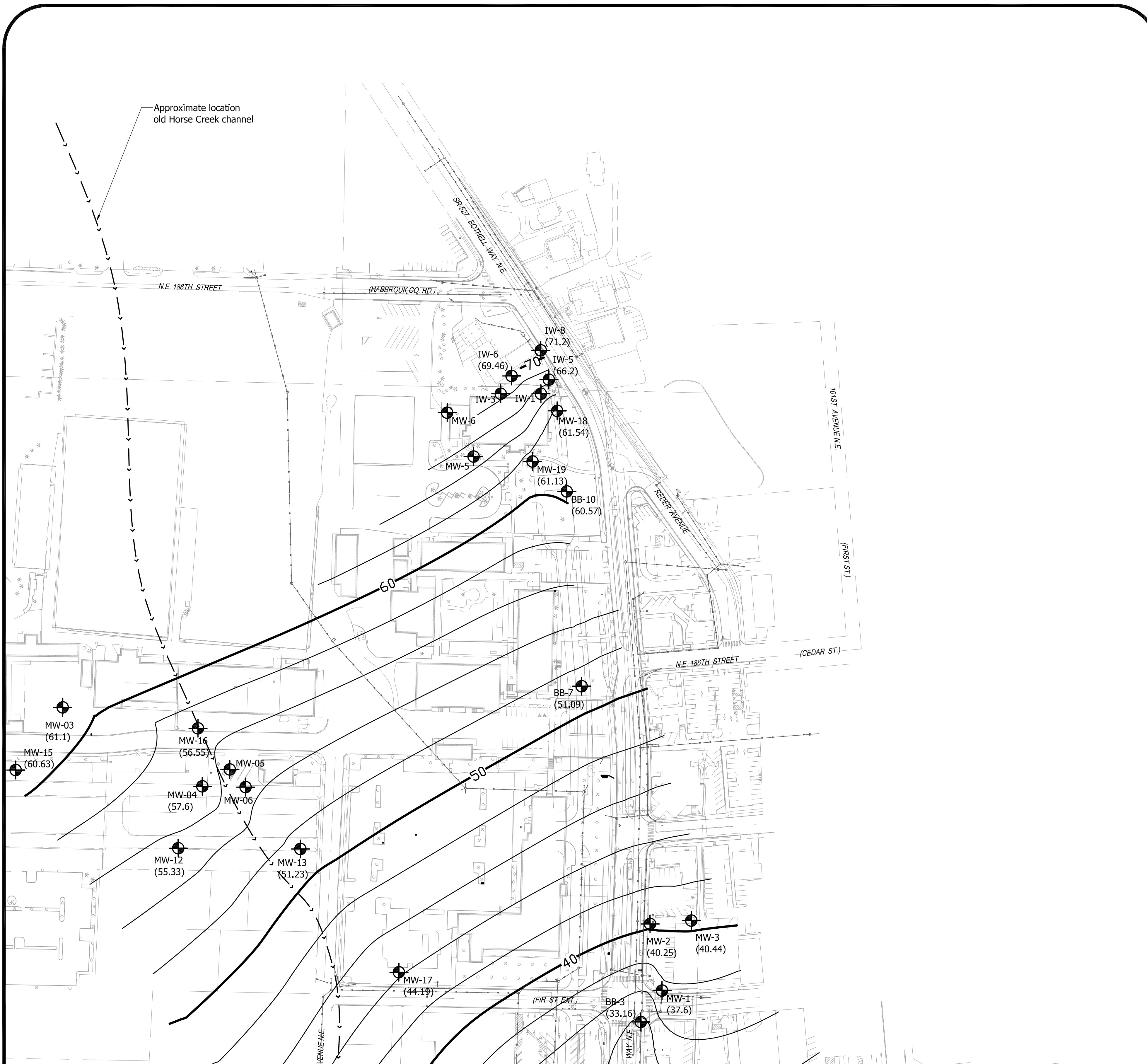
LEGEND

- HWA 2007 PHASE II ESA WELL LOCATIONS
- KLEINFELDER 1999 BORING LOCATIONS
- PMX 2009 RI/FS WELL LOCATIONS
- SITE BOUNDARY
- 27.06 GROUNDWATER TABLE ELEVATION MEASURED AT WELL ON 11/06/09
- 29 INFERRED POTENTIOMETRIC SURFACE ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION

NOTE:

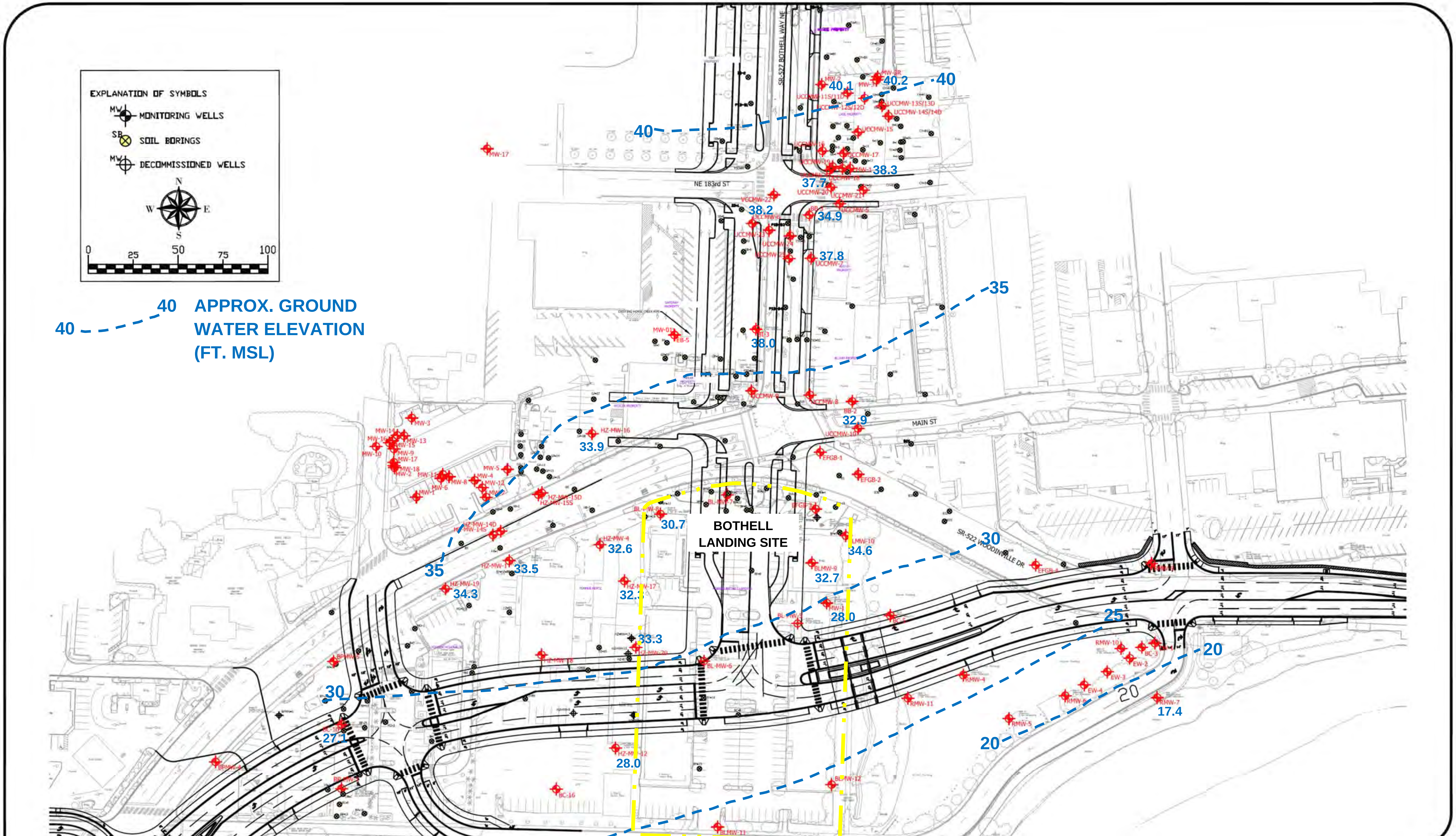
CONTOUR DATUM: NAVD 88

Figure 2-3
City of Bothell
Bothell Landing Site
November 2009 Potentiometric Surface



HWA GEOSCIENCES INC.	Area-Wide Gradient Study Bothell, Washington	Ground Water Gradient August 29-31, 2012	DRAWN BY: EFK CHECK BY: VA DATE: 09.07.12	FIGURE #: 1 PROJECT #: 2012-098 950

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



HWA GEOSCIENCES INC.

AREA WIDE GROUND WATER MONITORING NETWORK
BOTHELL, WASHINGTON

WATER TABLE ELEVATIONS
SEPTEMBER 2014

DRAWN BY EFK
CHECK BY NN
DATE

FIGURE NO. 3

PROJECT NO. 2007-098 T998

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T998.DWG <11x17 all wells> Plotted: 10/16/2014 11:59 AM

APPENDIX D

DOCUMENTATION OF INTERIM ACTION AT BOTHELL LANDING SITE, BOTHELL, WASHINGTON (HWA, 2011A, 2014d, 2015c, 2017)

(ON CD)

DOCUMENTATION OF INTERIM ACTION AT BOTHELL LANDING SITE BOTHELL, WASHINGTON

Prepared for
City of Bothell

February 2, 2011

HWA GEOSCIENCES INC.

- Geotechnical Engineering
- Hydrogeology
- Geoenvironmental Services
- Inspection & Testing

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DOCUMENTATION OF INTERIM ACTION AT
BOTHELL LANDING SITE
BOTHELL, WASHINGTON

1.0 INTRODUCTION

This report documents the results of the interim action soil cleanup conducted in September 2010 for the City of Bothell (City) at the Bothell Landing site (Site) (Figure 1). The City currently owns the Site, a portion of which will accommodate the realignment of State Route (SR) 522 and the southward extension of SR 527 (Bothell Crossroads Project). Figure 2 depicts the future alignment of SR 522 and SR 527 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 6294 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 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 Landing Remedial Investigation/Feasibility Study,* and associated *Draft Cleanup Action Plan* which have not been finalized or approved pending completion of interim actions and monitoring (Parametrix, 2009a, b)
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.

1.1 SITE LOCATION AND DESCRIPTION

The City owns the approximately 2.8-acre Site located at 18120, 18126, and 18132 Bothell Way, and 10001 Woodinville Drive, Bothell, Washington (King County Tax Parcel Nos. 9457200015 and 9457200020). Ecology's Facility Site ID is # 73975762; it is noted as a Brownfields Site in Ecology's Integrated Site Information System (ISIS) database. The latitude of the site is 47.7591 and the longitude is -122.20766.

The City acquired the Site through two property purchases, 1) in 1998 for roadway widening and construction of a small park (Rotunda Park), and 2) in 2008 for construction of the SR522 realignment. A 48-inch diameter concrete culvert conveys Horse Creek through the northern and eastern portion of the Site (Figure 2), and daylights just beyond the east property boundary. Prior to the interim action the Site was occupied by two single-story restaurants in the northeast and northwest corners of the property and two multi-tenant retail and office buildings in the southern portion of the site. The remainder of the site was covered with asphalt-paved parking and landscaping. All buildings were demolished in May 2010, in advance of the soil cleanup work and subsequent construction of a new roadway, a portion of which will accommodate the realignment of State Route (SR) 522 and the southward extension of SR 527 (Bothell Crossroads Project). The realignment of SR 522/527 will also entail relocating the Horse Creek culvert approximately 70 feet to the east. Remnant portions of the property may be redeveloped after the roadways are completed.

1.2 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

1.3 OBJECTIVES

The objective of the interim action soil cleanup was to reduce the threat to the environment and human health posed by petroleum- and lead-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).

1.4 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 Kleinfelder (1999), Riley Group (2007), ECOSS (2008), HWA (2007, 2009a), and Parametrix (2009a). The following is a summary of those assessments.

Two service stations were previously located at the northeast and northwest corners of the Site between the 1930's and 1970's at the approximate locations shown on Figure 3. The stations were demolished during site reconstruction in the 1970's and the underground storage tanks (USTs) associated with the stations were reported to have been removed (Riley Group, 2007).

In 1998, the City purchased the north central portion of the site at 10001 Woodinville Way as part of a roadway widening and the Rotunda Park project. In the course of site excavation, five USTs and associated petroleum-affected soils were discovered. The USTs were assumed to have been associated with one of the former service stations. The City removed approximately 385 tons of petroleum-affected soils from the Site. Petroleum hydrocarbon and aromatic hydrocarbon concentrations remaining in the excavation sidewalls exceeded Ecology's Model Toxics Cleanup Act (MTCA) cleanup levels. The excavation was backfilled with clean imported soils. A plastic sheeting barrier was placed around the excavation limits to minimize recontamination of soil from adjacent impacted soils.

The remaining (non-City owned at the time) parcels comprising the site were investigated by Kleinfelder (1999) who identified gasoline, diesel, oil, and benzene in soil and ground water at the Site. The property owners at the time filed a restrictive covenant in January 2002 acknowledging that impacted soils and ground water remained at the property. Ecology issued an interim No Further Action (NFA) determination for the Site in 2002 for soils only. The Site was later removed from the Voluntary Cleanup Program in 2006 due to the lack of further activity, such as monitoring or remediation. The 2002 NFA determination was also rescinded at this time due to cleanup exceedances.

HWA performed a Phase II environmental site assessment in 2007. The assessment identified soils in the northern portion of the property (vicinity of the known UST releases) containing petroleum-related compounds (petroleum hydrocarbons, aromatic hydrocarbons, and semi-volatile organic compounds) exceeding Ecology MTCA Method A cleanup levels (Table 740-1 in WAC 173-340-900). Ground water at the Site apparently was affected by multiple sources. Petroleum hydrocarbon impacts to ground water from historic UST releases at the property appeared to be limited. Chlorinated solvents were detected in ground water samples at the northwest and northeast portions of the property. These detections appeared to be either from an unknown historic on-site source, or from suspected upgradient sources to the north-northeast and/or north-northwest of the subject property.

Parametrix's 2009 remedial investigation concluded that petroleum contamination in soil and ground water at the former gas station area was relatively well defined within the Site boundaries; however, soil contamination extended into the SR 522 right-of-way where it was less well defined. The extent of the petroleum-contaminated ground water plume was limited to the vicinity of the Rotunda Park. The backfill around the Horse Creek culvert did not appear to be a preferential pathway for contaminated ground water. Surface water in the open channel portion of Horse Creek did not appear to be significantly affecting nearby surface soils or ground water. Halogenated volatile organic compounds (HVOCs) including perchloroethylene (PCE), trichloroethylene (TCE), and breakdown products, were present in ground water throughout the central and northern portions of the Site with concentrations generally below MTCA Method A cleanup levels (Table 720-1 in WAC 173-340-900). Concentration distributions indicated that the HVOCs were migrating onto the Site from an upgradient source.

1.5 CURRENT AND PLANNED SITE USE

Prior to the soil cleanup, the Site contained two single-story restaurants in the northeast and northwest corners of the property and two multi-tenant retail and office buildings in the southern portion of the property. The remainder of the Site was covered with asphalt-paved parking and landscaping. All buildings and pavement were demolished in May 2010, in advance of the soil cleanup work and roadway construction. The Site will be redeveloped as part of the City's overall Downtown Revitalization Plan, and will mostly accommodate the new SR 522/527 intersection and related utilities and infrastructure. Future use of remnant portions of the Site not under the new roadways 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 Site is predominantly flat. The west property boundary adjoins the Former Bothell Hertz Facility that previously was occupied by a commercial rental business with documented and suspected hazardous material releases to soil and ground water (HWA, 2008). The east property boundary consists of vegetated/landscaped ground sloping down to Horse Creek. Horse Creek is an urban stream discharging to the Sammamish River just beyond the southern boundary of the property. The creek is conveyed through storm drain pipes upgradient of the Site. A 48-inch diameter concrete culvert conveys Horse Creek through the northern and eastern portion of the Site, daylighting just beyond the east property boundary (Figure 2). The Sammamish River is between 175 and 250 feet south of the Site and separated from the property by NE 180th Street and the Park at Bothell Landing, a City park (Parametrix, 2009).

2.2 GEOLOGY

Site-specific stratigraphy typically consists of approximately 5 to 8 feet of silty sand fill over alluvial soil consisting of interbedded silt and peat. Much of the fill material is likely dredged spoils placed on the property from realignment of the Sammamish River in the 1960s (HWA, 2008). Interbedded alluvial sand and silt was encountered between 8 and 20 feet below ground surface (bgs). Peat or silt beds with high organic content up to 2 feet thick are present within the alluvial soil, generally at depths greater than 10 feet bgs. These compressible, organic-rich beds appear to underlie much of the Site but may not represent a contiguous layer (Parametrix, 2009).

2.4 HYDROGEOLOGY

Ground water in monitoring wells was encountered between approximately 3 and 9 feet bgs. Ground water flow is to the east-southeast, toward the Sammamish River at a gradient, i, of 0.011 to 0.046 feet per foot. The horizontal hydraulic conductivity, K, for the water-bearing zone was estimated to be 2.0 x 10^{-3} to 5.6 x 10^{-3} feet per minute (2.9 to 8.1 feet/day) using slug testing data collected during the remedial investigation field activities (HWA, 2009b). 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:

2.9 ft/d x 0.011 / 0.2 = 0.16 feet/day = 58 feet/year to
8.1 ft/d x 0.046 / 0.2 = 1.9 feet/day = 677 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 prior to the interim action cleanup included gasoline-, diesel- and motor oil-range petroleum hydrocarbons; benzene, toluene, ethylbenzene, and xylenes (BTEX); polycyclic aromatic hydrocarbons (PAHs, including naphthalenes); and metals (barium and lead). For ground water, the COPCs listed in the RI/FS included petroleum hydrocarbons, BTEX, and halogenated volatile organic compounds (HVOCs).

The *Interim Action Work Plan* (Parametrix, 2010) included metals (arsenic, cadmium, chromium, mercury, selenium, and silver) and polychlorinated biphenyls (PCBs) as additional soil COPCs. For ground water the *Interim Action Work Plan* included metals (barium, mercury, selenium, and silver) and PAHs as additional COPCs.

Because PCBs, HVOCs, arsenic, barium, cadmium, chromium, mercury, selenium, or silver were never detected in Site soil at concentrations exceeding MTCA Method A or B cleanup levels or natural background concentrations during the Phase II ESA, RI, or interim action cleanup, they should be dropped as COPCs during future RI activities. Because PCBs, PAHs, barium, mercury, selenium, and silver were never detected in Site ground water at concentrations exceeding MTCA Method A or B cleanup levels during the Phase II ESA, RI, or interim action cleanup, they should be dropped as COPCs during future RI activities.

Based on this information, soil COPCs for future site RI activities should include:

- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX
- Lead
- PAHs (including naphthalenes)

Ground water COPCs for future site RI activities should include:

- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX
- HVOCs
- Metals (arsenic, cadmium, chromium, and lead)

3.2 EXTENT OF CONTAMINATION

Soil samples containing COPCs above MTCA cleanup levels at the Site occurred only in the northeast corner of the Site at depths ranging from 6 to 12 feet below ground surface (bgs). Borehole data (location B3 on Figure 3) indicated that gasoline- and heavy oil-impacted soil extends from the Site to the northeast beneath SR 522 (CDM, 2009). 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.

Petroleum-contaminated ground water occurred only in the vicinity of Rotunda Park. The backfill around the Horse Creek culvert does not appear to be a preferential pathway for contaminated ground water. Horse Creek surface water does not appear to be significantly affecting nearby surface soils or ground water. HVOCs migrating onto the Site from an upgradient source are present in ground water throughout the northern portions of the Site at concentrations exceeding MTCA Method A cleanup levels, particularly in the vicinity of Rotunda Park (Parametrix, 2009).

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 gasoline-range petroleum hydrocarbons at the Site range between 84 and 246 milligrams per kilogram (mg/kg) depending on the mixture of hydrocarbon fractions and specific compounds such as benzene. The Method B TPH cleanup level of 84 mg/kg is a calculated value for protection of potable ground water from contamination by benzene 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 with detectible benzene in soil is 30 mg/kg. The calculated Method B cleanup levels for diesel- and oil-range petroleum hydrocarbons at the Site range between 3,130 and 5,225 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) are extremely conservative, as much of the site will be covered by 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 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 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 the contaminated ground water that has migrated onto the Site.

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 September and 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 522/527 realignment.

4.1 PRE-CLEANUP CHARACTERIZATION QQ

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.

Sixteen test pits were excavated between September 2nd and 20th 2010 using a rubber-tired backhoe operated by the Contractor. Test pits TP-17 through TP-21 were excavated on October 1st to investigate whether TPH contamination had migrated onto the Site from the adjacent Bothell Former Hertz Facility, in an area where the Contractor reported suspect soils in a utility trench. Figure 4 shows test pit locations. Test pits were excavated to a maximum depth of 8 feet bgs. HWA personnel collected a total of 38 representative soil samples at various depths within the test pits for chemical analysis. 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 2nd and 27th 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 or stockpiled 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 east to west. Approximately 784 cubic yards of clean overburden soil were excavated and stockpiled (and segregated to prevent cross-contamination using plastic sheeting) on site for later reuse. Contaminated soil was excavated approximately 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 50 by 160 feet in its maximum width and length. The depth of the excavation ranged from approximately 5 to 14 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 (Photos 1 and 2 in Appendix D). An abandoned 12-inch concrete storm drain pipe that apparently connected to the Horse Creek culvert was unearthed in the eastern extent of the excavation (Photo 2 and Figure 3). This storm drain pipe was not identified on City utility plans, and appeared to have been abandoned as it did not convey flowing water or have stained interior sidewalls. The Contractor capped the storm drain pipe with quick setting concrete where it was exposed in the northeastern and southeastern sidewalls of the excavation.

Scattered buried debris in the soil (e.g., tires, rubber hose, broken concrete, bricks, lumber, metal, and glass) was unearthed in the western half of the excavation from about 8 to 10 feet bgs and lying immediately above the peat horizon (Photos 3 and 4 in Appendix D). The soil associated with the buried debris had high TPH concentrations, primarily in the gasoline range.

An 8-inch diameter concrete storm drain pipe was unearthed in the western sidewall of the excavation at 5 feet bgs in the vicinity of the Horse Creek culvert (Figure 3 and Photo 5). This storm drain pipe apparently had never been put into service, as it was capped when unearthed. Because the original cap was inadvertently broken when uncovered, the Contractor capped the storm drain pipe again with quick setting concrete.

The Contractor utilized a vactor truck and compressed air to excavate explorations along the Horse Creek culvert (Photo 6 in Appendix D). This effort better defined the location of the culvert and its manhole access on the Bothell Landing site (Photo 7). As is discussed in the following section (4.3), HWA also utilized the vactor truck explorations to evaluate COPCs in the backfill surrounding the culvert.

The Contractor transported contaminated soil and debris to the CEMEX USA (formerly Rinker) Inert Materials Landfill facility in Everett, Washington for thermal desorption treatment followed by permitted landfill disposal. A total of 3,556.5 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 2,222 cubic yards. A copy of the CEMEX Release of Liability/Certificate of Disposal for the soil is presented in Appendix E.

4.3 CONFIRMATION SAMPLING

Twelve excavation sidewall and seven excavation bottom samples were collected to confirm soil cleanup (Table 2). Figure 4 depicts confirmation sample locations. Laboratory certificates are included in Appendix B. Twenty-five 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 COPCs 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.

Soil samples collected in test pits TP-17 through TP-21, excavated near a utility trench to investigate potential impacts from the adjacent Bothell Former Hertz Facility, did not contain COPCs at concentrations exceeding site cleanup levels (Table 2).

Five confirmation samples included contaminated soil left in place along SR 522. As discussed in Section 4.2 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 under Crossroads Phase III, after the new SR 522 roadway is constructed and the old roadway is vacated.

Contaminated soil was also left in place at location L-PEX-8 (Figure 4) to protect the structural integrity of the 48-inch concrete Horse Creek culvert. Future Site cleanup activities will address soil in this area when the pipe will be relocated approximately 70 feet to the east. At vactor truck exploration L-PEX-14 (Figure 4) on the west side of the Horse Creek culvert, HWA personnel used a clean stainless steel hand auger to sample the culvert backfill below the bottom of the vactor truck exploration. This sample, L-PEX-14-9, had COPC concentrations below MTCA Method A cleanup levels indicating that the culvert backfill is not contaminated or a preferred pathway for contaminated ground water.

4.4 GROUND WATER MANAGEMENT

Minor ground water seepage was present at approximately 8 to 10 feet below original grade at the Site (Photo 8 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.

5.5 ORC PLACEMENT

To facilitate bioremediation following soil removal, the Contractor applied 1,834 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. The Contractor applied ORC on the sidewall along SR 522 at the elevation of ground water. 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

Monitoring wells MW-3 and MW-4 were decommissioned because of their location within the cleanup excavation (Photo 9 in Appendix D). Decommissioning was performed by excavation and removal under HWA's supervision, as the depth of the excavation was greater than the well depths. Prior to remedial activities, Slead Construction Inc, a Washington State licensed well drilling contractor under subcontract to the Contractor, decommissioned ground water monitoring well BC-8 in accordance with WAC 173-160-381. Although not within the cleanup excavation footprint, well BC-8 was decommissioned because it will be covered by the new roadway.

4.7 SITE RESTORATION

After excavation of contaminated soil and receipt of confirmation sample analytical results, the Contractor backfilled and compacted the excavation with a combination of clean imported structural fill soils meeting the requirements of Select Borrow, per WSDOT Standard Specification 2-03.3(14)K, and 784 cubic yards of previously excavated soils from the Site that were tested and found to meet Site cleanup levels. Select borrow only was placed under the future roadway; a combination of select borrow and clean native soils was placed outside the roadway footprint. 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. The remediation area was then hydro-seeded for erosion control.

5.0 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.

ECOSS (Environmental Coalition of South Seattle), 2008, *City of Bothell Revenue Development Area, Report on Tax Parcel History Through 1972*. Prepared for The King County Brownfields Program, King County Solid Waste Division, and King County Department of Natural Resources and Parks, January 2008.

HWA GeoSciences, 2007, *Phase II Environmental Site Assessment Beta Bothell Landing Property, Bothell, Washington*. Prepared for City of Bothell, November 1, 2007.

HWA GeoSciences, 2008, *Phase II Environmental Site Assessment, Hertz Rentals Property, Bothell Washington.* Prepared for City of Bothell. October 10, 2008.

HWA GeoSciences, 2009a, *Remedial Investigation and Feasibility Study Work Plan, Bothell Landing Property, Bothell, Washington*. Prepared for City of Bothell, August 26, 2009.

HWA GeoSciences, 2009b*, Aquifer Testing and Permeability Estimates, Bothell Crossroads RI/FS, Bothell, Washington*. Prepared for City of Bothell, October 6, 2009.

Kleinfelder, 1999, *Phase II Soil and Ground water Exploration, Bothell Landing Shopping Plaza, Bothell, Washington*. Prepared for Buck & Gordon, LLP, Seattle, WA, September 8, 1999.

Parametrix, 2009a, *Bothell Landing Remedial Investigation/Feasibility Study, Revision No. 0*. Prepared for City of Bothell, November 2009.

Parametrix, 2009b, *Bothell Landing Draft Cleanup Action Plan, Revision No. 1,* Prepared for City of Bothell, December 2009.

Parametrix, 2010, *Interim Action Work Plan, Bothell Landing Site, Revision No.2,* Prepared for City of Bothell, April 2010.

Riley Group, *Draft Phase I Environmental Site Assessment, Bothell Landing Property #1*, May 29, 2007.

Washington Department of Ecology, 1994, *Natural Background Soil Metals Concentrations in Washington State*. Ecology Publication 94-115, October 1994.

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
2/2/11

State of Washington Licensed Geologist
Hydrogeologist 170
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Norm Nielsen, LG, LHG
Senior Hydrogeologist

Arnie Sugar, LG, LHG
President

Table 1
Summary of Method B Soil TPH Risk Calculations
Bothell Landing Site

Release area	Former east USTs	Former west USTs		
TPH Type	**Gasoline and diesel**	**Gasoline and diesel**		
Sample	**L-TP-13-8**	**L-TP-14-3**	**L-TP-15-7**	**L-TP-16-8**
Calculated Method B TPH cleanup level for direct skin contact (mg/Kg)	3,740	3,130	5,225	3,908
Most stringent soil risk criterion for direct skin contact	Hazard Index	Hazard Index	Hazard Index	Hazard Index
Method B soil TPH concentration protective of ground water (mg/Kg)	246	145	84	149
Most stringent soil risk criterion for protection of ground water	Hazard Index	Hazard Index	Benzene MCL Risk 1E-6	Hazard Index
Method A soil cleanup levels (mg/Kg)	30[1] (G) 2000 (D) 2000 (O) 0.03 (Benzene) 7 (Toluene) 6 (Ethylbenzene) 9 (Xylenes) 5 (Naphthalenes)[2] 0.10 (cPAHs TEC)[3]			

Notes:
1 - Cleanup level for gasoline mixtures with benzene
2 - Sum of Napthalene + 1-Methylnaphthalene + 2-Methylnaphthalene
3 - Toxic Equivalent Concentration of carcinogenic polynuclear aromatic hydrocarbons (cPAHs) per WAC 173-340-708(e)

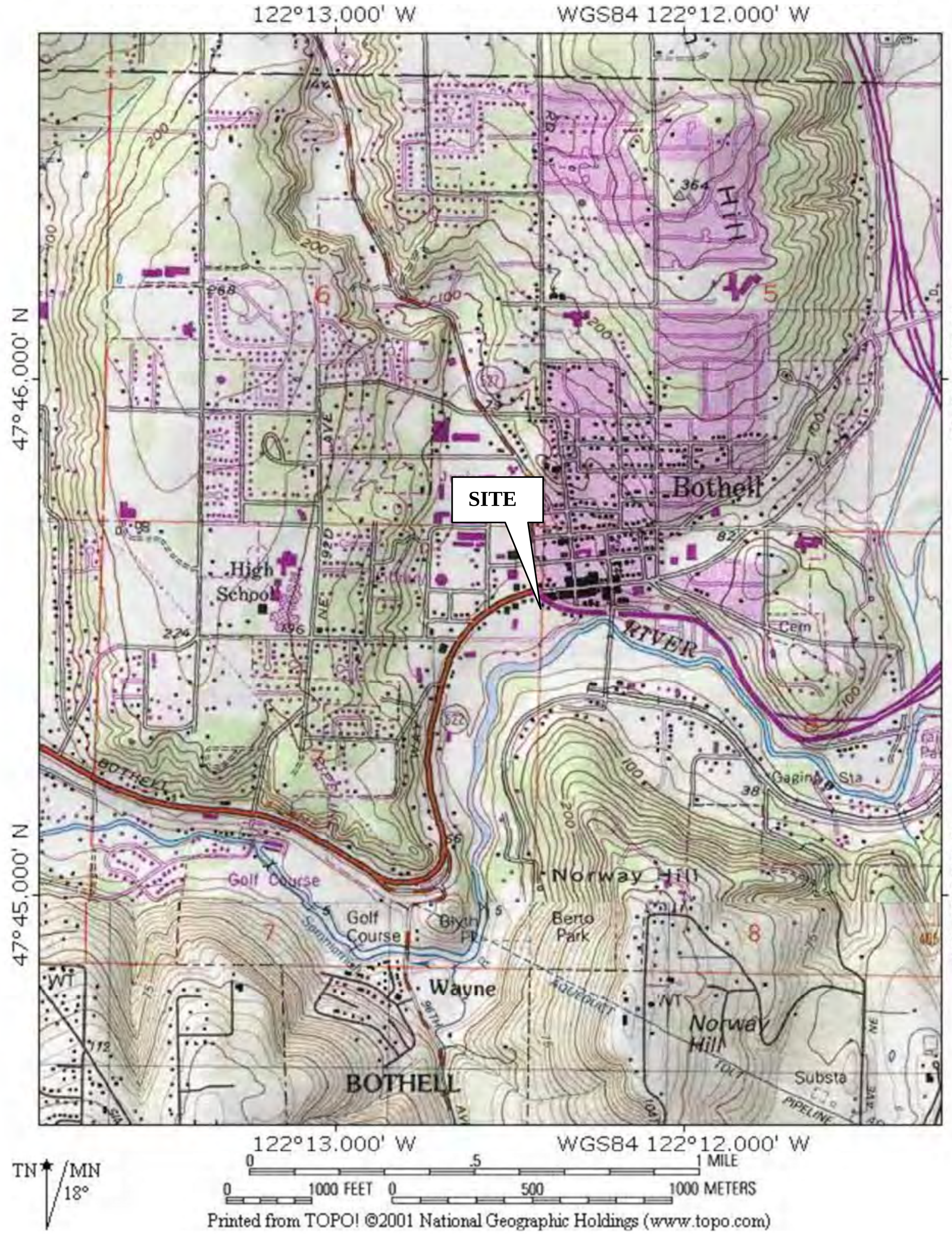
TABLE 2
SOIL CLEANUP ANALYTICAL RESULTS
BOTHELL LANDING SITE
(all results in milligrams per kilogram (mg/kg))

Sample Location	Sample Depth ft bgs	Confirmation Sample[1] Sidewall	Confirmation Sample[1] Bottom	Diesel	Oil	Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Total Naphthalenes[2]	cPAHs TEC[3]	PCBs	HVOCs	NOTES
L-TP-1-2	2			**340**	**420**	**300**	<0.023	<0.12	<0.12	**0.20**									**0.076**	0.000			
L-TP-1-8	8			**6300**	<530	**1200**	**0.34**	<.29	**1.3**	**1.5**									**70.91**	0.000			
L-TP-2-3	3	X		<27	<53	<5.5	<0.020	<0.055	<0.055	<0.055													
L-TP-2-8	8		X	<31	<61	<6.7	<0.020	<0.067	<0.067	<0.067													
L-TP-3-4	4	X		<28	<55	<6.1	<0.020	<0.061	<0.061	<0.061													
L-TP-3-7	7		X	<31	<62	<6.5	<0.020	<0.065	<0.065	<0.065													
L-TP-4-4	4	X		<27	<55	<5.7	<0.020	<0.057	<0.057	<0.057									<0.022	0.000			
L-TP-4-7	7		X	<28	<56	<5.5	<0.020	<0.055	<0.055	<0.055									<0.023	0.000			
L-TP-5-2	2	X		<28	<56	**8.1**	<0.020	<0.065	<0.065	<0.065									<0.022	0.000			
L-TP-5-6	6		X	**200**	<61	<6.0	<0.020	<0.060	<0.30	**0.23**									**0.118**	0.000			
L-TP-6-3	3			<76	**550**	**67**	<0.025	<0.13	<0.13	<0.13									**0.279**	**0.001**			Left-in-place northeast sidewall near SR 522
L-TP-6-7	7			<34	<57	**42**	<0.025	<0.12	<0.12	<0.12									**0.219**	0.000			Left-in-place northeast sidewall near SR 522
L-TP-7-2	2			<43	**160**	**120**	**0.29**	<0.11	**0.68**	**0.29**									**1.63**	**0.001**			
L-TP-7-7	7			<1000	**4200**	**11**	**0.088**	<0.055	<0.055	<0.055									**7.58**	**0.018**			
L-TP-8-2	2			**32**	**130**	<5.4	<0.020	<0.054	<0.054	<0.054									<0.022	0.000			
L-TP-8-7	7			<850	<59	**7800**	**5.8**	**3.6**	**35**	**40**									**2.17**	0.000			
L-TP-9-4	4	X		<27	<54	<5.3	<0.020	<0.053	<0.053	<0.053													
L-TP-9-8	8		X	<30	<59	<7.2	<0.020	<0.072	<0.072	<0.072													
L-TP-10-4	4	X		**77**	**470**	**8.6**	<0.020	<0.061	<0.061	<0.061													
L-TP-10-8	8		X	<29	<57	<5.4	<0.020	<0.054	<0.054	<0.054													
L-TP-11-4	4	X		<47	**350**	<6.0	<0.020	<0.060	<0.060	<0.060													
L-TP-11-8	8		X	<30	<60	<6.8	<0.020	<0.068	<0.068	<0.068													
L-TP-12-4	4	X		<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054													
L-TP-12-8	8		X	<35	**280**	<8.4	<0.020	<0.084	<0.084	<0.084													
L-TP-13-8	8		X	<30	<60														<0.024	0.000			
L-TP-14-3	3			<28	<55														**0.202**	0.000			
L-TP-15-7	7			<540	**2500**														**12.29**	**0.019**			
L-TP-16-8	8		X	<37	**100**														**0.46**	0.000			
L-TP-17-1	1			<29	**110**																		Contractor was concerned about possible contam from Hertz site
L-TP-17-3	3	X		<27	<55																		Contractor was concerned about possible contam from Hertz site
L-TP-17-6	6		X	<77	**160**																		Contractor was concerned about possible contam from Hertz site
L-TP-18-1	1			<31	**140**																		Contractor was concerned about possible contam from Hertz site
L-TP-18-3	3	X		<31	<61																		Contractor was concerned about possible contam from Hertz site
L-TP-19-1	1			<33	**160**																		Contractor was concerned about possible contam from Hertz site
L-TP-19-3	3	X		<29	<58																		Contractor was concerned about possible contam from Hertz site
L-TP-20-2	2	X		<86	**370**																		Contractor was concerned about possible contam from Hertz site
L-TP-21-2	2	X		<30	<61																		Contractor was concerned about possible contam from Hertz site
L-TP-21-5	5		X	<73	**180**																		
L-PEX-1-6	6		X	<28	<57	**13**	<0.020	<0.067	<0.067	<0.067	<11	**50**	<0.57	**29**	**6.4**	<0.28	<11	<0.57	**0.491**	**0.020**	All <0.057	All <0.0059	Northeast sidewall
L-PEX-2-10	10		X	<38	**120**	<10	<0.020	<0.10	<0.10	<0.10	<15	**61**	<0.76	**28**	**10**	<0.38	<15	<0.76	<0.03	0.000			
L-PEX-3-6	6	X		<31	<63	<7.1	<0.020	<0.071	<0.071	<0.071	<13	**37**	<0.63	**19**	<6.3	<0.31	<13	<0.63	<0.025	0.000			
L-PEX-4-6	6	X		<30	<59	<7.3	<0.020	<0.073	<0.073	<0.073	<12	**58**	<0.59	**40**	<5.9	<0.29	<12	<0.59	<0.024	0.000			
L-PEX-5-6	6	X		**360**	**310**	**140**	<0.020	<0.087	**0.13**	**0.44**	<14	**86**	<0.68	**9.5**	**29**	<0.34	<14	<0.68	**4.61**	**0.001**			Left-in-place north sidewall
L-PEX-6-11	11		X	<40	<80	<11	<0.023	<0.11	<0.11	<0.11	<16	**39**	<0.80	**24**	<8.0	<0.40	<16	<0.80	<0.033	0.000	All <0.080	All <0.0076	
L-PEX-7-11	11		X	<33	<66	<8.5	<0.020	<0.085	<0.085	<0.085	<13	**100**	<0.66	**34**	<6.6	<0.33	<13	<0.66	<0.026	0.000			
L-PEX-8-10	10	X		<96	**330**	**130**	**0.21**	**0.082**	**0.47**	**0.87**	<12	**36**	<0.58	**23**	**31**	<0.29	<12	<0.58	**0.092**	**0.001**			West sidewall at limit of excavation near Horse Creek culvert
L-PEX-9-10	10	X		<29	<58	<5.7	<0.020	<0.057	<0.057	<0.057	<12	**44**	<0.58	**29**	<5.8	<.29	<12	<0.58	**0.108**	0.000			Left-in-place north sidewall near rotunda
L-PEX-10-8	8	X		<1800	**2700**	**3100**	**23**	**2.6**	**43**	**165**													Left-in-place north sidewall near rotunda
L-PEX-11-8	8	X		<31	**80**	**32**	<0.020	<0.079	**0.083**	**0.15**	<12	**31**	<0.61	**15**	**9.6**	<0.31	<12	<0.61	**0.059**	0.002			Left-in-place north sidewall near rotunda
L-PEX-12-6	6	X		<29	<57	<5.3	<0.020	<0.053	<0.053	<0.053	<11	**66**	<0.57	**14**	<5.7	<0.29	<11	<0.57	<0.023	0.000			
L-PEX-13-14	14		X	<34	<68	<8.3	<0.020	<0.083	<0.083	<0.083	<14	**41**	<0.68	**29**	<6.8	<0.34	<14	<0.68	<0.027	0.000	All <0.068	All <0.0063	
L-PEX-14-9	9	X		<28	<56	**15**	<0.020	<0.051	**0.055**	**0.098**	<11	**31**	<0.56	**20**	**7.6**	<0.28	<11	<0.56	<0.022	0.000			Sample of backfill on west side of Horse Creek culvert
L-PEX-15-9.5	9.5	X		<40	**170**	<5.2	<0.020	<0.052	<0.052	<0.052	<12	**22**	<0.60	**10**	**8.1**	<0.30	<12	<0.60	<0.024	0.000			West sidewall at limit of excavation near Horse Creek culvert
L-PEX-16-11	11		X	<31	<62	<7.0	<0.020	<0.070	<0.070	<0.070	<12	**30**	<0.62	**26**	<6.2	<0.31	<12	<0.62	<0.025	0.000			
L-PEX-17-9	9	X		<32	<64	<7.8	<0.020	<0.078	<0.078	<0.078	<13	**67**	<0.64	**3.6**	<6.4	<0.32	<13	<0.64	<0.025	0.000	All <0.064	All <0.0060	
L-PEX-18-14	14		X	<33	**94**	<8.6	<0.020	<0.086	<0.086	<0.086	<13	**43**	<0.67	**19**	<6.7	<0.33	<13	<0.067	**0.062**	0.000			
L-PEX-19-10	10	X		<28	<56	<5.2	<0.020	<0.052	<0.052	<0.052	<11	**43**	<0.56	**22**	**11**	<0.28	<11	<0.56	<0.022	0.000			

TABLE 2
SOIL CLEANUP ANALYTICAL RESULTS
BOTHELL LANDING 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	Toluene	Ethylbenzene	Xylenes	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Total Naphthalenes[2]	cPAHs TEC[3]	PCBs	HVOCs	NOTES
Stockpile																							
L-TP-4-4	4			<27	<55	<5.7	<0.020	<0.057	<0.057	<0.057									<0.022	0.000			
L-TP-11-4	4			<47	**350**	<6.0	<0.020	<0.060	<0.060	<0.060													
L-TP-12-4	4			<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054													
L-TP-14-3	3			<28	<55														**0.202**	0.000			
PH-3	7			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-3	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-8	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-8	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-9	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-9	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-11	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-12	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-12	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-14	2.5			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
MTCA Method A Cleanup Leve[4]				2000		100/30[5]	0.03	7	6	9	20	NA	2	2000/19[6]	250	2	NA	NA	5	0.100	1	0.03[6]	
MTCA Method B Cleanup Leve[8]				3130		84	18	6,400	800	160,000	24	16,000	80	120,000	NA	24	400	400			0.5		
Background[9]				NA		NA	NA	NA	NA	NA	7	255	1	48	24	0.07	0.78	0.61	NA	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
Analytical data for stockpile samples PH-3 through PH-14 are from Kleinfelder (1999)
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 - The MTCA Method A soil cleanup level is 0.03 mg/kg for TCE, 0.05 mg/kg for PCE, and 2 mg/kg for TCA
8 - 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
9 - Background metals concentrations per *Natural Background Soil Metals Concentrations in Washington State* (Ecology, 1994) for the Puget Sound area



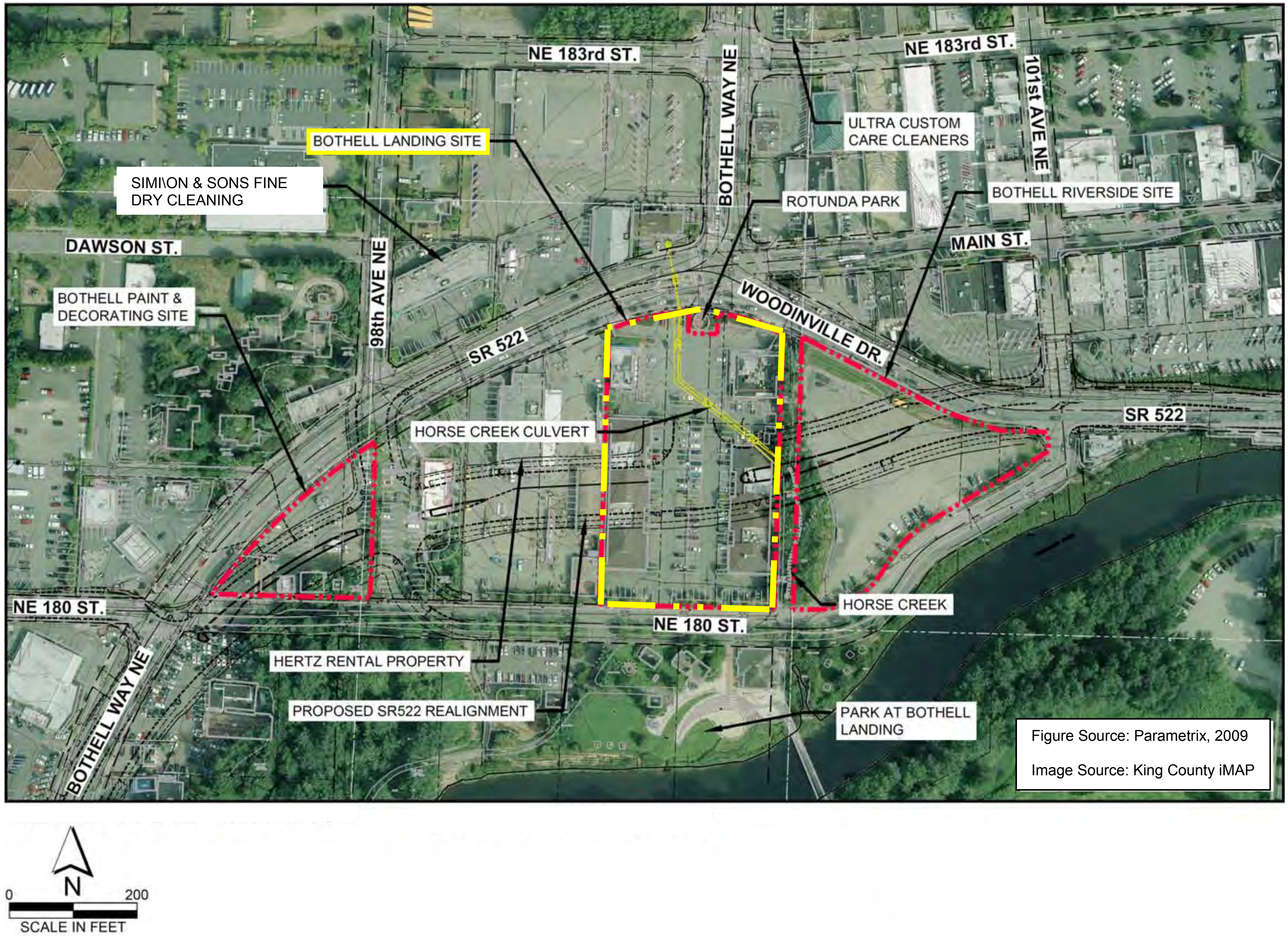
SITE VICINITY

BOTHELL LANDING SITE
INTERIM ACTION SOIL CLEANUP
BOTHELL, WASHINGTON

HWA GEOSCIENCES INC.

FIGURE NO. 1

PROJECT NO. 2007-098-920



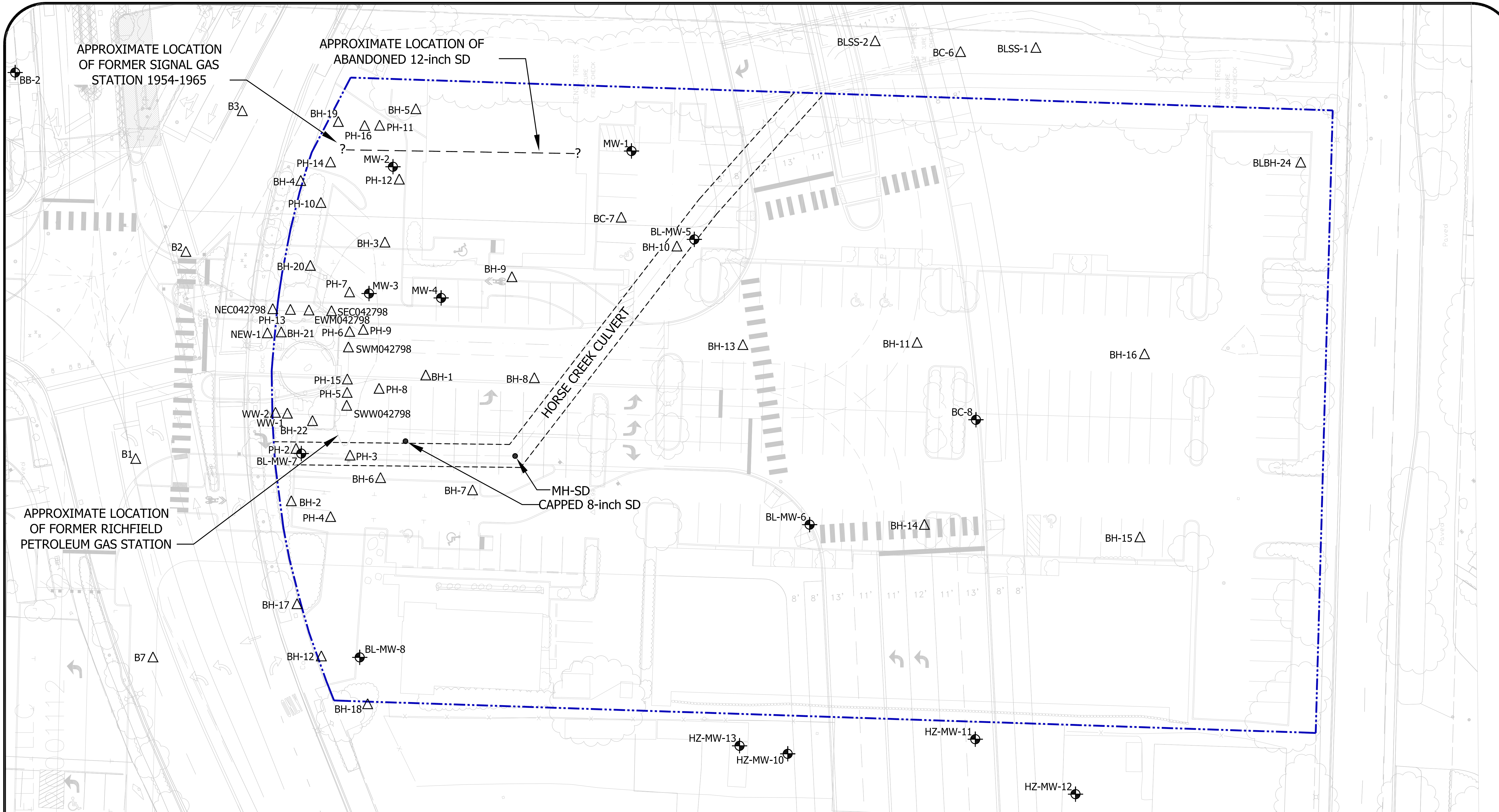
HWA GEOSCIENCES INC.

SITE LOCATION & ADJACENT PROPERTIES

BOTHELL LANDING SITE
INTERIM ACTION SOIL CLEANUP
BOTHELL, WASHINGTON

FIGURE NO.
2

PROJECT NO.
2007-098-920



EXPLANATION OF SYMBOL

APPROXIMATE PROPERTY BOUNDARY

BH-1 SOIL BORING LOCATIONS

BL-MW-1 MONITORING WELL LOCATIONS

BASE MAP PROVIDED BY PARAMETRIX

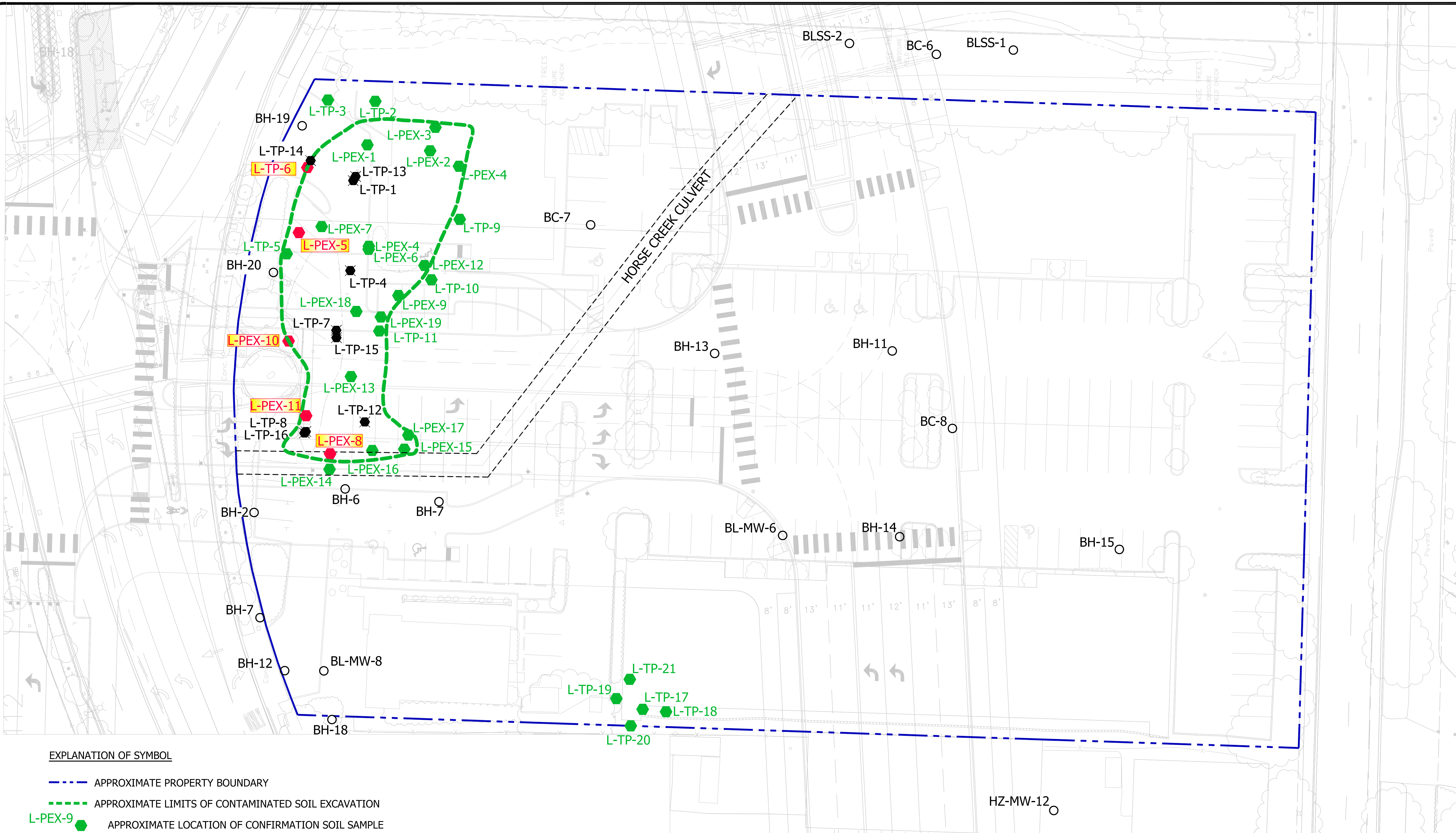
HWA GEOSCIENCES INC.

BOTHELL LANDING SITE
INTERIM ACTION CLEANUP
BOTHELL, WASHINGTON

SITE PLAN
PRIOR TO CLEANUP

DRAWN BY EFK	FIGURE NO. 3
CHECK BY NN	PROJECT NO.
DATE 01.18.11	2007-098 T920

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T920.DWG <PRE CLEAN UP FIG 3> Plotted: 1/25/2011 3:24 PM



EXPLANATION OF SYMBOL

APPROXIMATE PROPERTY BOUNDARY

APPROXIMATE LIMITS OF CONTAMINATED SOIL EXCAVATION

L-PEX-9 APPROXIMATE LOCATION OF CONFIRMATION SOIL SAMPLE LEFT IN PLACE WITH CONCENTRATIONS < MTCA

L-TP-9 APPROXIMATE LOCATION OF CONFIRMATION SOIL SAMPLE LEFT IN PLACE WITH CONCENTRATIONS ≥ MTCA

L-TP-9 APPROXIMATE LOCATION OF SOIL SAMPLE IN AREA THAT WAS SUBSEQUENTLY EXCAVATED

L-TP-9 PRE-INTERIM ACTION SOIL SAMPLE MEETING MTCA CLEANUP LEVELS

BASE MAP PROVIDED BY PARAMETRIX

HWA GEOSCIENCES INC.

BOTHELL LANDING SITE
INTERIM ACTION CLEANUP
BOTHELL, WASHINGTON

EXTENT OF INTERIM ACTION SOIL CLEANUP

DRAWN BY EFK

CHECK BY NN

DATE 11.18.10

FIGURE NO. 4

PROJECT NO. 2007-098 T920

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T920.DWG <BOTHELL LANDING FIG 4 (2)> Plotted: 1/27/2011 6:21 AM

APPENDIX A

DETERMINATION OF RISK-BASED CLEANUP LEVELS FOR THE SITE

HWA GEOSCIENCES INC.

November 4, 2010
HWA Project No. 2007 098-920

City of Bothell
9654 NE 182nd St.
Bothell, Washington 98021

Attention:Nduta Mbuthia, Project Engineer, Public Works Capital Projects

Subject: **CLEANUP LEVEL DETERMINATION**
Bothell Landing 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 Landing 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 Landing site in 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

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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 Landing 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 absence of buildings over affected areas. The ground water to surface water pathway was also not evaluated, as the site remedial investigation indicated TPH-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 Landing 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 Landing Site

Release area	Former east USTs	Former west USTs		
TPH Type	Gasoline and diesel	Gasoline and diesel		
Sample	L-TP-13-8	L-TP-14-3	L-TP-15-7	L-TP-16-8
Calculated Method B TPH cleanup level for direct skin contact (mg/Kg)	3,740	3,130	5,225	3,908
Most stringent soil risk criterion for direct skin contact	Hazard Index	Hazard Index	Hazard Index	Hazard Index
Method B soil TPH concentration protective of ground water (mg/Kg)	246	145	84	149
Most stringent soil risk criterion for protection of ground water	Hazard Index	Hazard Index	Benzene MCL Risk 1E-6	Hazard Index
Method A soil cleanup levels (mg/Kg)	30[1] (G) 2000 (D) 2000 (O) 0.03 (Benzene) 7 (Toluene) 6 (Ethylbenzene) 9 (Xylenes) 5 (Naphthalenes)[2] 0.10 (cPAHs TEC)[3]			
Maximum value detected on site after cleanup[4]	13 (G) <40 (D) 120 (O) <0.02 (Benzene) <0.11 (Toluene) <0.11 (Ethylbenzene) <0.11 (Xylenes) 0.49 (Naphthalenes) 0.02 (cPAHs TEC)			
Cleanup levels met?	Method A Yes Method B Yes TCs Yes[5]	Method A Yes Method B Yes TCs Yes	Method A Yes Method B Yes[6] TCs Yes	Method A Yes Method B Yes TCs Yes

Notes:
1 - Cleanup level for gasoline mixtures with benzene
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 - 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

5 - TCs: Cleanup levels for all target compounds (PAHs, EDB, EDC, MTBE, benzene, naphthalenes) were met as indicated by laboratory analysis for the individual compounds
6 - Method B TPH risk-based cleanup level of 84 mg/Kg no longer applicable because of benzene-contaminated soil having been removed

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 two 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 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).

4.0 Summary

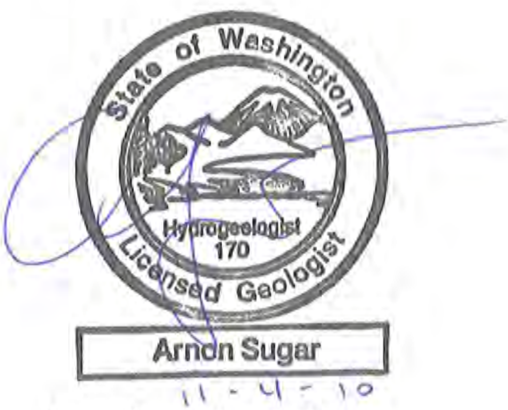
Confirmation soil samples in all accessible cleanup areas (with the exception of soil remaining under the active SR 522 roadway, which will be cleaned up in 2011) met all applicable cleanup levels, including:

- 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.



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: 10/13/10
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-15-7

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	6.9000	0.30%
AL_EC >6-8	48	2.06%
AL_EC >8-10	57	2.44%
AL_EC >10-12	77	3.30%
AL_EC >12-16	85	3.64%
AL_EC >16-21	120	5.14%
AL_EC >21-34	1300	55.71%
AR_EC >8-10	19.000	0.81%
AR_EC >10-12	39.0000	1.67%
AR_EC >12-16	59	2.53%
AR_EC >16-21	78.0000	3.34%
AR_EC >21-34	430.0000	18.43%
Benzene	0.82	0.04%
Toluene	0.00011	0.00%
Ethylbenzene	0.62	0.03%
Total Xylenes	0.64	0.03%
Naphthalene	0.29	0.01%
1-Methyl Naphthalene	3.4	0.15%
2-Methyl Naphthalene	8.6	0.37%
n-Hexane	0.0603	0.00%
MTBE	0.00017	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.029	0.00%
Benzo(b)fluoranthene	0.028	0.00%
Benzo(k)fluoranthene	0.011	0.00%
Benzo(a)pyrene	0.01	0.00%
Chrysene	0.1	0.00%
Dibenz(a,h)anthracene	0.000342	0.00%
Indeno(1,2,3-cd)pyrene	0.0091	0.00%
Sum	2333.518022	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 Landing 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: 10/13/2010
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-15-7
Measured Soil TPH Concentration, mg/kg: **2,333.518**

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	5,225	2.26E-07	4.47E-01	Pass
	Method C	70,606	5.09E-08	3.30E-02	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	84	7.72E-05	2.54E+00	Fail
	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	5,225.24	70,606.27
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	5.23E+03	5.06E-07	1.00E+00	YES	7.06E+04	1.54E-06	1.00E+00
Total Risk=1E-5	*NO*	1.03E+05	1.00E-05	1.98E+01	*NO*	4.58E+05	1.00E-05	6.49E+00
Risk of Benzene= 1E-6	*NO*	5.17E+04	5.00E-06	9.89E+00	NA			
Risk of cPAHs mixture= 1E-6	*NO*	1.29E+04	1.25E-06	2.47E+00				
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	**Benzene MCL = 5 ug/L**
Protective Ground Water Concentration, ug/L	**65.42**
Protective Soil Concentration, mg/kg	**83.55**

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	*NO*	1.31E+02	2.14E-05	1.00E+00	3.22E+02
Total Risk = 1E-5	*NO*	8.78E+01	1.00E-05	5.82E-01	1.37E+02
Total Risk = 1E-6	YES	1.49E+01	1.00E-06	8.20E-02	1.28E+01
Risk of cPAHs mixture= 1E-5	*NO*	2.76E+02	1.29E-04	3.86E+00	100% NAPL
Benzene MCL = 5 ug/L	YES	6.54E+01	6.29E-06	4.09E-01	8.35E+01
MTBE = 20 ug/L	*NO*	2.76E+02	1.29E-04	3.86E+00	100% NAPL

Note: 100% NAPL is 74000 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	2.76E+02	1.29E-04	3.86E+00	**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: 10/19/10
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-13-8

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	5	13.00%
AL_EC >6-8	5	13.00%
AL_EC >8-10	5	13.00%
AL_EC >10-12	2.3	5.98%
AL_EC >12-16	2.3	5.98%
AL_EC >16-21	2.3	5.98%
AL_EC >21-34	2.3	5.98%
AR_EC >8-10	5.000	13.00%
AR_EC >10-12	2.3000	5.98%
AR_EC >12-16	2.3	5.98%
AR_EC >16-21	2.3000	5.98%
AR_EC >21-34	2.3000	5.98%
Benzene	0.0000159	0.00%
Toluene	0.000011	0.00%
Ethylbenzene	0.0000096	0.00%
Total Xylenes	0.0000297	0.00%
Naphthalene	0.0000256	0.00%
1-Methyl Naphthalene	0.0000151	0.00%
2-Methyl Naphthalene	0.0000307	0.00%
n-Hexane	0.0603	0.16%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.0000338	0.00%
Benzo(b)fluoranthene	0.000039	0.00%
Benzo(k)fluoranthene	0.0000308	0.00%
Benzo(a)pyrene	0.0000261	0.00%
Chrysene	0.00003	0.00%
Dibenz(a,h)anthracene	0.0000342	0.00%
Indeno(1,2,3-cd)pyrene	0.0000373	0.00%
Sum	38.4606688	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 Landing 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: 10/19/2010
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-13-8
Measured Soil TPH Concentration, mg/kg: **38.461**

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	3,740	4.24E-10	1.03E-02	Pass
	Method C	57,049	1.05E-10	6.74E-04	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	246	3.52E-09	4.36E-01	Pass
	Target TPH GW Conc. @ 800 ug/L	317	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	**3,740.19**	**57,048.58**
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	3.74E+03	4.13E-08	1.00E+00	YES	5.70E+04	1.56E-07	1.00E+00
Total Risk=1E-5	*NO*	9.06E+05	1.00E-05	2.42E+02	*NO*	3.65E+06	1.00E-05	6.40E+01
Risk of Benzene= 1E-6	*NO*	4.39E+07	4.85E-04	1.17E+04	NA			
Risk of cPAHs mixture= 1E-6	*NO*	9.08E+04	1.00E-06	2.43E+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	**HI=1**
Protective Ground Water Concentration, ug/L	**751.03**
Protective Soil Concentration, mg/kg	**246.15**

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	7.51E+02	1.87E-08	1.00E+00	2.46E+02
Total Risk = 1E-5	*NO*	1.00E+03	7.72E-08	1.14E+00	100% NAPL
Total Risk = 1E-6	*NO*	1.00E+03	7.72E-08	1.14E+00	100% NAPL
Risk of cPAHs mixture= 1E-5	*NO*	1.00E+03	7.72E-08	1.14E+00	100% NAPL
Benzene MCL = 5 ug/L	*NO*	1.00E+03	7.72E-08	1.14E+00	100% NAPL
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	8.00E+02	2.27E-08	1.04E+00	**3.17E+02**

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/20/10
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-16-8

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	0.05	0.03%
AL_EC >6-8	13	6.78%
AL_EC >8-10	22	11.48%
AL_EC >10-12	30	15.66%
AL_EC >12-16	0.3525	0.18%
AL_EC >16-21	0.3582	0.19%
AL_EC >21-34	55	28.70%
AR_EC >8-10	27	14.09%
AR_EC >10-12	12	6.26%
AR_EC >12-16	5.2	2.71%
AR_EC >16-21	0.5115	0.27%
AR_EC >21-34	25	13.05%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0.62	0.32%
Naphthalene	0.14	0.07%
1-Methyl Naphthalene	0.14	0.07%
2-Methyl Naphthalene	0.18	0.09%
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	0.0000338	0.00%
Benzo(b)fluoranthene	0.000039	0.00%
Benzo(k)fluoranthene	0.0000308	0.00%
Benzo(a)pyrene	0.0000261	0.00%
Chrysene	0.00003	0.00%
Dibenz(a,h)anthracene	0.0000342	0.00%
Indeno(1,2,3-cd)pyrene	0.0000373	0.00%
Sum	191.6107312	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 Landing 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: 10/20/2010
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-16-8
Measured Soil TPH Concentration, mg/kg: **191.611**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc RISK @	HI @	Does Measured Soil Conc Pass or Fail?
Protection of Soil Direct Contact: Human Health	Method B	3,813	4.24E-10	5.03E-02	Pass
	Method C	63,625	1.05E-10	3.01E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	142	1.80E-12	1.12E+00	Fail
	Target TPH GW Conc. @ 800 ug/L	1,146	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	**3,812.88**	**63,625.40**
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	3.81E+03	8.43E-09	1.00E+00	YES	6.36E+04	3.49E-08	1.00E+00
Total Risk=1E-5	*NO*	4.52E+06	1.00E-05	1.19E+03	*NO*	1.82E+07	1.00E-05	2.86E+02
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	*NO*	4.52E+05	1.00E-06	1.19E+02				
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	**HI=1**
Protective Ground Water Concentration, ug/L	**490.51**
Protective Soil Concentration, mg/kg	**141.99**

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	4.91E+02	1.92E-12	1.00E+00	1.42E+02
Total Risk = 1E-5	*NO*	8.67E+02	1.42E-12	1.60E+00	100% NAPL
Total Risk = 1E-6	*NO*	8.67E+02	1.42E-12	1.60E+00	100% NAPL
Risk of cPAHs mixture= 1E-5	*NO*	8.67E+02	1.42E-12	1.60E+00	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 72000 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	8.00E+02	1.49E-12	1.51E+00	**1.15E+03**

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/20/10
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-14-3

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	5.0	8.30%
AL_EC >6-8	5.0	8.30%
AL_EC >8-10	5.0	8.30%
AL_EC >10-12	5.0	8.30%
AL_EC >12-16	5.0	8.30%
AL_EC >16-21	5.0	8.30%
AL_EC >21-34	5.0	8.30%
AR_EC >8-10	5.0	8.30%
AR_EC >10-12	5.0	8.30%
AR_EC >12-16	5.0	8.30%
AR_EC >16-21	5.0	8.30%
AR_EC >21-34	5.0	8.30%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0	0.00%
Naphthalene	0.022	0.04%
1-Methyl Naphthalene	0.05	0.08%
2-Methyl Naphthalene	0.13	0.22%
n-Hexane	0.0603	0.10%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.0000338	0.00%
Benzo(b)fluoranthene	0.000039	0.00%
Benzo(k)fluoranthene	0.0000308	0.00%
Benzo(a)pyrene	0.0000261	0.00%
Chrysene	0.00003	0.00%
Dibenz(a,h)anthracene	0.0000342	0.00%
Indeno(1,2,3-cd)pyrene	0.0000373	0.00%
Sum	60.2625312	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 Landing 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: 10/20/2010
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-14-3
Measured Soil TPH Concentration, mg/kg: **60.263**

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	3,130	4.24E-10	1.93E-02	Pass
	Method C	46,166	1.05E-10	1.31E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	145	7.53E-12	6.66E-01	Pass
	Target TPH GW Conc. @ 800 ug/L	19,329	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	**3,130.29**	**46,165.84**
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	3.13E+03	2.20E-08	1.00E+00	YES	4.62E+04	8.06E-08	1.00E+00
Total Risk=1E-5	*NO*	1.42E+06	1.00E-05	4.55E+02	*NO*	5.73E+06	1.00E-05	1.24E+02
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	*NO*	1.42E+05	1.00E-06	4.55E+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	**HI=1**
Protective Ground Water Concentration, ug/L	**475.46**
Protective Soil Concentration, mg/kg	**144.90**

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	4.75E+02	5.63E-12	1.00E+00	1.45E+02
Total Risk = 1E-5	*NO*	8.02E+02	3.89E-12	1.34E+00	100% NAPL
Total Risk = 1E-6	*NO*	8.02E+02	3.89E-12	1.34E+00	100% NAPL
Risk of cPAHs mixture= 1E-5	*NO*	8.02E+02	3.89E-12	1.34E+00	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 72000 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	8.00E+02	3.90E-12	1.33E+00	**1.93E+04**

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/19/10
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-13-8

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	5.0	8.03%
AL_EC >6-8	5.0	8.03%
AL_EC >8-10	5.0	8.03%
AL_EC >10-12	5.0	8.03%
AL_EC >12-16	5.0	8.03%
AL_EC >16-21	5.0	8.03%
AL_EC >21-34	5.0	8.03%
AR_EC >8-10	5.0	8.03%
AR_EC >10-12	5.0	8.03%
AR_EC >12-16	5.0	8.03%
AR_EC >16-21	5.0	8.03%
AR_EC >21-34	5.0	8.03%
Benzene	0.02	0.03%
Toluene	0.5	0.80%
Ethylbenzene	0.5	0.80%
Total Xylenes	0.5	0.80%
Naphthalene	0.008	0.01%
1-Methyl Naphthalene	0.008	0.01%
2-Methyl Naphthalene	0.008	0.01%
n-Hexane	0.2	0.32%
MTBE	0.5	0.80%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.008	0.01%
Benzo(b)fluoranthene	0.008	0.01%
Benzo(k)fluoranthene	0.008	0.01%
Benzo(a)pyrene	0.008	0.01%
Chrysene	0.008	0.01%
Dibenz(a,h)anthracene	0.008	0.01%
Indeno(1,2,3-cd)pyrene	0.008	0.01%
Sum	62.3	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 Landing 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: 10/19/2010
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-13-8
Measured Soil TPH Concentration, mg/kg: **62.300**

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	535	1.18E-07	1.91E-02	Pass
	Method C	21,424	2.91E-08	1.30E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	11	4.33E-06	9.05E-01	Fail
	Target TPH GW Conc. @ 800 ug/L	102	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	534.66	21,423.87
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	3.26E+03	6.15E-06	1.00E+00	NO	4.79E+04	2.24E-05	1.00E+00
Total Risk=1E-5	NO	5.30E+03	1.00E-05	1.63E+00	YES	2.14E+04	1.00E-05	4.47E-01
Risk of Benzene= 1E-6	NO	5.66E+04	1.07E-04	1.74E+01	NA			
Risk of cPAHs mixture= 1E-6	YES	5.35E+02	1.01E-06	1.64E-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	MTBE = 20 ug/L
Protective Ground Water Concentration, ug/L	117.04
Protective Soil Concentration, mg/kg	10.59

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	NO	6.29E+02	4.99E-06	1.00E+00	7.24E+01
Total Risk = 1E-5	NO	1.04E+03	1.00E-05	1.51E+00	1.55E+02
Total Risk = 1E-6	NO	1.53E+02	1.00E-06	2.62E-01	1.39E+01
Risk of cPAHs mixture= 1E-5	NO	2.85E+04	6.63E-05	3.55E+00	100% NAPL
Benzene MCL = 5 ug/L	NO	7.49E+02	6.29E-06	1.16E+00	9.27E+01
MTBE = 20 ug/L	YES	1.17E+02	7.61E-07	2.02E-01	1.06E+01

Note: 100% NAPL is 72000 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	8.00E+02	6.88E-06	1.23E+00	**1.02E+02**

APPENDIX B

LABORATORY CERTIFICATES OF ANALYSIS

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

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. 1009-030

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 3, 2020.

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, 2020
Laboratory Reference: 1009-030
Project: 2007-098

Case Narrative

Samples were collected on September 2, 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.

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^oC and -20^oC until extraction or analysis.

The chromatogram for sample L-TP-1-2 is similar to mineral spirits with diesel fuel.

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 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-1-2**					
Laboratory ID:	09-030-01					
Benzene	**ND**	0.023	EPA 8021	9-3-10	9-3-10	
Toluene	**ND**	0.12	EPA 8021	9-3-10	9-3-10	
Ethyl Benzene	**ND**	0.12	EPA 8021	9-3-10	9-3-10	
m,p-Xylene	**0.20**	0.12	EPA 8021	9-3-10	9-3-10	
o-Xylene	**ND**	0.12	EPA 8021	9-3-10	9-3-10	
Gasoline	**300**	12	NWTPH-Gx	9-3-10	9-3-10	Z,O
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***96***	***55-127***				
Client ID:	**L-TP-1-8**					
Laboratory ID:	09-030-02					
Benzene	**0.34**	0.058	EPA 8021	9-3-10	9-3-10	
Toluene	**ND**	0.29	EPA 8021	9-3-10	9-3-10	
Ethyl Benzene	**1.3**	0.29	EPA 8021	9-3-10	9-3-10	
m,p-Xylene	**1.5**	0.29	EPA 8021	9-3-10	9-3-10	
o-Xylene	**ND**	1.5	EPA 8021	9-3-10	9-3-10	U1
Gasoline	**1200**	29	NWTPH-Gx	9-3-10	9-3-10	O
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***100***	***55-127***				
Client ID:	**L-TP-2-3**					
Laboratory ID:	09-030-03					
Benzene	**ND**	0.020	EPA 8021	9-3-10	9-3-10	
Toluene	**ND**	0.055	EPA 8021	9-3-10	9-3-10	
Ethyl Benzene	**ND**	0.055	EPA 8021	9-3-10	9-3-10	
m,p-Xylene	**ND**	0.055	EPA 8021	9-3-10	9-3-10	
o-Xylene	**ND**	0.055	EPA 8021	9-3-10	9-3-10	
Gasoline	**ND**	5.5	NWTPH-Gx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***95***	***55-127***				

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-2-8**					
Laboratory ID:	09-030-04					
Benzene	**ND**	0.020	EPA 8021	9-3-10	9-3-10	
Toluene	**ND**	0.067	EPA 8021	9-3-10	9-3-10	
Ethyl Benzene	**ND**	0.067	EPA 8021	9-3-10	9-3-10	
m,p-Xylene	**ND**	0.067	EPA 8021	9-3-10	9-3-10	
o-Xylene	**ND**	0.067	EPA 8021	9-3-10	9-3-10	
Gasoline	**ND**	6.7	NWTPH-Gx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***99***	***55-127***				
Client ID:	**L-TP-3-4**					
Laboratory ID:	09-030-05					
Benzene	**ND**	0.020	EPA 8021	9-3-10	9-3-10	
Toluene	**ND**	0.061	EPA 8021	9-3-10	9-3-10	
Ethyl Benzene	**ND**	0.061	EPA 8021	9-3-10	9-3-10	
m,p-Xylene	**ND**	0.061	EPA 8021	9-3-10	9-3-10	
o-Xylene	**ND**	0.061	EPA 8021	9-3-10	9-3-10	
Gasoline	**ND**	6.1	NWTPH-Gx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***100***	***55-127***				
Client ID:	**L-TP-3-7**					
Laboratory ID:	09-030-06					
Benzene	**ND**	0.020	EPA 8021	9-3-10	9-3-10	
Toluene	**ND**	0.065	EPA 8021	9-3-10	9-3-10	
Ethyl Benzene	**ND**	0.065	EPA 8021	9-3-10	9-3-10	
m,p-Xylene	**ND**	0.065	EPA 8021	9-3-10	9-3-10	
o-Xylene	**ND**	0.065	EPA 8021	9-3-10	9-3-10	
Gasoline	**ND**	6.5	NWTPH-Gx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***98***	***55-127***				

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
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:	MB0903S1					
Benzene	**ND**	0.020	EPA 8021	9-3-10	9-3-10	
Toluene	**ND**	0.050	EPA 8021	9-3-10	9-3-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-3-10	9-3-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-3-10	9-3-10	
o-Xylene	**ND**	0.050	EPA 8021	9-3-10	9-3-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***95***	***55-127***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-030-05										
	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						***100***	***98***	***55-127***			
SPIKE BLANKS											
Laboratory ID:	SB0903S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.01**	**1.05**	1.00	1.00		**101**	**105**	75-113	4	9	
Toluene	**0.963**	**0.995**	1.00	1.00		**96**	**100**	75-116	3	10	
Ethyl Benzene	**0.970**	**0.999**	1.00	1.00		**97**	**100**	82-117	3	10	
m,p-Xylene	**0.983**	**1.01**	1.00	1.00		**98**	**101**	81-122	3	10	
o-Xylene	**0.975**	**1.00**	1.00	1.00		**98**	**100**	83-118	3	10	
Surrogate:											
Fluorobenzene						***97***	***99***	***55-127***			

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
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:	**L-TP-1-2**					
Laboratory ID:	09-030-01					
Diesel Fuel #2	**340**	27	NWTPH-Dx	9-3-10	9-3-10	M
Lube Oil	**420**	53	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***93***	***50-150***				
Client ID:	**L-TP-1-8**					
Laboratory ID:	09-030-02					
Diesel Fuel #2	**6300**	140	NWTPH-Dx	9-3-10	9-5-10	
Lube Oil Range Organics	**ND**	530	NWTPH-Dx	9-3-10	9-5-10	U1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***94***	***50-150***				
Client ID:	**L-TP-2-3**					
Laboratory ID:	09-030-03					
Diesel Range Organics	**ND**	27	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	53	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***107***	***50-150***				
Client ID:	**L-TP-2-8**					
Laboratory ID:	09-030-04					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***100***	***50-150***				
Client ID:	**L-TP-3-4**					
Laboratory ID:	09-030-05					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***108***	***50-150***				
Client ID:	**L-TP-3-7**					
Laboratory ID:	09-030-06					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
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:	MB0903S2					
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	***116***	***50-150***				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-030-01							
	ORIG	DUP						
Diesel Fuel #2	**318**	**265**				18	NA	
Lube Oil	**399**	**375**				6	NA	
Surrogate:								
o-Terphenyl			***93***	***109***	***50-150***			

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
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:	**L-TP-1-2**					
Laboratory ID:	09-030-01					
Naphthalene	**0.0080**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
2-Methylnaphthalene	**0.028**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
1-Methylnaphthalene	**0.040**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Acenaphthylene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Acenaphthene	**0.015**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Fluorene	**0.024**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Phenanthrene	**0.025**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Anthracene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Fluoranthene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Pyrene	**0.0084**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[a]anthracene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Chrysene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[b]fluoranthene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[k]fluoranthene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[a]pyrene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Dibenz[a,h]anthracene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[g,h,i]perylene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***83***	***45 - 101***				
Pyrene-d10	***93***	***52 - 118***				
Terphenyl-d14	***95***	***41 - 106***				

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
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:	**L-TP-1-8**					
Laboratory ID:	09-030-02					
Naphthalene	**0.91**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
2-Methylnaphthalene	**43**	0.76	EPA 8270/SIM	9-3-10	9-7-10	
1-Methylnaphthalene	**27**	0.76	EPA 8270/SIM	9-3-10	9-7-10	
Acenaphthylene	**0.39**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Acenaphthene	**1.6**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Fluorene	**3.0**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Phenanthrene	**3.5**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Anthracene	**0.23**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Fluoranthene	**0.045**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Pyrene	**0.076**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Benzo[a]anthracene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Chrysene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Benzo[b]fluoranthene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Benzo[k]fluoranthene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Benzo[a]pyrene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Dibenz[a,h]anthracene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Benzo[g,h,i]perylene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***81***	***45 - 101***				
Pyrene-d10	***89***	***52 - 118***				
Terphenyl-d14	***106***	***41 - 106***				

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
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:	MB0903S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***90***	***45 - 101***				
Pyrene-d10	***98***	***52 - 118***				
Terphenyl-d14	***101***	***41 - 106***				

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
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:	09-014-02										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0777**	**0.0818**	0.0833	0.0833	ND	93	98	31 - 115	5	19	
Acenaphthylene	**0.0774**	**0.0805**	0.0833	0.0833	ND	93	97	40 - 134	4	22	
Acenaphthene	**0.0789**	**0.0825**	0.0833	0.0833	ND	95	99	48 - 118	4	17	
Fluorene	**0.0841**	**0.0854**	0.0833	0.0833	ND	101	103	54 - 122	2	16	
Phenanthrene	**0.0848**	**0.0864**	0.0833	0.0833	0.0133	86	88	46 - 123	2	19	
Anthracene	**0.0802**	**0.0817**	0.0833	0.0833	0.00723	88	89	53 - 123	2	27	
Fluoranthene	**0.0894**	**0.0948**	0.0833	0.0833	0.0132	91	98	47 - 132	6	26	
Pyrene	**0.0942**	**0.103**	0.0833	0.0833	0.0118	99	109	41 - 137	9	25	
Benzo[a]anthracene	**0.0825**	**0.0837**	0.0833	0.0833	ND	99	100	43 - 132	1	26	
Chrysene	**0.0781**	**0.0806**	0.0833	0.0833	0.00702	85	88	46 - 126	3	24	
Benzo[b]fluoranthene	**0.0750**	**0.0753**	0.0833	0.0833	ND	90	90	44 - 134	0	24	
Benzo[k]fluoranthene	**0.0780**	**0.0784**	0.0833	0.0833	ND	94	94	45 - 132	1	20	
Benzo[a]pyrene	**0.0845**	**0.0859**	0.0833	0.0833	ND	101	103	36 - 136	2	23	
Indeno(1,2,3-c,d)pyrene	**0.0957**	**0.0971**	0.0833	0.0833	ND	115	117	40 - 136	1	16	
Dibenz[a,h]anthracene	**0.0952**	**0.0971**	0.0833	0.0833	ND	114	117	40 - 142	2	13	
Benzo[g,h,i]perylene	**0.0931**	**0.0957**	0.0833	0.0833	ND	112	115	37 - 137	3	18	
Surrogate:											
2-Fluorobiphenyl						***86***	***89***	***45 - 101***			
Pyrene-d10						***97***	***97***	***52 - 118***			
Terphenyl-d14						***103***	***104***	***41 - 106***			

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
Project: 2007-098

% MOISTURE

Date Analyzed: 9-3-10

Client ID	Lab ID	% Moisture
L-TP-1-2	09-030-01	6
L-TP-1-8	09-030-02	13
L-TP-2-3	09-030-03	6
L-TP-2-8	09-030-04	18
L-TP-3-4	09-030-05	10
L-TP-3-7	09-030-06	19

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 with diesel fuel.

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

Laboratory Number: 09-030

Company: HWA
Project Number: 2007-048
Project Name: Bothell X-roads Landing
Project Manager: Vance Atkins
Sampled by: Pete Pearson

Turnaround Request (in working days)
(Check One)
- [ ] Same Day
- [x] 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	L-TP-1-2	9/2/10	13:20	S	3		X	X				X							X
2	L-TP-1-8		13:30				X	X				X							
3	L-TP-2-3		13:40				X	X											
4	L-TP-2-8		13:50				X	X											
5	L-TP-3-4		14:00				X	X											
6	L-TP-3-7		14:10				X	X											

	Signature	Company	Date	Time
Relinquished by				
Received by	[signature]	Speedy	9-3-10	0800
Relinquished by	[signature]	Speedy	9-3-10	0832
Received by	[signature]	OSE	9/3/10	0832
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

OnSite Environmental Inc.
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September 9, 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. 1009-038

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 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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 $2^{o}C$ 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.

PAHs EPA 8270D/SIM Analysis

Sample L-TP-6-7 had one surrogate recovery out of control limits. This is within allowance of our standard operating procedure as long as the recovery is above 10%.

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 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-4-4**					
Laboratory ID:	09-038-01					
Benzene	**ND**	0.020	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.057	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.057	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**ND**	0.057	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.057	EPA 8021	9-4-10	9-7-10	
Gasoline	**ND**	5.7	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*55-127*				
Client ID:	**L-TP-4-7**					
Laboratory ID:	09-038-02					
Benzene	**ND**	0.020	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.055	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.055	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**ND**	0.055	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.055	EPA 8021	9-4-10	9-7-10	
Gasoline	**ND**	5.5	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*55-127*				
Client ID:	**L-TP-5-2**					
Laboratory ID:	09-038-03					
Benzene	**ND**	0.020	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.065	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.065	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**ND**	0.065	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.065	EPA 8021	9-4-10	9-7-10	
Gasoline	**8.1**	6.5	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*55-127*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-5-6**					
Laboratory ID:	09-038-04					
Benzene	**ND**	0.020	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.060	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.30	EPA 8021	9-4-10	9-7-10	U1
m,p-Xylene	**0.23**	0.060	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.30	EPA 8021	9-4-10	9-7-10	U1
Gasoline	**ND**	6.0	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*55-127*				
Client ID:	**L-TP-6-3**					
Laboratory ID:	09-038-05					
Benzene	**ND**	0.025	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.13	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.13	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**ND**	0.13	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.13	EPA 8021	9-4-10	9-7-10	
Gasoline	**67**	13	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*55-127*				
Client ID:	**L-TP-6-7**					
Laboratory ID:	09-038-06					
Benzene	**ND**	0.025	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.12	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.12	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**ND**	0.12	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.12	EPA 8021	9-4-10	9-7-10	
Gasoline	**42**	12	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*55-127*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-7-2**					
Laboratory ID:	09-038-07					
Benzene	**0.29**	0.023	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.11	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**0.68**	0.11	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**0.29**	0.11	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.11	EPA 8021	9-4-10	9-7-10	
Gasoline	**120**	11	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*55-127*				
Client ID:	**L-TP-7-7**					
Laboratory ID:	09-038-08					
Benzene	**0.088**	0.020	EPA 8021	9-4-10	9-8-10	
Toluene	**ND**	0.055	EPA 8021	9-4-10	9-8-10	
Ethyl Benzene	**ND**	0.055	EPA 8021	9-4-10	9-8-10	
m,p-Xylene	**0.11**	0.055	EPA 8021	9-4-10	9-8-10	
o-Xylene	**ND**	0.055	EPA 8021	9-4-10	9-8-10	
Gasoline	**11**	5.5	NWTPH-Gx	9-4-10	9-8-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*55-127*				
Client ID:	**L-TP-8-2**					
Laboratory ID:	09-038-09					
Benzene	**ND**	0.020	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.054	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.054	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**ND**	0.054	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.054	EPA 8021	9-4-10	9-7-10	
Gasoline	**ND**	5.4	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*55-127*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-8-7**					
Laboratory ID:	09-038-10					
Benzene	**5.8**	0.11	EPA 8021	9-4-10	9-8-10	
Toluene	**3.6**	0.54	EPA 8021	9-4-10	9-8-10	
Ethyl Benzene	**35**	0.54	EPA 8021	9-4-10	9-8-10	
m,p-Xylene	**40**	0.54	EPA 8021	9-4-10	9-8-10	
o-Xylene	**ND**	27	EPA 8021	9-4-10	9-8-10	U1
Gasoline	**7800**	540	NWTPH-Gx	9-4-10	9-8-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*121*	*55-127*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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:	MB0904S3					
Benzene	**ND**	0.020	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.050	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.050	EPA 8021	9-4-10	9-7-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*55-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-038-03										
	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	**7.30**	**6.72**	NA	NA		NA		NA	8	30	
Surrogate:											
Fluorobenzene						*103*	*98*	*55-127*			
SPIKE BLANKS											
Laboratory ID:	SB0904S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.03**	**1.04**	1.00	1.00		**103**	**104**	75-113	1	9	
Toluene	**0.990**	**1.01**	1.00	1.00		**99**	**101**	75-116	2	10	
Ethyl Benzene	**1.00**	**1.03**	1.00	1.00		**100**	**103**	82-117	3	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						*97*	*98*	*55-127*			

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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:	**L-TP-4-4**					
Laboratory ID:	09-038-01					
Diesel Range Organics	**ND**	27	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*102*	*50-150*				
Client ID:	**L-TP-4-7**					
Laboratory ID:	09-038-02					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*102*	*50-150*				
Client ID:	**L-TP-5-2**					
Laboratory ID:	09-038-03					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*99*	*50-150*				
Client ID:	**L-TP-5-6**					
Laboratory ID:	09-038-04					
Diesel Range Organics	**200**	30	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				
Client ID:	**L-TP-6-3**					
Laboratory ID:	09-038-05					
Diesel Range Organics	**ND**	76	NWTPH-Dx	9-3-10	9-3-10	U1
Lube Oil	**550**	55	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				
Client ID:	**L-TP-6-7**					
Laboratory ID:	09-038-06					
Diesel Range Organics	**ND**	34	NWTPH-Dx	9-3-10	9-3-10	U1
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				

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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:	**L-TP-7-2**					
Laboratory ID:	09-038-07					
Diesel Range Organics	**ND**	43	NWTPH-Dx	9-3-10	9-3-10	U1
Lube Oil	**160**	55	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*97*	*50-150*				
Client ID:	**L-TP-7-7**					
Laboratory ID:	09-038-08					
Diesel Range Organics	**ND**	1000	NWTPH-Dx	9-3-10	9-5-10	U1
Lube Oil	**4200**	290	NWTPH-Dx	9-3-10	9-5-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				
Client ID:	**L-TP-8-2**					
Laboratory ID:	09-038-09					
Diesel Range Organics	**32**	27	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil	**130**	54	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*109*	*50-150*				
Client ID:	**L-TP-8-7**					
Laboratory ID:	09-038-10					
Diesel Range Organics	**ND**	850	NWTPH-Dx	9-3-10	9-3-10	U1
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*103*	*50-150*				

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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:	09-038-05							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	U1
Lube Oil	**500**	**247**				68	NA	
Surrogate:								
o-Terphenyl			*104*	*98*	*50-150*			

Date of Report: September 9, 2010
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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:	**L-TP-4-4**					
Laboratory ID:	09-038-01					
Naphthalene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*83*	*45 - 101*				
Pyrene-d10	*90*	*52 - 118*				
Terphenyl-d14	*81*	*41 - 106*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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:	**L-TP-4-7**					
Laboratory ID:	09-038-02					
Naphthalene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*62*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*93*	*41 - 106*				

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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:	**L-TP-5-2**					
Laboratory ID:	09-038-03					
Naphthalene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*70*	*45 - 101*				
Pyrene-d10	*87*	*52 - 118*				
Terphenyl-d14	*88*	*41 - 106*				

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Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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:	**L-TP-5-6**					
Laboratory ID:	09-038-04					
Naphthalene	**0.016**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**0.054**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**0.048**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**0.0096**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*76*	*45 - 101*				
Pyrene-d10	*83*	*52 - 118*				
Terphenyl-d14	*82*	*41 - 106*				

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Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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:	**L-TP-6-3**					
Laboratory ID:	09-038-05					
Naphthalene	**0.15**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**0.092**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**0.037**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**0.014**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**0.014**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*70*	*45 - 101*				
Pyrene-d10	*77*	*52 - 118*				
Terphenyl-d14	*52*	*41 - 106*				

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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:	**L-TP-6-7**					
Laboratory ID:	09-038-06					
Naphthalene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**0.12**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**0.099**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**0.013**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**0.018**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*61*	*45 - 101*				
Pyrene-d10	*71*	*52 - 118*				
Terphenyl-d14	*37*	*41 - 106*				Q

Date of Report: September 9, 2010
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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:	**L-TP-7-2**					
Laboratory ID:	09-038-07					
Naphthalene	**0.33**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**0.91**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**0.39**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**0.010**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**0.016**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**0.026**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**0.016**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**0.015**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*87*	*45 - 101*				
Pyrene-d10	*95*	*52 - 118*				
Terphenyl-d14	*88*	*41 - 106*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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:	**L-TP-7-7**					
Laboratory ID:	09-038-08					
Naphthalene	**0.28**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**5.2**	0.077	EPA 8270/SIM	9-7-10	9-8-10	
1-Methylnaphthalene	**2.1**	0.077	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthylene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**0.017**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**0.027**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**0.044**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**0.016**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**0.030**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**0.0078**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**0.030**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**0.017**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**0.011**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*86*	*45 - 101*				
Pyrene-d10	*94*	*52 - 118*				
Terphenyl-d14	*81*	*41 - 106*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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:	**L-TP-8-2**					
Laboratory ID:	09-038-09					
Naphthalene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**0.012**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**0.013**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*93*	*52 - 118*				
Terphenyl-d14	*92*	*41 - 106*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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:	**L-TP-8-7**					
Laboratory ID:	09-038-10					
Naphthalene	**1.2**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
2-Methylnaphthalene	**0.65**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**0.32**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**0.0096**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*85*	*52 - 118*				
Terphenyl-d14	*79*	*41 - 106*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
Project: 2007-098

% MOISTURE

Date Analyzed: 9-3-10

Client ID	Lab ID	% Moisture
L-TP-4-4	09-038-01	9
L-TP-4-7	09-038-02	11
L-TP-5-2	09-038-03	10
L-TP-5-6	09-038-04	18
L-TP-6-3	09-038-05	9
L-TP-6-7	09-038-06	13
L-TP-7-2	09-038-07	10
L-TP-7-7	09-038-08	14
L-TP-8-2	09-038-09	8
L-TP-8-7	09-038-10	15

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

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Company: HWA
Project Number: 2007-098
Project Name: Bothell Crossroads
Project Manager: Vance Atkins
Sampled by: Pete Pearson

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: 09-038

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	L-TP-4-4	9/3/10	9:00	S	3		X	X				X													X
2	L-TP-4-7		9:05				X	X				X													
3	L-TP-5-2		9:15				X	X				X													
4	L-TP-5-6		9:25				X	X				X													
5	L-TP-6-3		9:40				X	X				X													
6	L-TP-6-7		9:45				X	X				X													
7	L-TP-7-2		10:00				X	X				X													
8	L-TP-7-7		10:20				X	X				X													
9	L-TP-8-2		10:30				X	X				X													
10	L-TP-8-7		10:45				X	X				X													

	Signature	Company	Date	Time
Relinquished by	[signature]	HWA	9/3/10	11:50
Received by	[signature]	OSE	9/3/10	1150
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 21, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-920
Laboratory Reference No. 1009-168

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 17, 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 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

Case Narrative

Samples were collected on September 17, 2010 and received by the laboratory on September 17, 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/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: September 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-9-4**					
Laboratory ID:	09-168-01					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.053	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.053	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.053	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.053	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	5.3	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*55-127*				
Client ID:	**L-TP-9-8**					
Laboratory ID:	09-168-02					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.072	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.072	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.072	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.072	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	7.2	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*55-127*				
Client ID:	**L-TP-10-4**					
Laboratory ID:	09-168-03					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.061	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.061	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.061	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.061	EPA 8021	9-20-10	9-20-10	
Gasoline	**8.6**	6.1	NWTPH-Gx	9-20-10	9-20-10	O
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*55-127*				

Date of Report: September 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-10-8**					
Laboratory ID:	09-168-04					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	5.4	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*55-127*				
Client ID:	**L-TP-11-4**					
Laboratory ID:	09-168-05					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.060	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.060	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.060	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.060	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	6.0	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*55-127*				
Client ID:	**L-TP-11-8**					
Laboratory ID:	09-168-06					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.068	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.068	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.068	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.068	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	6.8	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*55-127*				

Date of Report: September 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-12-4**					
Laboratory ID:	09-168-07					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	5.4	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*55-127*				
Client ID:	**L-TP-12-8**					
Laboratory ID:	09-168-08					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.084	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.084	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.084	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.084	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	8.4	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*55-127*				
Client ID:	**L-Dup-091710**					
Laboratory ID:	09-168-09					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.055	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.055	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.055	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.055	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	5.5	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*55-127*				

Date of Report: September 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920S2					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.050	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.050	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*55-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-168-05										
	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						*100*	*102*	*55-127*			
SPIKE BLANKS											
Laboratory ID:	SB0920S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.936**	**0.958**	1.00	1.00		**94**	**96**	75-113	2	9	
Toluene	**0.973**	**0.993**	1.00	1.00		**97**	**99**	75-116	2	10	
Ethyl Benzene	**1.01**	**1.03**	1.00	1.00		**101**	**103**	82-117	2	10	
m,p-Xylene	**1.03**	**1.05**	1.00	1.00		**103**	**105**	81-122	2	10	
o-Xylene	**1.02**	**1.04**	1.00	1.00		**102**	**104**	83-118	2	10	
Surrogate:											
Fluorobenzene						*96*	*98*	*55-127*			

Date of Report: September 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

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:	**L-TP-9-4**					
Laboratory ID:	09-168-01					
Diesel Range Organics	**ND**	27	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil Range Organics	**ND**	54	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*103*	*50-150*				
Client ID:	**L-TP-9-8**					
Laboratory ID:	09-168-02					
Diesel Range Organics	**ND**	30	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*113*	*50-150*				
Client ID:	**L-TP-10-4**					
Laboratory ID:	09-168-03					
Diesel Range Organics	**77**	28	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil	**470**	55	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*117*	*50-150*				
Client ID:	**L-TP-10-8**					
Laboratory ID:	09-168-04					
Diesel Range Organics	**ND**	29	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*103*	*50-150*				
Client ID:	**L-TP-11-4**					
Laboratory ID:	09-168-05					
Diesel Range Organics	**ND**	47	NWTPH-Dx	9-18-10	9-19-10	U1
Lube Oil	**350**	56	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*95*	*50-150*				

Date of Report: September 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

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:	**L-TP-11-8**					
Laboratory ID:	09-168-06					
Diesel Range Organics	**ND**	30	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				
Client ID:	**L-TP-12-4**					
Laboratory ID:	09-168-07					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**L-TP-12-8**					
Laboratory ID:	09-168-08					
Diesel Range Organics	**ND**	35	NWTPH-Dx	9-18-10	9-19-10	U1
Lube Oil	**280**	66	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*95*	*50-150*				
Client ID:	**L-Dup-091710**					
Laboratory ID:	09-168-09					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				

Date of Report: September 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

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:	MB0918S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*99*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-168-02							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*113*	*108*	*50-150*			

Date of Report: September 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

% MOISTURE

Date Analyzed: 9-18-10

Client ID	Lab ID	% Moisture
L-TP-9-4	09-168-01	7
L-TP-9-8	09-168-02	16
L-TP-10-4	09-168-03	10
L-TP-10-8	09-168-04	13
L-TP-11-4	09-168-05	11
L-TP-11-8	09-168-06	17
L-TP-12-4	09-168-07	9
L-TP-12-8	09-168-08	24
L-DUP-091710	09-168-09	10

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

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: 2007-098-920
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: [illegible]

Turnaround Request (in working days)
(Check One)
- [ ] Same Day
- [x] 1 Day
- [x] 2 Day
- [ ] 3 Day
- [ ] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ______ (other)

Laboratory Number: 09-168

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	L-TP-9-4	9/17/10	1330	S	3		/	/																	X
2	L-TP-9-8		1335		3		/	/																	
3	L-TP-10-4		1400		3		/	/																	
4	L-TP-10-8		1410		3		/	/																	
5	L-TP-11-4		1420		7		/	/																	
6	L-TP-11-8		1430		3		/	/																	
7	L-TP-12-4		1400		3		/	/																	
8	L-TP-12-8		1455		3		/	/																	
9	L-Dup-091710		1500		3		/	/																	

	Signature	Company	Date	Time
Relinquished by	[signature]	Hwa	9/17/10	1550
Received by	[signature]	OSE	9/17/10	1550
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

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September 23, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-920
Laboratory Reference No. 1009-193

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 20, 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: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

Case Narrative

Samples were collected on September 20, 2010 and received by the laboratory on September 20, 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.

Volatile Petroleum Hydrocarbons 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 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	**L-TP-13-8**					
Laboratory ID:	09-193-01					
Diesel Range Organics	**ND**	30	NWTPH-Dx	9-21-10	9-21-10	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*99*	*50-150*				
Client ID:	**L-TP-14-3**					
Laboratory ID:	09-193-02					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-21-10	9-21-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*109*	*50-150*				
Client ID:	**L-TP-15-7**					
Laboratory ID:	09-193-03					
Diesel Range Organics	**ND**	540	NWTPH-Dx	9-21-10	9-22-10	U1
Lube Oil	**2500**	300	NWTPH-Dx	9-21-10	9-22-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*109*	*50-150*				
Client ID:	**L-TP-16-8**					
Laboratory ID:	09-193-04					
Diesel Range Organics	**ND**	37	NWTPH-Dx	9-21-10	9-21-10	
Lube Oil	**100**	74	NWTPH-Dx	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	MB0921S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-21-10	9-21-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*122*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-194-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**71.7**	**54.4**				27	NA	
Surrogate:								
o-Terphenyl			*113*	*99*	*50-150*			

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	**L-TP-13-8**					
Laboratory ID:	09-193-01					
Naphthalene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
2-Methylnaphthalene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
1-Methylnaphthalene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthylene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Fluorene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Phenanthrene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Anthracene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Pyrene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]anthracene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Chrysene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[b]fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[k]fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]pyrene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Dibenz[a,h]anthracene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[g,h,i]perylene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*70*	*45 - 101*				
Pyrene-d10	*76*	*52 - 118*				
Terphenyl-d14	*98*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	**L-TP-14-3**					
Laboratory ID:	09-193-02					
Naphthalene	**0.022**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
2-Methylnaphthalene	**0.13**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
1-Methylnaphthalene	**0.050**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthylene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthene	**0.0097**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Fluorene	**0.0083**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Phenanthrene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Anthracene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Pyrene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]anthracene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Chrysene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[b]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[k]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]pyrene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Dibenz[a,h]anthracene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[g,h,i]perylene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*69*	*45 - 101*				
Pyrene-d10	*79*	*52 - 118*				
Terphenyl-d14	*100*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	**L-TP-15-7**					
Laboratory ID:	09-193-03					
Naphthalene	**0.29**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
2-Methylnaphthalene	**8.6**	0.16	EPA 8270/SIM	9-21-10	9-22-10	
1-Methylnaphthalene	**3.4**	0.16	EPA 8270/SIM	9-21-10	9-22-10	
Acenaphthylene	**0.011**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthene	**0.029**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Fluorene	**0.050**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Phenanthrene	**0.10**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Anthracene	**0.014**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Fluoranthene	**0.034**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Pyrene	**0.071**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]anthracene	**0.029**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Chrysene	**0.10**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[b]fluoranthene	**0.028**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[k]fluoranthene	**0.011**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]pyrene	**0.010**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Indeno(1,2,3-c,d)pyrene	**0.0091**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Dibenz[a,h]anthracene	**ND**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[g,h,i]perylene	**0.027**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*77*	*45 - 101*				
Pyrene-d10	*93*	*52 - 118*				
Terphenyl-d14	*89*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	**L-TP-16-8**					
Laboratory ID:	09-193-04					
Naphthalene	**0.14**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
2-Methylnaphthalene	**0.18**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
1-Methylnaphthalene	**0.14**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthylene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Fluorene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Phenanthrene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Anthracene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Fluoranthene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Pyrene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]anthracene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Chrysene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[b]fluoranthene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[k]fluoranthene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]pyrene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Dibenz[a,h]anthracene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[g,h,i]perylene	**0.0098**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*71*	*45 - 101*				
Pyrene-d10	*73*	*52 - 118*				
Terphenyl-d14	*89*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	MB0921S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*60*	*45 - 101*				
Pyrene-d10	*74*	*52 - 118*				
Terphenyl-d14	*87*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	09-193-02										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0879**	**0.0772**	0.0833	0.0833	0.0203	81	68	31 - 115	13	19	
Acenaphthylene	**0.0624**	**0.0592**	0.0833	0.0833	ND	75	71	40 - 134	5	22	
Acenaphthene	**0.0811**	**0.0734**	0.0833	0.0833	0.00880	87	78	48 - 118	10	17	
Fluorene	**0.0860**	**0.0776**	0.0833	0.0833	0.00754	94	84	54 - 122	10	16	
Phenanthrene	**0.0774**	**0.0726**	0.0833	0.0833	ND	93	87	46 - 123	6	19	
Anthracene	**0.0659**	**0.0626**	0.0833	0.0833	ND	79	75	53 - 123	5	27	
Fluoranthene	**0.0725**	**0.0689**	0.0833	0.0833	ND	87	83	47 - 132	5	26	
Pyrene	**0.0738**	**0.0700**	0.0833	0.0833	ND	89	84	41 - 137	5	25	
Benzo[a]anthracene	**0.0789**	**0.0762**	0.0833	0.0833	ND	95	91	43 - 132	3	26	
Chrysene	**0.0793**	**0.0772**	0.0833	0.0833	ND	95	93	46 - 126	3	24	
Benzo[b]fluoranthene	**0.0833**	**0.0807**	0.0833	0.0833	ND	100	97	44 - 134	3	24	
Benzo[k]fluoranthene	**0.0815**	**0.0752**	0.0833	0.0833	ND	98	90	45 - 132	8	20	
Benzo[a]pyrene	**0.0813**	**0.0777**	0.0833	0.0833	ND	98	93	36 - 136	5	23	
Indeno(1,2,3-c,d)pyrene	**0.0823**	**0.0788**	0.0833	0.0833	ND	99	95	40 - 136	4	16	
Dibenz[a,h]anthracene	**0.0813**	**0.0778**	0.0833	0.0833	ND	98	93	40 - 142	4	13	
Benzo[g,h,i]perylene	**0.0784**	**0.0763**	0.0833	0.0833	ND	94	92	37 - 137	3	18	
Surrogate:											
2-Fluorobiphenyl						*72*	*67*	*45 - 101*			
Pyrene-d10						*79*	*76*	*52 - 118*			
Terphenyl-d14						*89*	*88*	*41 - 106*			

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

VOLATILE PETROLEUM HYDROCARBONS

Date Extracted:	9-21-10
Date Analyzed:	9-21-10
Matrix:	Soil
Units:	mg/Kg (ppm)

Lab ID:	09-193-01
Client ID:	**L-TP-13-8**

VPH:	**Results**	**PQL**
Aliphatic C5-C6	ND	5.0
Aliphatic C6-C8	ND	5.0
Aliphatic C8-C10	ND	5.0
Aliphatic C10-C12	ND	5.0
Total Aliphatic:	NA	
Aromatic C8-C10	ND	5.0
Aromatic C10-C12	ND	5.0
Aromatic C12-C13	ND	5.0
Total Aromatic:	NA	
Target Analytes:		
Methyl t-butyl ether	ND	0.50
Benzene	ND	0.020
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylene	ND	0.50
o-Xylene	ND	0.50

Surrogate:	**Percent Recovery**	**Control Limits**
Fluorobenzene	87	60-126

Flags:

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

VOLATILE PETROLEUM HYDROCARBONS

Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 09-193-02
Client ID: **L-TP-14-3**

VPH:	**Results**	**PQL**
Aliphatic C5-C6	ND	5.0
Aliphatic C6-C8	ND	5.0
Aliphatic C8-C10	ND	5.0
Aliphatic C10-C12	ND	5.0
Total Aliphatic:	NA	
Aromatic C8-C10	ND	5.0
Aromatic C10-C12	ND	5.0
Aromatic C12-C13	ND	5.0
Total Aromatic:	NA	
Target Analytes:		
Methyl t-butyl ether	ND	0.50
Benzene	ND	0.024
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylene	ND	0.50
o-Xylene	ND	0.50

Surrogate:	**Percent Recovery**	**Control Limits**
Fluorobenzene	92	60-126

Flags:

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

VOLATILE PETROLEUM HYDROCARBONS

Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 09-193-03
Client ID: **L-TP-15-7**

VPH:	**Results**	**PQL**
Aliphatic C5-C6	6.9	5.0
Aliphatic C6-C8	48	5.0
Aliphatic C8-C10	17	5.0
Aliphatic C10-C12	52	5.0
Total Aliphatic:	120	
Aromatic C8-C10	19	5.0
Aromatic C10-C12	35	5.0
Aromatic C12-C13	16	5.0
Total Aromatic:	70	
Target Analytes:		
Methyl t-butyl ether	ND	0.50
Benzene	0.82	0.057
Toluene	ND	0.50
Ethylbenzene	0.62	0.50
m,p-Xylene	0.64	0.50
o-Xylene	ND	0.50

Surrogate:	**Percent Recovery**	**Control Limits**
Fluorobenzene	95	60-126

Flags:

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

VOLATILE PETROLEUM HYDROCARBONS

Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 09-193-04
Client ID: **L-TP-16-8**

VPH:	**Results**	**PQL**
Aliphatic C5-C6	ND	5.0
Aliphatic C6-C8	13	5.0
Aliphatic C8-C10	22	5.0
Aliphatic C10-C12	30	5.0
Total Aliphatic:	65	
Aromatic C8-C10	27	5.0
Aromatic C10-C12	12	5.0
Aromatic C12-C13	ND	5.0
Total Aromatic:	39	
Target Analytes:		
Methyl t-butyl ether	ND	0.50
Benzene	ND	0.020
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylene	0.62	0.50
o-Xylene	ND	0.50

Surrogate:	**Percent Recovery**	**Control Limits**
Fluorobenzene	85	60-126

Flags:

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

VOLATILE PETROLEUM HYDROCARBONS
METHOD BLANK QUALITY CONTROL

Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: MB0921S1

VPH:	**Results**	**PQL**
Aliphatic C5-C6	ND	5.0
Aliphatic C6-C8	ND	5.0
Aliphatic C8-C10	ND	5.0
Aliphatic C10-C12	ND	5.0
Total Aliphatic:	NA	
Aromatic C8-C10	ND	5.0
Aromatic C10-C12	ND	5.0
Aromatic C12-C13	ND	5.0
Total Aromatic:	NA	
Target Analytes:		
Methyl t-butyl ether	ND	0.50
Benzene	ND	0.020
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylene	ND	0.50
o-Xylene	ND	0.50

Surrogate:	**Percent Recovery**	**Control Limits**
Fluorobenzene	95	60-126

Flags:

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

VOLATILE PETROLEUM HYDROCARBONS
SB/SBDD QUALITY CONTROL

Date Extracted: 9-21-10
Date Analyzed: 9-21&22-10

Matrix: Soil
Units: mg/Kg (ppm)

Spike Level (ppm): 1

Lab ID:	SB0921S1		SBD0921S1			
	Result	**Percent Recovery**	**Result**	**Percent Recovery**	**PQL**	**RPD**
Benzene	0.922	92	0.992	99		7
Toluene	1.00	100	1.08	108		8
Ethylbenzene	1.06	106	1.14	114		7
m,p-Xylene	1.06	106	1.16	116		9
o-Xylene	1.05	105	1.14	114		8

Surrogate:	**Percent Recovery**	**Percent Recovery**	**Control Limits**
Fluorobenzene	93	96	60-127

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

% MOISTURE

Date Analyzed: 9-21-10

Client ID	Lab ID	% Moisture
L-TP-13-8	09-193-01	16
L-TP-14-3	09-193-02	9
L-TP-15-7	09-193-03	16
L-TP-16-8	09-193-04	32

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

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/23/2010
		ALS JOB#:	1009142
		DATE RECEIVED:	9/21/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #09-193 / Proj #2007-098-920
CLIENT SAMPLE ID: 9/20/2010 L-TP-13-8
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C8-C10 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
Total Aliphatics	NWEPH	ND	10	1	MG/KG	9/22/2010	DLC
Total Aromatics	NWEPH	ND	10	1	MG/KG	9/22/2010	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:

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Laboratory Group A Campbell Brothers Limited Company

CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE: 9/23/2010
ALS JOB#: 1009142
DATE RECEIVED: 9/21/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #09-193 / Proj #2007-098-920
CLIENT SAMPLE ID: 9/20/2010 L-TP-14-3
ALS SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C8-C10 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
Total Aliphatics	NWEPH	ND	10	1	MG/KG	9/22/2010	DLC
Total Aromatics	NWEPH	ND	10	1	MG/KG	9/22/2010	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:

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Laboratory Group A Campbell Brothers Limited Company

CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE: 9/23/2010
ALS JOB#: 1009142
DATE RECEIVED: 9/21/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #09-193 / Proj #2007-098-920
CLIENT SAMPLE ID: 9/20/2010 L-TP-15-7
ALS SAMPLE #: -03

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	**57**	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aliphatics	NWEPH	**77**	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aliphatics	NWEPH	**85**	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aliphatics	NWEPH	**120**	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aliphatics	NWEPH	**1,300**	5.0	1	MG/KG	9/22/2010	DLC
>C8-C10 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aromatics	NWEPH	**39**	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aromatics	NWEPH	**59**	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aromatics	NWEPH	**78**	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aromatics	NWEPH	**430**	5.0	1	MG/KG	9/22/2010	DLC
Total Aliphatics	NWEPH	**1,600**	10	1	MG/KG	9/22/2010	DLC
Total Aromatics	NWEPH	**610**	10	1	MG/KG	9/22/2010	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:

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ALS Laboratory Group A Campbell Brothers Limited Company

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/23/2010
		ALS JOB#:	1009142
		DATE RECEIVED:	9/21/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #09-193 / Proj #2007-098-920
CLIENT SAMPLE ID: 9/20/2010 L-TP-16-8
ALS SAMPLE #: -04

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	**21**	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aliphatics	NWEPH	**9.6**	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aliphatics	NWEPH	**55**	5.0	1	MG/KG	9/22/2010	DLC
>C8-C10 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aromatics	NWEPH	**8.1**	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aromatics	NWEPH	**5.2**	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aromatics	NWEPH	**25**	5.0	1	MG/KG	9/22/2010	DLC
Total Aliphatics	NWEPH	**91**	10	1	MG/KG	9/22/2010	DLC
Total Aromatics	NWEPH	**43**	10	1	MG/KG	9/22/2010	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.

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CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/23/2010
		ALS JOB#:	1009142
		DATE RECEIVED:	9/21/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #09-193 / Proj #2007-098-920

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
1009142-01	NWEPH	C25	90%
1009142-01	NWEPH	p-Terphenyl	103%
1009142-02	NWEPH	C25	89%
1009142-02	NWEPH	p-Terphenyl	100%
1009142-03	NWEPH	C25	100%
1009142-03	NWEPH	p-Terphenyl	110%
1009142-04	NWEPH	C25	88%
1009142-04	NWEPH	p-Terphenyl	102%

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CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE: 9/23/2010
ALS JOB#: 1009142
DATE RECEIVED: 9/21/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #09-193 / Proj #2007-098-920

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MBLK-9222010	Soil	NWEPH	>C8-C10 Aliphatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C10-C12 Aliphatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C12-C16 Aliphatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C16-C21 Aliphatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C21-C34 Aliphatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C8-C10 Aromatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C10-C12 Aromatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C12-C16 Aromatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C16-C21 Aromatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C21-C34 Aromatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	Total Aliphatics	ND(<10)	MG/KG
MBLK-9222010	Soil	NWEPH	Total Aromatics	ND(<10)	MG/KG

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ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Laboratory Group A Campbell Brothers Limited Company

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE: ALS JOB#: DATE RECEIVED: WDOE ACCREDITATION #:	9/23/2010 1009142 9/21/2010 C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #09-193 / Proj #2007-098-920

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
R70610	Soil	NWEPH	>C8-C10 Aliphatics	100	84%	90%	7
R70610	Soil	NWEPH	>C10-C12 Aliphatics	100	88%	94%	7
R70610	Soil	NWEPH	>C12-C16 Aliphatics	100	91%	96%	5
R70610	Soil	NWEPH	>C16-C21 Aliphatics	100	91%	97%	6
R70610	Soil	NWEPH	>C21-C34 Aliphatics	100	94%	94%	0
R70610	Soil	NWEPH	>C8-C10 Aromatics	100	98%	99%	1
R70610	Soil	NWEPH	>C10-C12 Aromatics	100	100%	101%	1
R70610	Soil	NWEPH	>C12-C16 Aromatics	100	102%	104%	2
R70610	Soil	NWEPH	>C16-C21 Aromatics	100	103%	105%	2
R70610	Soil	NWEPH	>C21-C34 Aromatics	100	98%	99%	1

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ALS Laboratory Group A Campbell Brothers Limited Company

1009142

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 09-193

Subcontract Laboratory: ALS

Contact Person: Rick Bas—

Address:

Phone Number:

Date/Time:

Turnaround Request: 1 Day 2 Day 3 Day Standard

Other:

Project Manager: David Baumeister

email: dbaumeister@onsite-env.com

Project Number: 2007-098-920

Project Name:

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
1	L-TP-13-8	9/20/10		S	1	EPH
2	L-TP-14-3	↓		↓	↓	↓
3	L-TP-15-7	↓		↓	↓	↓
4	L-TP-16-8	↓		↓	↓	↓

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	[signature]	OSE	9/21/10	1:15pm	RUSH 9/23
Received by:	[signature]	Speedy	9/21	1:[illegible]	
Relinquished by:	[signature]	"	9-21	205	
Received by:	[signature]	ALS	9-21	2:00	
Relinquished by:					
Received by:					

EIM-EDDS

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

Laboratory Number: 09-193

Company: Hwa
Project Number: 2003-098-920
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: " "

Turnaround Request (in working days)
(Check One)
- [ ] Same Day
- [x] 1 Day
- [x] 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 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 / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664	E-JPH/VPH	VPH	EPH				% Moisture
1	L-TP-13-8	9/20/10	1420	S					X				X								X	X	X				X
2	L-TP-14-3		1430						X				X								X	X	X				X
3	L-TP-15-7		1440						X				X								X	X	X				X
4	L-TP-16-8		1500						X				X								X	X	X				X

	Signature	Company	Date	Time
Relinquished		Hwa	9/20/10	1530
Received		OnSite Env	9/20/10	1530
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

September 24, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-920
Laboratory Reference No. 1009-209

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 21, 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 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

Case Narrative

Samples were collected on September 21, 2010 and received by the laboratory on September 21, 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/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^oC and -20^oC until extraction or analysis.

Halogenated 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^oC and -20^oC until extraction or analysis.

Not enough Method 5035 VOA vials were provided to perform the client-requested QA/QC.

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 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-1-6**					
Laboratory ID:	09-209-01					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.067	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.067	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.067	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.067	EPA 8021	9-22-10	9-22-10	
Gasoline	**13**	6.7	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***101***	***55-127***				
Client ID:	**L-PEX-2-10**					
Laboratory ID:	09-209-02					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.10	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.10	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.10	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.10	EPA 8021	9-22-10	9-22-10	
Gasoline	**ND**	10	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***103***	***55-127***				
Client ID:	**L-PEX-3-6**					
Laboratory ID:	09-209-03					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.071	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.071	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.071	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.071	EPA 8021	9-22-10	9-22-10	
Gasoline	**ND**	7.1	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***102***	***55-127***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-4-6**					
Laboratory ID:	09-209-04					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.073	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.073	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.073	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.073	EPA 8021	9-22-10	9-22-10	
Gasoline	**ND**	7.3	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***104***	***55-127***				
Client ID:	**L-PEX-5-6**					
Laboratory ID:	09-209-05					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.087	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**0.13**	0.087	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**0.15**	0.087	EPA 8021	9-22-10	9-22-10	
o-Xylene	**0.29**	0.087	EPA 8021	9-22-10	9-22-10	
Gasoline	**140**	8.7	NWTPH-Gx	9-22-10	9-22-10	O
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***102***	***55-127***				
Client ID:	**L-DUP-092110**					
Laboratory ID:	09-209-06					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.065	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.065	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.065	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.065	EPA 8021	9-22-10	9-22-10	
Gasoline	**35**	6.5	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***99***	***55-127***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0922S1					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***85***	***55-127***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-227-02										
	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						***106***	***109***	***55-127***			
SPIKE BLANKS											
Laboratory ID:	SB0922S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.945**	**0.908**	1.00	1.00		**95**	**91**	75-113	4	9	
Toluene	**0.976**	**0.920**	1.00	1.00		**98**	**92**	75-116	6	10	
Ethyl Benzene	**0.991**	**0.948**	1.00	1.00		**99**	**95**	82-117	4	10	
m,p-Xylene	**1.03**	**0.970**	1.00	1.00		**103**	**97**	81-122	6	10	
o-Xylene	**1.01**	**0.966**	1.00	1.00		**101**	**97**	83-118	4	10	
Surrogate:											
Fluorobenzene						***97***	***92***	***55-127***			

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	**L-PEX-1-6**					
Laboratory ID:	09-209-01					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-22-10	9-22-10	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				
Client ID:	**L-PEX-2-10**					
Laboratory ID:	09-209-02					
Diesel Range Organics	**ND**	38	NWTPH-Dx	9-22-10	9-22-10	
Lube Oil	**120**	77	NWTPH-Dx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***107***	***50-150***				
Client ID:	**L-PEX-3-6**					
Laboratory ID:	09-209-03					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-22-10	9-22-10	
Lube Oil Range Organics	**ND**	63	NWTPH-Dx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***90***	***50-150***				
Client ID:	**L-PEX-4-6**					
Laboratory ID:	09-209-04					
Diesel Range Organics	**ND**	30	NWTPH-Dx	9-22-10	9-22-10	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***97***	***50-150***				
Client ID:	**L-PEX-5-6**					
Laboratory ID:	09-209-05					
Diesel Fuel #2	**360**	34	NWTPH-Dx	9-22-10	9-22-10	M
Lube Oil	**310**	68	NWTPH-Dx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***103***	***50-150***				
Client ID:	**L-DUP-092110**					
Laboratory ID:	09-209-06					
Diesel Range Organics	**ND**	29	NWTPH-Dx	9-22-10	9-22-10	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***105***	***50-150***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
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Project: 2007-098-920

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:	MB0922S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-22-10	9-22-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***115***	***50-150***				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-209-02							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**79.8**	**73.2**				9	NA	
Surrogate:								
o-Terphenyl			***107***	***90***	***50-150***			

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
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HALOGENATED VOLATILES by EPA 8260B
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Date Extracted:	9-21-10
Date Analyzed:	9-21-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-209-01
Client ID:	**L-PEX-1-6**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0012
Chloromethane	ND		0.0059
Vinyl Chloride	ND		0.0012
Bromomethane	ND		0.0012
Chloroethane	ND		0.0059
Trichlorofluoromethane	ND		0.0012
1,1-Dichloroethene	ND		0.0012
Iodomethane	ND		0.0059
Methylene Chloride	ND		0.0059
(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		0.0059
(cis) 1,3-Dichloropropene	ND		0.0012
(trans) 1,3-Dichloropropene	ND		0.0012

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
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Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
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Lab ID: 09-209-01
Client ID: L-PEX-1-6

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		0.0059
1,2,4-Trichlorobenzene	ND		0.0012
Hexachlorobutadiene	ND		0.0059
1,2,3-Trichlorobenzene	ND		0.0012

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	99	66-128
Toluene-d8	112	68-126
4-Bromofluorobenzene	80	53-134

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
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Date Extracted:	9-21-10
Date Analyzed:	9-21-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-209-06
Client ID:	**L-DUP-092110**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0011
Chloromethane	ND		0.0056
Vinyl Chloride	ND		0.0011
Bromomethane	ND		0.0011
Chloroethane	ND		0.0056
Trichlorofluoromethane	ND		0.0011
1,1-Dichloroethene	ND		0.0011
Iodomethane	ND		0.0056
Methylene Chloride	ND		0.0056
(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		0.0056
(cis) 1,3-Dichloropropene	ND		0.0011
(trans) 1,3-Dichloropropene	ND		0.0011

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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Lab ID: 09-209-06
Client ID: L-DUP-092110

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		0.0056
1,2,4-Trichlorobenzene	ND		0.0011
Hexachlorobutadiene	ND		0.0056
1,2,3-Trichlorobenzene	ND		0.0011

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	95	66-128
Toluene-d8	107	68-126
4-Bromofluorobenzene	77	53-134

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
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Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0921S2

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 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
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Lab ID: MB0921S2

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	108	66-128
Toluene-d8	121	68-126
4-Bromofluorobenzene	93	53-134

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0921S1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	0.0500	0.0541	108	0.0492	98	70-130	
Benzene	0.0500	0.0409	82	0.0411	82	70-121	
Trichloroethene	0.0500	0.0477	95	0.0494	99	70-124	
Toluene	0.0500	0.0442	88	0.0450	90	70-123	
Chlorobenzene	0.0500	0.0424	85	0.0432	86	71-119	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	10	14	
Benzene	1	10	
Trichloroethene	3	12	
Toluene	2	12	
Chlorobenzene	2	9	

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	**L-PEX-1-6**					
Laboratory ID:	09-209-01					
Naphthalene	**0.14**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
2-Methylnaphthalene	**0.27**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
1-Methylnaphthalene	**0.081**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Acenaphthene	**ND**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Fluorene	**ND**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Phenanthrene	**ND**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Anthracene	**ND**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Fluoranthene	**0.015**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Pyrene	**0.016**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[a]anthracene	**0.012**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Chrysene	**0.012**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[b]fluoranthene	**0.011**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[k]fluoranthene	**0.012**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[a]pyrene	**0.015**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Indeno(1,2,3-c,d)pyrene	**0.0091**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Dibenz[a,h]anthracene	**ND**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[g,h,i]perylene	**0.011**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***71***	***45 - 101***				
Pyrene-d10	***76***	***52 - 118***				
Terphenyl-d14	***91***	***41 - 106***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	**L-PEX-2-10**					
Laboratory ID:	09-209-02					
Naphthalene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
2-Methylnaphthalene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
1-Methylnaphthalene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthylene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Fluorene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Phenanthrene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Anthracene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Fluoranthene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Pyrene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]anthracene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Chrysene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[k]fluoranthene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]pyrene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[g,h,i]perylene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***64***	***45 - 101***				
Pyrene-d10	***62***	***52 - 118***				
Terphenyl-d14	***69***	***41 - 106***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	**L-PEX-3-6**					
Laboratory ID:	09-209-03					
Naphthalene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
2-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
1-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthylene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Fluorene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Phenanthrene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Anthracene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Pyrene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]anthracene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Chrysene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[b]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[k]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]pyrene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Dibenz[a,h]anthracene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[g,h,i]perylene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***62***	***45 - 101***				
Pyrene-d10	***62***	***52 - 118***				
Terphenyl-d14	***75***	***41 - 106***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	**L-PEX-4-6**					
Laboratory ID:	09-209-04					
Naphthalene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
2-Methylnaphthalene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
1-Methylnaphthalene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthylene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Fluorene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Phenanthrene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Anthracene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Pyrene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]anthracene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Chrysene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[b]fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[k]fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]pyrene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Dibenz[a,h]anthracene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[g,h,i]perylene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***70***	***45 - 101***				
Pyrene-d10	***69***	***52 - 118***				
Terphenyl-d14	***81***	***41 - 106***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	**L-PEX-5-6**					
Laboratory ID:	09-209-05					
Naphthalene	**0.51**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
2-Methylnaphthalene	**2.5**	0.090	EPA 8270/SIM	9-22-10	9-23-10	
1-Methylnaphthalene	**1.6**	0.090	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthylene	**0.034**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthene	**0.16**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Fluorene	**0.29**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Phenanthrene	**0.42**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Anthracene	**0.034**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Fluoranthene	**0.018**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Pyrene	**0.023**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]anthracene	**ND**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Chrysene	**0.015**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[b]fluoranthene	**ND**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[k]fluoranthene	**ND**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]pyrene	**ND**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Dibenz[a,h]anthracene	**ND**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[g,h,i]perylene	**ND**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***63***	***45 - 101***				
Pyrene-d10	***72***	***52 - 118***				
Terphenyl-d14	***88***	***41 - 106***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	**L-DUP-092110**					
Laboratory ID:	09-209-06					
Naphthalene	**0.060**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
2-Methylnaphthalene	**0.11**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
1-Methylnaphthalene	**0.035**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthylene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Fluorene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Phenanthrene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Anthracene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Pyrene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]anthracene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Chrysene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[b]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[k]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]pyrene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Dibenz[a,h]anthracene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[g,h,i]perylene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***74***	***45 - 101***				
Pyrene-d10	***73***	***52 - 118***				
Terphenyl-d14	***76***	***41 - 106***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	MB0922S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***67***	***45 - 101***				
Pyrene-d10	***69***	***52 - 118***				
Terphenyl-d14	***80***	***41 - 106***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	09-209-02										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0551**	**0.0531**	0.0833	0.0833	ND	66	64	31 - 115	4	19	
Acenaphthylene	**0.0557**	**0.0527**	0.0833	0.0833	ND	67	63	40 - 134	6	22	
Acenaphthene	**0.0593**	**0.0565**	0.0833	0.0833	ND	71	68	48 - 118	5	17	
Fluorene	**0.0635**	**0.0602**	0.0833	0.0833	ND	76	72	54 - 122	5	16	
Phenanthrene	**0.0602**	**0.0573**	0.0833	0.0833	ND	72	69	46 - 123	5	19	
Anthracene	**0.0569**	**0.0543**	0.0833	0.0833	ND	68	65	53 - 123	5	27	
Fluoranthene	**0.0589**	**0.0567**	0.0833	0.0833	ND	71	68	47 - 132	4	26	
Pyrene	**0.0605**	**0.0584**	0.0833	0.0833	ND	73	70	41 - 137	4	25	
Benzo[a]anthracene	**0.0670**	**0.0609**	0.0833	0.0833	ND	80	73	43 - 132	10	26	
Chrysene	**0.0674**	**0.0656**	0.0833	0.0833	ND	81	79	46 - 126	3	24	
Benzo[b]fluoranthene	**0.0670**	**0.0661**	0.0833	0.0833	ND	80	79	44 - 134	1	24	
Benzo[k]fluoranthene	**0.0664**	**0.0616**	0.0833	0.0833	ND	80	74	45 - 132	8	20	
Benzo[a]pyrene	**0.0679**	**0.0647**	0.0833	0.0833	ND	82	78	36 - 136	5	23	
Indeno(1,2,3-c,d)pyrene	**0.0665**	**0.0652**	0.0833	0.0833	ND	80	78	40 - 136	2	16	
Dibenz[a,h]anthracene	**0.0655**	**0.0643**	0.0833	0.0833	ND	79	77	40 - 142	2	13	
Benzo[g,h,i]perylene	**0.0646**	**0.0636**	0.0833	0.0833	ND	78	76	37 - 137	2	18	
Surrogate:											
2-Fluorobiphenyl						***67***	***63***	***45 - 101***			
Pyrene-d10						***65***	***63***	***52 - 118***			
Terphenyl-d14						***72***	***65***	***41 - 106***			

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-1-6**					
Laboratory ID:	09-209-01					
Aroclor 1016	**ND**	0.057	EPA 8082	9-22-10	9-22-10	
Aroclor 1221	**ND**	0.057	EPA 8082	9-22-10	9-22-10	
Aroclor 1232	**ND**	0.057	EPA 8082	9-22-10	9-22-10	
Aroclor 1242	**ND**	0.057	EPA 8082	9-22-10	9-22-10	
Aroclor 1248	**ND**	0.057	EPA 8082	9-22-10	9-22-10	
Aroclor 1254	**ND**	0.057	EPA 8082	9-22-10	9-22-10	
Aroclor 1260	**ND**	0.057	EPA 8082	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***77***	***46-122***				
Client ID:	**L-DUP-092110**					
Laboratory ID:	09-209-06					
Aroclor 1016	**ND**	0.058	EPA 8082	9-22-10	9-22-10	
Aroclor 1221	**ND**	0.058	EPA 8082	9-22-10	9-22-10	
Aroclor 1232	**ND**	0.058	EPA 8082	9-22-10	9-22-10	
Aroclor 1242	**ND**	0.058	EPA 8082	9-22-10	9-22-10	
Aroclor 1248	**ND**	0.058	EPA 8082	9-22-10	9-22-10	
Aroclor 1254	**ND**	0.058	EPA 8082	9-22-10	9-22-10	
Aroclor 1260	**ND**	0.058	EPA 8082	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***67***	***46-122***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0922S1					
Aroclor 1016	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1221	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1232	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1242	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1248	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1254	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1260	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***86***	***46-122***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-209-06										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.410**	**0.406**	0.500	0.500	ND	**82**	**81**	36-121	1	15	
Surrogate:											
DCB						***83***	***81***	***46-122***			

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-209-01					
Client ID:	**L-PEX-1-6**					
Arsenic	**ND**	11	6010B	9-21-10	9-21-10	
Barium	**50**	2.8	6010B	9-21-10	9-21-10	
Cadmium	**ND**	0.57	6010B	9-21-10	9-21-10	
Chromium	**29**	0.57	6010B	9-21-10	9-21-10	
Lead	**6.4**	5.7	6010B	9-21-10	9-21-10	
Mercury	**ND**	0.28	7471A	9-21-10	9-21-10	
Selenium	**ND**	11	6010B	9-21-10	9-21-10	
Silver	**ND**	0.57	6010B	9-21-10	9-21-10	
Lab ID:	09-209-02					
Client ID:	**L-PEX-2-10**					
Arsenic	**ND**	15	6010B	9-21-10	9-21-10	
Barium	**61**	3.8	6010B	9-21-10	9-21-10	
Cadmium	**ND**	0.76	6010B	9-21-10	9-21-10	
Chromium	**28**	0.76	6010B	9-21-10	9-21-10	
Lead	**10**	7.6	6010B	9-21-10	9-21-10	
Mercury	**ND**	0.38	7471A	9-21-10	9-21-10	
Selenium	**ND**	15	6010B	9-21-10	9-21-10	
Silver	**ND**	0.76	6010B	9-21-10	9-21-10	

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-209-03					
Client ID:	**L-PEX-3-6**					
Arsenic	**ND**	13	6010B	9-21-10	9-21-10	
Barium	**37**	3.1	6010B	9-21-10	9-21-10	
Cadmium	**ND**	0.63	6010B	9-21-10	9-21-10	
Chromium	**19**	0.63	6010B	9-21-10	9-21-10	
Lead	**ND**	6.3	6010B	9-21-10	9-21-10	
Mercury	**ND**	0.31	7471A	9-21-10	9-21-10	
Selenium	**ND**	13	6010B	9-21-10	9-21-10	
Silver	**ND**	0.63	6010B	9-21-10	9-21-10	
Lab ID:	09-209-04					
Client ID:	**L-PEX-4-6**					
Arsenic	**ND**	12	6010B	9-21-10	9-21-10	
Barium	**58**	2.9	6010B	9-21-10	9-21-10	
Cadmium	**ND**	0.59	6010B	9-21-10	9-21-10	
Chromium	**40**	0.59	6010B	9-21-10	9-21-10	
Lead	**ND**	5.9	6010B	9-21-10	9-21-10	
Mercury	**ND**	0.29	7471A	9-21-10	9-21-10	
Selenium	**ND**	12	6010B	9-21-10	9-21-10	
Silver	**ND**	0.59	6010B	9-21-10	9-21-10	

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-209-05					
Client ID:	**L-PEX-5-6**					
Arsenic	**ND**	14	6010B	9-21-10	9-21-10	
Barium	**86**	3.4	6010B	9-21-10	9-21-10	
Cadmium	**ND**	0.68	6010B	9-21-10	9-21-10	
Chromium	**9.5**	0.68	6010B	9-21-10	9-21-10	
Lead	**29**	6.8	6010B	9-21-10	9-21-10	
Mercury	**ND**	0.34	7471A	9-21-10	9-21-10	
Selenium	**ND**	14	6010B	9-21-10	9-21-10	
Silver	**ND**	0.68	6010B	9-21-10	9-21-10	
Lab ID:	09-209-06					
Client ID:	**L-DUP-092110**					
Arsenic	**ND**	12	6010B	9-21-10	9-21-10	
Barium	**47**	2.9	6010B	9-21-10	9-21-10	
Cadmium	**ND**	0.58	6010B	9-21-10	9-21-10	
Chromium	**27**	0.58	6010B	9-21-10	9-21-10	
Lead	**8.3**	5.8	6010B	9-21-10	9-21-10	
Mercury	**ND**	0.29	7471A	9-21-10	9-21-10	
Selenium	**ND**	12	6010B	9-21-10	9-21-10	
Silver	**ND**	0.58	6010B	9-21-10	9-21-10	

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0921S1&MB0921S4

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 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-192-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**45.1**	**43.3**	4	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**26.0**	**21.5**	19	0.50	
Lead	**18.3**	**17.0**	7	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-192-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**96.6**	97	**98.9**	99	2	
Barium	100	**142**	97	**148**	103	4	
Cadmium	50	**46.1**	92	**47.9**	96	4	
Chromium	100	**114**	88	**117**	91	3	
Lead	250	**255**	95	**259**	96	2	
Mercury	0.50	**0.379**	76	**0.416**	83	9	
Selenium	100	**97.7**	98	**99.4**	99	2	
Silver	25	**22.6**	90	**23.3**	93	3	

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

% MOISTURE

Date Analyzed: 9-21-10

Client ID	Lab ID	% Moisture
L-PEX-1-6	09-209-01	12
L-PEX-2-10	09-209-02	35
L-PEX-3-6	09-209-03	20
L-PEX-4-6	09-209-04	15
L-PEX-5-6	09-209-05	26
L-DUP-092110	09-209-06	14

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.

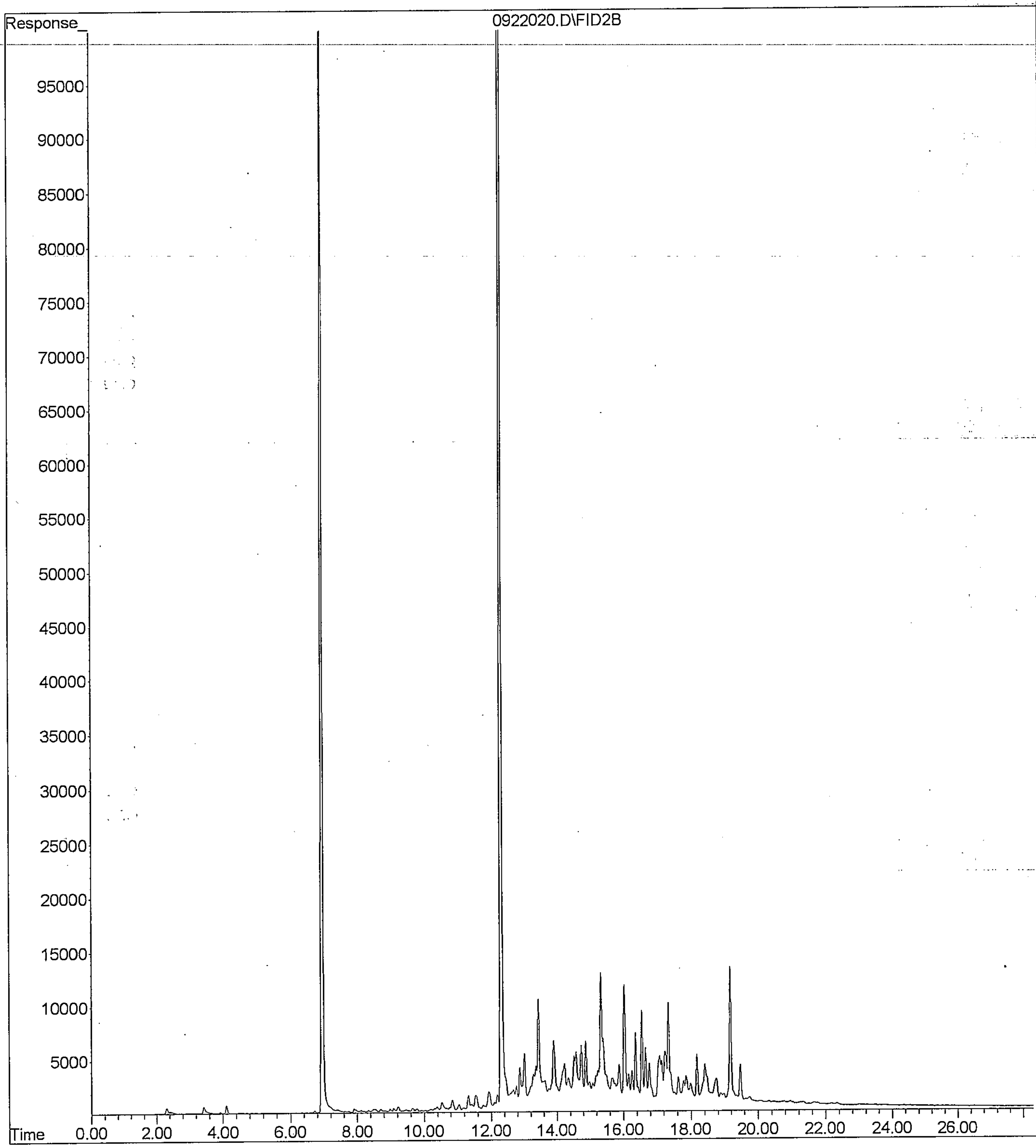
X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

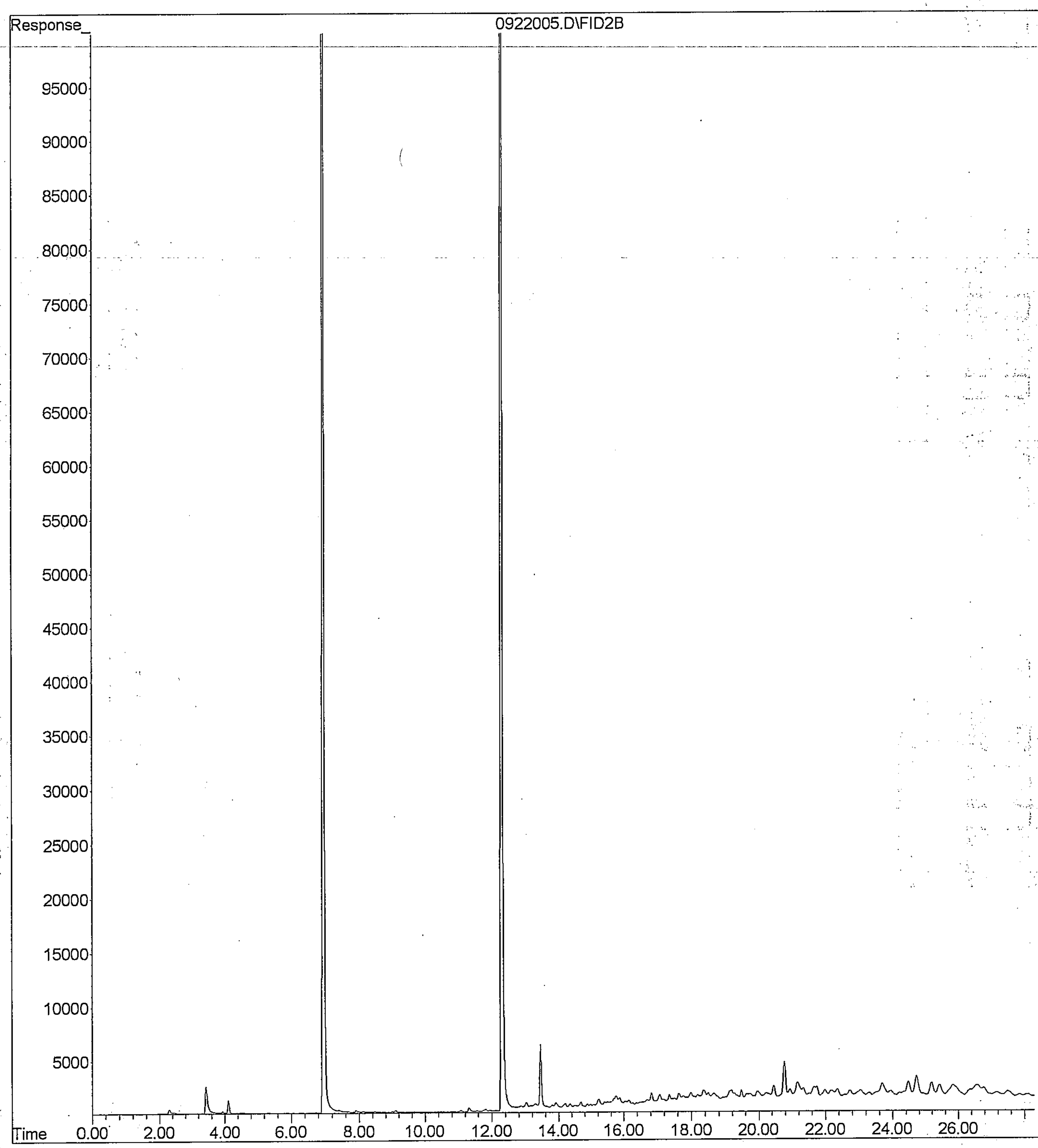
Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

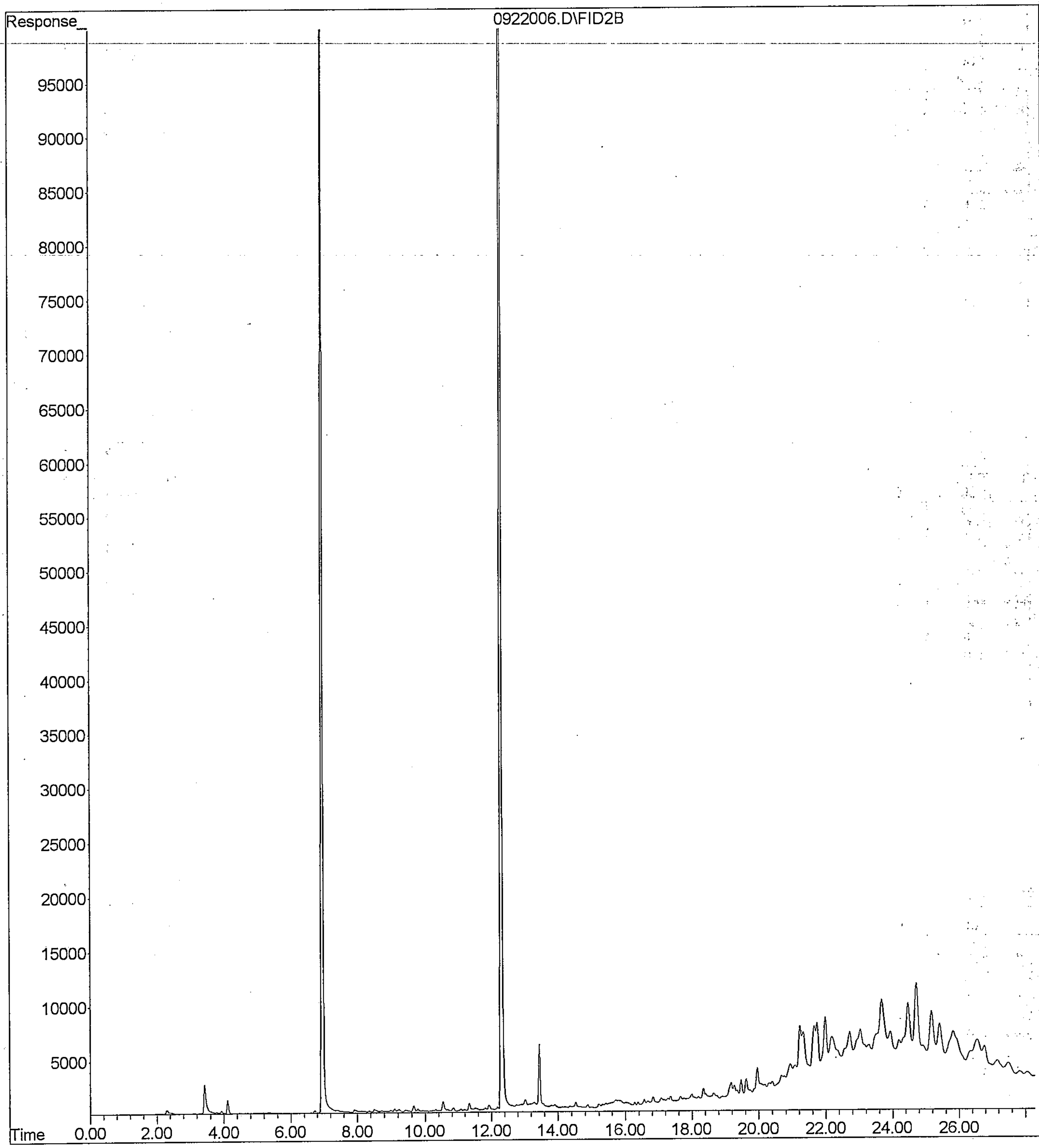
File : X:\BTEX\DARYL\DATA\D100922\0922020.D
Operator :
Acquired : 23 Sep 2010 00:20 using AcqMethod 100827B.M
Instrument : Daryl
Sample Name: 09-209-01s
Misc Info : V2-24-02
Vial Number: 20



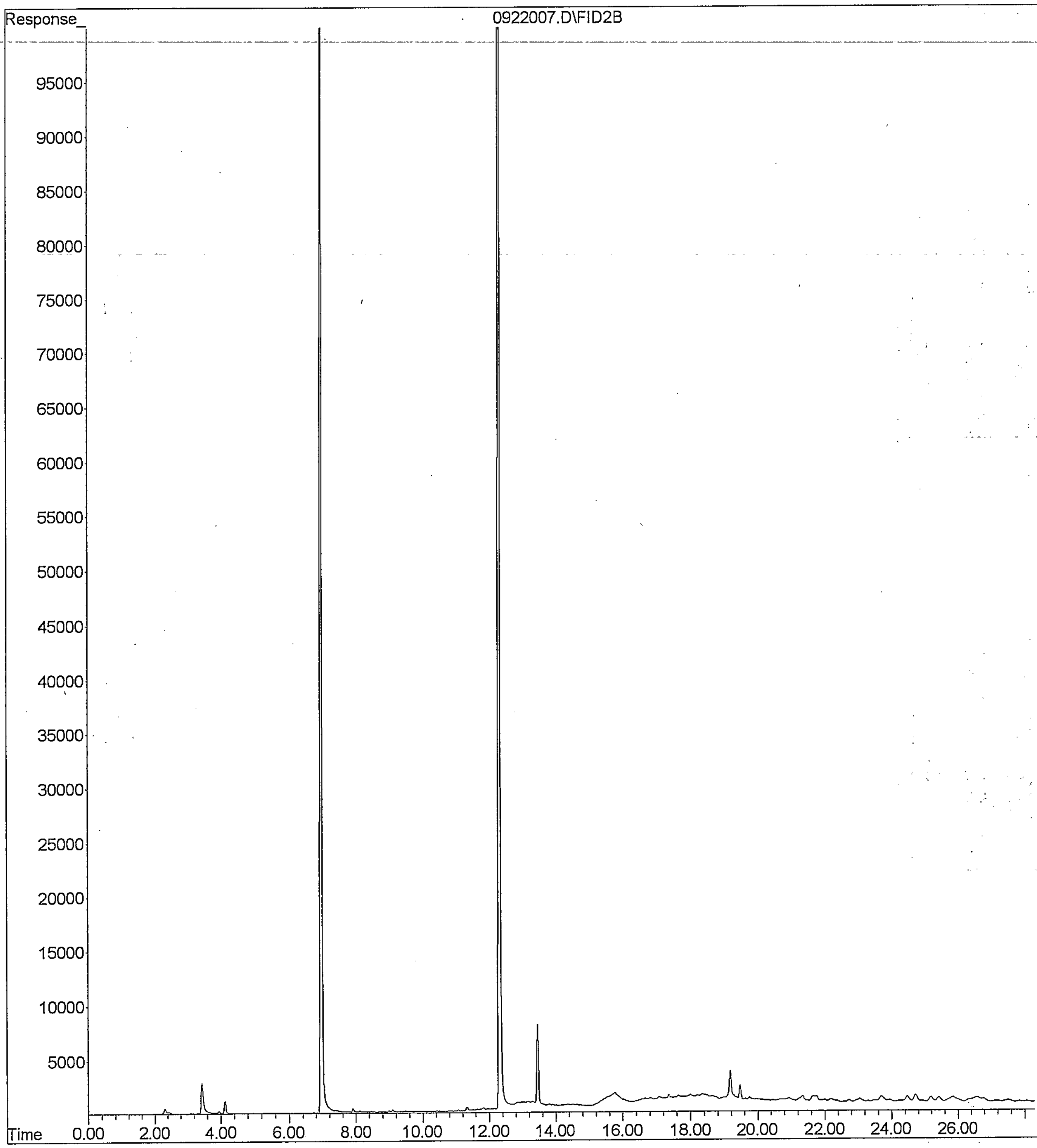
File : X:\BTEX\DARYL\DATA\D100922\0922005.D
Operator :
Acquired : 22 Sep 2010 13:20 using AcqMethod 100827B.M
Instrument : Daryl
Sample Name: 09-209-02s
Misc Info : V2-24-02
Vial Number: 5



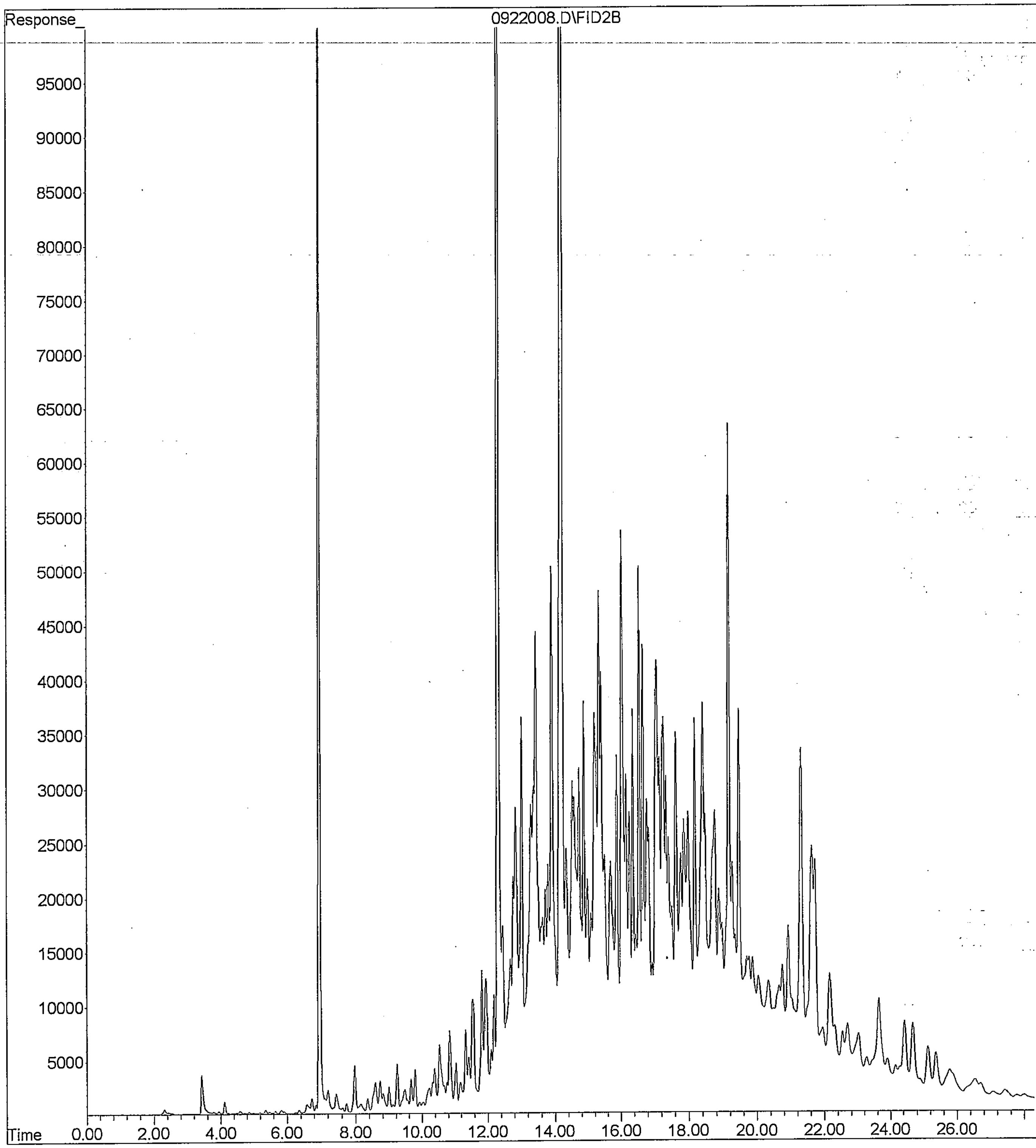
File : X:\BTEX\DARYL\DATA\D100922\0922006.D
Operator :
Acquired : 22 Sep 2010 13:54 using AcqMethod 100827B.M
Instrument : Daryl
Sample Name: 09-209-03s
Misc Info : V2-24-02
Vial Number: 6



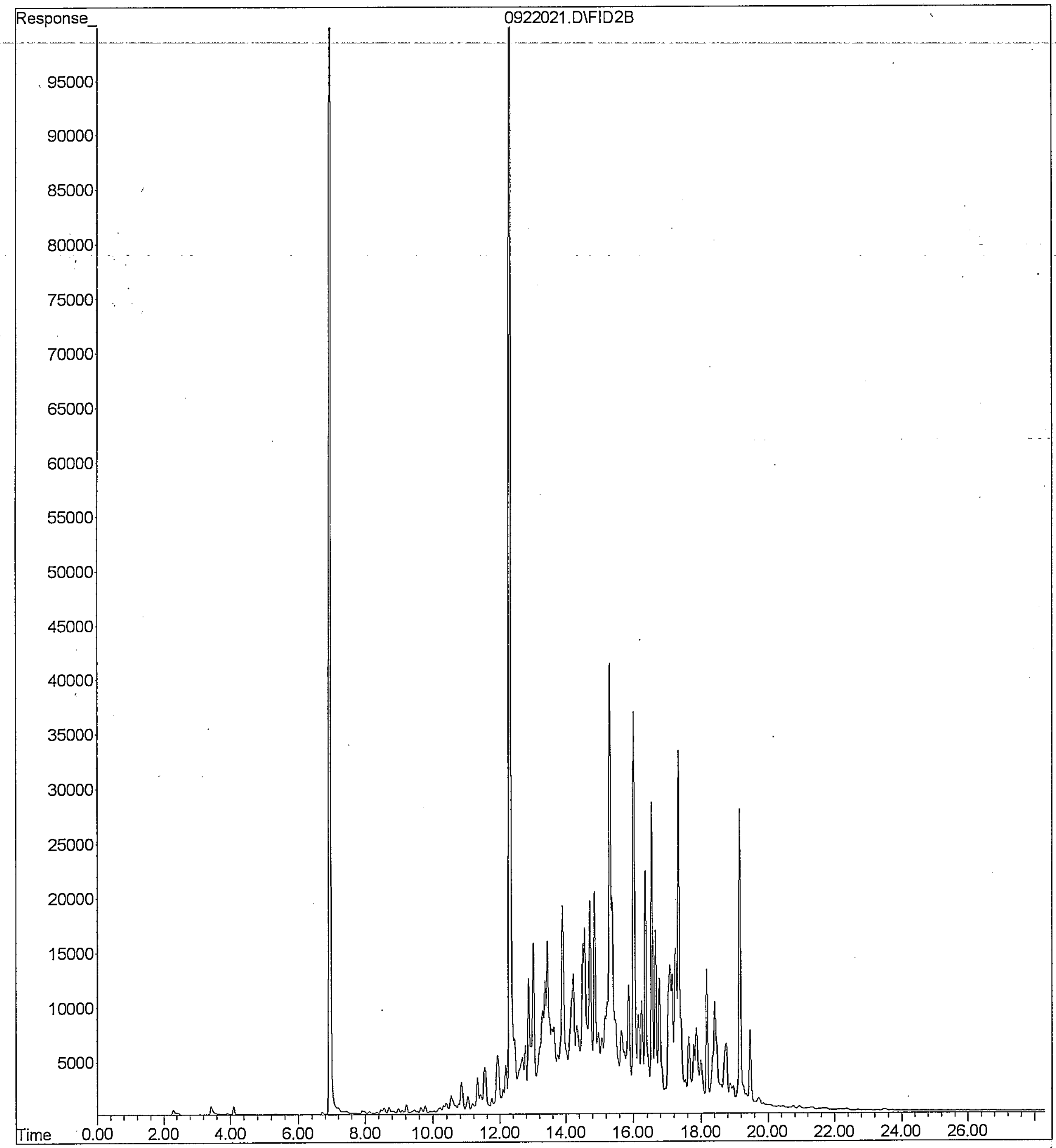
File   : X:\BTEX\DARYL\DATA\D100922\0922007.D
Operator   :
Acquired   : 22 Sep 2010 14:29   using AcqMethod 100827B.M
Instrument   :   Daryl
Sample Name: 09-209-04s
Misc Info   : V2-24-02
Vial Number: 7



File : X:\BTEX\DARYL\DATA\D100922\0922008.D
Operator :
Acquired : 22 Sep 2010 15:03 using AcqMethod 100827B.M
Instrument : Daryl
Sample Name: 09-209-05s
Misc Info : V2-24-02
Vial Number: 8



```
File       : X:\BTEX\DARYL\DATA\D100922\0922021.D
Operator   :
Acquired   : 23 Sep 2010  00:54     using AcqMethod 100827B.M
Instrument :   Daryl
Sample Name: 09-209-06s
Misc Info  : V2-24-02
Vial Number: 21
```



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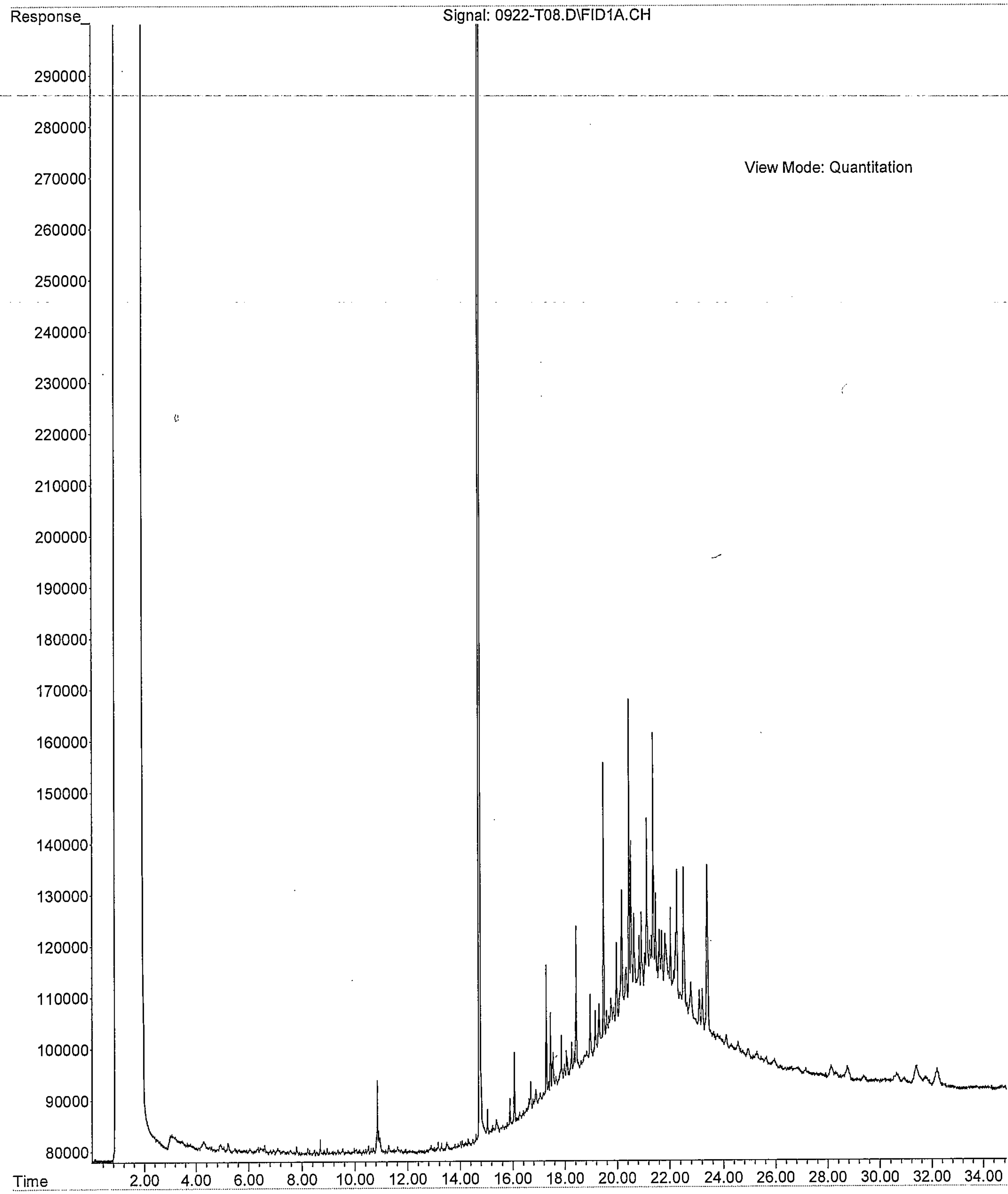
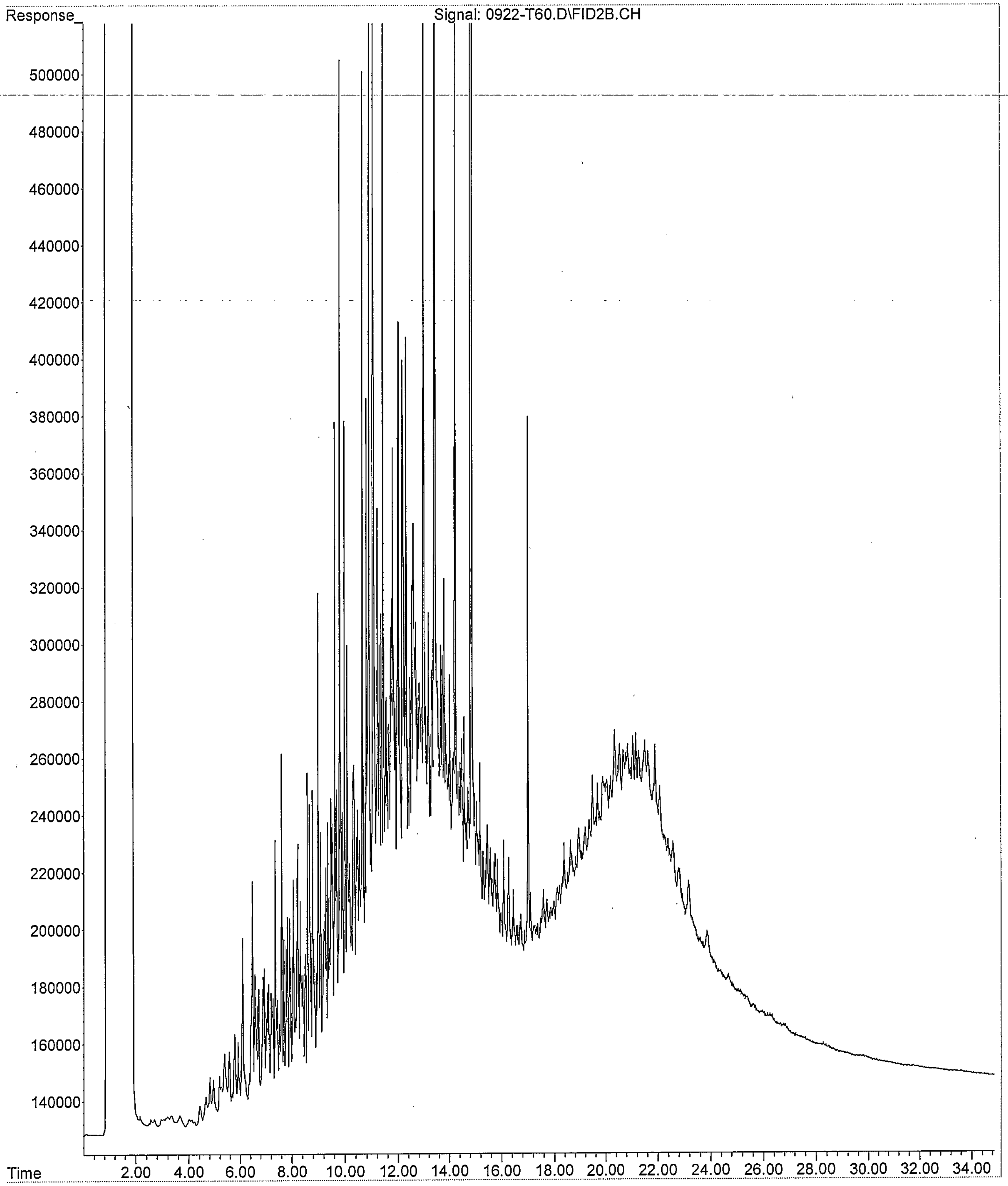
File         :C:\msdchem\1\DATA\T100922\0922-T08.D
Operator     : ZT
Acquired     : 22 Sep 2010  15:11     using AcqMethod T100818F.M
Instrument :    Teri
Sample Name: 09-209-02
Misc Info  :
Vial Number: 8
```



File   :C:\msdchem\1\DATA\T100922.SEC\0922-T60.D
Operator   : ZT
Acquired   : 22 Sep 2010 16:37   using AcqMethod T100818F.M
Instrument :   Teri
Sample Name: 09-209-05
Misc Info   :
Vial Number: 60



OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page ______ of ______

Laboratory Number: 09-209

Company: HWA
Project Number: 2007-098-920
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: ..

Turnaround Request (in working days)
(Check One)
☐ 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	L-PEX-1-6	9/21/10	1020	S	5		/	/		/		/	/			/			X
2	L-PEX-2-10		1300		~~7~~ 3		/	/				/				/			X
3	L-PEX-3-6		1330		~~7~~ 3		/	/				/				/			X
4	L-PEX-4-6		1345		~~7~~ 3		/	/				/				/			X
5	L-PEX-5-6		1320		~~7~~ 2		/	/		~~/~~ NC		/	~~/~~ NC			/			X
6	L-DUP-092110				5		/	/		/		/	/			/			X

	Signature	Company	Date	Time
Relinquished by	[signature]	HWA	9/21/10	1535
Received by	[signature]	OnSite Env	9/21/10	1535
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

OnSite Environmental Inc.
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September 28, 2010

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-920
Laboratory Reference No. 1009-227

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on September 22, 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 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

Case Narrative

Samples were collected on September 22, 2010 and received by the laboratory on September 22, 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/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^oC and -20^oC 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 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^oC and -20^oC until extraction or analysis.

Not enough Method 5035 VOA vials were provided to perform the client-requested QA/QC.

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 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-6-11**					
Laboratory ID:	09-227-01					
Benzene	**ND**	0.023	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.11	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.11	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.11	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.11	EPA 8021	9-22-10	9-22-10	
Gasoline	**ND**	11	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***107***	***55-127***				
Client ID:	**L-PEX-7-11**					
Laboratory ID:	09-227-02					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.085	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.085	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.085	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.085	EPA 8021	9-22-10	9-22-10	
Gasoline	**ND**	8.5	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***106***	***55-127***				
Client ID:	**L-PEX-8-10**					
Laboratory ID:	09-227-03					
Benzene	**0.21**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**0.082**	0.059	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**0.47**	0.059	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**0.87**	0.059	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.30	EPA 8021	9-22-10	9-22-10	U1
Gasoline	**130**	5.9	NWTPH-Gx	9-22-10	9-22-10	O
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***97***	***55-127***				

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0922S1					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***85***	***55-127***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-227-02										
	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						***106***	***109***	***55-127***			
SPIKE BLANKS											
Laboratory ID:	SB0922S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.945**	**0.908**	1.00	1.00		**95**	**91**	75-113	4	9	
Toluene	**0.976**	**0.920**	1.00	1.00		**98**	**92**	75-116	6	10	
Ethyl Benzene	**0.991**	**0.948**	1.00	1.00		**99**	**95**	82-117	4	10	
m,p-Xylene	**1.03**	**0.970**	1.00	1.00		**103**	**97**	81-122	6	10	
o-Xylene	**1.01**	**0.966**	1.00	1.00		**101**	**97**	83-118	4	10	
Surrogate:											
Fluorobenzene						***97***	***92***	***55-127***			

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

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:	**L-PEX-6-11**					
Laboratory ID:	09-227-01					
Diesel Range Organics	**ND**	40	NWTPH-Dx	9-23-10	9-23-10	
Lube Oil Range Organics	**ND**	80	NWTPH-Dx	9-23-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***114***	***50-150***				
Client ID:	**L-PEX-7-11**					
Laboratory ID:	09-227-02					
Diesel Range Organics	**ND**	33	NWTPH-Dx	9-23-10	9-23-10	
Lube Oil Range Organics	**ND**	66	NWTPH-Dx	9-23-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***98***	***50-150***				
Client ID:	**L-PEX-8-10**					
Laboratory ID:	09-227-03					
Diesel Range Organics	**ND**	96	NWTPH-Dx	9-23-10	9-23-10	U1
Lube Oil	**330**	58	NWTPH-Dx	9-23-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***114***	***50-150***				

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

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:	MB0923S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-23-10	9-23-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-23-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***121***	***50-150***				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-226-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**67.9**	**64.2**				6	NA	
Surrogate:								
o-Terphenyl			***109***	***101***	***50-150***			

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
page 1 of 2

Date Extracted:	9-22-10
Date Analyzed:	9-22-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-227-01
Client ID:	**L-PEX-6-11**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0015
Chloromethane	ND		0.0076
Vinyl Chloride	ND		0.0015
Bromomethane	ND		0.0015
Chloroethane	ND		0.0076
Trichlorofluoromethane	ND		0.0015
1,1-Dichloroethene	ND		0.0015
Iodomethane	ND		0.0076
Methylene Chloride	ND		0.0076
(trans) 1,2-Dichloroethene	ND		0.0015
1,1-Dichloroethane	ND		0.0015
2,2-Dichloropropane	ND		0.0015
(cis) 1,2-Dichloroethene	ND		0.0015
Bromochloromethane	ND		0.0015
Chloroform	ND		0.0015
1,1,1-Trichloroethane	ND		0.0015
Carbon Tetrachloride	ND		0.0015
1,1-Dichloropropene	ND		0.0015
1,2-Dichloroethane	ND		0.0015
Trichloroethene	ND		0.0015
1,2-Dichloropropane	ND		0.0015
Dibromomethane	ND		0.0015
Bromodichloromethane	ND		0.0015
2-Chloroethyl Vinyl Ether	ND		0.0076
(cis) 1,3-Dichloropropene	ND		0.0015
(trans) 1,3-Dichloropropene	ND		0.0015

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
page 2 of 2

Lab ID: 09-227-01
Client ID: L-PEX-6-11

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0015
Tetrachloroethene	ND		0.0015
1,3-Dichloropropane	ND		0.0015
Dibromochloromethane	ND		0.0015
1,2-Dibromoethane	ND		0.0015
Chlorobenzene	ND		0.0015
1,1,1,2-Tetrachloroethane	ND		0.0015
Bromoform	ND		0.0015
Bromobenzene	ND		0.0015
1,1,2,2-Tetrachloroethane	ND		0.0015
1,2,3-Trichloropropane	ND		0.0015
2-Chlorotoluene	ND		0.0015
4-Chlorotoluene	ND		0.0015
1,3-Dichlorobenzene	ND		0.0015
1,4-Dichlorobenzene	ND		0.0015
1,2-Dichlorobenzene	ND		0.0015
1,2-Dibromo-3-chloropropane	ND		0.0076
1,2,4-Trichlorobenzene	ND		0.0015
Hexachlorobutadiene	ND		0.0076
1,2,3-Trichlorobenzene	ND		0.0015

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	106	66-128
Toluene-d8	117	68-126
4-Bromofluorobenzene	84	53-134

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 1 of 2

Date Extracted: 9-22-10
Date Analyzed: 9-22-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0922S1

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 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 2 of 2

Lab ID: MB0922S1

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	98	66-128
Toluene-d8	110	68-126
4-Bromofluorobenzene	85	53-134

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
MS/MSD QUALITY CONTROL

Date Extracted: 9-22-10
Date Analyzed: 9-22-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-212-03

Compound	Sample Amount	Spike Amount	MS	Percent Recovery	MSD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	ND	0.0500	0.0561	112	0.0549	110	70-130	
Benzene	ND	0.0500	0.0431	86	0.0434	87	70-130	
Trichloroethene	ND	0.0500	0.0492	98	0.0505	101	70-130	
Toluene	ND	0.0500	0.0461	92	0.0473	95	70-126	
Chlorobenzene	ND	0.0500	0.0435	87	0.0430	86	70-130	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	2	14	
Benzene	0	14	
Trichloroethene	3	18	
Toluene	3	20	
Chlorobenzene	1	15	

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

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:	**L-PEX-6-11**					
Laboratory ID:	09-227-01					
Naphthalene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
2-Methylnaphthalene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
1-Methylnaphthalene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthylene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Fluorene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Phenanthrene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Anthracene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Fluoranthene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Pyrene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]anthracene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Chrysene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[b]fluoranthene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[k]fluoranthene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]pyrene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Dibenz[a,h]anthracene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[g,h,i]perylene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***72***	***45 - 101***				
Pyrene-d10	***87***	***52 - 118***				
Terphenyl-d14	***86***	***41 - 106***				

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

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:	**L-PEX-7-11**					
Laboratory ID:	09-227-02					
Naphthalene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
2-Methylnaphthalene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
1-Methylnaphthalene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Acenaphthylene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Acenaphthene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Fluorene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Phenanthrene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Anthracene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Fluoranthene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Pyrene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[a]anthracene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Chrysene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[b]fluoranthene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[k]fluoranthene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[a]pyrene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Dibenz[a,h]anthracene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[g,h,i]perylene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***73***	***45 - 101***				
Pyrene-d10	***99***	***52 - 118***				
Terphenyl-d14	***95***	***41 - 106***				

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

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:	**L-PEX-8-10**					
Laboratory ID:	09-227-03					
Naphthalene	**0.015**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
2-Methylnaphthalene	**0.014**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
1-Methylnaphthalene	**0.063**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Acenaphthylene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Acenaphthene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Fluorene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Phenanthrene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Anthracene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Fluoranthene	**0.0089**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Pyrene	**0.011**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[a]anthracene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Chrysene	**0.012**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[b]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[k]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[a]pyrene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Dibenz[a,h]anthracene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[g,h,i]perylene	**0.0093**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***82***	***45 - 101***				
Pyrene-d10	***74***	***52 - 118***				
Terphenyl-d14	***91***	***41 - 106***				

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

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:	MB0922S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***67***	***45 - 101***				
Pyrene-d10	***69***	***52 - 118***				
Terphenyl-d14	***80***	***41 - 106***				

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

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:	09-209-02										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0551**	**0.0531**	0.0833	0.0833	ND	66	64	31 - 115	4	19	
Acenaphthylene	**0.0557**	**0.0527**	0.0833	0.0833	ND	67	63	40 - 134	6	22	
Acenaphthene	**0.0593**	**0.0565**	0.0833	0.0833	ND	71	68	48 - 118	5	17	
Fluorene	**0.0635**	**0.0602**	0.0833	0.0833	ND	76	72	54 - 122	5	16	
Phenanthrene	**0.0602**	**0.0573**	0.0833	0.0833	ND	72	69	46 - 123	5	19	
Anthracene	**0.0569**	**0.0543**	0.0833	0.0833	ND	68	65	53 - 123	5	27	
Fluoranthene	**0.0589**	**0.0567**	0.0833	0.0833	ND	71	68	47 - 132	4	26	
Pyrene	**0.0605**	**0.0584**	0.0833	0.0833	ND	73	70	41 - 137	4	25	
Benzo[a]anthracene	**0.0670**	**0.0609**	0.0833	0.0833	ND	80	73	43 - 132	10	26	
Chrysene	**0.0674**	**0.0656**	0.0833	0.0833	ND	81	79	46 - 126	3	24	
Benzo[b]fluoranthene	**0.0670**	**0.0661**	0.0833	0.0833	ND	80	79	44 - 134	1	24	
Benzo[k]fluoranthene	**0.0664**	**0.0616**	0.0833	0.0833	ND	80	74	45 - 132	8	20	
Benzo[a]pyrene	**0.0679**	**0.0647**	0.0833	0.0833	ND	82	78	36 - 136	5	23	
Indeno(1,2,3-c,d)pyrene	**0.0665**	**0.0652**	0.0833	0.0833	ND	80	78	40 - 136	2	16	
Dibenz[a,h]anthracene	**0.0655**	**0.0643**	0.0833	0.0833	ND	79	77	40 - 142	2	13	
Benzo[g,h,i]perylene	**0.0646**	**0.0636**	0.0833	0.0833	ND	78	76	37 - 137	2	18	
Surrogate:											
2-Fluorobiphenyl						***67***	***63***	***45 - 101***			
Pyrene-d10						***65***	***63***	***52 - 118***			
Terphenyl-d14						***72***	***65***	***41 - 106***			

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-6-11**					
Laboratory ID:	09-227-01					
Aroclor 1016	**ND**	0.080	EPA 8082	9-22-10	9-23-10	
Aroclor 1221	**ND**	0.080	EPA 8082	9-22-10	9-23-10	
Aroclor 1232	**ND**	0.080	EPA 8082	9-22-10	9-23-10	
Aroclor 1242	**ND**	0.080	EPA 8082	9-22-10	9-23-10	
Aroclor 1248	**ND**	0.080	EPA 8082	9-22-10	9-23-10	
Aroclor 1254	**ND**	0.080	EPA 8082	9-22-10	9-23-10	
Aroclor 1260	**ND**	0.080	EPA 8082	9-22-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***97***	***46-122***				

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0922S1					
Aroclor 1016	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1221	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1232	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1242	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1248	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1254	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1260	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***86***	***46-122***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-209-06										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.410**	**0.406**	0.500	0.500	ND	**82**	**81**	36-121	1	15	
Surrogate:											
DCB						***83***	***81***	***46-122***			

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-227-01					
Client ID:	**L-PEX-6-11**					
Arsenic	**ND**	16	6010B	9-23-10	9-23-10	
Barium	**39**	4.0	6010B	9-23-10	9-23-10	
Cadmium	**ND**	0.80	6010B	9-23-10	9-23-10	
Chromium	**24**	0.80	6010B	9-23-10	9-23-10	
Lead	**ND**	8.0	6010B	9-23-10	9-23-10	
Mercury	**ND**	0.40	7471A	9-23-10	9-23-10	
Selenium	**ND**	16	6010B	9-23-10	9-23-10	
Silver	**ND**	0.80	6010B	9-23-10	9-23-10	
Lab ID:	09-227-02					
Client ID:	**L-PEX-7-11**					
Arsenic	**ND**	13	6010B	9-23-10	9-23-10	
Barium	**100**	3.3	6010B	9-23-10	9-23-10	
Cadmium	**ND**	0.66	6010B	9-23-10	9-23-10	
Chromium	**34**	0.66	6010B	9-23-10	9-23-10	
Lead	**ND**	6.6	6010B	9-23-10	9-23-10	
Mercury	**ND**	0.33	7471A	9-23-10	9-23-10	
Selenium	**ND**	13	6010B	9-23-10	9-23-10	
Silver	**ND**	0.66	6010B	9-23-10	9-23-10	

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-227-03					
Client ID:	**L-PEX-8-10**					
Arsenic	**ND**	12	6010B	9-23-10	9-23-10	
Barium	**36**	2.9	6010B	9-23-10	9-23-10	
Cadmium	**ND**	0.58	6010B	9-23-10	9-23-10	
Chromium	**23**	0.58	6010B	9-23-10	9-23-10	
Lead	**31**	5.8	6010B	9-23-10	9-23-10	
Mercury	**ND**	0.29	7471A	9-23-10	9-23-10	
Selenium	**ND**	12	6010B	9-23-10	9-23-10	
Silver	**ND**	0.58	6010B	9-23-10	9-23-10	

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
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Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 9-23-10
Date Analyzed: 9-23-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0923S1&MB0923S2

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 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-23-10
Date Analyzed: 9-23-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-227-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**76.3**	**74.7**	2	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**25.9**	**25.4**	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 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-23-10
Date Analyzed: 9-23-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-227-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**86.5**	86	**86.7**	87	0	
Barium	100	**173**	97	**174**	98	1	
Cadmium	50	**45.1**	90	**46.1**	92	2	
Chromium	100	**120**	94	**119**	93	1	
Lead	250	**222**	89	**225**	90	2	
Mercury	0.50	**0.510**	102	**0.501**	100	2	
Selenium	100	**91.2**	91	**92.3**	92	1	
Silver	25	**21.5**	86	**21.8**	87	1	

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

% MOISTURE

Date Analyzed: 9-22-10

Client ID	Lab ID	% Moisture
L-PEX-6-11	09-227-01	37
L-PEX-7-11	09-227-02	24
L-PEX-8-10	09-227-03	14

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

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE: ALS JOB#: CLIENT PROJECT:	9/28/2010 1009168 Lab Ref #09-227 / Proj #2007-098-920
CLIENT CONTACT:	Dave Baumeister	DATE RECEIVED:	9/23/2010
CLIENT SAMPLE ID	L-PEX-8-10	COLLECTION DATE:	9/22/2010 15:00
ALS SAMPLE#:	-01	WDOE ACCREDITATION:	C601

DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Methyl T-Butyl Ether	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
Benzene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
Toluene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
Ethylbenzene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
M & P- Xylenes	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
O-Xylene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
C5-C6 Aliphatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
>C6-C8 Aliphatics	NWVPH	**29**	5.0	1	MG/KG	09/26/2010	DLC
>C8-C10 Aliphatics	NWVPH	**36**	5.0	1	MG/KG	09/26/2010	DLC
>C10-C12 Aliphatics	NWVPH	**47**	5.0	1	MG/KG	09/26/2010	DLC
>C8-C10 Aromatics	NWVPH	**48**	5.0	1	MG/KG	09/26/2010	DLC
>C10-C12 Aromatics	NWVPH	**38**	5.0	1	MG/KG	09/26/2010	DLC
>C12-C13 Aromatics	NWVPH	**18 C1**	5.0	1	MG/KG	09/26/2010	DLC
Hexane	NWVPH	U	0.20	1	MG/KG	09/26/2010	DLC
>C8-C10 Aliphatics	NWEPH	**29 C1**	5.0	1	MG/KG	09/24/2010	DLC
>C10-C12 Aliphatics	NWEPH	**18 C1**	5.0	1	MG/KG	09/24/2010	DLC
>C12-C16 Aliphatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C16-C21 Aliphatics	NWEPH	**11**	5.0	1	MG/KG	09/24/2010	DLC
>C21-C34 Aliphatics	NWEPH	**130**	5.0	1	MG/KG	09/24/2010	DLC
>C8-C10 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C10-C12 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C16-C21 Aromatics	NWEPH	**9.1**	5.0	1	MG/KG	09/24/2010	DLC
>C21-C34 Aromatics	NWEPH	**58**	5.0	1	MG/KG	09/24/2010	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	EPA-8021	**73.0**	09/26/2010	DLC
TFT - Aliphatic	NWVPH	**71.0**	09/26/2010	DLC
TFT - Aromatic	NWVPH	**75.0**	09/26/2010	DLC
C25	NWEPH	**90.0**	09/24/2010	DLC
p-Terphenyl	NWEPH	**107**	09/24/2010	DLC

U - Analyte analyzed for but not detected at level above reporting limit.
C1 - Values for this range should be ignored due to overlap correction.

Note: BTEX, MtBE and Hexane results have not been subtracted from the aliphatic range results.

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ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE: ALS JOB#: CLIENT PROJECT:	9/28/2010 1009168 Lab Ref #09-227 / Proj #2007-098-920
CLIENT CONTACT:	Dave Baumeister	WDOE ACCREDITATION:	C601

LABORATORY BLANK RESULTS

MBLK-9162010

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Methyl T-Butyl Ether	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
Benzene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
Toluene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
Ethylbenzene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
M & P- Xylenes	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
O-Xylene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC

MBLK-9262010

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
>C6-C8 Aliphatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
>C8-C10 Aliphatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
>C10-C12 Aliphatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
>C8-C10 Aromatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
>C10-C12 Aromatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
>C12-C13 Aromatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
Hexane	NWVPH	U	0.20	1	MG/KG	09/26/2010	DLC

MBLK-9242010

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C10-C12 Aliphatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C12-C16 Aliphatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C16-C21 Aliphatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C21-C34 Aliphatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C8-C10 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C10-C12 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C16-C21 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C21-C34 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/28/2010
		ALS JOB#:	1009168
		CLIENT PROJECT:	Lab Ref #09-227 / Proj #2007-098-920
CLIENT CONTACT:	Dave Baumeister	WDOE ACCREDITATION:	C601

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: R70683

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	ANALYSIS DATE	ANALYSIS BY
Methyl T-Butyl Ether - BS	EPA-8021	**80**			09/26/2010	DLC
Methyl T-Butyl Ether - BSD	EPA-8021	**85**	**6**		09/26/2010	DLC
Benzene - BS	EPA-8021	**78**			09/26/2010	DLC
Benzene - BSD	EPA-8021	**82**	**5**		09/26/2010	DLC
Toluene - BS	EPA-8021	**77**			09/26/2010	DLC
Toluene - BSD	EPA-8021	**81**	**5**		09/26/2010	DLC
Ethylbenzene - BS	EPA-8021	**78**			09/26/2010	DLC
Ethylbenzene - BSD	EPA-8021	**82**	**5**		09/26/2010	DLC
M & P- Xylenes - BS	EPA-8021	**78**			09/26/2010	DLC
M & P- Xylenes - BSD	EPA-8021	**82**	**5**		09/26/2010	DLC
O-Xylene - BS	EPA-8021	**79**			09/26/2010	DLC
O-Xylene - BSD	EPA-8021	**83**	**4**		09/26/2010	DLC

ALS Test Batch ID: R70685

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics - BS	NWVPH	**76**			09/26/2010	DLC
C5-C6 Aliphatics - BSD	NWVPH	**83**	**8**		09/26/2010	DLC
>C6-C8 Aliphatics - BS	NWVPH	**73**			09/26/2010	DLC
>C6-C8 Aliphatics - BSD	NWVPH	**79**	**7**		09/26/2010	DLC
>C8-C10 Aliphatics - BS	NWVPH	**73**			09/26/2010	DLC
>C8-C10 Aliphatics - BSD	NWVPH	**79**	**7**		09/26/2010	DLC
>C10-C12 Aliphatics - BS	NWVPH	**70**			09/26/2010	DLC
>C10-C12 Aliphatics - BSD	NWVPH	**74**	**5**		09/26/2010	DLC
>C8-C10 Aromatics - BS	NWVPH	**80**			09/26/2010	DLC
>C8-C10 Aromatics - BSD	NWVPH	**84**	**4**		09/26/2010	DLC
>C10-C12 Aromatics - BS	NWVPH	**76**			09/26/2010	DLC
>C10-C12 Aromatics - BSD	NWVPH	**78**	**2**		09/26/2010	DLC
>C12-C13 Aromatics - BS	NWVPH	**80**			09/26/2010	DLC
>C12-C13 Aromatics - BSD	NWVPH	**79**	**1**		09/26/2010	DLC
Hexane - BS	NWVPH	**77**			09/26/2010	DLC
Hexane - BSD	NWVPH	**84**	**8**		09/26/2010	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE: ALS JOB#: CLIENT PROJECT:	9/28/2010 1009168 Lab Ref #09-227 / Proj #2007-098-920
CLIENT CONTACT:	Dave Baumeister	WDOE ACCREDITATION:	C601

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: R70687

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	ANALYSIS DATE	ANALYSIS BY
>C10-C12 Aliphatics - BS	NWEPH	**88**			09/24/2010	DLC
>C10-C12 Aliphatics - BSD	NWEPH	**94**	**6**		09/24/2010	DLC
>C12-C16 Aliphatics - BS	NWEPH	**91**			09/24/2010	DLC
>C12-C16 Aliphatics - BSD	NWEPH	**96**	**5**		09/24/2010	DLC
>C16-C21 Aliphatics - BS	NWEPH	**91**			09/24/2010	DLC
>C16-C21 Aliphatics - BSD	NWEPH	**97**	**6**		09/24/2010	DLC
>C21-C34 Aliphatics - BS	NWEPH	**94**			09/24/2010	DLC
>C21-C34 Aliphatics - BSD	NWEPH	**94**	**0**		09/24/2010	DLC
>C10-C12 Aromatics - BS	NWEPH	**100**			09/24/2010	DLC
>C10-C12 Aromatics - BSD	NWEPH	**101**	**0**		09/24/2010	DLC
>C12-C16 Aromatics - BS	NWEPH	**102**			09/24/2010	DLC
>C12-C16 Aromatics - BSD	NWEPH	**104**	**1**		09/24/2010	DLC
>C16-C21 Aromatics - BS	NWEPH	**103**			09/24/2010	DLC
>C16-C21 Aromatics - BSD	NWEPH	**105**	**1**		09/24/2010	DLC
>C21-C34 Aromatics - BS	NWEPH	**98**			09/24/2010	DLC
>C21-C34 Aromatics - BSD	NWEPH	**99**	**1**		09/24/2010	DLC

APPROVED BY:

Laboratory Director

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
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1009168

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Page ____ of ____

Subcontract Laboratory: ALS

Contact Person:

Address:

Phone Number:

Date/Time:

Turnaround Request: 1 Day / 2 Day / 3 Day / Standard

Other: ASAP

Laboratory Reference #: 09-227

Project Manager: David Baumeister

email: dbaumeister@onsite-env.com

Project Number: 2007-098-920

Project Name:

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
1	L-PEX-8-10	9/22/10	1500	S	2	EPH/VPH

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	[signature]	OSE	9/23/10	1530	EIM
Received by:	[signature]	Speedy	9/23/10	1030	
Relinquished by:	[signature]	Speedy	9/23/10	1130	
Received by:					
Relinquished by:					
Received by:	Shawn Robinson	ALS	9/23/10	1130	

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Company: HWA
Project Number: 2007-098-920
Project Name: Bothell Landing
Project Manager: Arnie Sugar
Sampled by:

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [x] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [ ] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ________ (other)

Laboratory Number: 09-227

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.
1	L-PEX-6-11	9/22/10	14:20	Soil	4
2	L-PEX-7-11	"	14:30	"	"
3	L-PEX-8-10	"	15:00	"	"

Requested Analysis

Lab ID	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	~~E-TPH~~ EPH	VPH					% Moisture
1		X	X		X		X	X			X									X
2		X	X				X				X									X
3		X	X				X				X			X	X					X

	Signature	Company	Date	Time
Relinquished by		HWA	9/22/10	1500
Received by		OSE	9/22/10	1550
Relinquished by				
Received by				
Relinquished by				
Received by				

Reviewed by/Date

Reviewed by/Date

Comments/Special Instructions:

Chromatograms with final report ☐

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Environmental Inc.

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September 30, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-920
Laboratory Reference No. 1009-258

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 24, 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 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

Case Narrative

Samples were collected on September 24, 2010 and received by the laboratory on September 24, 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/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^oC and -20^oC until extraction or analysis.

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^oC and -20^oC until extraction or analysis.

Not enough Method 5035 VOA vials were provided to perform the client-requested QA/QC.

PAHs EPA 8270D/SIM Analysis

Sample L-PEX-14-9 had one surrogate recovery out of control limits. This is within allowance of our standard operating procedure as long as the recovery is above 10%.

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 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-9-10**					
Laboratory ID:	09-258-01					
Benzene	**ND**	0.020	EPA 8021	9-24-10	9-25-10	
Toluene	**ND**	0.057	EPA 8021	9-24-10	9-25-10	
Ethyl Benzene	**ND**	0.057	EPA 8021	9-24-10	9-25-10	
m,p-Xylene	**ND**	0.057	EPA 8021	9-24-10	9-25-10	
o-Xylene	**ND**	0.057	EPA 8021	9-24-10	9-25-10	
Gasoline	**ND**	5.7	NWTPH-Gx	9-24-10	9-25-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*55-127*				
Client ID:	**L-PEX-10-8**					
Laboratory ID:	09-258-02					
Benzene	**23**	0.10	EPA 8021	9-24-10	9-25-10	
Toluene	**2.6**	0.52	EPA 8021	9-24-10	9-25-10	
Ethyl Benzene	**43**	0.52	EPA 8021	9-24-10	9-25-10	
m,p-Xylene	**120**	5.2	EPA 8021	9-24-10	9-27-10	
o-Xylene	**45**	0.52	EPA 8021	9-24-10	9-25-10	
Gasoline	**3100**	52	NWTPH-Gx	9-24-10	9-25-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*118*	*55-127*				
Client ID:	**L-PEX-11-8**					
Laboratory ID:	09-258-03					
Benzene	**ND**	0.020	EPA 8021	9-24-10	9-25-10	
Toluene	**ND**	0.079	EPA 8021	9-24-10	9-25-10	
Ethyl Benzene	**0.083**	0.079	EPA 8021	9-24-10	9-25-10	
m,p-Xylene	**0.15**	0.079	EPA 8021	9-24-10	9-25-10	
o-Xylene	**ND**	0.079	EPA 8021	9-24-10	9-25-10	
Gasoline	**32**	7.9	NWTPH-Gx	9-24-10	9-25-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*55-127*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-13-14**					
Laboratory ID:	09-258-05					
Gasoline	**ND**	8.3	NWTPH-Gx	9-24-10	9-25-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*55-127*				
Client ID:	**L-PEX-14-9**					
Laboratory ID:	09-258-06					
Benzene	**ND**	0.020	EPA 8021	9-24-10	9-25-10	
Toluene	**ND**	0.051	EPA 8021	9-24-10	9-25-10	
Ethyl Benzene	**0.055**	0.051	EPA 8021	9-24-10	9-25-10	
m,p-Xylene	**0.098**	0.051	EPA 8021	9-24-10	9-25-10	
o-Xylene	**ND**	0.26	EPA 8021	9-24-10	9-25-10	U1
Gasoline	**15**	5.1	NWTPH-Gx	9-24-10	9-25-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*55-127*				
Client ID:	**L-PEX-15-9.5**					
Laboratory ID:	09-258-08					
Benzene	**ND**	0.020	EPA 8021	9-24-10	9-25-10	
Toluene	**ND**	0.052	EPA 8021	9-24-10	9-25-10	
Ethyl Benzene	**ND**	0.052	EPA 8021	9-24-10	9-25-10	
m,p-Xylene	**ND**	0.052	EPA 8021	9-24-10	9-25-10	
o-Xylene	**ND**	0.052	EPA 8021	9-24-10	9-25-10	
Gasoline	**ND**	5.2	NWTPH-Gx	9-24-10	9-25-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*55-127*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0924S2					
Benzene	**ND**	0.020	EPA 8021	9-24-10	9-24-10	
Toluene	**ND**	0.050	EPA 8021	9-24-10	9-24-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-24-10	9-24-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-24-10	9-24-10	
o-Xylene	**ND**	0.050	EPA 8021	9-24-10	9-24-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-24-10	9-24-10	
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:	09-247-02										
	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						*93*	*96*	*55-127*			
SPIKE BLANKS											
Laboratory ID:	SB0924S2										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.914**	**0.936**	1.00	1.00		**91**	**94**	75-113	2	9	
Toluene	**0.943**	**0.975**	1.00	1.00		**94**	**98**	75-116	3	10	
Ethyl Benzene	**0.980**	**1.02**	1.00	1.00		**98**	**102**	82-117	4	10	
m,p-Xylene	**0.990**	**1.03**	1.00	1.00		**99**	**103**	81-122	4	10	
o-Xylene	**0.994**	**1.02**	1.00	1.00		**99**	**102**	83-118	3	10	
Surrogate:											
Fluorobenzene						*91*	*96*	*55-127*			

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-12-6**					
Laboratory ID:	09-258-04					
Benzene	**ND**	0.020	EPA 8021	9-29-10	9-29-10	
Toluene	**ND**	0.053	EPA 8021	9-29-10	9-29-10	
Ethyl Benzene	**ND**	0.053	EPA 8021	9-29-10	9-29-10	
m,p-Xylene	**ND**	0.053	EPA 8021	9-29-10	9-29-10	
o-Xylene	**ND**	0.053	EPA 8021	9-29-10	9-29-10	
Gasoline	**ND**	5.3	NWTPH-Gx	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*55-127*				
Client ID:	**L-PEX-13-14**					
Laboratory ID:	09-258-05					
Benzene	**ND**	0.020	EPA 8021	9-29-10	9-29-10	
Toluene	**ND**	0.083	EPA 8021	9-29-10	9-29-10	
Ethyl Benzene	**ND**	0.083	EPA 8021	9-29-10	9-29-10	
m,p-Xylene	**ND**	0.083	EPA 8021	9-29-10	9-29-10	
o-Xylene	**ND**	0.083	EPA 8021	9-29-10	9-29-10	
Gasoline	**ND**	8.3	NWTPH-Gx	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*55-127*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0929S1					
Benzene	**ND**	0.020	EPA 8021	9-29-10	9-29-10	
Toluene	**ND**	0.050	EPA 8021	9-29-10	9-29-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-29-10	9-29-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-29-10	9-29-10	
o-Xylene	**ND**	0.050	EPA 8021	9-29-10	9-29-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*55-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-319-05										
	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						*89*	*90*	*55-127*			
SPIKE BLANKS											
Laboratory ID:	SB0929S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.918**	**0.967**	1.00	1.00		**92**	**97**	75-113	5	9	
Toluene	**0.895**	**0.941**	1.00	1.00		**90**	**94**	75-116	5	10	
Ethyl Benzene	**0.899**	**0.950**	1.00	1.00		**90**	**95**	82-117	6	10	
m,p-Xylene	**0.913**	**0.961**	1.00	1.00		**91**	**96**	81-122	5	10	
o-Xylene	**0.910**	**0.955**	1.00	1.00		**91**	**96**	83-118	5	10	
Surrogate:											
Fluorobenzene						*91*	*93*	*55-127*			

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	**L-PEX-9-10**					
Laboratory ID:	09-258-01					
Diesel Range Organics	**ND**	29	NWTPH-Dx	9-24-10	9-24-10	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*130*	*50-150*				
Client ID:	**L-PEX-10-8**					
Laboratory ID:	09-258-02					
Diesel Range Organics	**ND**	1800	NWTPH-Dx	9-24-10	9-24-10	U1
Lube Oil	**2700**	58	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*132*	*50-150*				
Client ID:	**L-PEX-11-8**					
Laboratory ID:	09-258-03					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-24-10	9-24-10	
Lube Oil	**80**	61	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*127*	*50-150*				
Client ID:	**L-PEX-12-6**					
Laboratory ID:	09-258-04					
Diesel Range Organics	**ND**	29	NWTPH-Dx	9-24-10	9-24-10	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*121*	*50-150*				
Client ID:	**L-PEX-13-14**					
Laboratory ID:	09-258-05					
Diesel Range Organics	**ND**	34	NWTPH-Dx	9-24-10	9-24-10	
Lube Oil Range Organics	**ND**	68	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*115*	*50-150*				
Client ID:	**L-PEX-14-9**					
Laboratory ID:	09-258-06					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-24-10	9-24-10	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*87*	*50-150*				
Client ID:	**L-PEX-15-9.5**					
Laboratory ID:	09-258-08					
Diesel Range Organics	**ND**	40	NWTPH-Dx	9-24-10	9-24-10	U1
Lube Oil	**170**	60	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	MB0924S3					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-24-10	9-24-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*132*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-258-04							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*121*	*121*	*50-150*			

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

VOLATILES by EPA 8260B
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Date Extracted:	9-24-10
Date Analyzed:	9-24-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-258-05
Client ID:	**L-PEX-13-14**

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0013
Chloromethane	ND		0.0063
Vinyl Chloride	ND		0.0013
Bromomethane	ND		0.0013
Chloroethane	ND		0.0063
Trichlorofluoromethane	ND		0.0013
1,1-Dichloroethene	ND		0.0013
Acetone	ND		0.0063
Iodomethane	ND		0.0063
Carbon Disulfide	ND		0.0013
Methylene Chloride	ND		0.0063
(trans) 1,2-Dichloroethene	ND		0.0013
Methyl t-Butyl Ether	ND		0.0013
1,1-Dichloroethane	ND		0.0013
Vinyl Acetate	ND		0.0063
2,2-Dichloropropane	ND		0.0013
(cis) 1,2-Dichloroethene	ND		0.0013
2-Butanone	0.032		0.0063
Bromochloromethane	ND		0.0013
Chloroform	ND		0.0013
1,1,1-Trichloroethane	ND		0.0013
Carbon Tetrachloride	ND		0.0013
1,1-Dichloropropene	ND		0.0013
Benzene	ND		0.0013
1,2-Dichloroethane	ND		0.0013
Trichloroethene	ND		0.0013
1,2-Dichloropropane	ND		0.0013
Dibromomethane	ND		0.0013
Bromodichloromethane	ND		0.0013
2-Chloroethyl Vinyl Ether	ND		0.0063
(cis) 1,3-Dichloropropene	ND		0.0013
Methyl Isobutyl Ketone	ND		0.0063
Toluene	ND		0.0063
(trans) 1,3-Dichloropropene	ND		0.0013

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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Lab ID: 09-258-05
Client ID: L-PEX-13-14

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0013
Tetrachloroethene	ND		0.0013
1,3-Dichloropropane	ND		0.0013
2-Hexanone	ND		0.0063
Dibromochloromethane	ND		0.0013
1,2-Dibromoethane	ND		0.0013
Chlorobenzene	ND		0.0013
1,1,1,2-Tetrachloroethane	ND		0.0013
Ethylbenzene	ND		0.0013
m,p-Xylene	ND		0.0025
o-Xylene	ND		0.0013
Styrene	ND		0.0013
Bromoform	ND		0.0013
Isopropylbenzene	ND		0.0013
Bromobenzene	ND		0.0013
1,1,2,2-Tetrachloroethane	ND		0.0013
1,2,3-Trichloropropane	ND		0.0013
n-Propylbenzene	ND		0.0013
2-Chlorotoluene	ND		0.0013
4-Chlorotoluene	ND		0.0013
1,3,5-Trimethylbenzene	0.0060		0.0013
tert-Butylbenzene	ND		0.0013
1,2,4-Trimethylbenzene	ND		0.0013
sec-Butylbenzene	ND		0.0013
1,3-Dichlorobenzene	ND		0.0013
p-Isopropyltoluene	ND		0.0013
1,4-Dichlorobenzene	ND		0.0013
1,2-Dichlorobenzene	ND		0.0013
n-Butylbenzene	ND		0.0013
1,2-Dibromo-3-chloropropane	ND		0.0063
1,2,4-Trichlorobenzene	ND		0.0013
Hexachlorobutadiene	ND		0.0063
Naphthalene	ND		0.0013
1,2,3-Trichlorobenzene	ND		0.0013

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	102	66-128
Toluene-d8	110	68-126
4-Bromofluorobenzene	75	53-134

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 1 of 2

Date Extracted: 9-24-10
Date Analyzed: 9-24-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0924S1

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		0.0050
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 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 2 of 2

Lab ID: MB0924S1

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	108	66-128
Toluene-d8	114	68-126
4-Bromofluorobenzene	76	53-134

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 9-24-10
Date Analyzed: 9-24-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0924S1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits
1,1-Dichloroethene	0.0500	0.0608	122	0.0614	123	70-130
Benzene	0.0500	0.0450	90	0.0471	94	70-121
Trichloroethene	0.0500	0.0534	107	0.0522	104	70-124
Toluene	0.0500	0.0496	99	0.0486	97	70-123
Chlorobenzene	0.0500	0.0441	88	0.0430	86	71-119

	RPD	RPD Limit	Flags
1,1-Dichloroethene	1	14	
Benzene	5	10	
Trichloroethene	2	12	
Toluene	2	12	
Chlorobenzene	3	9	

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	**L-PEX-13-14**					
Laboratory ID:	09-258-05					
Naphthalene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
2-Methylnaphthalene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
1-Methylnaphthalene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Acenaphthylene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Acenaphthene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Fluorene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Phenanthrene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Anthracene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Fluoranthene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Pyrene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[a]anthracene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Chrysene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[b]fluoranthene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[k]fluoranthene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[a]pyrene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Dibenz[a,h]anthracene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[g,h,i]perylene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*80*	*45 - 101*				
Pyrene-d10	*96*	*52 - 118*				
Terphenyl-d14	*87*	*41 - 106*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	MB0924S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*73*	*45 - 101*				
Pyrene-d10	*102*	*52 - 118*				
Terphenyl-d14	*106*	*41 - 106*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	09-243-01										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0778**	**0.0740**	0.0833	0.0833	ND	93	89	31 - 115	5	19	
Acenaphthylene	**0.0958**	**0.0958**	0.0833	0.0833	0.00932	104	104	40 - 134	0	22	
Acenaphthene	**0.0847**	**0.0830**	0.0833	0.0833	ND	102	100	48 - 118	2	17	
Fluorene	**0.0857**	**0.0772**	0.0833	0.0833	ND	103	93	54 - 122	10	16	
Phenanthrene	**0.0818**	**0.0771**	0.0833	0.0833	ND	98	93	46 - 123	6	19	
Anthracene	**0.0805**	**0.0781**	0.0833	0.0833	0.00702	88	85	53 - 123	3	27	
Fluoranthene	**0.0875**	**0.0841**	0.0833	0.0833	0.00701	97	93	47 - 132	4	26	
Pyrene	**0.0921**	**0.0862**	0.0833	0.0833	0.0143	93	86	41 - 137	7	25	
Benzo[a]anthracene	**0.0917**	**0.0906**	0.0833	0.0833	0.00917	99	98	43 - 132	1	26	
Chrysene	**0.102**	**0.0889**	0.0833	0.0833	0.0252	92	76	46 - 126	14	24	
Benzo[b]fluoranthene	**0.0766**	**0.0658**	0.0833	0.0833	0.0100	80	67	44 - 134	15	24	
Benzo[k]fluoranthene	**0.0702**	**0.0604**	0.0833	0.0833	ND	84	73	45 - 132	15	20	
Benzo[a]pyrene	**0.0806**	**0.0702**	0.0833	0.0833	0.0125	82	69	36 - 136	14	23	
Indeno(1,2,3-c,d)pyrene	**0.0934**	**0.0835**	0.0833	0.0833	0.00841	102	90	40 - 136	11	16	
Dibenz[a,h]anthracene	**0.0901**	**0.0874**	0.0833	0.0833	ND	108	105	40 - 142	3	13	
Benzo[g,h,i]perylene	**0.0971**	**0.0861**	0.0833	0.0833	0.0191	94	80	37 - 137	12	18	
Surrogate:											
2-Fluorobiphenyl						*91*	*92*	*45 - 101*			
Pyrene-d10						*96*	*93*	*52 - 118*			
Terphenyl-d14						*91*	*98*	*41 - 106*			

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	**L-PEX-9-10**					
Laboratory ID:	09-258-01					
Naphthalene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
2-Methylnaphthalene	**0.067**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
1-Methylnaphthalene	**0.041**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthylene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Fluorene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Phenanthrene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Anthracene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Fluoranthene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Pyrene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]anthracene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Chrysene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[b]fluoranthene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[k]fluoranthene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]pyrene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Dibenz[a,h]anthracene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[g,h,i]perylene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*80*	*45 - 101*				
Pyrene-d10	*106*	*52 - 118*				
Terphenyl-d14	*94*	*41 - 106*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	**L-PEX-11-8**					
Laboratory ID:	09-258-03					
Naphthalene	**0.020**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
2-Methylnaphthalene	**0.015**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
1-Methylnaphthalene	**0.024**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthylene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Fluorene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Phenanthrene	**0.0090**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Anthracene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Fluoranthene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Pyrene	**0.010**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]anthracene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Chrysene	**0.013**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[b]fluoranthene	**0.011**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[k]fluoranthene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]pyrene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Dibenz[a,h]anthracene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[g,h,i]perylene	**0.0094**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*106*	*52 - 118*				
Terphenyl-d14	*101*	*41 - 106*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	**L-PEX-12-6**					
Laboratory ID:	09-258-04					
Naphthalene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
2-Methylnaphthalene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
1-Methylnaphthalene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Fluorene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Phenanthrene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Anthracene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Pyrene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]anthracene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Chrysene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[b]fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[k]fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]pyrene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Dibenz[a,h]anthracene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[g,h,i]perylene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*81*	*45 - 101*				
Pyrene-d10	*106*	*52 - 118*				
Terphenyl-d14	*94*	*41 - 106*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	**L-PEX-14-9**					
Laboratory ID:	09-258-06					
Naphthalene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
2-Methylnaphthalene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
1-Methylnaphthalene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthylene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Fluorene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Phenanthrene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Anthracene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Pyrene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]anthracene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Chrysene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[b]fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[k]fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]pyrene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Dibenz[a,h]anthracene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[g,h,i]perylene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*86*	*45 - 101*				
Pyrene-d10	*107*	*52 - 118*				
Terphenyl-d14	*112*	*41 - 106*				Q

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	**L-PEX-15-9.5**					
Laboratory ID:	09-258-08					
Naphthalene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
2-Methylnaphthalene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
1-Methylnaphthalene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthylene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Fluorene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Phenanthrene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Anthracene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Pyrene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]anthracene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Chrysene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[b]fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[k]fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]pyrene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Dibenz[a,h]anthracene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[g,h,i]perylene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*82*	*45 - 101*				
Pyrene-d10	*96*	*52 - 118*				
Terphenyl-d14	*100*	*41 - 106*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	MB0929S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*83*	*45 - 101*				
Pyrene-d10	*106*	*52 - 118*				
Terphenyl-d14	*95*	*41 - 106*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	SB0929S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0624**	**0.0607**	0.0833	0.0833	75	73	33 - 105	3	30	
Acenaphthylene	**0.0778**	**0.0757**	0.0833	0.0833	93	91	51 - 110	3	22	
Acenaphthene	**0.0774**	**0.0745**	0.0833	0.0833	93	89	51 - 105	4	20	
Fluorene	**0.0782**	**0.0724**	0.0833	0.0833	94	87	61 - 107	8	17	
Phenanthrene	**0.0740**	**0.0724**	0.0833	0.0833	89	87	61 - 106	2	12	
Anthracene	**0.0732**	**0.0704**	0.0833	0.0833	88	85	59 - 106	4	12	
Fluoranthene	**0.0842**	**0.0826**	0.0833	0.0833	101	99	66 - 116	2	12	
Pyrene	**0.0862**	**0.0851**	0.0833	0.0833	103	102	67 - 118	1	14	
Benzo[a]anthracene	**0.0759**	**0.0747**	0.0833	0.0833	91	90	60 - 114	2	11	
Chrysene	**0.0758**	**0.0748**	0.0833	0.0833	91	90	64 - 112	1	12	
Benzo[b]fluoranthene	**0.0765**	**0.0716**	0.0833	0.0833	92	86	61 - 123	7	14	
Benzo[k]fluoranthene	**0.0768**	**0.0744**	0.0833	0.0833	92	89	50 - 124	3	17	
Benzo[a]pyrene	**0.0742**	**0.0691**	0.0833	0.0833	89	83	50 - 114	7	17	
Indeno(1,2,3-c,d)pyrene	**0.0733**	**0.0696**	0.0833	0.0833	88	84	56 - 122	5	16	
Dibenz[a,h]anthracene	**0.0734**	**0.0693**	0.0833	0.0833	88	83	57 - 124	6	16	
Benzo[g,h,i]perylene	**0.0678**	**0.0644**	0.0833	0.0833	81	77	56 - 121	5	15	
Surrogate:										
2-Fluorobiphenyl					*79*	*86*	*45 - 101*			
Pyrene-d10					*106*	*103*	*52 - 118*			
Terphenyl-d14					*92*	*92*	*41 - 106*			

Date of Report: September 30, 2010
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Project: 2007-098-920

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**L-PEX-13-14**					
Laboratory ID:	09-258-05					
Aroclor 1016	**ND**	0.068	EPA 8082	9-26-10	9-27-10	
Aroclor 1221	**ND**	0.068	EPA 8082	9-26-10	9-27-10	
Aroclor 1232	**ND**	0.068	EPA 8082	9-26-10	9-27-10	
Aroclor 1242	**ND**	0.068	EPA 8082	9-26-10	9-27-10	
Aroclor 1248	**ND**	0.068	EPA 8082	9-26-10	9-27-10	
Aroclor 1254	**ND**	0.068	EPA 8082	9-26-10	9-27-10	
Aroclor 1260	**ND**	0.068	EPA 8082	9-26-10	9-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*69*	*46-122*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0926S1					
Aroclor 1016	**ND**	0.050	EPA 8082	9-26-10	9-27-10	
Aroclor 1221	**ND**	0.050	EPA 8082	9-26-10	9-27-10	
Aroclor 1232	**ND**	0.050	EPA 8082	9-26-10	9-27-10	
Aroclor 1242	**ND**	0.050	EPA 8082	9-26-10	9-27-10	
Aroclor 1248	**ND**	0.050	EPA 8082	9-26-10	9-27-10	
Aroclor 1254	**ND**	0.050	EPA 8082	9-26-10	9-27-10	
Aroclor 1260	**ND**	0.050	EPA 8082	9-26-10	9-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*89*	*46-122*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0926S1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	**0.399**	**0.449**	0.500	0.500	N/A	**80**	**90**	54-123	12	20	
Surrogate:											
DCB						*88*	*85*	*46-122*			

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Samples Submitted: September 24, 2010
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TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-258-01					
Client ID:	**L-PEX-9-10**					
Arsenic	**ND**	12	6010B	9-30-10	9-30-10	
Barium	**44**	2.9	6010B	9-30-10	9-30-10	
Cadmium	**ND**	0.58	6010B	9-30-10	9-30-10	
Chromium	**29**	0.58	6010B	9-30-10	9-30-10	
Lead	**ND**	5.8	6010B	9-30-10	9-30-10	
Mercury	**ND**	0.29	7471A	9-29-10	9-29-10	
Selenium	**ND**	12	6010B	9-30-10	9-30-10	
Silver	**ND**	0.58	6010B	9-30-10	9-30-10	
Lab ID:	09-258-03					
Client ID:	**L-PEX-11-8**					
Arsenic	**ND**	12	6010B	9-30-10	9-30-10	
Barium	**31**	3.1	6010B	9-30-10	9-30-10	
Cadmium	**ND**	0.61	6010B	9-30-10	9-30-10	
Chromium	**15**	0.61	6010B	9-30-10	9-30-10	
Lead	**9.6**	6.1	6010B	9-30-10	9-30-10	
Mercury	**ND**	0.31	7471A	9-29-10	9-29-10	
Selenium	**ND**	12	6010B	9-30-10	9-30-10	
Silver	**ND**	0.61	6010B	9-30-10	9-30-10	

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-258-04					
Client ID:	**L-PEX-12-6**					
Arsenic	**ND**	11	6010B	9-30-10	9-30-10	
Barium	**66**	2.9	6010B	9-30-10	9-30-10	
Cadmium	**ND**	0.57	6010B	9-30-10	9-30-10	
Chromium	**14**	0.57	6010B	9-30-10	9-30-10	
Lead	**ND**	5.7	6010B	9-30-10	9-30-10	
Mercury	**ND**	0.29	7471A	9-29-10	9-29-10	
Selenium	**ND**	11	6010B	9-30-10	9-30-10	
Silver	**ND**	0.57	6010B	9-30-10	9-30-10	

Lab ID:	09-258-05					
Client ID:	**L-PEX-13-14**					
Arsenic	**ND**	14	6010B	9-30-10	9-30-10	
Barium	**41**	3.4	6010B	9-30-10	9-30-10	
Cadmium	**ND**	0.68	6010B	9-30-10	9-30-10	
Chromium	**29**	0.68	6010B	9-30-10	9-30-10	
Lead	**ND**	6.8	6010B	9-30-10	9-30-10	
Mercury	**ND**	0.34	7471A	9-29-10	9-29-10	
Selenium	**ND**	14	6010B	9-30-10	9-30-10	
Silver	**ND**	0.68	6010B	9-30-10	9-30-10	

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-258-06					
Client ID:	**L-PEX-14-9**					
Arsenic	**ND**	11	6010B	9-30-10	9-30-10	
Barium	**31**	2.8	6010B	9-30-10	9-30-10	
Cadmium	**ND**	0.56	6010B	9-30-10	9-30-10	
Chromium	**20**	0.56	6010B	9-30-10	9-30-10	
Lead	**7.6**	5.6	6010B	9-30-10	9-30-10	
Mercury	**ND**	0.28	7471A	9-29-10	9-29-10	
Selenium	**ND**	11	6010B	9-30-10	9-30-10	
Silver	**ND**	0.56	6010B	9-30-10	9-30-10	

Lab ID:	09-258-08					
Client ID:	**L-PEX-15-9.5**					
Arsenic	**ND**	12	6010B	9-30-10	9-30-10	
Barium	**22**	3.0	6010B	9-30-10	9-30-10	
Cadmium	**ND**	0.60	6010B	9-30-10	9-30-10	
Chromium	**10**	0.60	6010B	9-30-10	9-30-10	
Lead	**8.1**	6.0	6010B	9-30-10	9-30-10	
Mercury	**ND**	0.30	7471A	9-29-10	9-29-10	
Selenium	**ND**	12	6010B	9-30-10	9-30-10	
Silver	**ND**	0.60	6010B	9-30-10	9-30-10	

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 9-29&30-10
Date Analyzed: 9-29&30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0929S1&MB0930S1

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 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-29&30-10
Date Analyzed: 9-29&30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-258-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**37.5**	**37.8**	1	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**25.0**	**22.3**	11	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 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-29&30-10
Date Analyzed: 9-29&30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-258-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**90.9**	91	**96.7**	97	6	
Barium	100	**133**	95	**128**	91	3	
Cadmium	50	**44.6**	89	**44.9**	90	1	
Chromium	100	**117**	92	**114**	89	2	
Lead	250	**222**	89	**222**	89	0	
Mercury	0.50	**0.480**	96	**0.497**	99	4	
Selenium	100	**94.7**	95	**95.7**	96	1	
Silver	25	**21.5**	86	**21.9**	88	2	

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

% MOISTURE

Date Analyzed: 9-24-10

Client ID	Lab ID	% Moisture
L-PEX-9-10	09-258-01	14
L-PEX-10-8	09-258-02	14
L-PEX-11-8	09-258-03	19
L-PEX-12-6	09-258-04	12
L-PEX-13-14	09-258-05	27
L-PEX-14-9	09-258-06	10
L-PEX-15-9.5	09-258-08	17

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

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

Laboratory Number: 09-258

Company: HWA
Project Number: 2007-098-920
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: --

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 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 / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664							% Moisture
1	L-PEX-9-10	9/24/10	850	S	2		/		/				X					X									X
2	L-PEX-10-8		900		2		/		/																		
3	L-PEX-11-8		915		5		/		/				X					X									
4	L-PEX-12-6		1130		2		X		/				X					X									
5	L-PEX-13-14		1200		6		X	/	/	/			/	/				X									
6	L-PEX-14-9		1200		3		/		/				X					X									
7	L-PEX-14-10		1310		3																						
8	L-PEX-15-9.5		1400		3		X		X				X					X									X

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	9/24/10	1430
Received	[signature]	OSE	9/24/10	1430
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
X Added 9/28/10. DB (2 day TAT)

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

September 29, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-920
Laboratory Reference No. 1009-277

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 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 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

Case Narrative

Samples were collected on September 27, 2010 and received by the laboratory on September 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.

<u>NWTPH Gx/BTEX Analysis</u>

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^oC and -20^oC until extraction or analysis.

<u>Halogenated Volatiles EPA 8260B</u>

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^oC and -20^oC until extraction or analysis.

Not enough Method 5035 VOA vials were provided to perform the client-requested QA/QC.

<u>PAHs EPA 8270D/SIM Analysis</u>

The spike blank had one surrogate recovery out of control limits. This is within allowance of our standard operating procedure as long as the recovery is above 10%.

Sample MS/MSD pair had one recovery fall outside of control limits and two RPD's out. The SB/SBD pair extracted with this batch had all parameters in control, no further action was deemed necessary.

<u>Total Metals EPA 6010B/7471A Analysis</u>

The Matrix Spike/ Matrix Spike Duplicate recoveries for Mercury are outside control limits due to matrix inhomogeniety. The samples were re-extracted and re-analyzed with similar results. The Spike Blank recovery was 95%.

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 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-16-11**					
Laboratory ID:	09-277-01					
Benzene	**ND**	0.020	EPA 8021	9-27-10	9-27-10	
Toluene	**ND**	0.070	EPA 8021	9-27-10	9-27-10	
Ethyl Benzene	**ND**	0.070	EPA 8021	9-27-10	9-27-10	
m,p-Xylene	**ND**	0.070	EPA 8021	9-27-10	9-27-10	
o-Xylene	**ND**	0.070	EPA 8021	9-27-10	9-27-10	
Gasoline	**ND**	7.0	NWTPH-Gx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***95***	***55-127***				
Client ID:	**L-PEX-17-9**					
Laboratory ID:	09-277-02					
Benzene	**ND**	0.020	EPA 8021	9-27-10	9-27-10	
Toluene	**ND**	0.078	EPA 8021	9-27-10	9-27-10	
Ethyl Benzene	**ND**	0.078	EPA 8021	9-27-10	9-27-10	
m,p-Xylene	**ND**	0.078	EPA 8021	9-27-10	9-27-10	
o-Xylene	**ND**	0.078	EPA 8021	9-27-10	9-27-10	
Gasoline	**ND**	7.8	NWTPH-Gx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***95***	***55-127***				
Client ID:	**L-PEX-18-14**					
Laboratory ID:	09-277-03					
Benzene	**ND**	0.020	EPA 8021	9-27-10	9-27-10	
Toluene	**ND**	0.086	EPA 8021	9-27-10	9-27-10	
Ethyl Benzene	**ND**	0.086	EPA 8021	9-27-10	9-27-10	
m,p-Xylene	**ND**	0.086	EPA 8021	9-27-10	9-27-10	
o-Xylene	**ND**	0.086	EPA 8021	9-27-10	9-27-10	
Gasoline	**ND**	8.6	NWTPH-Gx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***92***	***55-127***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-DUP-092710**					
Laboratory ID:	09-277-04					
Benzene	**ND**	0.020	EPA 8021	9-27-10	9-27-10	
Toluene	**ND**	0.074	EPA 8021	9-27-10	9-27-10	
Ethyl Benzene	**ND**	0.074	EPA 8021	9-27-10	9-27-10	
m,p-Xylene	**ND**	0.074	EPA 8021	9-27-10	9-27-10	
o-Xylene	**ND**	0.074	EPA 8021	9-27-10	9-27-10	
Gasoline	**ND**	7.4	NWTPH-Gx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***95***	***55-127***				
Client ID:	**L-PEX-19-10**					
Laboratory ID:	09-277-05					
Benzene	**ND**	0.020	EPA 8021	9-27-10	9-27-10	
Toluene	**ND**	0.052	EPA 8021	9-27-10	9-27-10	
Ethyl Benzene	**ND**	0.052	EPA 8021	9-27-10	9-27-10	
m,p-Xylene	**ND**	0.052	EPA 8021	9-27-10	9-27-10	
o-Xylene	**ND**	0.052	EPA 8021	9-27-10	9-27-10	
Gasoline	**ND**	5.2	NWTPH-Gx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***100***	***55-127***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0927S1					
Benzene	**ND**	0.020	EPA 8021	9-27-10	9-27-10	
Toluene	**ND**	0.050	EPA 8021	9-27-10	9-27-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-27-10	9-27-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-27-10	9-27-10	
o-Xylene	**ND**	0.050	EPA 8021	9-27-10	9-27-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-27-10	9-27-10	
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:	09-277-03										
	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***	***93***	***55-127***			
SPIKE BLANKS											
Laboratory ID:	SB0927S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.965**	**0.979**	1.00	1.00		**97**	**98**	75-113	1	9	
Toluene	**0.942**	**0.945**	1.00	1.00		**94**	**95**	75-116	0	10	
Ethyl Benzene	**0.944**	**0.950**	1.00	1.00		**94**	**95**	82-117	1	10	
m,p-Xylene	**0.961**	**0.956**	1.00	1.00		**96**	**96**	81-122	1	10	
o-Xylene	**0.953**	**0.952**	1.00	1.00		**95**	**95**	83-118	0	10	
Surrogate:											
Fluorobenzene						***94***	***92***	***55-127***			

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	**L-PEX-16-11**					
Laboratory ID:	09-277-01					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-27-10	9-27-10	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***122***	***50-150***				
Client ID:	**L-PEX-17-9**					
Laboratory ID:	09-277-02					
Diesel Range Organics	**ND**	32	NWTPH-Dx	9-27-10	9-27-10	
Lube Oil Range Organics	**ND**	64	NWTPH-Dx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***94***	***50-150***				
Client ID:	**L-PEX-18-14**					
Laboratory ID:	09-277-03					
Diesel Range Organics	**ND**	33	NWTPH-Dx	9-27-10	9-27-10	
Lube Oil	**94**	67	NWTPH-Dx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***107***	***50-150***				
Client ID:	**L-DUP-092710**					
Laboratory ID:	09-277-04					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-27-10	9-27-10	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***118***	***50-150***				
Client ID:	**L-PEX-19-10**					
Laboratory ID:	09-277-05					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-27-10	9-27-10	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	MB0927S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-27-10	9-27-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***121***	***50-150***				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-277-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			***122***	***98***	***50-150***			

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
page 1 of 2

Date Extracted:	9-27-10
Date Analyzed:	9-27-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-277-02
Client ID:	**L-PEX-17-9**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0012
Chloromethane	ND		0.0060
Vinyl Chloride	ND		0.0012
Bromomethane	ND		0.0012
Chloroethane	ND		0.0060
Trichlorofluoromethane	ND		0.0012
1,1-Dichloroethene	ND		0.0012
Iodomethane	ND		0.0060
Methylene Chloride	ND		0.0060
(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		0.0060
(cis) 1,3-Dichloropropene	ND		0.0012
(trans) 1,3-Dichloropropene	ND		0.0012

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
page 2 of 2

Lab ID: 09-277-02
Client ID: L-PEX-17-9

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		0.0060
1,2,4-Trichlorobenzene	ND		0.0012
Hexachlorobutadiene	ND		0.0060
1,2,3-Trichlorobenzene	ND		0.0012

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	109	66-128
Toluene-d8	115	68-126
4-Bromofluorobenzene	101	53-134

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Date Extracted:	9-27-10
Date Analyzed:	9-27-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0927S1

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 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB0927S1

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	110	66-128
Toluene-d8	115	68-126
4-Bromofluorobenzene	103	53-134

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 9-27-10
Date Analyzed: 9-27-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0927S1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	0.0500	0.0450	90	0.0479	96	70-130	
Benzene	0.0500	0.0498	100	0.0522	104	70-121	
Trichloroethene	0.0500	0.0486	97	0.0508	102	70-124	
Toluene	0.0500	0.0506	101	0.0544	109	70-123	
Chlorobenzene	0.0500	0.0477	95	0.0509	102	71-119	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	6	14	
Benzene	5	10	
Trichloroethene	4	12	
Toluene	7	12	
Chlorobenzene	7	9	

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	**L-PEX-16-11**					
Laboratory ID:	09-277-01					
Naphthalene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
2-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
1-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Acenaphthylene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Acenaphthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Fluorene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Phenanthrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Anthracene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Pyrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[a]anthracene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Chrysene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[b]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[k]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[a]pyrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Dibenz[a,h]anthracene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[g,h,i]perylene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***85***	***45 - 101***				
Pyrene-d10	***98***	***52 - 118***				
Terphenyl-d14	***94***	***41 - 106***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	**L-PEX-17-9**					
Laboratory ID:	09-277-02					
Naphthalene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
2-Methylnaphthalene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
1-Methylnaphthalene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Acenaphthylene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Acenaphthene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Fluorene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Phenanthrene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Anthracene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Fluoranthene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Pyrene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[a]anthracene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Chrysene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[b]fluoranthene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[k]fluoranthene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[a]pyrene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Dibenz[a,h]anthracene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[g,h,i]perylene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***89***	***45 - 101***				
Pyrene-d10	***97***	***52 - 118***				
Terphenyl-d14	***105***	***41 - 106***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	**L-PEX-18-14**					
Laboratory ID:	09-277-03					
Naphthalene	**0.017**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
2-Methylnaphthalene	**0.032**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
1-Methylnaphthalene	**0.013**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Acenaphthylene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Acenaphthene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Fluorene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Phenanthrene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Anthracene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Fluoranthene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Pyrene	**0.010**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[a]anthracene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Chrysene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[b]fluoranthene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[k]fluoranthene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[a]pyrene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Dibenz[a,h]anthracene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[g,h,i]perylene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***82***	***45 - 101***				
Pyrene-d10	***85***	***52 - 118***				
Terphenyl-d14	***91***	***41 - 106***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	**L-DUP-092710**					
Laboratory ID:	09-277-04					
Naphthalene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
2-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
1-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Acenaphthylene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Acenaphthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Fluorene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Phenanthrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Anthracene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Pyrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[a]anthracene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Chrysene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[b]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[k]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[a]pyrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Dibenz[a,h]anthracene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[g,h,i]perylene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***84***	***45 - 101***				
Pyrene-d10	***93***	***52 - 118***				
Terphenyl-d14	***95***	***41 - 106***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	**L-PEX-19-10**					
Laboratory ID:	09-277-05					
Naphthalene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
2-Methylnaphthalene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
1-Methylnaphthalene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Acenaphthylene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Acenaphthene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Fluorene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Phenanthrene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Anthracene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Pyrene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[a]anthracene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Chrysene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[b]fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[k]fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[a]pyrene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Dibenz[a,h]anthracene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[g,h,i]perylene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***89***	***45 - 101***				
Pyrene-d10	***101***	***52 - 118***				
Terphenyl-d14	***95***	***41 - 106***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	MB0927S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***88***	***45 - 101***				
Pyrene-d10	***105***	***52 - 118***				
Terphenyl-d14	***98***	***41 - 106***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	09-277-01										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.00971**	**0.0499**	0.0833	0.0833	ND	12	60	31 - 115	135	19	I,L
Acenaphthylene	**0.0616**	**0.0758**	0.0833	0.0833	ND	74	91	40 - 134	21	22	
Acenaphthene	**0.0599**	**0.0766**	0.0833	0.0833	ND	72	92	48 - 118	24	17	L
Fluorene	**0.0657**	**0.0752**	0.0833	0.0833	ND	79	90	54 - 122	13	16	
Phenanthrene	**0.0703**	**0.0751**	0.0833	0.0833	ND	84	90	46 - 123	7	19	
Anthracene	**0.0697**	**0.0737**	0.0833	0.0833	ND	84	88	53 - 123	6	27	
Fluoranthene	**0.0811**	**0.0845**	0.0833	0.0833	ND	97	101	47 - 132	4	26	
Pyrene	**0.0823**	**0.0860**	0.0833	0.0833	ND	99	103	41 - 137	4	25	
Benzo[a]anthracene	**0.0751**	**0.0783**	0.0833	0.0833	ND	90	94	43 - 132	4	26	
Chrysene	**0.0735**	**0.0766**	0.0833	0.0833	ND	88	92	46 - 126	4	24	
Benzo[b]fluoranthene	**0.0704**	**0.0753**	0.0833	0.0833	ND	85	90	44 - 134	7	24	
Benzo[k]fluoranthene	**0.0591**	**0.0722**	0.0833	0.0833	ND	71	87	45 - 132	20	20	
Benzo[a]pyrene	**0.0729**	**0.0758**	0.0833	0.0833	ND	88	91	36 - 136	4	23	
Indeno(1,2,3-c,d)pyrene	**0.0660**	**0.0706**	0.0833	0.0833	ND	79	85	40 - 136	7	16	
Dibenz[a,h]anthracene	**0.0665**	**0.0717**	0.0833	0.0833	ND	80	86	40 - 142	8	13	
Benzo[g,h,i]perylene	**0.0639**	**0.0660**	0.0833	0.0833	ND	77	79	37 - 137	3	18	
Surrogate:											
2-Fluorobiphenyl						***48***	***77***	***45 - 101***			
Pyrene-d10						***100***	***104***	***52 - 118***			
Terphenyl-d14						***96***	***99***	***41 - 106***			

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	SB0927S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0666**	**0.0598**	0.0833	0.0833	80	72	33 - 105	11	30	
Acenaphthylene	**0.0793**	**0.0743**	0.0833	0.0833	95	89	51 - 110	7	22	
Acenaphthene	**0.0786**	**0.0746**	0.0833	0.0833	94	90	51 - 105	5	20	
Fluorene	**0.0768**	**0.0737**	0.0833	0.0833	92	88	61 - 107	4	17	
Phenanthrene	**0.0762**	**0.0749**	0.0833	0.0833	91	90	61 - 106	2	12	
Anthracene	**0.0756**	**0.0734**	0.0833	0.0833	91	88	59 - 106	3	12	
Fluoranthene	**0.0868**	**0.0867**	0.0833	0.0833	104	104	66 - 116	0	12	
Pyrene	**0.0885**	**0.0883**	0.0833	0.0833	106	106	67 - 118	0	14	
Benzo[a]anthracene	**0.0831**	**0.0813**	0.0833	0.0833	100	98	60 - 114	2	11	
Chrysene	**0.0802**	**0.0791**	0.0833	0.0833	96	95	64 - 112	1	12	
Benzo[b]fluoranthene	**0.0768**	**0.0790**	0.0833	0.0833	92	95	61 - 123	3	14	
Benzo[k]fluoranthene	**0.0751**	**0.0759**	0.0833	0.0833	90	91	50 - 124	1	17	
Benzo[a]pyrene	**0.0764**	**0.0753**	0.0833	0.0833	92	90	50 - 114	1	17	
Indeno(1,2,3-c,d)pyrene	**0.0663**	**0.0699**	0.0833	0.0833	80	84	56 - 122	5	16	
Dibenz[a,h]anthracene	**0.0675**	**0.0709**	0.0833	0.0833	81	85	57 - 124	5	16	
Benzo[g,h,i]perylene	**0.0637**	**0.0660**	0.0833	0.0833	76	79	56 - 121	4	15	
Surrogate:										
2-Fluorobiphenyl					***83***	***78***	***45 - 101***			
Pyrene-d10					***107***	***107***	***52 - 118***			
Terphenyl-d14					***108***	***103***	***41 - 106***			Q

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-17-9**					
Laboratory ID:	09-277-02					
Aroclor 1016	**ND**	0.064	EPA 8082	9-28-10	9-28-10	
Aroclor 1221	**ND**	0.064	EPA 8082	9-28-10	9-28-10	
Aroclor 1232	**ND**	0.064	EPA 8082	9-28-10	9-28-10	
Aroclor 1242	**ND**	0.064	EPA 8082	9-28-10	9-28-10	
Aroclor 1248	**ND**	0.064	EPA 8082	9-28-10	9-28-10	
Aroclor 1254	**ND**	0.064	EPA 8082	9-28-10	9-28-10	
Aroclor 1260	**ND**	0.064	EPA 8082	9-28-10	9-28-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***71***	***46-122***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0928S1					
Aroclor 1016	**ND**	0.050	EPA 8082	9-28-10	9-28-10	
Aroclor 1221	**ND**	0.050	EPA 8082	9-28-10	9-28-10	
Aroclor 1232	**ND**	0.050	EPA 8082	9-28-10	9-28-10	
Aroclor 1242	**ND**	0.050	EPA 8082	9-28-10	9-28-10	
Aroclor 1248	**ND**	0.050	EPA 8082	9-28-10	9-28-10	
Aroclor 1254	**ND**	0.050	EPA 8082	9-28-10	9-28-10	
Aroclor 1260	**ND**	0.050	EPA 8082	9-28-10	9-28-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***91***	***46-122***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-277-02										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.423**	**0.452**	0.500	0.500	ND	**85**	**90**	36-121	7	15	
Surrogate:											
DCB						***83***	***86***	***46-122***			

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-277-01					
Client ID:	**L-PEX-16-11**					
Arsenic	**ND**	12	6010B	9-28-10	9-28-10	
Barium	**30**	3.1	6010B	9-28-10	9-28-10	
Cadmium	**ND**	0.62	6010B	9-28-10	9-28-10	
Chromium	**26**	0.62	6010B	9-28-10	9-28-10	
Lead	**ND**	6.2	6010B	9-28-10	9-28-10	
Mercury	**ND**	0.31	7471A	9-27-10	9-27-10	
Selenium	**ND**	12	6010B	9-28-10	9-28-10	
Silver	**ND**	0.62	6010B	9-28-10	9-28-10	
Lab ID:	09-277-02					
Client ID:	**L-PEX-17-9**					
Arsenic	**ND**	13	6010B	9-28-10	9-28-10	
Barium	**67**	3.2	6010B	9-28-10	9-28-10	
Cadmium	**ND**	0.64	6010B	9-28-10	9-28-10	
Chromium	**3.6**	0.64	6010B	9-28-10	9-28-10	
Lead	**ND**	6.4	6010B	9-28-10	9-28-10	
Mercury	**ND**	0.32	7471A	9-27-10	9-27-10	
Selenium	**ND**	13	6010B	9-28-10	9-28-10	
Silver	**ND**	0.64	6010B	9-28-10	9-28-10	

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-277-03					
Client ID:	**L-PEX-18-14**					
Arsenic	**ND**	13	6010B	9-28-10	9-28-10	
Barium	**43**	3.3	6010B	9-28-10	9-28-10	
Cadmium	**ND**	0.67	6010B	9-28-10	9-28-10	
Chromium	**19**	0.67	6010B	9-28-10	9-28-10	
Lead	**ND**	6.7	6010B	9-28-10	9-28-10	
Mercury	**ND**	0.33	7471A	9-27-10	9-27-10	
Selenium	**ND**	13	6010B	9-28-10	9-28-10	
Silver	**ND**	0.67	6010B	9-28-10	9-28-10	

Lab ID:	09-277-04					
Client ID:	**L-DUP-092710**					
Arsenic	**ND**	12	6010B	9-28-10	9-28-10	
Barium	**34**	3.1	6010B	9-28-10	9-28-10	
Cadmium	**ND**	0.62	6010B	9-28-10	9-28-10	
Chromium	**17**	0.62	6010B	9-28-10	9-28-10	
Lead	**ND**	6.2	6010B	9-28-10	9-28-10	
Mercury	**ND**	0.31	7471A	9-27-10	9-27-10	
Selenium	**ND**	12	6010B	9-28-10	9-28-10	
Silver	**ND**	0.62	6010B	9-28-10	9-28-10	

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-277-05					
Client ID:	**L-PEX-19-10**					
Arsenic	**ND**	11	6010B	9-28-10	9-28-10	
Barium	**43**	2.8	6010B	9-28-10	9-28-10	
Cadmium	**ND**	0.56	6010B	9-28-10	9-28-10	
Chromium	**22**	0.56	6010B	9-28-10	9-28-10	
Lead	**11**	5.6	6010B	9-28-10	9-28-10	
Mercury	**ND**	0.28	7471A	9-27-10	9-27-10	
Selenium	**ND**	11	6010B	9-28-10	9-28-10	
Silver	**ND**	0.56	6010B	9-28-10	9-28-10	

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted: 9-28-10
Date Analyzed: 9-28-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0928S1

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 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL MERCURY
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-27-10
Date Analyzed:	9-27-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0927S3

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 9-28-10
Date Analyzed: 9-28-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-277-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**32.0**	**35.6**	11	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**14.2**	**14.6**	3	0.50	
Lead	**ND**	**ND**	NA	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL MERCURY
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-27-10
Date Analyzed: 9-27-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-264-05

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**0.756**	**0.760**	1	0.25	

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 9-28-10
Date Analyzed: 9-28-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-277-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**93.1**	93	**97.3**	97	5	
Barium	100	**127**	95	**128**	96	2	
Cadmium	50	**44.2**	88	**44.9**	90	2	
Chromium	100	**108**	94	**109**	95	1	
Lead	250	**220**	88	**227**	91	3	
Selenium	100	**96.3**	96	**99.4**	99	3	
Silver	25	**22.2**	89	**23.0**	92	4	

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL MERCURY
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-27-10
Date Analyzed: 9-27-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-264-05

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.50	**1.16**	81	**1.11**	72	4	V

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

% MOISTURE

Date Analyzed: 9-27-10

Client ID	Lab ID	% Moisture
L-PEX-16-11	09-277-01	20
L-PEX-17-9	09-277-02	22
L-PEX-18-14	09-277-03	25
L-DUP-092710	09-277-04	20
L-PEX-19-10	09-277-05	11

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

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Company: HWA GeoSciences
Project Number: 2007-098-920
Project Name: Bothell Landing
Project Manager: Vance Atkins
Sampled by: Norm Nielsen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☒ 1 Day
☐ 2 Day ☐ 3 Day
☐ Standard (7 working days) (TPH analysis 5 working days)
☐ ______ (other)

Laboratory Number: 09-277

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	L-PEX-16-11	9/27/10	10:50	Soil	2		X	X				X				X			X
2	L-PEX-17-9	↓	11:05	↓	4		X	X		X		X	X			X			↓
3	L-PEX-18-14	↓	11:15	↓	2		X	X				X				X			↓
4	L-DUP-092710	↓	11:25	↓	2		X	X				X				X			↓
5	L-PEX-19-10	↓	11:30	↓	2		X	X				X				X			↓

	Signature	Company	Date	Time
Relinquished by	[signature]	HWA GeoSciences	9/27/10	12:49
Received by	[signature]	OSE	9/27/10	1249
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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October 4, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-920
Laboratory Reference No. 1010-014

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on October 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: October 4, 2010
Samples Submitted: October 1, 2010
Laboratory Reference: 1010-014
Project: 2007-098-920

Case Narrative

Samples were collected on October 1, 2010 and received by the laboratory on October 1, 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: October 4, 2010
Samples Submitted: October 1, 2010
Laboratory Reference: 1010-014
Project: 2007-098-920

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:	**L-TP-17-1**					
Laboratory ID:	10-014-01					
Diesel Range Organics	**ND**	29	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil	**110**	58	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***90***	***50-150***				
Client ID:	**L-TP-17-3**					
Laboratory ID:	10-014-02					
Diesel Range Organics	**ND**	27	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***90***	***50-150***				
Client ID:	**L-TP-17-6**					
Laboratory ID:	10-014-03					
Diesel Range Organics	**ND**	77	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil	**160**	150	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***70***	***50-150***				
Client ID:	**L-TP-18-1**					
Laboratory ID:	10-014-04					
Diesel Range Organics	**ND**	31	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil	**140**	62	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***94***	***50-150***				
Client ID:	**L-TP-18-3**					
Laboratory ID:	10-014-05					
Diesel Range Organics	**ND**	31	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**L-TP-19-1**					
Laboratory ID:	10-014-07					
Diesel Range Organics	**ND**	33	NWTPH-Dx	10-1-10	10-3-10	U1
Lube Oil	**160**	58	NWTPH-Dx	10-1-10	10-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				

Date of Report: October 4, 2010
Samples Submitted: October 1, 2010
Laboratory Reference: 1010-014
Project: 2007-098-920

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:	**L-TP-19-3**					
Laboratory ID:	10-014-08					
Diesel Range Organics	**ND**	29	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***94***	***50-150***				
Client ID:	**L-TP-20-2**					
Laboratory ID:	10-014-10					
Diesel Range Organics	**ND**	86	NWTPH-Dx	10-1-10	10-3-10	U1
Lube Oil	**370**	60	NWTPH-Dx	10-1-10	10-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				
Client ID:	**L-TP-21-2**					
Laboratory ID:	10-014-11					
Diesel Range Organics	**ND**	30	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***98***	***50-150***				
Client ID:	**L-TP-21-5**					
Laboratory ID:	10-014-12					
Diesel Range Organics	**ND**	73	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil	**180**	150	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***80***	***50-150***				

Date of Report: October 4, 2010
Samples Submitted: October 1, 2010
Laboratory Reference: 1010-014
Project: 2007-098-920

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:	MB1001S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***92***	***50-150***				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	10-014-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**96.5**	**54.8**				55	NA	
Surrogate:								
o-Terphenyl			***90***	***85***	***50-150***			
Laboratory ID:	10-014-11							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			***98***	***100***	***50-150***			

Date of Report: October 4, 2010
Samples Submitted: October 1, 2010
Laboratory Reference: 1010-014
Project: 2007-098-920

% MOISTURE

Date Analyzed: 10-1-10

Client ID	Lab ID	% Moisture
L-TP-17-1	10-014-01	13
L-TP-17-3	10-014-02	8
L-TP-17-6	10-014-03	68
L-TP-18-1	10-014-04	19
L-TP-18-3	10-014-05	18
L-TP-19-1	10-014-07	13
L-TP-19-3	10-014-08	14
L-TP-20-2	10-014-10	16
L-TP-21-2	10-014-11	18
L-TP-21-5	10-014-12	66

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

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Chain of Custody

Page 1 of 2

Laboratory Number: 10-014

Company: HWA

Project Number: 2007-098-920

Project Name: Bothell Landing

Project Manager: Atkins

Sampled by: dr

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [x] 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 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 / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664	% Moisture
1	L-TP-17-1	10/1/10	1315	S	2				/												X
2	L-TP-17-3		1320		2				/												
3	L-TP-17-6		1325		2				/												
4	L-TP-18-1		1335		1				/												
5	L-TP-18-3		1340		1				/												
6	L-TP-18-6		1345		1																
7	L-TP-19-1		1350		1				/												X
8	L-TP-19-3		1400		1				/												
9	L-TP-19-5		1405		1																
10	L-TP-20-2		1410		1				/												X

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	10/1/10	1510
Received	[signature]	OSE	10/1/10	1510
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

Laboratory Number: 10-014

Company: HWA
Project Number: 2007-098-920
Project Name: Bothell Landing
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 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 / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664							% Moisture
11	L-TP-21-2	10/1/10	1415	S	1				/																		X
12	L-TP-21-5	"	1420	S	1				/																		↓

	Signature	Company	Date	Time
Relinquished	[illegible]	HWA	10/1/10	1510
Received	[illegible]	OSE	10/1/10	1510
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) ☐ ______

APPENDIX C

DATA QUALITY ASSESSMENT

Introduction

This appendix presents a data quality assessment for the Bothell Landing 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 Landing site cleanup: field and laboratory. Both components followed Washington Department of **Ecology guidance (Ecology, 2004). Also, the *Compliance Monitoring Quality Assurance Project Plan, Bothell Landing Site* (Appendix B, 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.

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* on three instances during the cleanup:

1. Two 5035A vials submitted on September 21, 2010 for halogenated volatile organic compound (HVOC) analysis (samples L-PEX-1-6 and its duplicate L-DUP-092110) contained too little soil for the lab to perform a matrix spike / matrix spike duplicate (MS/MSD) QC check.
2. One 5035A vial submitted on September 24, 2010 for halogenated volatile organic compound (HVOC) analysis (sample L-PEX-13-14) contained too little soil for the lab to perform a MS/MSD QC check.

3. One 5035A vial submitted on September 27, 2010 for halogenated volatile organic compound (HVOC) analysis (sample L-PEX-17-9) contained too little soil for the lab to perform a MS/MSD QC check.

As discussed below in the Data Verification section of this appendix, this oversight is not thought to have significantly compromise the reported analytical results.

Laboratory QC Methods

OnSite Environmental Inc. of Redmond, Washington performed all sample analyses. OnSite Environmental is accredited by the Washington Department of Ecology (Accreditation #C591-10) for all analyses performed for the interim action cleanup.

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:

$$\text{Percent Recovery (\%R)} = 100*(X_s/C_t)$$

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

Fifty-seven 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
- HVOCs - Halogenated volatile organic hydrocarbons by EPA Method 8260B
- PAHs - Polynuclear aromatic hydrocarbons by EPA Method 8270D/SIM
- PCBs - Polychlorinated biphenyls by EPA Method 8082
- NWVPH/NWEPH - Ecology methods VPH and EPH for volatile and extractable petroleum hydrocarbon fractions

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:

- **Samples L-PEX-1-6, L-DUP-092110, L-PEX-13-14, PEX-17-9:** Method 5035A vials submitted for halogenated volatile organic compound (HVOC) analysis (Method 8260B) contained too little soil for the lab to perform a MS/MSD QC check on these samples. However, the method blank and SB/SBD QC checks were in control. The HVOC concentrations in these samples were either below PQLs or were significantly below site cleanup levels. It is HWA's opinion that this QC issue did not compromise the analytical data for HVOCs or the conclusion that the site was successfully cleaned up
- **Sample L-PEX-8-10:** OnSite Environmental, not being Ecology certified for NWEPH analysis, couriered the sample to ALS Environmental in Everett where both the NWEPH and NWVPH analyses were performed. ALS flagged values for C12-C13 aromatics and C8-C12 aliphatic ranges for overlap corrections (C1 flag) with advice that the values should be ignored. However, HWA used the reported approximate values to calculate a Method B risk-based soil cleanup level (see Appendix A) because having no data for these hydrocarbon ranges would have biased the calculated cleanup levels towards heavier hydrocarbon compounds.
- **Samples L-PEX-16-11, L-PEX-17-9, L-PEX-18-14, L-DUP-092710, L-PEX-19-10:** The naphthalene recovery for the 8270D (PAHs) MS/MSD QC analysis was outside of the lab's control limits (an I Flag). This QC issue arose because the QC sample for the batch had elevated concentrations of these PAHs; the QC sample was from the site of another client of OnSite Environmental. The lab reported that the SB/SBD pair extracted with this batch had all parameters in control, and that no further action was deemed necessary.
- **Samples L-PEX-16-11, L-PEX-17-9, L-PEX-18-14, L-DUP-092710, L-PEX-19-10:** The RPD for the 8270D MS/MSD QC analysis was outside of the control limits for multiple PAHs (an L Flag). This QC issue arose because the QC sample for the batch had elevated concentrations of these PAHs; the QC sample was from the site of another client of OnSite Environmental. The lab reported that the SB/SBD pair extracted with this batch had all parameters in control, and that no further action was deemed necessary.
- **Samples L-PEX-16-11, L-PEX-17-9, L-PEX-18-14, L-DUP-092710, L-PEX-19-10:** The MS/MSD recoveries for the 7471A (mercury) analysis were outside control limits (a V Flag) due to matrix inhomogeniety. The samples were re-extracted and re-analyzed with similar results; the spike blank and duplicate QC

checks were within control. It is HWA's opinion that this QC issue did not compromise the analytical data for mercury or the conclusion that the site was successfully cleaned up.

- **Samples L-TP-1-2, L-PEX-5-6:** Hydrocarbons in the gasoline range impacted the diesel range result (an M Flag). This QC issue arose due to gasoline and diesel's overlapping hydrocarbon ranges, and resulted in the reported concentration of the less dominant product (diesel) being slightly higher than may actually be the case. The area represented by sample L-TP-1-2 was subsequently excavated. The sample location L-PEX-5-6 was a confirmation sample 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. Consequently, this QC issue did not compromise the conclusion that the site was successfully cleaned up.
- **Samples L-TP-1-2, L-TP-1-8, L-TP-10-4, L-PEX-5-6, L-PEX-8-10:** Hydrocarbons indicative of heavier fuels were present in the sample and impacted the gasoline result (an O Flag). This QC issue arose due to gasoline and diesel's overlapping hydrocarbon ranges, and resulted in the reported concentration of the less dominant product (gasoline) being slightly higher than may actually be the case. The areas represented by sample L-TP-1-2, L-TP-1-8, and L-TP-10-4 were subsequently excavated. The remaining sample locations were confirmation sample 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. Consequently, this QC issue did not compromise the conclusion that the site was successfully cleaned up.
- **Sample L-TP-6-7, L-PEX-14-9, L-PEX-16-11, L-PEX-17-9, L-PEX-18-14, L-DUP-092710, L-PEX-19-10:** One surrogate recovery for the QC check of the 8270D/SIM analysis was outside of the control limits (Q flag). However, this was within allowance of the lab's standard operating procedure as long as the recovery was above 10 percent. The lab personnel though that no further action was deemed necessary. Consequently, this QC issue did not compromise the conclusion that the site was successfully cleaned up.
- **Samples L-TP-5-6, L-TP-6-3, L-TP-6-7, L-TP-7-2, L-TP-7-7, L-TP-8-7, L-TP-11-4, L-TP-12-8, L-TP-15-7, L-PEX-8-10, L-PEX-10-8, L-PEX-14-9, L-PEX-15-9.5, L-TP-19-1, L-TP-20-2:** The practical quantitation limit in these samples was elevated due to interferences present in the samples (U1 flag). The areas represented by 8 of these samples were subsequently excavated. The remaining samples (L-TP-5-6, L-PEX-8-10, L-PEX-10-8, L-PEX-14-9, L-PEX-15-9.5, L-TP-19-1, L-TP-20-2) were confirmation samples which were left in place. The quantitation limit was not raised above the applicable cleanup level. Consequently, this QC issue did not compromise the conclusion that the site was successfully cleaned up**.**

- **L-TP-1-2:** The sample chromatogram for this sample was similar to mineral spirits with diesel (Z flag). The flag for this confirmation sample was advisory and not an indication of a QC issue that may have compromised the conclusion that the site was successfully cleaned up.

Evaluation of Field Duplicate Sample Results

Field duplicate samples were collected at an approximate frequency of one duplicate per 19 samples, a frequency slightly greater than 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 where one or more COPC were detected. As can be seen, field duplicate sample analytical results were generally within the quality criteria listed above except for:

- Duplicates PEX-1-6/L-DUP-092110 which had major disagreement in the NWTPH-Gx, total naphthalenes, and cPAH results.
- Duplicates L-PEX-16-11/L-DUP-092710 which had major disagreement in the total chromium results.

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 one exception noted above, field QC procedures were followed. The exception is 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.
- 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.

References

Grant, C.G, T.F. Jenkins, and A.R. Mudambi, 1996, *Comparison Criteria for Environmental Chemical Analyses of Split Samples Sent to Different Laboratories-Corps of Engineers Archived Data*, U.S. Army Corps of Engineers Cold Regions & Environmental Research Laboratory, Hanover NH. CRREL Special Report No. 96-9, May 1996.

Flory, D., 2000, *What is "Good" Data*, Quality Assurance Associates (www.qaallc.com/gooddata.html)

Parametrix, 2010, *Interim Action Work Plan, Bothell Landing Site, Revision No.2,* Prepared for City of Bothell, April 2010.

OnSite Environmental, 2008, *Quality Assurance Manual, Revision No. 9.2*, November 19, 2008 (www.onsite-env.com/pdf/QA.pdf)

PMI, 2008, *A Guide to the Project Management Body of Knowledge – Fourth Edition* (ANSI/PMI 99-001-2008), Project Management Institute (www.pmi.org).

Quality Assurance Associates, 2010, *Understanding Laboratory Reporting Limits*. (www.qaallc.com/replimit.html)

Washington Department of Ecology, 2004, *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies*, Publication No. 04-03-030.

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
L-TP-1-2	Soil	1009-030-01	9/2/10	√	NWTPH-G/BETX NWTPH-Dx PAHs	√	√	√	√	√	√	M flag for diesel analysis - Hydrocarbons in the gasoline range impacted the diesel range result O flag for NWTPH-Gx analysis - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result Z flag for NWTPH-Gx analysis - Chromatogram is similar to mineral spirits
L-TP-1-8	Soil	1009-030-02	9/2/10	√	NWTPH-G/BETX NWTPH-Dx PAHs	√	√	√	√	√	√	O flag for NWTPH-Gx analysis - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result U1 flag for o-xylene - The practical quantitation limit is elevated due to interferences present in the sample
L-TP-2-3	Soil	1009-030-03	9/2/10	√	NWTPH-G/BETX NWTPH-Dx	√	√	√	√		√	
L-TP-2-8	Soil	1009-030-04	9/2/10	√	NWTPH-G/BETX WTPH-Dx	√	√	√	√		√	
L-TP-3-4	Soil	1009-030-05	9/2/10	√	NWTPH-G/BETX NWTPH-Dx	√	√	√	√		√	
L-TP-3-7	Soil	1009-030-06	9/2/10	√	NWTPH-G/BETX NWTPH-Dx	√	√	√	√		√	
L-TP-4-4	Soil	1009-038-01	9/3/10	√	NWTPH-G/BETX NWTPH-Dx PAHs	√	√	√	See Notes	√	√	U1 flag for lab duplicate diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample
L-TP-4-7	Soil	1009-038-02	9/3/10	√	NWTPH-G/BETX NWTPH-Dx PAHs	√	√	√	See Notes	√	√	U1 flag for lab duplicate diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample
L-TP-5-2	Soil	1009-038-03	9/3/10	√	NWTPH-G/BETX NWTPH-Dx PAHs	√	√	√	See Notes	√	√	U1 flag for lab duplicate diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample
L-TP-5-6	Soil	1009-038-04	9/3/10	√	NWTPH-G/BETX NWTPH-Dx PAHs	√	√	√	See Notes	√	√	U1 flag for ethyl benzene and o-xylene analyses - The practical quantitation limit is elevated due to interferences present in the sample U1 flag for lab duplicate diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample
L-TP-6-3	Soil	1009-038-05	9/3/10	√	NWTPH-G/BETX NWTPH-Dx PAHs	√	√	√	See Notes	√	√	U1 flag for diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample U1 flag for lab duplicate diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample
L-TP-6-7	Soil	1009-038-06	9/3/10	√	NWTPH-G/BETX NWTPH-Dx PAHs	√	See Notes	√	See Notes	√	√	U1 flag for diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample U1 flag for lab duplicate diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample Q flag for 8270D/SIM analysis - One PAH surrogate recovery was outside of the control limits; lab reported this was within their standard operating procedure as long as the recovery is above 10%
L-TP-7-2	Soil	1009-038-07	9/3/10	√	NWTPH-G/BETX NWTPH-Dx PAHs	√	√	√	See Notes	√	√	U1 flag for diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample U1 flag for lab duplicate diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample
L-TP-7-7	Soil	1009-038-08	9/3/10	√	NWTPH-G/BETX NWTPH-Dx PAHs	√	√	√	See Notes	√	√	U1 flag for diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample U1 flag for lab duplicate diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample
L-TP-8-2	Soil	1009-038-09	9/3/10	√	NWTPH-G/BETX NWTPH-Dx PAHs	√	√	√	See Notes	√	√	U1 flag for lab duplicate diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample
L-TP-8-7	Soil	1009-038-10	9/3/10	√	NWTPH-G/BETX NWTPH-Dx PAHs	√	√	√	See Notes	√	√	U1 flag for o-xylene and diesel - The practical quantitation limit is elevated due to interferences present in the sample U1 flag for lab duplicate diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample

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
L-TP-9-4	Soil	1009-168-01	9/17/10	√	NWTPH-G/BETX NWTPH-Dx	√	√	√	√		√	
L-TP-9-8	Soil	1009-168-02	9/17/10	√	NWTPH-G/BETX NWTPH-Dx	√	√	√	√		√	
L-TP-10-4	Soil	1009-168-03	9/17/10	√	NWTPH-G/BETX NWTPH-Dx	√	√	√	√		√	O flag for NWTPH-Gx analysis - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result
L-TP-10-8	Soil	1009-168-04	9/17/10	√	NWTPH-G/BETX NWTPH-Dx	√	√	√	√		√	
L-TP-11-4	Soil	1009-168-05	9/17/10	√	NWTPH-G/BETX NWTPH-Dx	√	√	√	√		√	U1 flag for diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample
L-TP-11-8	Soil	1009-168-06	9/17/10	√	NWTPH-G/BETX NWTPH-Dx	√	√	√	√		√	
L-TP-12-4	Soil	1009-168-07	9/17/10	√	NWTPH-G/BETX NWTPH-Dx	√	√	√	√		√	
L-TP-12-8	Soil	1009-168-08	9/17/10	√	NWTPH-G/BETX NWTPH-Dx	√	√	√	√		√	U1 flag for diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample
L-Dup-091710	Soil	1009-168-09	9/17/10	√	NWTPH-G/BETX NWTPH-Dx	√	√	√	√	√	√	Duplicate of L-TP-12-4
L-TP-13-8	Soil	1009-193-01	9/20/10	√	NWTPH-Dx PAHs NWVPH/NWEPH	√	√	√	√	√	√	
L-TP-14-3	Soil	1009-193-02	9/20/10	√	NWTPH-Dx PAHs NWVPH/NWEPH	√	√	√	√	√	√	
L-TP-15-7	Soil	1009-193-03	9/20/10	√	NWTPH-Dx PAHs NWVPH/NWEPH	√	√	√	√	√	√	U1 flag for diesel analysis - The practical quantitation limit is elevated due to interferences present in the sample
L-TP-16-8	Soil	1009-193-04	9/20/10	√	NWTPH-Dx PAHs NWVPH/NWEPH	√	√	√	√	√	√	
L-PEX-1-6	Soil	1009-209-01	9/21/10	√	NWTPH-G/BETX NWTPH-Dx HVOCs PAHs PCBs RCRA Metals	√	√	√	√	See Notes	√	8260B analysis (HVOCs) - Lab received not enough sample in 5035 VOA vials to perform MS/MSD QC check
L-PEX-2-10	Soil	1009-209-02	9/21/10	√	NWTPH-G/BETX NWTPH-Dx PAHs RCRA Metals	√	√	√	√	√	√	
L-PEX-3-6	Soil	1009-209-03	9/21/10	√	NWTPH-G/BETX NWTPH-Dx PAHs RCRA Metals	√	√	√	√	√	√	
L-PEX-4-6	Soil	1009-209-04	9/21/10	√	NWTPH-G/BETX NWTPH-Dx PAHs RCRA Metals	√	√	√	√	√	√	
L-PEX-5-6	Soil	1009-209-05	9/21/10	√	NWTPH-G/BETX NWTPH-Dx PAHs RCRA Metals	√	√	√	√	√	√	M flag for diesel - Hydrocarbons in the gasoline range are impacting the diesel range result O flag for NWTPH-Gx analysis - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result
L-DUP-092110	Soil	1009-209-06	9/21/10	√	NWTPH-G/BETX NWTPH-Dx HVOCs PAHs PCBs RCRA Metals	√	√	√	√	See Notes	√	Duplicate of L-PEX-1-6 8260B analysis (HVOCs) - Lab received not enough sample in 5035 VOA vials to perform MS/MSD QC check
L-PEX-6-11	Soil	1009-227-01	9/22/10	√	NWTPH-G/BETX NWTPH-Dx HVOCs PAHs PCBs RCRA Metals	√	√	√	√	√	√	

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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
L-PEX-7-11	Soil	1009-227-02	9/22/10	√	NWTPH-G/BETX NWTPH-Dx PAHs RCRA Metals	√	√	√	√	√	√	
L-PEX-8-10	Soil	1009-227-03	9/22/10	√	NWTPH-G/BETX NWTPH-Dx PAHs RCRA Metals NWVPH/NWEPH	√	√	√	√	√	√	O flag for NWTPH-Gx analysis - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result U1 flag for o-xylene and diesel analyses - The practical quantitation limit is elevated due to interferences present in the sample C1 flag for NWVPH/NWEPH analyses - Values for C12-C13 aromatics and C8-C12 aliphatic ranges should be ignored due to overlap correction
L-PEX-9-10	Soil	1009-258-01	9/24/10	√	NWTPH-G/BETX NWTPH-Dx PAHs RCRA Metals	√	√	√	√	√	√	
L-PEX-10-8	Soil	1009-258-02	9/24/10	√	NWTPH-G/BETX NWTPH-Dx	√	√	√	√		√	U1 flag for diesel analyses - The practical quantitation limit is elevated due to interferences present in the sample
L-PEX-11-8	Soil	1009-258-03	9/24/10	√	NWTPH-G/BETX NWTPH-Dx PAHs RCRA Metals	√	√	√	√	√	√	
L-PEX-12-6	Soil	1009-258-04	9/24/10	√	NWTPH-G/BETX NWTPH-Dx PAHs RCRA Metals	√	√	√	√	√	√	
L-PEX-13-14	Soil	1009-258-05	9/24/10	√	NWTPH-G/BETX NWTPH-Dx HVOCs PAHs PCBs RCRA Metals	√	√	√	√	See Notes	√	8260B analysis (VOCs) - Lab received not enough sample in 5035 VOA vials to perform MS/MSD QC check
L-PEX-14-9	Soil	1009-258-06	9/24/10	√	NWTPH-G/BETX NWTPH-Dx PAHs RCRA Metals	√		√	√	√	√	U1 flag for o-xylene analysis - The practical quantitation limit is elevated due to interferences present in the sample Q flag for 8270D/SIM analysis - One PAH surrogate recovery was outside of the control limits; lab reported this was within their standard operating procedure as long as the recovery is above 10%
L-PEX-15-9.5	Soil	1009-258-08	9/24/10	√	NWTPH-G/BETX NWTPH-Dx PAHs RCRA Metals	√	√	√	√	√	√	U1 flag for diesel analyses - The practical quantitation limit is elevated due to interferences present in the sample
L-PEX-16-11	Soil	1009-277-01	9/27/10	√	NWTPH-G/BETX NWTPH-Dx PAHs RCRA Metals	√	See Notes	√	√	See Notes	See Notes	Q flag for 8270D/SIM SB/SBD analysis - One PAH surrogate recovery was outside of the control limits; this was within allowance of the lab's standard operating procedure as long as the recovery was above 10% I flag for 8270D/SIM MS/MSD QC check - Napthalene recovery was outside of the control limits; the SB/SBD pair extracted with this batch had all parameters in control, no further action was deemed necessary L flag for 8270D/SIM MS/MSD QC check - The RPDs for naphthalene and acenapthene were outside of the control limits; the SB/SBD pair extracted with this batch had all parameters in control, no further action was deemed necessary V flag for 7471A (mercury) analysis - The MS/MSD recoveries were outside control limits due to matrix inhomogeniety. The samples were re-extracted and re-analyzed with similar results; the SB recovery was 95%

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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
L-PEX-17-9	Soil	1009-277-02	9/27/10	√	NWTPH-G/BETX NWTPH-Dx HVOCs PAHs PCBs RCRA Metals	√	See Notes	√	√	See Notes	See Notes	8260B analysis (VOCs) - Lab received not enough sample in 5035 VOA vials to perform MS/MSD QC check Q flag for 8270D/SIM SB/SBD analysis - One PAH surrogate recovery was outside of the control limits; this was within allowance of the lab's standard operating procedure as long as the recovery was above 10% I flag for 8270D/SIM MS/MSD QC check - Napthalene recovery was outside of the control limits; the SB/SBD pair extracted with this batch had all parameters in control, no further action was deemed necessary L flag for 8270D/SIM MS/MSD QC check - The RPDs for naphthalene and acenapthene were outside of the control limits; the SB/SBD pair extracted with this batch had all parameters in control, no further action was deemed necessary V flag for 7471A (mercury) analysis - The MS/MSD recoveries were outside control limits due to matrix inhomogeniety. The samples were re-extracted and re-analyzed with similar results; the SB recovery was 95%
L-PEX-18-14	Soil	1009-277-03	9/27/10	√	NWTPH-G/BETX NWTPH-Dx PAHs RCRA Metals	√	See Notes	√	√	See Notes	See Notes	Q flag for 8270D/SIM SB/SBD analysis - One PAH surrogate recovery was outside of the control limits; this was within allowance of the lab's standard operating procedure as long as the recovery was above 10% I flag for 8270D/SIM MS/MSD QC check - Napthalene recovery was outside of the control limits; the SB/SBD pair extracted with this batch had all parameters in control, no further action was deemed necessary L flag for 8270D/SIM MS/MSD QC check - The RPDs for naphthalene and acenapthene were outside of the control limits; the SB/SBD pair extracted with this batch had all parameters in control, no further action was deemed necessary V flag for 7471A (mercury) analysis - The MS/MSD recoveries were outside control limits due to matrix inhomogeniety. The samples were re-extracted and re-analyzed with similar results; the SB recovery was 95%
L-DUP-092710	Soil	1009-277-04	9/27/10	√	NWTPH-G/BETX NWTPH-Dx PAHs RCRA Metals	√	See Notes	√	√	See Notes	See Notes	Duplicate of L-PEX-16-11 Q flag for 8270D/SIM SB/SBD analysis - One PAH surrogate recovery was outside of the control limits; this was within allowance of the lab's standard operating procedure as long as the recovery was above 10% I flag for 8270D/SIM MS/MSD QC check - Napthalene recovery was outside of the control limits; the SB/SBD pair extracted with this batch had all parameters in control, no further action was deemed necessary L flag for 8270D/SIM MS/MSD QC check - The RPDs for naphthalene and acenapthene were outside of the control limits; the SB/SBD pair extracted with this batch had all parameters in control, no further action was deemed necessary V flag for 7471A (mercury) analysis - The MS/MSD recoveries were outside control limits due to matrix inhomogeniety. The samples were re-extracted and re-analyzed with similar results; the SB recovery was 95%
L-PEX-19-10	Soil	1009-277-05	9/27/10	√	NWTPH-G/BETX NWTPH-Dx PAHs RCRA Metals	√	See Notes	√	√	See Notes	See Notes	Q flag for 8270D/SIM SB/SBD analysis - One PAH surrogate recovery was outside of the control limits; this was within allowance of the lab's standard operating procedure as long as the recovery was above 10% I flag for 8270D/SIM MS/MSD QC check - Napthalene recovery was outside of the control limits; the SB/SBD pair extracted with this batch had all parameters in control, no further action was deemed necessary L flag for 8270D/SIM MS/MSD QC check - The RPDs for naphthalene and acenapthene were outside of the control limits; the SB/SBD pair extracted with this batch had all parameters in control, no further action was deemed necessary V flag for 7471A (mercury) analysis - The MS/MSD recoveries were outside control limits due to matrix inhomogeniety. The samples were re-extracted and re-analyzed with similar results; the SB recovery was 95%
L-TP-17-1	Soil	10-014-01	10/1/10	√	NWTPH-Dx	√	√	√	√		√	

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
L-TP-17-3	Soil	10-014-02	10/1/10	√	NWTPH-Dx	√	√	√	√		√	
L-TP-17-6	Soil	10-014-03	10/1/10	√	NWTPH-Dx	√	√	√	√		√	
L-TP-18-1	Soil	10-014-04	10/1/10	√	NWTPH-Dx	√	√	√	√		√	
L-TP-18-3	Soil	10-014-05	10/1/10	√	NWTPH-Dx	√	√	√	√		√	
L-TP-19-1	Soil	10-014-06	10/1/10	√	NWTPH-Dx	√	√	√	√		√	U1 flag for diesel analyses - The practical quantitation limit is elevated due to interferences present in the sample
L-TP-19-3	Soil	10-014-07	10/1/10	√	NWTPH-Dx	√	√	√	√		√	
L-TP-20-2	Soil	10-014-08	10/1/10	√	NWTPH-Dx	√	√	√	√		√	U1 flag for diesel analyses - The practical quantitation limit is elevated due to interferences present in the sample
L-TP-21-2	Soil	10-014-09	10/1/10	√	NWTPH-Dx	√	√	√	√		√	
L-TP-21-5	Soil	10-014-10	10/1/10	√	NWTPH-Dx	√	√	√	√		√	

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
PCBs - Polychlorinated biphenyls by EPA Method 8082
NWVPH/NWEPH - Ecology methods VPH and EPH for volatile and extractable petroleum hydrocarbon fractions

Table C-2
Evaluation of Field Duplicate Sample Results

Sample Location	Diesel	Oil	Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Total Naphthalenes	cPAHs TEC	PCBs	HVOCs	Notes
L-TP-12-4	<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054													
L-Dup-091710	<28	<56	<5.5	<0.020	<0.055	<0.055	<0.055													
Ratio of Non-detects[1]	1.0	0.93	0.98	1.0	0.98	0.98	0.98													
RPDs[2] for Detects																				
L-PEX-1-6	<28	<57	13	<0.020	<0.067	<0.067	<0.067	<11	50	<0.57	29	6.4	<0.28	<11	<0.57	0.491	0.020	All <0.057	All <0.0059	
L-DUP-092110	<29	<58	35	<0.020	<0.065	<0.065	<0.065	<12	47	<0.58	27	8.3	<0.29	<12	<0.58	0.205	0.000	All <0.058	All <0.0056	
Ratio of Non-detects	1.0	0.98	0.37	1.0	1.03	1.03	1.03	0.92	1.06	0.98	1.06	1.06	0.97	0.92	0.98	1.06	1.06	0.98	1.05	
RPDs for Detects			-91.7%						6.2%		7.1%	-25.9%				82.2%	200.0%			
L-PEX-16-11	<31	<62	<7.0	<0.020	<0.070	<0.070	<0.070	<12	30	<0.62	26	<6.2	<0.31	<12	<0.62	<0.025	0.000			
L-DUP-092710	<31	<62	<7.4	<0.020	<0.074	<0.074	<0.074	<12	34	<0.62	17	<6.2	<0.31	<12	<0.62	<0.025	0.000			
Ratio of Non-detects	1.0	1.0	0.95	1.0	0.95	0.95	0.95	1.0	1.06	1.0	1.06	1.0	1.0	1.0	1.0	1.0	1.0			
RPDs for Detects									-12.5%		41.9%									

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 INTERIM ACTION SOIL CLEANUP

Photo 1 – Excavation limit looking north to SR 522. Note peat layer on excavation floor. Extent of excavation was limited to maintain the structural integrity of SR 522 and related sidewalk and utilities

Photo 2 – Uncovered abandoned storm drain pipe in northeast corner of excavation

Photo 3 – Buried debris in west end of excavation below Rotunda Park (looking to northwest)

Photo 4 – Buried debris in west end of excavation below Rotunda Park (looking to northwest)

Photo 5 – Exposed abandoned storm drain side connection to Horse Creek Culvert in western extent of excavation (looking southwest)

Photo 6 – Using a vactor truck to excavate an exploration borehole adjacent to Horse Creek culvert


Photo 7 – Exposed manhole to Horse Creek culvert (looking to south)


Photo 8 – Pumping ground water out of excavation (looking to east)

Photo 9 – Monitoring wells MW-3 (left) and MW-4 (right) prior to decommissioning by excavation (looking to northeast)

APPENDIX E

CEMEX USA RELEASE OF LIABILITY/

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
Bothell Landing Parcel
Bothell WA. 98011

and transported to:

CEMEX Soil Remediation Facility
6300 Glenwood Ave.
Everett WA 98203

From 09/09/2010 through 10/11/2010

A total of 3556.50 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

APPENDIX E

INTERIM ACTION CLEANUP ACTION REPORTS, BOTHELL LANDING SITE (HWA, 2014D, 2015C, 2017)

(ON CD)

INTERIM ACTION CLEANUP REPORT
BOTHELL LANDING SITE
BOTHELL, WASHINGTON

Prepared for
City of Bothell

September 2, 2014

HWA GEOSCIENCES INC.

- Geotechnical Engineering
- Hydrogeology
- Geoenvironmental Services
- Inspection & Testing

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1.0 INTRODUCTION

This report documents the results of the interim action soil cleanup conducted in 2010, 2013 and 2014 for the City of Bothell (City) at the Bothell Landing site (Site) (Figure 1). The City owns the Site, a portion of which accommodates the realignment of State Route (SR) 522 and the southward extension of Bothell Way NE (Bothell Crossroads Project). Figure 2 depicts the alignment of SR 522 and Bothell Way NE through the Site 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 2013/2014, 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. 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.

The interim action cleanup was performed in compliance with the terms and conditions of Amendment No. 1 to Agreed Order Number DE 6294 as amended on June 9, 2010 between the Washington Department of Ecology (Ecology) and the City.

This Interim Action Cleanup Report will be submitted to Ecology pursuant to 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 Landing Remedial Investigation/Feasibility Study*, and associated *Draft Cleanup Action Plan* which have not been finalized or approved pending completion of interim actions and monitoring (Parametrix, 2009a, b)
5. Preparation and submittal to Ecology of an *Interim Action Work Plan* (Parametrix, 2010)
6. Completion of the 2010 initial phase of interim action soil cleanup and subsequent reporting (*Documentation of Interim Action at Bothell Landing Site*, HWA, 2011a)
7. Preparation and submittal to Ecology of the *Remedial Investigation Feasibility Study Final Work Plan, Bothell Landing Site Bothell, Washington*, September 19, 2011 (HWA, 2011b)

8. Preparation and submittal to Ecology of a Letter Report: *Bothell Landing Interim Action Status Report, January – March 2014, Bothell, WA* dated April 7, 2014 (HWA, 2014)
9. Completion of the 2013 and 2014 supplemental 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 any contaminated soil and ground water remaining at the Site following interim remedial actions.

1.1 SITE LOCATION AND DESCRIPTION

The City owns the approximately 2.8-acre Site located at 18120, 18126, and 18132 Bothell Way, and 10001 Woodinville Drive, Bothell, Washington (King County Tax Parcel Nos. 9457200015 and 9457200020). Ecology's Facility Site ID is # 73975762; it is noted as a Brownfields Site in Ecology's Integrated Site Information System (ISIS) database. The latitude of the site is 47.7591 and the longitude is -122.20766.

The City acquired the Site through two property purchases, 1) in 1998 for roadway widening and construction of a small park (Rotunda Park), and 2) in 2008 for construction of the SR522 realignment. A 48-inch diameter concrete culvert conveys Horse Creek through the northern and eastern portion of the Site (Figure 2), and daylights just beyond the east property boundary. Prior to the interim action the Site was occupied by two single-story restaurants in the northeast and northwest corners of the property and two multi-tenant retail and office buildings in the southern portion of the site. The remainder of the site was covered with asphalt-paved parking and landscaping. All buildings were demolished in May 2010, in advance of the soil cleanup work and subsequent construction of a new roadway, a portion of which accommodates the realignment of State Route (SR) 522 and the southward extension of Bothell Way NE (Bothell Crossroads Project). Remnant portions of the property are to be conjugated into new City parcels and sold to private parties for redevelopment; the southern portion of the property will become a part of the expanded park.

1.2 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 the 2011 soil cleanup report and this Interim Action Soil Cleanup Report

1.3 OBJECTIVES

The objective of the interim action soil cleanup was to reduce the threat to the environment and human health posed by petroleum- and lead-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).

1.4 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 Kleinfelder (1999), Riley Group (2007), ECOSS (2008), HWA (2007, 2009a), and Parametrix (2009a). The following is a summary of those assessments.

Two service stations were previously located at the northeast and northwest corners of the Site between the 1930's and 1970's at the approximate locations shown on Figure 3. The stations were demolished during site reconstruction in the 1970's and the underground storage tanks (USTs) associated with the stations were reported to have been removed (Riley Group, 2007).

In 1998, the City purchased the north central portion of the site at 10001 Woodinville Way as part of a roadway widening and the Rotunda Park project. In the course of site excavation, five USTs and associated petroleum-affected soils were discovered. The USTs were assumed to have been associated with one of the former service stations. The City removed approximately 385 tons of petroleum-affected soils from the Site. Petroleum hydrocarbon and aromatic hydrocarbon concentrations remaining in the excavation sidewalls exceeded Ecology's Model Toxics Cleanup Act (MTCA) cleanup levels. The excavation was backfilled with clean imported soils. A plastic sheeting barrier was placed around the excavation limits to minimize recontamination of soil from adjacent impacted soils.

The remaining (non-City owned at the time) parcels comprising the site were investigated by Kleinfelder (1999) who identified gasoline, diesel, oil, and benzene in soil and ground water at the Site. The property owners at the time filed a restrictive covenant in January 2002 acknowledging that impacted soils and ground water remained at the property. Ecology issued an interim No Further Action (NFA) determination for the Site in 2002 for soils only. The Site was later removed from the Voluntary Cleanup Program in 2006 due to the lack of further activity, such as monitoring or remediation. The 2002 NFA determination was also rescinded at this time due to cleanup exceedances.

HWA performed a Phase II environmental site assessment in 2007. The assessment identified soils in the northern portion of the property (vicinity of the known UST releases) containing petroleum-related compounds (petroleum hydrocarbons, aromatic hydrocarbons, and semi-volatile organic compounds) exceeding Ecology MTCA Method A cleanup levels (Table 740-1 in WAC 173-340-900). Ground water at the Site apparently was affected by multiple sources. Petroleum hydrocarbon impacts to ground water from historic UST releases at the property appeared to be limited. Chlorinated solvents were detected in ground water samples at the northwest and northeast portions of the property. These detections appeared to be either from an unknown historic on-site source, or from suspected upgradient sources to the north-northeast and/or north-northwest of the subject property.

Parametrix's 2009 remedial investigation concluded that petroleum contamination in soil and ground water at the former gas station area was relatively well defined within the Site boundaries; however, soil contamination extended into the SR 522 right-of-way where it was less well defined. The extent of the petroleum-contaminated ground water plume was limited to the vicinity of the Rotunda Park. The backfill around the Horse Creek culvert did not appear to be a preferential pathway for contaminated ground water. Surface water in the open channel portion of Horse Creek did not appear to be significantly affecting nearby surface soils or ground water. Halogenated volatile organic compounds (HVOCs) including perchloroethylene (PCE), trichloroethylene (TCE), and breakdown products, were present in ground water throughout the central and northern portions of the Site with concentrations generally below MTCA Method A cleanup levels (Table 720-1 in WAC 173-340-900). Concentration distributions indicated that the HVOCs were migrating onto the Site from an upgradient source.

The 2011 Final RI Work Plan identified additional data gaps associated with defining the nature and extent of HVOC impacts from upgradient plumes, other potential off property sources of TPH impacts, and on-property TPH impacts. The 2011 Final RI Work Plan and subsequent discussions and correspondence Ecology also defined an area wide ground water monitoring well network, to address the Bothell Landing and several other nearby sites under Agreed Orders.

1.5 CURRENT AND PLANNED SITE USE

Prior to the soil cleanup, the Site contained two single-story restaurants in the northeast and northwest corners of the property and two multi-tenant retail and office buildings in the southern portion of the property. The remainder of the Site was covered with asphalt-paved parking and landscaping. All buildings and pavement were demolished in May

2010, in advance of the soil cleanup work and roadway construction. The Site will be redeveloped as part of the City's overall Downtown Revitalization Plan, and mostly accommodates the new SR 522/Bothell Way NE intersection and related utilities and infrastructure. Future use of remnant portions of the Site not under the new roadways 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 Site is predominantly flat. The west property boundary adjoins the Former Bothell Hertz Facility that previously was occupied by a commercial rental business with documented and suspected hazardous material releases to soil and ground water (HWA, 2008). The east property boundary consists of vegetated/landscaped ground sloping down to Horse Creek. Horse Creek is an urban stream discharging to the Sammamish River just beyond the southern boundary of the property. The creek is conveyed through storm drain pipes upgradient of the Site. A 48-inch diameter concrete culvert conveys Horse Creek through the northern and eastern portion of the Site, daylighting just beyond the east property boundary (Figure 2). The Sammamish River is between 175 and 250 feet south of the Site and separated from the property by NE 180th Street and the Park at Bothell Landing, a City park (Parametrix, 2009a).

2.2 GEOLOGY

Site-specific stratigraphy typically consists of approximately 5 to 8 feet of silty sand fill over alluvial soil consisting of interbedded silt and peat. Much of the fill material is likely dredged spoils placed on the property from realignment of the Sammamish River in the 1960s (HWA, 2008). Interbedded alluvial sand and silt was encountered between 8 and 20 feet below ground surface (bgs). Peat or silt beds with high organic content up to 2 feet thick are present within the alluvial soil, generally at depths greater than 10 feet bgs. These compressible, organic-rich beds appear to underlie much of the Site but may not represent a contiguous layer (Parametrix, 2009).

2.3 HYDROGEOLOGY

Ground water in monitoring wells was encountered between approximately 3 and 9 feet bgs. Ground water flow is to the east-southeast, toward the Sammamish River at a gradient, i, of 0.011 to 0.046 feet per foot. The horizontal hydraulic conductivity, K, for the water-bearing zone was estimated to be 2.0×10^{-3} to 5.6×10^{-3} feet per minute (2.9 to 8.1 feet/day) using slug testing data collected during the remedial investigation field activities (HWA, 2009b). 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:

2.9 ft/d x 0.011 / 0.2 = 0.16 feet/day = 58 feet/year to
8.1 ft/d x 0.046 / 0.2 = 1.9 feet/day = 677 feet/year.

3.0 NATURE AND EXTENT OF CONTAMINATION

3.1 CHEMICALS OF POTENTIAL CONCERN

Based on the 2011 final RI Work Plan, COPCs for the RI study area are:

- Chlorinated VOCs / HVOCs (primarily PCE, TCE, (cis)-1,2-DCE, and vinyl chloride)
- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX (benzene, toluene, ethylbenzene, and xylenes)
- Lead, barium
- Polycyclic Aromatic Hydrocarbons (PAHs) (including naphthalenes)

The *Interim Action Work Plan* (Parametrix, 2010) also included metals (arsenic, cadmium, chromium, mercury, selenium, and silver) and polychlorinated biphenyls (PCBs) as COPCs. Because PCBs, HVOCs, arsenic, barium, cadmium, chromium, mercury, selenium, or silver were never detected in Site soil at concentrations exceeding MTCA Method A or B cleanup levels or natural background concentrations during the Phase II ESA, RI, or initial interim action cleanup, they were dropped as COPCs during subsequent cleanup and RI activity.

COPCs for ground water in the RI area are:

- Chlorinated VOCs
- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX
- Metals (arsenic, cadmium, chromium, and lead)

3.2 EXTENT OF CONTAMINATION

After the initial 2010 interim action, soil samples containing COPCs above MTCA cleanup levels at the Site remained along the northern portion of the excavation limits at depths ranging from three to eight feet below ground surface (bgs). Borehole data (location B3 on Figure 3) indicated that gasoline- and heavy oil-impacted soil extends from the Site to the northeast beneath SR 522 (CDM, 2009). Supplemental investigations were completed in August 2013 and January 2014 to delineate soil contamination west and east of Bothell Way NE, respectively. Petroleum-contaminated soils were subsequently excavated from these two areas in October 2013 (west of Bothell Way NE) and between January and May, 2014 (East side of Bothell Way NE).

Petroleum-contaminated ground water occurred only in the vicinity of Rotunda Park. The backfill around the Horse Creek culvert does not appear to be a preferential pathway for contaminated ground water. Horse Creek surface water does not appear to be significantly affecting nearby surface soils or ground water. HVOCs migrating onto the Site from an upgradient source are present in ground water in the northern portions of the Site at concentrations less than MTCA Method A cleanup levels.

3.3 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 gasoline-range petroleum hydrocarbons at the Site range between 84 and 246 milligrams per kilogram (mg/kg) depending on the mixture of hydrocarbon fractions and specific compounds such as benzene. The Method B TPH cleanup level of 84 mg/kg is a calculated value for protection of potable ground water from contamination by benzene 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 with detectible benzene in soil is 30 mg/kg. The calculated Method B cleanup levels for diesel- and oil-range petroleum hydrocarbons at the Site range between 3,130 and 5,225 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) are extremely conservative, as much of the site will be covered by 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, 2009b):

- 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 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 the contaminated ground water that has migrated onto the Site.

4.0 INTERIM ACTION SOIL CLEANUP

The interim actions 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 first interim action soil cleanup in September and October of 2010. HWA personnel monitored the cleanup activities and sampled soil to confirm successful cleanup. Prior to site cleanup, Hos Brothers 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/Bothell Way NE realignment.

2013/14 interim action - The City engaged a construction contractor, Guy F. Atkinson Construction, LLC, (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 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.

2010 interim action - HWA’s 2010 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.

Sixteen test pits were excavated between September 2nd and 20th 2010 using a rubber-tired backhoe operated by the Contractor. Test pits TP-17 through TP-21 were excavated on October 1, 2010 to investigate whether TPH contamination had migrated onto the Site from the adjacent Bothell Former Hertz Facility, in an area where the Contractor reported suspect soils in a utility trench. Figure 4 shows test pit locations. Test pits were excavated to a maximum depth of 8 feet bgs. HWA personnel collected a total of 38 representative soil samples at various depths within the test pits for chemical analysis.

2013/14 interim action - Seven test pits were excavated in August, 2013 using a tracked excavator operated by Atkinson. Test pits TP-L1 through TP-L7 were excavated to investigate and delineate TPH contamination north of the former Rotunda location and within the former SR522/SR527 intersection. During utility work in 2012, an underground storage tank had been discovered in the north edge of the SR522 roadway southeast of the former Grease Monkey (HWA, 2012). Although a release was not documented in HWA's UST site assessment report, there was the potential for historical releases from the former service station located at that site (ECOSS, 2008; HWA, 2007). Figure 4 shows test pit locations. Test pits were excavated to a maximum depth of ten feet bgs. HWA personnel collected a total of 16 representative soil samples at various depths within the test pits for chemical analysis.

Seven additional test pits were excavated in January, 2014 using a tracked excavator operated by Atkinson. Test pits TP-L8 through TP-L14 were excavated to investigate and delineate TPH contamination within the former SR522 right-of way. Additionally, three test pits were completed in the City's 'Triangle Park' to assess soil conditions at that location. Figure 4 shows test pit locations. Test pits were excavated to a maximum depth of nine feet bgs. HWA personnel collected a total of 21 representative soil samples at various depths within the test pits for chemical analysis.

HWA also collected nine soil samples during water line installation in February 2014. The water line was installed in Main Street adjacent north of the Site and Triangle Park. Soil samples were collected between depths of four and 7.5 feet.

OnSite Environmental Inc. of Redmond, Washington, an Ecology accredited laboratory, performed all 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 - Hos Brothers excavated contaminated soil at the Site between September 2nd and 27th 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 or stockpiled 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 east to west during the 2010 cleanup. Approximately 784 cubic yards of clean overburden soil were excavated and stockpiled (and segregated to prevent cross-contamination using plastic sheeting) on site for later reuse. Contaminated soil was excavated approximately 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 2010 soil excavation are shown on Figure 4. The final excavation was approximately 50 by 160 feet in its maximum width and length. The depth of the excavation ranged from approximately 5 to 14 feet bgs.

In 2010 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 (Photos 1 and 2 in Appendix D). An abandoned 12-inch concrete storm drain pipe that apparently connected to the Horse Creek culvert was unearthed in the eastern extent of the excavation (Photo 2 and Figure 3). This storm drain pipe was not identified on City utility plans, and appeared to have been abandoned as it did not convey flowing water or have stained interior sidewalls. The Contractor capped the storm drain pipe with quick setting concrete where it was exposed in the northeastern and southeastern sidewalls of the excavation.

In 2010 scattered buried debris in the soil (e.g., tires, rubber hose, broken concrete, bricks, lumber, metal, and glass) was unearthed in the western half of the excavation from about 8 to 10 feet bgs and lying immediately above the peat horizon (Photos 3 and 4 in Appendix D). The soil associated with the buried debris had high TPH concentrations, primarily in the gasoline range.

In 2010 an 8-inch diameter concrete storm drain pipe was unearthed in the western sidewall of the excavation at 5 feet bgs in the vicinity of the Horse Creek culvert (Figure 3 and Photo 5). This storm drain pipe apparently had never been put into service, as it was capped when unearthed. Because the original cap was inadvertently broken when uncovered, the Contractor capped the storm drain pipe again with quick setting concrete.

In 2010 Hos Brothers utilized a vactor truck and compressed air to excavate explorations along the Horse Creek culvert (Photo 6 in Appendix D). This effort better defined the location of the culvert and its manhole access on the Bothell Landing site (Photo 7). As is discussed in the following section (4.3), HWA also utilized the vactor truck explorations to evaluate COPCs in the backfill surrounding the culvert.

For the 2010 cleanup Hos Brothers transported contaminated soil and debris to the CEMEX USA (formerly Rinker) Inert Materials Landfill facility in Everett, Washington for thermal desorption treatment followed by permitted landfill disposal. A total of 3,556.5 tons of soil were excavated and transported to the CEMEX facility. A copy of the CEMEX Release of Liability/Certificate of Disposal for the soil is presented in Appendix E.

2013/14 interim action – The 2013 and 2014 supplemental interim action soil cleanups completed excavation of the remnant contaminated soils left in place adjacent to SR-522 in 2010 to protect the structural integrity of the active roadway and associated sidewalk and underground utilities. Atkinson excavated contaminated soil at the Site between

October 2013 and May 2014. Soil remediation activities took place in several stages as roadways were abandoned and access was scheduled around realignments and other construction activities. Remediation west of Bothell Way NE took place in October, 2013, and remediation east of Bothell Way NE took place between January and May 2014.

During the 2013 and 2014 cleanups clean overburden soils were excavated and stockpiled on site for later reuse. Contaminated soil was excavated approximately down to the contact with a peat horizon and sandy silts underlying the site, which was found to meet the cleanup levels. The approximate limits of the 2013 and 2014 soil excavations are shown on Figure 4. The final excavation west of SR-27 was approximately 50 by 50 feet in the vicinity of the former 'rotunda' location and extended northward approximately 20 feet wide and 80 feet long. Test pit and soil borings in the center of Bothell Way NE did not identify petroleum-affected soils, so the roadway was not excavated.

Additional excavation was completed along the east side of the Bothell Way NE roadway underlying the former SR-522 roadway and Triangle Park. An area of approximately 100 by 100 feet was excavated between Bothell Way NE and Main Street, with an additional area under the former SR-522 excavated to the east, extending approximately 40 feet wide by 80 feet long. The depth of the excavations ranged from approximately six to 12 feet bgs.

For the 2013 and 2014 cleanups Atkinson transported contaminated soil and debris to the Cowlitz County Landfill in Longview, Washington. A total of 3317.95 tons of contaminated soil were excavated and transported to the Cowlitz County Landfill permitted landfill disposal. A copy of the Cowlitz County Certificate of Disposal for the soil is presented in Appendix F.

4.2.1 UST Removal

On April 30, 2014, Atkinson uncovered a UST during excavation of contaminated soils near the former Triangle Park at the southeast corner of the roadway intersection. The UST contained no product or water, but did contain some soil. The UST was 300 gallons in capacity, and was of welded steel construction. Rust was observed on the surface of the UST, and evidence of small holes was observed. Vent, fill and distribution lines associated with the UST were not present at the time of the UST removal.

An HWA Washington Licensed Geologist/Certified UST Site Assessor observed Atkinson excavate soils around the tank, exposing the UST. The UST was removed and stored on site due to the ongoing soil excavation activities.

Clearcreek Contractors, a licensed UST decommissioning supervisor, removed the UST on May 2, 2014 with the assistance of Atkinson using a track-mounted excavator. The UST was heavily damaged during removal. Bothell Fire Department personnel inspected the UST prior to its removal from the site for off-site cleaning and disposal by Clearcreek. Site photographs of the UST removal are included in Appendix D. Appendix E contains documentation of UST disposal.

HWA performed a UST Site Assessment after the UST removal, and documented the soil conditions. Staining and odors were noted in the soils adjoining and immediately underlying the UST. Soils underlying the UST were excavated to a depth of approximately eight feet bgs as part of site remedial activities. HWA collected two soil samples along the UST end and side and below the UST for characterization purposes (Figure 5).

Table 2 presents the analytical results for the UST Site Assessment. Gasoline-range petroleum hydrocarbons and benzene exceeding MTCA Method A cleanup levels (Ecology, 2007) were detected in the soil sample immediately underlying the UST (L-TANK-BOT-8). The end and sidewall samples (L-TANK-E and L-TANK-S) contained diesel-range petroleum hydrocarbons at concentration below the MTCA Method A cleanup level of 2,000 mg/kg. Lead was detected in all three samples, but at concentrations below the MTCA Method A cleanup level of 250 mg/kg.

Additional soil excavation was completed in the vicinity of the UST as part of the remedial excavation.

4.3 CONFIRMATION SAMPLING

2010 interim action – Twelve excavation sidewall and seven excavation bottom samples were collected to confirm the 2010 soil cleanup (Table 2). Figure 4 depicts 2010 confirmation sample locations. Laboratory certificates are included in Appendix B. Twenty-five 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 COPCs at concentrations exceeding site cleanup levels.

Five 2010 confirmation samples included contaminated soil left in place under the (then) active SR 522 roadway, to protect the structural integrity of the road and associated sidewalk and underground utilities. This area and the soil represented by those samples was subsequently cleaned up in the 2013 and 2014 effort.

Soil samples collected in test pits TP-17 through TP-21 in 2010, excavated near a utility trench to investigate potential impacts from the adjacent Bothell Former Hertz Facility, did not contain COPCs at concentrations exceeding site cleanup levels (Table 2).

Contaminated soil was left in place in 2010 at location L-PEX-8 (Figure 4) to protect the structural integrity of the 48-inch concrete Horse Creek culvert. This culvert is slated for removal or decommissioning at a later time. At vactor truck exploration L-PEX-14 (Figure 4) on the west side of the Horse Creek culvert, HWA personnel used a clean stainless steel hand auger to sample the culvert backfill below the bottom of the vactor truck exploration. This sample, L-PEX-14-9, had COPC concentrations below MTCA Method A cleanup levels indicating that the culvert backfill is not contaminated or a preferred pathway for contaminated ground water, and the volume of impacted soil in this location is small.

2013/14 interim action – In the course of the 2013 and 2014 cleanups 34 excavation sidewall and 28 five excavation bottom samples were collected from the cleanup areas to confirm soil cleanup (Table 2). Ten soil samples confirmed cleanup along the water line, and 17 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 COPCs at concentrations exceeding site cleanup levels. (Table 2). Figure 4 depicts confirmation sample locations. Laboratory certificates are included in Appendix B. Other than the soil left at the property boundary at the east edge of the former SR 522 roadway at the limit of the City right-of-way (not accessible because City did not have property owner's permission to extend excavation onto private property) (sample location L-PEX-85), the 2013 and 2014 cleanups achieved the site cleanup levels.

4.4 GROUND WATER MANAGEMENT

Minor ground water seepage was present at approximately 8 to 10 feet below original grade at the Site (Photo 8 in Appendix D). Ground water flow into the excavations was managed by creating sumps and ponding the water behind soil berms. Accumulated water was removed with either a gasoline powered 'trash' pump or an electric submersible dewatering 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

2010 interim action – To facilitate bioremediation following soil removal in 2010, Hos Brothers applied 1,834 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. Hos Brothers applied ORC on the sidewall along SR 522 at the elevation of ground water.

2013/14 interim action – For the 2013 and 2014 cleanup Atkinson applied 1,500 pounds of ORC along the upgradient excavation sidewalls to address contamination left in place and other trace petroleum concentrations.

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.

4.6 WELL DECOMMISSIONING

Monitoring wells MW-3 and MW-4 were decommissioned in 2010 because of their location within the cleanup excavation (Photo 9 in Appendix D). Decommissioning was performed by excavation and removal under HWA's supervision, as the depth of the excavation was greater than the well depths. Prior to remedial activities, Slead Construction Inc, a Washington State licensed well drilling contractor under subcontract to the Contractor, decommissioned ground water monitoring well BC-8 in accordance with WAC 173-160-381. Although not within the cleanup excavation footprint, well BC-8 was decommissioned because it will be covered by the new roadway.

4.7 SITE RESTORATION

In 2010 after excavation of contaminated soil and receipt of confirmation sample analytical results, Hos Brothers backfilled and compacted the excavation with a combination of clean imported structural fill soils meeting the requirements of Select Borrow, per WSDOT Standard Specification 2-03.3(14)K, and 784 cubic yards of previously excavated soils from the Site that were tested and found to meet Site cleanup levels. Select borrow only was placed under the future roadway; a combination of select borrow and clean native soils was placed outside the roadway footprint. 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. The remediation area was then hydro-seeded for erosion control.

Backfill in 2013 and 2014 was performed to similar specifications, with cleanup areas generally paved or otherwise developed in areas under the new roadway.

5.0 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.

ECOSS (Environmental Coalition of South Seattle), 2008, *City of Bothell Revenue Development Area, Report on Tax Parcel History Through 1972*. Prepared for The King County Brownfields Program, King County Solid Waste Division, and King County Department of Natural Resources and Parks, January 2008.

HWA GeoSciences, 2007, *Phase II Environmental Site Assessment Beta Bothell Landing Property, Bothell, Washington*. Prepared for City of Bothell, November 1, 2007.

HWA GeoSciences, 2008, *Phase II Environmental Site Assessment, Hertz Rentals Property, Bothell Washington.* Prepared for City of Bothell. October 10, 2008.

HWA GeoSciences, 2009a, *Remedial Investigation and Feasibility Study Work Plan, Bothell Landing Property, Bothell, Washington*. Prepared for City of Bothell, August 26, 2009.

HWA GeoSciences, 2009b*, Aquifer Testing and Permeability Estimates, Bothell Crossroads RI/FS, Bothell, Washington*. Prepared for City of Bothell, October 6, 2009.

HWA GeoSciences, 2011a, *Documentation of Interim Action at Bothell Landing Site, Bothell, Washington.* Prepared for City of Bothell, February 2, 2011.

HWA, 2011b, *Remedial Investigation Feasibility Study Final Work Plan, Bothell Landing Site Bothell, Washington,* September 19, 2011.

HWA GeoSciences, 2012, *City of Bothell Storm Drainage Improvements UST Site Assessment Report, Bothell, Washington.* Prepared for City of Bothell, August 2, 2012.

HWA, 2014, *Letter Report: Bothell Landing Interim Action Status Report, January – March 2014, Bothell, WA* dated April 7, 2014.

Kleinfelder, 1999, *Phase II Soil and Ground water Exploration, Bothell Landing Shopping Plaza, Bothell, Washington*. Prepared for Buck & Gordon, LLP, Seattle, WA, September 8, 1999.

Parametrix, 2009a, *Bothell Landing Remedial Investigation/Feasibility Study, Revision No. 0*. Prepared for City of Bothell, November 2009.

Parametrix, 2009b, *Bothell Landing Draft Cleanup Action Plan, Revision No. 1,* Prepared for City of Bothell, December 2009.

Parametrix, 2010, *Interim Action Work Plan, Bothell Landing Site, Revision No.2,* Prepared for City of Bothell, April 2010.

Riley Group, *Draft Phase I Environmental Site Assessment, Bothell Landing Property #1,* May 29, 2007.

Washington Department of Ecology, 1994, *Natural Background Soil Metals Concentrations in Washington State*. Ecology Publication 94-115, October 1994.

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.

AS for:

State of Washington
Hydrogeologist
170
Licensed Geologist
Arnon Sugar

9-2-14

Norm Nielsen, LG, LHG
Senior Hydrogeologist

Arnie Sugar, LG, LHG
President

Table 1
Summary of Method B Soil TPH Risk Calculations
Bothell Landing Site

Release area	Former east USTs	Former west USTs		
TPH Type	Gasoline and diesel	Gasoline and diesel		
Sample	L-TP-13-8	L-TP-14-3	L-TP-15-7	L-TP-16-8
Calculated Method B TPH cleanup level for direct skin contact (mg/Kg)	3,740	3,130	5,225	3,908
Most stringent soil risk criterion for direct skin contact	Hazard Index	Hazard Index	Hazard Index	Hazard Index
Method B soil TPH concentration protective of ground water (mg/Kg)	246	145	84	149
Most stringent soil risk criterion for protection of ground water	Hazard Index	Hazard Index	Benzene MCL Risk 1E-6	Hazard Index
Method A soil cleanup levels (mg/Kg)	30[1] (G) 2000 (D) 2000 (O) 0.03 (Benzene) 7 (Toluene) 6 (Ethylbenzene) 9 (Xylenes) 5 (Naphthalenes)[2] 0.10 (cPAHs TEC)[3]			

Notes:
1 - Cleanup level for gasoline mixtures with benzene
2 - Sum of Napthalene + 1-Methylnaphthalene + 2-Methylnaphthalene
3 - Toxic Equivalent Concentration of carcinogenic polynuclear aromatic hydrocarbons (cPAHs) per WAC 173-340-708(e)

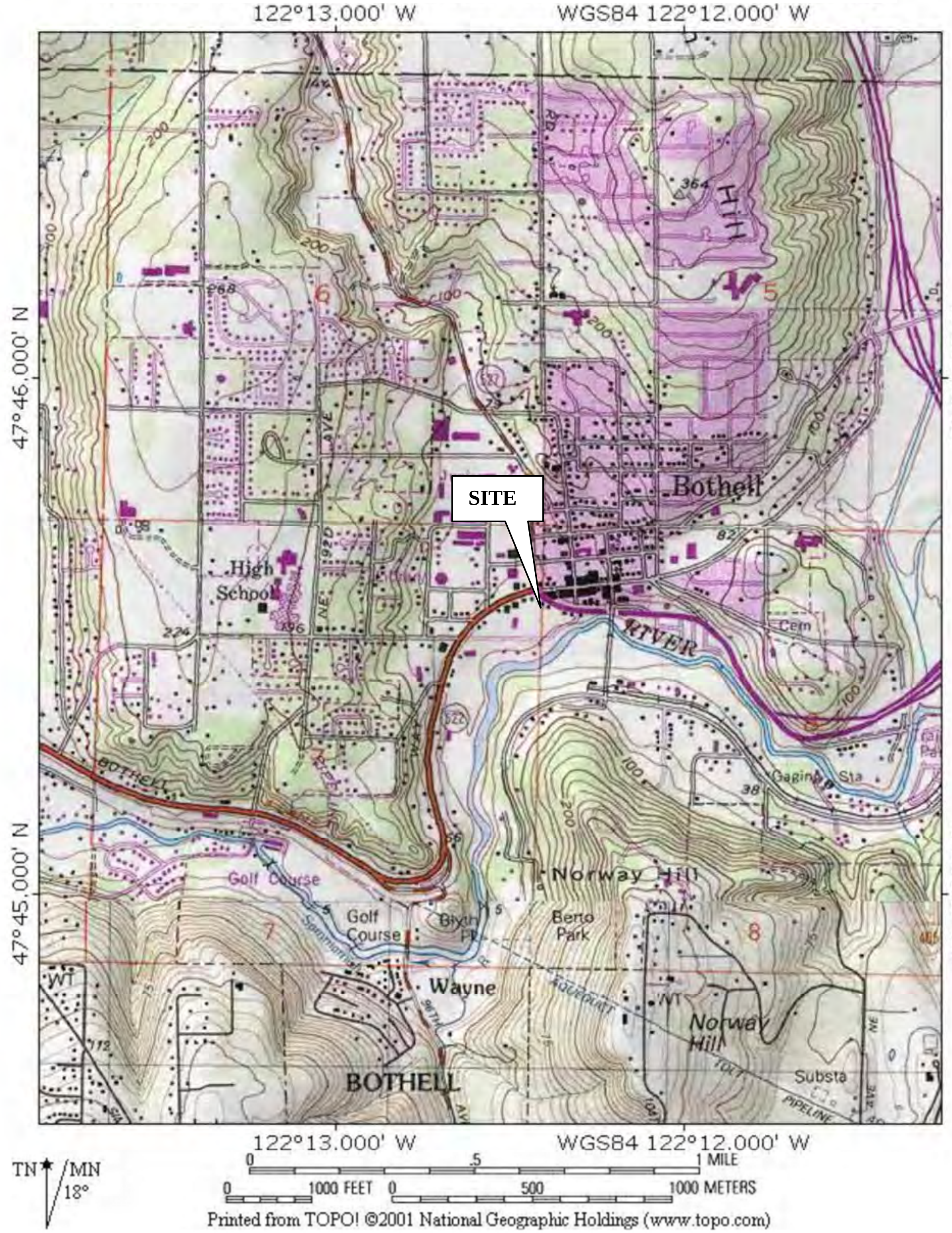
TABLE 2
SOIL CLEANUP ANALYTICAL RESULTS
BOTHELL LANDING SITE
(all results in milligrams per kilogram (mg/kg))

Sample Location	Sample Depth ft bgs	Confirmation Sample[1] Sidewall	Confirmation Sample[1] Bottom	Diesel	Oil	Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes	Total Naphthalenes[2]	cPAHs TEC[3]	PCBs	HVOCs	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	NOTES
											2010 Cleanup												
L-TP-1-2	2			340	420	300	<0.023	<0.12	<0.12	0.20	0.076	0.000											
L-TP-1-8	8			6300	<530	1200	0.34	<.29	1.3	1.5	70.91	0.000											
L-TP-2-3	3	X		<27	<53	<5.5	<0.020	<0.055	<0.055	<0.055													
L-TP-2-8	8		X	<31	<61	<6.7	<0.020	<0.067	<0.067	<0.067													
L-TP-3-4	4	X		<28	<55	<6.1	<0.020	<0.061	<0.061	<0.061													
L-TP-3-7	7		X	<31	<62	<6.5	<0.020	<0.065	<0.065	<0.065													
L-TP-4-4	4	X		<27	<55	<5.7	<0.020	<0.057	<0.057	<0.057	<0.022	0.000											
L-TP-4-7	7		X	<28	<56	<5.5	<0.020	<0.055	<0.055	<0.055	<0.023	0.000											
L-TP-5-2	2	X		<28	<56	8.1	<0.020	<0.065	<0.065	<0.065	<0.022	0.000											
L-TP-5-6	6		X	200	<61	<6.0	<0.020	<0.060	<0.30	0.23	0.118	0.000											
L-TP-6-3	3			<76	550	67	<0.025	<0.13	<0.13	<0.13	0.279	0.001											
L-TP-6-7	7			<34	<57	42	<0.025	<0.12	<0.12	<0.12	0.219	0.000											
L-TP-7-2	2			<43	160	120	0.29	<0.11	0.68	0.29	1.63	0.001											
L-TP-7-7	7			<1000	4200	11	0.088	<0.055	<0.055	<0.055	7.58	0.018											
L-TP-8-2	2			32	130	<5.4	<0.020	<0.054	<0.054	<0.054	<0.022	0.000											
L-TP-8-7	7			<850	<59	7800	5.8	3.6	35	40	2.17	0.000											
L-TP-9-4	4	X		<27	<54	<5.3	<0.020	<0.053	<0.053	<0.053													
L-TP-9-8	8		X	<30	<59	<7.2	<0.020	<0.072	<0.072	<0.072													
L-TP-10-4	4	X		77	470	8.6	<0.020	<0.061	<0.061	<0.061													
L-TP-10-8	8		X	<29	<57	<5.4	<0.020	<0.054	<0.054	<0.054													
L-TP-11-4	4	X		<47	350	<6.0	<0.020	<0.060	<0.060	<0.060													
L-TP-11-8	8		X	<30	<60	<6.8	<0.020	<0.068	<0.068	<0.068													
L-TP-12-4	4	X		<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054													
L-TP-12-8	8		X	<35	280	<8.4	<0.020	<0.084	<0.084	<0.084													
L-TP-13-8	8		X	<30	<60						<0.024	0.000											
L-TP-14-3	3			<28	<55						0.202	0.000											
L-TP-15-7	7			<540	2500						12.29	0.019											
L-TP-16-8	8		X	<37	100						0.46	0.000											
L-TP-17-1	1			<29	110																		Contractor was concerned about possible contam from Hertz site
L-TP-17-3	3	X		<27	<55																		Contractor was concerned about possible contam from Hertz site
L-TP-17-6	6		X	<77	160																		Contractor was concerned about possible contam from Hertz site
L-TP-18-1	1			<31	140																		Contractor was concerned about possible contam from Hertz site
L-TP-18-3	3	X		<31	<61																		Contractor was concerned about possible contam from Hertz site
L-TP-19-1	1			<33	160																		Contractor was concerned about possible contam from Hertz site
L-TP-19-3	3	X		<29	<58																		Contractor was concerned about possible contam from Hertz site
L-TP-20-2	2	X		<86	370																		Contractor was concerned about possible contam from Hertz site
L-TP-21-2	2	X		<30	<61																		Contractor was concerned about possible contam from Hertz site
L-TP-21-5	5		X	<73	180																		
L-PEX-1-6	6		X	<28	<57	13	<0.020	<0.067	<0.067	<0.067	0.491	0.020	All <0.057	All <0.0059	<11	50	<0.57	29	6.4	<0.28	<11	<0.57	Northeast sidewall
L-PEX-2-10	10		X	<38	120	<10	<0.020	<0.10	<0.10	<0.10	<0.03	0.000			<15	61	<0.76	28	10	<0.38	<15	<0.76	
L-PEX-3-6	6	X		<31	<63	<7.1	<0.020	<0.071	<0.071	<0.071	<0.025	0.000			<13	37	<0.63	19	<6.3	<0.31	<13	<0.63	
L-PEX-4-6	6	X		<30	<59	<7.3	<0.020	<0.073	<0.073	<0.073	<0.024	0.000			<12	58	<0.59	40	<5.9	<0.29	<12	<0.59	
L-PEX-5-6	6	X		360	310	140	<0.020	<0.087	0.13	0.44	4.61	0.001			<14	86	<0.68	9.5	29	<0.34	<14	<0.68	
L-PEX-6-11	11		X	<40	<80	<11	<0.023	<0.11	<0.11	<0.11	<0.033	0.000	All <0.080	All <0.0076	<16	39	<0.80	24	<8.0	<0.40	<16	<0.80	
L-PEX-7-11	11		X	<33	<66	<8.5	<0.020	<0.085	<0.085	<0.085	<0.026	0.000			<13	100	<0.66	34	<6.6	<0.33	<13	<0.66	
L-PEX-8-10	10	X		<96	330	130	0.21	0.082	0.47	0.87	0.092	0.001			<12	36	<0.58	23	31	<0.29	<12	<0.58	
L-PEX-9-10	10	X		<29	<58	<5.7	<0.020	<0.057	<0.057	<0.057	0.108	0.000			<12	44	<0.58	29	<5.8	<.29	<12	<0.58	
L-PEX-10-8	8	X		<1800	2700	3100	23	2.6	43	165													
L-PEX-11-8	8	X		<31	80	32	<0.020	<0.079	0.083	0.15	0.059	0.002			<12	31	<0.61	15	9.6	<0.31	<12	<0.61	
L-PEX-12-6	6	X		<29	<57	<5.3	<0.020	<0.053	<0.053	<0.053	<0.023	0.000			<11	66	<0.57	14	<5.7	<0.29	<11	<0.57	
L-PEX-13-14	14		X	<34	<68	<8.3	<0.020	<0.083	<0.083	<0.083	<0.027	0.000	All <0.068	All <0.0063	<14	41	<0.68	29	<6.8	<0.34	<14	<0.68	
L-PEX-14-9	9	X		<28	<56	15	<0.020	<0.051	0.055	0.098	<0.022	0.000			<11	31	<0.56	20	7.6	<0.28	<11	<0.56	Sample of backfill on west side of Horse Creek culvert
L-PEX-15-9.5	9.5	X		<40	170	<5.2	<0.020	<0.052	<0.052	<0.052	<0.024	0.000			<12	22	<0.60	10	8.1	<0.30	<12	<0.60	West sidewall at limit of excavation near Horse Creek culvert
L-PEX-16-11	11		X	<31	<62	<7.0	<0.020	<0.070	<0.070	<0.070	<0.025	0.000			<12	30	<0.62	26	<6.2	<0.31	<12	<0.62	
L-PEX-17-9	9	X		<32	<64	<7.8	<0.020	<0.078	<0.078	<0.078	<0.025	0.000	All <0.064	All <0.0060	<13	67	<0.64	3.6	<6.4	<0.32	<13	<0.64	
L-PEX-18-14	14		X	<33	94	<8.6	<0.020	<0.086	<0.086	<0.086	0.062	0.000			<13	43	<0.67	19	<6.7	<0.33	<13	<0.067	
L-PEX-19-10	10	X		<28	<56	<5.2	<0.020	<0.052	<0.052	<0.052	<0.022	0.000			<11	43	<0.56	22	11	<0.28	<11	<0.56	
Stockpile																							
L-TP-4-4	4			<27	<55	<5.7	<0.020	<0.057	<0.057	<0.057	<0.022	0.000											
L-TP-11-4	4			<47	350	<6.0	<0.020	<0.060	<0.060	<0.060													
L-TP-12-4	4			<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054													
L-TP-14-3	3			<28	<55						0.202	0.000											
PH-3	7			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-3	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-8	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-8	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-9	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-9	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-11	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-12	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-12	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-14	2.5			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													

2013-2014 Cleanup																							
West Side 527 Excavation																							
August 2013 Test Pits																							
TP-L1-4	4			110	160	8.6	<0.020	<0.061	<0.061	<0.061				ND	<11	67	<0.56	50	45	<0.28	<11	<1..1	Characterization only, soils left in place
TP-L1-7	7			<29	130	<5.2	<0.020	<0.052	<0.052	<0.052				ND	<11	52	<0.57	41	26	<0.29	<11	<1..1	Characterization only, soils left in place
TP-L1-10	10			<37	<75	<9.8	<0.020	<0.098	<0.098	<0.098				ND	<15	60	<0.75	41	<7.5	<0.37	<15	<1..5	Characterization only, soils left in place
TP-L2-5	5			<59	290	<4.9	<0.020	<0.049	<0.049	<0.049				ND	<11	50	<0.57	36	20	<0.28	<11	<1..1	
TP-L2-8	8			73	180	60	<0.020	<0.075	0.12	0.16				ND	<13	61	<0.65	34	18	<0.33	<13	<1.3	
TP-L3-5	5			<37	160	<9.3	<0.020	<0.093	<0.093	<0.093				ND	<15	65	<0.73	35	<7.3	<0.36	<15	<1.5	Characterization only, soils left in place
TP-L3-10	10			<31	<62	<5.9	<0.020	<0.059	<0.059	<0.059				ND	<12	61	<0.62	19	<6.2	<0.31	<12	<1.2	Characterization only, soils left in place
TP-L4-5	5			<31	<62	<6	<0.020	<0.060	<0.060	<0.060				ND	<12	62	<0.62	32	<6.2	<0.31	<12	<1.2	
TP-L4-8	8			<41	<81	<11	0.079	<0.11	<0.11	<0.11				0.0017 Chlorobenzene	<16	130	<0.81	57	12	<0.41	<16	<1.6	
TP-L5-4	4	X		<28	<55	<6.2	<0.020	<0.062	<0.062	<0.062				ND	<11	35	<0.55	26	<5.5	<0.28	<11	<1.1	
TP-L5-8	8			<41	<81	<10	0.0025	<0.1	<0.1	<0.1				ND	<16	95	<0.81	43	15	<0.40	<16	<1.6	Characterization only, soils left in place
TP-L6-4	4	X		<29	76	<6.1	<0.020	<0.061	<0.061	<0.061				0.00099 PCE	<12	65	<0.58	41	12	<0.29	<12	<1.2	
TP-L6-9	9			<34	75	<8.2	<0.020	<0.082	<0.082	<0.082				ND	<14	71	<0.68	33	11	<0.34	<14	<1.4	Characterization only, soils left in place
TP-L7-4	4			<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054				ND	<11	55	<0.55	30	12	<0.28	<11	<1.1	
TP-L7-7	7			<54	180	290	0.056	<0.17	1.3	1.4				ND	<11	180	<1.1	25	37	<0.54	<22	<2.2	
TP-L7-8	8			<48	<92	17	<0.020	<0.13	<0.13	<0.13				ND	<18	30	<0.92	14	<9.2	<0.46	<18	<1.8	
October 2013 Soil Excavation																							
L-PEX-20-11	11		X			<7.9	<0.020	<0.079	<0.079	<0.079													
L-PEX-21-9	9	X				<10	<0.020	<0.10	<0.10	<0.10													
L-PEX-22-9	9			<81	150	210	<0.020	<0.076	<0.076	<0.076					<13	80	<0.66	42	19	<0.33	<13	<1.3	
L-PEX-23-11	11		X			<6	<0.020	<0.060	<0.060	<0.060													
L-PEX-24-9	9	X				<8	<0.020	<0.080	<0.080	<0.080													
L-PEX-25-8	8	X				<24	<0.048	<0.24	<0.24	<0.24													
L-PEX-26-9	9	X				<7.5	<0.020	<0.075	<0.075	<0.075													
L-PEX-27-12	12		X	<35	<70	<8.3	<0.020	<0.083	<0.083	<0.083					<14	99	<0.70	62	<7.0	<0.35	<14	<1.4	
L-PEX-28-9	9	X		<39	170	<10	<0.020	<0.10	<0.10	<0.10					<16	54	<0.78	39	<7.8	<0.39	<16	<1.6	
L-PEX-29-7	7	X				6.4	<0.020	<0.056	<0.056	<0.056													
L-PEX-30-11	11					42	<0.020	<0.1	<0.1	0.13													
L-PEX-31-9	9	X				<5.9	<0.020	<0.059	<0.059	<0.059													
L-PEX-32-9	9	X				<5.5	<0.020	<0.055	<0.055	<0.055													
L-PEX-33-8	8		X	<28	110	<5.2	<0.020	<0.052	<0.052	<0.052					<11	42	<0.57	46	17	<0.28	<11	<1.1	
L-PEX-34-9	9	X				<16	<0.033	<0.16	<0.16	<0.16													
L-PEX-35-7	7	X				<6.1	<0.020	<0.061	<0.061	<0.061													
L-PEX-36-12	12		X			<6.9	<0.020	<0.069	<0.069	<0.069													
East Side 527 Excavation																							
January 2014 Test Pits																							
TP-L8-4	4			<540	82	1800	0.023	0.081	0.81	4.7									<5.9				
TP-L8-8	8		X	<30	<60	<6.6	<0.02	<0.066	<0.066	<0.066									<6				
TP-L9-4	4			<120	170	54	0.02	<0.072	<0.072	<0.072									<6.4				
TP-L9-8	8			<36	<72	360	0.15	0.13	0.3	<0.89									<7.2				
TP-L10-4	4			<1500	72	8100	1.7	2	6.2	28									<6.1				
TP-L10-9	9		X	<29	<58	<5.5	<0.02	<0.055	<0.055	<0.055									<5.7				
TP-L11-4	4			<1500	460	2000	<0.024	<0.12	0.73	2.7									<9.2				
TP-L11-9	9		X	<33	<65	<7.2	<0.02	<0.075	<0.075	<0.075									<6.5				
TP-L12-4	4			<160	110	1000	0.059	0.19	0.68	0.3									<6.9				
TP-L12-9	9		X	<32	<63	<7	<0.02	<0.007	<0.007	<0.007									<6.3				
TP-L13-4	4			<32	<65	<6.6	<0.02	<0.066	<0.066	<0.066									13				Characterization only, soils left in place
TP-L13-7	7			<33	<66	<8.1	<0.02	<0.081	<0.081	<0.081									<6.6				Characterization only, soils left in place
TP-L14-4	4	X		<31	<62	<6.1	<0.02	<0.061	<0.061	<0.061									<6.2				
TP-L14-8	8			<30	<61	<6.4	<0.02	<0.064	<0.064	<0.064									<6.1				
January 22, 2014 Test Pits, Triangle Park																							
Triangle-W5	5			<49	<58	270	<0.026	<0.13	1	0.93									<6.1				
Triangle-W8	8		X			<11	<0.021	<0.11	<0.11	<0.11									<5.6				
Triangle-E5	5			<110	<58	1200	0.6	0.3	6.5	4.7									<5.8				
Triangle-E8	8		X			<7.1	<0.02	<0.071	<0.071	<0.071									<6.2				
Triangle-N4	4			<1600	5200	410	<0.02	<0.097	0.7	1									120				
Triangle-N6	6			<29	<58	16	<0.02	<0.10	<0.10	<0.10									<5.7				
Triangle-N7	7		X			<4.8	<0.02	<0.048	<0.048	<0.048									<5.7				
February, 2014 Water Line Characterization Samples																							
Water Line-1-6	6			<30	<59	<6.3	<0.02	<0.063	<0.063	<0.063									<5.9				Characterization only, soils left in place
Water Line-2-4	4			<30	<60	<6.2	<0.02	<0.062	<0.062	<0.062									<6.0				Characterization only, soils left in place
Water Line-2-7 1/2	7.5			<32	<65	<7.4	<0.02	<0.074	<0.074	<0.074									<6.5				Characterization only, soils left in place
Water Line-3-4	4			45	260	<5.7	<0.02	<0.057	<0.057	<0.057									22				Characterization only, soils left in place
Water Line-3-6	6			<40	<81	<11	<0.02	<0.11	<0.11	<0.11									<8.0				Characterization only, soils left in place
Water Line-4-4	4			<39	<71	<8.7	<0.02	<0.087	<0.087	<0.087									<7.1				Characterization only, soils left in place
Water Line-4-6	6			<31	<63	<6.7	<0.02	<0.064	<0.064	<0.064									<6.3				Characterization only, soils left in place
Water Line-5-4	4			<44	250	<7.2	<0.02	<0.072	<0.072	<0.072									33				Characterization only, soils left in place
Water Line-5-6	6			<42	85	<11	<0.02	<0.11	<0.11	<0.11									12				Characterization only, soils left in place
January-April 2014 Soil Excavations																							
L-PEX-35E-11	11		X			<6.4	<0.02	<0.064	<0.064	<0.064	<0.024	<0.012							<6				
L-PEX-36E-6	6	X		<32	<64	<6.5	<0.02	<0.065	<0.065	<0.065	<0.026	<0.013											
L-PEX-37-6	6	X		<30	<61	<12	<0.024	<0.12	<0.12	<0.12	0.011	<0.012											
L-PEX-38-6	6			<36	76	150	<0.02	<0.084	0.3	0.54													
L-PEX-39-4	4			<890	81	1700	<0.029	<0.15	3	3.8													
L-PEX-40-4	4	X		<33	<67	<8.2	<0.02	<0.082	<0.082	<0.082									7.7				
L-PEX-41-8	8	X		<32	<64	<6.2	<0.02	<0.062	<0.062	<0.062									<6.4				
L-PEX-42-5	5			<180	<67	510	<0.02	<0.080	0.4	0.88									8.2				

L-PEX-43-7	7	X		<62	<31	<6.2	<0.02	<0.062	<0.062	<0.062		<0.012							<6.2				
L-PEX-44-8	8		X	<37	<73	<9.3	<0.02	<0.093	<0.093	<0.093									<7.3				
L-PEX-45-9	9		X	<40	<80	<10	<0.021	<0.10	<0.10	<0.10									<8.0				
L-PEX-46-10	10		X	<39	<78	<9.8	<0.02	<0.098	<0.098	<0.098		<0.015							<7.8				
L-PEX-47-7	7	X		<29	<58	**17**	<0.02	<0.049	<0.049	<0.049									<5.8				
L-PEX-48-7	7	X		<40	**100**	<11	<0.022	<0.11	<0.11	<0.11									<8.0				
L-PEX-49-10	10		X	<29	<58	<5.4	<0.02	<0.054	<0.054	<0.054									<5.8				
L-PEX-50-8	8	X		<34	<68	<7.3	<0.02	<0.073	<0.073	<0.073									<6.8				
L-PEX-51-10	10		X	<31	<62	<6.5	<0.02	<0.065	<0.065	<0.065									<6.1				
L-PEX-52-7	7	X		<31	**210**	<7.3	<0.02	<0.073	<0.073	<0.073									**24**				
L-PEX-53-6	6	X		<30	**220**	<6.4	<0.02	<0.064	<0.064	<0.064									**25**				
L-PEX-54-9	9		X	<36	**80**	<7.7	<0.02	<0.077	<0.077	<0.077		<0.014							**55**				
L-PEX-55-9	9		X	<32	<65	<6.2	<0.02	<0.062	<0.062	<0.062									<6.5				
L-PEX-56-9	9		X	<31	<63	<7.2	<0.02	<0.072	<0.072	<0.072									<6.3				
L-PEX-57-11	11		X	<32	<63	<6.6	<0.02	<0.066	<0.066	<0.066									<6.3				
L-PEX-58-8	8		X	<28	<56	<5.3	<0.02	<0.053	<0.053	<0.053									<5.6				
L-PEX-59-8	8		X	<31	<62	<9.9	<0.02	<0.099	<0.099	<0.099		<0.012							<6.2				
L-PEX-60-5	5			<360	**260**	**4400**	**0.61**	**1.1**	**2.8**	**19.5**									**120**				
L-PEX-61-5	5			<2900	**830**	**4000**	**0.38**	<0.08	**1.8**	**15.94**									**250**				
L-PEX-62-10	10		X	<31	<63	<3.9	<0.02	<0.039	<0.039	<0.039		<0.013							<6.3				
L-PEX-63-7	7	X		<27	<54	<2.1	<0.02	<0.021	<0.021	<0.021									<5.4				
L-PEX-64-7	7	X		<29	<57	<5.8	<0.02	<0.058	<0.058	<0.058									<5.7				
L-PEX-65-7	7			<31	<62	**440**	**0.32**	**0.16**	**2.4**	**2.177**									<6.2				
L-PEX-66-7	7	X		<29	<59	<5.9	<0.02	<0.059	<0.059	<0.059									<5.9				
L-PEX-67-9	9		X	<35	<71	<9.5	<0.02	<0.095	<0.095	<0.095									<7.1				
L-PEX-68-8	8		X	<31	<62	<6.4	<0.02	<0.064	<0.064	<0.064									<6.2				
L-PEX-69-6	6	X		<31	<63	<6.2	<0.02	<0.062	<0.062	<0.062									<6.3				
L-PEX-70-5	5			<32	<64	**110**	**0.048**	<0.071	**0.35**	**0.47**									<6.4				
L-PEX-71-6	6	X		<29	<58	<4.9	<0.02	<0.049	<0.049	<0.049									<5.8				
L-PEX-72-6	6	X		<30	<59	<4.8	<0.02	<0.048	<0.048	<0.048									<5.9				
L-PEX-73-6	6	X		<30	<59	<5.6	<0.02	<0.056	<0.056	<0.056		<0.012							<5.9				
L-PEX-74-5	5	X		<160	**800**	**9.8**	<0.02	<0.06	<0.06	<0.06									**67**				
L-PEX-75-7	7		X	<36	<71	<9	<0.02	<0.09	<0.09	<0.09									**29**				
L-PEX-76-7	7			<100	<200	**130**	<0.072	<0.36	<0.36	**1.2**		<0.041							<20				
L-PEX-77-7	7	X		<32	<63	<6.2	<0.02	<0.062	<0.062	<0.062									<6.3				
L-PEX-78-10	10		X	<31	<61	<6.7	<0.02	<0.067	<0.067	<0.067									<6.1				
L-PEX-79-6	6	X		<1110	**65**	**730**	**0.26**	**0.21**	**0.4**	**2.9**									<6.0				
L-PEX-80-8	8		X	<32	<65	<7.6	<0.02	<0.076	<0.076	<0.076		<0.013							<6.5				
L-PEX-81-6	6	X		<30	<60	<6.6	<0.02	<0.066	<0.066	<0.066									<6.0				
L-PEX-82-9	9		X	<36	<73	<9.1	<0.02	<0.091	<0.091	<0.091									<7.3				
L-PEX-83-6	6	X		<29	<58	<6.5	<0.02	<0.065	<0.065	<0.065									<5.8				
L-PEX-84-6	6	X		<31	<62	<6	<0.02	<0.06	<0.06	<0.06									<6.2				
L-PEX-85-5	5	X		<49	<59	**480**	**0.17**	**<0.12**	**0.53**	**2.3**									<5.9				Sidewall left in place at property boundary
L-PEX-86-5	5	X		<30	<60	<6.8	<0.02	<0.068	<0.068	<0.068									<6.0				
L-PEX-87-7	7		X	<32	<63	<7.6	<0.02	<0.076	<0.076	<0.076									<6.3				
April 30, 2014 UST Site Assessment Samples																							
L-TANK-BOT	8			<27	<54	**420**	**0.39**	**0.09**	**1.5**	**1.5**									**16**				
L-TANK-E	5			<29	**89**	<5.8	<0.2	<0.058	<0.058	<0.058									**57**				
L-TANK-S	5			<28	**290**	<5.7	<0.02	<0.057	<0.057	<0.057									**44**				
MTCA Method A Cleanup Level[4]				2000		100/30[5]	0.03	7	6	9	5	0.100	1	0.03[6]	20	NA	2	2000/19[7]	250	2	NA	NA	
MTCA Method B Cleanup Level[8]				3130		84	18	6,400	800	160,000			0.5		24	16,000	80	120,000	NA	24	400	400	
Background[9]				NA		NA	NA	NA	NA	NA	NA	NA	NA		7	255	1	48	24	0.07	0.78	0.61	

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 in sample left in place following excavation
- Sample in area that was subsequently excavated
Analytical data for stockpile samples PH-3 through PH-14 are from Kleinfelder (1999)
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
6 - The MTCA Method A soil cleanup level is 0.03 mg/kg for TCE, 0.05 mg/kg for PCE, and 2 mg/kg for TCA
7 - The MTCA
8 - Method B TPH
9 - Background metals concentrations per *Natural Background Soil Metals Concentrations in Washington State* (Ecology, 1994) for the Puget Sound area



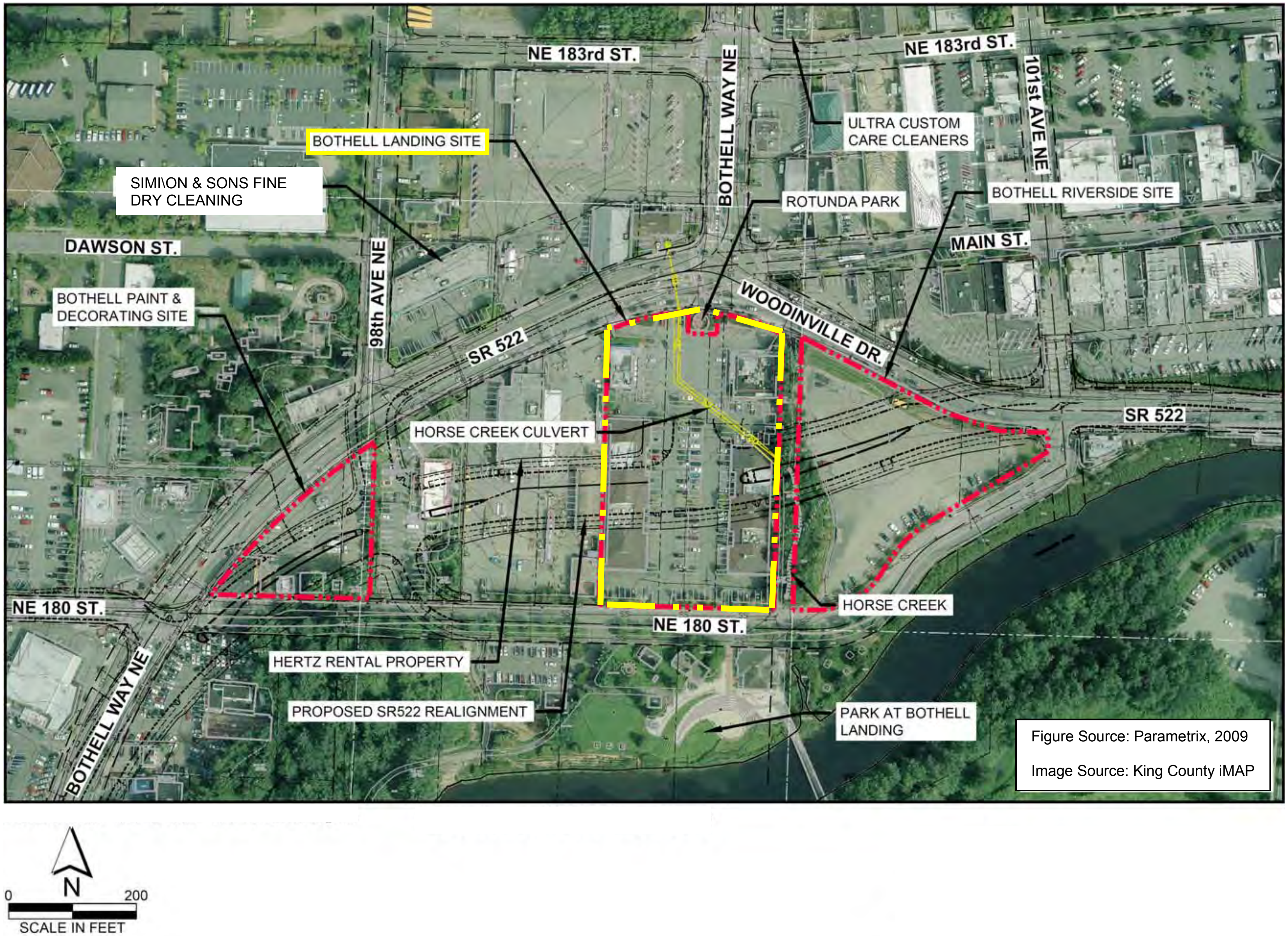
HWA GEOSCIENCES INC.

SITE VICINITY

BOTHELL LANDING SITE
INTERIM ACTION SOIL CLEANUP
BOTHELL, WASHINGTON

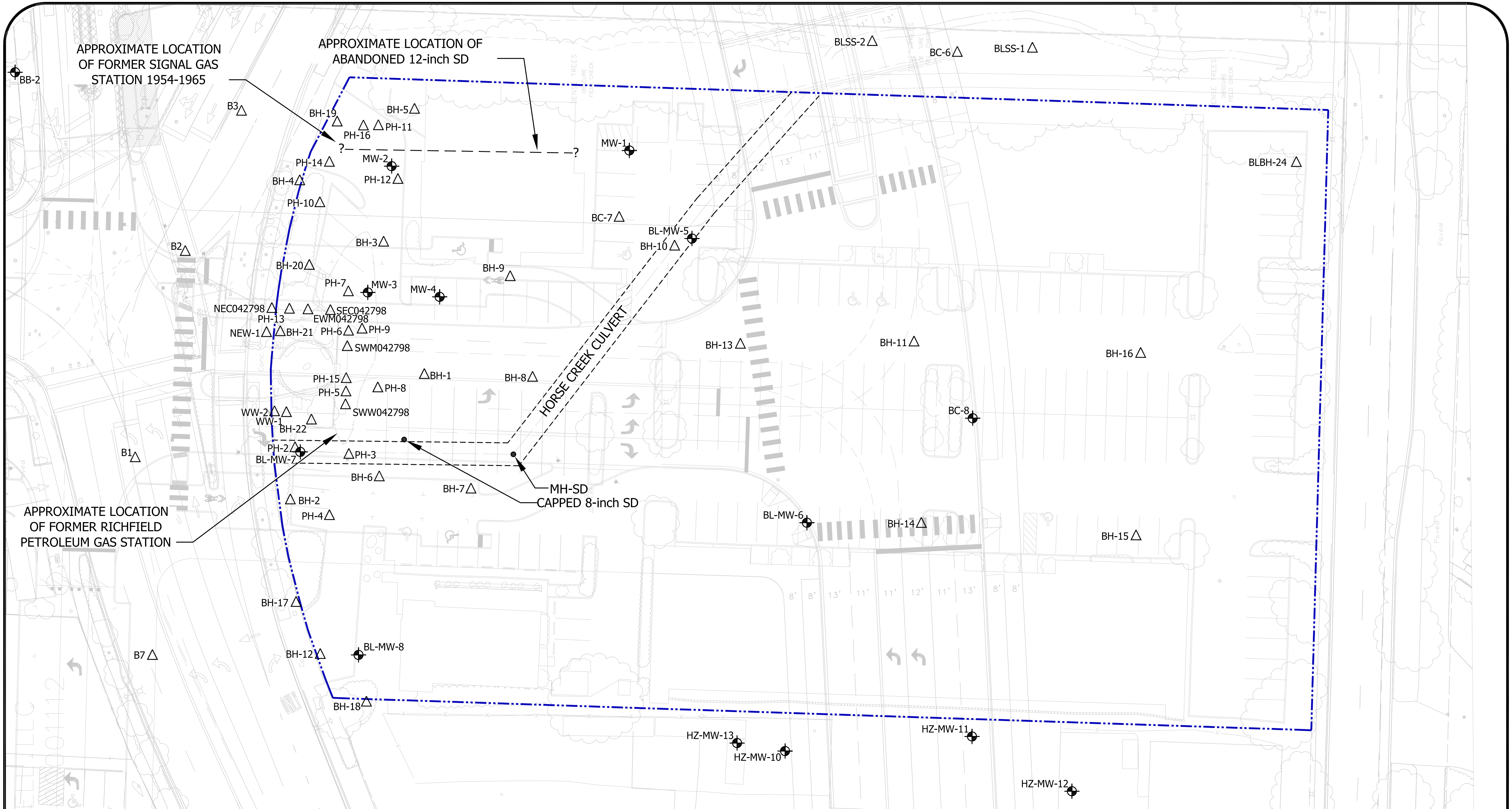
FIGURE NO.
1

PROJECT NO.
2007-098-920



HWA GEOSCIENCES INC.

SITE LOCATION & ADJACENT PROPERTIES	FIGURE NO. 2
BOTHELL LANDING SITE INTERIM ACTION SOIL CLEANUP BOTHELL, WASHINGTON	PROJECT NO. 2007-098-920



EXPLANATION OF SYMBOL

APPROXIMATE PROPERTY BOUNDARY

BH-1 SOIL BORING LOCATIONS

BL-MW-1 MONITORING WELL LOCATIONS

BASE MAP PROVIDED BY PARAMETRIX

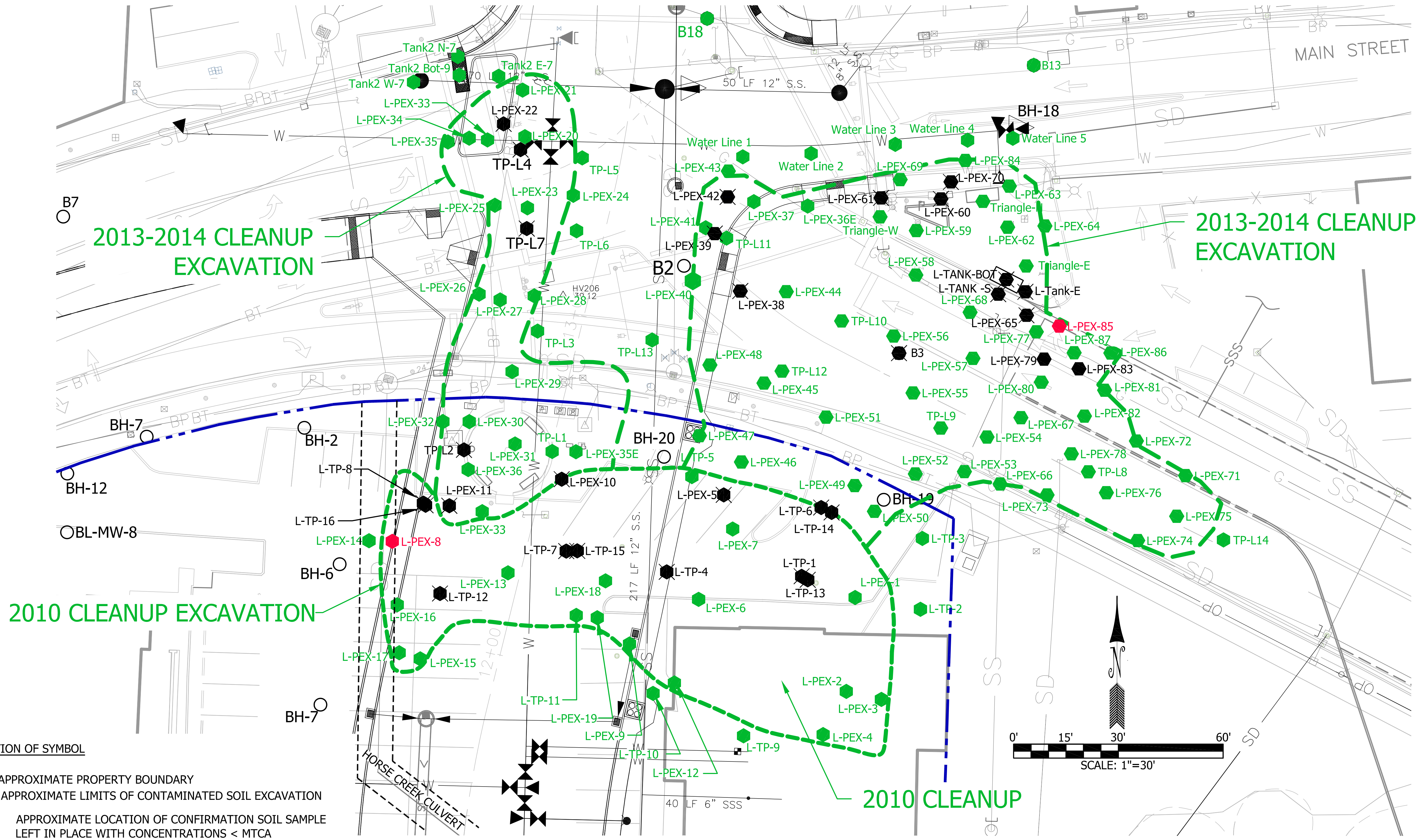
HWA GEOSCIENCES INC.

BOTHELL LANDING SITE
INTERIM ACTION CLEANUP
BOTHELL, WASHINGTON

SITE PLAN
PRIOR TO CLEANUP

DRAWN BY EFK	FIGURE NO. 3
CHECK BY NN	PROJECT NO.
DATE 01.18.11	2007-098 T920

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T920.DWG <PRE CLEAN UP FIG 3> Plotted: 1/25/2011 3:24 PM



EXPLANATION OF SYMBOL

APPROXIMATE PROPERTY BOUNDARY

APPROXIMATE LIMITS OF CONTAMINATED SOIL EXCAVATION

L-PEX-9 — APPROXIMATE LOCATION OF CONFIRMATION SOIL SAMPLE LEFT IN PLACE WITH CONCENTRATIONS < MTCA

L-TP-6 — APPROXIMATE LOCATION OF CONFIRMATION SOIL SAMPLE LEFT IN PLACE WITH CONCENTRATIONS ≥ MTCA

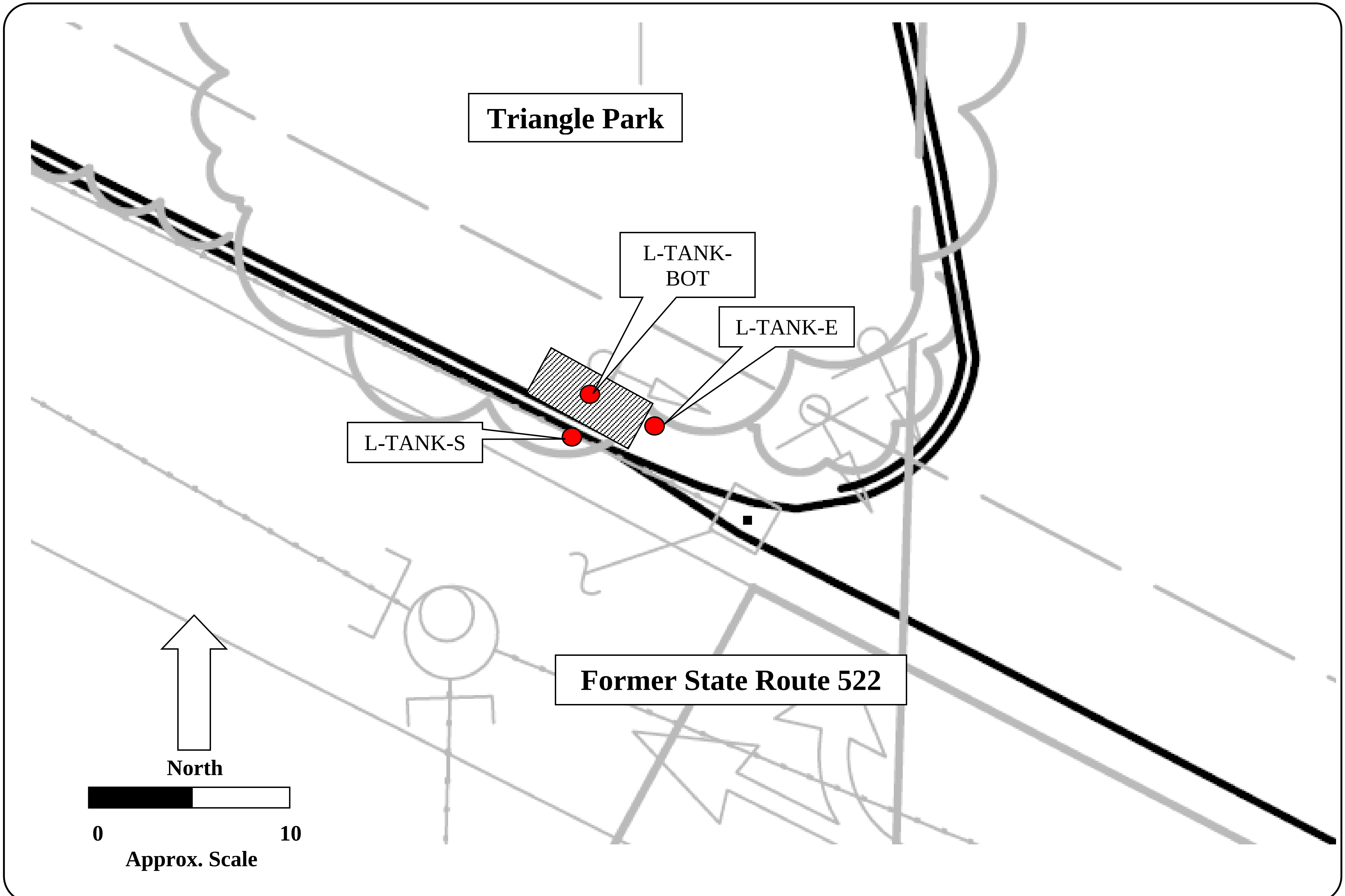
L-TP-9 — APPROXIMATE LOCATION OF SOIL SAMPLE IN AREA THAT WAS SUBSEQUENTLY EXCAVATED

L-TP-9 — PRE-INTERIM ACTION SOIL SAMPLE MEETING MTCA CLEANUP LEVELS

BASE MAP PROVIDED BY PARAMETRIX

HWA GEOSCIENCES INC.	BOTHELL LANDING SITE INTERIM ACTION CLEANUP BOTHELL, WASHINGTON	EXTENT OF INTERIM ACTION SOIL CLEANUP	DRAWN BY EFK CHECK BY AS DATE 08.19.14	FIGURE NO. 4 PROJECT NO. 2007-098 T994

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T994.DWG <BOTHELL LANDING ONLY FIG 4 (17)> Plotted: 8/21/2014 2:01 PM



HWA GEOSCIENCES INC.

UST DETAIL MAP

TRIANGLE PARK
UST SITE ASSESSMENT
BOTHELL, WASHINGTON

FIGURE NO. 5

PROJECT NO. 2007-098-994

APPENDIX A

DETERMINATION OF RISK-BASED CLEANUP LEVELS FOR THE SITE

HWA GEOSCIENCES INC.

November 4, 2010
HWA Project No. 2007 098-920

City of Bothell
9654 NE 182nd St.
Bothell, Washington 98021

Attention:Nduta Mbuthia, Project Engineer, Public Works Capital Projects

Subject: **CLEANUP LEVEL DETERMINATION**
Bothell Landing 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 Landing 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 Landing site in 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

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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 Landing 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 absence of buildings over affected areas. The ground water to surface water pathway was also not evaluated, as the site remedial investigation indicated TPH-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 Landing 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 Landing Site

Release area	Former east USTs	Former west USTs		
TPH Type	**Gasoline and diesel**	**Gasoline and diesel**		
Sample	**L-TP-13-8**	**L-TP-14-3**	**L-TP-15-7**	**L-TP-16-8**
Calculated Method B TPH cleanup level for direct skin contact (mg/Kg)	3,740	3,130	5,225	3,908
Most stringent soil risk criterion for direct skin contact	Hazard Index	Hazard Index	Hazard Index	Hazard Index
Method B soil TPH concentration protective of ground water (mg/Kg)	246	145	84	149
Most stringent soil risk criterion for protection of ground water	Hazard Index	Hazard Index	Benzene MCL Risk 1E-6	Hazard Index
Method A soil cleanup levels (mg/Kg)	30[1] (G) 2000 (D) 2000 (O) 0.03 (Benzene) 7 (Toluene) 6 (Ethylbenzene) 9 (Xylenes) 5 (Naphthalenes)[2] 0.10 (cPAHs TEC)[3]			
Maximum value detected on site after cleanup[4]	13 (G) <40 (D) 120 (O) <0.02 (Benzene) <0.11 (Toluene) <0.11 (Ethylbenzene) <0.11 (Xylenes) 0.49 (Naphthalenes) 0.02 (cPAHs TEC)			
Cleanup levels met?	Method A Yes Method B Yes TCs Yes[5]	Method A Yes Method B Yes TCs Yes	Method A Yes Method B Yes[6] TCs Yes	Method A Yes Method B Yes TCs Yes

Notes:
1 - Cleanup level for gasoline mixtures with benzene
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 - 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

5 - TCs: Cleanup levels for all target compounds (PAHs, EDB, EDC, MTBE, benzene, naphthalenes) were met as indicated by laboratory analysis for the individual compounds
6 - Method B TPH risk-based cleanup level of 84 mg/Kg no longer applicable because of benzene-contaminated soil having been removed

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 two 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 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).

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

Arnie Sugar, LG, LHG
President

State of Washington
Geologist
Hydrogeologist
327
Licensed Geologist
NORMAN C. NIELSEN
11/4/10

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: 10/13/10
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-15-7

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	6.9000	0.30%
AL_EC >6-8	48	2.06%
AL_EC >8-10	57	2.44%
AL_EC >10-12	77	3.30%
AL_EC >12-16	85	3.64%
AL_EC >16-21	120	5.14%
AL_EC >21-34	1300	55.71%
AR_EC >8-10	19.000	0.81%
AR_EC >10-12	39.0000	1.67%
AR_EC >12-16	59	2.53%
AR_EC >16-21	78.0000	3.34%
AR_EC >21-34	430.0000	18.43%
Benzene	0.82	0.04%
Toluene	0.00011	0.00%
Ethylbenzene	0.62	0.03%
Total Xylenes	0.64	0.03%
Naphthalene	0.29	0.01%
1-Methyl Naphthalene	3.4	0.15%
2-Methyl Naphthalene	8.6	0.37%
n-Hexane	0.0603	0.00%
MTBE	0.00017	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.029	0.00%
Benzo(b)fluoranthene	0.028	0.00%
Benzo(k)fluoranthene	0.011	0.00%
Benzo(a)pyrene	0.01	0.00%
Chrysene	0.1	0.00%
Dibenz(a,h)anthracene	0.000342	0.00%
Indeno(1,2,3-cd)pyrene	0.0091	0.00%
Sum	2333.518022	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 Landing 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: 10/13/2010
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-15-7
Measured Soil TPH Concentration, mg/kg: **2,333.518**

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	5,225	2.26E-07	4.47E-01	Pass
	Method C	70,606	5.09E-08	3.30E-02	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	84	7.72E-05	2.54E+00	Fail
	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	5,225.24	70,606.27
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	5.23E+03	5.06E-07	1.00E+00	YES	7.06E+04	1.54E-06	1.00E+00
Total Risk=1E-5	*NO*	1.03E+05	1.00E-05	1.98E+01	*NO*	4.58E+05	1.00E-05	6.49E+00
Risk of Benzene= 1E-6	*NO*	5.17E+04	5.00E-06	9.89E+00	NA			
Risk of cPAHs mixture= 1E-6	*NO*	1.29E+04	1.25E-06	2.47E+00				
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	Benzene MCL = 5 ug/L
Protective Ground Water Concentration, ug/L	65.42
Protective Soil Concentration, mg/kg	83.55

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	*NO*	1.31E+02	2.14E-05	1.00E+00	3.22E+02
Total Risk = 1E-5	*NO*	8.78E+01	1.00E-05	5.82E-01	1.37E+02
Total Risk = 1E-6	YES	1.49E+01	1.00E-06	8.20E-02	1.28E+01
Risk of cPAHs mixture= 1E-5	*NO*	2.76E+02	1.29E-04	3.86E+00	100% NAPL
Benzene MCL = 5 ug/L	YES	6.54E+01	6.29E-06	4.09E-01	8.35E+01
MTBE = 20 ug/L	*NO*	2.76E+02	1.29E-04	3.86E+00	100% NAPL

Note: 100% NAPL is 74000 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	2.76E+02	1.29E-04	3.86E+00	**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: 10/19/10
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-13-8

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	5	13.00%
AL_EC >6-8	5	13.00%
AL_EC >8-10	5	13.00%
AL_EC >10-12	2.3	5.98%
AL_EC >12-16	2.3	5.98%
AL_EC >16-21	2.3	5.98%
AL_EC >21-34	2.3	5.98%
AR_EC >8-10	5.000	13.00%
AR_EC >10-12	2.3000	5.98%
AR_EC >12-16	2.3	5.98%
AR_EC >16-21	2.3000	5.98%
AR_EC >21-34	2.3000	5.98%
Benzene	0.0000159	0.00%
Toluene	0.000011	0.00%
Ethylbenzene	0.0000096	0.00%
Total Xylenes	0.0000297	0.00%
Naphthalene	0.0000256	0.00%
1-Methyl Naphthalene	0.0000151	0.00%
2-Methyl Naphthalene	0.0000307	0.00%
n-Hexane	0.0603	0.16%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.0000338	0.00%
Benzo(b)fluoranthene	0.000039	0.00%
Benzo(k)fluoranthene	0.0000308	0.00%
Benzo(a)pyrene	0.0000261	0.00%
Chrysene	0.00003	0.00%
Dibenz(a,h)anthracene	0.0000342	0.00%
Indeno(1,2,3-cd)pyrene	0.0000373	0.00%
Sum	38.4606688	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 Landing 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: 10/19/2010
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-13-8
Measured Soil TPH Concentration, mg/kg: **38.461**

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	3,740	4.24E-10	1.03E-02	Pass
	Method C	57,049	1.05E-10	6.74E-04	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	246	3.52E-09	4.36E-01	Pass
	Target TPH GW Conc. @ 800 ug/L	317	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	**3,740.19**	**57,048.58**
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	3.74E+03	4.13E-08	1.00E+00	YES	5.70E+04	1.56E-07	1.00E+00
Total Risk=1E-5	*NO*	9.06E+05	1.00E-05	2.42E+02	*NO*	3.65E+06	1.00E-05	6.40E+01
Risk of Benzene= 1E-6	*NO*	4.39E+07	4.85E-04	1.17E+04	NA			
Risk of cPAHs mixture= 1E-6	*NO*	9.08E+04	1.00E-06	2.43E+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	**HI=1**
Protective Ground Water Concentration, ug/L	**751.03**
Protective Soil Concentration, mg/kg	**246.15**

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	7.51E+02	1.87E-08	1.00E+00	2.46E+02
Total Risk = 1E-5	*NO*	1.00E+03	7.72E-08	1.14E+00	100% NAPL
Total Risk = 1E-6	*NO*	1.00E+03	7.72E-08	1.14E+00	100% NAPL
Risk of cPAHs mixture= 1E-5	*NO*	1.00E+03	7.72E-08	1.14E+00	100% NAPL
Benzene MCL = 5 ug/L	*NO*	1.00E+03	7.72E-08	1.14E+00	100% NAPL
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	8.00E+02	2.27E-08	1.04E+00	**3.17E+02**

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/20/10
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-16-8

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	0.05	0.03%
AL_EC >6-8	13	6.78%
AL_EC >8-10	22	11.48%
AL_EC >10-12	30	15.66%
AL_EC >12-16	0.3525	0.18%
AL_EC >16-21	0.3582	0.19%
AL_EC >21-34	55	28.70%
AR_EC >8-10	27	14.09%
AR_EC >10-12	12	6.26%
AR_EC >12-16	5.2	2.71%
AR_EC >16-21	0.5115	0.27%
AR_EC >21-34	25	13.05%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0.62	0.32%
Naphthalene	0.14	0.07%
1-Methyl Naphthalene	0.14	0.07%
2-Methyl Naphthalene	0.18	0.09%
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	0.0000338	0.00%
Benzo(b)fluoranthene	0.000039	0.00%
Benzo(k)fluoranthene	0.0000308	0.00%
Benzo(a)pyrene	0.0000261	0.00%
Chrysene	0.00003	0.00%
Dibenz(a,h)anthracene	0.0000342	0.00%
Indeno(1,2,3-cd)pyrene	0.0000373	0.00%
Sum	191.6107312	100.00%

REMARK:
Bothell Landing 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: 10/20/2010
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-16-8
Measured Soil TPH Concentration, mg/kg: **191.611**

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	3,813	4.24E-10	5.03E-02	Pass
	Method C	63,625	1.05E-10	3.01E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	142	1.80E-12	1.12E+00	Fail
	Target TPH GW Conc. @ 800 ug/L	1,146	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	**3,812.88**	**63,625.40**
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	3.81E+03	8.43E-09	1.00E+00	YES	6.36E+04	3.49E-08	1.00E+00
Total Risk=1E-5	*NO*	4.52E+06	1.00E-05	1.19E+03	*NO*	1.82E+07	1.00E-05	2.86E+02
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	*NO*	4.52E+05	1.00E-06	1.19E+02				
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	**HI=1**
Protective Ground Water Concentration, ug/L	**490.51**
Protective Soil Concentration, mg/kg	**141.99**

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	4.91E+02	1.92E-12	1.00E+00	1.42E+02
Total Risk = 1E-5	*NO*	8.67E+02	1.42E-12	1.60E+00	100% NAPL
Total Risk = 1E-6	*NO*	8.67E+02	1.42E-12	1.60E+00	100% NAPL
Risk of cPAHs mixture= 1E-5	*NO*	8.67E+02	1.42E-12	1.60E+00	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 72000 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	8.00E+02	1.49E-12	1.51E+00	**1.15E+03**

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/20/10
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-14-3

Notes for Data Entry | Set Default Hydrogeology
Clear All Soil Concentration Data Entry Cells
Restore All Soil Concentration Data cleared previously

REMARK:
Bothell Landing site pot hole sample
MTCA Method A cleanup level = 800 mg/Kg because benzene was detected in ground water in onsite monitoring wells

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	5.0	8.30%
AL_EC >6-8	5.0	8.30%
AL_EC >8-10	5.0	8.30%
AL_EC >10-12	5.0	8.30%
AL_EC >12-16	5.0	8.30%
AL_EC >16-21	5.0	8.30%
AL_EC >21-34	5.0	8.30%
AR_EC >8-10	5.0	8.30%
AR_EC >10-12	5.0	8.30%
AR_EC >12-16	5.0	8.30%
AR_EC >16-21	5.0	8.30%
AR_EC >21-34	5.0	8.30%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0	0.00%
Naphthalene	0.022	0.04%
1-Methyl Naphthalene	0.05	0.08%
2-Methyl Naphthalene	0.13	0.22%
n-Hexane	0.0603	0.10%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.0000338	0.00%
Benzo(b)fluoranthene	0.000039	0.00%
Benzo(k)fluoranthene	0.0000308	0.00%
Benzo(a)pyrene	0.0000261	0.00%
Chrysene	0.00003	0.00%
Dibenz(a,h)anthracene	0.0000342	0.00%
Indeno(1,2,3-cd)pyrene	0.0000373	0.00%
Sum	60.2625312	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

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/20/2010
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-14-3
Measured Soil TPH Concentration, mg/kg: **60.263**

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	3,130	4.24E-10	1.93E-02	Pass
	Method C	46,166	1.05E-10	1.31E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectio	145	7.53E-12	6.66E-01	Pass
	Target TPH GW Conc. @ 800 ug/L	19,329	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	**3,130.29**	**46,165.84**
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	3.13E+03	2.20E-08	1.00E+00	YES	4.62E+04	8.06E-08	1.00E+00
Total Risk=1E-5	*NO*	1.42E+06	1.00E-05	4.55E+02	*NO*	5.73E+06	1.00E-05	1.24E+02
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	*NO*	1.42E+05	1.00E-06	4.55E+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	**HI=1**
Protective Ground Water Concentration, ug/L	**475.46**
Protective Soil Concentration, mg/kg	**144.90**

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	4.75E+02	5.63E-12	1.00E+00	1.45E+02
Total Risk = 1E-5	*NO*	8.02E+02	3.89E-12	1.34E+00	100% NAPL
Total Risk = 1E-6	*NO*	8.02E+02	3.89E-12	1.34E+00	100% NAPL
Risk of cPAHs mixture= 1E-5	*NO*	8.02E+02	3.89E-12	1.34E+00	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 72000 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	8.00E+02	3.90E-12	1.33E+00	**1.93E+04**

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/19/10
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-13-8

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	5.0	8.03%
AL_EC >6-8	5.0	8.03%
AL_EC >8-10	5.0	8.03%
AL_EC >10-12	5.0	8.03%
AL_EC >12-16	5.0	8.03%
AL_EC >16-21	5.0	8.03%
AL_EC >21-34	5.0	8.03%
AR_EC >8-10	5.0	8.03%
AR_EC >10-12	5.0	8.03%
AR_EC >12-16	5.0	8.03%
AR_EC >16-21	5.0	8.03%
AR_EC >21-34	5.0	8.03%
Benzene	0.02	0.03%
Toluene	0.5	0.80%
Ethylbenzene	0.5	0.80%
Total Xylenes	0.5	0.80%
Naphthalene	0.008	0.01%
1-Methyl Naphthalene	0.008	0.01%
2-Methyl Naphthalene	0.008	0.01%
n-Hexane	0.2	0.32%
MTBE	0.5	0.80%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.008	0.01%
Benzo(b)fluoranthene	0.008	0.01%
Benzo(k)fluoranthene	0.008	0.01%
Benzo(a)pyrene	0.008	0.01%
Chrysene	0.008	0.01%
Dibenz(a,h)anthracene	0.008	0.01%
Indeno(1,2,3-cd)pyrene	0.008	0.01%
Sum	62.3	100.00%

REMARK:
Bothell Landing 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: 10/19/2010
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-13-8
Measured Soil TPH Concentration, mg/kg: **62.300**

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	Method B	535	1.18E-07	1.91E-02	Pass
Contact: Human Health	Method C	21,424	2.91E-08	1.30E-03	Pass
Protection of Method B Ground	Potable GW: Human Health Protectior	11	4.33E-06	9.05E-01	Fail
Water Quality (Leaching)	Target TPH GW Conc. @ 800 ug/L	102	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	534.66	21,423.87
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	3.26E+03	6.15E-06	1.00E+00	NO	4.79E+04	2.24E-05	1.00E+00
Total Risk=1E-5	NO	5.30E+03	1.00E-05	1.63E+00	YES	2.14E+04	1.00E-05	4.47E-01
Risk of Benzene= 1E-6	NO	5.66E+04	1.07E-04	1.74E+01	NA			
Risk of cPAHs mixture= 1E-6	YES	5.35E+02	1.01E-06	1.64E-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	MTBE = 20 ug/L
Protective Ground Water Concentration, ug/L	117.04
Protective Soil Concentration, mg/kg	10.59

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	NO	6.29E+02	4.99E-06	1.00E+00	7.24E+01
Total Risk = 1E-5	NO	1.04E+03	1.00E-05	1.51E+00	1.55E+02
Total Risk = 1E-6	NO	1.53E+02	1.00E-06	2.62E-01	1.39E+01
Risk of cPAHs mixture= 1E-5	NO	2.85E+04	6.63E-05	3.55E+00	100% NAPL
Benzene MCL = 5 ug/L	NO	7.49E+02	6.29E-06	1.16E+00	9.27E+01
MTBE = 20 ug/L	YES	1.17E+02	7.61E-07	2.02E-01	1.06E+01

Note: 100% NAPL is 72000 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	8.00E+02	6.88E-06	1.23E+00	**1.02E+02**

APPENDIX B

LABORATORY CERTIFICATES OF ANALYSIS

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

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. 1009-030

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 3, 2020.

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, 2020
Laboratory Reference: 1009-030
Project: 2007-098

Case Narrative

Samples were collected on September 2, 2010 and received by the laboratory on September 3, 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/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.

The chromatogram for sample L-TP-1-2 is similar to mineral spirits with diesel fuel.

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 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-1-2**					
Laboratory ID:	09-030-01					
Benzene	**ND**	0.023	EPA 8021	9-3-10	9-3-10	
Toluene	**ND**	0.12	EPA 8021	9-3-10	9-3-10	
Ethyl Benzene	**ND**	0.12	EPA 8021	9-3-10	9-3-10	
m,p-Xylene	**0.20**	0.12	EPA 8021	9-3-10	9-3-10	
o-Xylene	**ND**	0.12	EPA 8021	9-3-10	9-3-10	
Gasoline	**300**	12	NWTPH-Gx	9-3-10	9-3-10	Z,O
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***96***	***55-127***				
Client ID:	**L-TP-1-8**					
Laboratory ID:	09-030-02					
Benzene	**0.34**	0.058	EPA 8021	9-3-10	9-3-10	
Toluene	**ND**	0.29	EPA 8021	9-3-10	9-3-10	
Ethyl Benzene	**1.3**	0.29	EPA 8021	9-3-10	9-3-10	
m,p-Xylene	**1.5**	0.29	EPA 8021	9-3-10	9-3-10	
o-Xylene	**ND**	1.5	EPA 8021	9-3-10	9-3-10	U1
Gasoline	**1200**	29	NWTPH-Gx	9-3-10	9-3-10	O
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***100***	***55-127***				
Client ID:	**L-TP-2-3**					
Laboratory ID:	09-030-03					
Benzene	**ND**	0.020	EPA 8021	9-3-10	9-3-10	
Toluene	**ND**	0.055	EPA 8021	9-3-10	9-3-10	
Ethyl Benzene	**ND**	0.055	EPA 8021	9-3-10	9-3-10	
m,p-Xylene	**ND**	0.055	EPA 8021	9-3-10	9-3-10	
o-Xylene	**ND**	0.055	EPA 8021	9-3-10	9-3-10	
Gasoline	**ND**	5.5	NWTPH-Gx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***95***	***55-127***				

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-2-8**					
Laboratory ID:	09-030-04					
Benzene	**ND**	0.020	EPA 8021	9-3-10	9-3-10	
Toluene	**ND**	0.067	EPA 8021	9-3-10	9-3-10	
Ethyl Benzene	**ND**	0.067	EPA 8021	9-3-10	9-3-10	
m,p-Xylene	**ND**	0.067	EPA 8021	9-3-10	9-3-10	
o-Xylene	**ND**	0.067	EPA 8021	9-3-10	9-3-10	
Gasoline	**ND**	6.7	NWTPH-Gx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***99***	***55-127***				
Client ID:	**L-TP-3-4**					
Laboratory ID:	09-030-05					
Benzene	**ND**	0.020	EPA 8021	9-3-10	9-3-10	
Toluene	**ND**	0.061	EPA 8021	9-3-10	9-3-10	
Ethyl Benzene	**ND**	0.061	EPA 8021	9-3-10	9-3-10	
m,p-Xylene	**ND**	0.061	EPA 8021	9-3-10	9-3-10	
o-Xylene	**ND**	0.061	EPA 8021	9-3-10	9-3-10	
Gasoline	**ND**	6.1	NWTPH-Gx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***100***	***55-127***				
Client ID:	**L-TP-3-7**					
Laboratory ID:	09-030-06					
Benzene	**ND**	0.020	EPA 8021	9-3-10	9-3-10	
Toluene	**ND**	0.065	EPA 8021	9-3-10	9-3-10	
Ethyl Benzene	**ND**	0.065	EPA 8021	9-3-10	9-3-10	
m,p-Xylene	**ND**	0.065	EPA 8021	9-3-10	9-3-10	
o-Xylene	**ND**	0.065	EPA 8021	9-3-10	9-3-10	
Gasoline	**ND**	6.5	NWTPH-Gx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***98***	***55-127***				

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
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:	MB0903S1					
Benzene	**ND**	0.020	EPA 8021	9-3-10	9-3-10	
Toluene	**ND**	0.050	EPA 8021	9-3-10	9-3-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-3-10	9-3-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-3-10	9-3-10	
o-Xylene	**ND**	0.050	EPA 8021	9-3-10	9-3-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***95***	***55-127***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-030-05										
	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						***100***	***98***	***55-127***			
SPIKE BLANKS											
Laboratory ID:	SB0903S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.01**	**1.05**	1.00	1.00		**101**	**105**	75-113	4	9	
Toluene	**0.963**	**0.995**	1.00	1.00		**96**	**100**	75-116	3	10	
Ethyl Benzene	**0.970**	**0.999**	1.00	1.00		**97**	**100**	82-117	3	10	
m,p-Xylene	**0.983**	**1.01**	1.00	1.00		**98**	**101**	81-122	3	10	
o-Xylene	**0.975**	**1.00**	1.00	1.00		**98**	**100**	83-118	3	10	
Surrogate:											
Fluorobenzene						***97***	***99***	***55-127***			

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
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:	**L-TP-1-2**					
Laboratory ID:	09-030-01					
Diesel Fuel #2	**340**	27	NWTPH-Dx	9-3-10	9-3-10	M
Lube Oil	**420**	53	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***93***	***50-150***				
Client ID:	**L-TP-1-8**					
Laboratory ID:	09-030-02					
Diesel Fuel #2	**6300**	140	NWTPH-Dx	9-3-10	9-5-10	
Lube Oil Range Organics	**ND**	530	NWTPH-Dx	9-3-10	9-5-10	U1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***94***	***50-150***				
Client ID:	**L-TP-2-3**					
Laboratory ID:	09-030-03					
Diesel Range Organics	**ND**	27	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	53	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***107***	***50-150***				
Client ID:	**L-TP-2-8**					
Laboratory ID:	09-030-04					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***100***	***50-150***				
Client ID:	**L-TP-3-4**					
Laboratory ID:	09-030-05					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***108***	***50-150***				
Client ID:	**L-TP-3-7**					
Laboratory ID:	09-030-06					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
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:	MB0903S2					
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	***116***	***50-150***				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-030-01							
	ORIG	DUP						
Diesel Fuel #2	**318**	**265**				18	NA	
Lube Oil	**399**	**375**				6	NA	
Surrogate:								
o-Terphenyl			***93***	***109***	***50-150***			

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
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:	**L-TP-1-2**					
Laboratory ID:	09-030-01					
Naphthalene	**0.0080**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
2-Methylnaphthalene	**0.028**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
1-Methylnaphthalene	**0.040**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Acenaphthylene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Acenaphthene	**0.015**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Fluorene	**0.024**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Phenanthrene	**0.025**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Anthracene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Fluoranthene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Pyrene	**0.0084**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[a]anthracene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Chrysene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[b]fluoranthene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[k]fluoranthene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[a]pyrene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Dibenz[a,h]anthracene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[g,h,i]perylene	**ND**	0.0071	EPA 8270/SIM	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***83***	***45 - 101***				
Pyrene-d10	***93***	***52 - 118***				
Terphenyl-d14	***95***	***41 - 106***				

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
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:	**L-TP-1-8**					
Laboratory ID:	09-030-02					
Naphthalene	**0.91**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
2-Methylnaphthalene	**43**	0.76	EPA 8270/SIM	9-3-10	9-7-10	
1-Methylnaphthalene	**27**	0.76	EPA 8270/SIM	9-3-10	9-7-10	
Acenaphthylene	**0.39**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Acenaphthene	**1.6**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Fluorene	**3.0**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Phenanthrene	**3.5**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Anthracene	**0.23**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Fluoranthene	**0.045**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Pyrene	**0.076**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Benzo[a]anthracene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Chrysene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Benzo[b]fluoranthene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Benzo[k]fluoranthene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Benzo[a]pyrene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Dibenz[a,h]anthracene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Benzo[g,h,i]perylene	**ND**	0.038	EPA 8270/SIM	9-3-10	9-6-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***81***	***45 - 101***				
Pyrene-d10	***89***	***52 - 118***				
Terphenyl-d14	***106***	***41 - 106***				

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
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:	MB0903S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-3-10	9-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***90***	***45 - 101***				
Pyrene-d10	***98***	***52 - 118***				
Terphenyl-d14	***101***	***41 - 106***				

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
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:	09-014-02										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0777**	**0.0818**	0.0833	0.0833	ND	93	98	31 - 115	5	19	
Acenaphthylene	**0.0774**	**0.0805**	0.0833	0.0833	ND	93	97	40 - 134	4	22	
Acenaphthene	**0.0789**	**0.0825**	0.0833	0.0833	ND	95	99	48 - 118	4	17	
Fluorene	**0.0841**	**0.0854**	0.0833	0.0833	ND	101	103	54 - 122	2	16	
Phenanthrene	**0.0848**	**0.0864**	0.0833	0.0833	0.0133	86	88	46 - 123	2	19	
Anthracene	**0.0802**	**0.0817**	0.0833	0.0833	0.00723	88	89	53 - 123	2	27	
Fluoranthene	**0.0894**	**0.0948**	0.0833	0.0833	0.0132	91	98	47 - 132	6	26	
Pyrene	**0.0942**	**0.103**	0.0833	0.0833	0.0118	99	109	41 - 137	9	25	
Benzo[a]anthracene	**0.0825**	**0.0837**	0.0833	0.0833	ND	99	100	43 - 132	1	26	
Chrysene	**0.0781**	**0.0806**	0.0833	0.0833	0.00702	85	88	46 - 126	3	24	
Benzo[b]fluoranthene	**0.0750**	**0.0753**	0.0833	0.0833	ND	90	90	44 - 134	0	24	
Benzo[k]fluoranthene	**0.0780**	**0.0784**	0.0833	0.0833	ND	94	94	45 - 132	1	20	
Benzo[a]pyrene	**0.0845**	**0.0859**	0.0833	0.0833	ND	101	103	36 - 136	2	23	
Indeno(1,2,3-c,d)pyrene	**0.0957**	**0.0971**	0.0833	0.0833	ND	115	117	40 - 136	1	16	
Dibenz[a,h]anthracene	**0.0952**	**0.0971**	0.0833	0.0833	ND	114	117	40 - 142	2	13	
Benzo[g,h,i]perylene	**0.0931**	**0.0957**	0.0833	0.0833	ND	112	115	37 - 137	3	18	
Surrogate:											
2-Fluorobiphenyl						***86***	***89***	***45 - 101***			
Pyrene-d10						***97***	***97***	***52 - 118***			
Terphenyl-d14						***103***	***104***	***41 - 106***			

Date of Report: September 7, 2010
Samples Submitted: September 3, 2020
Laboratory Reference: 1009-030
Project: 2007-098

% MOISTURE

Date Analyzed: 9-3-10

Client ID	Lab ID	% Moisture
L-TP-1-2	09-030-01	6
L-TP-1-8	09-030-02	13
L-TP-2-3	09-030-03	6
L-TP-2-8	09-030-04	18
L-TP-3-4	09-030-05	10
L-TP-3-7	09-030-06	19

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 with diesel fuel.

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: LWA

Project Number: 2007-048

Project Name: Bothell X-roads Landing

Project Manager: Vance Atkins

Sampled by: Pete Pearson

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [x] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [ ] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ________ (other)

Laboratory Number: 09-030

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	L-TP-1-2	9/2/10	13:20	S	3		X	X				X													X
2	L-TP-1-8		13:30				X	X				X													
3	L-TP-2-3		13:40				X	X																	
4	L-TP-2-8		13:50				X	X																	
5	L-TP-3-4		14:00				X	X																	
6	L-TP-3-7		14:10				X	X																	

	Signature	Company	Date	Time
Relinquished by				
Received by	Michael Wright	Speedy	9-3-10	0800
Relinquished by	Michael Wright	Speedy	9-3-10	0832
Received by	[illegible]	OSE	9/3/10	0832
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

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Environmental Inc.

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September 9, 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. 1009-038

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 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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.

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^oC and -20^oC 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.

PAHs EPA 8270D/SIM Analysis

Sample L-TP-6-7 had one surrogate recovery out of control limits. This is within allowance of our standard operating procedure as long as the recovery is above 10%.

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 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-4-4**					
Laboratory ID:	09-038-01					
Benzene	**ND**	0.020	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.057	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.057	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**ND**	0.057	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.057	EPA 8021	9-4-10	9-7-10	
Gasoline	**ND**	5.7	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*55-127*				
Client ID:	**L-TP-4-7**					
Laboratory ID:	09-038-02					
Benzene	**ND**	0.020	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.055	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.055	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**ND**	0.055	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.055	EPA 8021	9-4-10	9-7-10	
Gasoline	**ND**	5.5	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*55-127*				
Client ID:	**L-TP-5-2**					
Laboratory ID:	09-038-03					
Benzene	**ND**	0.020	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.065	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.065	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**ND**	0.065	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.065	EPA 8021	9-4-10	9-7-10	
Gasoline	**8.1**	6.5	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*55-127*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-5-6**					
Laboratory ID:	09-038-04					
Benzene	**ND**	0.020	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.060	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.30	EPA 8021	9-4-10	9-7-10	U1
m,p-Xylene	**0.23**	0.060	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.30	EPA 8021	9-4-10	9-7-10	U1
Gasoline	**ND**	6.0	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*55-127*				
Client ID:	**L-TP-6-3**					
Laboratory ID:	09-038-05					
Benzene	**ND**	0.025	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.13	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.13	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**ND**	0.13	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.13	EPA 8021	9-4-10	9-7-10	
Gasoline	**67**	13	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*55-127*				
Client ID:	**L-TP-6-7**					
Laboratory ID:	09-038-06					
Benzene	**ND**	0.025	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.12	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.12	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**ND**	0.12	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.12	EPA 8021	9-4-10	9-7-10	
Gasoline	**42**	12	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*55-127*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-7-2**					
Laboratory ID:	09-038-07					
Benzene	**0.29**	0.023	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.11	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**0.68**	0.11	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**0.29**	0.11	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.11	EPA 8021	9-4-10	9-7-10	
Gasoline	**120**	11	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*55-127*				
Client ID:	**L-TP-7-7**					
Laboratory ID:	09-038-08					
Benzene	**0.088**	0.020	EPA 8021	9-4-10	9-8-10	
Toluene	**ND**	0.055	EPA 8021	9-4-10	9-8-10	
Ethyl Benzene	**ND**	0.055	EPA 8021	9-4-10	9-8-10	
m,p-Xylene	**0.11**	0.055	EPA 8021	9-4-10	9-8-10	
o-Xylene	**ND**	0.055	EPA 8021	9-4-10	9-8-10	
Gasoline	**11**	5.5	NWTPH-Gx	9-4-10	9-8-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*55-127*				
Client ID:	**L-TP-8-2**					
Laboratory ID:	09-038-09					
Benzene	**ND**	0.020	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.054	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.054	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**ND**	0.054	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.054	EPA 8021	9-4-10	9-7-10	
Gasoline	**ND**	5.4	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*55-127*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-8-7**					
Laboratory ID:	09-038-10					
Benzene	**5.8**	0.11	EPA 8021	9-4-10	9-8-10	
Toluene	**3.6**	0.54	EPA 8021	9-4-10	9-8-10	
Ethyl Benzene	**35**	0.54	EPA 8021	9-4-10	9-8-10	
m,p-Xylene	**40**	0.54	EPA 8021	9-4-10	9-8-10	
o-Xylene	**ND**	27	EPA 8021	9-4-10	9-8-10	U1
Gasoline	**7800**	540	NWTPH-Gx	9-4-10	9-8-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*121*	*55-127*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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:	MB0904S3					
Benzene	**ND**	0.020	EPA 8021	9-4-10	9-7-10	
Toluene	**ND**	0.050	EPA 8021	9-4-10	9-7-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-4-10	9-7-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-4-10	9-7-10	
o-Xylene	**ND**	0.050	EPA 8021	9-4-10	9-7-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-4-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*55-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-038-03										
	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	**7.30**	**6.72**	NA	NA		NA		NA	8	30	
Surrogate:											
Fluorobenzene						*103*	*98*	*55-127*			
SPIKE BLANKS											
Laboratory ID:	SB0904S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.03**	**1.04**	1.00	1.00		**103**	**104**	75-113	1	9	
Toluene	**0.990**	**1.01**	1.00	1.00		**99**	**101**	75-116	2	10	
Ethyl Benzene	**1.00**	**1.03**	1.00	1.00		**100**	**103**	82-117	3	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						*97*	*98*	*55-127*			

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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:	**L-TP-4-4**					
Laboratory ID:	09-038-01					
Diesel Range Organics	**ND**	27	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*102*	*50-150*				
Client ID:	**L-TP-4-7**					
Laboratory ID:	09-038-02					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*102*	*50-150*				
Client ID:	**L-TP-5-2**					
Laboratory ID:	09-038-03					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*99*	*50-150*				
Client ID:	**L-TP-5-6**					
Laboratory ID:	09-038-04					
Diesel Range Organics	**200**	30	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				
Client ID:	**L-TP-6-3**					
Laboratory ID:	09-038-05					
Diesel Range Organics	**ND**	76	NWTPH-Dx	9-3-10	9-3-10	U1
Lube Oil	**550**	55	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				
Client ID:	**L-TP-6-7**					
Laboratory ID:	09-038-06					
Diesel Range Organics	**ND**	34	NWTPH-Dx	9-3-10	9-3-10	U1
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				

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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:	**L-TP-7-2**					
Laboratory ID:	09-038-07					
Diesel Range Organics	**ND**	43	NWTPH-Dx	9-3-10	9-3-10	U1
Lube Oil	**160**	55	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*97*	*50-150*				
Client ID:	**L-TP-7-7**					
Laboratory ID:	09-038-08					
Diesel Range Organics	**ND**	1000	NWTPH-Dx	9-3-10	9-5-10	U1
Lube Oil	**4200**	290	NWTPH-Dx	9-3-10	9-5-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				
Client ID:	**L-TP-8-2**					
Laboratory ID:	09-038-09					
Diesel Range Organics	**32**	27	NWTPH-Dx	9-3-10	9-3-10	
Lube Oil	**130**	54	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*109*	*50-150*				
Client ID:	**L-TP-8-7**					
Laboratory ID:	09-038-10					
Diesel Range Organics	**ND**	850	NWTPH-Dx	9-3-10	9-3-10	U1
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	9-3-10	9-3-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*103*	*50-150*				

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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:	09-038-05							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	U1
Lube Oil	**500**	**247**				68	NA	
Surrogate:								
o-Terphenyl			*104*	*98*	*50-150*			

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
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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:	**L-TP-4-4**					
Laboratory ID:	09-038-01					
Naphthalene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*83*	*45 - 101*				
Pyrene-d10	*90*	*52 - 118*				
Terphenyl-d14	*81*	*41 - 106*				

Date of Report: September 9, 2010
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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:	**L-TP-4-7**					
Laboratory ID:	09-038-02					
Naphthalene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0075	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*62*	*45 - 101*				
Pyrene-d10	*91*	*52 - 118*				
Terphenyl-d14	*93*	*41 - 106*				

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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:	**L-TP-5-2**					
Laboratory ID:	09-038-03					
Naphthalene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*70*	*45 - 101*				
Pyrene-d10	*87*	*52 - 118*				
Terphenyl-d14	*88*	*41 - 106*				

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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:	**L-TP-5-6**					
Laboratory ID:	09-038-04					
Naphthalene	**0.016**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**0.054**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**0.048**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**0.0096**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0081	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*76*	*45 - 101*				
Pyrene-d10	*83*	*52 - 118*				
Terphenyl-d14	*82*	*41 - 106*				

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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:	**L-TP-6-3**					
Laboratory ID:	09-038-05					
Naphthalene	**0.15**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**0.092**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**0.037**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**0.014**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**0.014**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0073	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*70*	*45 - 101*				
Pyrene-d10	*77*	*52 - 118*				
Terphenyl-d14	*52*	*41 - 106*				

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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:	**L-TP-6-7**					
Laboratory ID:	09-038-06					
Naphthalene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**0.12**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**0.099**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**0.013**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**0.018**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0076	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*61*	*45 - 101*				
Pyrene-d10	*71*	*52 - 118*				
Terphenyl-d14	*37*	*41 - 106*				Q

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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:	**L-TP-7-2**					
Laboratory ID:	09-038-07					
Naphthalene	**0.33**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**0.91**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**0.39**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**0.010**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**0.016**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**0.026**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**0.016**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**0.015**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0074	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*87*	*45 - 101*				
Pyrene-d10	*95*	*52 - 118*				
Terphenyl-d14	*88*	*41 - 106*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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:	**L-TP-7-7**					
Laboratory ID:	09-038-08					
Naphthalene	**0.28**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**5.2**	0.077	EPA 8270/SIM	9-7-10	9-8-10	
1-Methylnaphthalene	**2.1**	0.077	EPA 8270/SIM	9-7-10	9-8-10	
Acenaphthylene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**0.017**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**0.027**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**0.044**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**0.016**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**0.030**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**0.0078**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**0.030**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**0.017**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**0.011**	0.0077	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*86*	*45 - 101*				
Pyrene-d10	*94*	*52 - 118*				
Terphenyl-d14	*81*	*41 - 106*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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:	**L-TP-8-2**					
Laboratory ID:	09-038-09					
Naphthalene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
2-Methylnaphthalene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**0.012**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**0.013**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0072	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*93*	*52 - 118*				
Terphenyl-d14	*92*	*41 - 106*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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:	**L-TP-8-7**					
Laboratory ID:	09-038-10					
Naphthalene	**1.2**	0.039	EPA 8270/SIM	9-7-10	9-8-10	
2-Methylnaphthalene	**0.65**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
1-Methylnaphthalene	**0.32**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthylene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Acenaphthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Fluorene	**0.0096**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Phenanthrene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Anthracene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Pyrene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]anthracene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Chrysene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[b]fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[k]fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[a]pyrene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Dibenz[a,h]anthracene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Benzo[g,h,i]perylene	**ND**	0.0079	EPA 8270/SIM	9-7-10	9-7-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*85*	*52 - 118*				
Terphenyl-d14	*79*	*41 - 106*				

Date of Report: September 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
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 9, 2010
Samples Submitted: September 3, 2010
Laboratory Reference: 1009-038
Project: 2007-098

% MOISTURE

Date Analyzed: 9-3-10

Client ID	Lab ID	% Moisture
L-TP-4-4	09-038-01	9
L-TP-4-7	09-038-02	11
L-TP-5-2	09-038-03	10
L-TP-5-6	09-038-04	18
L-TP-6-3	09-038-05	9
L-TP-6-7	09-038-06	13
L-TP-7-2	09-038-07	10
L-TP-7-7	09-038-08	14
L-TP-8-2	09-038-09	8
L-TP-8-7	09-038-10	15

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

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
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Chain of Custody

Page 1 of 1

Company: HWA
Project Number: 2007-098
Project Name: Bothell Crossroads
Project Manager: Vance Atkins
Sampled by: Pete Pearson

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: 09-038

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	L-TP-4-4	9/3/10	9:00	S	3		X	X				X							X
2	L-TP-4-7		9:05				X	X				X							
3	L-TP-5-2		9:15				X	X				X							
4	L-TP-5-6		9:25				X	X				X							
5	L-TP-6-3		9:40				X	X				X							
6	L-TP-6-7		9:45				X	X				X							
7	L-TP-7-2		10:00				X	X				X							
8	L-TP-7-7		10:20				X	X				X							
9	L-TP-8-2		10:30				X	X				X							
10	L-TP-8-7		10:45				X	X				X							

	Signature	Company	Date	Time
Relinquished by	[signature]	HWA	9/3/10	11:50
Received by	[signature]	OSE	9/3/10	1150
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 21, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-920
Laboratory Reference No. 1009-168

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 17, 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 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

Case Narrative

Samples were collected on September 17, 2010 and received by the laboratory on September 17, 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 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-9-4**					
Laboratory ID:	09-168-01					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.053	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.053	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.053	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.053	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	5.3	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*55-127*				
Client ID:	**L-TP-9-8**					
Laboratory ID:	09-168-02					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.072	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.072	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.072	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.072	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	7.2	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*55-127*				
Client ID:	**L-TP-10-4**					
Laboratory ID:	09-168-03					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.061	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.061	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.061	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.061	EPA 8021	9-20-10	9-20-10	
Gasoline	**8.6**	6.1	NWTPH-Gx	9-20-10	9-20-10	O
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*55-127*				

Date of Report: September 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-10-8**					
Laboratory ID:	09-168-04					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	5.4	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*55-127*				
Client ID:	**L-TP-11-4**					
Laboratory ID:	09-168-05					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.060	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.060	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.060	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.060	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	6.0	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*55-127*				
Client ID:	**L-TP-11-8**					
Laboratory ID:	09-168-06					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.068	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.068	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.068	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.068	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	6.8	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*55-127*				

Date of Report: September 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TP-12-4**					
Laboratory ID:	09-168-07					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.054	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	5.4	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*55-127*				
Client ID:	**L-TP-12-8**					
Laboratory ID:	09-168-08					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.084	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.084	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.084	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.084	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	8.4	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*55-127*				
Client ID:	**L-Dup-091710**					
Laboratory ID:	09-168-09					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.055	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.055	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.055	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.055	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	5.5	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*55-127*				

Date of Report: September 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920S2					
Benzene	**ND**	0.020	EPA 8021	9-20-10	9-20-10	
Toluene	**ND**	0.050	EPA 8021	9-20-10	9-20-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-20-10	9-20-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-20-10	9-20-10	
o-Xylene	**ND**	0.050	EPA 8021	9-20-10	9-20-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-20-10	9-20-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*55-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-168-05										
	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						*100*	*102*	*55-127*			
SPIKE BLANKS											
Laboratory ID:	SB0920S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.936**	**0.958**	1.00	1.00		**94**	**96**	75-113	2	9	
Toluene	**0.973**	**0.993**	1.00	1.00		**97**	**99**	75-116	2	10	
Ethyl Benzene	**1.01**	**1.03**	1.00	1.00		**101**	**103**	82-117	2	10	
m,p-Xylene	**1.03**	**1.05**	1.00	1.00		**103**	**105**	81-122	2	10	
o-Xylene	**1.02**	**1.04**	1.00	1.00		**102**	**104**	83-118	2	10	
Surrogate:											
Fluorobenzene						*96*	*98*	*55-127*			

Date of Report: September 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

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:	**L-TP-9-4**					
Laboratory ID:	09-168-01					
Diesel Range Organics	**ND**	27	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil Range Organics	**ND**	54	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*103*	*50-150*				
Client ID:	**L-TP-9-8**					
Laboratory ID:	09-168-02					
Diesel Range Organics	**ND**	30	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*113*	*50-150*				
Client ID:	**L-TP-10-4**					
Laboratory ID:	09-168-03					
Diesel Range Organics	**77**	28	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil	**470**	55	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*117*	*50-150*				
Client ID:	**L-TP-10-8**					
Laboratory ID:	09-168-04					
Diesel Range Organics	**ND**	29	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*103*	*50-150*				
Client ID:	**L-TP-11-4**					
Laboratory ID:	09-168-05					
Diesel Range Organics	**ND**	47	NWTPH-Dx	9-18-10	9-19-10	U1
Lube Oil	**350**	56	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*95*	*50-150*				

Date of Report: September 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

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:	**L-TP-11-8**					
Laboratory ID:	09-168-06					
Diesel Range Organics	**ND**	30	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				
Client ID:	**L-TP-12-4**					
Laboratory ID:	09-168-07					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**L-TP-12-8**					
Laboratory ID:	09-168-08					
Diesel Range Organics	**ND**	35	NWTPH-Dx	9-18-10	9-19-10	U1
Lube Oil	**280**	66	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*95*	*50-150*				
Client ID:	**L-Dup-091710**					
Laboratory ID:	09-168-09					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				

Date of Report: September 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

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:	MB0918S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-18-10	9-19-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-18-10	9-19-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*99*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-168-02							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*113*	*108*	*50-150*			

Date of Report: September 21, 2010
Samples Submitted: September 17, 2010
Laboratory Reference: 1009-168
Project: 2007-098-920

% MOISTURE

Date Analyzed: 9-18-10

Client ID	Lab ID	% Moisture
L-TP-9-4	09-168-01	7
L-TP-9-8	09-168-02	16
L-TP-10-4	09-168-03	10
L-TP-10-8	09-168-04	13
L-TP-11-4	09-168-05	11
L-TP-11-8	09-168-06	17
L-TP-12-4	09-168-07	9
L-TP-12-8	09-168-08	24
L-DUP-091710	09-168-09	10

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

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: 2007-098-920
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: ei

Turnaround Request (in working days)
(Check One)
☐ Same Day ☒ 1 Day
☒ 2 Day ☐ 3 Day
☐ Standard (7 working days) (TPH analysis 5 working days)
☐ ________ (other)

Laboratory Number: 09-168

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	L-TP-9-4	9/17/10	1330	S	3		/	/											X
2	L-TP-9-8		1335		3		/	/											
3	L-TP-10-4		1400		3		/	/											
4	L-TP-10-8		1410		3		/	/											
5	L-TP-11-4		1420		~~3~~7		/	/											
6	L-TP-11-8		1430		3		/	/											
7	L-TP-12-4		1400		3		/	/											
8	L-TP-12-8		1455		3		/	/											
9	L-Dup-091710		1500		3		/	/											

	Signature	Company	Date	Time
Relinquished by	[signature]	Hwa	9/17/10	1550
Received by	[signature]	OSE	9/17/10	1550
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

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Environmental Inc.

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September 23, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-920
Laboratory Reference No. 1009-193

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 20, 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: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

Case Narrative

Samples were collected on September 20, 2010 and received by the laboratory on September 20, 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.

Volatile Petroleum Hydrocarbons 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 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	**L-TP-13-8**					
Laboratory ID:	09-193-01					
Diesel Range Organics	**ND**	30	NWTPH-Dx	9-21-10	9-21-10	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*99*	*50-150*				
Client ID:	**L-TP-14-3**					
Laboratory ID:	09-193-02					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-21-10	9-21-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*109*	*50-150*				
Client ID:	**L-TP-15-7**					
Laboratory ID:	09-193-03					
Diesel Range Organics	**ND**	540	NWTPH-Dx	9-21-10	9-22-10	U1
Lube Oil	**2500**	300	NWTPH-Dx	9-21-10	9-22-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*109*	*50-150*				
Client ID:	**L-TP-16-8**					
Laboratory ID:	09-193-04					
Diesel Range Organics	**ND**	37	NWTPH-Dx	9-21-10	9-21-10	
Lube Oil	**100**	74	NWTPH-Dx	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	MB0921S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-21-10	9-21-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*122*	*50-150*				

Analyte	**Result**		**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE								
Laboratory ID:	09-194-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**71.7**	**54.4**				27	NA	
Surrogate:								
o-Terphenyl			*113*	*99*	*50-150*			

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	**L-TP-13-8**					
Laboratory ID:	09-193-01					
Naphthalene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
2-Methylnaphthalene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
1-Methylnaphthalene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthylene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Fluorene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Phenanthrene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Anthracene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Pyrene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]anthracene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Chrysene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[b]fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[k]fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]pyrene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Dibenz[a,h]anthracene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[g,h,i]perylene	**ND**	0.0080	EPA 8270/SIM	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*70*	*45 - 101*				
Pyrene-d10	*76*	*52 - 118*				
Terphenyl-d14	*98*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	**L-TP-14-3**					
Laboratory ID:	09-193-02					
Naphthalene	**0.022**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
2-Methylnaphthalene	**0.13**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
1-Methylnaphthalene	**0.050**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthylene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthene	**0.0097**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Fluorene	**0.0083**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Phenanthrene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Anthracene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Pyrene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]anthracene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Chrysene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[b]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[k]fluoranthene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]pyrene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Dibenz[a,h]anthracene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[g,h,i]perylene	**ND**	0.0073	EPA 8270/SIM	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*69*	*45 - 101*				
Pyrene-d10	*79*	*52 - 118*				
Terphenyl-d14	*100*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	**L-TP-15-7**					
Laboratory ID:	09-193-03					
Naphthalene	**0.29**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
2-Methylnaphthalene	**8.6**	0.16	EPA 8270/SIM	9-21-10	9-22-10	
1-Methylnaphthalene	**3.4**	0.16	EPA 8270/SIM	9-21-10	9-22-10	
Acenaphthylene	**0.011**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthene	**0.029**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Fluorene	**0.050**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Phenanthrene	**0.10**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Anthracene	**0.014**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Fluoranthene	**0.034**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Pyrene	**0.071**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]anthracene	**0.029**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Chrysene	**0.10**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[b]fluoranthene	**0.028**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[k]fluoranthene	**0.011**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]pyrene	**0.010**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Indeno(1,2,3-c,d)pyrene	**0.0091**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Dibenz[a,h]anthracene	**ND**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[g,h,i]perylene	**0.027**	0.0079	EPA 8270/SIM	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*77*	*45 - 101*				
Pyrene-d10	*93*	*52 - 118*				
Terphenyl-d14	*89*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	**L-TP-16-8**					
Laboratory ID:	09-193-04					
Naphthalene	**0.14**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
2-Methylnaphthalene	**0.18**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
1-Methylnaphthalene	**0.14**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthylene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Fluorene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Phenanthrene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Anthracene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Fluoranthene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Pyrene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]anthracene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Chrysene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[b]fluoranthene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[k]fluoranthene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]pyrene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Dibenz[a,h]anthracene	**ND**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[g,h,i]perylene	**0.0098**	0.0098	EPA 8270/SIM	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*71*	*45 - 101*				
Pyrene-d10	*73*	*52 - 118*				
Terphenyl-d14	*89*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	MB0921S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-21-10	9-21-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*60*	*45 - 101*				
Pyrene-d10	*74*	*52 - 118*				
Terphenyl-d14	*87*	*41 - 106*				

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

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:	09-193-02										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0879**	**0.0772**	0.0833	0.0833	0.0203	81	68	31 - 115	13	19	
Acenaphthylene	**0.0624**	**0.0592**	0.0833	0.0833	ND	75	71	40 - 134	5	22	
Acenaphthene	**0.0811**	**0.0734**	0.0833	0.0833	0.00880	87	78	48 - 118	10	17	
Fluorene	**0.0860**	**0.0776**	0.0833	0.0833	0.00754	94	84	54 - 122	10	16	
Phenanthrene	**0.0774**	**0.0726**	0.0833	0.0833	ND	93	87	46 - 123	6	19	
Anthracene	**0.0659**	**0.0626**	0.0833	0.0833	ND	79	75	53 - 123	5	27	
Fluoranthene	**0.0725**	**0.0689**	0.0833	0.0833	ND	87	83	47 - 132	5	26	
Pyrene	**0.0738**	**0.0700**	0.0833	0.0833	ND	89	84	41 - 137	5	25	
Benzo[a]anthracene	**0.0789**	**0.0762**	0.0833	0.0833	ND	95	91	43 - 132	3	26	
Chrysene	**0.0793**	**0.0772**	0.0833	0.0833	ND	95	93	46 - 126	3	24	
Benzo[b]fluoranthene	**0.0833**	**0.0807**	0.0833	0.0833	ND	100	97	44 - 134	3	24	
Benzo[k]fluoranthene	**0.0815**	**0.0752**	0.0833	0.0833	ND	98	90	45 - 132	8	20	
Benzo[a]pyrene	**0.0813**	**0.0777**	0.0833	0.0833	ND	98	93	36 - 136	5	23	
Indeno(1,2,3-c,d)pyrene	**0.0823**	**0.0788**	0.0833	0.0833	ND	99	95	40 - 136	4	16	
Dibenz[a,h]anthracene	**0.0813**	**0.0778**	0.0833	0.0833	ND	98	93	40 - 142	4	13	
Benzo[g,h,i]perylene	**0.0784**	**0.0763**	0.0833	0.0833	ND	94	92	37 - 137	3	18	
Surrogate:											
2-Fluorobiphenyl						*72*	*67*	*45 - 101*			
Pyrene-d10						*79*	*76*	*52 - 118*			
Terphenyl-d14						*89*	*88*	*41 - 106*			

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

VOLATILE PETROLEUM HYDROCARBONS

Date Extracted:	9-21-10
Date Analyzed:	9-21-10
Matrix:	Soil
Units:	mg/Kg (ppm)

Lab ID:	09-193-01
Client ID:	**L-TP-13-8**

VPH:	**Results**	**PQL**
Aliphatic C5-C6	ND	5.0
Aliphatic C6-C8	ND	5.0
Aliphatic C8-C10	ND	5.0
Aliphatic C10-C12	ND	5.0
Total Aliphatic:	NA	
Aromatic C8-C10	ND	5.0
Aromatic C10-C12	ND	5.0
Aromatic C12-C13	ND	5.0
Total Aromatic:	NA	
Target Analytes:		
Methyl t-butyl ether	ND	0.50
Benzene	ND	0.020
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylene	ND	0.50
o-Xylene	ND	0.50

Surrogate:	**Percent Recovery**	**Control Limits**
Fluorobenzene	87	60-126

Flags:

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

VOLATILE PETROLEUM HYDROCARBONS

Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 09-193-02
Client ID: **L-TP-14-3**

VPH:	**Results**	**PQL**
Aliphatic C5-C6	ND	5.0
Aliphatic C6-C8	ND	5.0
Aliphatic C8-C10	ND	5.0
Aliphatic C10-C12	ND	5.0
Total Aliphatic:	NA	
Aromatic C8-C10	ND	5.0
Aromatic C10-C12	ND	5.0
Aromatic C12-C13	ND	5.0
Total Aromatic:	NA	
Target Analytes:		
Methyl t-butyl ether	ND	0.50
Benzene	ND	0.024
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylene	ND	0.50
o-Xylene	ND	0.50

Surrogate:	**Percent Recovery**	**Control Limits**
Fluorobenzene	92	60-126

Flags:

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

VOLATILE PETROLEUM HYDROCARBONS

Date Extracted:	9-21-10
Date Analyzed:	9-21-10
Matrix:	Soil
Units:	mg/Kg (ppm)

Lab ID:	09-193-03
Client ID:	**L-TP-15-7**

VPH:	**Results**	**PQL**
Aliphatic C5-C6	6.9	5.0
Aliphatic C6-C8	48	5.0
Aliphatic C8-C10	17	5.0
Aliphatic C10-C12	52	5.0
Total Aliphatic:	120	
Aromatic C8-C10	19	5.0
Aromatic C10-C12	35	5.0
Aromatic C12-C13	16	5.0
Total Aromatic:	70	
Target Analytes:		
Methyl t-butyl ether	ND	0.50
Benzene	0.82	0.057
Toluene	ND	0.50
Ethylbenzene	0.62	0.50
m,p-Xylene	0.64	0.50
o-Xylene	ND	0.50

Surrogate:	**Percent Recovery**	**Control Limits**
Fluorobenzene	95	60-126

Flags:

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

VOLATILE PETROLEUM HYDROCARBONS

Date Extracted:	9-21-10
Date Analyzed:	9-21-10
Matrix:	Soil
Units:	mg/Kg (ppm)

Lab ID:	09-193-04
Client ID:	**L-TP-16-8**

VPH:	**Results**	**PQL**
Aliphatic C5-C6	ND	5.0
Aliphatic C6-C8	13	5.0
Aliphatic C8-C10	22	5.0
Aliphatic C10-C12	30	5.0
Total Aliphatic:	65	
Aromatic C8-C10	27	5.0
Aromatic C10-C12	12	5.0
Aromatic C12-C13	ND	5.0
Total Aromatic:	39	
Target Analytes:		
Methyl t-butyl ether	ND	0.50
Benzene	ND	0.020
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylene	0.62	0.50
o-Xylene	ND	0.50

Surrogate:	**Percent Recovery**	**Control Limits**
Fluorobenzene	85	60-126

Flags:

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

VOLATILE PETROLEUM HYDROCARBONS
METHOD BLANK QUALITY CONTROL

Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: MB0921S1

VPH:	**Results**	**PQL**
Aliphatic C5-C6	ND	5.0
Aliphatic C6-C8	ND	5.0
Aliphatic C8-C10	ND	5.0
Aliphatic C10-C12	ND	5.0
Total Aliphatic:	NA	
Aromatic C8-C10	ND	5.0
Aromatic C10-C12	ND	5.0
Aromatic C12-C13	ND	5.0
Total Aromatic:	NA	
Target Analytes:		
Methyl t-butyl ether	ND	0.50
Benzene	ND	0.020
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylene	ND	0.50
o-Xylene	ND	0.50

Surrogate:	**Percent Recovery**	**Control Limits**
Fluorobenzene	95	60-126

Flags:

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

VOLATILE PETROLEUM HYDROCARBONS
SB/SBDD QUALITY CONTROL

Date Extracted: 9-21-10
Date Analyzed: 9-21&22-10

Matrix: Soil
Units: mg/Kg (ppm)

Spike Level (ppm): 1

Lab ID:	SB0921S1		SBD0921S1			
	Result	**Percent Recovery**	**Result**	**Percent Recovery**	**PQL**	**RPD**
Benzene	0.922	92	0.992	99		7
Toluene	1.00	100	1.08	108		8
Ethylbenzene	1.06	106	1.14	114		7
m,p-Xylene	1.06	106	1.16	116		9
o-Xylene	1.05	105	1.14	114		8

Surrogate:	**Percent Recovery**	**Percent Recovery**	**Control Limits**
Fluorobenzene	93	96	60-127

Date of Report: September 23, 2010
Samples Submitted: September 20, 2010
Laboratory Reference: 1009-193
Project: 2007-098-920

% MOISTURE

Date Analyzed: 9-21-10

Client ID	Lab ID	% Moisture
L-TP-13-8	09-193-01	16
L-TP-14-3	09-193-02	9
L-TP-15-7	09-193-03	16
L-TP-16-8	09-193-04	32

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

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/23/2010
		ALS JOB#:	1009142
		DATE RECEIVED:	9/21/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #09-193 / Proj #2007-098-920
CLIENT SAMPLE ID: 9/20/2010 L-TP-13-8
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C8-C10 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
Total Aliphatics	NWEPH	ND	10	1	MG/KG	9/22/2010	DLC
Total Aromatics	NWEPH	ND	10	1	MG/KG	9/22/2010	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:

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Laboratory Group A Campbell Brothers Limited Company

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/23/2010
		ALS JOB#:	1009142
		DATE RECEIVED:	9/21/2010
		WDOE ACCREDITATION #:	C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #09-193 / Proj #2007-098-920
CLIENT SAMPLE ID: 9/20/2010 L-TP-14-3
ALS SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C8-C10 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
Total Aliphatics	NWEPH	ND	10	1	MG/KG	9/22/2010	DLC
Total Aromatics	NWEPH	ND	10	1	MG/KG	9/22/2010	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:

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Laboratory Group A Campbell Brothers Limited Company

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE: ALS JOB#: DATE RECEIVED: WDOE ACCREDITATION #:	9/23/2010 1009142 9/21/2010 C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #09-193 / Proj #2007-098-920
CLIENT SAMPLE ID: 9/20/2010 L-TP-15-7
ALS SAMPLE #: -03

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	**57**	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aliphatics	NWEPH	**77**	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aliphatics	NWEPH	**85**	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aliphatics	NWEPH	**120**	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aliphatics	NWEPH	**1,300**	5.0	1	MG/KG	9/22/2010	DLC
>C8-C10 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aromatics	NWEPH	**39**	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aromatics	NWEPH	**59**	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aromatics	NWEPH	**78**	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aromatics	NWEPH	**430**	5.0	1	MG/KG	9/22/2010	DLC
Total Aliphatics	NWEPH	**1,600**	10	1	MG/KG	9/22/2010	DLC
Total Aromatics	NWEPH	**610**	10	1	MG/KG	9/22/2010	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.

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ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE: 9/23/2010
ALS JOB#: 1009142
DATE RECEIVED: 9/21/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #09-193 / Proj #2007-098-920
CLIENT SAMPLE ID: 9/20/2010 L-TP-16-8
ALS SAMPLE #: -04

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	**21**	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aliphatics	NWEPH	**9.6**	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aliphatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aliphatics	NWEPH	**55**	5.0	1	MG/KG	9/22/2010	DLC
>C8-C10 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C10-C12 Aromatics	NWEPH	**8.1**	5.0	1	MG/KG	9/22/2010	DLC
>C12-C16 Aromatics	NWEPH	**5.2**	5.0	1	MG/KG	9/22/2010	DLC
>C16-C21 Aromatics	NWEPH	ND	5.0	1	MG/KG	9/22/2010	DLC
>C21-C34 Aromatics	NWEPH	**25**	5.0	1	MG/KG	9/22/2010	DLC
Total Aliphatics	NWEPH	**91**	10	1	MG/KG	9/22/2010	DLC
Total Aromatics	NWEPH	**43**	10	1	MG/KG	9/22/2010	DLC

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMT.
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CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE: ALS JOB#: DATE RECEIVED: WDOE ACCREDITATION #:	9/23/2010 1009142 9/21/2010 C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #09-193 / Proj #2007-098-920

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
1009142-01	NWEPH	C25	90%
1009142-01	NWEPH	p-Terphenyl	103%
1009142-02	NWEPH	C25	89%
1009142-02	NWEPH	p-Terphenyl	100%
1009142-03	NWEPH	C25	100%
1009142-03	NWEPH	p-Terphenyl	110%
1009142-04	NWEPH	C25	88%
1009142-04	NWEPH	p-Terphenyl	102%

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14648 NE 95th Street
Redmond, WA 98052

DATE: 9/23/2010
ALS JOB#: 1009142
DATE RECEIVED: 9/21/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #09-193 / Proj #2007-098-920

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MBLK-9222010	Soil	NWEPH	>C8-C10 Aliphatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C10-C12 Aliphatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C12-C16 Aliphatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C16-C21 Aliphatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C21-C34 Aliphatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C8-C10 Aromatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C10-C12 Aromatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C12-C16 Aromatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C16-C21 Aromatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	>C21-C34 Aromatics	ND(<5.0)	MG/KG
MBLK-9222010	Soil	NWEPH	Total Aliphatics	ND(<10)	MG/KG
MBLK-9222010	Soil	NWEPH	Total Aromatics	ND(<10)	MG/KG

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ALS Laboratory Group A Campbell Brothers Limited Company

CERTIFICATE OF ANALYSIS

CLIENT: OnSite Environmental Inc.
14648 NE 95th Street
Redmond, WA 98052

DATE: 9/23/2010
ALS JOB#: 1009142
DATE RECEIVED: 9/21/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Dave Baumeister
CLIENT PROJECT ID: Lab Ref #09-193 / Proj #2007-098-920

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
R70610	Soil	NWEPH	>C8-C10 Aliphatics	100	84%	90%	7
R70610	Soil	NWEPH	>C10-C12 Aliphatics	100	88%	94%	7
R70610	Soil	NWEPH	>C12-C16 Aliphatics	100	91%	96%	5
R70610	Soil	NWEPH	>C16-C21 Aliphatics	100	91%	97%	6
R70610	Soil	NWEPH	>C21-C34 Aliphatics	100	94%	94%	0
R70610	Soil	NWEPH	>C8-C10 Aromatics	100	98%	99%	1
R70610	Soil	NWEPH	>C10-C12 Aromatics	100	100%	101%	1
R70610	Soil	NWEPH	>C12-C16 Aromatics	100	102%	104%	2
R70610	Soil	NWEPH	>C16-C21 Aromatics	100	103%	105%	2
R70610	Soil	NWEPH	>C21-C34 Aromatics	100	98%	99%	1

APPROVED BY:

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ALS Laboratory Group A Campbell Brothers Limited Company

1009142

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Subcontract Laboratory: ALS
Contact Person: Rick Bag---
Address:
Phone Number:
Date/Time:

Turnaround Request: 1 Day 2 Day 3 Day Standard
Other:

Laboratory Reference #: 09-193
Project Manager: David Baumeister
email: dbaumeister@onsite-env.com
Project Number: 2007-098-920
Project Name:

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
1	L-TP-13-8	9/20/10		S	1	EPH
2	L-TP-14-3					
3	L-TP-15-7					
4	L-TP-16-8					

	Signature	Company	Date	Time
Relinquished by:	[illegible]	OSE	9/21/10	1:15pm
Received by:	[illegible]	Speedy	9/21	1:[illegible]
Relinquished by:	[illegible]	"	9-21	205
Received by:	[illegible]	ALS	9-21	2:00
Relinquished by:				
Received by:				

Comments/Special Instructions:

RUSH 9/23

EIM-EDDS

OnSite Environmental Inc.

14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Company: Hwa

Project Number: 2003-098-920

Project Name: Bothell Landing

Project Manager: Atkins

Sampled by: " "

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [x] 1 Day
- [x] 2 Days
- [ ] 3 Days
- [ ] Standard (7 Days) (TPH analysis 5 Days)
- [ ] ________ (other)

Laboratory Number: 09-193

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	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 / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664	E-JPH / VPH	VPH	EPH				% Moisture
1	L-TP-13-8	9/20/10	1420	S					X				X								X	X	X				X
2	L-TP-14-3		1430						X				X								X	X	X				X
3	L-TP-15-7		1440						X				X								X	X	X				X
4	L-TP-16-8		1500						X				X								X	X	X				X

	Signature	Company	Date	Time
Relinquished	[signature]	Hwa	9/20/10	1530
Received	[signature]	OnSite Env	9/20/10	1530
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

September 24, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-920
Laboratory Reference No. 1009-209

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 21, 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 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

Case Narrative

Samples were collected on September 21, 2010 and received by the laboratory on September 21, 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/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^oC and -20^oC until extraction or analysis.

Halogenated 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^oC and -20^oC until extraction or analysis.

Not enough Method 5035 VOA vials were provided to perform the client-requested QA/QC.

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 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-1-6**					
Laboratory ID:	09-209-01					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.067	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.067	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.067	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.067	EPA 8021	9-22-10	9-22-10	
Gasoline	**13**	6.7	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***101***	***55-127***				
Client ID:	**L-PEX-2-10**					
Laboratory ID:	09-209-02					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.10	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.10	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.10	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.10	EPA 8021	9-22-10	9-22-10	
Gasoline	**ND**	10	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***103***	***55-127***				
Client ID:	**L-PEX-3-6**					
Laboratory ID:	09-209-03					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.071	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.071	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.071	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.071	EPA 8021	9-22-10	9-22-10	
Gasoline	**ND**	7.1	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***102***	***55-127***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-4-6**					
Laboratory ID:	09-209-04					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.073	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.073	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.073	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.073	EPA 8021	9-22-10	9-22-10	
Gasoline	**ND**	7.3	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***104***	***55-127***				
Client ID:	**L-PEX-5-6**					
Laboratory ID:	09-209-05					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.087	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**0.13**	0.087	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**0.15**	0.087	EPA 8021	9-22-10	9-22-10	
o-Xylene	**0.29**	0.087	EPA 8021	9-22-10	9-22-10	
Gasoline	**140**	8.7	NWTPH-Gx	9-22-10	9-22-10	O
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***102***	***55-127***				
Client ID:	**L-DUP-092110**					
Laboratory ID:	09-209-06					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.065	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.065	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.065	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.065	EPA 8021	9-22-10	9-22-10	
Gasoline	**35**	6.5	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***99***	***55-127***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0922S1					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***85***	***55-127***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-227-02										
	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						***106***	***109***	***55-127***			
SPIKE BLANKS											
Laboratory ID:	SB0922S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.945**	**0.908**	1.00	1.00		**95**	**91**	75-113	4	9	
Toluene	**0.976**	**0.920**	1.00	1.00		**98**	**92**	75-116	6	10	
Ethyl Benzene	**0.991**	**0.948**	1.00	1.00		**99**	**95**	82-117	4	10	
m,p-Xylene	**1.03**	**0.970**	1.00	1.00		**103**	**97**	81-122	6	10	
o-Xylene	**1.01**	**0.966**	1.00	1.00		**101**	**97**	83-118	4	10	
Surrogate:											
Fluorobenzene						***97***	***92***	***55-127***			

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	**L-PEX-1-6**					
Laboratory ID:	09-209-01					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-22-10	9-22-10	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				
Client ID:	**L-PEX-2-10**					
Laboratory ID:	09-209-02					
Diesel Range Organics	**ND**	38	NWTPH-Dx	9-22-10	9-22-10	
Lube Oil	**120**	77	NWTPH-Dx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***107***	***50-150***				
Client ID:	**L-PEX-3-6**					
Laboratory ID:	09-209-03					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-22-10	9-22-10	
Lube Oil Range Organics	**ND**	63	NWTPH-Dx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***90***	***50-150***				
Client ID:	**L-PEX-4-6**					
Laboratory ID:	09-209-04					
Diesel Range Organics	**ND**	30	NWTPH-Dx	9-22-10	9-22-10	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***97***	***50-150***				
Client ID:	**L-PEX-5-6**					
Laboratory ID:	09-209-05					
Diesel Fuel #2	**360**	34	NWTPH-Dx	9-22-10	9-22-10	M
Lube Oil	**310**	68	NWTPH-Dx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***103***	***50-150***				
Client ID:	**L-DUP-092110**					
Laboratory ID:	09-209-06					
Diesel Range Organics	**ND**	29	NWTPH-Dx	9-22-10	9-22-10	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***105***	***50-150***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
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Project: 2007-098-920

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:	MB0922S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-22-10	9-22-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***115***	***50-150***				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-209-02							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**79.8**	**73.2**				9	NA	
Surrogate:								
o-Terphenyl			***107***	***90***	***50-150***			

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
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Project: 2007-098-920

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Date Extracted:	9-21-10
Date Analyzed:	9-21-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-209-01
Client ID:	**L-PEX-1-6**

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0012
Chloromethane	ND		0.0059
Vinyl Chloride	ND		0.0012
Bromomethane	ND		0.0012
Chloroethane	ND		0.0059
Trichlorofluoromethane	ND		0.0012
1,1-Dichloroethene	ND		0.0012
Iodomethane	ND		0.0059
Methylene Chloride	ND		0.0059
(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		0.0059
(cis) 1,3-Dichloropropene	ND		0.0012
(trans) 1,3-Dichloropropene	ND		0.0012

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
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HALOGENATED VOLATILES by EPA 8260B
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Lab ID: 09-209-01
Client ID: L-PEX-1-6

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		0.0059
1,2,4-Trichlorobenzene	ND		0.0012
Hexachlorobutadiene	ND		0.0059
1,2,3-Trichlorobenzene	ND		0.0012

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	99	66-128
Toluene-d8	112	68-126
4-Bromofluorobenzene	80	53-134

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
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Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-209-06
Client ID: L-DUP-092110

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0011
Chloromethane	ND		0.0056
Vinyl Chloride	ND		0.0011
Bromomethane	ND		0.0011
Chloroethane	ND		0.0056
Trichlorofluoromethane	ND		0.0011
1,1-Dichloroethene	ND		0.0011
Iodomethane	ND		0.0056
Methylene Chloride	ND		0.0056
(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		0.0056
(cis) 1,3-Dichloropropene	ND		0.0011
(trans) 1,3-Dichloropropene	ND		0.0011

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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Lab ID: 09-209-06
Client ID: L-DUP-092110

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		0.0056
1,2,4-Trichlorobenzene	ND		0.0011
Hexachlorobutadiene	ND		0.0056
1,2,3-Trichlorobenzene	ND		0.0011

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	95	66-128
Toluene-d8	107	68-126
4-Bromofluorobenzene	77	53-134

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
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Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0921S2

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 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
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Lab ID: MB0921S2

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	108	66-128
Toluene-d8	121	68-126
4-Bromofluorobenzene	93	53-134

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0921S1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	0.0500	0.0541	108	0.0492	98	70-130	
Benzene	0.0500	0.0409	82	0.0411	82	70-121	
Trichloroethene	0.0500	0.0477	95	0.0494	99	70-124	
Toluene	0.0500	0.0442	88	0.0450	90	70-123	
Chlorobenzene	0.0500	0.0424	85	0.0432	86	71-119	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	10	14	
Benzene	1	10	
Trichloroethene	3	12	
Toluene	2	12	
Chlorobenzene	2	9	

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	**L-PEX-1-6**					
Laboratory ID:	09-209-01					
Naphthalene	**0.14**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
2-Methylnaphthalene	**0.27**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
1-Methylnaphthalene	**0.081**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Acenaphthene	**ND**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Fluorene	**ND**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Phenanthrene	**ND**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Anthracene	**ND**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Fluoranthene	**0.015**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Pyrene	**0.016**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[a]anthracene	**0.012**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Chrysene	**0.012**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[b]fluoranthene	**0.011**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[k]fluoranthene	**0.012**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[a]pyrene	**0.015**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Indeno(1,2,3-c,d)pyrene	**0.0091**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Dibenz[a,h]anthracene	**ND**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[g,h,i]perylene	**0.011**	0.0076	EPA 8270/SIM	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***71***	***45 - 101***				
Pyrene-d10	***76***	***52 - 118***				
Terphenyl-d14	***91***	***41 - 106***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	**L-PEX-2-10**					
Laboratory ID:	09-209-02					
Naphthalene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
2-Methylnaphthalene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
1-Methylnaphthalene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthylene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Fluorene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Phenanthrene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Anthracene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Fluoranthene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Pyrene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]anthracene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Chrysene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[k]fluoranthene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]pyrene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[g,h,i]perylene	**ND**	0.010	EPA 8270/SIM	9-22-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***64***	***45 - 101***				
Pyrene-d10	***62***	***52 - 118***				
Terphenyl-d14	***69***	***41 - 106***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	**L-PEX-3-6**					
Laboratory ID:	09-209-03					
Naphthalene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
2-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
1-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthylene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Fluorene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Phenanthrene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Anthracene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Pyrene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]anthracene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Chrysene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[b]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[k]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]pyrene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Dibenz[a,h]anthracene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[g,h,i]perylene	**ND**	0.0083	EPA 8270/SIM	9-22-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***62***	***45 - 101***				
Pyrene-d10	***62***	***52 - 118***				
Terphenyl-d14	***75***	***41 - 106***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	**L-PEX-4-6**					
Laboratory ID:	09-209-04					
Naphthalene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
2-Methylnaphthalene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
1-Methylnaphthalene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthylene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Fluorene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Phenanthrene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Anthracene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Pyrene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]anthracene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Chrysene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[b]fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[k]fluoranthene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]pyrene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Dibenz[a,h]anthracene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[g,h,i]perylene	**ND**	0.0079	EPA 8270/SIM	9-22-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***70***	***45 - 101***				
Pyrene-d10	***69***	***52 - 118***				
Terphenyl-d14	***81***	***41 - 106***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	**L-PEX-5-6**					
Laboratory ID:	09-209-05					
Naphthalene	**0.51**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
2-Methylnaphthalene	**2.5**	0.090	EPA 8270/SIM	9-22-10	9-23-10	
1-Methylnaphthalene	**1.6**	0.090	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthylene	**0.034**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthene	**0.16**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Fluorene	**0.29**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Phenanthrene	**0.42**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Anthracene	**0.034**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Fluoranthene	**0.018**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Pyrene	**0.023**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]anthracene	**ND**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Chrysene	**0.015**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[b]fluoranthene	**ND**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[k]fluoranthene	**ND**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]pyrene	**ND**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Dibenz[a,h]anthracene	**ND**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[g,h,i]perylene	**ND**	0.0090	EPA 8270/SIM	9-22-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***63***	***45 - 101***				
Pyrene-d10	***72***	***52 - 118***				
Terphenyl-d14	***88***	***41 - 106***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	**L-DUP-092110**					
Laboratory ID:	09-209-06					
Naphthalene	**0.060**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
2-Methylnaphthalene	**0.11**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
1-Methylnaphthalene	**0.035**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthylene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Fluorene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Phenanthrene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Anthracene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Pyrene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]anthracene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Chrysene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[b]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[k]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]pyrene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Dibenz[a,h]anthracene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[g,h,i]perylene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***74***	***45 - 101***				
Pyrene-d10	***73***	***52 - 118***				
Terphenyl-d14	***76***	***41 - 106***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	MB0922S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***67***	***45 - 101***				
Pyrene-d10	***69***	***52 - 118***				
Terphenyl-d14	***80***	***41 - 106***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

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:	09-209-02										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0551**	**0.0531**	0.0833	0.0833	ND	66	64	31 - 115	4	19	
Acenaphthylene	**0.0557**	**0.0527**	0.0833	0.0833	ND	67	63	40 - 134	6	22	
Acenaphthene	**0.0593**	**0.0565**	0.0833	0.0833	ND	71	68	48 - 118	5	17	
Fluorene	**0.0635**	**0.0602**	0.0833	0.0833	ND	76	72	54 - 122	5	16	
Phenanthrene	**0.0602**	**0.0573**	0.0833	0.0833	ND	72	69	46 - 123	5	19	
Anthracene	**0.0569**	**0.0543**	0.0833	0.0833	ND	68	65	53 - 123	5	27	
Fluoranthene	**0.0589**	**0.0567**	0.0833	0.0833	ND	71	68	47 - 132	4	26	
Pyrene	**0.0605**	**0.0584**	0.0833	0.0833	ND	73	70	41 - 137	4	25	
Benzo[a]anthracene	**0.0670**	**0.0609**	0.0833	0.0833	ND	80	73	43 - 132	10	26	
Chrysene	**0.0674**	**0.0656**	0.0833	0.0833	ND	81	79	46 - 126	3	24	
Benzo[b]fluoranthene	**0.0670**	**0.0661**	0.0833	0.0833	ND	80	79	44 - 134	1	24	
Benzo[k]fluoranthene	**0.0664**	**0.0616**	0.0833	0.0833	ND	80	74	45 - 132	8	20	
Benzo[a]pyrene	**0.0679**	**0.0647**	0.0833	0.0833	ND	82	78	36 - 136	5	23	
Indeno(1,2,3-c,d)pyrene	**0.0665**	**0.0652**	0.0833	0.0833	ND	80	78	40 - 136	2	16	
Dibenz[a,h]anthracene	**0.0655**	**0.0643**	0.0833	0.0833	ND	79	77	40 - 142	2	13	
Benzo[g,h,i]perylene	**0.0646**	**0.0636**	0.0833	0.0833	ND	78	76	37 - 137	2	18	
Surrogate:											
2-Fluorobiphenyl						***67***	***63***	***45 - 101***			
Pyrene-d10						***65***	***63***	***52 - 118***			
Terphenyl-d14						***72***	***65***	***41 - 106***			

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-1-6**					
Laboratory ID:	09-209-01					
Aroclor 1016	**ND**	0.057	EPA 8082	9-22-10	9-22-10	
Aroclor 1221	**ND**	0.057	EPA 8082	9-22-10	9-22-10	
Aroclor 1232	**ND**	0.057	EPA 8082	9-22-10	9-22-10	
Aroclor 1242	**ND**	0.057	EPA 8082	9-22-10	9-22-10	
Aroclor 1248	**ND**	0.057	EPA 8082	9-22-10	9-22-10	
Aroclor 1254	**ND**	0.057	EPA 8082	9-22-10	9-22-10	
Aroclor 1260	**ND**	0.057	EPA 8082	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***77***	***46-122***				
Client ID:	**L-DUP-092110**					
Laboratory ID:	09-209-06					
Aroclor 1016	**ND**	0.058	EPA 8082	9-22-10	9-22-10	
Aroclor 1221	**ND**	0.058	EPA 8082	9-22-10	9-22-10	
Aroclor 1232	**ND**	0.058	EPA 8082	9-22-10	9-22-10	
Aroclor 1242	**ND**	0.058	EPA 8082	9-22-10	9-22-10	
Aroclor 1248	**ND**	0.058	EPA 8082	9-22-10	9-22-10	
Aroclor 1254	**ND**	0.058	EPA 8082	9-22-10	9-22-10	
Aroclor 1260	**ND**	0.058	EPA 8082	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***67***	***46-122***				

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0922S1					
Aroclor 1016	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1221	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1232	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1242	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1248	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1254	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1260	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***86***	***46-122***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-209-06										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.410**	**0.406**	0.500	0.500	ND	**82**	**81**	36-121	1	15	
Surrogate:											
DCB						***83***	***81***	***46-122***			

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-209-01					
Client ID:	**L-PEX-1-6**					
Arsenic	**ND**	11	6010B	9-21-10	9-21-10	
Barium	**50**	2.8	6010B	9-21-10	9-21-10	
Cadmium	**ND**	0.57	6010B	9-21-10	9-21-10	
Chromium	**29**	0.57	6010B	9-21-10	9-21-10	
Lead	**6.4**	5.7	6010B	9-21-10	9-21-10	
Mercury	**ND**	0.28	7471A	9-21-10	9-21-10	
Selenium	**ND**	11	6010B	9-21-10	9-21-10	
Silver	**ND**	0.57	6010B	9-21-10	9-21-10	
Lab ID:	09-209-02					
Client ID:	**L-PEX-2-10**					
Arsenic	**ND**	15	6010B	9-21-10	9-21-10	
Barium	**61**	3.8	6010B	9-21-10	9-21-10	
Cadmium	**ND**	0.76	6010B	9-21-10	9-21-10	
Chromium	**28**	0.76	6010B	9-21-10	9-21-10	
Lead	**10**	7.6	6010B	9-21-10	9-21-10	
Mercury	**ND**	0.38	7471A	9-21-10	9-21-10	
Selenium	**ND**	15	6010B	9-21-10	9-21-10	
Silver	**ND**	0.76	6010B	9-21-10	9-21-10	

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-209-03					
Client ID:	**L-PEX-3-6**					
Arsenic	**ND**	13	6010B	9-21-10	9-21-10	
Barium	**37**	3.1	6010B	9-21-10	9-21-10	
Cadmium	**ND**	0.63	6010B	9-21-10	9-21-10	
Chromium	**19**	0.63	6010B	9-21-10	9-21-10	
Lead	**ND**	6.3	6010B	9-21-10	9-21-10	
Mercury	**ND**	0.31	7471A	9-21-10	9-21-10	
Selenium	**ND**	13	6010B	9-21-10	9-21-10	
Silver	**ND**	0.63	6010B	9-21-10	9-21-10	

Lab ID:	09-209-04					
Client ID:	**L-PEX-4-6**					
Arsenic	**ND**	12	6010B	9-21-10	9-21-10	
Barium	**58**	2.9	6010B	9-21-10	9-21-10	
Cadmium	**ND**	0.59	6010B	9-21-10	9-21-10	
Chromium	**40**	0.59	6010B	9-21-10	9-21-10	
Lead	**ND**	5.9	6010B	9-21-10	9-21-10	
Mercury	**ND**	0.29	7471A	9-21-10	9-21-10	
Selenium	**ND**	12	6010B	9-21-10	9-21-10	
Silver	**ND**	0.59	6010B	9-21-10	9-21-10	

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-209-05					
Client ID:	**L-PEX-5-6**					
Arsenic	**ND**	14	6010B	9-21-10	9-21-10	
Barium	**86**	3.4	6010B	9-21-10	9-21-10	
Cadmium	**ND**	0.68	6010B	9-21-10	9-21-10	
Chromium	**9.5**	0.68	6010B	9-21-10	9-21-10	
Lead	**29**	6.8	6010B	9-21-10	9-21-10	
Mercury	**ND**	0.34	7471A	9-21-10	9-21-10	
Selenium	**ND**	14	6010B	9-21-10	9-21-10	
Silver	**ND**	0.68	6010B	9-21-10	9-21-10	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-209-06					
Client ID:	**L-DUP-092110**					
Arsenic	**ND**	12	6010B	9-21-10	9-21-10	
Barium	**47**	2.9	6010B	9-21-10	9-21-10	
Cadmium	**ND**	0.58	6010B	9-21-10	9-21-10	
Chromium	**27**	0.58	6010B	9-21-10	9-21-10	
Lead	**8.3**	5.8	6010B	9-21-10	9-21-10	
Mercury	**ND**	0.29	7471A	9-21-10	9-21-10	
Selenium	**ND**	12	6010B	9-21-10	9-21-10	
Silver	**ND**	0.58	6010B	9-21-10	9-21-10	

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0921S1&MB0921S4

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 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-192-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**45.1**	**43.3**	4	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**26.0**	**21.5**	19	0.50	
Lead	**18.3**	**17.0**	7	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-21-10
Date Analyzed: 9-21-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-192-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**96.6**	97	**98.9**	99	2	
Barium	100	**142**	97	**148**	103	4	
Cadmium	50	**46.1**	92	**47.9**	96	4	
Chromium	100	**114**	88	**117**	91	3	
Lead	250	**255**	95	**259**	96	2	
Mercury	0.50	**0.379**	76	**0.416**	83	9	
Selenium	100	**97.7**	98	**99.4**	99	2	
Silver	25	**22.6**	90	**23.3**	93	3	

Date of Report: September 24, 2010
Samples Submitted: September 21, 2010
Laboratory Reference: 1009-209
Project: 2007-098-920

% MOISTURE

Date Analyzed: 9-21-10

Client ID	Lab ID	% Moisture
L-PEX-1-6	09-209-01	12
L-PEX-2-10	09-209-02	35
L-PEX-3-6	09-209-03	20
L-PEX-4-6	09-209-04	15
L-PEX-5-6	09-209-05	26
L-DUP-092110	09-209-06	14

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.

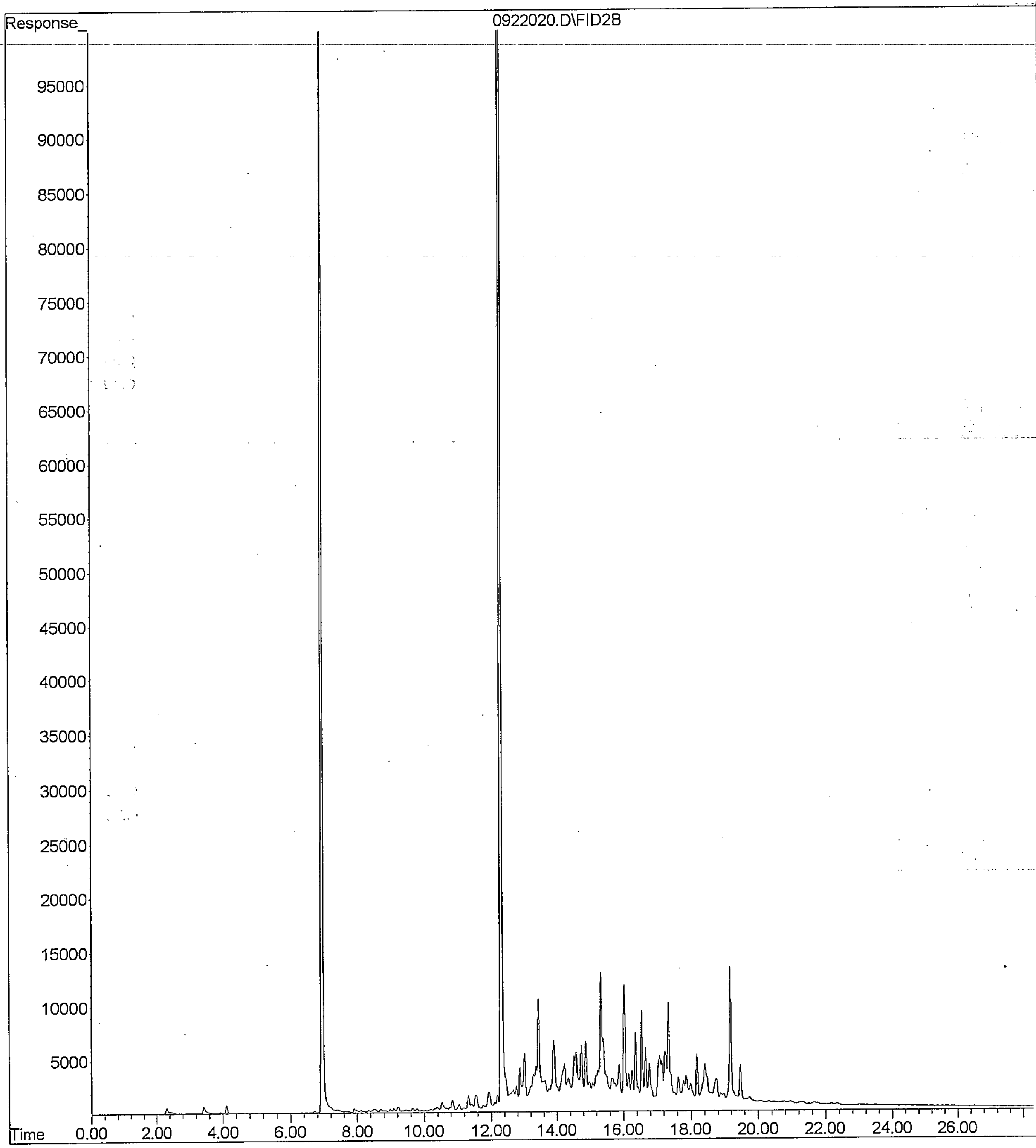
X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

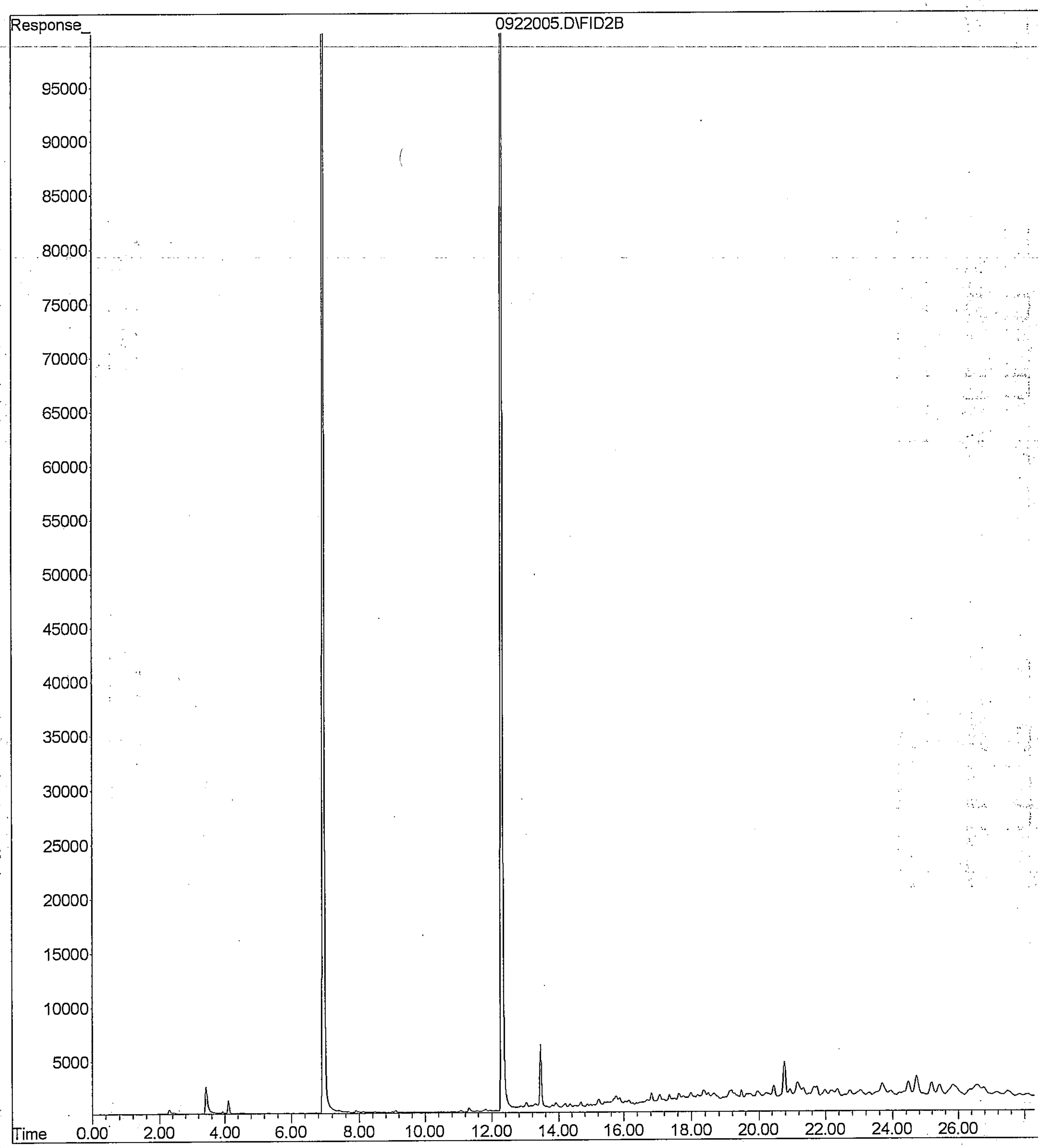
Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

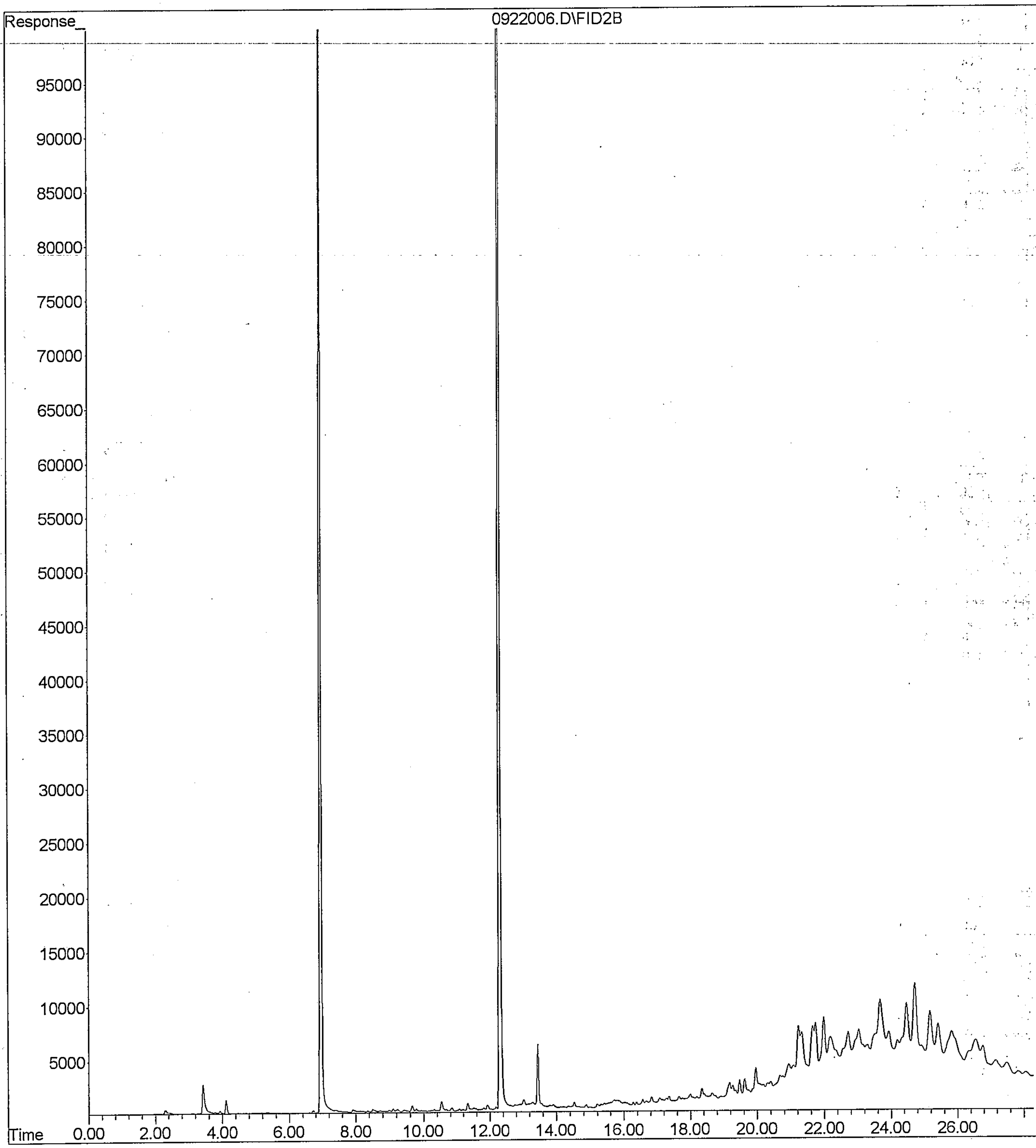
File : X:\BTEX\DARYL\DATA\D100922\0922020.D
Operator :
Acquired : 23 Sep 2010 00:20 using AcqMethod 100827B.M
Instrument : Daryl
Sample Name: 09-209-01s
Misc Info : V2-24-02
Vial Number: 20



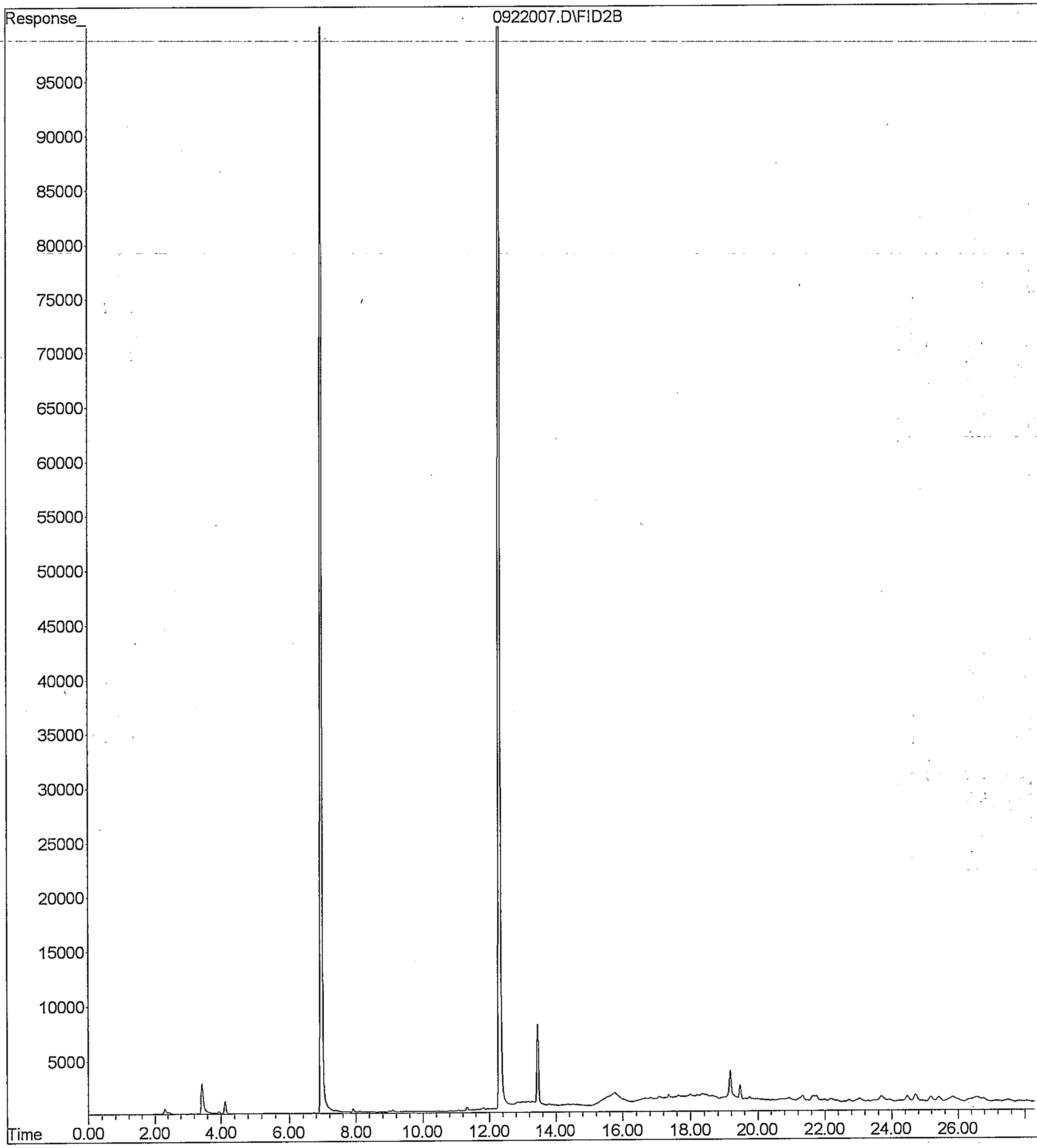
File   : X:\BTEX\DARYL\DATA\D100922\0922005.D
Operator   :
Acquired   : 22 Sep 2010 13:20   using AcqMethod 100827B.M
Instrument   :   Daryl
Sample Name: 09-209-02s
Misc Info   : V2-24-02
Vial Number: 5



File : X:\BTEX\DARYL\DATA\D100922\0922006.D
Operator :
Acquired : 22 Sep 2010 13:54 using AcqMethod 100827B.M
Instrument : Daryl
Sample Name: 09-209-03s
Misc Info : V2-24-02
Vial Number: 6



File : X:\BTEX\DARYL\DATA\D100922\0922007.D
Operator :
Acquired : 22 Sep 2010 14:29 using AcqMethod 100827B.M
Instrument : Daryl
Sample Name: 09-209-04s
Misc Info : V2-24-02
Vial Number: 7



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File         : X:\BTEX\DARYL\DATA\D100922\0922008.D
Operator     :
Acquired     : 22 Sep 2010  15:03     using AcqMethod 100827B.M
Instrument   :   Daryl
Sample Name: 09-209-05s
Misc Info    : V2-24-02
Vial Number: 8
```
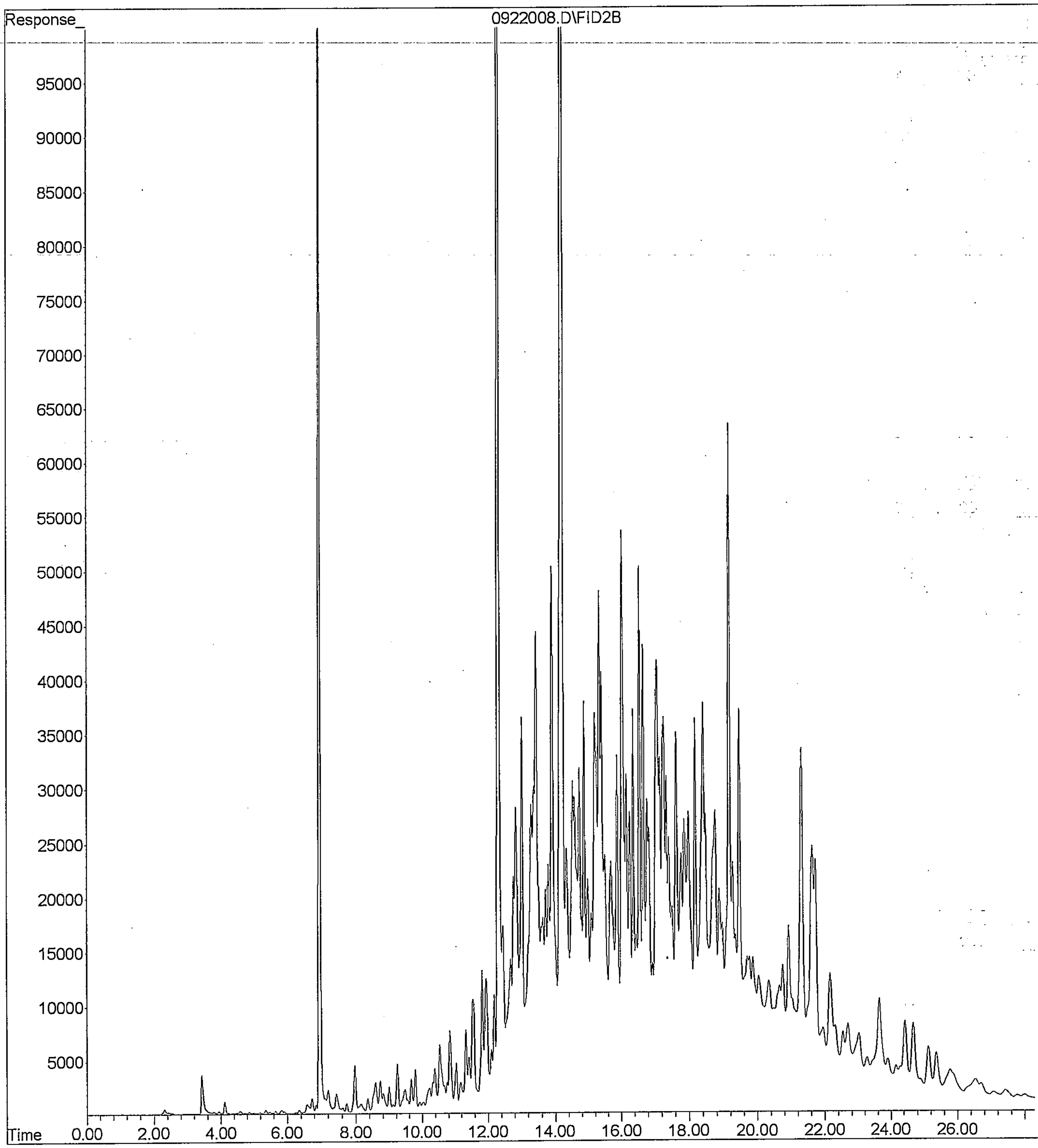
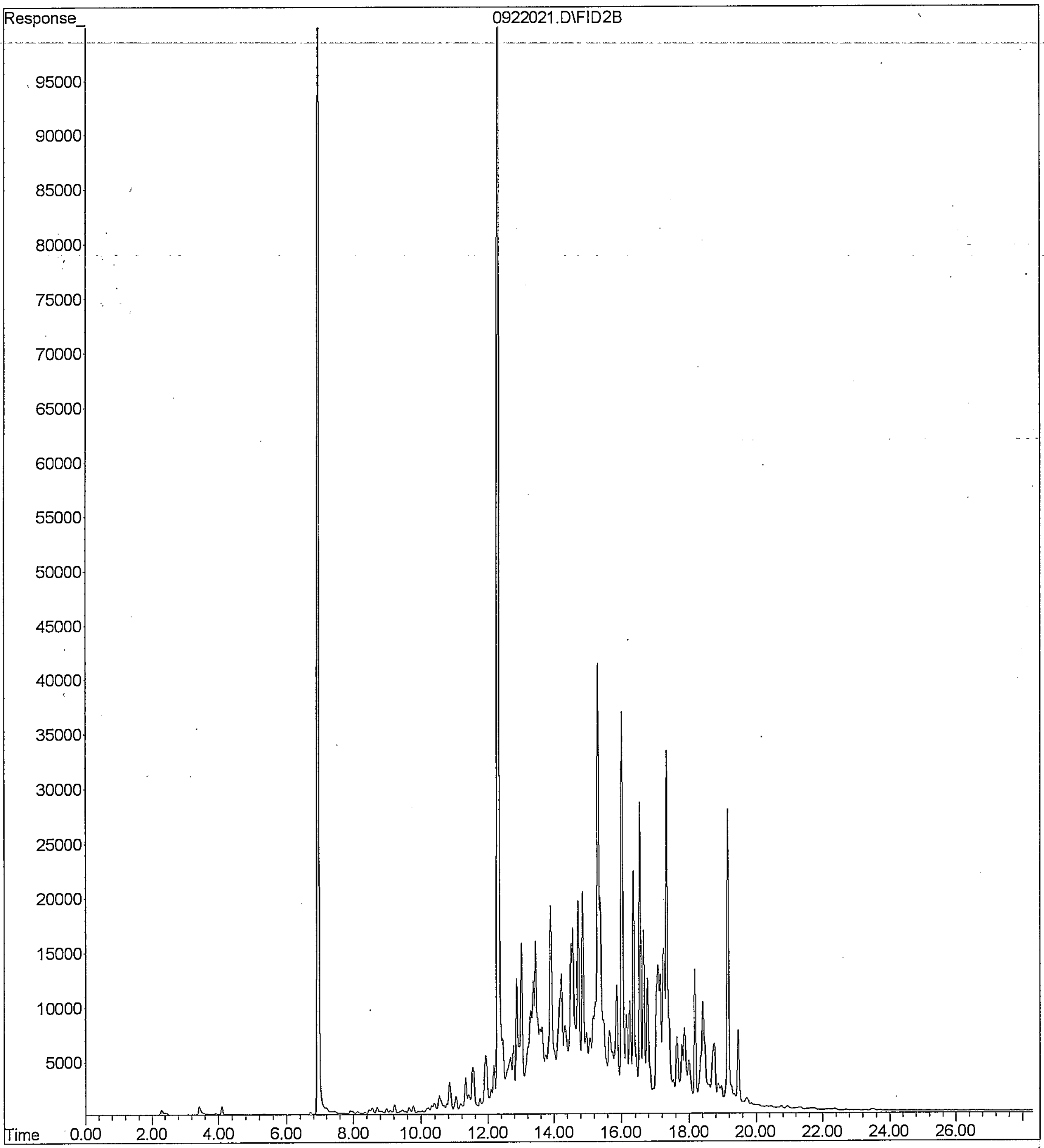



```
File        : X:\BTEX\DARYL\DATA\D100922\0922021.D
Operator    :
Acquired    : 23 Sep 2010  00:54     using AcqMethod 100827B.M
Instrument :   Daryl
Sample Name: 09-209-06s
Misc Info  : V2-24-02
Vial Number: 21
```



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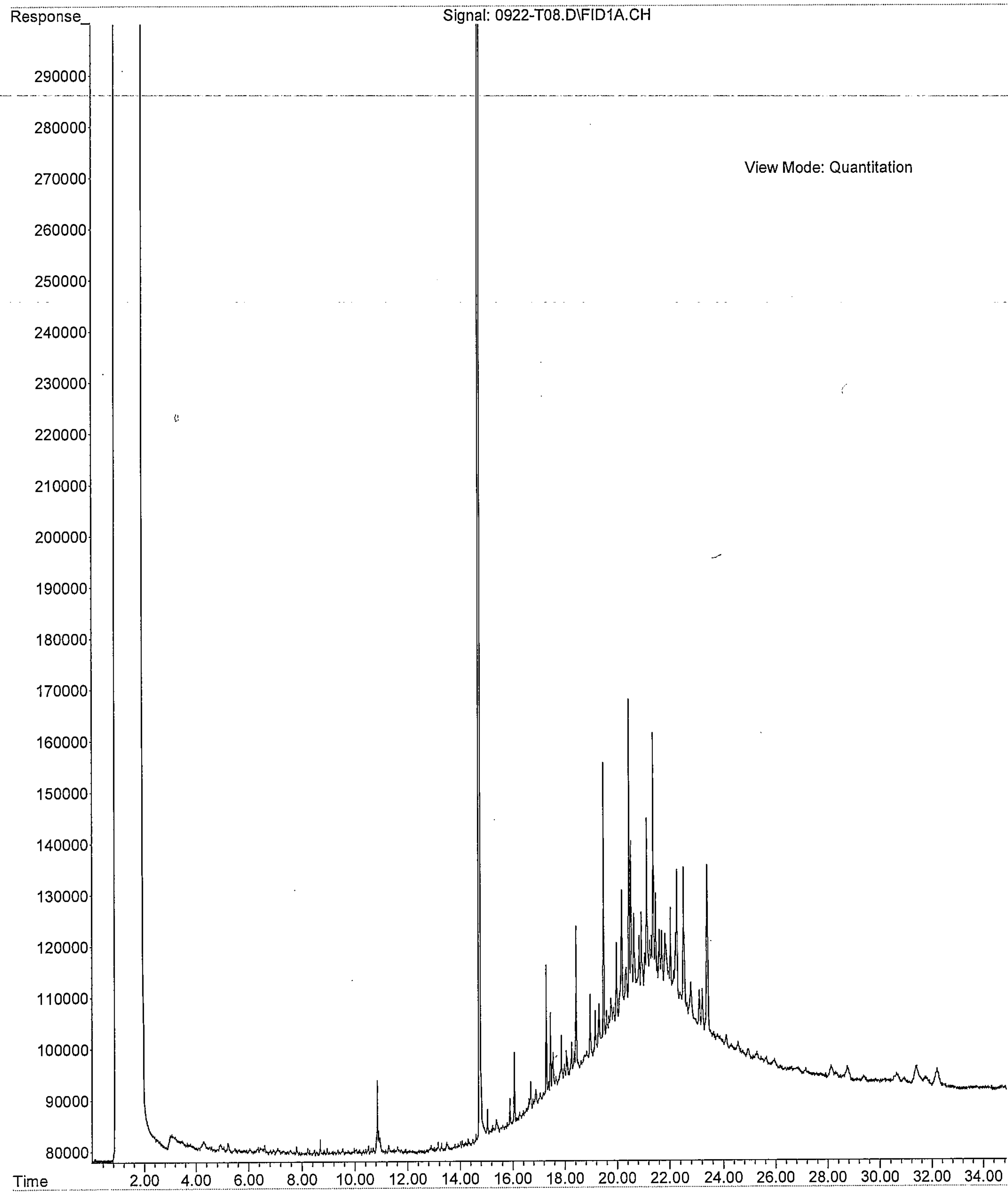
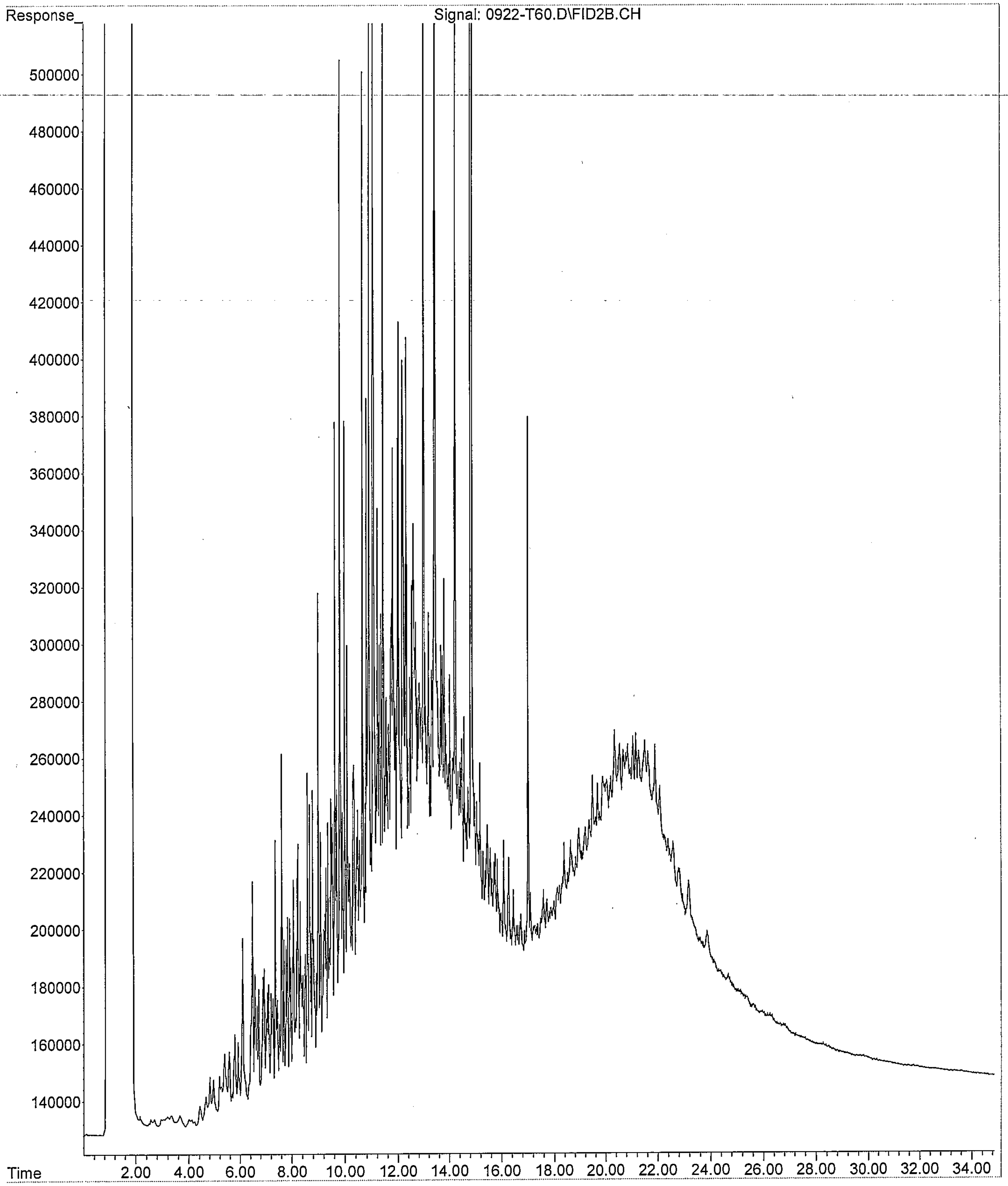
File        :C:\msdchem\1\DATA\T100922\0922-T08.D
Operator    : ZT
Acquired    : 22 Sep 2010  15:11     using AcqMethod T100818F.M
Instrument :   Teri
Sample Name: 09-209-02
Misc Info  :
Vial Number: 8
```



File   :C:\msdchem\1\DATA\T100922.SEC\0922-T60.D
Operator   : ZT
Acquired   : 22 Sep 2010 16:37   using AcqMethod T100818F.M
Instrument :   Teri
Sample Name: 09-209-05
Misc Info   :
Vial Number: 60



OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page ______ of ______

Company: HWA
Project Number: 2007-098-920
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: ..

Turnaround Request (in working days)
(Check One)
- ☐ Same Day
- ☒ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☐ Standard (7 working days) (TPH analysis 5 working days)
- ☐ ______ (other)

Laboratory Number: 09-209

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	L-PEX-1-6	9/21/10	1020	S	5		/	/		/		/	/			/									X
2	L-PEX-2-10		1300		3		/	/				/				/									X
3	L-PEX-3-6		1330		3		/	/				/				/									X
4	L-PEX-4-6		1345		3		/	/				/				/									X
5	L-PEX-5-6		1320		2		/	/		/NG		/	/NG			/									X
6	L-DUP-092110				5		/	/		/		/	/			/									X

	Signature	Company	Date	Time
Relinquished by	[signature]	HWA	9/21/10	1535
Received by	[signature]	OnSite Env	9/21/10	1535
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

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 28, 2010

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-920
Laboratory Reference No. 1009-227

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on September 22, 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 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

Case Narrative

Samples were collected on September 22, 2010 and received by the laboratory on September 22, 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/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.

Halogenated 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^{o}C and -20^{o}C until extraction or analysis.

Not enough Method 5035 VOA vials were provided to perform the client-requested QA/QC.

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 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-6-11**					
Laboratory ID:	09-227-01					
Benzene	**ND**	0.023	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.11	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.11	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.11	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.11	EPA 8021	9-22-10	9-22-10	
Gasoline	**ND**	11	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***107***	***55-127***				
Client ID:	**L-PEX-7-11**					
Laboratory ID:	09-227-02					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.085	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.085	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.085	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.085	EPA 8021	9-22-10	9-22-10	
Gasoline	**ND**	8.5	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***106***	***55-127***				
Client ID:	**L-PEX-8-10**					
Laboratory ID:	09-227-03					
Benzene	**0.21**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**0.082**	0.059	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**0.47**	0.059	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**0.87**	0.059	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.30	EPA 8021	9-22-10	9-22-10	U1
Gasoline	**130**	5.9	NWTPH-Gx	9-22-10	9-22-10	O
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***97***	***55-127***				

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0922S1					
Benzene	**ND**	0.020	EPA 8021	9-22-10	9-22-10	
Toluene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
o-Xylene	**ND**	0.050	EPA 8021	9-22-10	9-22-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***85***	***55-127***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-227-02										
	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						***106***	***109***	***55-127***			
SPIKE BLANKS											
Laboratory ID:	SB0922S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.945**	**0.908**	1.00	1.00		**95**	**91**	75-113	4	9	
Toluene	**0.976**	**0.920**	1.00	1.00		**98**	**92**	75-116	6	10	
Ethyl Benzene	**0.991**	**0.948**	1.00	1.00		**99**	**95**	82-117	4	10	
m,p-Xylene	**1.03**	**0.970**	1.00	1.00		**103**	**97**	81-122	6	10	
o-Xylene	**1.01**	**0.966**	1.00	1.00		**101**	**97**	83-118	4	10	
Surrogate:											
Fluorobenzene						***97***	***92***	***55-127***			

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

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:	**L-PEX-6-11**					
Laboratory ID:	09-227-01					
Diesel Range Organics	**ND**	40	NWTPH-Dx	9-23-10	9-23-10	
Lube Oil Range Organics	**ND**	80	NWTPH-Dx	9-23-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***114***	***50-150***				
Client ID:	**L-PEX-7-11**					
Laboratory ID:	09-227-02					
Diesel Range Organics	**ND**	33	NWTPH-Dx	9-23-10	9-23-10	
Lube Oil Range Organics	**ND**	66	NWTPH-Dx	9-23-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***98***	***50-150***				
Client ID:	**L-PEX-8-10**					
Laboratory ID:	09-227-03					
Diesel Range Organics	**ND**	96	NWTPH-Dx	9-23-10	9-23-10	U1
Lube Oil	**330**	58	NWTPH-Dx	9-23-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***114***	***50-150***				

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

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:	MB0923S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-23-10	9-23-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-23-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***121***	***50-150***				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-226-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**67.9**	**64.2**				6	NA	
Surrogate:								
o-Terphenyl			***109***	***101***	***50-150***			

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
page 1 of 2

Date Extracted:	9-22-10
Date Analyzed:	9-22-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-227-01
Client ID:	**L-PEX-6-11**

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.0015
Chloromethane	ND		0.0076
Vinyl Chloride	ND		0.0015
Bromomethane	ND		0.0015
Chloroethane	ND		0.0076
Trichlorofluoromethane	ND		0.0015
1,1-Dichloroethene	ND		0.0015
Iodomethane	ND		0.0076
Methylene Chloride	ND		0.0076
(trans) 1,2-Dichloroethene	ND		0.0015
1,1-Dichloroethane	ND		0.0015
2,2-Dichloropropane	ND		0.0015
(cis) 1,2-Dichloroethene	ND		0.0015
Bromochloromethane	ND		0.0015
Chloroform	ND		0.0015
1,1,1-Trichloroethane	ND		0.0015
Carbon Tetrachloride	ND		0.0015
1,1-Dichloropropene	ND		0.0015
1,2-Dichloroethane	ND		0.0015
Trichloroethene	ND		0.0015
1,2-Dichloropropane	ND		0.0015
Dibromomethane	ND		0.0015
Bromodichloromethane	ND		0.0015
2-Chloroethyl Vinyl Ether	ND		0.0076
(cis) 1,3-Dichloropropene	ND		0.0015
(trans) 1,3-Dichloropropene	ND		0.0015

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
page 2 of 2

Lab ID: 09-227-01
Client ID: L-PEX-6-11

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0015
Tetrachloroethene	ND		0.0015
1,3-Dichloropropane	ND		0.0015
Dibromochloromethane	ND		0.0015
1,2-Dibromoethane	ND		0.0015
Chlorobenzene	ND		0.0015
1,1,1,2-Tetrachloroethane	ND		0.0015
Bromoform	ND		0.0015
Bromobenzene	ND		0.0015
1,1,2,2-Tetrachloroethane	ND		0.0015
1,2,3-Trichloropropane	ND		0.0015
2-Chlorotoluene	ND		0.0015
4-Chlorotoluene	ND		0.0015
1,3-Dichlorobenzene	ND		0.0015
1,4-Dichlorobenzene	ND		0.0015
1,2-Dichlorobenzene	ND		0.0015
1,2-Dibromo-3-chloropropane	ND		0.0076
1,2,4-Trichlorobenzene	ND		0.0015
Hexachlorobutadiene	ND		0.0076
1,2,3-Trichlorobenzene	ND		0.0015

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	106	66-128
Toluene-d8	117	68-126
4-Bromofluorobenzene	84	53-134

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 1 of 2

Date Extracted:	9-22-10
Date Analyzed:	9-22-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0922S1

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 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 2 of 2

Lab ID: MB0922S1

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	98	66-128
Toluene-d8	110	68-126
4-Bromofluorobenzene	85	53-134

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
MS/MSD QUALITY CONTROL

Date Extracted: 9-22-10
Date Analyzed: 9-22-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-212-03

Compound	Sample Amount	Spike Amount	MS	Percent Recovery	MSD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	ND	0.0500	0.0561	112	0.0549	110	70-130	
Benzene	ND	0.0500	0.0431	86	0.0434	87	70-130	
Trichloroethene	ND	0.0500	0.0492	98	0.0505	101	70-130	
Toluene	ND	0.0500	0.0461	92	0.0473	95	70-126	
Chlorobenzene	ND	0.0500	0.0435	87	0.0430	86	70-130	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	2	14	
Benzene	0	14	
Trichloroethene	3	18	
Toluene	3	20	
Chlorobenzene	1	15	

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

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:	**L-PEX-6-11**					
Laboratory ID:	09-227-01					
Naphthalene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
2-Methylnaphthalene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
1-Methylnaphthalene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthylene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Acenaphthene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Fluorene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Phenanthrene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Anthracene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Fluoranthene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Pyrene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]anthracene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Chrysene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[b]fluoranthene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[k]fluoranthene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[a]pyrene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Dibenz[a,h]anthracene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Benzo[g,h,i]perylene	**ND**	0.011	EPA 8270/SIM	9-22-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***72***	***45 - 101***				
Pyrene-d10	***87***	***52 - 118***				
Terphenyl-d14	***86***	***41 - 106***				

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

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:	**L-PEX-7-11**					
Laboratory ID:	09-227-02					
Naphthalene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
2-Methylnaphthalene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
1-Methylnaphthalene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Acenaphthylene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Acenaphthene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Fluorene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Phenanthrene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Anthracene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Fluoranthene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Pyrene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[a]anthracene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Chrysene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[b]fluoranthene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[k]fluoranthene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[a]pyrene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Dibenz[a,h]anthracene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[g,h,i]perylene	**ND**	0.0088	EPA 8270/SIM	9-22-10	9-24-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***73***	***45 - 101***				
Pyrene-d10	***99***	***52 - 118***				
Terphenyl-d14	***95***	***41 - 106***				

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

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:	**L-PEX-8-10**					
Laboratory ID:	09-227-03					
Naphthalene	**0.015**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
2-Methylnaphthalene	**0.014**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
1-Methylnaphthalene	**0.063**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Acenaphthylene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Acenaphthene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Fluorene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Phenanthrene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Anthracene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Fluoranthene	**0.0089**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Pyrene	**0.011**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[a]anthracene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Chrysene	**0.012**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[b]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[k]fluoranthene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[a]pyrene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Dibenz[a,h]anthracene	**ND**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Benzo[g,h,i]perylene	**0.0093**	0.0077	EPA 8270/SIM	9-22-10	9-24-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***82***	***45 - 101***				
Pyrene-d10	***74***	***52 - 118***				
Terphenyl-d14	***91***	***41 - 106***				

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

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:	MB0922S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***67***	***45 - 101***				
Pyrene-d10	***69***	***52 - 118***				
Terphenyl-d14	***80***	***41 - 106***				

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

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:	09-209-02										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0551**	**0.0531**	0.0833	0.0833	ND	66	64	31 - 115	4	19	
Acenaphthylene	**0.0557**	**0.0527**	0.0833	0.0833	ND	67	63	40 - 134	6	22	
Acenaphthene	**0.0593**	**0.0565**	0.0833	0.0833	ND	71	68	48 - 118	5	17	
Fluorene	**0.0635**	**0.0602**	0.0833	0.0833	ND	76	72	54 - 122	5	16	
Phenanthrene	**0.0602**	**0.0573**	0.0833	0.0833	ND	72	69	46 - 123	5	19	
Anthracene	**0.0569**	**0.0543**	0.0833	0.0833	ND	68	65	53 - 123	5	27	
Fluoranthene	**0.0589**	**0.0567**	0.0833	0.0833	ND	71	68	47 - 132	4	26	
Pyrene	**0.0605**	**0.0584**	0.0833	0.0833	ND	73	70	41 - 137	4	25	
Benzo[a]anthracene	**0.0670**	**0.0609**	0.0833	0.0833	ND	80	73	43 - 132	10	26	
Chrysene	**0.0674**	**0.0656**	0.0833	0.0833	ND	81	79	46 - 126	3	24	
Benzo[b]fluoranthene	**0.0670**	**0.0661**	0.0833	0.0833	ND	80	79	44 - 134	1	24	
Benzo[k]fluoranthene	**0.0664**	**0.0616**	0.0833	0.0833	ND	80	74	45 - 132	8	20	
Benzo[a]pyrene	**0.0679**	**0.0647**	0.0833	0.0833	ND	82	78	36 - 136	5	23	
Indeno(1,2,3-c,d)pyrene	**0.0665**	**0.0652**	0.0833	0.0833	ND	80	78	40 - 136	2	16	
Dibenz[a,h]anthracene	**0.0655**	**0.0643**	0.0833	0.0833	ND	79	77	40 - 142	2	13	
Benzo[g,h,i]perylene	**0.0646**	**0.0636**	0.0833	0.0833	ND	78	76	37 - 137	2	18	
Surrogate:											
2-Fluorobiphenyl						***67***	***63***	***45 - 101***			
Pyrene-d10						***65***	***63***	***52 - 118***			
Terphenyl-d14						***72***	***65***	***41 - 106***			

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-6-11**					
Laboratory ID:	09-227-01					
Aroclor 1016	**ND**	0.080	EPA 8082	9-22-10	9-23-10	
Aroclor 1221	**ND**	0.080	EPA 8082	9-22-10	9-23-10	
Aroclor 1232	**ND**	0.080	EPA 8082	9-22-10	9-23-10	
Aroclor 1242	**ND**	0.080	EPA 8082	9-22-10	9-23-10	
Aroclor 1248	**ND**	0.080	EPA 8082	9-22-10	9-23-10	
Aroclor 1254	**ND**	0.080	EPA 8082	9-22-10	9-23-10	
Aroclor 1260	**ND**	0.080	EPA 8082	9-22-10	9-23-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***97***	***46-122***				

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0922S1					
Aroclor 1016	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1221	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1232	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1242	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1248	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1254	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Aroclor 1260	**ND**	0.050	EPA 8082	9-22-10	9-22-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***86***	***46-122***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-209-06										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.410**	**0.406**	0.500	0.500	ND	**82**	**81**	36-121	1	15	
Surrogate:											
DCB						***83***	***81***	***46-122***			

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-227-01					
Client ID:	**L-PEX-6-11**					
Arsenic	**ND**	16	6010B	9-23-10	9-23-10	
Barium	**39**	4.0	6010B	9-23-10	9-23-10	
Cadmium	**ND**	0.80	6010B	9-23-10	9-23-10	
Chromium	**24**	0.80	6010B	9-23-10	9-23-10	
Lead	**ND**	8.0	6010B	9-23-10	9-23-10	
Mercury	**ND**	0.40	7471A	9-23-10	9-23-10	
Selenium	**ND**	16	6010B	9-23-10	9-23-10	
Silver	**ND**	0.80	6010B	9-23-10	9-23-10	
Lab ID:	09-227-02					
Client ID:	**L-PEX-7-11**					
Arsenic	**ND**	13	6010B	9-23-10	9-23-10	
Barium	**100**	3.3	6010B	9-23-10	9-23-10	
Cadmium	**ND**	0.66	6010B	9-23-10	9-23-10	
Chromium	**34**	0.66	6010B	9-23-10	9-23-10	
Lead	**ND**	6.6	6010B	9-23-10	9-23-10	
Mercury	**ND**	0.33	7471A	9-23-10	9-23-10	
Selenium	**ND**	13	6010B	9-23-10	9-23-10	
Silver	**ND**	0.66	6010B	9-23-10	9-23-10	

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-227-03					
Client ID:	**L-PEX-8-10**					
Arsenic	**ND**	12	6010B	9-23-10	9-23-10	
Barium	**36**	2.9	6010B	9-23-10	9-23-10	
Cadmium	**ND**	0.58	6010B	9-23-10	9-23-10	
Chromium	**23**	0.58	6010B	9-23-10	9-23-10	
Lead	**31**	5.8	6010B	9-23-10	9-23-10	
Mercury	**ND**	0.29	7471A	9-23-10	9-23-10	
Selenium	**ND**	12	6010B	9-23-10	9-23-10	
Silver	**ND**	0.58	6010B	9-23-10	9-23-10	

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
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Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-23-10
Date Analyzed:	9-23-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0923S1&MB0923S2

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 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-23-10
Date Analyzed: 9-23-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-227-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**76.3**	**74.7**	2	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**25.9**	**25.4**	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 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-23-10
Date Analyzed: 9-23-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-227-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**86.5**	86	**86.7**	87	0	
Barium	100	**173**	97	**174**	98	1	
Cadmium	50	**45.1**	90	**46.1**	92	2	
Chromium	100	**120**	94	**119**	93	1	
Lead	250	**222**	89	**225**	90	2	
Mercury	0.50	**0.510**	102	**0.501**	100	2	
Selenium	100	**91.2**	91	**92.3**	92	1	
Silver	25	**21.5**	86	**21.8**	87	1	

Date of Report: September 28, 2010
Samples Submitted: September 22, 2010
Laboratory Reference: 1009-227
Project: 2007-098-920

% MOISTURE

Date Analyzed: 9-22-10

Client ID	Lab ID	% Moisture
L-PEX-6-11	09-227-01	37
L-PEX-7-11	09-227-02	24
L-PEX-8-10	09-227-03	14

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

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/28/2010
		ALS JOB#:	1009168
		CLIENT PROJECT:	Lab Ref #09-227 / Proj #2007-098-920
CLIENT CONTACT:	Dave Baumeister	DATE RECEIVED:	9/23/2010
CLIENT SAMPLE ID	L-PEX-8-10	COLLECTION DATE:	9/22/2010 15:00
ALS SAMPLE#:	-01	WDOE ACCREDITATION:	C601

DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Methyl T-Butyl Ether	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
Benzene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
Toluene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
Ethylbenzene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
M & P- Xylenes	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
O-Xylene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
C5-C6 Aliphatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
>C6-C8 Aliphatics	NWVPH	**29**	5.0	1	MG/KG	09/26/2010	DLC
>C8-C10 Aliphatics	NWVPH	**36**	5.0	1	MG/KG	09/26/2010	DLC
>C10-C12 Aliphatics	NWVPH	**47**	5.0	1	MG/KG	09/26/2010	DLC
>C8-C10 Aromatics	NWVPH	**48**	5.0	1	MG/KG	09/26/2010	DLC
>C10-C12 Aromatics	NWVPH	**38**	5.0	1	MG/KG	09/26/2010	DLC
>C12-C13 Aromatics	NWVPH	**18 C1**	5.0	1	MG/KG	09/26/2010	DLC
Hexane	NWVPH	U	0.20	1	MG/KG	09/26/2010	DLC
>C8-C10 Aliphatics	NWEPH	**29 C1**	5.0	1	MG/KG	09/24/2010	DLC
>C10-C12 Aliphatics	NWEPH	**18 C1**	5.0	1	MG/KG	09/24/2010	DLC
>C12-C16 Aliphatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C16-C21 Aliphatics	NWEPH	**11**	5.0	1	MG/KG	09/24/2010	DLC
>C21-C34 Aliphatics	NWEPH	**130**	5.0	1	MG/KG	09/24/2010	DLC
>C8-C10 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C10-C12 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C16-C21 Aromatics	NWEPH	**9.1**	5.0	1	MG/KG	09/24/2010	DLC
>C21-C34 Aromatics	NWEPH	**58**	5.0	1	MG/KG	09/24/2010	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	EPA-8021	**73.0**	09/26/2010	DLC
TFT - Aliphatic	NWVPH	**71.0**	09/26/2010	DLC
TFT - Aromatic	NWVPH	**75.0**	09/26/2010	DLC
C25	NWEPH	**90.0**	09/24/2010	DLC
p-Terphenyl	NWEPH	**107**	09/24/2010	DLC

U - Analyte analyzed for but not detected at level above reporting limit.
C1 - Values for this range should be ignored due to overlap correction.

Note: BTEX, MtBE and Hexane results have not been subtracted from the aliphatic range results.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Laboratory Group A Campbell Brothers Limited Company

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	9/28/2010
		ALS JOB#:	1009168
		CLIENT PROJECT:	Lab Ref #09-227 / Proj #2007-098-920
CLIENT CONTACT:	Dave Baumeister	WDOE ACCREDITATION:	C601

LABORATORY BLANK RESULTS

MBLK-9162010

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Methyl T-Butyl Ether	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
Benzene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
Toluene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
Ethylbenzene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
M & P- Xylenes	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC
O-Xylene	EPA-8021	U	0.50	1	MG/KG	09/26/2010	DLC

MBLK-9262010

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
>C6-C8 Aliphatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
>C8-C10 Aliphatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
>C10-C12 Aliphatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
>C8-C10 Aromatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
>C10-C12 Aromatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
>C12-C13 Aromatics	NWVPH	U	5.0	1	MG/KG	09/26/2010	DLC
Hexane	NWVPH	U	0.20	1	MG/KG	09/26/2010	DLC

MBLK-9242010

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C10-C12 Aliphatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C12-C16 Aliphatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C16-C21 Aliphatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C21-C34 Aliphatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C8-C10 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C10-C12 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C16-C21 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC
>C21-C34 Aromatics	NWEPH	U	5.0	1	MG/KG	09/24/2010	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE: ALS JOB#: CLIENT PROJECT:	9/28/2010 1009168 Lab Ref #09-227 / Proj #2007-098-920
CLIENT CONTACT:	Dave Baumeister	WDOE ACCREDITATION:	C601

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: R70683

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	ANALYSIS DATE	ANALYSIS BY
Methyl T-Butyl Ether - BS	EPA-8021	**80**			09/26/2010	DLC
Methyl T-Butyl Ether - BSD	EPA-8021	**85**	**6**		09/26/2010	DLC
Benzene - BS	EPA-8021	**78**			09/26/2010	DLC
Benzene - BSD	EPA-8021	**82**	**5**		09/26/2010	DLC
Toluene - BS	EPA-8021	**77**			09/26/2010	DLC
Toluene - BSD	EPA-8021	**81**	**5**		09/26/2010	DLC
Ethylbenzene - BS	EPA-8021	**78**			09/26/2010	DLC
Ethylbenzene - BSD	EPA-8021	**82**	**5**		09/26/2010	DLC
M & P- Xylenes - BS	EPA-8021	**78**			09/26/2010	DLC
M & P- Xylenes - BSD	EPA-8021	**82**	**5**		09/26/2010	DLC
O-Xylene - BS	EPA-8021	**79**			09/26/2010	DLC
O-Xylene - BSD	EPA-8021	**83**	**4**		09/26/2010	DLC

ALS Test Batch ID: R70685

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics - BS	NWVPH	**76**			09/26/2010	DLC
C5-C6 Aliphatics - BSD	NWVPH	**83**	**8**		09/26/2010	DLC
>C6-C8 Aliphatics - BS	NWVPH	**73**			09/26/2010	DLC
>C6-C8 Aliphatics - BSD	NWVPH	**79**	**7**		09/26/2010	DLC
>C8-C10 Aliphatics - BS	NWVPH	**73**			09/26/2010	DLC
>C8-C10 Aliphatics - BSD	NWVPH	**79**	**7**		09/26/2010	DLC
>C10-C12 Aliphatics - BS	NWVPH	**70**			09/26/2010	DLC
>C10-C12 Aliphatics - BSD	NWVPH	**74**	**5**		09/26/2010	DLC
>C8-C10 Aromatics - BS	NWVPH	**80**			09/26/2010	DLC
>C8-C10 Aromatics - BSD	NWVPH	**84**	**4**		09/26/2010	DLC
>C10-C12 Aromatics - BS	NWVPH	**76**			09/26/2010	DLC
>C10-C12 Aromatics - BSD	NWVPH	**78**	**2**		09/26/2010	DLC
>C12-C13 Aromatics - BS	NWVPH	**80**			09/26/2010	DLC
>C12-C13 Aromatics - BSD	NWVPH	**79**	**1**		09/26/2010	DLC
Hexane - BS	NWVPH	**77**			09/26/2010	DLC
Hexane - BSD	NWVPH	**84**	**8**		09/26/2010	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental Inc. 14648 NE 95th Street Redmond, WA 98052	DATE: ALS JOB#: CLIENT PROJECT:	9/28/2010 1009168 Lab Ref #09-227 / Proj #2007-098-920
CLIENT CONTACT:	Dave Baumeister	WDOE ACCREDITATION:	C601

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: R70687

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	ANALYSIS DATE	ANALYSIS BY
>C10-C12 Aliphatics - BS	NWEPH	**88**			09/24/2010	DLC
>C10-C12 Aliphatics - BSD	NWEPH	**94**	**6**		09/24/2010	DLC
>C12-C16 Aliphatics - BS	NWEPH	**91**			09/24/2010	DLC
>C12-C16 Aliphatics - BSD	NWEPH	**96**	**5**		09/24/2010	DLC
>C16-C21 Aliphatics - BS	NWEPH	**91**			09/24/2010	DLC
>C16-C21 Aliphatics - BSD	NWEPH	**97**	**6**		09/24/2010	DLC
>C21-C34 Aliphatics - BS	NWEPH	**94**			09/24/2010	DLC
>C21-C34 Aliphatics - BSD	NWEPH	**94**	**0**		09/24/2010	DLC
>C10-C12 Aromatics - BS	NWEPH	**100**			09/24/2010	DLC
>C10-C12 Aromatics - BSD	NWEPH	**101**	**0**		09/24/2010	DLC
>C12-C16 Aromatics - BS	NWEPH	**102**			09/24/2010	DLC
>C12-C16 Aromatics - BSD	NWEPH	**104**	**1**		09/24/2010	DLC
>C16-C21 Aromatics - BS	NWEPH	**103**			09/24/2010	DLC
>C16-C21 Aromatics - BSD	NWEPH	**105**	**1**		09/24/2010	DLC
>C21-C34 Aromatics - BS	NWEPH	**98**			09/24/2010	DLC
>C21-C34 Aromatics - BSD	NWEPH	**99**	**1**		09/24/2010	DLC

APPROVED BY:

Laboratory Director

1009168

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Page ____ of ____

Subcontract Laboratory: ALS

Contact Person:

Address:

Phone Number:

Date/Time:

Turnaround Request: 1 Day 2 Day 3 Day

Standard

Other: ASAP

Laboratory Reference #: 09-227

Project Manager: David Baumeister

email: dbaumeister@onsite-env.com

Project Number: 2007-098-920

Project Name:

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
1	L-PEX-8-10	9/22/10	1500	S	2	EPH/VPH

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	[illegible]	OSE	9/23/10	1530	EIM
Received by:	[illegible]	SPEEDY	9/23/10	1030	
Relinquished by:	[illegible]	SPEEDY	9/23/10	1130	
Received by:					
Relinquished by:					
Received by:	Shawn Robinson	ALS	9/23/10	1130	

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Company: HWA
Project Number: 2007-098-920
Project Name: Bothell Landing
Project Manager: Arnie Sugar
Sampled by:

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☒ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☐ Standard (7 working days) (TPH analysis 5 working days)
- ☐ ________ (other)

Laboratory Number: 09-227

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	~~E-TPH~~ EPH	VPH					% Moisture
1	L-PEX-6-11	9/22/10	14:20	Soil	4		X	X		X		X	X			X									X
2	L-PEX-7-11	"	14:30	"	"		X	X				X				X									X
3	L-PEX-8-10	"	15:00	"	"		X	X				X				X			X	X					X

	Signature	Company	Date	Time
Relinquished by	[signature]	HWA	9/22/10	1500
Received by	[signature]	OSE	9/22/10	1550
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

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Environmental Inc.

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September 30, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-920
Laboratory Reference No. 1009-258

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 24, 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 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

Case Narrative

Samples were collected on September 24, 2010 and received by the laboratory on September 24, 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/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.

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^{o}C and -20^{o}C until extraction or analysis.

Not enough Method 5035 VOA vials were provided to perform the client-requested QA/QC.

PAHs EPA 8270D/SIM Analysis

Sample L-PEX-14-9 had one surrogate recovery out of control limits. This is within allowance of our standard operating procedure as long as the recovery is above 10%.

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 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-9-10**					
Laboratory ID:	09-258-01					
Benzene	**ND**	0.020	EPA 8021	9-24-10	9-25-10	
Toluene	**ND**	0.057	EPA 8021	9-24-10	9-25-10	
Ethyl Benzene	**ND**	0.057	EPA 8021	9-24-10	9-25-10	
m,p-Xylene	**ND**	0.057	EPA 8021	9-24-10	9-25-10	
o-Xylene	**ND**	0.057	EPA 8021	9-24-10	9-25-10	
Gasoline	**ND**	5.7	NWTPH-Gx	9-24-10	9-25-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*55-127*				
Client ID:	**L-PEX-10-8**					
Laboratory ID:	09-258-02					
Benzene	**23**	0.10	EPA 8021	9-24-10	9-25-10	
Toluene	**2.6**	0.52	EPA 8021	9-24-10	9-25-10	
Ethyl Benzene	**43**	0.52	EPA 8021	9-24-10	9-25-10	
m,p-Xylene	**120**	5.2	EPA 8021	9-24-10	9-27-10	
o-Xylene	**45**	0.52	EPA 8021	9-24-10	9-25-10	
Gasoline	**3100**	52	NWTPH-Gx	9-24-10	9-25-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*118*	*55-127*				
Client ID:	**L-PEX-11-8**					
Laboratory ID:	09-258-03					
Benzene	**ND**	0.020	EPA 8021	9-24-10	9-25-10	
Toluene	**ND**	0.079	EPA 8021	9-24-10	9-25-10	
Ethyl Benzene	**0.083**	0.079	EPA 8021	9-24-10	9-25-10	
m,p-Xylene	**0.15**	0.079	EPA 8021	9-24-10	9-25-10	
o-Xylene	**ND**	0.079	EPA 8021	9-24-10	9-25-10	
Gasoline	**32**	7.9	NWTPH-Gx	9-24-10	9-25-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*55-127*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-13-14**					
Laboratory ID:	09-258-05					
Gasoline	**ND**	8.3	NWTPH-Gx	9-24-10	9-25-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*55-127*				
Client ID:	**L-PEX-14-9**					
Laboratory ID:	09-258-06					
Benzene	**ND**	0.020	EPA 8021	9-24-10	9-25-10	
Toluene	**ND**	0.051	EPA 8021	9-24-10	9-25-10	
Ethyl Benzene	**0.055**	0.051	EPA 8021	9-24-10	9-25-10	
m,p-Xylene	**0.098**	0.051	EPA 8021	9-24-10	9-25-10	
o-Xylene	**ND**	0.26	EPA 8021	9-24-10	9-25-10	U1
Gasoline	**15**	5.1	NWTPH-Gx	9-24-10	9-25-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*55-127*				
Client ID:	**L-PEX-15-9.5**					
Laboratory ID:	09-258-08					
Benzene	**ND**	0.020	EPA 8021	9-24-10	9-25-10	
Toluene	**ND**	0.052	EPA 8021	9-24-10	9-25-10	
Ethyl Benzene	**ND**	0.052	EPA 8021	9-24-10	9-25-10	
m,p-Xylene	**ND**	0.052	EPA 8021	9-24-10	9-25-10	
o-Xylene	**ND**	0.052	EPA 8021	9-24-10	9-25-10	
Gasoline	**ND**	5.2	NWTPH-Gx	9-24-10	9-25-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*55-127*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0924S2					
Benzene	**ND**	0.020	EPA 8021	9-24-10	9-24-10	
Toluene	**ND**	0.050	EPA 8021	9-24-10	9-24-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-24-10	9-24-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-24-10	9-24-10	
o-Xylene	**ND**	0.050	EPA 8021	9-24-10	9-24-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-24-10	9-24-10	
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:	09-247-02										
	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						*93*	*96*	*55-127*			
SPIKE BLANKS											
Laboratory ID:	SB0924S2										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.914**	**0.936**	1.00	1.00		**91**	**94**	75-113	2	9	
Toluene	**0.943**	**0.975**	1.00	1.00		**94**	**98**	75-116	3	10	
Ethyl Benzene	**0.980**	**1.02**	1.00	1.00		**98**	**102**	82-117	4	10	
m,p-Xylene	**0.990**	**1.03**	1.00	1.00		**99**	**103**	81-122	4	10	
o-Xylene	**0.994**	**1.02**	1.00	1.00		**99**	**102**	83-118	3	10	
Surrogate:											
Fluorobenzene						*91*	*96*	*55-127*			

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-12-6**					
Laboratory ID:	09-258-04					
Benzene	**ND**	0.020	EPA 8021	9-29-10	9-29-10	
Toluene	**ND**	0.053	EPA 8021	9-29-10	9-29-10	
Ethyl Benzene	**ND**	0.053	EPA 8021	9-29-10	9-29-10	
m,p-Xylene	**ND**	0.053	EPA 8021	9-29-10	9-29-10	
o-Xylene	**ND**	0.053	EPA 8021	9-29-10	9-29-10	
Gasoline	**ND**	5.3	NWTPH-Gx	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*55-127*				
Client ID:	**L-PEX-13-14**					
Laboratory ID:	09-258-05					
Benzene	**ND**	0.020	EPA 8021	9-29-10	9-29-10	
Toluene	**ND**	0.083	EPA 8021	9-29-10	9-29-10	
Ethyl Benzene	**ND**	0.083	EPA 8021	9-29-10	9-29-10	
m,p-Xylene	**ND**	0.083	EPA 8021	9-29-10	9-29-10	
o-Xylene	**ND**	0.083	EPA 8021	9-29-10	9-29-10	
Gasoline	**ND**	8.3	NWTPH-Gx	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*55-127*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0929S1					
Benzene	**ND**	0.020	EPA 8021	9-29-10	9-29-10	
Toluene	**ND**	0.050	EPA 8021	9-29-10	9-29-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-29-10	9-29-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-29-10	9-29-10	
o-Xylene	**ND**	0.050	EPA 8021	9-29-10	9-29-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*55-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-319-05										
	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						*89*	*90*	*55-127*			
SPIKE BLANKS											
Laboratory ID:	SB0929S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.918**	**0.967**	1.00	1.00		**92**	**97**	75-113	5	9	
Toluene	**0.895**	**0.941**	1.00	1.00		**90**	**94**	75-116	5	10	
Ethyl Benzene	**0.899**	**0.950**	1.00	1.00		**90**	**95**	82-117	6	10	
m,p-Xylene	**0.913**	**0.961**	1.00	1.00		**91**	**96**	81-122	5	10	
o-Xylene	**0.910**	**0.955**	1.00	1.00		**91**	**96**	83-118	5	10	
Surrogate:											
Fluorobenzene						*91*	*93*	*55-127*			

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	**L-PEX-9-10**					
Laboratory ID:	09-258-01					
Diesel Range Organics	**ND**	29	NWTPH-Dx	9-24-10	9-24-10	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*130*	*50-150*				
Client ID:	**L-PEX-10-8**					
Laboratory ID:	09-258-02					
Diesel Range Organics	**ND**	1800	NWTPH-Dx	9-24-10	9-24-10	U1
Lube Oil	**2700**	58	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*132*	*50-150*				
Client ID:	**L-PEX-11-8**					
Laboratory ID:	09-258-03					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-24-10	9-24-10	
Lube Oil	**80**	61	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*127*	*50-150*				
Client ID:	**L-PEX-12-6**					
Laboratory ID:	09-258-04					
Diesel Range Organics	**ND**	29	NWTPH-Dx	9-24-10	9-24-10	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*121*	*50-150*				
Client ID:	**L-PEX-13-14**					
Laboratory ID:	09-258-05					
Diesel Range Organics	**ND**	34	NWTPH-Dx	9-24-10	9-24-10	
Lube Oil Range Organics	**ND**	68	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*115*	*50-150*				
Client ID:	**L-PEX-14-9**					
Laboratory ID:	09-258-06					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-24-10	9-24-10	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*87*	*50-150*				
Client ID:	**L-PEX-15-9.5**					
Laboratory ID:	09-258-08					
Diesel Range Organics	**ND**	40	NWTPH-Dx	9-24-10	9-24-10	U1
Lube Oil	**170**	60	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	MB0924S3					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-24-10	9-24-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*132*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-258-04							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*121*	*121*	*50-150*			

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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Date Extracted:	9-24-10
Date Analyzed:	9-24-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-258-05
Client ID:	**L-PEX-13-14**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0013
Chloromethane	ND		0.0063
Vinyl Chloride	ND		0.0013
Bromomethane	ND		0.0013
Chloroethane	ND		0.0063
Trichlorofluoromethane	ND		0.0013
1,1-Dichloroethene	ND		0.0013
Acetone	ND		0.0063
Iodomethane	ND		0.0063
Carbon Disulfide	ND		0.0013
Methylene Chloride	ND		0.0063
(trans) 1,2-Dichloroethene	ND		0.0013
Methyl t-Butyl Ether	ND		0.0013
1,1-Dichloroethane	ND		0.0013
Vinyl Acetate	ND		0.0063
2,2-Dichloropropane	ND		0.0013
(cis) 1,2-Dichloroethene	ND		0.0013
2-Butanone	0.032		0.0063
Bromochloromethane	ND		0.0013
Chloroform	ND		0.0013
1,1,1-Trichloroethane	ND		0.0013
Carbon Tetrachloride	ND		0.0013
1,1-Dichloropropene	ND		0.0013
Benzene	ND		0.0013
1,2-Dichloroethane	ND		0.0013
Trichloroethene	ND		0.0013
1,2-Dichloropropane	ND		0.0013
Dibromomethane	ND		0.0013
Bromodichloromethane	ND		0.0013
2-Chloroethyl Vinyl Ether	ND		0.0063
(cis) 1,3-Dichloropropene	ND		0.0013
Methyl Isobutyl Ketone	ND		0.0063
Toluene	ND		0.0063
(trans) 1,3-Dichloropropene	ND		0.0013

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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Lab ID: 09-258-05
Client ID: L-PEX-13-14

Compound	**Results**	**Flags**	**PQL**
1,1,2-Trichloroethane	ND		0.0013
Tetrachloroethene	ND		0.0013
1,3-Dichloropropane	ND		0.0013
2-Hexanone	ND		0.0063
Dibromochloromethane	ND		0.0013
1,2-Dibromoethane	ND		0.0013
Chlorobenzene	ND		0.0013
1,1,1,2-Tetrachloroethane	ND		0.0013
Ethylbenzene	ND		0.0013
m,p-Xylene	ND		0.0025
o-Xylene	ND		0.0013
Styrene	ND		0.0013
Bromoform	ND		0.0013
Isopropylbenzene	ND		0.0013
Bromobenzene	ND		0.0013
1,1,2,2-Tetrachloroethane	ND		0.0013
1,2,3-Trichloropropane	ND		0.0013
n-Propylbenzene	ND		0.0013
2-Chlorotoluene	ND		0.0013
4-Chlorotoluene	ND		0.0013
1,3,5-Trimethylbenzene	0.0060		0.0013
tert-Butylbenzene	ND		0.0013
1,2,4-Trimethylbenzene	ND		0.0013
sec-Butylbenzene	ND		0.0013
1,3-Dichlorobenzene	ND		0.0013
p-Isopropyltoluene	ND		0.0013
1,4-Dichlorobenzene	ND		0.0013
1,2-Dichlorobenzene	ND		0.0013
n-Butylbenzene	ND		0.0013
1,2-Dibromo-3-chloropropane	ND		0.0063
1,2,4-Trichlorobenzene	ND		0.0013
Hexachlorobutadiene	ND		0.0063
Naphthalene	ND		0.0013
1,2,3-Trichlorobenzene	ND		0.0013

Surrogate	**Percent Recovery**	**Control Limits**
Dibromofluoromethane	102	66-128
Toluene-d8	110	68-126
4-Bromofluorobenzene	75	53-134

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 1 of 2

Date Extracted: 9-24-10
Date Analyzed: 9-24-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0924S1

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		0.0050
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 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
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Lab ID: MB0924S1

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	108	66-128
Toluene-d8	114	68-126
4-Bromofluorobenzene	76	53-134

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 9-24-10
Date Analyzed: 9-24-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0924S1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits
1,1-Dichloroethene	0.0500	0.0608	122	0.0614	123	70-130
Benzene	0.0500	0.0450	90	0.0471	94	70-121
Trichloroethene	0.0500	0.0534	107	0.0522	104	70-124
Toluene	0.0500	0.0496	99	0.0486	97	70-123
Chlorobenzene	0.0500	0.0441	88	0.0430	86	71-119

	RPD	RPD Limit	Flags
1,1-Dichloroethene	1	14	
Benzene	5	10	
Trichloroethene	2	12	
Toluene	2	12	
Chlorobenzene	3	9	

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	**L-PEX-13-14**					
Laboratory ID:	09-258-05					
Naphthalene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
2-Methylnaphthalene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
1-Methylnaphthalene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Acenaphthylene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Acenaphthene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Fluorene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Phenanthrene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Anthracene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Fluoranthene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Pyrene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[a]anthracene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Chrysene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[b]fluoranthene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[k]fluoranthene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[a]pyrene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Dibenz[a,h]anthracene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[g,h,i]perylene	**ND**	0.0091	EPA 8270/SIM	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*80*	*45 - 101*				
Pyrene-d10	*96*	*52 - 118*				
Terphenyl-d14	*87*	*41 - 106*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	MB0924S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-24-10	9-24-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*73*	*45 - 101*				
Pyrene-d10	*102*	*52 - 118*				
Terphenyl-d14	*106*	*41 - 106*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	09-243-01										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0778**	**0.0740**	0.0833	0.0833	ND	93	89	31 - 115	5	19	
Acenaphthylene	**0.0958**	**0.0958**	0.0833	0.0833	0.00932	104	104	40 - 134	0	22	
Acenaphthene	**0.0847**	**0.0830**	0.0833	0.0833	ND	102	100	48 - 118	2	17	
Fluorene	**0.0857**	**0.0772**	0.0833	0.0833	ND	103	93	54 - 122	10	16	
Phenanthrene	**0.0818**	**0.0771**	0.0833	0.0833	ND	98	93	46 - 123	6	19	
Anthracene	**0.0805**	**0.0781**	0.0833	0.0833	0.00702	88	85	53 - 123	3	27	
Fluoranthene	**0.0875**	**0.0841**	0.0833	0.0833	0.00701	97	93	47 - 132	4	26	
Pyrene	**0.0921**	**0.0862**	0.0833	0.0833	0.0143	93	86	41 - 137	7	25	
Benzo[a]anthracene	**0.0917**	**0.0906**	0.0833	0.0833	0.00917	99	98	43 - 132	1	26	
Chrysene	**0.102**	**0.0889**	0.0833	0.0833	0.0252	92	76	46 - 126	14	24	
Benzo[b]fluoranthene	**0.0766**	**0.0658**	0.0833	0.0833	0.0100	80	67	44 - 134	15	24	
Benzo[k]fluoranthene	**0.0702**	**0.0604**	0.0833	0.0833	ND	84	73	45 - 132	15	20	
Benzo[a]pyrene	**0.0806**	**0.0702**	0.0833	0.0833	0.0125	82	69	36 - 136	14	23	
Indeno(1,2,3-c,d)pyrene	**0.0934**	**0.0835**	0.0833	0.0833	0.00841	102	90	40 - 136	11	16	
Dibenz[a,h]anthracene	**0.0901**	**0.0874**	0.0833	0.0833	ND	108	105	40 - 142	3	13	
Benzo[g,h,i]perylene	**0.0971**	**0.0861**	0.0833	0.0833	0.0191	94	80	37 - 137	12	18	
Surrogate:											
2-Fluorobiphenyl						*91*	*92*	*45 - 101*			
Pyrene-d10						*96*	*93*	*52 - 118*			
Terphenyl-d14						*91*	*98*	*41 - 106*			

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	**L-PEX-9-10**					
Laboratory ID:	09-258-01					
Naphthalene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
2-Methylnaphthalene	**0.067**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
1-Methylnaphthalene	**0.041**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthylene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Fluorene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Phenanthrene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Anthracene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Fluoranthene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Pyrene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]anthracene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Chrysene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[b]fluoranthene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[k]fluoranthene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]pyrene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Dibenz[a,h]anthracene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[g,h,i]perylene	**ND**	0.0078	EPA 8270/SIM	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*80*	*45 - 101*				
Pyrene-d10	*106*	*52 - 118*				
Terphenyl-d14	*94*	*41 - 106*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	**L-PEX-11-8**					
Laboratory ID:	09-258-03					
Naphthalene	**0.020**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
2-Methylnaphthalene	**0.015**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
1-Methylnaphthalene	**0.024**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthylene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Fluorene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Phenanthrene	**0.0090**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Anthracene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Fluoranthene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Pyrene	**0.010**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]anthracene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Chrysene	**0.013**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[b]fluoranthene	**0.011**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[k]fluoranthene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]pyrene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Dibenz[a,h]anthracene	**ND**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[g,h,i]perylene	**0.0094**	0.0082	EPA 8270/SIM	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*45 - 101*				
Pyrene-d10	*106*	*52 - 118*				
Terphenyl-d14	*101*	*41 - 106*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	**L-PEX-12-6**					
Laboratory ID:	09-258-04					
Naphthalene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
2-Methylnaphthalene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
1-Methylnaphthalene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Fluorene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Phenanthrene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Anthracene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Pyrene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]anthracene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Chrysene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[b]fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[k]fluoranthene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]pyrene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Dibenz[a,h]anthracene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[g,h,i]perylene	**ND**	0.0076	EPA 8270/SIM	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*81*	*45 - 101*				
Pyrene-d10	*106*	*52 - 118*				
Terphenyl-d14	*94*	*41 - 106*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	**L-PEX-14-9**					
Laboratory ID:	09-258-06					
Naphthalene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
2-Methylnaphthalene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
1-Methylnaphthalene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthylene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Fluorene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Phenanthrene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Anthracene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Pyrene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]anthracene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Chrysene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[b]fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[k]fluoranthene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]pyrene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Dibenz[a,h]anthracene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[g,h,i]perylene	**ND**	0.0074	EPA 8270/SIM	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*86*	*45 - 101*				
Pyrene-d10	*107*	*52 - 118*				
Terphenyl-d14	*112*	*41 - 106*				Q

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	**L-PEX-15-9.5**					
Laboratory ID:	09-258-08					
Naphthalene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
2-Methylnaphthalene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
1-Methylnaphthalene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthylene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Fluorene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Phenanthrene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Anthracene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Pyrene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]anthracene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Chrysene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[b]fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[k]fluoranthene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]pyrene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Dibenz[a,h]anthracene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[g,h,i]perylene	**ND**	0.0080	EPA 8270/SIM	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*82*	*45 - 101*				
Pyrene-d10	*96*	*52 - 118*				
Terphenyl-d14	*100*	*41 - 106*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	MB0929S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-29-10	9-29-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*83*	*45 - 101*				
Pyrene-d10	*106*	*52 - 118*				
Terphenyl-d14	*95*	*41 - 106*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

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:	SB0929S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0624**	**0.0607**	0.0833	0.0833	75	73	33 - 105	3	30	
Acenaphthylene	**0.0778**	**0.0757**	0.0833	0.0833	93	91	51 - 110	3	22	
Acenaphthene	**0.0774**	**0.0745**	0.0833	0.0833	93	89	51 - 105	4	20	
Fluorene	**0.0782**	**0.0724**	0.0833	0.0833	94	87	61 - 107	8	17	
Phenanthrene	**0.0740**	**0.0724**	0.0833	0.0833	89	87	61 - 106	2	12	
Anthracene	**0.0732**	**0.0704**	0.0833	0.0833	88	85	59 - 106	4	12	
Fluoranthene	**0.0842**	**0.0826**	0.0833	0.0833	101	99	66 - 116	2	12	
Pyrene	**0.0862**	**0.0851**	0.0833	0.0833	103	102	67 - 118	1	14	
Benzo[a]anthracene	**0.0759**	**0.0747**	0.0833	0.0833	91	90	60 - 114	2	11	
Chrysene	**0.0758**	**0.0748**	0.0833	0.0833	91	90	64 - 112	1	12	
Benzo[b]fluoranthene	**0.0765**	**0.0716**	0.0833	0.0833	92	86	61 - 123	7	14	
Benzo[k]fluoranthene	**0.0768**	**0.0744**	0.0833	0.0833	92	89	50 - 124	3	17	
Benzo[a]pyrene	**0.0742**	**0.0691**	0.0833	0.0833	89	83	50 - 114	7	17	
Indeno(1,2,3-c,d)pyrene	**0.0733**	**0.0696**	0.0833	0.0833	88	84	56 - 122	5	16	
Dibenz[a,h]anthracene	**0.0734**	**0.0693**	0.0833	0.0833	88	83	57 - 124	6	16	
Benzo[g,h,i]perylene	**0.0678**	**0.0644**	0.0833	0.0833	81	77	56 - 121	5	15	
Surrogate:										
2-Fluorobiphenyl					*79*	*86*	*45 - 101*			
Pyrene-d10					*106*	*103*	*52 - 118*			
Terphenyl-d14					*92*	*92*	*41 - 106*			

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-13-14**					
Laboratory ID:	09-258-05					
Aroclor 1016	**ND**	0.068	EPA 8082	9-26-10	9-27-10	
Aroclor 1221	**ND**	0.068	EPA 8082	9-26-10	9-27-10	
Aroclor 1232	**ND**	0.068	EPA 8082	9-26-10	9-27-10	
Aroclor 1242	**ND**	0.068	EPA 8082	9-26-10	9-27-10	
Aroclor 1248	**ND**	0.068	EPA 8082	9-26-10	9-27-10	
Aroclor 1254	**ND**	0.068	EPA 8082	9-26-10	9-27-10	
Aroclor 1260	**ND**	0.068	EPA 8082	9-26-10	9-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*69*	*46-122*				

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0926S1					
Aroclor 1016	**ND**	0.050	EPA 8082	9-26-10	9-27-10	
Aroclor 1221	**ND**	0.050	EPA 8082	9-26-10	9-27-10	
Aroclor 1232	**ND**	0.050	EPA 8082	9-26-10	9-27-10	
Aroclor 1242	**ND**	0.050	EPA 8082	9-26-10	9-27-10	
Aroclor 1248	**ND**	0.050	EPA 8082	9-26-10	9-27-10	
Aroclor 1254	**ND**	0.050	EPA 8082	9-26-10	9-27-10	
Aroclor 1260	**ND**	0.050	EPA 8082	9-26-10	9-27-10	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*89*	*46-122*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0926S1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	**0.399**	**0.449**	0.500	0.500	N/A	**80**	**90**	54-123	12	20	
Surrogate:											
DCB						*88*	*85*	*46-122*			

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Samples Submitted: September 24, 2010
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Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-258-01					
Client ID:	**L-PEX-9-10**					
Arsenic	**ND**	12	6010B	9-30-10	9-30-10	
Barium	**44**	2.9	6010B	9-30-10	9-30-10	
Cadmium	**ND**	0.58	6010B	9-30-10	9-30-10	
Chromium	**29**	0.58	6010B	9-30-10	9-30-10	
Lead	**ND**	5.8	6010B	9-30-10	9-30-10	
Mercury	**ND**	0.29	7471A	9-29-10	9-29-10	
Selenium	**ND**	12	6010B	9-30-10	9-30-10	
Silver	**ND**	0.58	6010B	9-30-10	9-30-10	
Lab ID:	09-258-03					
Client ID:	**L-PEX-11-8**					
Arsenic	**ND**	12	6010B	9-30-10	9-30-10	
Barium	**31**	3.1	6010B	9-30-10	9-30-10	
Cadmium	**ND**	0.61	6010B	9-30-10	9-30-10	
Chromium	**15**	0.61	6010B	9-30-10	9-30-10	
Lead	**9.6**	6.1	6010B	9-30-10	9-30-10	
Mercury	**ND**	0.31	7471A	9-29-10	9-29-10	
Selenium	**ND**	12	6010B	9-30-10	9-30-10	
Silver	**ND**	0.61	6010B	9-30-10	9-30-10	

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-258-04					
Client ID:	**L-PEX-12-6**					
Arsenic	**ND**	11	6010B	9-30-10	9-30-10	
Barium	**66**	2.9	6010B	9-30-10	9-30-10	
Cadmium	**ND**	0.57	6010B	9-30-10	9-30-10	
Chromium	**14**	0.57	6010B	9-30-10	9-30-10	
Lead	**ND**	5.7	6010B	9-30-10	9-30-10	
Mercury	**ND**	0.29	7471A	9-29-10	9-29-10	
Selenium	**ND**	11	6010B	9-30-10	9-30-10	
Silver	**ND**	0.57	6010B	9-30-10	9-30-10	

Lab ID:	09-258-05					
Client ID:	**L-PEX-13-14**					
Arsenic	**ND**	14	6010B	9-30-10	9-30-10	
Barium	**41**	3.4	6010B	9-30-10	9-30-10	
Cadmium	**ND**	0.68	6010B	9-30-10	9-30-10	
Chromium	**29**	0.68	6010B	9-30-10	9-30-10	
Lead	**ND**	6.8	6010B	9-30-10	9-30-10	
Mercury	**ND**	0.34	7471A	9-29-10	9-29-10	
Selenium	**ND**	14	6010B	9-30-10	9-30-10	
Silver	**ND**	0.68	6010B	9-30-10	9-30-10	

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-258-06					
Client ID:	**L-PEX-14-9**					
Arsenic	**ND**	11	6010B	9-30-10	9-30-10	
Barium	**31**	2.8	6010B	9-30-10	9-30-10	
Cadmium	**ND**	0.56	6010B	9-30-10	9-30-10	
Chromium	**20**	0.56	6010B	9-30-10	9-30-10	
Lead	**7.6**	5.6	6010B	9-30-10	9-30-10	
Mercury	**ND**	0.28	7471A	9-29-10	9-29-10	
Selenium	**ND**	11	6010B	9-30-10	9-30-10	
Silver	**ND**	0.56	6010B	9-30-10	9-30-10	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-258-08					
Client ID:	**L-PEX-15-9.5**					
Arsenic	**ND**	12	6010B	9-30-10	9-30-10	
Barium	**22**	3.0	6010B	9-30-10	9-30-10	
Cadmium	**ND**	0.60	6010B	9-30-10	9-30-10	
Chromium	**10**	0.60	6010B	9-30-10	9-30-10	
Lead	**8.1**	6.0	6010B	9-30-10	9-30-10	
Mercury	**ND**	0.30	7471A	9-29-10	9-29-10	
Selenium	**ND**	12	6010B	9-30-10	9-30-10	
Silver	**ND**	0.60	6010B	9-30-10	9-30-10	

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 9-29&30-10
Date Analyzed: 9-29&30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0929S1&MB0930S1

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 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-29&30-10
Date Analyzed: 9-29&30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-258-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**37.5**	**37.8**	1	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**25.0**	**22.3**	11	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 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-29&30-10
Date Analyzed: 9-29&30-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-258-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**90.9**	91	**96.7**	97	6	
Barium	100	**133**	95	**128**	91	3	
Cadmium	50	**44.6**	89	**44.9**	90	1	
Chromium	100	**117**	92	**114**	89	2	
Lead	250	**222**	89	**222**	89	0	
Mercury	0.50	**0.480**	96	**0.497**	99	4	
Selenium	100	**94.7**	95	**95.7**	96	1	
Silver	25	**21.5**	86	**21.9**	88	2	

Date of Report: September 30, 2010
Samples Submitted: September 24, 2010
Laboratory Reference: 1009-258
Project: 2007-098-920

% MOISTURE

Date Analyzed: 9-24-10

Client ID	Lab ID	% Moisture
L-PEX-9-10	09-258-01	14
L-PEX-10-8	09-258-02	14
L-PEX-11-8	09-258-03	19
L-PEX-12-6	09-258-04	12
L-PEX-13-14	09-258-05	27
L-PEX-14-9	09-258-06	10
L-PEX-15-9.5	09-258-08	17

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

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: 2007-098-920
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: --

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: 09-258

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	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 / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664	% Moisture
1	L-PEx-9-10	9/24/10	850	S	2		/		/				X					X			X
2	L-PEx-10-8		900		2		/		/												
3	L-PEx-11-8		915		5		/		/				X					X			
4	L-PEx-12-6		1130		2		X		/				X					X			
5	L-PEx-13-14		1200		6		X	/	/	/			/	/				X			
6	L-PEx-14-9		1700		3		/		/				X					X			
7	L-PEx-14-10		1310		3																
8	L-PEx-15-9.5		1400		3		X		X				X					X			X

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	9/24/10	1430
Received	[signature]	OSE	9/24/10	1430
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

X Added 9/28/10. DB (2 day TAT)

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

September 29, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-920
Laboratory Reference No. 1009-277

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on September 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 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

Case Narrative

Samples were collected on September 27, 2010 and received by the laboratory on September 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/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.

Halogenated Volatiles EPA 8260B

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.

Not enough Method 5035 VOA vials were provided to perform the client-requested QA/QC.

PAHs EPA 8270D/SIM Analysis

The spike blank had one surrogate recovery out of control limits. This is within allowance of our standard operating procedure as long as the recovery is above 10%.

Sample MS/MSD pair had one recovery fall outside of control limits and two RPD's out. The SB/SBD pair extracted with this batch had all parameters in control, no further action was deemed necessary.

Total Metals EPA 6010B/7471A Analysis

The Matrix Spike/ Matrix Spike Duplicate recoveries for Mercury are outside control limits due to matrix inhomogeniety. The samples were re-extracted and re-analyzed with similar results. The Spike Blank recovery was 95%.

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 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-16-11**					
Laboratory ID:	09-277-01					
Benzene	**ND**	0.020	EPA 8021	9-27-10	9-27-10	
Toluene	**ND**	0.070	EPA 8021	9-27-10	9-27-10	
Ethyl Benzene	**ND**	0.070	EPA 8021	9-27-10	9-27-10	
m,p-Xylene	**ND**	0.070	EPA 8021	9-27-10	9-27-10	
o-Xylene	**ND**	0.070	EPA 8021	9-27-10	9-27-10	
Gasoline	**ND**	7.0	NWTPH-Gx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***95***	***55-127***				
Client ID:	**L-PEX-17-9**					
Laboratory ID:	09-277-02					
Benzene	**ND**	0.020	EPA 8021	9-27-10	9-27-10	
Toluene	**ND**	0.078	EPA 8021	9-27-10	9-27-10	
Ethyl Benzene	**ND**	0.078	EPA 8021	9-27-10	9-27-10	
m,p-Xylene	**ND**	0.078	EPA 8021	9-27-10	9-27-10	
o-Xylene	**ND**	0.078	EPA 8021	9-27-10	9-27-10	
Gasoline	**ND**	7.8	NWTPH-Gx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***95***	***55-127***				
Client ID:	**L-PEX-18-14**					
Laboratory ID:	09-277-03					
Benzene	**ND**	0.020	EPA 8021	9-27-10	9-27-10	
Toluene	**ND**	0.086	EPA 8021	9-27-10	9-27-10	
Ethyl Benzene	**ND**	0.086	EPA 8021	9-27-10	9-27-10	
m,p-Xylene	**ND**	0.086	EPA 8021	9-27-10	9-27-10	
o-Xylene	**ND**	0.086	EPA 8021	9-27-10	9-27-10	
Gasoline	**ND**	8.6	NWTPH-Gx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***92***	***55-127***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-DUP-092710**					
Laboratory ID:	09-277-04					
Benzene	**ND**	0.020	EPA 8021	9-27-10	9-27-10	
Toluene	**ND**	0.074	EPA 8021	9-27-10	9-27-10	
Ethyl Benzene	**ND**	0.074	EPA 8021	9-27-10	9-27-10	
m,p-Xylene	**ND**	0.074	EPA 8021	9-27-10	9-27-10	
o-Xylene	**ND**	0.074	EPA 8021	9-27-10	9-27-10	
Gasoline	**ND**	7.4	NWTPH-Gx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***95***	***55-127***				
Client ID:	**L-PEX-19-10**					
Laboratory ID:	09-277-05					
Benzene	**ND**	0.020	EPA 8021	9-27-10	9-27-10	
Toluene	**ND**	0.052	EPA 8021	9-27-10	9-27-10	
Ethyl Benzene	**ND**	0.052	EPA 8021	9-27-10	9-27-10	
m,p-Xylene	**ND**	0.052	EPA 8021	9-27-10	9-27-10	
o-Xylene	**ND**	0.052	EPA 8021	9-27-10	9-27-10	
Gasoline	**ND**	5.2	NWTPH-Gx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***100***	***55-127***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0927S1					
Benzene	**ND**	0.020	EPA 8021	9-27-10	9-27-10	
Toluene	**ND**	0.050	EPA 8021	9-27-10	9-27-10	
Ethyl Benzene	**ND**	0.050	EPA 8021	9-27-10	9-27-10	
m,p-Xylene	**ND**	0.050	EPA 8021	9-27-10	9-27-10	
o-Xylene	**ND**	0.050	EPA 8021	9-27-10	9-27-10	
Gasoline	**ND**	5.0	NWTPH-Gx	9-27-10	9-27-10	
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:	09-277-03										
	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***	***93***	***55-127***			
SPIKE BLANKS											
Laboratory ID:	SB0927S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.965**	**0.979**	1.00	1.00		**97**	**98**	75-113	1	9	
Toluene	**0.942**	**0.945**	1.00	1.00		**94**	**95**	75-116	0	10	
Ethyl Benzene	**0.944**	**0.950**	1.00	1.00		**94**	**95**	82-117	1	10	
m,p-Xylene	**0.961**	**0.956**	1.00	1.00		**96**	**96**	81-122	1	10	
o-Xylene	**0.953**	**0.952**	1.00	1.00		**95**	**95**	83-118	0	10	
Surrogate:											
Fluorobenzene						***94***	***92***	***55-127***			

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	**L-PEX-16-11**					
Laboratory ID:	09-277-01					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-27-10	9-27-10	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***122***	***50-150***				
Client ID:	**L-PEX-17-9**					
Laboratory ID:	09-277-02					
Diesel Range Organics	**ND**	32	NWTPH-Dx	9-27-10	9-27-10	
Lube Oil Range Organics	**ND**	64	NWTPH-Dx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***94***	***50-150***				
Client ID:	**L-PEX-18-14**					
Laboratory ID:	09-277-03					
Diesel Range Organics	**ND**	33	NWTPH-Dx	9-27-10	9-27-10	
Lube Oil	**94**	67	NWTPH-Dx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***107***	***50-150***				
Client ID:	**L-DUP-092710**					
Laboratory ID:	09-277-04					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-27-10	9-27-10	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***118***	***50-150***				
Client ID:	**L-PEX-19-10**					
Laboratory ID:	09-277-05					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-27-10	9-27-10	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	MB0927S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-27-10	9-27-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***121***	***50-150***				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-277-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			***122***	***98***	***50-150***			

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
page 1 of 2

Date Extracted:	9-27-10
Date Analyzed:	9-27-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-277-02
Client ID:	**L-PEX-17-9**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0012
Chloromethane	ND		0.0060
Vinyl Chloride	ND		0.0012
Bromomethane	ND		0.0012
Chloroethane	ND		0.0060
Trichlorofluoromethane	ND		0.0012
1,1-Dichloroethene	ND		0.0012
Iodomethane	ND		0.0060
Methylene Chloride	ND		0.0060
(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		0.0060
(cis) 1,3-Dichloropropene	ND		0.0012
(trans) 1,3-Dichloropropene	ND		0.0012

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
page 2 of 2

Lab ID: 09-277-02
Client ID: L-PEX-17-9

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		0.0060
1,2,4-Trichlorobenzene	ND		0.0012
Hexachlorobutadiene	ND		0.0060
1,2,3-Trichlorobenzene	ND		0.0012

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	109	66-128
Toluene-d8	115	68-126
4-Bromofluorobenzene	101	53-134

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Date Extracted:	9-27-10
Date Analyzed:	9-27-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0927S1

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 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB0927S1

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	110	66-128
Toluene-d8	115	68-126
4-Bromofluorobenzene	103	53-134

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

HALOGENATED VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 9-27-10
Date Analyzed: 9-27-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0927S1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	0.0500	0.0450	90	0.0479	96	70-130	
Benzene	0.0500	0.0498	100	0.0522	104	70-121	
Trichloroethene	0.0500	0.0486	97	0.0508	102	70-124	
Toluene	0.0500	0.0506	101	0.0544	109	70-123	
Chlorobenzene	0.0500	0.0477	95	0.0509	102	71-119	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	6	14	
Benzene	5	10	
Trichloroethene	4	12	
Toluene	7	12	
Chlorobenzene	7	9	

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	**L-PEX-16-11**					
Laboratory ID:	09-277-01					
Naphthalene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
2-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
1-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Acenaphthylene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Acenaphthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Fluorene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Phenanthrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Anthracene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Pyrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[a]anthracene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Chrysene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[b]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[k]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[a]pyrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Dibenz[a,h]anthracene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[g,h,i]perylene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***85***	***45 - 101***				
Pyrene-d10	***98***	***52 - 118***				
Terphenyl-d14	***94***	***41 - 106***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	**L-PEX-17-9**					
Laboratory ID:	09-277-02					
Naphthalene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
2-Methylnaphthalene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
1-Methylnaphthalene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Acenaphthylene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Acenaphthene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Fluorene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Phenanthrene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Anthracene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Fluoranthene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Pyrene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[a]anthracene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Chrysene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[b]fluoranthene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[k]fluoranthene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[a]pyrene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Dibenz[a,h]anthracene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[g,h,i]perylene	**ND**	0.0085	EPA 8270/SIM	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***89***	***45 - 101***				
Pyrene-d10	***97***	***52 - 118***				
Terphenyl-d14	***105***	***41 - 106***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	**L-PEX-18-14**					
Laboratory ID:	09-277-03					
Naphthalene	**0.017**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
2-Methylnaphthalene	**0.032**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
1-Methylnaphthalene	**0.013**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Acenaphthylene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Acenaphthene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Fluorene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Phenanthrene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Anthracene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Fluoranthene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Pyrene	**0.010**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[a]anthracene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Chrysene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[b]fluoranthene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[k]fluoranthene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[a]pyrene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Dibenz[a,h]anthracene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[g,h,i]perylene	**ND**	0.0089	EPA 8270/SIM	9-27-10	9-28-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***82***	***45 - 101***				
Pyrene-d10	***85***	***52 - 118***				
Terphenyl-d14	***91***	***41 - 106***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	**L-DUP-092710**					
Laboratory ID:	09-277-04					
Naphthalene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
2-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
1-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Acenaphthylene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Acenaphthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Fluorene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Phenanthrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Anthracene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Pyrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[a]anthracene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Chrysene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[b]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[k]fluoranthene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[a]pyrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Dibenz[a,h]anthracene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[g,h,i]perylene	**ND**	0.0083	EPA 8270/SIM	9-27-10	9-28-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***84***	***45 - 101***				
Pyrene-d10	***93***	***52 - 118***				
Terphenyl-d14	***95***	***41 - 106***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	**L-PEX-19-10**					
Laboratory ID:	09-277-05					
Naphthalene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
2-Methylnaphthalene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
1-Methylnaphthalene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Acenaphthylene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Acenaphthene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Fluorene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Phenanthrene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Anthracene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Pyrene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[a]anthracene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Chrysene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[b]fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[k]fluoranthene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[a]pyrene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Dibenz[a,h]anthracene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Benzo[g,h,i]perylene	**ND**	0.0075	EPA 8270/SIM	9-27-10	9-28-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***89***	***45 - 101***				
Pyrene-d10	***101***	***52 - 118***				
Terphenyl-d14	***95***	***41 - 106***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	MB0927S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Fluorene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Anthracene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Pyrene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Chrysene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[k]fluoranthene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270/SIM	9-27-10	9-27-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***88***	***45 - 101***				
Pyrene-d10	***105***	***52 - 118***				
Terphenyl-d14	***98***	***41 - 106***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	09-277-01										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.00971**	**0.0499**	0.0833	0.0833	ND	12	60	31 - 115	135	19	I,L
Acenaphthylene	**0.0616**	**0.0758**	0.0833	0.0833	ND	74	91	40 - 134	21	22	
Acenaphthene	**0.0599**	**0.0766**	0.0833	0.0833	ND	72	92	48 - 118	24	17	L
Fluorene	**0.0657**	**0.0752**	0.0833	0.0833	ND	79	90	54 - 122	13	16	
Phenanthrene	**0.0703**	**0.0751**	0.0833	0.0833	ND	84	90	46 - 123	7	19	
Anthracene	**0.0697**	**0.0737**	0.0833	0.0833	ND	84	88	53 - 123	6	27	
Fluoranthene	**0.0811**	**0.0845**	0.0833	0.0833	ND	97	101	47 - 132	4	26	
Pyrene	**0.0823**	**0.0860**	0.0833	0.0833	ND	99	103	41 - 137	4	25	
Benzo[a]anthracene	**0.0751**	**0.0783**	0.0833	0.0833	ND	90	94	43 - 132	4	26	
Chrysene	**0.0735**	**0.0766**	0.0833	0.0833	ND	88	92	46 - 126	4	24	
Benzo[b]fluoranthene	**0.0704**	**0.0753**	0.0833	0.0833	ND	85	90	44 - 134	7	24	
Benzo[k]fluoranthene	**0.0591**	**0.0722**	0.0833	0.0833	ND	71	87	45 - 132	20	20	
Benzo[a]pyrene	**0.0729**	**0.0758**	0.0833	0.0833	ND	88	91	36 - 136	4	23	
Indeno(1,2,3-c,d)pyrene	**0.0660**	**0.0706**	0.0833	0.0833	ND	79	85	40 - 136	7	16	
Dibenz[a,h]anthracene	**0.0665**	**0.0717**	0.0833	0.0833	ND	80	86	40 - 142	8	13	
Benzo[g,h,i]perylene	**0.0639**	**0.0660**	0.0833	0.0833	ND	77	79	37 - 137	3	18	
Surrogate:											
2-Fluorobiphenyl						***48***	***77***	***45 - 101***			
Pyrene-d10						***100***	***104***	***52 - 118***			
Terphenyl-d14						***96***	***99***	***41 - 106***			

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

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:	SB0927S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0666**	**0.0598**	0.0833	0.0833	80	72	33 - 105	11	30	
Acenaphthylene	**0.0793**	**0.0743**	0.0833	0.0833	95	89	51 - 110	7	22	
Acenaphthene	**0.0786**	**0.0746**	0.0833	0.0833	94	90	51 - 105	5	20	
Fluorene	**0.0768**	**0.0737**	0.0833	0.0833	92	88	61 - 107	4	17	
Phenanthrene	**0.0762**	**0.0749**	0.0833	0.0833	91	90	61 - 106	2	12	
Anthracene	**0.0756**	**0.0734**	0.0833	0.0833	91	88	59 - 106	3	12	
Fluoranthene	**0.0868**	**0.0867**	0.0833	0.0833	104	104	66 - 116	0	12	
Pyrene	**0.0885**	**0.0883**	0.0833	0.0833	106	106	67 - 118	0	14	
Benzo[a]anthracene	**0.0831**	**0.0813**	0.0833	0.0833	100	98	60 - 114	2	11	
Chrysene	**0.0802**	**0.0791**	0.0833	0.0833	96	95	64 - 112	1	12	
Benzo[b]fluoranthene	**0.0768**	**0.0790**	0.0833	0.0833	92	95	61 - 123	3	14	
Benzo[k]fluoranthene	**0.0751**	**0.0759**	0.0833	0.0833	90	91	50 - 124	1	17	
Benzo[a]pyrene	**0.0764**	**0.0753**	0.0833	0.0833	92	90	50 - 114	1	17	
Indeno(1,2,3-c,d)pyrene	**0.0663**	**0.0699**	0.0833	0.0833	80	84	56 - 122	5	16	
Dibenz[a,h]anthracene	**0.0675**	**0.0709**	0.0833	0.0833	81	85	57 - 124	5	16	
Benzo[g,h,i]perylene	**0.0637**	**0.0660**	0.0833	0.0833	76	79	56 - 121	4	15	
Surrogate:										
2-Fluorobiphenyl					***83***	***78***	***45 - 101***			
Pyrene-d10					***107***	***107***	***52 - 118***			
Terphenyl-d14					***108***	***103***	***41 - 106***			Q

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-17-9**					
Laboratory ID:	09-277-02					
Aroclor 1016	**ND**	0.064	EPA 8082	9-28-10	9-28-10	
Aroclor 1221	**ND**	0.064	EPA 8082	9-28-10	9-28-10	
Aroclor 1232	**ND**	0.064	EPA 8082	9-28-10	9-28-10	
Aroclor 1242	**ND**	0.064	EPA 8082	9-28-10	9-28-10	
Aroclor 1248	**ND**	0.064	EPA 8082	9-28-10	9-28-10	
Aroclor 1254	**ND**	0.064	EPA 8082	9-28-10	9-28-10	
Aroclor 1260	**ND**	0.064	EPA 8082	9-28-10	9-28-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***71***	***46-122***				

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0928S1					
Aroclor 1016	**ND**	0.050	EPA 8082	9-28-10	9-28-10	
Aroclor 1221	**ND**	0.050	EPA 8082	9-28-10	9-28-10	
Aroclor 1232	**ND**	0.050	EPA 8082	9-28-10	9-28-10	
Aroclor 1242	**ND**	0.050	EPA 8082	9-28-10	9-28-10	
Aroclor 1248	**ND**	0.050	EPA 8082	9-28-10	9-28-10	
Aroclor 1254	**ND**	0.050	EPA 8082	9-28-10	9-28-10	
Aroclor 1260	**ND**	0.050	EPA 8082	9-28-10	9-28-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***91***	***46-122***				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
MATRIX SPIKES											
Laboratory ID:	09-277-02										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.423**	**0.452**	0.500	0.500	ND	**85**	**90**	36-121	7	15	
Surrogate:											
DCB						***83***	***86***	***46-122***			

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-277-01					
Client ID:	**L-PEX-16-11**					
Arsenic	**ND**	12	6010B	9-28-10	9-28-10	
Barium	**30**	3.1	6010B	9-28-10	9-28-10	
Cadmium	**ND**	0.62	6010B	9-28-10	9-28-10	
Chromium	**26**	0.62	6010B	9-28-10	9-28-10	
Lead	**ND**	6.2	6010B	9-28-10	9-28-10	
Mercury	**ND**	0.31	7471A	9-27-10	9-27-10	
Selenium	**ND**	12	6010B	9-28-10	9-28-10	
Silver	**ND**	0.62	6010B	9-28-10	9-28-10	
Lab ID:	09-277-02					
Client ID:	**L-PEX-17-9**					
Arsenic	**ND**	13	6010B	9-28-10	9-28-10	
Barium	**67**	3.2	6010B	9-28-10	9-28-10	
Cadmium	**ND**	0.64	6010B	9-28-10	9-28-10	
Chromium	**3.6**	0.64	6010B	9-28-10	9-28-10	
Lead	**ND**	6.4	6010B	9-28-10	9-28-10	
Mercury	**ND**	0.32	7471A	9-27-10	9-27-10	
Selenium	**ND**	13	6010B	9-28-10	9-28-10	
Silver	**ND**	0.64	6010B	9-28-10	9-28-10	

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-277-03					
Client ID:	**L-PEX-18-14**					
Arsenic	**ND**	13	6010B	9-28-10	9-28-10	
Barium	**43**	3.3	6010B	9-28-10	9-28-10	
Cadmium	**ND**	0.67	6010B	9-28-10	9-28-10	
Chromium	**19**	0.67	6010B	9-28-10	9-28-10	
Lead	**ND**	6.7	6010B	9-28-10	9-28-10	
Mercury	**ND**	0.33	7471A	9-27-10	9-27-10	
Selenium	**ND**	13	6010B	9-28-10	9-28-10	
Silver	**ND**	0.67	6010B	9-28-10	9-28-10	

Lab ID:	09-277-04					
Client ID:	**L-DUP-092710**					
Arsenic	**ND**	12	6010B	9-28-10	9-28-10	
Barium	**34**	3.1	6010B	9-28-10	9-28-10	
Cadmium	**ND**	0.62	6010B	9-28-10	9-28-10	
Chromium	**17**	0.62	6010B	9-28-10	9-28-10	
Lead	**ND**	6.2	6010B	9-28-10	9-28-10	
Mercury	**ND**	0.31	7471A	9-27-10	9-27-10	
Selenium	**ND**	12	6010B	9-28-10	9-28-10	
Silver	**ND**	0.62	6010B	9-28-10	9-28-10	

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-277-05					
Client ID:	**L-PEX-19-10**					
Arsenic	**ND**	11	6010B	9-28-10	9-28-10	
Barium	**43**	2.8	6010B	9-28-10	9-28-10	
Cadmium	**ND**	0.56	6010B	9-28-10	9-28-10	
Chromium	**22**	0.56	6010B	9-28-10	9-28-10	
Lead	**11**	5.6	6010B	9-28-10	9-28-10	
Mercury	**ND**	0.28	7471A	9-27-10	9-27-10	
Selenium	**ND**	11	6010B	9-28-10	9-28-10	
Silver	**ND**	0.56	6010B	9-28-10	9-28-10	

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted: 9-28-10
Date Analyzed: 9-28-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0928S1

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 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL MERCURY
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 9-27-10
Date Analyzed: 9-27-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0927S3

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 9-28-10
Date Analyzed: 9-28-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-277-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**32.0**	**35.6**	11	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**14.2**	**14.6**	3	0.50	
Lead	**ND**	**ND**	NA	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL MERCURY
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 9-27-10
Date Analyzed: 9-27-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-264-05

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**0.756**	**0.760**	1	0.25	

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 9-28-10
Date Analyzed: 9-28-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-277-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**93.1**	93	**97.3**	97	5	
Barium	100	**127**	95	**128**	96	2	
Cadmium	50	**44.2**	88	**44.9**	90	2	
Chromium	100	**108**	94	**109**	95	1	
Lead	250	**220**	88	**227**	91	3	
Selenium	100	**96.3**	96	**99.4**	99	3	
Silver	25	**22.2**	89	**23.0**	92	4	

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

TOTAL MERCURY
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted: 9-27-10
Date Analyzed: 9-27-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-264-05

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.50	**1.16**	81	**1.11**	72	4	V

Date of Report: September 29, 2010
Samples Submitted: September 27, 2010
Laboratory Reference: 1009-277
Project: 2007-098-920

% MOISTURE

Date Analyzed: 9-27-10

Client ID	Lab ID	% Moisture
L-PEX-16-11	09-277-01	20
L-PEX-17-9	09-277-02	22
L-PEX-18-14	09-277-03	25
L-DUP-092710	09-277-04	20
L-PEX-19-10	09-277-05	11

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

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
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Chain of Custody

Page 1 of 1

Company: HWA GeoSciences
Project Number: 2007-098-920
Project Name: Bothell Landing
Project Manager: Vance Atkins
Sampled by: Norm Nielsen

Turnaround Request (in working days)
(Check One)
- [ ] Same Day
- [x] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [ ] Standard (7 working days) (TPH analysis 5 working days)
- [ ] ______ (other)

Laboratory Number: 09-277

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	L-PEX-16-11	9/27/10	10:50	Soil	2		X	X				X				X			X
2	L-PEX-17-9		11:05		4		X	X		X		X	X			X			
3	L-PEX-18-14		11:15		2		X	X				X				X			
4	L-DUP-092710		11:25		2		X	X				X				X			
5	L-PEX-19-10		11:30		2		X	X				X				X			

	Signature	Company	Date	Time
Relinquished by	[signature]	HWA GeoSciences	9/27/10	12:49
Received by	[signature]	OSE	9/27/10	1249
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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October 4, 2010

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re:	Analytical Data for Project 2007-098-920
	Laboratory Reference No. 1010-014

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on October 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: October 4, 2010
Samples Submitted: October 1, 2010
Laboratory Reference: 1010-014
Project: 2007-098-920

Case Narrative

Samples were collected on October 1, 2010 and received by the laboratory on October 1, 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: October 4, 2010
Samples Submitted: October 1, 2010
Laboratory Reference: 1010-014
Project: 2007-098-920

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:	**L-TP-17-1**					
Laboratory ID:	10-014-01					
Diesel Range Organics	**ND**	29	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil	**110**	58	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***90***	***50-150***				
Client ID:	**L-TP-17-3**					
Laboratory ID:	10-014-02					
Diesel Range Organics	**ND**	27	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***90***	***50-150***				
Client ID:	**L-TP-17-6**					
Laboratory ID:	10-014-03					
Diesel Range Organics	**ND**	77	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil	**160**	150	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***70***	***50-150***				
Client ID:	**L-TP-18-1**					
Laboratory ID:	10-014-04					
Diesel Range Organics	**ND**	31	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil	**140**	62	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***94***	***50-150***				
Client ID:	**L-TP-18-3**					
Laboratory ID:	10-014-05					
Diesel Range Organics	**ND**	31	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**L-TP-19-1**					
Laboratory ID:	10-014-07					
Diesel Range Organics	**ND**	33	NWTPH-Dx	10-1-10	10-3-10	U1
Lube Oil	**160**	58	NWTPH-Dx	10-1-10	10-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				

Date of Report: October 4, 2010
Samples Submitted: October 1, 2010
Laboratory Reference: 1010-014
Project: 2007-098-920

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:	**L-TP-19-3**					
Laboratory ID:	10-014-08					
Diesel Range Organics	**ND**	29	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***94***	***50-150***				
Client ID:	**L-TP-20-2**					
Laboratory ID:	10-014-10					
Diesel Range Organics	**ND**	86	NWTPH-Dx	10-1-10	10-3-10	U1
Lube Oil	**370**	60	NWTPH-Dx	10-1-10	10-3-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				
Client ID:	**L-TP-21-2**					
Laboratory ID:	10-014-11					
Diesel Range Organics	**ND**	30	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***98***	***50-150***				
Client ID:	**L-TP-21-5**					
Laboratory ID:	10-014-12					
Diesel Range Organics	**ND**	73	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil	**180**	150	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***80***	***50-150***				

Date of Report: October 4, 2010
Samples Submitted: October 1, 2010
Laboratory Reference: 1010-014
Project: 2007-098-920

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:	MB1001S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	10-1-10	10-1-10	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	10-1-10	10-1-10	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***92***	***50-150***				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	10-014-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil	**96.5**	**54.8**				55	NA	
Surrogate:								
o-Terphenyl			***90***	***85***	***50-150***			
Laboratory ID:	10-014-11							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			***98***	***100***	***50-150***			

Date of Report: October 4, 2010
Samples Submitted: October 1, 2010
Laboratory Reference: 1010-014
Project: 2007-098-920

% MOISTURE

Date Analyzed: 10-1-10

Client ID	Lab ID	% Moisture
L-TP-17-1	10-014-01	13
L-TP-17-3	10-014-02	8
L-TP-17-6	10-014-03	68
L-TP-18-1	10-014-04	19
L-TP-18-3	10-014-05	18
L-TP-19-1	10-014-07	13
L-TP-19-3	10-014-08	14
L-TP-20-2	10-014-10	16
L-TP-21-2	10-014-11	18
L-TP-21-5	10-014-12	66

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

OnSite Environmental Inc.
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Chain of Custody

Page 1 of 2

Laboratory Number: 10-014

Company: HWA
Project Number: 2007-098-920
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: dr

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 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 / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664							% Moisture
1	L-TP-17-1	10/1/10	1315	S	2				/																		X
2	L-TP-17-3		1320		2				/																		
3	L-TP-17-6		1325		2				/																		
4	L-TP-18-1		1335		1				/																		
5	L-TP-18-3		1340		1				/																		
6	L-TP-18-6		1345		1																						
7	L-TP-19-1		1350		1				/																		X
8	L-TP-19-3		1400		1				/																		
9	L-TP-19-5		1405		1																						
10	L-TP-20-2		1410		1				/																		X

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	10/1/10	1510
Received	[signature]	OSE	10/1/10	1510
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

Laboratory Number: 10-014

Company: HWA

Project Number: 2007-098-920

Project Name: Bothell Landing

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 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 / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664	% Moisture
11	L-TP-21-2	10/1/10	1415	S	1				/												X
12	L-TP-21-5	"	1420	S	1				/												✓

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	10/1/10	1510
Received	[signature]	OSE	10/1/10	1510
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

August 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. 1308-125

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on August 19, 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: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
Project: 2007-098-995

Case Narrative

Samples were collected on August 19, 2013 and received by the laboratory on August 19, 2013. 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/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^oC and -20^oC until extraction or analysis.

Halogenated Volatiles EPA 8260C 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^oC and -20^oC until extraction or analysis.

Client-requested QA/QC could not be performed due to an insufficient number of Method 5035A VOA vials.

Surrogate Standard Dibromofluoromethane is outside control limits for sample TP-L7-7 due to sample matrix effects.

Total Metals EPA 6010C/7471B Analysis

The duplicate RPD for Chromium is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

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: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
Project: 2007-098-995

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L1-4**					
Laboratory ID:	08-125-01					
Benzene	**ND**	0.020	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.061	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.061	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.061	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.061	EPA 8021B	8-20-13	8-20-13	
Gasoline	**8.6**	6.1	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*79*	*71-121*				
Client ID:	**TP-L1-7**					
Laboratory ID:	08-125-02					
Benzene	**ND**	0.020	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.052	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.052	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.052	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.052	EPA 8021B	8-20-13	8-20-13	
Gasoline	**ND**	5.2	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-121*				
Client ID:	**TP-L1-10**					
Laboratory ID:	08-125-03					
Benzene	**ND**	0.020	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.098	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.098	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.098	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.098	EPA 8021B	8-20-13	8-20-13	
Gasoline	**ND**	9.8	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*71-121*				

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
Project: 2007-098-995

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L2-5**					
Laboratory ID:	08-125-04					
Benzene	**ND**	0.020	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.049	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.049	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.049	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.049	EPA 8021B	8-20-13	8-20-13	
Gasoline	**ND**	4.9	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*81*	*71-121*				
Client ID:	**TP-L2-8**					
Laboratory ID:	08-125-05					
Benzene	**ND**	0.020	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.075	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**0.12**	0.075	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**0.16**	0.075	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.075	EPA 8021B	8-20-13	8-20-13	
Gasoline	**60**	7.5	NWTPH-Gx	8-20-13	8-20-13	O
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*71-121*				
Client ID:	**TP-L3-5**					
Laboratory ID:	08-125-06					
Benzene	**ND**	0.020	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.093	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.093	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.093	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.093	EPA 8021B	8-20-13	8-20-13	
Gasoline	**ND**	9.3	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*71-121*				

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
Project: 2007-098-995

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L3-10**					
Laboratory ID:	08-125-07					
Benzene	**ND**	0.020	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.059	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.059	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.059	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.059	EPA 8021B	8-20-13	8-20-13	
Gasoline	**ND**	5.9	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-121*				
Client ID:	**TP-L4-5**					
Laboratory ID:	08-125-08					
Benzene	**ND**	0.020	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.060	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.060	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.060	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.060	EPA 8021B	8-20-13	8-20-13	
Gasoline	**ND**	6.0	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*82*	*71-121*				
Client ID:	**TP-L4-8**					
Laboratory ID:	08-125-09					
Benzene	**0.079**	0.022	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.11	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.11	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.11	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.11	EPA 8021B	8-20-13	8-20-13	
Gasoline	**ND**	11	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-121*				

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
Project: 2007-098-995

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L5-4**					
Laboratory ID:	08-125-10					
Benzene	**ND**	0.020	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.062	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.062	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.062	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.062	EPA 8021B	8-20-13	8-20-13	
Gasoline	**ND**	6.2	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*72*	*71-121*				
Client ID:	**TP-L5-8**					
Laboratory ID:	08-125-11					
Benzene	**0.025**	0.020	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.10	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.10	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.10	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.10	EPA 8021B	8-20-13	8-20-13	
Gasoline	**ND**	10	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*112*	*71-121*				
Client ID:	**TP-L6-4**					
Laboratory ID:	08-125-12					
Benzene	**ND**	0.020	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.061	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.061	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.061	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.061	EPA 8021B	8-20-13	8-20-13	
Gasoline	**ND**	6.1	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*81*	*71-121*				

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
Project: 2007-098-995

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L6-9**					
Laboratory ID:	08-125-13					
Benzene	**ND**	0.020	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.082	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.082	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.082	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.082	EPA 8021B	8-20-13	8-20-13	
Gasoline	**ND**	8.2	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-121*				
Client ID:	**TP-L7-4**					
Laboratory ID:	08-125-14					
Benzene	**ND**	0.020	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.054	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.054	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.054	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.054	EPA 8021B	8-20-13	8-20-13	
Gasoline	**ND**	5.4	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*71-121*				
Client ID:	**TP-L7-7**					
Laboratory ID:	08-125-15					
Benzene	**0.056**	0.033	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.17	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**1.3**	0.17	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**1.4**	0.17	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.85	EPA 8021B	8-20-13	8-20-13	U1
Gasoline	**290**	17	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*71-121*				

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
Project: 2007-098-995

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L7-8**					
Laboratory ID:	08-125-16					
Benzene	**ND**	0.025	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.13	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.13	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.13	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.13	EPA 8021B	8-20-13	8-20-13	
Gasoline	**17**	13	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*71-121*				

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
Project: 2007-098-995

NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0820S1					
Benzene	**ND**	0.020	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.050	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.050	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.050	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.050	EPA 8021B	8-20-13	8-20-13	
Gasoline	**ND**	5.0	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*78*	*71-121*				
Laboratory ID:	MB0820S2					
Benzene	**ND**	0.020	EPA 8021B	8-20-13	8-20-13	
Toluene	**ND**	0.050	EPA 8021B	8-20-13	8-20-13	
Ethyl Benzene	**ND**	0.050	EPA 8021B	8-20-13	8-20-13	
m,p-Xylene	**ND**	0.050	EPA 8021B	8-20-13	8-20-13	
o-Xylene	**ND**	0.050	EPA 8021B	8-20-13	8-20-13	
Gasoline	**ND**	5.0	NWTPH-Gx	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*82*	*71-121*				

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
Project: 2007-098-995

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-125-03										
	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						*100*	*100*	*71-121*			
Laboratory ID:	08-125-04										
	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						*81*	*81*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0820S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.885**	**0.927**	1.00	1.00		**89**	**93**	73-121	5	10	
Toluene	**0.916**	**0.952**	1.00	1.00		**92**	**95**	75-124	4	10	
Ethyl Benzene	**0.924**	**0.955**	1.00	1.00		**92**	**96**	75-125	3	9	
m,p-Xylene	**0.944**	**0.971**	1.00	1.00		**94**	**97**	75-126	3	9	
o-Xylene	**0.941**	**0.954**	1.00	1.00		**94**	**95**	74-123	1	8	
Surrogate:											
Fluorobenzene						*80*	*82*	*71-121*			

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Project: 2007-098-995

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L1-4**					
Laboratory ID:	08-125-01					
Diesel Range Organics	**110**	28	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil	**160**	56	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*67*	*50-150*				
Client ID:	**TP-L1-7**					
Laboratory ID:	08-125-02					
Diesel Range Organics	**ND**	29	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil	**130**	57	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				
Client ID:	**TP-L1-10**					
Laboratory ID:	08-125-03					
Diesel Range Organics	**ND**	37	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil Range Organics	**ND**	75	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*69*	*50-150*				
Client ID:	**TP-L2-5**					
Laboratory ID:	08-125-04					
Diesel Range Organics	**ND**	59	NWTPH-Dx	8-19-13	8-20-13	U1,X1
Lube Oil	**290**	57	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*78*	*50-150*				
Client ID:	**TP-L2-8**					
Laboratory ID:	08-125-05					
Diesel Range Organics	**73**	33	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil	**180**	65	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				
Client ID:	**TP-L3-5**					
Laboratory ID:	08-125-06					
Diesel Range Organics	**ND**	37	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil	**160**	73	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				

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Project: 2007-098-995

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L3-10**					
Laboratory ID:	08-125-07					
Diesel Range Organics	**ND**	31	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*58*	*50-150*				
Client ID:	**TP-L4-5**					
Laboratory ID:	08-125-08					
Diesel Range Organics	**ND**	31	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**TP-L4-8**					
Laboratory ID:	08-125-09					
Diesel Range Organics	**ND**	41	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil Range Organics	**ND**	81	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				
Client ID:	**TP-L5-4**					
Laboratory ID:	08-125-10					
Diesel Range Organics	**ND**	28	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*64*	*50-150*				
Client ID:	**TP-L5-8**					
Laboratory ID:	08-125-11					
Diesel Range Organics	**ND**	41	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil Range Organics	**ND**	81	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				
Client ID:	**TP-L6-4**					
Laboratory ID:	08-125-12					
Diesel Range Organics	**ND**	29	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil	**76**	58	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*65*	*50-150*				

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NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L6-9**					
Laboratory ID:	08-125-13					
Diesel Range Organics	**ND**	34	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil	**75**	68	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*76*	*50-150*				
Client ID:	**TP-L7-4**					
Laboratory ID:	08-125-14					
Diesel Range Organics	**ND**	28	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*61*	*50-150*				
Client ID:	**TP-L7-7**					
Laboratory ID:	08-125-15					
Diesel Range Organics	**ND**	54	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil Range Organics	**180**	110	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				
Client ID:	**TP-L7-8**					
Laboratory ID:	08-125-16					
Diesel Range Organics	**ND**	46	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil Range Organics	**ND**	92	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				

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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:	MB0819S3					
Diesel Range Organics	**ND**	25	NWTPH-Dx	8-19-13	8-20-13	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	8-19-13	8-20-13	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-125-04							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	U1,X1
Lube Oil	**254**	**177**				36	NA	X1
Surrogate:								
o-Terphenyl			*78*	*86*	*50-150*			
Laboratory ID:	08-125-14							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	X1
Lube Oil Range Organics	**ND**	**ND**				NA	NA	X1
Surrogate:								
o-Terphenyl			*61*	*74*	*50-150*			

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L1-4**					
Laboratory ID:	08-125-01					
Dichlorodifluoromethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.0051	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.0051	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.0051	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.0051	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.0051	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L1-4**					
Laboratory ID:	08-125-01					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.0051	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.0051	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*115*	*65-129*				
Toluene-d8	*109*	*77-122*				
4-Bromofluorobenzene	*106*	*73-124*				

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L1-7**					
Laboratory ID:	08-125-02					
Dichlorodifluoromethane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.0039	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.0039	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.0039	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.0039	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.0039	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L1-7**					
Laboratory ID:	08-125-02					
1,1,2-Trichloroethane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.0039	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.0039	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.00077	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*108*	*65-129*				
Toluene-d8	*103*	*77-122*				
4-Bromofluorobenzene	*101*	*73-124*				

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L1-10**					
Laboratory ID:	08-125-03					
Dichlorodifluoromethane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.0088	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.0088	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.0088	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.0088	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.0088	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L1-10**					
Laboratory ID:	08-125-03					
1,1,2-Trichloroethane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.0088	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.0088	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.0018	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*97*	*65-129*				
Toluene-d8	*96*	*77-122*				
4-Bromofluorobenzene	*92*	*73-124*				

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L2-5**					
Laboratory ID:	08-125-04					
Dichlorodifluoromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.0054	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.0054	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.0054	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.0054	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.0054	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L2-5**					
Laboratory ID:	08-125-04					
1,1,2-Trichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.0054	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.0054	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*110*	*65-129*				
Toluene-d8	*106*	*77-122*				
4-Bromofluorobenzene	*100*	*73-124*				

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L2-8**					
Laboratory ID:	08-125-05					
Dichlorodifluoromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.0054	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.0054	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.0054	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.0054	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.0054	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L2-8**					
Laboratory ID:	08-125-05					
1,1,2-Trichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.0054	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.0054	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*118*	*65-129*				
Toluene-d8	*119*	*77-122*				
4-Bromofluorobenzene	*109*	*73-124*				

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L3-5**					
Laboratory ID:	08-125-06					
Dichlorodifluoromethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.0080	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.0080	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.0080	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.0080	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.0080	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L3-5**					
Laboratory ID:	08-125-06					
1,1,2-Trichloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.092	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.092	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.092	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.092	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.092	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.092	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.092	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.092	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.46	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.092	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.46	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.092	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*106*	*65-129*				
Toluene-d8	*101*	*77-122*				
4-Bromofluorobenzene	*82*	*73-124*				

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Project: 2007-098-995

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L3-10**					
Laboratory ID:	08-125-07					
Dichlorodifluoromethane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.0067	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.0067	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.0067	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.0067	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.0067	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L3-10**					
Laboratory ID:	08-125-07					
1,1,2-Trichloroethane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.0067	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.0067	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.0013	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*111*	*65-129*				
Toluene-d8	*110*	*77-122*				
4-Bromofluorobenzene	*94*	*73-124*				

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L4-5**					
Laboratory ID:	08-125-08					
Dichlorodifluoromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.0053	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.0053	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.0053	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.0053	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.0053	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L4-5**					
Laboratory ID:	08-125-08					
1,1,2-Trichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.0053	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.0053	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*111*	*65-129*				
Toluene-d8	*107*	*77-122*				
4-Bromofluorobenzene	*100*	*73-124*				

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L4-8**					
Laboratory ID:	08-125-09					
Dichlorodifluoromethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.0078	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.0078	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.0078	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.0078	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.0078	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L4-8**					
Laboratory ID:	08-125-09					
1,1,2-Trichloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	0.0017	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.11	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.11	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.11	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.11	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.11	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.11	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.11	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.11	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.55	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.11	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.55	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.11	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*112*	*65-129*				
Toluene-d8	*108*	*77-122*				
4-Bromofluorobenzene	*102*	*73-124*				

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L5-4**					
Laboratory ID:	08-125-10					
Dichlorodifluoromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.0057	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.0057	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.0057	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.0057	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.0057	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L5-4**					
Laboratory ID:	08-125-10					
1,1,2-Trichloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.0057	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.0057	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.0011	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*109*	*65-129*				
Toluene-d8	*111*	*77-122*				
4-Bromofluorobenzene	*108*	*73-124*				

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L5-8**					
Laboratory ID:	08-125-11					
Dichlorodifluoromethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.0081	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.0081	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.0081	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.0081	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.0081	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L5-8**					
Laboratory ID:	08-125-11					
1,1,2-Trichloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.0081	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.0081	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.0016	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*113*	*65-129*				
Toluene-d8	*112*	*77-122*				
4-Bromofluorobenzene	*109*	*73-124*				

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L6-4**					
Laboratory ID:	08-125-12					
Dichlorodifluoromethane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.0041	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.0041	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.0041	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.0041	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.0041	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L6-4**					
Laboratory ID:	08-125-12					
1,1,2-Trichloroethane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	0.00099	0.00082	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.0041	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.0041	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.00082	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*114*	*65-129*				
Toluene-d8	*111*	*77-122*				
4-Bromofluorobenzene	*99*	*73-124*				

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L6-9**					
Laboratory ID:	08-125-13					
Dichlorodifluoromethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.0059	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.0059	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.0059	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.0059	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.0059	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L6-9**					
Laboratory ID:	08-125-13					
1,1,2-Trichloroethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.0059	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.0059	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*113*	*65-129*				
Toluene-d8	*110*	*77-122*				
4-Bromofluorobenzene	*102*	*73-124*				

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L7-4**					
Laboratory ID:	08-125-14					
Dichlorodifluoromethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.0060	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.0060	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.0060	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.0060	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.0060	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L7-4**					
Laboratory ID:	08-125-14					
1,1,2-Trichloroethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.0060	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.0060	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.0012	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*112*	*65-129*				
Toluene-d8	*112*	*77-122*				
4-Bromofluorobenzene	*110*	*73-124*				

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L7-7**					
Laboratory ID:	08-125-15					
Dichlorodifluoromethane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.011	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.011	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.011	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.011	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.011	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L7-7**					
Laboratory ID:	08-125-15					
1,1,2-Trichloroethane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.011	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.011	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.0021	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*10*	*65-129*				Q
Toluene-d8	*116*	*77-122*				
4-Bromofluorobenzene	*111*	*73-124*				

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
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Project: 2007-098-995

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L7-8**					
Laboratory ID:	08-125-16					
Dichlorodifluoromethane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.011	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.011	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.011	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.011	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.011	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.0023	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L7-8**					
Laboratory ID:	08-125-16					
1,1,2-Trichloroethane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.0023	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.12	EPA 8260C	8-21-13	8-21-13	
1,1,2,2-Tetrachloroethane	ND	0.12	EPA 8260C	8-21-13	8-21-13	
1,2,3-Trichloropropane	ND	0.12	EPA 8260C	8-21-13	8-21-13	
2-Chlorotoluene	ND	0.12	EPA 8260C	8-21-13	8-21-13	
4-Chlorotoluene	ND	0.12	EPA 8260C	8-21-13	8-21-13	
1,3-Dichlorobenzene	ND	0.12	EPA 8260C	8-21-13	8-21-13	
1,4-Dichlorobenzene	ND	0.12	EPA 8260C	8-21-13	8-21-13	
1,2-Dichlorobenzene	ND	0.12	EPA 8260C	8-21-13	8-21-13	
1,2-Dibromo-3-chloropropane	ND	0.61	EPA 8260C	8-21-13	8-21-13	
1,2,4-Trichlorobenzene	ND	0.12	EPA 8260C	8-21-13	8-21-13	
Hexachlorobutadiene	ND	0.61	EPA 8260C	8-21-13	8-21-13	
1,2,3-Trichlorobenzene	ND	0.12	EPA 8260C	8-21-13	8-21-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*112*	*65-129*				
Toluene-d8	*115*	*77-122*				
4-Bromofluorobenzene	*89*	*73-124*				

Date of Report: August 21, 2013
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METHOD BLANK QUALITY CONTROL
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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0820S1					
Dichlorodifluoromethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Chloromethane	ND	0.0050	EPA 8260C	8-20-13	8-20-13	
Vinyl Chloride	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Bromomethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Chloroethane	ND	0.0050	EPA 8260C	8-20-13	8-20-13	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Iodomethane	ND	0.0050	EPA 8260C	8-20-13	8-20-13	
Methylene Chloride	ND	0.0050	EPA 8260C	8-20-13	8-20-13	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Bromochloromethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Chloroform	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Trichloroethene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Dibromomethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Bromodichloromethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
2-Chloroethyl Vinyl Ether	ND	0.0050	EPA 8260C	8-20-13	8-20-13	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0820S1					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Tetrachloroethene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Dibromochloromethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Chlorobenzene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Bromoform	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Bromobenzene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
2-Chlorotoluene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
4-Chlorotoluene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260C	8-20-13	8-20-13	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	8-20-13	8-20-13	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	8-20-13	8-20-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*110*	*65-129*				
Toluene-d8	*109*	*77-122*				
4-Bromofluorobenzene	*109*	*73-124*				

Date of Report: August 21, 2013
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HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0821S1					
Dichlorodifluoromethane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Chloromethane	ND	0.0050	EPA 8260C	8-21-13	8-21-13	
Vinyl Chloride	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Bromomethane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Chloroethane	ND	0.0050	EPA 8260C	8-21-13	8-21-13	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Iodomethane	ND	0.0050	EPA 8260C	8-21-13	8-21-13	
Methylene Chloride	ND	0.0050	EPA 8260C	8-21-13	8-21-13	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Bromochloromethane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Chloroform	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Trichloroethene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Dibromomethane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Bromodichloromethane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
2-Chloroethyl Vinyl Ether	ND	0.0050	EPA 8260C	8-21-13	8-21-13	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	

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METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0821S1					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Tetrachloroethene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Dibromochloromethane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Chlorobenzene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Bromoform	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Bromobenzene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
2-Chlorotoluene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
4-Chlorotoluene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260C	8-21-13	8-21-13	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	8-21-13	8-21-13	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	8-21-13	8-21-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*126*	*65-129*				
Toluene-d8	*120*	*77-122*				
4-Bromofluorobenzene	*112*	*73-124*				

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
Project: 2007-098-995

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:	SB0820S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0516**	**0.0510**	0.0500	0.0500	103	102	56-141	1	15	
Benzene	**0.0509**	**0.0507**	0.0500	0.0500	102	101	70-121	0	15	
Trichloroethene	**0.0501**	**0.0499**	0.0500	0.0500	100	100	74-118	0	15	
Toluene	**0.0505**	**0.0508**	0.0500	0.0500	101	102	75-120	1	15	
Chlorobenzene	**0.0519**	**0.0518**	0.0500	0.0500	104	104	75-120	0	15	
Surrogate:										
Dibromofluoromethane					*103*	*103*	*65-129*			
Toluene-d8					*99*	*100*	*77-122*			
4-Bromofluorobenzene					*100*	*100*	*73-124*			

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
Project: 2007-098-995

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:	SB0821S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0514**	**0.0492**	0.0500	0.0500	103	98	56-141	4	15	
Benzene	**0.0518**	**0.0510**	0.0500	0.0500	104	102	70-121	2	15	
Trichloroethene	**0.0512**	**0.0502**	0.0500	0.0500	102	100	74-118	2	15	
Toluene	**0.0526**	**0.0514**	0.0500	0.0500	105	103	75-120	2	15	
Chlorobenzene	**0.0550**	**0.0530**	0.0500	0.0500	110	106	75-120	4	15	
Surrogate:										
Dibromofluoromethane					*116*	*114*	*65-129*			
Toluene-d8					*109*	*112*	*77-122*			
4-Bromofluorobenzene					*102*	*104*	*73-124*			

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
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:	08-125-01					
Client ID:	**TP-L1-4**					
Arsenic	**ND**	11	6010C	8-20-13	8-20-13	
Barium	**67**	2.8	6010C	8-20-13	8-20-13	
Cadmium	**ND**	0.56	6010C	8-20-13	8-20-13	
Chromium	**50**	0.56	6010C	8-20-13	8-20-13	
Lead	**45**	5.6	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.28	7471B	8-20-13	8-20-13	
Selenium	**ND**	11	6010C	8-20-13	8-20-13	
Silver	**ND**	1.1	6010C	8-20-13	8-20-13	
Lab ID:	08-125-02					
Client ID:	**TP-L1-7**					
Arsenic	**ND**	11	6010C	8-20-13	8-20-13	
Barium	**52**	2.9	6010C	8-20-13	8-20-13	
Cadmium	**ND**	0.57	6010C	8-20-13	8-20-13	
Chromium	**41**	0.57	6010C	8-20-13	8-20-13	
Lead	**26**	5.7	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.29	7471B	8-20-13	8-20-13	
Selenium	**ND**	11	6010C	8-20-13	8-20-13	
Silver	**ND**	1.1	6010C	8-20-13	8-20-13	

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TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-125-03					
Client ID:	**TP-L1-10**					
Arsenic	**ND**	15	6010C	8-20-13	8-20-13	
Barium	**60**	3.7	6010C	8-20-13	8-20-13	
Cadmium	**ND**	0.75	6010C	8-20-13	8-20-13	
Chromium	**41**	0.75	6010C	8-20-13	8-20-13	
Lead	**ND**	7.5	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.37	7471B	8-20-13	8-20-13	
Selenium	**ND**	15	6010C	8-20-13	8-20-13	
Silver	**ND**	1.5	6010C	8-20-13	8-20-13	

Lab ID:	08-125-04					
Client ID:	**TP-L2-5**					
Arsenic	**ND**	11	6010C	8-20-13	8-20-13	
Barium	**50**	2.8	6010C	8-20-13	8-20-13	
Cadmium	**ND**	0.57	6010C	8-20-13	8-20-13	
Chromium	**36**	0.57	6010C	8-20-13	8-20-13	
Lead	**20**	5.7	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.28	7471B	8-20-13	8-20-13	
Selenium	**ND**	11	6010C	8-20-13	8-20-13	
Silver	**ND**	1.1	6010C	8-20-13	8-20-13	

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
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:	08-125-05					
Client ID:	**TP-L2-8**					
Arsenic	**ND**	13	6010C	8-20-13	8-20-13	
Barium	**61**	3.3	6010C	8-20-13	8-20-13	
Cadmium	**ND**	0.65	6010C	8-20-13	8-20-13	
Chromium	**34**	0.65	6010C	8-20-13	8-20-13	
Lead	**18**	6.5	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.33	7471B	8-20-13	8-20-13	
Selenium	**ND**	13	6010C	8-20-13	8-20-13	
Silver	**ND**	1.3	6010C	8-20-13	8-20-13	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-125-06					
Client ID:	**TP-L3-5**					
Arsenic	**ND**	15	6010C	8-20-13	8-20-13	
Barium	**65**	3.6	6010C	8-20-13	8-20-13	
Cadmium	**ND**	0.73	6010C	8-20-13	8-20-13	
Chromium	**35**	0.73	6010C	8-20-13	8-20-13	
Lead	**ND**	7.3	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.36	7471B	8-20-13	8-20-13	
Selenium	**ND**	15	6010C	8-20-13	8-20-13	
Silver	**ND**	1.5	6010C	8-20-13	8-20-13	

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
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:	08-125-07					
Client ID:	**TP-L3-10**					
Arsenic	**ND**	12	6010C	8-20-13	8-20-13	
Barium	**61**	3.1	6010C	8-20-13	8-20-13	
Cadmium	**ND**	0.62	6010C	8-20-13	8-20-13	
Chromium	**19**	0.62	6010C	8-20-13	8-20-13	
Lead	**ND**	6.2	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.31	7471B	8-20-13	8-20-13	
Selenium	**ND**	12	6010C	8-20-13	8-20-13	
Silver	**ND**	1.2	6010C	8-20-13	8-20-13	
Lab ID:	08-125-08					
Client ID:	**TP-L4-5**					
Arsenic	**ND**	12	6010C	8-20-13	8-20-13	
Barium	**62**	3.1	6010C	8-20-13	8-20-13	
Cadmium	**ND**	0.62	6010C	8-20-13	8-20-13	
Chromium	**32**	0.62	6010C	8-20-13	8-20-13	
Lead	**ND**	6.2	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.31	7471B	8-20-13	8-20-13	
Selenium	**ND**	12	6010C	8-20-13	8-20-13	
Silver	**ND**	1.2	6010C	8-20-13	8-20-13	

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
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:	08-125-09					
Client ID:	**TP-L4-8**					
Arsenic	**ND**	16	6010C	8-20-13	8-20-13	
Barium	**130**	4.1	6010C	8-20-13	8-20-13	
Cadmium	**ND**	0.81	6010C	8-20-13	8-20-13	
Chromium	**57**	0.81	6010C	8-20-13	8-20-13	
Lead	**12**	8.1	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.41	7471B	8-20-13	8-20-13	
Selenium	**ND**	16	6010C	8-20-13	8-20-13	
Silver	**ND**	1.6	6010C	8-20-13	8-20-13	

Lab ID:	08-125-10					
Client ID:	**TP-L5-4**					
Arsenic	**ND**	11	6010C	8-20-13	8-20-13	
Barium	**35**	2.8	6010C	8-20-13	8-20-13	
Cadmium	**ND**	0.55	6010C	8-20-13	8-20-13	
Chromium	**26**	0.55	6010C	8-20-13	8-20-13	
Lead	**ND**	5.5	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.28	7471B	8-20-13	8-20-13	
Selenium	**ND**	11	6010C	8-20-13	8-20-13	
Silver	**ND**	1.1	6010C	8-20-13	8-20-13	

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
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TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-125-11					
Client ID:	**TP-L5-8**					
Arsenic	**ND**	16	6010C	8-20-13	8-20-13	
Barium	**95**	4.0	6010C	8-20-13	8-20-13	
Cadmium	**ND**	0.81	6010C	8-20-13	8-20-13	
Chromium	**43**	0.81	6010C	8-20-13	8-20-13	
Lead	**15**	8.1	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.40	7471B	8-20-13	8-20-13	
Selenium	**ND**	16	6010C	8-20-13	8-20-13	
Silver	**ND**	1.6	6010C	8-20-13	8-20-13	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-125-12					
Client ID:	**TP-L6-4**					
Arsenic	**ND**	12	6010C	8-20-13	8-20-13	
Barium	**65**	2.9	6010C	8-20-13	8-20-13	
Cadmium	**ND**	0.58	6010C	8-20-13	8-20-13	
Chromium	**41**	0.58	6010C	8-20-13	8-20-13	
Lead	**12**	5.8	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.29	7471B	8-20-13	8-20-13	
Selenium	**ND**	12	6010C	8-20-13	8-20-13	
Silver	**ND**	1.2	6010C	8-20-13	8-20-13	

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
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:	08-125-13					
Client ID:	**TP-L6-9**					
Arsenic	**ND**	14	6010C	8-20-13	8-20-13	
Barium	**71**	3.4	6010C	8-20-13	8-20-13	
Cadmium	**ND**	0.68	6010C	8-20-13	8-20-13	
Chromium	**33**	0.68	6010C	8-20-13	8-20-13	
Lead	**11**	6.8	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.34	7471B	8-20-13	8-20-13	
Selenium	**ND**	14	6010C	8-20-13	8-20-13	
Silver	**ND**	1.4	6010C	8-20-13	8-20-13	
Lab ID:	08-125-14					
Client ID:	**TP-L7-4**					
Arsenic	**ND**	11	6010C	8-20-13	8-20-13	
Barium	**55**	2.8	6010C	8-20-13	8-20-13	
Cadmium	**ND**	0.55	6010C	8-20-13	8-20-13	
Chromium	**30**	0.55	6010C	8-20-13	8-20-13	
Lead	**12**	5.5	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.28	7471B	8-20-13	8-20-13	
Selenium	**ND**	11	6010C	8-20-13	8-20-13	
Silver	**ND**	1.1	6010C	8-20-13	8-20-13	

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
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TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-125-15					
Client ID:	**TP-L7-7**					
Arsenic	**ND**	11	6010C	8-20-13	8-20-13	
Barium	**180**	5.4	6010C	8-20-13	8-20-13	
Cadmium	**ND**	1.1	6010C	8-20-13	8-20-13	
Chromium	**25**	1.1	6010C	8-20-13	8-20-13	
Lead	**37**	11	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.54	7471B	8-20-13	8-20-13	
Selenium	**ND**	22	6010C	8-20-13	8-20-13	
Silver	**ND**	2.2	6010C	8-20-13	8-20-13	

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	08-125-16					
Client ID:	**TP-L7-8**					
Arsenic	**ND**	18	6010C	8-20-13	8-20-13	
Barium	**30**	4.6	6010C	8-20-13	8-20-13	
Cadmium	**ND**	0.92	6010C	8-20-13	8-20-13	
Chromium	**14**	0.92	6010C	8-20-13	8-20-13	
Lead	**ND**	9.2	6010C	8-20-13	8-20-13	
Mercury	**ND**	0.46	7471B	8-20-13	8-20-13	
Selenium	**ND**	18	6010C	8-20-13	8-20-13	
Silver	**ND**	1.8	6010C	8-20-13	8-20-13	

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
Project: 2007-098-995

TOTAL METALS
EPA 6010C/7471B
METHOD BLANK QUALITY CONTROL

Date Extracted: 8-20-13
Date Analyzed: 8-20-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0820S1&MB0820SM1

Analyte	Method	Result	PQL
Arsenic	6010C	**ND**	5.0
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: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
Project: 2007-098-995

TOTAL METALS
EPA 6010C/7471B
DUPLICATE QUALITY CONTROL

Date Extracted: 8-20-13
Date Analyzed: 8-20-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-125-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**60.0**	**56.4**	6	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**44.9**	**30.8**	37	0.50	K
Lead	**39.7**	**42.8**	8	5.0	
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	1.0	

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
Project: 2007-098-995

TOTAL METALS
EPA 6010C/7471B
MS/MSD QUALITY CONTROL

Date Extracted: 8-20-13
Date Analyzed: 8-20-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-125-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**95.7**	96	**99.8**	100	4	
Barium	100	**171**	111	**160**	100	7	
Cadmium	50.0	**45.0**	90	**45.3**	91	1	
Chromium	100	**126**	81	**124**	79	1	
Lead	250	**280**	96	**262**	89	7	
Mercury	0.500	**0.494**	99	**0.493**	99	0	
Selenium	100	**94.3**	94	**96.9**	97	3	
Silver	25.0	**21.2**	85	**22.0**	88	4	

Date of Report: August 21, 2013
Samples Submitted: August 19, 2013
Laboratory Reference: 1308-125
Project: 2007-098-995

% MOISTURE

Date Analyzed: 8-19-13

Client ID	Lab ID	% Moisture
TP-L1-4	08-125-01	11
TP-L1-7	08-125-02	13
TP-L1-10	08-125-03	33
TP-L2-5	08-125-04	12
TP-L2-8	08-125-05	23
TP-L3-5	08-125-06	31
TP-L3-10	08-125-07	20
TP-L4-5	08-125-08	19
TP-L4-8	08-125-09	38
TP-L5-4	08-125-10	9
TP-L5-8	08-125-11	38
TP-L6-4	08-125-12	14
TP-L6-9	08-125-13	27
TP-L7-4	08-125-14	9
TP-L7-7	08-125-15	54
TP-L7-8	08-125-16	46

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

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Analytical Laboratory Testing Services
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Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 08-125

Company: HWA
Project Number: 2007-098-995
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: "

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [ ] 1 Day
- [x] 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	TP-L1-4	8/19/13	800	S	5		✓		✓		✓							✓									✓
2	TP-L1-7		810				✓		✓		✓							✓									✓
3	TP-L1-10		820				✓		✓		✓							✓									✓
4	TP-L2-5		830				✓		✓		✓							✓									✓
5	TP-L2-8		840				✓		✓		✓							✓									✓
6	TP-L3-5		900				✓		✓		✓							✓									✓
7	TP-L3-10		910				✓		✓		✓							✓									✓
8	TP-L4-5		930				✓		✓		✓							✓									✓
9	TP-L4-8		940				✓		✓		✓							✓									✓
10	TP-L5-4		1000				✓		✓		✓							✓									✓

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	[signature]	HWA	8/19/13	1500	Silica gel cleanup
Received	[signature]	OSE	8/19/13	1500	
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

Company: HWA
Project Number: 2007-098 -- 995
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: " "

Turnaround Request (in working days)
(Check One)
- [ ] Same Day
- [ ] 1 Day
- [x] 2 Days
- [ ] 3 Days
- [ ] Standard (7 Days) (TPH analysis 5 Days)
- [ ] ______ (other)

Laboratory Number: 08-125

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
11	TP-L5-8	8/19/13	1010	S	5		✓		✓		✓							✓									✓
12	TP-L6-4		1200				✓		✓		✓							✓									✓
13	TP-L6-9		1210				✓		✓		✓							✓									✓
14	TP-L7-4		1345				✓		✓		✓							✓									✓
15	TP-L7-7		1320				✓		✓		✓							✓									✓
16	TP-L7-8		1340				✓		✓		✓							✓									✓

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	[signature]	HWA	8/19/13	1500	Silica gel
Received	[signature]	OSE	8/19/13	1500	
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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October 7, 2013

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-
Laboratory Reference No. 1310-042

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on October 3, 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 7, 2013
Samples Submitted: October 3, 2013
Laboratory Reference: 1310-042
Project: 2007-098-

Case Narrative

Samples were collected on October 3, 2013 and received by the laboratory on October 3, 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.

<u>NWTPH Gx/BTEX Analysis</u>

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 L-PEX-22-9 is similar to mineral spirits with gasoline.

The MTCA Method A clean-up level of 0.03 PPM for Benzene is not achievable for sample L-PEX-25-8 due to the high moisture content of the sample.

The surrogate recovery is outside of the control limit on the high end for sample L-PEX-25-8. However, since the sample is non-detect no further action will be taken.

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 7, 2013
Samples Submitted: October 3, 2013
Laboratory Reference: 1310-042
Project: 2007-098-

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-20-11**					
Laboratory ID:	10-042-01					
Benzene	**ND**	0.020	EPA 8021B	10-3-13	10-3-13	
Toluene	**ND**	0.079	EPA 8021B	10-3-13	10-3-13	
Ethyl Benzene	**ND**	0.079	EPA 8021B	10-3-13	10-3-13	
m,p-Xylene	**ND**	0.079	EPA 8021B	10-3-13	10-3-13	
o-Xylene	**ND**	0.079	EPA 8021B	10-3-13	10-3-13	
Gasoline	**ND**	7.9	NWTPH-Gx	10-3-13	10-3-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*112*	*71-121*				
Client ID:	**L-PEX-21-9**					
Laboratory ID:	10-042-02					
Benzene	**0.020**	0.020	EPA 8021B	10-3-13	10-3-13	
Toluene	**ND**	0.10	EPA 8021B	10-3-13	10-3-13	
Ethyl Benzene	**ND**	0.10	EPA 8021B	10-3-13	10-3-13	
m,p-Xylene	**ND**	0.10	EPA 8021B	10-3-13	10-3-13	
o-Xylene	**ND**	0.10	EPA 8021B	10-3-13	10-3-13	
Gasoline	**ND**	10	NWTPH-Gx	10-3-13	10-3-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*71-121*				
Client ID:	**L-PEX-22-9**					
Laboratory ID:	10-042-03					
Benzene	**ND**	0.020	EPA 8021B	10-3-13	10-3-13	
Toluene	**ND**	0.076	EPA 8021B	10-3-13	10-3-13	
Ethyl Benzene	**0.43**	0.076	EPA 8021B	10-3-13	10-3-13	
m,p-Xylene	**0.76**	0.076	EPA 8021B	10-3-13	10-3-13	
o-Xylene	**ND**	0.38	EPA 8021B	10-3-13	10-3-13	U1
Gasoline	**210**	15	NWTPH-Gx	10-3-13	10-4-13	Z
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*71-121*				

Date of Report: October 7, 2013
Samples Submitted: October 3, 2013
Laboratory Reference: 1310-042
Project: 2007-098-

NWTPH-Gx/BTEX

Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-23-11**					
Laboratory ID:	10-042-04					
Benzene	**ND**	0.020	EPA 8021B	10-3-13	10-3-13	
Toluene	**ND**	0.060	EPA 8021B	10-3-13	10-3-13	
Ethyl Benzene	**ND**	0.060	EPA 8021B	10-3-13	10-3-13	
m,p-Xylene	**ND**	0.060	EPA 8021B	10-3-13	10-3-13	
o-Xylene	**ND**	0.060	EPA 8021B	10-3-13	10-3-13	
Gasoline	**ND**	6.0	NWTPH-Gx	10-3-13	10-3-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*108*	*71-121*				
Client ID:	**L-PEX-24-9**					
Laboratory ID:	10-042-05					
Benzene	**ND**	0.020	EPA 8021B	10-3-13	10-3-13	
Toluene	**ND**	0.080	EPA 8021B	10-3-13	10-3-13	
Ethyl Benzene	**ND**	0.080	EPA 8021B	10-3-13	10-3-13	
m,p-Xylene	**ND**	0.080	EPA 8021B	10-3-13	10-3-13	
o-Xylene	**ND**	0.080	EPA 8021B	10-3-13	10-3-13	
Gasoline	**ND**	8.0	NWTPH-Gx	10-3-13	10-3-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*71-121*				
Client ID:	**L-PEX-25-8**					
Laboratory ID:	10-042-06					
Benzene	**ND**	0.048	EPA 8021B	10-3-13	10-3-13	
Toluene	**ND**	0.24	EPA 8021B	10-3-13	10-3-13	
Ethyl Benzene	**ND**	0.24	EPA 8021B	10-3-13	10-3-13	
m,p-Xylene	**ND**	0.24	EPA 8021B	10-3-13	10-3-13	
o-Xylene	**ND**	0.24	EPA 8021B	10-3-13	10-3-13	
Gasoline	**ND**	24	NWTPH-Gx	10-3-13	10-3-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*130*	*71-121*				Q

Date of Report: October 7, 2013
Samples Submitted: October 3, 2013
Laboratory Reference: 1310-042
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:	MB1003S1					
Benzene	**ND**	0.020	EPA 8021B	10-3-13	10-3-13	
Toluene	**ND**	0.050	EPA 8021B	10-3-13	10-3-13	
Ethyl Benzene	**ND**	0.050	EPA 8021B	10-3-13	10-3-13	
m,p-Xylene	**ND**	0.050	EPA 8021B	10-3-13	10-3-13	
o-Xylene	**ND**	0.050	EPA 8021B	10-3-13	10-3-13	
Gasoline	**ND**	5.0	NWTPH-Gx	10-3-13	10-3-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	10-042-01										
	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						*112*	*114*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB1003S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.02**	**1.04**	1.00	1.00		**102**	**104**	73-121	2	10	
Toluene	**1.01**	**1.09**	1.00	1.00		**101**	**109**	75-124	8	10	
Ethyl Benzene	**1.05**	**1.06**	1.00	1.00		**105**	**106**	75-125	1	9	
m,p-Xylene	**1.10**	**1.13**	1.00	1.00		**110**	**113**	75-126	3	9	
o-Xylene	**1.05**	**1.07**	1.00	1.00		**105**	**107**	74-123	2	8	
Surrogate:											
Fluorobenzene						*97*	*96*	*71-121*			

Date of Report: October 7, 2013
Samples Submitted: October 3, 2013
Laboratory Reference: 1310-042
Project: 2007-098-

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**L-PEX-22-9**					
Laboratory ID:	10-042-03					
Diesel Range Organics	**ND**	81	NWTPH-Dx	10-3-13	10-4-13	U1
Lube Oil	**150**	66	NWTPH-Dx	10-3-13	10-4-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*73*	*50-150*				

Date of Report: October 7, 2013
Samples Submitted: October 3, 2013
Laboratory Reference: 1310-042
Project: 2007-098-

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB1003S3					
Diesel Range Organics	**ND**	25	NWTPH-Dx	10-3-13	10-3-13	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	10-3-13	10-3-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				

Analyte	**Result**		**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE								
Laboratory ID:	09-223-09							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*76*	*70*	*50-150*			

Date of Report: October 7, 2013
Samples Submitted: October 3, 2013
Laboratory Reference: 1310-042
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:	10-042-03					
Client ID:	**L-PEX-22-9**					
Arsenic	**ND**	13	6010C	10-3-13	10-3-13	
Barium	**80**	3.3	6010C	10-3-13	10-3-13	
Cadmium	**ND**	0.66	6010C	10-3-13	10-3-13	
Chromium	**42**	0.66	6010C	10-3-13	10-3-13	
Lead	**19**	6.6	6010C	10-3-13	10-3-13	
Mercury	**ND**	0.33	7471B	10-3-13	10-3-13	
Selenium	**ND**	13	6010C	10-3-13	10-3-13	
Silver	**ND**	1.3	6010C	10-3-13	10-3-13	

Date of Report: October 7, 2013
Samples Submitted: October 3, 2013
Laboratory Reference: 1310-042
Project: 2007-098-

TOTAL METALS
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 10-3-13
Date Analyzed: 10-3-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB1003SM1

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
Selenium	6010C	**ND**	10
Silver	6010C	**ND**	1.0

Date of Report: October 7, 2013
Samples Submitted: October 3, 2013
Laboratory Reference: 1310-042
Project: 2007-098-

TOTAL MERCURY
EPA 7471B
METHOD BLANK QUALITY CONTROL

Date Extracted:	10-3-13
Date Analyzed:	10-3-13
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB1003S1

Analyte	Method	Result	PQL
Mercury	7471B	**ND**	0.25

Date of Report: October 7, 2013
Samples Submitted: October 3, 2013
Laboratory Reference: 1310-042
Project: 2007-098-

TOTAL METALS
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 10-3-13
Date Analyzed: 10-3-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 10-026-07

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**49.2**	**49.4**	0	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**7.21**	**6.39**	12	0.50	
Lead	**ND**	**ND**	NA	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	1.0	

Date of Report: October 7, 2013
Samples Submitted: October 3, 2013
Laboratory Reference: 1310-042
Project: 2007-098-

TOTAL MERCURY
EPA 7471B
DUPLICATE QUALITY CONTROL

Date Extracted: 10-3-13
Date Analyzed: 10-3-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 10-027-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: October 7, 2013
Samples Submitted: October 3, 2013
Laboratory Reference: 1310-042
Project: 2007-098-

TOTAL METALS
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 10-3-13
Date Analyzed: 10-3-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 10-026-07

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**91.4**	91	**96.3**	96	5	
Barium	100	**151**	101	**143**	94	5	
Cadmium	50.0	**44.1**	88	**43.6**	87	1	
Chromium	100	**102**	94	**100**	93	1	
Lead	250	**228**	91	**226**	90	1	
Selenium	100	**88.9**	89	**90.9**	91	2	
Silver	25.0	**20.2**	81	**20.5**	82	1	

Date of Report: October 7, 2013
Samples Submitted: October 3, 2013
Laboratory Reference: 1310-042
Project: 2007-098-

TOTAL MERCURY
EPA 7471B
MS/MSD QUALITY CONTROL

Date Extracted: 10-3-13
Date Analyzed: 10-3-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 10-027-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.500	**0.514**	103	**0.496**	99	4	

Date of Report: October 7, 2013
Samples Submitted: October 3, 2013
Laboratory Reference: 1310-042
Project: 2007-098-

% MOISTURE

Date Analyzed: 10-3-13

Client ID	Lab ID	% Moisture
L-PEX-20-11	10-042-01	23
L-PEX-21-9	10-042-02	34
L-PEX-22-9	10-042-03	24
L-PEX-23-11	10-042-04	16
L-PEX-24-9	10-042-05	30
L-PEX-25-8	10-042-06	66

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 - The sample chromatogram is similar to mineral spirits with gasoline.

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: 10-042

Company: HWA
Project Number: 2007-098--
Project Name: Bothell Landing
Project Manager: A. Sugar
Sampled by: V. Atkins

Turnaround Request (in working days)
(Check One)
- [x] 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
1	L-PEX-20-11	10/3/13	1230	S	2		✓																			✓
2	L-PEX-21-9		1235				✓																			
3	L-PEX-22-9		1240				✓		✓									✓								
4	LPEX-23-11		1400				✓																			
5	LPEX-24-9		1405				✓																			
6	LPEX-25-8		1410				✓																			

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	[illegible]	HWA	~~10/~~ 10/3/13	1450	Silica Gel Cleanup
Received	[illegible]	Speedy	10/3/13	1455	
Relinquished	[illegible]	Speedy	10/3/13	3:30	
Received	[illegible]	OSE	10/3/13	1530	
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 7, 2013

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1310-057

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on October 4, 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 7, 2013
Samples Submitted: October 4, 2013
Laboratory Reference: 1310-057
Project: 2007-098

Case Narrative

Samples were collected on October 4, 2013 and received by the laboratory on October 4, 2013. 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/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^oC and -20^oC 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 7, 2013
Samples Submitted: October 4, 2013
Laboratory Reference: 1310-057
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-26-9**					
Laboratory ID:	10-057-01					
Benzene	**ND**	0.020	EPA 8021B	10-4-13	10-4-13	
Toluene	**ND**	0.075	EPA 8021B	10-4-13	10-4-13	
Ethyl Benzene	**ND**	0.075	EPA 8021B	10-4-13	10-4-13	
m,p-Xylene	**ND**	0.075	EPA 8021B	10-4-13	10-4-13	
o-Xylene	**ND**	0.075	EPA 8021B	10-4-13	10-4-13	
Gasoline	**ND**	7.5	NWTPH-Gx	10-4-13	10-4-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*110*	*71-121*				
Client ID:	**L-PEX-27-12**					
Laboratory ID:	10-057-02					
Benzene	**ND**	0.020	EPA 8021B	10-4-13	10-4-13	
Toluene	**ND**	0.083	EPA 8021B	10-4-13	10-4-13	
Ethyl Benzene	**ND**	0.083	EPA 8021B	10-4-13	10-4-13	
m,p-Xylene	**ND**	0.083	EPA 8021B	10-4-13	10-4-13	
o-Xylene	**ND**	0.083	EPA 8021B	10-4-13	10-4-13	
Gasoline	**ND**	8.3	NWTPH-Gx	10-4-13	10-4-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*71-121*				
Client ID:	**L-PEX-28-9**					
Laboratory ID:	10-057-03					
Benzene	**ND**	0.020	EPA 8021B	10-4-13	10-4-13	
Toluene	**ND**	0.10	EPA 8021B	10-4-13	10-4-13	
Ethyl Benzene	**ND**	0.10	EPA 8021B	10-4-13	10-4-13	
m,p-Xylene	**ND**	0.10	EPA 8021B	10-4-13	10-4-13	
o-Xylene	**ND**	0.10	EPA 8021B	10-4-13	10-4-13	
Gasoline	**ND**	10	NWTPH-Gx	10-4-13	10-4-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*106*	*71-121*				

Date of Report: October 7, 2013
Samples Submitted: October 4, 2013
Laboratory Reference: 1310-057
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-29-7**					
Laboratory ID:	10-057-04					
Benzene	**ND**	0.020	EPA 8021B	10-4-13	10-4-13	
Toluene	**ND**	0.056	EPA 8021B	10-4-13	10-4-13	
Ethyl Benzene	**ND**	0.056	EPA 8021B	10-4-13	10-4-13	
m,p-Xylene	**ND**	0.056	EPA 8021B	10-4-13	10-4-13	
o-Xylene	**ND**	0.056	EPA 8021B	10-4-13	10-4-13	
Gasoline	**6.4**	5.6	NWTPH-Gx	10-4-13	10-4-13	O
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-121*				
Client ID:	**L-PEX-30-11**					
Laboratory ID:	10-057-05					
Benzene	**ND**	0.022	EPA 8021B	10-4-13	10-4-13	
Toluene	**ND**	0.11	EPA 8021B	10-4-13	10-4-13	
Ethyl Benzene	**ND**	0.11	EPA 8021B	10-4-13	10-4-13	
m,p-Xylene	**0.13**	0.11	EPA 8021B	10-4-13	10-4-13	
o-Xylene	**ND**	0.11	EPA 8021B	10-4-13	10-4-13	
Gasoline	**42**	11	NWTPH-Gx	10-4-13	10-4-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*71-121*				
Client ID:	**L-PEX-31-9**					
Laboratory ID:	10-057-06					
Benzene	**ND**	0.020	EPA 8021B	10-4-13	10-4-13	
Toluene	**ND**	0.059	EPA 8021B	10-4-13	10-4-13	
Ethyl Benzene	**ND**	0.059	EPA 8021B	10-4-13	10-4-13	
m,p-Xylene	**ND**	0.059	EPA 8021B	10-4-13	10-4-13	
o-Xylene	**ND**	0.059	EPA 8021B	10-4-13	10-4-13	
Gasoline	**ND**	5.9	NWTPH-Gx	10-4-13	10-4-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*71-121*				

Date of Report: October 7, 2013
Samples Submitted: October 4, 2013
Laboratory Reference: 1310-057
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-32-9**					
Laboratory ID:	10-057-07					
Benzene	**ND**	0.020	EPA 8021B	10-4-13	10-4-13	
Toluene	**ND**	0.055	EPA 8021B	10-4-13	10-4-13	
Ethyl Benzene	**ND**	0.055	EPA 8021B	10-4-13	10-4-13	
m,p-Xylene	**ND**	0.055	EPA 8021B	10-4-13	10-4-13	
o-Xylene	**ND**	0.055	EPA 8021B	10-4-13	10-4-13	
Gasoline	**ND**	5.5	NWTPH-Gx	10-4-13	10-4-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*71-121*				
Client ID:	**L-PEX-33-8**					
Laboratory ID:	10-057-08					
Benzene	**ND**	0.020	EPA 8021B	10-4-13	10-4-13	
Toluene	**ND**	0.052	EPA 8021B	10-4-13	10-4-13	
Ethyl Benzene	**ND**	0.052	EPA 8021B	10-4-13	10-4-13	
m,p-Xylene	**ND**	0.052	EPA 8021B	10-4-13	10-4-13	
o-Xylene	**ND**	0.052	EPA 8021B	10-4-13	10-4-13	
Gasoline	**ND**	5.2	NWTPH-Gx	10-4-13	10-4-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*71-121*				

Date of Report: October 7, 2013
Samples Submitted: October 4, 2013
Laboratory Reference: 1310-057
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:	MB1004S1					
Benzene	**ND**	0.020	EPA 8021B	10-4-13	10-4-13	
Toluene	**ND**	0.050	EPA 8021B	10-4-13	10-4-13	
Ethyl Benzene	**ND**	0.050	EPA 8021B	10-4-13	10-4-13	
m,p-Xylene	**ND**	0.050	EPA 8021B	10-4-13	10-4-13	
o-Xylene	**ND**	0.050	EPA 8021B	10-4-13	10-4-13	
Gasoline	**ND**	5.0	NWTPH-Gx	10-4-13	10-4-13	
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:	10-057-02										
	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						*102*	*110*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB1004S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.06**	**1.06**	1.00	1.00		**106**	**106**	73-121	0	10	
Toluene	**1.05**	**1.05**	1.00	1.00		**105**	**105**	75-124	0	10	
Ethyl Benzene	**1.05**	**1.04**	1.00	1.00		**105**	**104**	75-125	1	9	
m,p-Xylene	**1.05**	**1.06**	1.00	1.00		**105**	**106**	75-126	1	9	
o-Xylene	**1.06**	**1.05**	1.00	1.00		**106**	**105**	74-123	1	8	
Surrogate:											
Fluorobenzene						*101*	*98*	*71-121*			

Date of Report: October 7, 2013
Samples Submitted: October 4, 2013
Laboratory Reference: 1310-057
Project: 2007-098

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-27-12**					
Laboratory ID:	10-057-02					
Diesel Range Organics	**ND**	35	NWTPH-Dx	10-4-13	10-4-13	
Lube Oil Range Organics	**ND**	70	NWTPH-Dx	10-4-13	10-4-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*74*	*50-150*				
Client ID:	**L-PEX-28-9**					
Laboratory ID:	10-057-03					
Diesel Range Organics	**ND**	39	NWTPH-Dx	10-4-13	10-4-13	
Lube Oil Range Organics	**170**	79	NWTPH-Dx	10-4-13	10-4-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*80*	*50-150*				
Client ID:	**L-PEX-33-8**					
Laboratory ID:	10-057-08					
Diesel Range Organics	**ND**	28	NWTPH-Dx	10-4-13	10-4-13	
Lube Oil	**110**	57	NWTPH-Dx	10-4-13	10-4-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*72*	*50-150*				

Date of Report: October 7, 2013
Samples Submitted: October 4, 2013
Laboratory Reference: 1310-057
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1004S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	10-4-13	10-4-13	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	10-4-13	10-4-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*81*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	10-047-02							
	ORIG	DUP						
Diesel Range Organics	**51.1**	**29.1**				55	NA	
Lube Oil	**227**	**204**				11	NA	
Surrogate:								
o-Terphenyl			*84*	*69*	*50-150*			

Date of Report: October 7, 2013
Samples Submitted: October 4, 2013
Laboratory Reference: 1310-057
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:	10-057-02					
Client ID:	**L-PEX-27-12**					
Arsenic	**ND**	14	6010C	10-4-13	10-4-13	
Barium	**99**	3.5	6010C	10-4-13	10-4-13	
Cadmium	**ND**	0.70	6010C	10-4-13	10-4-13	
Chromium	**62**	0.70	6010C	10-4-13	10-4-13	
Lead	**ND**	7.0	6010C	10-4-13	10-4-13	
Mercury	**ND**	0.35	7471B	10-7-13	10-7-13	
Selenium	**ND**	14	6010C	10-4-13	10-4-13	
Silver	**ND**	1.4	6010C	10-4-13	10-4-13	
Lab ID:	10-057-03					
Client ID:	**L-PEX-28-9**					
Arsenic	**ND**	16	6010C	10-4-13	10-4-13	
Barium	**54**	3.9	6010C	10-4-13	10-4-13	
Cadmium	**ND**	0.78	6010C	10-4-13	10-4-13	
Chromium	**39**	0.78	6010C	10-4-13	10-4-13	
Lead	**ND**	7.8	6010C	10-4-13	10-4-13	
Mercury	**ND**	0.39	7471B	10-7-13	10-7-13	
Selenium	**ND**	16	6010C	10-4-13	10-4-13	
Silver	**ND**	1.6	6010C	10-4-13	10-4-13	

Date of Report: October 7, 2013
Samples Submitted: October 4, 2013
Laboratory Reference: 1310-057
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:	10-057-08					
Client ID:	**L-PEX-33-8**					
Arsenic	**ND**	11	6010C	10-4-13	10-4-13	
Barium	**42**	2.8	6010C	10-4-13	10-4-13	
Cadmium	**ND**	0.57	6010C	10-4-13	10-4-13	
Chromium	**46**	0.57	6010C	10-4-13	10-4-13	
Lead	**17**	5.7	6010C	10-4-13	10-4-13	
Mercury	**ND**	0.28	7471B	10-7-13	10-7-13	
Selenium	**ND**	11	6010C	10-4-13	10-4-13	
Silver	**ND**	1.1	6010C	10-4-13	10-4-13	

Date of Report: October 7, 2013
Samples Submitted: October 4, 2013
Laboratory Reference: 1310-057
Project: 2007-098

TOTAL METALS
EPA 6010C/7471B
METHOD BLANK QUALITY CONTROL

Date Extracted: 10-4&7-13
Date Analyzed: 10-4&7-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB1004SM1&MB1007S1

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 7, 2013
Samples Submitted: October 4, 2013
Laboratory Reference: 1310-057
Project: 2007-098

TOTAL METALS
EPA 6010C/7471B
DUPLICATE QUALITY CONTROL

Date Extracted: 10-4&7-13
Date Analyzed: 10-4&7-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 10-057-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**34.5**	**35.8**	4	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**24.9**	**26.3**	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: October 7, 2013
Samples Submitted: October 4, 2013
Laboratory Reference: 1310-057
Project: 2007-098

TOTAL METALS
EPA 6010C/7471B
MS/MSD QUALITY CONTROL

Date Extracted: 10-4&7-13
Date Analyzed: 10-4&7-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 10-057-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**90.9**	91	**90.5**	91	0	
Barium	100	**134**	100	**137**	103	2	
Cadmium	50.0	**46.4**	93	**47.1**	94	1	
Chromium	100	**121**	96	**123**	99	2	
Lead	250	**231**	92	**233**	93	1	
Mercury	0.500	**0.533**	107	**0.516**	103	3	
Selenium	100	**92.8**	93	**95.2**	95	3	
Silver	25.0	**20.7**	83	**20.9**	84	1	

Date of Report: October 7, 2013
Samples Submitted: October 4, 2013
Laboratory Reference: 1310-057
Project: 2007-098

% MOISTURE

Date Analyzed: 10-4-13

Client ID	Lab ID	% Moisture
L-PEX-26-9	10-057-01	24
L-PEX-27-12	10-057-02	28
L-PEX-28-9	10-057-03	36
L-PEX-29-7	10-057-04	11
L-PEX-30-11	10-057-05	15
L-PEX-31-9	10-057-06	12
L-PEX-32-9	10-057-07	14
L-PEX-33-8	10-057-08	12

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

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

Laboratory Number: 10-057

Company: HWA
Project Number: 2007-098
Project Name: Bothell Landing
Project Manager: A. Sugar
Sampled by: Atkins

Turnaround Request (in working days)
(Check One)
- [x] 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
1	L-PCA-26-9	10/4/13	1000	S	2		✓															✓
2	L-PCA-27-12		1005				✓		✓									✓				
3	L-PCA-28-9		1010				✓		✓									✓				
4	L-PCA-29-7		1020				✓															
5	L-PCA-30-11		1300				✓		~~✓~~									~~✓~~				
6	L-PCA-31-9		1345				✓															
7	L-PCA-32-9		1350				✓															
8	L-PCA-33-8		1355				✓		✓									✓				

	Signature	Company	Date	Time
Relinquished	[illegible]	HWA	10/4/13	1430
Received	[illegible]	Speedy	10/4/13	14:30
Relinquished	[illegible]	Speedy	10/4/13	2:53
Received	[illegible]	OSE	10/4/13	1453
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.

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October 9, 2013

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-
Laboratory Reference No. 1310-066

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on October 7, 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 9, 2013
Samples Submitted: October 7, 2013
Laboratory Reference: 1310-066
Project: 2007-098-

Case Narrative

Samples were collected on October 7, 2013 and received by the laboratory on October 7, 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 MTCA Method A clean-up level of 0.03 ppm for Benzene is not achievable for sample L-PEX-34-9 due to the high moisture content of the sample.

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 9, 2013
Samples Submitted: October 7, 2013
Laboratory Reference: 1310-066
Project: 2007-098-

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-34-9**					
Laboratory ID:	10-066-01					
Benzene	**ND**	0.033	EPA 8021B	10-7-13	10-7-13	
Toluene	**ND**	0.16	EPA 8021B	10-7-13	10-7-13	
Ethyl Benzene	**ND**	0.16	EPA 8021B	10-7-13	10-7-13	
m,p-Xylene	**ND**	0.16	EPA 8021B	10-7-13	10-7-13	
o-Xylene	**ND**	0.16	EPA 8021B	10-7-13	10-7-13	
Gasoline	**ND**	16	NWTPH-Gx	10-7-13	10-7-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*71-121*				
Client ID:	**L-PEX-35-7**					
Laboratory ID:	10-066-02					
Benzene	**ND**	0.020	EPA 8021B	10-7-13	10-7-13	
Toluene	**ND**	0.061	EPA 8021B	10-7-13	10-7-13	
Ethyl Benzene	**ND**	0.061	EPA 8021B	10-7-13	10-7-13	
m,p-Xylene	**ND**	0.061	EPA 8021B	10-7-13	10-7-13	
o-Xylene	**ND**	0.061	EPA 8021B	10-7-13	10-7-13	
Gasoline	**ND**	6.1	NWTPH-Gx	10-7-13	10-7-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*71-121*				

Date of Report: October 9, 2013
Samples Submitted: October 7, 2013
Laboratory Reference: 1310-066
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:	MB1007S1					
Benzene	**ND**	0.020	EPA 8021B	10-7-13	10-7-13	
Toluene	**ND**	0.050	EPA 8021B	10-7-13	10-7-13	
Ethyl Benzene	**ND**	0.050	EPA 8021B	10-7-13	10-7-13	
m,p-Xylene	**ND**	0.050	EPA 8021B	10-7-13	10-7-13	
o-Xylene	**ND**	0.050	EPA 8021B	10-7-13	10-7-13	
Gasoline	**ND**	5.0	NWTPH-Gx	10-7-13	10-7-13	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	10-060-02										
	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*	*103*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB1007S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.935**	**0.896**	1.00	1.00		**94**	**90**	73-121	4	10	
Toluene	**0.993**	**0.953**	1.00	1.00		**99**	**95**	75-124	4	10	
Ethyl Benzene	**1.02**	**0.993**	1.00	1.00		**102**	**99**	75-125	3	9	
m,p-Xylene	**1.04**	**1.02**	1.00	1.00		**104**	**102**	75-126	2	9	
o-Xylene	**1.04**	**1.03**	1.00	1.00		**104**	**103**	74-123	1	8	
Surrogate:											
Fluorobenzene						*95*	*91*	*71-121*			

Date of Report: October 9, 2013
Samples Submitted: October 7, 2013
Laboratory Reference: 1310-066
Project: 2007-098-

% MOISTURE

Date Analyzed: 10-7-13

Client ID	Lab ID	% Moisture
L-PEX-34-9	10-066-01	54
L-PEX-35-7	10-066-02	19

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

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Chain of Custody

Page ______ of ______

Laboratory Number: 10-066

Company: HWA
Project Number: 2007-098-
Project Name: Bothell Landing
Project Manager: A. Sugar
Sampled by: Atkins

Turnaround Request (in working days)

(Check One)

- [x] 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
1	L-PEX-34-9	10/7	1000	S	2		X																			X
2	L-PEX-35-~~7~~7 DB.	10/7	1015	S	2		X																			X

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	10/7/13	1125
Received	[signature]	OSE	10/7/13	1125
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Silica Gel Cleanup

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

OnSite Environmental Inc.
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October 10, 2013

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1310-096

Dear Vance:

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: 1310-096
Project: 2007-098-994

Case Narrative

Samples were collected on October 9, 2013 and received by the laboratory on October 9, 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: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-096
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-36-12**					
Laboratory ID:	10-096-01					
Benzene	**ND**	0.020	EPA 8021B	10-9-13	10-9-13	
Toluene	**ND**	0.069	EPA 8021B	10-9-13	10-9-13	
Ethyl Benzene	**ND**	0.069	EPA 8021B	10-9-13	10-9-13	
m,p-Xylene	**ND**	0.069	EPA 8021B	10-9-13	10-9-13	
o-Xylene	**ND**	0.069	EPA 8021B	10-9-13	10-9-13	
Gasoline	**ND**	6.9	NWTPH-Gx	10-9-13	10-9-13	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***108***	***71-121***				

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-096
Project: 2007-098-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1009S2					
Benzene	**ND**	0.020	EPA 8021B	10-9-13	10-9-13	
Toluene	**ND**	0.050	EPA 8021B	10-9-13	10-9-13	
Ethyl Benzene	**ND**	0.050	EPA 8021B	10-9-13	10-9-13	
m,p-Xylene	**ND**	0.050	EPA 8021B	10-9-13	10-9-13	
o-Xylene	**ND**	0.050	EPA 8021B	10-9-13	10-9-13	
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									
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						***108***	***110***	***71-121***			
SPIKE BLANKS											
Laboratory ID:	SB1009S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.01**	**0.952**	1.00	1.00		**101**	**95**	73-121	6	10	
Toluene	**1.02**	**0.961**	1.00	1.00		**102**	**96**	75-124	6	10	
Ethyl Benzene	**1.02**	**0.969**	1.00	1.00		**102**	**97**	75-125	5	9	
m,p-Xylene	**1.04**	**0.988**	1.00	1.00		**104**	**99**	75-126	5	9	
o-Xylene	**1.04**	**0.991**	1.00	1.00		**104**	**99**	74-123	5	8	
Surrogate:											
Fluorobenzene						***99***	***91***	***71-121***			

Date of Report: October 10, 2013
Samples Submitted: October 9, 2013
Laboratory Reference: 1310-096
Project: 2007-098-994

% MOISTURE

Date Analyzed: 10-9-13

Client ID	Lab ID	% Moisture
L-PEX-36-12	10-096-01	24

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

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Chain of Custody

Laboratory Number: 10-096

Company: HWA
Project Number: 2007-098
Project Name: Bothell Landing
Project Manager:
Sampled by:

Turnaround Request (in working days) (Check One)

- [x] Same Day
- [x] 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
1	6-PEX-35-12	10/9/13	800	S	2		X																			X

	Signature	Company	Date	Time
Relinquished	[illegible]	HWA GeoSciences	10/9/13	9:40am
Received	T Hol	Speedy	10/9/13	9:52
Relinquished	T Hol	Speedy	10/9/13	10:09
Received	[illegible]	OSE	10/9/13	1009
Relinquished				
Received				

Comments/Special Instructions: Silica gel cleanup

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

January 14, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1401-052

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 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

Case Narrative

Samples were collected on January 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.

<u>NWTPH Gx/BTEX Analysis</u>

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: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L8-4**					
Laboratory ID:	01-052-01					
Benzene	**0.023**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**0.081**	0.059	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**0.81**	0.059	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**4.7**	1.2	EPA 8021B	1-10-14	1-13-14	
o-Xylene	**ND**	3.0	EPA 8021B	1-10-14	1-10-14	U1
Gasoline	**1800**	120	NWTPH-Gx	1-10-14	1-13-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*71-121*				
Client ID:	**TP-L8-8**					
Laboratory ID:	01-052-02					
Benzene	**ND**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**ND**	0.066	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**ND**	0.066	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**ND**	0.066	EPA 8021B	1-10-14	1-10-14	
o-Xylene	**ND**	0.066	EPA 8021B	1-10-14	1-10-14	
Gasoline	**ND**	6.6	NWTPH-Gx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-121*				
Client ID:	**TP-L9-4**					
Laboratory ID:	01-052-03					
Benzene	**0.020**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**ND**	0.072	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**ND**	0.072	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**ND**	0.36	EPA 8021B	1-10-14	1-10-14	U1
o-Xylene	**ND**	0.072	EPA 8021B	1-10-14	1-10-14	
Gasoline	**54**	7.2	NWTPH-Gx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-121*				

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L9-8**					
Laboratory ID:	01-052-04					
Benzene	**0.15**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**0.13**	0.089	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**0.30**	0.089	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**ND**	0.89	EPA 8021B	1-10-14	1-10-14	U1
o-Xylene	**ND**	0.45	EPA 8021B	1-10-14	1-10-14	U1
Gasoline	**360**	8.9	NWTPH-Gx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*71-121*				
Client ID:	**TP-L10-4**					
Laboratory ID:	01-052-05					
Benzene	**1.7**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**2.0**	0.066	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**6.2**	0.066	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**28**	1.3	EPA 8021B	1-10-14	1-13-14	
o-Xylene	**ND**	6.5	EPA 8021B	1-10-14	1-13-14	U1
Gasoline	**8100**	130	NWTPH-Gx	1-10-14	1-13-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-121*				
Client ID:	**TP-L10-9**					
Laboratory ID:	01-052-06					
Benzene	**ND**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**ND**	0.055	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**ND**	0.055	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**ND**	0.055	EPA 8021B	1-10-14	1-10-14	
o-Xylene	**ND**	0.055	EPA 8021B	1-10-14	1-10-14	
Gasoline	**ND**	5.5	NWTPH-Gx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*71-121*				

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L11-4**					
Laboratory ID:	01-052-07					
Benzene	**ND**	0.024	EPA 8021B	1-10-14	1-10-14	
Toluene	**ND**	0.12	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**0.73**	0.12	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**2.7**	0.61	EPA 8021B	1-10-14	1-13-14	
o-Xylene	**ND**	1.2	EPA 8021B	1-10-14	1-10-14	U1
Gasoline	**2000**	61	NWTPH-Gx	1-10-14	1-13-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-121*				
Client ID:	**TP-L11-9**					
Laboratory ID:	01-052-08					
Benzene	**ND**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**ND**	0.075	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**ND**	0.075	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**ND**	0.075	EPA 8021B	1-10-14	1-10-14	
o-Xylene	**ND**	0.075	EPA 8021B	1-10-14	1-10-14	
Gasoline	**ND**	7.5	NWTPH-Gx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*71-121*				
Client ID:	**TP-L12-4**					
Laboratory ID:	01-052-09					
Benzene	**0.059**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**0.19**	0.086	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**0.68**	0.086	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**ND**	0.86	EPA 8021B	1-10-14	1-10-14	U1
o-Xylene	**0.30**	0.086	EPA 8021B	1-10-14	1-10-14	
Gasoline	**1000**	43	NWTPH-Gx	1-10-14	1-13-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*71-121*				

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L12-9**					
Laboratory ID:	01-052-10					
Benzene	**ND**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**ND**	0.070	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**ND**	0.070	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**ND**	0.070	EPA 8021B	1-10-14	1-10-14	
o-Xylene	**ND**	0.070	EPA 8021B	1-10-14	1-10-14	
Gasoline	**ND**	7.0	NWTPH-Gx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-121*				
Client ID:	**TP-L13-4**					
Laboratory ID:	01-052-11					
Benzene	**ND**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**ND**	0.066	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**ND**	0.066	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**ND**	0.066	EPA 8021B	1-10-14	1-10-14	
o-Xylene	**ND**	0.066	EPA 8021B	1-10-14	1-10-14	
Gasoline	**ND**	6.6	NWTPH-Gx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*71-121*				
Client ID:	**TP-L13-7**					
Laboratory ID:	01-052-12					
Benzene	**ND**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**ND**	0.081	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**ND**	0.081	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**ND**	0.081	EPA 8021B	1-10-14	1-10-14	
o-Xylene	**ND**	0.081	EPA 8021B	1-10-14	1-10-14	
Gasoline	**ND**	8.1	NWTPH-Gx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-121*				

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0110S1					
Benzene	**ND**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**ND**	0.050	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-10-14	1-10-14	
o-Xylene	**ND**	0.050	EPA 8021B	1-10-14	1-10-14	
Gasoline	**ND**	5.0	NWTPH-Gx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*71-121*				
Laboratory ID:	MB0110S2					
Benzene	**ND**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**ND**	0.050	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-10-14	1-10-14	
o-Xylene	**ND**	0.050	EPA 8021B	1-10-14	1-10-14	
Gasoline	**ND**	5.0	NWTPH-Gx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*71-121*				

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-052-02										
	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						*87*	*80*	*71-121*			
Laboratory ID:	01-052-08										
	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						*89*	*81*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0110S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.923**	**0.929**	1.00	1.00		**92**	**93**	73-121	1	10	
Toluene	**0.949**	**0.983**	1.00	1.00		**95**	**98**	75-124	4	10	
Ethyl Benzene	**0.968**	**0.968**	1.00	1.00		**97**	**97**	75-125	0	9	
m,p-Xylene	**0.968**	**0.981**	1.00	1.00		**97**	**98**	75-126	1	9	
o-Xylene	**0.959**	**0.980**	1.00	1.00		**96**	**98**	74-123	2	8	
Surrogate:											
Fluorobenzene						*84*	*85*	*71-121*			

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L8-4**					
Laboratory ID:	01-052-01					
Diesel Range Organics	**ND**	540	NWTPH-Dx	1-10-14	1-10-14	U1
Lube Oil	**82**	59	NWTPH-Dx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				
Client ID:	**TP-L8-8**					
Laboratory ID:	01-052-02					
Diesel Range Organics	**ND**	30	NWTPH-Dx	1-10-14	1-10-14	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*57*	*50-150*				
Client ID:	**TP-L9-4**					
Laboratory ID:	01-052-03					
Diesel Range Organics	**ND**	120	NWTPH-Dx	1-10-14	1-10-14	U1
Lube Oil	**170**	64	NWTPH-Dx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*73*	*50-150*				
Client ID:	**TP-L9-8**					
Laboratory ID:	01-052-04					
Diesel Range Organics	**ND**	36	NWTPH-Dx	1-10-14	1-10-14	
Lube Oil Range Organics	**ND**	72	NWTPH-Dx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*61*	*50-150*				
Client ID:	**TP-L10-4**					
Laboratory ID:	01-052-05					
Diesel Range Organics	**ND**	1500	NWTPH-Dx	1-10-14	1-10-14	U1
Lube Oil Range Organics	**72**	61	NWTPH-Dx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*74*	*50-150*				
Client ID:	**TP-L10-9**					
Laboratory ID:	01-052-06					
Diesel Range Organics	**ND**	29	NWTPH-Dx	1-10-14	1-10-14	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L11-4**					
Laboratory ID:	01-052-07					
Diesel Range Organics	**ND**	1500	NWTPH-Dx	1-10-14	1-10-14	U1
Lube Oil Range Organics	**460**	92	NWTPH-Dx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*70*	*50-150*				
Client ID:	**TP-L11-9**					
Laboratory ID:	01-052-08					
Diesel Range Organics	**ND**	33	NWTPH-Dx	1-10-14	1-10-14	
Lube Oil Range Organics	**ND**	65	NWTPH-Dx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*62*	*50-150*				
Client ID:	**TP-L12-4**					
Laboratory ID:	01-052-09					
Diesel Range Organics	**ND**	160	NWTPH-Dx	1-10-14	1-10-14	U1
Lube Oil	**110**	69	NWTPH-Dx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*73*	*50-150*				
Client ID:	**TP-L12-9**					
Laboratory ID:	01-052-10					
Diesel Range Organics	**ND**	32	NWTPH-Dx	1-10-14	1-10-14	
Lube Oil Range Organics	**ND**	63	NWTPH-Dx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*75*	*50-150*				
Client ID:	**TP-L13-4**					
Laboratory ID:	01-052-11					
Diesel Range Organics	**ND**	32	NWTPH-Dx	1-13-14	1-13-14	
Lube Oil Range Organics	**ND**	65	NWTPH-Dx	1-13-14	1-13-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*87*	*50-150*				
Client ID:	**TP-L13-7**					
Laboratory ID:	01-052-12					
Diesel Range Organics	**ND**	33	NWTPH-Dx	1-13-14	1-13-14	
Lube Oil Range Organics	**ND**	66	NWTPH-Dx	1-13-14	1-13-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*80*	*50-150*				

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0110S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-10-14	1-10-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*95*	*50-150*				
Laboratory ID:	MB0113S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-13-14	1-13-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-13-14	1-13-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-052-02							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*57*	*87*	*50-150*			
Laboratory ID:	01-055-02							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*97*	*85*	*50-150*			

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	01-052-01					
Client ID:	**TP-L8-4**					
Lead	**ND**	5.9	6010C	1-9-14	1-9-14	
Lab ID:	01-052-02					
Client ID:	**TP-L8-8**					
Lead	**ND**	6.0	6010C	1-9-14	1-9-14	
Lab ID:	01-052-03					
Client ID:	**TP-L9-4**					
Lead	**ND**	6.4	6010C	1-9-14	1-9-14	
Lab ID:	01-052-04					
Client ID:	**TP-L9-8**					
Lead	**ND**	7.2	6010C	1-9-14	1-9-14	
Lab ID:	01-052-05					
Client ID:	**TP-L10-4**					
Lead	**ND**	6.1	6010C	1-9-14	1-9-14	
Lab ID:	01-052-06					
Client ID:	**TP-L10-9**					
Lead	**ND**	5.7	6010C	1-9-14	1-9-14	
Lab ID:	01-052-07					
Client ID:	**TP-L11-4**					
Lead	**ND**	9.2	6010C	1-9-14	1-9-14	

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	01-052-08					
Client ID:	**TP-L11-9**					
Lead	**ND**	6.5	6010C	1-9-14	1-9-14	
Lab ID:	01-052-09					
Client ID:	**TP-L12-4**					
Lead	**ND**	6.9	6010C	1-9-14	1-9-14	
Lab ID:	01-052-10					
Client ID:	**TP-L12-9**					
Lead	**ND**	6.3	6010C	1-9-14	1-9-14	
Lab ID:	01-052-11					
Client ID:	**TP-L13-4**					
Lead	**13**	6.5	6010C	1-9-14	1-9-14	
Lab ID:	01-052-12					
Client ID:	**TP-L13-7**					
Lead	**ND**	6.6	6010C	1-9-14	1-9-14	

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 1-9-14
Date Analyzed: 1-9-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0109SM2

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 1-9-14
Date Analyzed: 1-9-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 01-055-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 1-9-14
Date Analyzed: 1-9-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 01-055-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**201**	80	**203**	81	1	

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-052
Project: 2007-098

% MOISTURE

Date Analyzed: 1-9-14

Client ID	Lab ID	% Moisture
TP-L8-4	01-052-01	16
TP-L8-8	01-052-02	17
TP-L9-4	01-052-03	22
TP-L9-8	01-052-04	30
TP-L10-4	01-052-05	18
TP-L10-9	01-052-06	13
TP-L11-4	01-052-07	45
TP-L11-9	01-052-08	24
TP-L12-4	01-052-09	27
TP-L12-9	01-052-10	21
TP-L13-4	01-052-11	22
TP-L13-7	01-052-12	24

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

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

Laboratory Number: 01-052

Company: HWA
Project Number: 2002-098-
Project Name: Bothell - Landing
Project Manager: A. Sugar
Sampled by: Atkins

Turnaround Request (in working days) (Check One)
- [ ] Same Day
- [ ] 1 Day
- [x] 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)~~ Cancelled 1/10/14	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals/ MTCA Metals (circle one) LEAD	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
1	TP-L8-4	1/8/14	1230	S	3		/		/				~~/~~					/			/
2	TP-L8-8		1240				/		/				~~/~~					/			
3	TP-L9-4		1250				/		/				~~/~~					/			
4	TP-L9-8		1300				/		/				~~/~~					/			
5	TP-L10-4		1310				/		/				~~/~~					/			
6	TP-L10-9		1320				/		/				~~/~~					/			
7	TP-~~L10~~ L11-4		1330				/		/				~~/~~					/			
8	TP-~~L10~~ L11-9		1340				/		/				~~/~~					/			
9	TP-L12-4		1350				/		/				~~/~~					/			
10	TP-L12-9		1400				/		/				~~/~~					/			

	Signature	Company	Date	Time
Relinquished	[signature]	HWA GeoSciences	1/9/14	10:15am
Received	[signature]	Speedy Msngr	1-9-14	1021
Relinquished	[signature]	" "	" "	1141
Received	[signature]	OSE	1/9/14	1141
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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Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 01-052

Company: HWA
Project Number: 2007-098-
Project Name: Bothell Landing
Project Manager: A. Sugar
Sampled by: V. Atkins

Turnaround Request (in working days) (Check One)
- [ ] Same Day
- [ ] 1 Day
- [x] 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)~~ Cancelled 1/10/14	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals/ MTCA Metals (circle one) LEAD	TCLP Metals	HEM (oil and grease) 1664A							% Moisture
11	TP-L13-4	1/8/14	1410	S	3		/		/				/					/									/
12	TP-L13-7	1/8/14	1420	S	↓		/		/				/					/									/

	Signature	Company	Date	Time
Relinquished	[signature]	HWA GeoSciences	1/9/14	10:15am
Received	[signature]	Speedy Msngr	1-9-14	1021
Relinquished	[signature]	" "	" "	1141
Received	[signature]	OSE	1/9/14	1141
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

January 14, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re:	Analytical Data for Project 2007-098
	Laboratory Reference No. 1401-055

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 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-055
Project: 2007-098

Case Narrative

Samples were collected on January 9, 2014 and received by the laboratory on January 9, 2014. 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/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^oC and -20^oC 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: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-055
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L14-4**					
Laboratory ID:	01-055-01					
Benzene	**ND**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**ND**	0.061	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**ND**	0.061	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**ND**	0.061	EPA 8021B	1-10-14	1-10-14	
o-Xylene	**ND**	0.061	EPA 8021B	1-10-14	1-10-14	
Gasoline	**ND**	6.1	NWTPH-Gx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*71-121*				
Client ID:	**TP-L14-8**					
Laboratory ID:	01-055-02					
Benzene	**ND**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**ND**	0.064	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**ND**	0.064	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**ND**	0.064	EPA 8021B	1-10-14	1-10-14	
o-Xylene	**ND**	0.064	EPA 8021B	1-10-14	1-10-14	
Gasoline	**ND**	6.4	NWTPH-Gx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*71-121*				

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-055
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:	MB0110S2					
Benzene	**ND**	0.020	EPA 8021B	1-10-14	1-10-14	
Toluene	**ND**	0.050	EPA 8021B	1-10-14	1-10-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-10-14	1-10-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-10-14	1-10-14	
o-Xylene	**ND**	0.050	EPA 8021B	1-10-14	1-10-14	
Gasoline	**ND**	5.0	NWTPH-Gx	1-10-14	1-10-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-052-08										
	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						*89*	*81*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0110S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.923**	**0.929**	1.00	1.00		**92**	**93**	73-121	1	10	
Toluene	**0.949**	**0.983**	1.00	1.00		**95**	**98**	75-124	4	10	
Ethyl Benzene	**0.968**	**0.968**	1.00	1.00		**97**	**97**	75-125	0	9	
m,p-Xylene	**0.968**	**0.981**	1.00	1.00		**97**	**98**	75-126	1	9	
o-Xylene	**0.959**	**0.980**	1.00	1.00		**96**	**98**	74-123	2	8	
Surrogate:											
Fluorobenzene						*84*	*85*	*71-121*			

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-055
Project: 2007-098

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-L14-4**					
Laboratory ID:	01-055-01					
Diesel Range Organics	**ND**	31	NWTPH-Dx	1-13-14	1-13-14	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	1-13-14	1-13-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				
Client ID:	**TP-L14-8**					
Laboratory ID:	01-055-02					
Diesel Range Organics	**ND**	30	NWTPH-Dx	1-13-14	1-13-14	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	1-13-14	1-13-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*97*	*50-150*				

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-055
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0113S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-13-14	1-13-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-13-14	1-13-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-055-02							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*97*	*85*	*50-150*			

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-055
Project: 2007-098

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	01-055-01					
Client ID:	**TP-L14-4**					
Lead	**ND**	6.2	6010C	1-9-14	1-9-14	
Lab ID:	01-055-02					
Client ID:	**TP-L14-8**					
Lead	**ND**	6.1	6010C	1-9-14	1-9-14	

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-055
Project: 2007-098

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 1-9-14
Date Analyzed: 1-9-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0109SM2

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-055
Project: 2007-098

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 1-9-14
Date Analyzed: 1-9-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 01-055-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-055
Project: 2007-098

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 1-9-14
Date Analyzed: 1-9-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 01-055-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**201**	80	**203**	81	1	

Date of Report: January 14, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-055
Project: 2007-098

% MOISTURE

Date Analyzed: 1-9-14

Client ID	Lab ID	% Moisture
TP-L14-4	01-055-01	19
TP-L14-8	01-055-02	17

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

Chain of Custody and Laboratory Anaylsis Request

DATE: 1/9/14
PAGE: 1 of 1

01-055

PROJECT NAME: Bothell Landing #: 2007-098
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE: [signature] DATE:
HWA CONTACT: Atkins/ Sugan PHONE:

TURNAROUND TIME
☒ DAYS
☐ STANDARD

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPHG/BTEX	NWTPH-Dx	~~PAHs~~	LEAD	% MOISTURE	EDD	REMARKS
TP-~~[illegible]~~-L14-4	1/9/14	1230	S	1	4	/	/	/	/	X		
TP-L14-8	1/9/14	1240	S	2	4	/	/	/ Cancelled 1/10/14	/	X		

ANALYSIS REQUESTED

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: [signature]	[signature]	HWA GeoSciences	1/9/14	1:50pm	
Received by: Van	Van Spdy	Spdy	1/9/14	1:50pm	
Relinquished by: Van	Spdy	Spdy	1/9/14	2:15	
Received by: M.Von	[signature]	[illegible]	1/9/14	1415	

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 24, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re:	Analytical Data for Project 2007-098-994
	Laboratory Reference No. 1401-147

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on January 22, 2014.

Please note that this is a *revised* report and replaces the original due to a change of a sample identification.

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 24, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-147
Project: 2007-098-994

Case Narrative

Samples were collected on January 22, 2014 and received by the laboratory on January 22, 2014. 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: January 24, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-147
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-35E-11**					
Laboratory ID:	01-147-01					
Benzene	**ND**	0.020	EPA 8021B	1-23-14	1-23-14	
Toluene	**ND**	0.064	EPA 8021B	1-23-14	1-23-14	
Ethyl Benzene	**ND**	0.064	EPA 8021B	1-23-14	1-23-14	
m,p-Xylene	**ND**	0.064	EPA 8021B	1-23-14	1-23-14	
o-Xylene	**ND**	0.064	EPA 8021B	1-23-14	1-23-14	
Gasoline	**ND**	6.4	NWTPH-Gx	1-23-14	1-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*71-121*				

Date of Report: January 24, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-147
Project: 2007-098-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0123S1					
Benzene	**ND**	0.020	EPA 8021B	1-23-14	1-23-14	
Toluene	**ND**	0.050	EPA 8021B	1-23-14	1-23-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-23-14	1-23-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-23-14	1-23-14	
o-Xylene	**ND**	0.050	EPA 8021B	1-23-14	1-23-14	
Gasoline	**ND**	5.0	NWTPH-Gx	1-23-14	1-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-147-01										
	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						*100*	*98*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0123S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.979**	**1.01**	1.00	1.00		**98**	**101**	73-121	3	10	
Toluene	**1.01**	**1.03**	1.00	1.00		**101**	**103**	75-124	2	10	
Ethyl Benzene	**0.999**	**1.00**	1.00	1.00		**100**	**100**	75-125	0	9	
m,p-Xylene	**1.01**	**1.00**	1.00	1.00		**101**	**100**	75-126	1	9	
o-Xylene	**0.998**	**0.972**	1.00	1.00		**100**	**97**	74-123	3	8	
Surrogate:											
Fluorobenzene						*95*	*95*	*71-121*			

Date of Report: January 24, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-147
Project: 2007-098-994

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-35E-11**					
Laboratory ID:	01-147-01					
Naphthalene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
2-Methylnaphthalene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
1-Methylnaphthalene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Acenaphthylene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Acenaphthene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Fluorene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Phenanthrene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Anthracene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Fluoranthene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Pyrene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Benzo[a]anthracene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Chrysene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Benzo[b]fluoranthene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Benzo(j,k)fluoranthene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Benzo[a]pyrene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Dibenz[a,h]anthracene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Benzo[g,h,i]perylene	**ND**	0.0080	EPA 8270D/SIM	1-22-14	1-22-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*73*	*43 - 116*				
Pyrene-d10	*63*	*33 - 124*				
Terphenyl-d14	*59*	*38 - 125*				

Date of Report: January 24, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-147
Project: 2007-098-994

PAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0122S1					
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	1-22-14	1-22-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*91*	*43 - 116*				
Pyrene-d10	*86*	*33 - 124*				
Terphenyl-d14	*82*	*38 - 125*				

Date of Report: January 24, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-147
Project: 2007-098-994

PAHs EPA 8270D/SIM
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:	01-147-01										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0578**	**0.0662**	0.0833	0.0833	ND	69	79	47 - 99	14	30	
Acenaphthylene	**0.0591**	**0.0653**	0.0833	0.0833	ND	71	78	41 - 118	10	26	
Acenaphthene	**0.0591**	**0.0675**	0.0833	0.0833	ND	71	81	43 - 112	13	28	
Fluorene	**0.0572**	**0.0671**	0.0833	0.0833	ND	69	81	41 - 119	16	25	
Phenanthrene	**0.0559**	**0.0669**	0.0833	0.0833	ND	67	80	40 - 115	18	24	
Anthracene	**0.0577**	**0.0657**	0.0833	0.0833	ND	69	79	41 - 140	13	25	
Fluoranthene	**0.0533**	**0.0603**	0.0833	0.0833	ND	64	72	36 -128	12	26	
Pyrene	**0.0539**	**0.0604**	0.0833	0.0833	ND	65	73	36 - 123	11	24	
Benzo[a]anthracene	**0.0470**	**0.0544**	0.0833	0.0833	ND	56	65	33 - 123	15	26	
Chrysene	**0.0559**	**0.0607**	0.0833	0.0833	ND	67	73	35 - 123	8	25	
Benzo[b]fluoranthene	**0.0495**	**0.0564**	0.0833	0.0833	ND	59	68	30 - 125	13	28	
Benzo(j,k)fluoranthene	**0.0528**	**0.0601**	0.0833	0.0833	ND	63	72	31 - 122	13	30	
Benzo[a]pyrene	**0.0507**	**0.0577**	0.0833	0.0833	ND	61	69	29 - 125	13	28	
Indeno(1,2,3-c,d)pyrene	**0.0518**	**0.0592**	0.0833	0.0833	ND	62	71	28 - 125	13	27	
Dibenz[a,h]anthracene	**0.0520**	**0.0589**	0.0833	0.0833	ND	62	71	32 - 124	12	27	
Benzo[g,h,i]perylene	**0.0527**	**0.0597**	0.0833	0.0833	ND	63	72	30 - 120	12	26	
Surrogate:											
2-Fluorobiphenyl						*71*	*77*	*43 - 116*			
Pyrene-d10						*62*	*69*	*33 - 124*			
Terphenyl-d14						*60*	*67*	*38 - 125*			

Date of Report: January 24, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-147
Project: 2007-098-994

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	01-147-01					
Client ID:	**L-PEX-35E-11**					
Lead	**ND**	6.0	6010C	1-23-14	1-23-14	

Date of Report: January 24, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-147
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted:	1-23-14
Date Analyzed:	1-23-14
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0123SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: January 24, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-147
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 1-23-14
Date Analyzed: 1-23-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 01- 147-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: January 24, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-147
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 1-23-14
Date Analyzed: 1-23-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 01- 147-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**232**	93	**233**	93	1	

Date of Report: January 24, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-147
Project: 2007-098-994

% MOISTURE

Date Analyzed: 1-22-14

Client ID	Lab ID	% Moisture
L-PEX-35E-11	01-147-01	17

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

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Analytical Laboratory Testing Services
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Chain of Custody

Page 1 of 1

Laboratory Number: 01-147

Company: HWA
Project Number: 2007-058-994
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: ''

Turnaround Request (in working days)
(Check One)
- [ ] Same Day
- [x] 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) LEAD	TCLP Metals	HEM (oil and grease) 1664A							% Moisture
1	L-PEx-~~37~~ 35E-11 DB	1/22/14	900	S	2		X						X					X									X

	Signature	Company	Date	Time
Relinquished	CFisk	HWA GeoSciences	1/22/14	142
Received	T Hall	Speedy	1/22/14	142
Relinquished	T Hall		1/22/14	208
Received		OSE	1/22/14	1408
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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Environmental Inc.

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January 29, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1401-148

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on January 22, 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 29, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148
Project: 2007-098-994

Case Narrative

Samples were collected on January 22, 2014 and received by the laboratory on January 22, 2014. 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.

<u>NWTPH Gx/BTEX Analysis</u>

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^oC and -20^oC 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: January 29, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Triangle-W-5**					
Laboratory ID:	01-148-01					
Benzene	**ND**	0.026	EPA 8021B	1-23-14	1-23-14	
Toluene	**ND**	0.13	EPA 8021B	1-23-14	1-23-14	
Ethyl Benzene	**1.0**	0.13	EPA 8021B	1-23-14	1-23-14	
m,p-Xylene	**0.93**	0.13	EPA 8021B	1-23-14	1-23-14	
o-Xylene	**ND**	0.65	EPA 8021B	1-23-14	1-23-14	U1
Gasoline	**270**	13	NWTPH-Gx	1-23-14	1-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*71-121*				
Client ID:	**Triangle-W-8**					
Laboratory ID:	01-148-02					
Benzene	**ND**	0.021	EPA 8021B	1-23-14	1-23-14	
Toluene	**ND**	0.11	EPA 8021B	1-23-14	1-23-14	
Ethyl Benzene	**ND**	0.11	EPA 8021B	1-23-14	1-23-14	
m,p-Xylene	**ND**	0.11	EPA 8021B	1-23-14	1-23-14	
o-Xylene	**ND**	0.11	EPA 8021B	1-23-14	1-23-14	
Gasoline	**ND**	11	NWTPH-Gx	1-23-14	1-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-121*				
Client ID:	**Triangle-E-5**					
Laboratory ID:	01-148-03					
Benzene	**0.60**	0.025	EPA 8021B	1-23-14	1-23-14	
Toluene	**0.30**	0.12	EPA 8021B	1-23-14	1-23-14	
Ethyl Benzene	**6.5**	0.12	EPA 8021B	1-23-14	1-23-14	
m,p-Xylene	**4.7**	0.12	EPA 8021B	1-23-14	1-23-14	
o-Xylene	**ND**	0.12	EPA 8021B	1-23-14	1-23-14	
Gasoline	**1200**	12	NWTPH-Gx	1-23-14	1-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*71-121*				

Date of Report: January 29, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Triangle-E-8**					
Laboratory ID:	01-148-04					
Benzene	**ND**	0.020	EPA 8021B	1-23-14	1-23-14	
Toluene	**ND**	0.071	EPA 8021B	1-23-14	1-23-14	
Ethyl Benzene	**ND**	0.071	EPA 8021B	1-23-14	1-23-14	
m,p-Xylene	**ND**	0.071	EPA 8021B	1-23-14	1-23-14	
o-Xylene	**ND**	0.071	EPA 8021B	1-23-14	1-23-14	
Gasoline	**ND**	7.1	NWTPH-Gx	1-23-14	1-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*71-121*				
Client ID:	**Triangle-N-4**					
Laboratory ID:	01-148-05					
Benzene	**ND**	0.020	EPA 8021B	1-23-14	1-27-14	
Toluene	**ND**	0.097	EPA 8021B	1-23-14	1-27-14	
Ethyl Benzene	**0.70**	0.097	EPA 8021B	1-23-14	1-27-14	
m,p-Xylene	**1.0**	0.097	EPA 8021B	1-23-14	1-27-14	
o-Xylene	**ND**	0.49	EPA 8021B	1-23-14	1-27-14	U1
Gasoline	**410**	9.7	NWTPH-Gx	1-23-14	1-27-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*71-121*				
Client ID:	**Triangle-N-6**					
Laboratory ID:	01-148-06					
Benzene	**ND**	0.020	EPA 8021B	1-23-14	1-23-14	
Toluene	**ND**	0.10	EPA 8021B	1-23-14	1-23-14	
Ethyl Benzene	**ND**	0.10	EPA 8021B	1-23-14	1-23-14	
m,p-Xylene	**ND**	0.10	EPA 8021B	1-23-14	1-23-14	
o-Xylene	**ND**	0.10	EPA 8021B	1-23-14	1-23-14	
Gasoline	**16**	10	NWTPH-Gx	1-23-14	1-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*71-121*				

Date of Report: January 29, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Triangle-N-7**					
Laboratory ID:	01-148-07					
Benzene	**ND**	0.020	EPA 8021B	1-23-14	1-23-14	
Toluene	**ND**	0.048	EPA 8021B	1-23-14	1-23-14	
Ethyl Benzene	**ND**	0.048	EPA 8021B	1-23-14	1-23-14	
m,p-Xylene	**ND**	0.048	EPA 8021B	1-23-14	1-23-14	
o-Xylene	**ND**	0.048	EPA 8021B	1-23-14	1-23-14	
Gasoline	**ND**	4.8	NWTPH-Gx	1-23-14	1-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*71-121*				

Date of Report: January 29, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148
Project: 2007-098-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0123S1					
Benzene	**ND**	0.020	EPA 8021B	1-23-14	1-23-14	
Toluene	**ND**	0.050	EPA 8021B	1-23-14	1-23-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-23-14	1-23-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-23-14	1-23-14	
o-Xylene	**ND**	0.050	EPA 8021B	1-23-14	1-23-14	
Gasoline	**ND**	5.0	NWTPH-Gx	1-23-14	1-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-147-01										
	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						*100*	*98*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0123S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.979**	**1.01**	1.00	1.00		**98**	**101**	73-121	3	10	
Toluene	**1.01**	**1.03**	1.00	1.00		**101**	**103**	75-124	2	10	
Ethyl Benzene	**0.999**	**1.00**	1.00	1.00		**100**	**100**	75-125	0	9	
m,p-Xylene	**1.01**	**1.00**	1.00	1.00		**101**	**100**	75-126	1	9	
o-Xylene	**0.998**	**0.972**	1.00	1.00		**100**	**97**	74-123	3	8	
Surrogate:											
Fluorobenzene						*95*	*95*	*71-121*			

Date of Report: January 29, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148
Project: 2007-098-994

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	01-148-01					
Client ID:	**Triangle-W-5**					
Lead	**ND**	6.1	6010C	1-23-14	1-23-14	
Lab ID:	01-148-02					
Client ID:	**Triangle-W-8**					
Lead	**ND**	5.6	6010C	1-23-14	1-23-14	
Lab ID:	01-148-03					
Client ID:	**Triangle-E-5**					
Lead	**ND**	5.8	6010C	1-23-14	1-23-14	
Lab ID:	01-148-04					
Client ID:	**Triangle-E-8**					
Lead	**ND**	6.2	6010C	1-23-14	1-23-14	
Lab ID:	01-148-05					
Client ID:	**Triangle-N-4**					
Lead	**120**	7.4	6010C	1-23-14	1-23-14	
Lab ID:	01-148-06					
Client ID:	**Triangle-N-6**					
Lead	**ND**	5.7	6010C	1-23-14	1-23-14	
Lab ID:	01-148-07					
Client ID:	**Triangle-N-7**					
Lead	**ND**	5.7	6010C	1-23-14	1-23-14	

Date of Report: January 29, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted:	1-23-14
Date Analyzed:	1-23-14
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0123SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: January 29, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 1-23-14
Date Analyzed: 1-23-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 01- 147-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: January 29, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 1-23-14
Date Analyzed: 1-23-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 01- 147-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**232**	93	**233**	93	1	

Date of Report: January 29, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148
Project: 2007-098-994

% MOISTURE

Date Analyzed: 1-23-14

Client ID	Lab ID	% Moisture
Triangle-W-5	01-148-01	18
Triangle-W-8	01-148-02	11
Triangle-E-5	01-148-03	14
Triangle-E-8	01-148-04	20
Triangle-N-4	01-148-05	32
Triangle-N-6	01-148-06	13
Triangle-N-7	01-148-07	12

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

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Chain of Custody

Page 1 of 1

Laboratory Number: 01-148

Company: HWA
Project Number: 2007-098-994
Project Name: Bothell Triangle Park
Project Manager: Atkins
Sampled by: "

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) LEAD	TCLP Metals	HEM (oil and grease) 1664A							% Moisture
1	Triangle-W-5	1/22/14	1245	S	2		/											/									
2	-W-8		1150				/											/									
3	-E-5		1200		3		/											/									
4	-E-8		1210		2		/											/									
5	-N-4		1220				/											/									
6	-N-6		1230				/											/									
7	-N-7		1235				/											/									

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	[illegible]	HWA GeoSciences	1/22/14	142	
Received	J. Ha	SpeeDy	1-22-14	142	
Relinquished	J. Ha	Speedy	1-22-1	2:08	
Received	[illegible]	OSE	1/22/14	1408	
Relinquished					
Received					
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

February 4, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1401-148B

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on January 22, 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: February 4, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148B
Project: 2007-098-994

Case Narrative

Samples were collected on January 22, 2014 and received by the laboratory on January 22, 2014. 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: February 4, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148B
Project: 2007-098-994

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Triangle-W-5**					
Laboratory ID:	01-148-01					
Diesel Range Organics	**ND**	49	NWTPH-Dx	1-31-14	1-31-14	U1
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	1-31-14	1-31-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				
Client ID:	**Triangle-E-5**					
Laboratory ID:	01-148-03					
Diesel Range Organics	**ND**	110	NWTPH-Dx	1-31-14	1-31-14	U1
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	1-31-14	1-31-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				
Client ID:	**Triangle-N-4**					
Laboratory ID:	01-148-05					
Diesel Range Organics	**ND**	1600	NWTPH-Dx	1-31-14	1-31-14	U1
Lube Oil	**5200**	370	NWTPH-Dx	1-31-14	1-31-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				

Date of Report: February 4, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148B
Project: 2007-098-994

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0131S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-31-14	1-31-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-31-14	1-31-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*97*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-222-01							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*73*	*81*	*50-150*			

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

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: 01-148

Company: HWA
Project Number: 2007-098-994
Project Name: Bothell Triangle Park
Project Manager: Atkins
Sampled by: "

Turnaround Request (in working days) (Check One)

- [ ] Same Day
- [ ] 1 Day
- [ ] 2 Days
- [ ] 3 Days
- [x] 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) LEAD	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
1	Triangle-W-5	1/22/14	1245	S	2		/		X									/			
2	-W-8		1150		1		/											/			
3	-E-5		1200		3		/		X									/			
4	-E-8		1210		2		/											/			
5	-N-4		1220				/		X									/			
6	-N-6		1230				/											/			
7	-N-7		1235				/											/			

	Signature	Company	Date	Time
Relinquished	[illegible]	HWA GeoSciences	1/22/14	142
Received	J. Ha[illegible]	Speedy	1-22-14	142
Relinquished	J. Ha[illegible]	Speedy	1-22-14	2:08
Received	[illegible]	OSE	1/22/14	1408
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

(X) Added 1/30/14. DB (STA)

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

February 5, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1401-148C

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on January 22, 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: February 5, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148C
Project: 2007-098-994

Case Narrative

Samples were collected on January 22, 2014 and received by the laboratory on January 22, 2014. 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: February 5, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148C
Project: 2007-098-994

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Triangle-N-6**					
Laboratory ID:	01-148-06					
Diesel Range Organics	**ND**	29	NWTPH-Dx	2-4-14	2-4-14	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	2-4-14	2-4-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*81*	*50-150*				

Date of Report: February 5, 2014
Samples Submitted: January 22, 2014
Laboratory Reference: 1401-148C
Project: 2007-098-994

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0204S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	2-4-14	2-4-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	2-4-14	2-4-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*87*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-148-06							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*81*	*83*	*50-150*			

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.

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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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Analytical Laboratory Testing Services
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Chain of Custody

Page 1 of 1

Laboratory Number: 01-148

Company: HWA
Project Number: 2007-098-994
Project Name: Bothell Triangle Park
Project Manager: Atkins
Sampled by: "

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) LEAD	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
1	Triangle-W-5	1/22/14	1245	S	2		/		X									/			O
2	-W-8		1150				/											/			
3	-E-5		1200		3		/		X									/			
4	-E-8		1210		2		/											/			
5	-N-4		1220				/		X									/			
6	-N-6		1230				/		O									/			
7	-N-7		1235				/											/			

	Signature	Company	Date	Time
Relinquished	[signature]	HWA GeoSciences	1/22/14	142
Received	[signature]	SpeeDy	1-22-14	142
Relinquished	[signature]	Speedy	1-22-14	208
Received	[signature]	OSE	1/22/14	1408
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

X Added 1/30/14. DB (STA)
O Added 2/4/14. DB (1 day TAT)

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

February 10, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1402-023

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on February 5, 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: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

Case Narrative

Samples were collected on February 5, 2014 and received by the laboratory on February 5, 2014. 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.

<u>NWTPH Gx/BTEX Analysis</u>

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^oC and -20^oC 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: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-36-6**					
Laboratory ID:	02-023-01					
Benzene	**ND**	0.020	EPA 8021B	2-5-14	2-6-14	
Toluene	**ND**	0.065	EPA 8021B	2-5-14	2-6-14	
Ethyl Benzene	**ND**	0.065	EPA 8021B	2-5-14	2-6-14	
m,p-Xylene	**ND**	0.065	EPA 8021B	2-5-14	2-6-14	
o-Xylene	**ND**	0.065	EPA 8021B	2-5-14	2-6-14	
Gasoline	**ND**	6.5	NWTPH-Gx	2-5-14	2-6-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*71-121*				
Client ID:	**L-PEX-37-6**					
Laboratory ID:	02-023-02					
Benzene	**ND**	0.024	EPA 8021B	2-5-14	2-5-14	
Toluene	**ND**	0.12	EPA 8021B	2-5-14	2-5-14	
Ethyl Benzene	**ND**	0.12	EPA 8021B	2-5-14	2-5-14	
m,p-Xylene	**ND**	0.12	EPA 8021B	2-5-14	2-5-14	
o-Xylene	**ND**	0.12	EPA 8021B	2-5-14	2-5-14	
Gasoline	**ND**	12	NWTPH-Gx	2-5-14	2-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*71-121*				
Client ID:	**L-PEX-38-6**					
Laboratory ID:	02-023-03					
Benzene	**ND**	0.020	EPA 8021B	2-5-14	2-6-14	
Toluene	**ND**	0.084	EPA 8021B	2-5-14	2-6-14	
Ethyl Benzene	**0.30**	0.084	EPA 8021B	2-5-14	2-6-14	
m,p-Xylene	**0.54**	0.084	EPA 8021B	2-5-14	2-6-14	
o-Xylene	**ND**	0.42	EPA 8021B	2-5-14	2-6-14	U1
Gasoline	**150**	8.4	NWTPH-Gx	2-5-14	2-6-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-121*				

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-39-4**					
Laboratory ID:	02-023-04					
Benzene	**ND**	0.029	EPA 8021B	2-5-14	2-5-14	
Toluene	**ND**	0.15	EPA 8021B	2-5-14	2-5-14	
Ethyl Benzene	**3.0**	0.15	EPA 8021B	2-5-14	2-5-14	
m,p-Xylene	**3.8**	0.15	EPA 8021B	2-5-14	2-5-14	
o-Xylene	**ND**	1.5	EPA 8021B	2-5-14	2-5-14	U1
Gasoline	**1700**	150	NWTPH-Gx	2-5-14	2-6-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*71-121*				

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
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:	MB0205S1					
Benzene	**ND**	0.020	EPA 8021B	2-5-14	2-5-14	
Toluene	**ND**	0.050	EPA 8021B	2-5-14	2-5-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	2-5-14	2-5-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	2-5-14	2-5-14	
o-Xylene	**ND**	0.050	EPA 8021B	2-5-14	2-5-14	
Gasoline	**ND**	5.0	NWTPH-Gx	2-5-14	2-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	02-024-01										
	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						*91*	*92*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0205S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.997**	**0.922**	1.00	1.00		**100**	**92**	73-121	8	10	
Toluene	**1.03**	**0.973**	1.00	1.00		**103**	**97**	75-124	6	10	
Ethyl Benzene	**0.993**	**0.935**	1.00	1.00		**99**	**94**	75-125	6	9	
m,p-Xylene	**1.03**	**0.989**	1.00	1.00		**103**	**99**	75-126	4	9	
o-Xylene	**0.996**	**0.961**	1.00	1.00		**100**	**96**	74-123	4	8	
Surrogate:											
Fluorobenzene						*91*	*84*	*71-121*			

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-36-6**					
Laboratory ID:	02-023-01					
Diesel Range Organics	**ND**	32	NWTPH-Dx	2-5-14	2-5-14	X1
Lube Oil Range Organics	**ND**	64	NWTPH-Dx	2-5-14	2-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				
Client ID:	**L-PEX-37-6**					
Laboratory ID:	02-023-02					
Diesel Range Organics	**ND**	30	NWTPH-Dx	2-5-14	2-5-14	X1
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	2-5-14	2-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				
Client ID:	**L-PEX-38-6**					
Laboratory ID:	02-023-03					
Diesel Range Organics	**ND**	36	NWTPH-Dx	2-5-14	2-5-14	X1
Lube Oil	**76**	73	NWTPH-Dx	2-5-14	2-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				
Client ID:	**L-PEX-39-4**					
Laboratory ID:	02-023-04					
Diesel Range Organics	**ND**	890	NWTPH-Dx	2-5-14	2-5-14	U1,X1
Lube Oil	**81**	68	NWTPH-Dx	2-5-14	2-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB00205S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	2-5-14	2-5-14	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	2-5-14	2-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	02-010-01							
	ORIG	DUP						
Diesel Fuel #2	**1510**	**1230**				20	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*112*	*108*	*50-150*			

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-36-6**					
Laboratory ID:	02-023-01					
Naphthalene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
2-Methylnaphthalene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
1-Methylnaphthalene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Acenaphthylene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Acenaphthene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Fluorene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Phenanthrene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Anthracene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Fluoranthene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Pyrene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[a]anthracene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Chrysene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[b]fluoranthene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo(j,k)fluoranthene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[a]pyrene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Dibenz[a,h]anthracene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[g,h,i]perylene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*82*	*43 - 116*				
Pyrene-d10	*82*	*33 - 124*				
Terphenyl-d14	*77*	*38 - 125*				

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-37-6**					
Laboratory ID:	02-023-02					
Naphthalene	**0.011**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
2-Methylnaphthalene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
1-Methylnaphthalene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Acenaphthylene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Acenaphthene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Fluorene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Phenanthrene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Anthracene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Fluoranthene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Pyrene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[a]anthracene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Chrysene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[b]fluoranthene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo(j,k)fluoranthene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[a]pyrene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Dibenz[a,h]anthracene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[g,h,i]perylene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*75*	*43 - 116*				
Pyrene-d10	*77*	*33 - 124*				
Terphenyl-d14	*75*	*38 - 125*				

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

PAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0205S1					
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*43 - 116*				
Pyrene-d10	*95*	*33 - 124*				
Terphenyl-d14	*91*	*38 - 125*				

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

PAHs EPA 8270D/SIM
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:	02-023-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzo[a]anthracene	**0.0680**	**0.0569**	0.0833	0.0833	ND	82	68	33 - 123	18	26	
Chrysene	**0.0698**	**0.0598**	0.0833	0.0833	ND	84	72	35 - 123	15	25	
Benzo[b]fluoranthene	**0.0738**	**0.0617**	0.0833	0.0833	ND	89	74	30 - 125	18	28	
Benzo(j,k)fluoranthene	**0.0685**	**0.0580**	0.0833	0.0833	ND	82	70	31 - 122	17	30	
Benzo[a]pyrene	**0.0824**	**0.0631**	0.0833	0.0833	ND	99	76	29 - 125	27	28	
Indeno(1,2,3-c,d)pyrene	**0.0700**	**0.0586**	0.0833	0.0833	ND	84	70	28 - 125	18	27	
Dibenz[a,h]anthracene	**0.0701**	**0.0587**	0.0833	0.0833	ND	84	70	32 - 124	18	27	
Surrogate:											
2-Fluorobiphenyl						*79*	*71*	*43 - 116*			
Pyrene-d10						*83*	*71*	*33 - 124*			
Terphenyl-d14						*78*	*67*	*38 - 125*			

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	02-023-01					
Client ID:	**L-PEX-36-6**					
Lead	**ND**	6.4	6010C	2-5-14	2-5-14	
Lab ID:	02-023-02					
Client ID:	**L-PEX-37-6**					
Lead	**ND**	6.1	6010C	2-5-14	2-5-14	
Lab ID:	02-023-03					
Client ID:	**L-PEX-38-6**					
Lead	**ND**	7.3	6010C	2-5-14	2-5-14	
Lab ID:	02-023-04					
Client ID:	**L-PEX-39-4**					
Lead	**11**	6.8	6010C	2-5-14	2-5-14	

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-5-14
Date Analyzed: 2-5-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0205SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 2-5-14
Date Analyzed: 2-5-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 02-011-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**37.9**	**35.5**	7	5.0	

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 2-5-14
Date Analyzed: 2-5-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 02-011-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**271**	93	**256**	87	6	

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

% MOISTURE

Date Analyzed: 2-5-14

Client ID	Lab ID	% Moisture
L-PEX-36-6	02-023-01	22
L-PEX-37-6	02-023-02	18
L-PEX-38-6	02-023-03	31
L-PEX-39-4	02-023-04	27

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

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: 02-023

Company: HWA
Project Number: 2007-098
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by:

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 ACU/SG	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level) cPAH	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total ~~RCRA Metals~~/ MTCA Metals (circle one) LEAD	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
1	L-PSX-36-6	2/5	1045	S			\		\				\					\			\
2	L-PSX-37-6		1050				\		\				\					\			\
3	L-PSX-38-6		1055				\		\									\			\
4	L-PSX-39-4		1100				\		\									\			\

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	2/8/14	1155
Received	[signature]	OSE	2/5/14	1155
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
Silica Gel Cleanup

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

February 10, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1402-023

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on February 5, 2014.

Please note that this is a *revised* report and replaces the original due to a change of a sample identification.

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: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

Case Narrative

Samples were collected on February 5, 2014 and received by the laboratory on February 5, 2014. 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/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^oC and -20^oC 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: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-36E-6**					
Laboratory ID:	02-023-01					
Benzene	**ND**	0.020	EPA 8021B	2-5-14	2-6-14	
Toluene	**ND**	0.065	EPA 8021B	2-5-14	2-6-14	
Ethyl Benzene	**ND**	0.065	EPA 8021B	2-5-14	2-6-14	
m,p-Xylene	**ND**	0.065	EPA 8021B	2-5-14	2-6-14	
o-Xylene	**ND**	0.065	EPA 8021B	2-5-14	2-6-14	
Gasoline	**ND**	6.5	NWTPH-Gx	2-5-14	2-6-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*71-121*				
Client ID:	**L-PEX-37-6**					
Laboratory ID:	02-023-02					
Benzene	**ND**	0.024	EPA 8021B	2-5-14	2-5-14	
Toluene	**ND**	0.12	EPA 8021B	2-5-14	2-5-14	
Ethyl Benzene	**ND**	0.12	EPA 8021B	2-5-14	2-5-14	
m,p-Xylene	**ND**	0.12	EPA 8021B	2-5-14	2-5-14	
o-Xylene	**ND**	0.12	EPA 8021B	2-5-14	2-5-14	
Gasoline	**ND**	12	NWTPH-Gx	2-5-14	2-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*71-121*				
Client ID:	**L-PEX-38-6**					
Laboratory ID:	02-023-03					
Benzene	**ND**	0.020	EPA 8021B	2-5-14	2-6-14	
Toluene	**ND**	0.084	EPA 8021B	2-5-14	2-6-14	
Ethyl Benzene	**0.30**	0.084	EPA 8021B	2-5-14	2-6-14	
m,p-Xylene	**0.54**	0.084	EPA 8021B	2-5-14	2-6-14	
o-Xylene	**ND**	0.42	EPA 8021B	2-5-14	2-6-14	U1
Gasoline	**150**	8.4	NWTPH-Gx	2-5-14	2-6-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-121*				

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-39-4**					
Laboratory ID:	02-023-04					
Benzene	**ND**	0.029	EPA 8021B	2-5-14	2-5-14	
Toluene	**ND**	0.15	EPA 8021B	2-5-14	2-5-14	
Ethyl Benzene	**3.0**	0.15	EPA 8021B	2-5-14	2-5-14	
m,p-Xylene	**3.8**	0.15	EPA 8021B	2-5-14	2-5-14	
o-Xylene	**ND**	1.5	EPA 8021B	2-5-14	2-5-14	U1
Gasoline	**1700**	150	NWTPH-Gx	2-5-14	2-6-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*71-121*				

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
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:	MB0205S1					
Benzene	**ND**	0.020	EPA 8021B	2-5-14	2-5-14	
Toluene	**ND**	0.050	EPA 8021B	2-5-14	2-5-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	2-5-14	2-5-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	2-5-14	2-5-14	
o-Xylene	**ND**	0.050	EPA 8021B	2-5-14	2-5-14	
Gasoline	**ND**	5.0	NWTPH-Gx	2-5-14	2-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	02-024-01										
	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						*91*	*92*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0205S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.997**	**0.922**	1.00	1.00		**100**	**92**	73-121	8	10	
Toluene	**1.03**	**0.973**	1.00	1.00		**103**	**97**	75-124	6	10	
Ethyl Benzene	**0.993**	**0.935**	1.00	1.00		**99**	**94**	75-125	6	9	
m,p-Xylene	**1.03**	**0.989**	1.00	1.00		**103**	**99**	75-126	4	9	
o-Xylene	**0.996**	**0.961**	1.00	1.00		**100**	**96**	74-123	4	8	
Surrogate:											
Fluorobenzene						*91*	*84*	*71-121*			

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-36E-6**					
Laboratory ID:	02-023-01					
Diesel Range Organics	**ND**	32	NWTPH-Dx	2-5-14	2-5-14	X1
Lube Oil Range Organics	**ND**	64	NWTPH-Dx	2-5-14	2-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				
Client ID:	**L-PEX-37-6**					
Laboratory ID:	02-023-02					
Diesel Range Organics	**ND**	30	NWTPH-Dx	2-5-14	2-5-14	X1
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	2-5-14	2-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				
Client ID:	**L-PEX-38-6**					
Laboratory ID:	02-023-03					
Diesel Range Organics	**ND**	36	NWTPH-Dx	2-5-14	2-5-14	X1
Lube Oil	**76**	73	NWTPH-Dx	2-5-14	2-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				
Client ID:	**L-PEX-39-4**					
Laboratory ID:	02-023-04					
Diesel Range Organics	**ND**	890	NWTPH-Dx	2-5-14	2-5-14	U1,X1
Lube Oil	**81**	68	NWTPH-Dx	2-5-14	2-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB00205S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	2-5-14	2-5-14	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	2-5-14	2-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	02-010-01							
	ORIG	DUP						
Diesel Fuel #2	**1510**	**1230**				20	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*112*	*108*	*50-150*			

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-36E-6**					
Laboratory ID:	02-023-01					
Naphthalene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
2-Methylnaphthalene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
1-Methylnaphthalene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Acenaphthylene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Acenaphthene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Fluorene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Phenanthrene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Anthracene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Fluoranthene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Pyrene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[a]anthracene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Chrysene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[b]fluoranthene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo(j,k)fluoranthene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[a]pyrene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Dibenz[a,h]anthracene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[g,h,i]perylene	**ND**	0.0085	EPA 8270D/SIM	2-5-14	2-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*82*	*43 - 116*				
Pyrene-d10	*82*	*33 - 124*				
Terphenyl-d14	*77*	*38 - 125*				

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-37-6**					
Laboratory ID:	02-023-02					
Naphthalene	**0.011**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
2-Methylnaphthalene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
1-Methylnaphthalene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Acenaphthylene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Acenaphthene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Fluorene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Phenanthrene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Anthracene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Fluoranthene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Pyrene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[a]anthracene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Chrysene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[b]fluoranthene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo(j,k)fluoranthene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[a]pyrene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Dibenz[a,h]anthracene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[g,h,i]perylene	**ND**	0.0081	EPA 8270D/SIM	2-5-14	2-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*75*	*43 - 116*				
Pyrene-d10	*77*	*33 - 124*				
Terphenyl-d14	*75*	*38 - 125*				

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

PAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0205S1					
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	2-5-14	2-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*43 - 116*				
Pyrene-d10	*95*	*33 - 124*				
Terphenyl-d14	*91*	*38 - 125*				

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

PAHs EPA 8270D/SIM
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:	02-023-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzo[a]anthracene	**0.0680**	**0.0569**	0.0833	0.0833	ND	82	68	33 - 123	18	26	
Chrysene	**0.0698**	**0.0598**	0.0833	0.0833	ND	84	72	35 - 123	15	25	
Benzo[b]fluoranthene	**0.0738**	**0.0617**	0.0833	0.0833	ND	89	74	30 - 125	18	28	
Benzo(j,k)fluoranthene	**0.0685**	**0.0580**	0.0833	0.0833	ND	82	70	31 - 122	17	30	
Benzo[a]pyrene	**0.0824**	**0.0631**	0.0833	0.0833	ND	99	76	29 - 125	27	28	
Indeno(1,2,3-c,d)pyrene	**0.0700**	**0.0586**	0.0833	0.0833	ND	84	70	28 - 125	18	27	
Dibenz[a,h]anthracene	**0.0701**	**0.0587**	0.0833	0.0833	ND	84	70	32 - 124	18	27	
Surrogate:											
2-Fluorobiphenyl						*79*	*71*	*43 - 116*			
Pyrene-d10						*83*	*71*	*33 - 124*			
Terphenyl-d14						*78*	*67*	*38 - 125*			

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	02-023-01					
Client ID:	**L-PEX-36E-6**					
Lead	**ND**	6.4	6010C	2-5-14	2-5-14	
Lab ID:	02-023-02					
Client ID:	**L-PEX-37-6**					
Lead	**ND**	6.1	6010C	2-5-14	2-5-14	
Lab ID:	02-023-03					
Client ID:	**L-PEX-38-6**					
Lead	**ND**	7.3	6010C	2-5-14	2-5-14	
Lab ID:	02-023-04					
Client ID:	**L-PEX-39-4**					
Lead	**11**	6.8	6010C	2-5-14	2-5-14	

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-5-14
Date Analyzed: 2-5-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0205SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 2-5-14
Date Analyzed: 2-5-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 02-011-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**37.9**	**35.5**	7	5.0	

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 2-5-14
Date Analyzed: 2-5-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 02-011-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**271**	93	**256**	87	6	

Date of Report: February 10, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-023
Project: 2007-098

% MOISTURE

Date Analyzed: 2-5-14

Client ID	Lab ID	% Moisture
L-PEX-36E-6	02-023-01	22
L-PEX-37-6	02-023-02	18
L-PEX-38-6	02-023-03	31
L-PEX-39-4	02-023-04	27

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

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: 02-023

Company: HWA
Project Number: R007-098
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: ..

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 DB-	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx ACU/SG	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level) cPAH	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total ~~RCRA Metals~~/ ~~MTCA~~ Metals (circle one) LEAD	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
1	L-PSX-~~36~~ 36E-6	2/5	1045	S			\		\				\					\			\
2	L-PSX-37-6		1050				\		\				\					\			\
3	L-PSX-38-6		1055				\		\									\			\
4	L-PSX-39-4		1100				\		\									\			\

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	2/5/14	1155
Received	[signature]	OSE	2/5/14	1155
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
Silica gel cleanup

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite
Environmental Inc.
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February 6, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1402-024

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on February 5, 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: February 6, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-024
Project: 2007-098

Case Narrative

Samples were collected on February 5, 2014 and received by the laboratory on February 5, 2014. 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: February 6, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-024
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SP-MH1**					
Laboratory ID:	02-024-01					
Benzene	**ND**	0.020	EPA 8021B	2-5-14	2-5-14	
Toluene	**ND**	0.068	EPA 8021B	2-5-14	2-5-14	
Ethyl Benzene	**ND**	0.068	EPA 8021B	2-5-14	2-5-14	
m,p-Xylene	**ND**	0.068	EPA 8021B	2-5-14	2-5-14	
o-Xylene	**ND**	0.068	EPA 8021B	2-5-14	2-5-14	
Gasoline	**ND**	6.8	NWTPH-Gx	2-5-14	2-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*71-121*				
Client ID:	**SP-MH2**					
Laboratory ID:	02-024-02					
Benzene	**ND**	0.020	EPA 8021B	2-5-14	2-5-14	
Toluene	**ND**	0.056	EPA 8021B	2-5-14	2-5-14	
Ethyl Benzene	**ND**	0.056	EPA 8021B	2-5-14	2-5-14	
m,p-Xylene	**ND**	0.056	EPA 8021B	2-5-14	2-5-14	
o-Xylene	**ND**	0.056	EPA 8021B	2-5-14	2-5-14	
Gasoline	**ND**	5.6	NWTPH-Gx	2-5-14	2-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-121*				
Client ID:	**SP-TRENCH1**					
Laboratory ID:	02-024-03					
Benzene	**ND**	0.020	EPA 8021B	2-5-14	2-5-14	
Toluene	**ND**	0.066	EPA 8021B	2-5-14	2-5-14	
Ethyl Benzene	**ND**	0.066	EPA 8021B	2-5-14	2-5-14	
m,p-Xylene	**ND**	0.066	EPA 8021B	2-5-14	2-5-14	
o-Xylene	**ND**	0.066	EPA 8021B	2-5-14	2-5-14	
Gasoline	**ND**	6.6	NWTPH-Gx	2-5-14	2-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*71-121*				

Date of Report: February 6, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-024
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SP-TRENCH2**					
Laboratory ID:	02-024-04					
Benzene	**ND**	0.020	EPA 8021B	2-5-14	2-5-14	
Toluene	**ND**	0.081	EPA 8021B	2-5-14	2-5-14	
Ethyl Benzene	**ND**	0.081	EPA 8021B	2-5-14	2-5-14	
m,p-Xylene	**ND**	0.081	EPA 8021B	2-5-14	2-5-14	
o-Xylene	**ND**	0.081	EPA 8021B	2-5-14	2-5-14	
Gasoline	**ND**	8.1	NWTPH-Gx	2-5-14	2-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*80*	*71-121*				

Date of Report: February 6, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-024
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:	MB0205S1					
Benzene	**ND**	0.020	EPA 8021B	2-5-14	2-5-14	
Toluene	**ND**	0.050	EPA 8021B	2-5-14	2-5-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	2-5-14	2-5-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	2-5-14	2-5-14	
o-Xylene	**ND**	0.050	EPA 8021B	2-5-14	2-5-14	
Gasoline	**ND**	5.0	NWTPH-Gx	2-5-14	2-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	02-024-01										
	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						*91*	*92*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0205S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.997**	**0.922**	1.00	1.00		**100**	**92**	73-121	8	10	
Toluene	**1.03**	**0.973**	1.00	1.00		**103**	**97**	75-124	6	10	
Ethyl Benzene	**0.993**	**0.935**	1.00	1.00		**99**	**94**	75-125	6	9	
m,p-Xylene	**1.03**	**0.989**	1.00	1.00		**103**	**99**	75-126	4	9	
o-Xylene	**0.996**	**0.961**	1.00	1.00		**100**	**96**	74-123	4	8	
Surrogate:											
Fluorobenzene						*91*	*84*	*71-121*			

Date of Report: February 6, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-024
Project: 2007-098

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SP-MH1**					
Laboratory ID:	02-024-01					
Diesel Range Organics	**ND**	32	NWTPH-Dx	2-5-14	2-5-14	X1
Lube Oil	**69**	63	NWTPH-Dx	2-5-14	2-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				
Client ID:	**SP-MH2**					
Laboratory ID:	02-024-02					
Diesel Range Organics	**ND**	27	NWTPH-Dx	2-5-14	2-5-14	X1
Lube Oil	**130**	55	NWTPH-Dx	2-5-14	2-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*96*	*50-150*				
Client ID:	**SP-TRENCH1**					
Laboratory ID:	02-024-03					
Diesel Range Organics	**ND**	31	NWTPH-Dx	2-5-14	2-5-14	X1
Lube Oil	**120**	62	NWTPH-Dx	2-5-14	2-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*87*	*50-150*				
Client ID:	**SP-TRENCH2**					
Laboratory ID:	02-024-04					
Diesel Range Organics	**ND**	31	NWTPH-Dx	2-5-14	2-5-14	X1
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	2-5-14	2-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				

Date of Report: February 6, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-024
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB00205S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	2-5-14	2-5-14	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	2-5-14	2-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	02-010-01							
	ORIG	DUP						
Diesel Fuel #2	**1510**	**1230**				20	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*112*	*108*	*50-150*			

Date of Report: February 6, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-024
Project: 2007-098

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	02-024-01					
Client ID:	**SP-MH1**					
Lead	**20**	6.3	6010C	2-5-14	2-5-14	
Lab ID:	02-024-02					
Client ID:	**SP-MH2**					
Lead	**47**	5.5	6010C	2-5-14	2-5-14	
Lab ID:	02-024-03					
Client ID:	**SP-TRENCH1**					
Lead	**17**	6.2	6010C	2-5-14	2-5-14	
Lab ID:	02-024-04					
Client ID:	**SP-TRENCH2**					
Lead	**12**	6.1	6010C	2-5-14	2-5-14	

Date of Report: February 6, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-024
Project: 2007-098

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-5-14
Date Analyzed: 2-5-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0205SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: February 6, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-024
Project: 2007-098

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 2-5-14
Date Analyzed: 2-5-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 02-011-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**37.9**	**35.5**	7	5.0	

Date of Report: February 6, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-024
Project: 2007-098

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 2-5-14
Date Analyzed: 2-5-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 02-011-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**271**	93	**256**	87	6	

Date of Report: February 6, 2014
Samples Submitted: February 5, 2014
Laboratory Reference: 1402-024
Project: 2007-098

% MOISTURE

Date Analyzed: 2-5-14

Client ID	Lab ID	% Moisture
SP-MH1	02-024-01	21
SP-MH2	02-024-02	8
SP-TRENCH1	02-024-03	20
SP-TRENCH2	02-024-04	18

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

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

Laboratory Number: 02-024

Company: HWA
Project Number: 2007-098
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: Atkins

Turnaround Request (in working days)
(Check One)
- [ ] Same Day
- [x] 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 ACU/SG	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) LEAD	TCLP Metals	HEM (oil and grease) 1664A							% Moisture
1	SP-MH1	2/3/14	830	S			\		\									\									\
2	SP-MH2		835				\		\									\									\
3	SP-TRENCH1		840				\		\									\									\
4	SP-TRENCH2		845				\		\									\									\

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	2/5/14	1155
Received	[signature]	OSE	2/5/14	1155
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions:
Silica Gel

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

February 10, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-099-994
Laboratory Reference No. 1402-041

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on February 7, 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: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-041
Project: 2007-099-994

Case Narrative

Samples were collected on February 6, 2014 and received by the laboratory on February 7, 2014. 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/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^oC and -20^oC 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: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-041
Project: 2007-099-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**WATER LINE-1-6'**					
Laboratory ID:	02-041-01					
Benzene	**ND**	0.020	EPA 8021B	2-7-14	2-7-14	
Toluene	**ND**	0.063	EPA 8021B	2-7-14	2-7-14	
Ethyl Benzene	**ND**	0.063	EPA 8021B	2-7-14	2-7-14	
m,p-Xylene	**ND**	0.063	EPA 8021B	2-7-14	2-7-14	
o-Xylene	**ND**	0.063	EPA 8021B	2-7-14	2-7-14	
Gasoline	**ND**	6.3	NWTPH-Gx	2-7-14	2-7-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***93***	***71-121***				
Client ID:	**WATER LINE-2-4**					
Laboratory ID:	02-041-02					
Benzene	**ND**	0.020	EPA 8021B	2-7-14	2-7-14	
Toluene	**ND**	0.062	EPA 8021B	2-7-14	2-7-14	
Ethyl Benzene	**ND**	0.062	EPA 8021B	2-7-14	2-7-14	
m,p-Xylene	**ND**	0.062	EPA 8021B	2-7-14	2-7-14	
o-Xylene	**ND**	0.062	EPA 8021B	2-7-14	2-7-14	
Gasoline	**ND**	6.2	NWTPH-Gx	2-7-14	2-7-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***95***	***71-121***				
Client ID:	**WATER LINE-2-7 1/2**					
Laboratory ID:	02-041-03					
Benzene	**ND**	0.020	EPA 8021B	2-7-14	2-7-14	
Toluene	**ND**	0.074	EPA 8021B	2-7-14	2-7-14	
Ethyl Benzene	**ND**	0.074	EPA 8021B	2-7-14	2-7-14	
m,p-Xylene	**ND**	0.074	EPA 8021B	2-7-14	2-7-14	
o-Xylene	**ND**	0.074	EPA 8021B	2-7-14	2-7-14	
Gasoline	**ND**	7.4	NWTPH-Gx	2-7-14	2-7-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***115***	***71-121***				

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-041
Project: 2007-099-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0207S1					
Benzene	**ND**	0.020	EPA 8021B	2-7-14	2-7-14	
Toluene	**ND**	0.050	EPA 8021B	2-7-14	2-7-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	2-7-14	2-7-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	2-7-14	2-7-14	
o-Xylene	**ND**	0.050	EPA 8021B	2-7-14	2-7-14	
Gasoline	**ND**	5.0	NWTPH-Gx	2-7-14	2-7-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***89***	***71-121***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	02-041-01										
	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						***93***	***92***	***71-121***			
SPIKE BLANKS											
Laboratory ID:	SB0207S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.948**	**1.00**	1.00	1.00		**95**	**100**	73-121	5	10	
Toluene	**0.947**	**0.996**	1.00	1.00		**95**	**100**	75-124	5	10	
Ethyl Benzene	**0.939**	**0.988**	1.00	1.00		**94**	**99**	75-125	5	9	
m,p-Xylene	**0.950**	**0.995**	1.00	1.00		**95**	**100**	75-126	5	9	
o-Xylene	**0.948**	**0.990**	1.00	1.00		**95**	**99**	74-123	4	8	
Surrogate:											
Fluorobenzene						***88***	***90***	***71-121***			

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-041
Project: 2007-099-994

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**WATER LINE-1-6'**					
Laboratory ID:	02-041-01					
Diesel Range Organics	**ND**	30	NWTPH-Dx	2-7-14	2-7-14	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	2-7-14	2-7-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**WATER LINE-2-4**					
Laboratory ID:	02-041-02					
Diesel Range Organics	**ND**	30	NWTPH-Dx	2-7-14	2-7-14	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	2-7-14	2-7-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***88***	***50-150***				
Client ID:	**WATER LINE-2-7 1/2**					
Laboratory ID:	02-041-03					
Diesel Range Organics	**ND**	32	NWTPH-Dx	2-7-14	2-7-14	
Lube Oil Range Organics	**ND**	65	NWTPH-Dx	2-7-14	2-7-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***79***	***50-150***				

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-041
Project: 2007-099-994

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0207S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	2-7-14	2-7-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	2-7-14	2-7-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***88***	***50-150***				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	02-041-03							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			***79***	***75***	***50-150***			

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-041
Project: 2007-099-994

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	02-041-01					
Client ID:	**WATER LINE-1-6'**					
Lead	**ND**	5.9	6010C	2-10-14	2-10-14	
Lab ID:	02-041-02					
Client ID:	**WATER LINE-2-4**					
Lead	**ND**	6.0	6010C	2-10-14	2-10-14	
Lab ID:	02-041-03					
Client ID:	**WATER LINE-2-7 1/2**					
Lead	**ND**	6.5	6010C	2-10-14	2-10-14	

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-041
Project: 2007-099-994

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted:	2-10-14
Date Analyzed:	2-10-14
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0210SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-041
Project: 2007-099-994

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 2-10-14
Date Analyzed: 2-10-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 02-041-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-041
Project: 2007-099-994

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 2-10-14
Date Analyzed: 2-10-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 02-041-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**239**	96	**243**	97	2	

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-041
Project: 2007-099-994

% MOISTURE

Date Analyzed: 2-7-14

Client ID	Lab ID	% Moisture
WATER LINE-1-6’	02-041-01	16
WATER LINE-2-4	02-041-02	17
WATER LINE-2-7 1/2	02-041-03	23

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

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

Laboratory Number: 02-041

Company: HWA
Project Number: 2003-098-994
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: "

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) LEAD	TCLP Metals	HEM (oil and grease) 1664A								% Moisture
1	WATERLINE-1-6'	2/6/14	2245	S	2		/		/									/										X
2	WATERLINE-2-4	↓	2300	↓	↓		/		/									/										↓
3	WATERLINE-2-7 1/2	↓	2305	↓	↓		/		/									/										↓

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	CFuk	HWA GeoSciences	2/7/14		
Received	Van	Speedy	2/7/14	1015	
Relinquished	Van	"	"	1035	
Received	[signature]	OSE	2/7/14	1035	
Relinquished					
Received					
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

February 10, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1402-045

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on February 7, 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: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-045
Project: 2007-098-994

Case Narrative

Samples were collected on February 7, 2014 and received by the laboratory on February 7, 2014. 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/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^oC and -20^oC 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: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-045
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-40-4**					
Laboratory ID:	02-045-01					
Benzene	**ND**	0.020	EPA 8021B	2-7-14	2-7-14	
Toluene	**ND**	0.082	EPA 8021B	2-7-14	2-7-14	
Ethyl Benzene	**ND**	0.082	EPA 8021B	2-7-14	2-7-14	
m,p-Xylene	**ND**	0.082	EPA 8021B	2-7-14	2-7-14	
o-Xylene	**ND**	0.082	EPA 8021B	2-7-14	2-7-14	
Gasoline	**ND**	8.2	NWTPH-Gx	2-7-14	2-7-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***103***	***71-121***				
Client ID:	**L-PEX-41-8**					
Laboratory ID:	02-045-02					
Benzene	**ND**	0.020	EPA 8021B	2-7-14	2-7-14	
Toluene	**ND**	0.062	EPA 8021B	2-7-14	2-7-14	
Ethyl Benzene	**ND**	0.062	EPA 8021B	2-7-14	2-7-14	
m,p-Xylene	**ND**	0.062	EPA 8021B	2-7-14	2-7-14	
o-Xylene	**ND**	0.062	EPA 8021B	2-7-14	2-7-14	
Gasoline	**ND**	6.2	NWTPH-Gx	2-7-14	2-7-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***117***	***71-121***				
Client ID:	**L-PEX-42-5**					
Laboratory ID:	02-045-03					
Benzene	**ND**	0.020	EPA 8021B	2-7-14	2-7-14	
Toluene	**ND**	0.080	EPA 8021B	2-7-14	2-7-14	
Ethyl Benzene	**0.40**	0.080	EPA 8021B	2-7-14	2-7-14	
m,p-Xylene	**0.88**	0.080	EPA 8021B	2-7-14	2-7-14	
o-Xylene	**ND**	0.40	EPA 8021B	2-7-14	2-7-14	U1
Gasoline	**510**	8.0	NWTPH-Gx	2-7-14	2-7-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***110***	***71-121***				

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-045
Project: 2007-098-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0207S1					
Benzene	**ND**	0.020	EPA 8021B	2-7-14	2-7-14	
Toluene	**ND**	0.050	EPA 8021B	2-7-14	2-7-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	2-7-14	2-7-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	2-7-14	2-7-14	
o-Xylene	**ND**	0.050	EPA 8021B	2-7-14	2-7-14	
Gasoline	**ND**	5.0	NWTPH-Gx	2-7-14	2-7-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***89***	***71-121***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	02-041-01										
	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						***93***	***92***	***71-121***			
SPIKE BLANKS											
Laboratory ID:	SB0207S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.948**	**1.00**	1.00	1.00		**95**	**100**	73-121	5	10	
Toluene	**0.947**	**0.996**	1.00	1.00		**95**	**100**	75-124	5	10	
Ethyl Benzene	**0.939**	**0.988**	1.00	1.00		**94**	**99**	75-125	5	9	
m,p-Xylene	**0.950**	**0.995**	1.00	1.00		**95**	**100**	75-126	5	9	
o-Xylene	**0.948**	**0.990**	1.00	1.00		**95**	**99**	74-123	4	8	
Surrogate:											
Fluorobenzene						***88***	***90***	***71-121***			

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-045
Project: 2007-098-994

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-40-4**					
Laboratory ID:	02-045-01					
Diesel Range Organics	**ND**	33	NWTPH-Dx	2-7-14	2-7-14	X1
Lube Oil Range Organics	**ND**	67	NWTPH-Dx	2-7-14	2-7-14	X1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***102***	***50-150***				
Client ID:	**L-PEX-41-8**					
Laboratory ID:	02-045-02					
Diesel Range Organics	**ND**	32	NWTPH-Dx	2-7-14	2-7-14	X1
Lube Oil Range Organics	**ND**	64	NWTPH-Dx	2-7-14	2-7-14	X1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***90***	***50-150***				
Client ID:	**L-PEX-42-5**					
Laboratory ID:	02-045-03					
Diesel Range Organics	**ND**	130	NWTPH-Dx	2-7-14	2-7-14	U1,X1
Lube Oil Range Organics	**ND**	67	NWTPH-Dx	2-7-14	2-7-14	X1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***85***	***50-150***				

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-045
Project: 2007-098-994

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0207S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	2-7-14	2-7-14	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	2-7-14	2-7-14	X1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***103***	***50-150***				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	02-041-03							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			***79***	***75***	***50-150***			

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-045
Project: 2007-098-994

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	02-045-01					
Client ID:	**L-PEX-40-4**					
Lead	**7.7**	6.7	6010C	2-10-14	2-10-14	
Lab ID:	02-045-02					
Client ID:	**L-PEX-41-8**					
Lead	**ND**	6.4	6010C	2-10-14	2-10-14	
Lab ID:	02-045-03					
Client ID:	**L-PEX-42-5**					
Lead	**8.2**	6.7	6010C	2-10-14	2-10-14	

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-045
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-10-14
Date Analyzed: 2-10-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0210SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-045
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 2-10-14
Date Analyzed: 2-10-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 02-041-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-045
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 2-10-14
Date Analyzed: 2-10-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 02-041-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**239**	96	**243**	97	2	

Date of Report: February 10, 2014
Samples Submitted: February 7, 2014
Laboratory Reference: 1402-045
Project: 2007-098-994

% MOISTURE

Date Analyzed: 2-7-14

Client ID	Lab ID	% Moisture
L-PEX-40-4	02-045-01	25
L-PEX-41-8	02-045-02	22
L-PEX-42-5	02-045-03	26

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

OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

February 12, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1402-059

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on February 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: February 12, 2014
Samples Submitted: February 11, 2014
Laboratory Reference: 1402-059
Project: 2007-098-994

Case Narrative

Samples were collected on February 10 and 11, 2014 and received by the laboratory on February 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.

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: February 12, 2014
Samples Submitted: February 11, 2014
Laboratory Reference: 1402-059
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Water Line-3-4**					
Laboratory ID:	02-059-01					
Benzene	**ND**	0.020	EPA 8021B	2-11-14	2-11-14	
Toluene	**ND**	0.057	EPA 8021B	2-11-14	2-11-14	
Ethyl Benzene	**ND**	0.057	EPA 8021B	2-11-14	2-11-14	
m,p-Xylene	**ND**	0.057	EPA 8021B	2-11-14	2-11-14	
o-Xylene	**ND**	0.057	EPA 8021B	2-11-14	2-11-14	
Gasoline	**ND**	5.7	NWTPH-Gx	2-11-14	2-11-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*84*	*71-121*				
Client ID:	**Water Line-3-6**					
Laboratory ID:	02-059-02					
Benzene	**ND**	0.022	EPA 8021B	2-11-14	2-11-14	
Toluene	**ND**	0.11	EPA 8021B	2-11-14	2-11-14	
Ethyl Benzene	**ND**	0.11	EPA 8021B	2-11-14	2-11-14	
m,p-Xylene	**ND**	0.11	EPA 8021B	2-11-14	2-11-14	
o-Xylene	**ND**	0.11	EPA 8021B	2-11-14	2-11-14	
Gasoline	**ND**	11	NWTPH-Gx	2-11-14	2-11-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*71-121*				
Client ID:	**Water Line-4-4**					
Laboratory ID:	02-059-03					
Benzene	**ND**	0.020	EPA 8021B	2-11-14	2-11-14	
Toluene	**ND**	0.087	EPA 8021B	2-11-14	2-11-14	
Ethyl Benzene	**ND**	0.087	EPA 8021B	2-11-14	2-11-14	
m,p-Xylene	**ND**	0.087	EPA 8021B	2-11-14	2-11-14	
o-Xylene	**ND**	0.087	EPA 8021B	2-11-14	2-11-14	
Gasoline	**ND**	8.7	NWTPH-Gx	2-11-14	2-11-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-121*				

Date of Report: February 12, 2014
Samples Submitted: February 11, 2014
Laboratory Reference: 1402-059
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Water Line-4-6**					
Laboratory ID:	02-059-04					
Benzene	**ND**	0.020	EPA 8021B	2-11-14	2-11-14	
Toluene	**ND**	0.064	EPA 8021B	2-11-14	2-11-14	
Ethyl Benzene	**ND**	0.064	EPA 8021B	2-11-14	2-11-14	
m,p-Xylene	**ND**	0.064	EPA 8021B	2-11-14	2-11-14	
o-Xylene	**ND**	0.064	EPA 8021B	2-11-14	2-11-14	
Gasoline	**ND**	6.4	NWTPH-Gx	2-11-14	2-11-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-121*				

Date of Report: February 12, 2014
Samples Submitted: February 11, 2014
Laboratory Reference: 1402-059
Project: 2007-098-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0211S1					
Benzene	**ND**	0.020	EPA 8021B	2-11-14	2-11-14	
Toluene	**ND**	0.050	EPA 8021B	2-11-14	2-11-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	2-11-14	2-11-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	2-11-14	2-11-14	
o-Xylene	**ND**	0.050	EPA 8021B	2-11-14	2-11-14	
Gasoline	**ND**	5.0	NWTPH-Gx	2-11-14	2-11-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*84*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	02-059-01										
	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						*84*	*87*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0211S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.926**	**0.949**	1.00	1.00		**93**	**95**	73-121	2	10	
Toluene	**0.930**	**0.953**	1.00	1.00		**93**	**95**	75-124	2	10	
Ethyl Benzene	**0.922**	**0.946**	1.00	1.00		**92**	**95**	75-125	3	9	
m,p-Xylene	**0.931**	**0.955**	1.00	1.00		**93**	**96**	75-126	3	9	
o-Xylene	**0.925**	**0.951**	1.00	1.00		**93**	**95**	74-123	3	8	
Surrogate:											
Fluorobenzene						*85*	*84*	*71-121*			

Date of Report: February 12, 2014
Samples Submitted: February 11, 2014
Laboratory Reference: 1402-059
Project: 2007-098-994

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Water Line-3-4**					
Laboratory ID:	02-059-01					
Diesel Fuel #2	**45**	29	NWTPH-Dx	2-11-14	2-11-14	
Lube Oil	**260**	58	NWTPH-Dx	2-11-14	2-11-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*80*	*50-150*				
Client ID:	**Water Line-3-6**					
Laboratory ID:	02-059-02					
Diesel Range Organics	**ND**	40	NWTPH-Dx	2-11-14	2-11-14	
Lube Oil Range Organics	**ND**	80	NWTPH-Dx	2-11-14	2-11-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				
Client ID:	**Water Line-4-4**					
Laboratory ID:	02-059-03					
Diesel Range Organics	**ND**	39	NWTPH-Dx	2-11-14	2-12-14	U1
Lube Oil Range Organics	**110**	71	NWTPH-Dx	2-11-14	2-12-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*71*	*50-150*				
Client ID:	**Water Line-4-6**					
Laboratory ID:	02-059-04					
Diesel Range Organics	**ND**	31	NWTPH-Dx	2-11-14	2-11-14	
Lube Oil Range Organics	**ND**	63	NWTPH-Dx	2-11-14	2-11-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*74*	*50-150*				

Date of Report: February 12, 2014
Samples Submitted: February 11, 2014
Laboratory Reference: 1402-059
Project: 2007-098-994

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0211S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	2-11-14	2-11-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	2-11-14	2-11-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*100*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	02-059-01									
	ORIG	DUP								
Diesel Fuel #2	**38.6**	**ND**	NA	NA		NA	NA	NA	NA	
Lube Oil	**223**	**91.7**	NA	NA		NA	NA	83	NA	
Surrogate:										
o-Terphenyl						*80 82*	*50-150*			

Date of Report: February 12, 2014
Samples Submitted: February 11, 2014
Laboratory Reference: 1402-059
Project: 2007-098-994

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	02-059-01					
Client ID:	**Water Line-3-4**					
Lead	**22**	5.8	6010C	2-12-14	2-12-14	
Lab ID:	02-059-02					
Client ID:	**Water Line-3-6**					
Lead	**ND**	8.0	6010C	2-12-14	2-12-14	
Lab ID:	02-059-03					
Client ID:	**Water Line-4-4**					
Lead	**ND**	7.1	6010C	2-12-14	2-12-14	
Lab ID:	02-059-04					
Client ID:	**Water Line-4-6**					
Lead	**ND**	6.3	6010C	2-12-14	2-12-14	

Date of Report: February 12, 2014
Samples Submitted: February 11, 2014
Laboratory Reference: 1402-059
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted:	2-12-14
Date Analyzed:	2-12-14
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0212SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: February 12, 2014
Samples Submitted: February 11, 2014
Laboratory Reference: 1402-059
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 2-12-14
Date Analyzed: 2-12-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 02-059-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**18.5**	**15.2**	20	5.0	

Date of Report: February 12, 2014
Samples Submitted: February 11, 2014
Laboratory Reference: 1402-059
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 2-12-14
Date Analyzed: 2-12-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 02-059-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**249**	92	**257**	95	3	

Date of Report: February 12, 2014
Samples Submitted: February 11, 2014
Laboratory Reference: 1402-059
Project: 2007-098-994

% MOISTURE

Date Analyzed: 2-11-14

Client ID	Lab ID	% Moisture
Water Line-3-4	02-059-01	14
Water Line-3-6	02-059-02	38
Water Line-4-4	02-059-03	30
Water Line-4-6	02-059-04	20

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

Chain of Custody and Laboratory Anaylsis Request

DATE: 2/11/14
PAGE: 1 of 1

02-059

PROJECT NAME: Bothell Landing #: 2007-098 994
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE: [signature] DATE: 2/10/14
HWA CONTACT: " " PHONE:

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-G/BTEX	NWTPH-Dx	LEAD	Tomorrow	EDD	REMARKS
Waterline-3-4	2/10/14	2340	S	1	2	/	/	/			
-3-6	2/10/14	2350		2		/	/	/			
-4-4	2/11/14	140		3		/	/	/			
-4.6	2/11/14	150		4		/	/	/			

TURNAROUND TIME
[x] 1 DAYS
[ ] STANDARD

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: Chrissi Fisk	[signature]	HWA GeoSciences	2/11/14	11:39am	
Received by: Pete Bodin	[signature]	Speedy Msngr	2-11-14	1140am	
Relinquished by: Pete Bodin	[signature]	" "	" "	1220	
Received by: MVOUN	[signature]	OSE	2/11/14	1220	

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

February 24, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-988
Laboratory Reference No. 1402-156

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on February 21, 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: February 24, 2014
Samples Submitted: February 21, 2014
Laboratory Reference: 1402-156
Project: 2007-098-988

Case Narrative

Samples were collected on February 20, 2014 and received by the laboratory on February 21, 2014. 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: February 24, 2014
Samples Submitted: February 21, 2014
Laboratory Reference: 1402-156
Project: 2007-098-988

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Water Line-5-4**					
Laboratory ID:	02-156-01					
Benzene	**ND**	0.020	EPA 8021B	2-21-14	2-21-14	
Toluene	**ND**	0.072	EPA 8021B	2-21-14	2-21-14	
Ethyl Benzene	**ND**	0.072	EPA 8021B	2-21-14	2-21-14	
m,p-Xylene	**ND**	0.072	EPA 8021B	2-21-14	2-21-14	
o-Xylene	**ND**	0.072	EPA 8021B	2-21-14	2-21-14	
Gasoline	**ND**	7.2	NWTPH-Gx	2-21-14	2-21-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***88***	***71-121***				
Client ID:	**Water Line-5-6**					
Laboratory ID:	02-156-02					
Benzene	**ND**	0.023	EPA 8021B	2-21-14	2-21-14	
Toluene	**ND**	0.11	EPA 8021B	2-21-14	2-21-14	
Ethyl Benzene	**ND**	0.11	EPA 8021B	2-21-14	2-21-14	
m,p-Xylene	**ND**	0.11	EPA 8021B	2-21-14	2-21-14	
o-Xylene	**ND**	0.11	EPA 8021B	2-21-14	2-21-14	
Gasoline	**ND**	11	NWTPH-Gx	2-21-14	2-21-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***82***	***71-121***				

Date of Report: February 24, 2014
Samples Submitted: February 21, 2014
Laboratory Reference: 1402-156
Project: 2007-098-988

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0221S1					
MTBE	**ND**	0.050	EPA 8021B	2-21-14	2-21-14	
Benzene	**ND**	0.020	EPA 8021B	2-21-14	2-21-14	
Toluene	**ND**	0.050	EPA 8021B	2-21-14	2-21-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	2-21-14	2-21-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	2-21-14	2-21-14	
o-Xylene	**ND**	0.050	EPA 8021B	2-21-14	2-21-14	
Gasoline	**ND**	5.0	NWTPH-Gx	2-21-14	2-21-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***87***	***71-121***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	02-117-01										
	ORIG	DUP									
MTBE	**ND**	**ND**	NA	NA		NA		NA	NA	?	
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***	***80***	***71-121***			
SPIKE BLANKS											
Laboratory ID:	SB0221S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.939**	**0.978**	1.00	1.00		**94**	**98**	73-121	4	10	
Toluene	**0.938**	**0.985**	1.00	1.00		**94**	**99**	75-124	5	10	
Ethyl Benzene	**0.925**	**0.965**	1.00	1.00		**93**	**97**	75-125	4	9	
m,p-Xylene	**0.935**	**0.983**	1.00	1.00		**94**	**98**	75-126	5	9	
o-Xylene	**0.927**	**0.968**	1.00	1.00		**93**	**97**	74-123	4	8	
Surrogate:											
Fluorobenzene						***82***	***86***	***71-121***			

Date of Report: February 24, 2014
Samples Submitted: February 21, 2014
Laboratory Reference: 1402-156
Project: 2007-098-988

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**Water Line-5-4**					
Laboratory ID:	02-156-01					
Diesel Range Organics	**ND**	44	NWTPH-Dx	2-21-14	2-21-14	U1
Lube Oil	**250**	64	NWTPH-Dx	2-21-14	2-21-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***84***	***50-150***				

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**Water Line-5-6**					
Laboratory ID:	02-156-02					
Diesel Range Organics	**ND**	42	NWTPH-Dx	2-21-14	2-21-14	
Lube Oil	**85**	84	NWTPH-Dx	2-21-14	2-21-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***76***	***50-150***				

Date of Report: February 24, 2014
Samples Submitted: February 21, 2014
Laboratory Reference: 1402-156
Project: 2007-098-988

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0221S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	2-21-14	2-21-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	2-21-14	2-21-14	
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:	02-126-10										
	ORIG	DUP									
Diesel Range Organics	**ND**	**ND**	NA	NA		NA		NA	NA	NA	U1,M1
Lube Oil	**444**	**282**	NA	NA		NA		NA	45	NA	
Surrogate:											
o-Terphenyl						***87***	***85***	***50-150***			

Date of Report: February 24, 2014
Samples Submitted: February 21, 2014
Laboratory Reference: 1402-156
Project: 2007-098-988

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	02-156-01					
Client ID:	**Water Line-5-4**					
Lead	**33**	6.4	6010C	2-24-14	2-24-14	
Lab ID:	02-156-02					
Client ID:	**Water Line-5-6**					
Lead	**12**	8.4	6010C	2-24-14	2-24-14	

Date of Report: February 24, 2014
Samples Submitted: February 21, 2014
Laboratory Reference: 1402-156
Project: 2007-098-988

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted:	2-24-14
Date Analyzed:	2-24-14
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0224SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: February 24, 2014
Samples Submitted: February 21, 2014
Laboratory Reference: 1402-156
Project: 2007-098-988

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 2-24-14
Date Analyzed: 2-24-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 02-156-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**7.00**	**6.05**	15	5.0	

Date of Report: February 24, 2014
Samples Submitted: February 21, 2014
Laboratory Reference: 1402-156
Project: 2007-098-988

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 2-24-14
Date Analyzed: 2-24-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 02-156-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**262**	102	**265**	103	1	

Date of Report: February 24, 2014
Samples Submitted: February 21, 2014
Laboratory Reference: 1402-156
Project: 2007-098-988

% MOISTURE

Date Analyzed: 2-21-14

Client ID	Lab ID	% Moisture
Water Line-5-4	02-156-01	22
Water Line-5-6	02-156-02	41

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

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: 02-156

Company: HWA
Project Number: 2007-058-988
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: "

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~~ Lead	TCLP Metals	HEM (oil and grease) 1664					% Moisture
1	Water Line-5-4	2/20/14	2105	S	2		\		\										/							X
2	Water Line-5-6	2/20/14	2110	S	2		\		\										\							X

	Signature	Company	Date	Time
Relinquished	[signature]	HWA GeoSciences	2/21/14	10:10am
Received	Van	Speedy	2/21/14	1010
Relinquished	"	"	2/21/14	1030
Received	[signature]	OSE	2/21/14	1030
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

April 7, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1403-216

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on March 29, 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: April 7, 2014
Samples Submitted: March 29, 2014
Laboratory Reference: 1403-216
Project: 2007-098

Case Narrative

Samples were collected on March 29, 2014 and received by the laboratory on March 29, 2014. 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: April 7, 2014
Samples Submitted: March 29, 2014
Laboratory Reference: 1403-216
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-43-7**					
Laboratory ID:	03-216-01					
Benzene	**ND**	0.020	EPA 8021B	4-1-14	4-1-14	
Toluene	**ND**	0.062	EPA 8021B	4-1-14	4-1-14	
Ethyl Benzene	**ND**	0.062	EPA 8021B	4-1-14	4-1-14	
m,p-Xylene	**ND**	0.062	EPA 8021B	4-1-14	4-1-14	
o-Xylene	**ND**	0.062	EPA 8021B	4-1-14	4-1-14	
Gasoline	**ND**	6.2	NWTPH-Gx	4-1-14	4-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*71-121*				

Date of Report: April 7, 2014
Samples Submitted: March 29, 2014
Laboratory Reference: 1403-216
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:	MB0401S1					
Benzene	**ND**	0.020	EPA 8021B	4-1-14	4-1-14	
Toluene	**ND**	0.050	EPA 8021B	4-1-14	4-1-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	4-1-14	4-1-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	4-1-14	4-1-14	
o-Xylene	**ND**	0.050	EPA 8021B	4-1-14	4-1-14	
Gasoline	**ND**	5.0	NWTPH-Gx	4-1-14	4-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-216-01										
	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*	*92*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0401S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.928**	**0.974**	1.00	1.00		**93**	**97**	73-121	5	10	
Toluene	**0.941**	**0.979**	1.00	1.00		**94**	**98**	75-124	4	10	
Ethyl Benzene	**0.936**	**0.970**	1.00	1.00		**94**	**97**	75-125	4	9	
m,p-Xylene	**0.971**	**1.00**	1.00	1.00		**97**	**100**	75-126	3	9	
o-Xylene	**0.945**	**0.975**	1.00	1.00		**95**	**98**	74-123	3	8	
Surrogate:											
Fluorobenzene						*92*	*92*	*71-121*			

Date of Report: April 7, 2014
Samples Submitted: March 29, 2014
Laboratory Reference: 1403-216
Project: 2007-098

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**L-PEX-43-7**					
Laboratory ID:	03-216-01					
Diesel Range Organics	**ND**	31	NWTPH-Dx	4-2-14	4-2-14	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	4-2-14	4-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				

Date of Report: April 7, 2014
Samples Submitted: March 29, 2014
Laboratory Reference: 1403-216
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0402S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-2-14	4-2-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-2-14	4-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*99*	*50-150*				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	03-216-01										
	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						*94*	*93*	*50-150*			

Date of Report: April 7, 2014
Samples Submitted: March 29, 2014
Laboratory Reference: 1403-216
Project: 2007-098

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-216-01					
Client ID:	**L-PEX-43-7**					
Lead	**ND**	6.2	6010C	4-3-14	4-3-14	

Date of Report: April 7, 2014
Samples Submitted: March 29, 2014
Laboratory Reference: 1403-216
Project: 2007-098

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 4-3-14
Date Analyzed: 4-3-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0403SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: April 7, 2014
Samples Submitted: March 29, 2014
Laboratory Reference: 1403-216
Project: 2007-098

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted:	4-3-14
Date Analyzed:	4-3-14
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	03-216-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**5.50**	NA	5.0	

Date of Report: April 7, 2014
Samples Submitted: March 29, 2014
Laboratory Reference: 1403-216
Project: 2007-098

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 4-3-14
Date Analyzed: 4-3-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 03-216-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**235**	94	**241**	96	3	

Date of Report: April 7, 2014
Samples Submitted: March 29, 2014
Laboratory Reference: 1403-216
Project: 2007-098

cPAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-43-7**					
Laboratory ID:	03-216-01					
Benzo[a]anthracene	**ND**	0.0082	EPA 8270D/SIM	4-1-14	4-1-14	
Chrysene	**ND**	0.0082	EPA 8270D/SIM	4-1-14	4-1-14	
Benzo[b]fluoranthene	**ND**	0.0082	EPA 8270D/SIM	4-1-14	4-1-14	
Benzo(j,k)fluoranthene	**ND**	0.0082	EPA 8270D/SIM	4-1-14	4-1-14	
Benzo[a]pyrene	**ND**	0.0082	EPA 8270D/SIM	4-1-14	4-1-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0082	EPA 8270D/SIM	4-1-14	4-1-14	
Dibenz[a,h]anthracene	**ND**	0.0082	EPA 8270D/SIM	4-1-14	4-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*80*	*43 - 116*				
Pyrene-d10	*91*	*33 - 124*				
Terphenyl-d14	*77*	*38 - 125*				

Date of Report: April 7, 2014
Samples Submitted: March 29, 2014
Laboratory Reference: 1403-216
Project: 2007-098

cPAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0401S1					
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	4-1-14	4-1-14	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	4-1-14	4-1-14	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	4-1-14	4-1-14	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	4-1-14	4-1-14	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	4-1-14	4-1-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270D/SIM	4-1-14	4-1-14	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	4-1-14	4-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*80*	*43 - 116*				
Pyrene-d10	*94*	*33 - 124*				
Terphenyl-d14	*87*	*38 - 125*				

Date of Report: April 7, 2014
Samples Submitted: March 29, 2014
Laboratory Reference: 1403-216
Project: 2007-098

cPAHs EPA 8270D/SIM
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:	03-216-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzo[a]anthracene	**0.0698**	**0.0805**	0.0833	0.0833	ND	84	97	33 - 123	14	26	
Chrysene	**0.0655**	**0.0761**	0.0833	0.0833	ND	79	91	35 - 123	15	25	
Benzo[b]fluoranthene	**0.0581**	**0.0713**	0.0833	0.0833	ND	70	86	30 - 125	20	28	
Benzo(j,k)fluoranthene	**0.0571**	**0.0657**	0.0833	0.0833	ND	69	79	31 - 122	14	30	
Benzo[a]pyrene	**0.0694**	**0.0809**	0.0833	0.0833	ND	83	97	29 - 125	15	28	
Indeno(1,2,3-c,d)pyrene	**0.0630**	**0.0750**	0.0833	0.0833	ND	76	90	28 - 125	17	27	
Dibenz[a,h]anthracene	**0.0644**	**0.0757**	0.0833	0.0833	ND	77	91	32 - 124	16	27	
Surrogate:											
2-Fluorobiphenyl						*66*	*77*	*43 - 116*			
Pyrene-d10						*76*	*87*	*33 - 124*			
Terphenyl-d14						*62*	*75*	*38 - 125*			

Date of Report: April 7, 2014
Samples Submitted: March 29, 2014
Laboratory Reference: 1403-216
Project: 2007-098

% MOISTURE

Date Analyzed: 4-1-14

Client ID	Lab ID	% Moisture
L-PEX-43-7	03-216-01	19

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

03-216

Chain of Custody and Laboratory Anaylsis Request

DATE: 3/29/14
PAGE: 1 of 1

PROJECT NAME: Bothell Landing #:
SAMPLERS NAME: Atkins PHONE:
SAMPLERS SIGNATURE: DATE: 3/29/14
HWA CONTACT: " " PHONE:

ANALYSIS REQUESTED

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-G/BTEX	NWTPH-Dx	LEAD	CPAHs	% MOISTURE	EDD	REMARKS
L-PEX-43-7	3/29/14	0200	S	1	2	/	/	/	/	X	/	

TURNAROUND TIME
☐ DAYS
☑ STANDARD

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:		HWA	3/29/14	1005	
Received by: Blair Goodrow		OnSite Env	3/29/14	1005	
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 22, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-988
Laboratory Reference No. 1404-170

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on April 21, 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: April 22, 2014
Samples Submitted: April 21, 2014
Laboratory Reference: 1404-170
Project: 2007-098-988

Case Narrative

Samples were collected on April 21, 2014 and received by the laboratory on April 21, 2014. 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: April 22, 2014
Samples Submitted: April 21, 2014
Laboratory Reference: 1404-170
Project: 2007-098-988

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-44-8**					
Laboratory ID:	04-170-01					
Benzene	**ND**	0.020	EPA 8021B	4-21-14	4-22-14	
Toluene	**ND**	0.093	EPA 8021B	4-21-14	4-22-14	
Ethyl Benzene	**ND**	0.093	EPA 8021B	4-21-14	4-22-14	
m,p-Xylene	**ND**	0.093	EPA 8021B	4-21-14	4-22-14	
o-Xylene	**ND**	0.093	EPA 8021B	4-21-14	4-22-14	
Gasoline	**ND**	9.3	NWTPH-Gx	4-21-14	4-22-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*111*	*71-121*				
Client ID:	**L-PEX-45-9**					
Laboratory ID:	04-170-02					
Benzene	**ND**	0.021	EPA 8021B	4-21-14	4-21-14	
Toluene	**ND**	0.10	EPA 8021B	4-21-14	4-21-14	
Ethyl Benzene	**ND**	0.10	EPA 8021B	4-21-14	4-21-14	
m,p-Xylene	**ND**	0.10	EPA 8021B	4-21-14	4-21-14	
o-Xylene	**ND**	0.10	EPA 8021B	4-21-14	4-21-14	
Gasoline	**ND**	10	NWTPH-Gx	4-21-14	4-21-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*120*	*71-121*				
Client ID:	**L-PEX-46-10**					
Laboratory ID:	04-170-03					
Benzene	**ND**	0.020	EPA 8021B	4-21-14	4-21-14	
Toluene	**ND**	0.098	EPA 8021B	4-21-14	4-21-14	
Ethyl Benzene	**ND**	0.098	EPA 8021B	4-21-14	4-21-14	
m,p-Xylene	**ND**	0.098	EPA 8021B	4-21-14	4-21-14	
o-Xylene	**ND**	0.098	EPA 8021B	4-21-14	4-21-14	
Gasoline	**ND**	9.8	NWTPH-Gx	4-21-14	4-21-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*119*	*71-121*				

Date of Report: April 22, 2014
Samples Submitted: April 21, 2014
Laboratory Reference: 1404-170
Project: 2007-098-988

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-47-7**					
Laboratory ID:	04-170-04					
Benzene	**ND**	0.020	EPA 8021B	4-21-14	4-21-14	
Toluene	**ND**	0.049	EPA 8021B	4-21-14	4-21-14	
Ethyl Benzene	**ND**	0.049	EPA 8021B	4-21-14	4-21-14	
m,p-Xylene	**ND**	0.049	EPA 8021B	4-21-14	4-21-14	
o-Xylene	**ND**	0.049	EPA 8021B	4-21-14	4-21-14	
Gasoline	**17**	4.9	NWTPH-Gx	4-21-14	4-21-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*71-121*				
Client ID:	**L-PEX-48-7**					
Laboratory ID:	04-170-05					
Benzene	**ND**	0.022	EPA 8021B	4-21-14	4-21-14	
Toluene	**ND**	0.11	EPA 8021B	4-21-14	4-21-14	
Ethyl Benzene	**ND**	0.11	EPA 8021B	4-21-14	4-21-14	
m,p-Xylene	**ND**	0.11	EPA 8021B	4-21-14	4-21-14	
o-Xylene	**ND**	0.11	EPA 8021B	4-21-14	4-21-14	
Gasoline	**ND**	11	NWTPH-Gx	4-21-14	4-21-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*71-121*				

Date of Report: April 22, 2014
Samples Submitted: April 21, 2014
Laboratory Reference: 1404-170
Project: 2007-098-988

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0421S2					
Benzene	**ND**	0.020	EPA 8021B	4-21-14	4-21-14	
Toluene	**ND**	0.050	EPA 8021B	4-21-14	4-21-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	4-21-14	4-21-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	4-21-14	4-21-14	
o-Xylene	**ND**	0.050	EPA 8021B	4-21-14	4-21-14	
Gasoline	**ND**	5.0	NWTPH-Gx	4-21-14	4-21-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-170-05										
	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*	*108*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0421S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.05**	**1.10**	1.00	1.00		**105**	**110**	73-121	5	10	
Toluene	**1.08**	**1.12**	1.00	1.00		**108**	**112**	75-124	4	10	
Ethyl Benzene	**1.06**	**1.09**	1.00	1.00		**106**	**109**	75-125	3	9	
m,p-Xylene	**1.06**	**1.10**	1.00	1.00		**106**	**110**	75-126	4	9	
o-Xylene	**1.06**	**1.07**	1.00	1.00		**106**	**107**	74-123	1	8	
Surrogate:											
Fluorobenzene						*99*	*100*	*71-121*			

Date of Report: April 22, 2014
Samples Submitted: April 21, 2014
Laboratory Reference: 1404-170
Project: 2007-098-988

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-44-8**					
Laboratory ID:	04-170-01					
Diesel Range Organics	**ND**	37	NWTPH-Dx	4-21-14	4-21-14	
Lube Oil Range Organics	**ND**	73	NWTPH-Dx	4-21-14	4-21-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				
Client ID:	**L-PEX-45-9**					
Laboratory ID:	04-170-02					
Diesel Range Organics	**ND**	40	NWTPH-Dx	4-21-14	4-21-14	
Lube Oil Range Organics	**ND**	80	NWTPH-Dx	4-21-14	4-21-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*74*	*50-150*				
Client ID:	**L-PEX-46-10**					
Laboratory ID:	04-170-03					
Diesel Range Organics	**ND**	39	NWTPH-Dx	4-21-14	4-21-14	
Lube Oil Range Organics	**ND**	78	NWTPH-Dx	4-21-14	4-21-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*72*	*50-150*				
Client ID:	**L-PEX-47-7**					
Laboratory ID:	04-170-04					
Diesel Range Organics	**ND**	29	NWTPH-Dx	4-21-14	4-21-14	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	4-21-14	4-21-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				
Client ID:	**L-PEX-48-7**					
Laboratory ID:	04-170-05					
Diesel Range Organics	**ND**	40	NWTPH-Dx	4-21-14	4-21-14	
Lube Oil	**100**	80	NWTPH-Dx	4-21-14	4-21-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				

Date of Report: April 22, 2014
Samples Submitted: April 21, 2014
Laboratory Reference: 1404-170
Project: 2007-098-988

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0421S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-21-14	4-21-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-21-14	4-21-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-150-02										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	X1
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	X1
Surrogate:											
o-Terphenyl						*92*	*89*	*50-150*			

Date of Report: April 22, 2014
Samples Submitted: April 21, 2014
Laboratory Reference: 1404-170
Project: 2007-098-988

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-46-10**					
Laboratory ID:	04-170-03					
Benzo[a]anthracene	**ND**	0.010	EPA 8270D/SIM	4-21-14	4-22-14	
Chrysene	**ND**	0.010	EPA 8270D/SIM	4-21-14	4-22-14	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270D/SIM	4-21-14	4-22-14	
Benzo(j,k)fluoranthene	**ND**	0.010	EPA 8270D/SIM	4-21-14	4-22-14	
Benzo[a]pyrene	**ND**	0.010	EPA 8270D/SIM	4-21-14	4-22-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.010	EPA 8270D/SIM	4-21-14	4-22-14	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270D/SIM	4-21-14	4-22-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*74*	*43 - 116*				
Pyrene-d10	*79*	*33 - 124*				
Terphenyl-d14	*71*	*38 - 125*				

Date of Report: April 22, 2014
Samples Submitted: April 21, 2014
Laboratory Reference: 1404-170
Project: 2007-098-988

PAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0421S1					
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	4-21-14	4-22-14	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	4-21-14	4-22-14	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	4-21-14	4-22-14	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	4-21-14	4-22-14	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	4-21-14	4-22-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270D/SIM	4-21-14	4-22-14	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	4-21-14	4-22-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*87*	*43 - 116*				
Pyrene-d10	*88*	*33 - 124*				
Terphenyl-d14	*89*	*38 - 125*				

Date of Report: April 22, 2014
Samples Submitted: April 21, 2014
Laboratory Reference: 1404-170
Project: 2007-098-988

PAHs EPA 8270D/SIM
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:	04-170-03										
	MS	MSD	MS	MSD		MS	MSD				
Benzo[a]anthracene	**0.146**	**0.139**	0.167	0.167	ND	87	83	33 - 123	5	26	
Chrysene	**0.129**	**0.123**	0.167	0.167	ND	77	74	35 - 123	5	25	
Benzo[b]fluoranthene	**0.135**	**0.129**	0.167	0.167	ND	81	77	30 - 125	5	28	
Benzo(j,k)fluoranthene	**0.122**	**0.115**	0.167	0.167	ND	73	69	31 - 122	6	30	
Benzo[a]pyrene	**0.127**	**0.119**	0.167	0.167	ND	76	71	29 - 125	7	28	
Indeno(1,2,3-c,d)pyrene	**0.126**	**0.120**	0.167	0.167	ND	75	72	28 - 125	5	27	
Dibenz[a,h]anthracene	**0.127**	**0.122**	0.167	0.167	ND	76	73	32 - 124	4	27	
Surrogate:											
2-Fluorobiphenyl						*74*	*71*	*43 - 116*			
Pyrene-d10						*76*	*75*	*33 - 124*			
Terphenyl-d14						*71*	*67*	*38 - 125*			

Date of Report: April 22, 2014
Samples Submitted: April 21, 2014
Laboratory Reference: 1404-170
Project: 2007-098-988

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-170-01					
Client ID:	**L-PEX-44-8**					
Lead	**ND**	7.3	6010C	4-22-14	4-22-14	
Lab ID:	04-170-02					
Client ID:	**L-PEX-45-9**					
Lead	**ND**	8.0	6010C	4-22-14	4-22-14	
Lab ID:	04-170-03					
Client ID:	**L-PEX-46-10**					
Lead	**ND**	7.8	6010C	4-22-14	4-22-14	
Lab ID:	04-170-04					
Client ID:	**L-PEX-47-7**					
Lead	**ND**	5.8	6010C	4-22-14	4-22-14	
Lab ID:	04-170-05					
Client ID:	**L-PEX-48-7**					
Lead	**ND**	8.0	6010C	4-22-14	4-22-14	

Date of Report: April 22, 2014
Samples Submitted: April 21, 2014
Laboratory Reference: 1404-170
Project: 2007-098-988

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted:	4-22-14
Date Analyzed:	4-22-14
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0422SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: April 22, 2014
Samples Submitted: April 21, 2014
Laboratory Reference: 1404-170
Project: 2007-098-988

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 4-22-14
Date Analyzed: 4-22-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-170-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: April 22, 2014
Samples Submitted: April 21, 2014
Laboratory Reference: 1404-170
Project: 2007-098-988

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 4-22-14
Date Analyzed: 4-22-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-170-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**234**	94	**227**	91	3	

Date of Report: April 22, 2014
Samples Submitted: April 21, 2014
Laboratory Reference: 1404-170
Project: 2007-098-988

% MOISTURE

Date Analyzed: 4-21-14

Client ID	Lab ID	% Moisture
L-PEX-44-8	04-170-01	32
L-PEX-45-9	04-170-02	37
L-PEX-46-10	04-170-03	36
L-PEX-47-7	04-170-04	14
L-PEX-48-7	04-170-05	38

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

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

Company: HWA
Project Number: 2007-058-588
Project Name: Bothell Landing
Project Manager: Susan
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: 04-170

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) CPAH.	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total ~~MTCA Metals~~ LEAD	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
1	L-PEX.44-8	4/21/14	1220	S	2		/		/										/			/
2	-45-9		1230				/		/										/			/
3	-46-10		1240				/		/				/						/			/
4	-47-7		1300				/		/										/			/
5	-48-7		1315				/		/										/			/

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	4/21/14	1420
Received	[signature]	OSE	4/21/14	1420
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

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

April 24, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-988
Laboratory Reference No. 1404-184

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on April 22, 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: April 24, 2014
Samples Submitted: April 22, 2014
Laboratory Reference: 1404-184
Project: 2007-098-988

Case Narrative

Samples were collected on April 22, 2014 and received by the laboratory on April 22, 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 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: April 24, 2014
Samples Submitted: April 22, 2014
Laboratory Reference: 1404-184
Project: 2007-098-988

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-49-10**					
Laboratory ID:	04-184-01					
Benzene	**ND**	0.020	EPA 8021B	4-23-14	4-23-14	
Toluene	**ND**	0.054	EPA 8021B	4-23-14	4-23-14	
Ethyl Benzene	**ND**	0.054	EPA 8021B	4-23-14	4-23-14	
m,p-Xylene	**ND**	0.054	EPA 8021B	4-23-14	4-23-14	
o-Xylene	**ND**	0.054	EPA 8021B	4-23-14	4-23-14	
Gasoline	**ND**	5.4	NWTPH-Gx	4-23-14	4-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-121*				
Client ID:	**L-PEX-50-8**					
Laboratory ID:	04-184-02					
Benzene	**ND**	0.020	EPA 8021B	4-23-14	4-23-14	
Toluene	**ND**	0.073	EPA 8021B	4-23-14	4-23-14	
Ethyl Benzene	**ND**	0.073	EPA 8021B	4-23-14	4-23-14	
m,p-Xylene	**ND**	0.073	EPA 8021B	4-23-14	4-23-14	
o-Xylene	**ND**	0.073	EPA 8021B	4-23-14	4-23-14	
Gasoline	**ND**	7.3	NWTPH-Gx	4-23-14	4-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-121*				
Client ID:	**L-PEX-51-10**					
Laboratory ID:	04-184-03					
Benzene	**ND**	0.020	EPA 8021B	4-23-14	4-23-14	
Toluene	**ND**	0.065	EPA 8021B	4-23-14	4-23-14	
Ethyl Benzene	**ND**	0.065	EPA 8021B	4-23-14	4-23-14	
m,p-Xylene	**ND**	0.065	EPA 8021B	4-23-14	4-23-14	
o-Xylene	**ND**	0.065	EPA 8021B	4-23-14	4-23-14	
Gasoline	**ND**	6.5	NWTPH-Gx	4-23-14	4-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*71-121*				

Date of Report: April 24, 2014
Samples Submitted: April 22, 2014
Laboratory Reference: 1404-184
Project: 2007-098-988

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-52-7**					
Laboratory ID:	04-184-04					
Benzene	**ND**	0.020	EPA 8021B	4-23-14	4-23-14	
Toluene	**ND**	0.073	EPA 8021B	4-23-14	4-23-14	
Ethyl Benzene	**ND**	0.073	EPA 8021B	4-23-14	4-23-14	
m,p-Xylene	**ND**	0.073	EPA 8021B	4-23-14	4-23-14	
o-Xylene	**ND**	0.073	EPA 8021B	4-23-14	4-23-14	
Gasoline	**ND**	7.3	NWTPH-Gx	4-23-14	4-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*71-121*				

Date of Report: April 24, 2014
Samples Submitted: April 22, 2014
Laboratory Reference: 1404-184
Project: 2007-098-988

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0423S1					
Benzene	**ND**	0.020	EPA 8021B	4-23-14	4-23-14	
Toluene	**ND**	0.050	EPA 8021B	4-23-14	4-23-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	4-23-14	4-23-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	4-23-14	4-23-14	
o-Xylene	**ND**	0.050	EPA 8021B	4-23-14	4-23-14	
Gasoline	**ND**	5.0	NWTPH-Gx	4-23-14	4-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-121*				

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Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-184-01										
	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*	*81*	*71-121*			

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0423S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.879**	**0.924**	1.00	1.00		**88**	**92**	73-121	5	10	
Toluene	**0.895**	**0.935**	1.00	1.00		**90**	**94**	75-124	4	10	
Ethyl Benzene	**0.909**	**0.943**	1.00	1.00		**91**	**94**	75-125	4	9	
m,p-Xylene	**0.914**	**0.949**	1.00	1.00		**91**	**95**	75-126	4	9	
o-Xylene	**0.895**	**0.931**	1.00	1.00		**90**	**93**	74-123	4	8	
Surrogate:											
Fluorobenzene						*85*	*89*	*71-121*			

Date of Report: April 24, 2014
Samples Submitted: April 22, 2014
Laboratory Reference: 1404-184
Project: 2007-098-988

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-49-10**					
Laboratory ID:	04-184-01					
Diesel Range Organics	**ND**	29	NWTPH-Dx	4-22-14	4-22-14	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	4-22-14	4-22-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				
Client ID:	**L-PEX-50-8**					
Laboratory ID:	04-184-02					
Diesel Range Organics	**ND**	34	NWTPH-Dx	4-22-14	4-22-14	
Lube Oil Range Organics	**ND**	68	NWTPH-Dx	4-22-14	4-22-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**L-PEX-51-10**					
Laboratory ID:	04-184-03					
Diesel Range Organics	**ND**	31	NWTPH-Dx	4-22-14	4-22-14	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	4-22-14	4-22-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*74*	*50-150*				
Client ID:	**L-PEX-52-7**					
Laboratory ID:	04-184-04					
Diesel Range Organics	**ND**	31	NWTPH-Dx	4-22-14	4-22-14	
Lube Oil	**210**	63	NWTPH-Dx	4-22-14	4-22-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*73*	*50-150*				

Date of Report: April 24, 2014
Samples Submitted: April 22, 2014
Laboratory Reference: 1404-184
Project: 2007-098-988

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0422S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-22-14	4-22-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-22-14	4-22-14	
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:	04-184-01										
	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*	*83*	*50-150*			

Date of Report: April 24, 2014
Samples Submitted: April 22, 2014
Laboratory Reference: 1404-184
Project: 2007-098-988

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-184-01					
Client ID:	**L-PEX-49-10**					
Lead	**ND**	5.8	6010C	4-23-14	4-23-14	
Lab ID:	04-184-02					
Client ID:	**L-PEX-50-8**					
Lead	**ND**	6.8	6010C	4-23-14	4-23-14	
Lab ID:	04-184-03					
Client ID:	**L-PEX-51-10**					
Lead	**ND**	6.1	6010C	4-23-14	4-23-14	
Lab ID:	04-184-04					
Client ID:	**L-PEX-52-7**					
Lead	**24**	6.2	6010C	4-23-14	4-23-14	

Date of Report: April 24, 2014
Samples Submitted: April 22, 2014
Laboratory Reference: 1404-184
Project: 2007-098-988

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 4-23-14
Date Analyzed: 4-23-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0423SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: April 24, 2014
Samples Submitted: April 22, 2014
Laboratory Reference: 1404-184
Project: 2007-098-988

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 4-23-14
Date Analyzed: 4-23-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-184-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: April 24, 2014
Samples Submitted: April 22, 2014
Laboratory Reference: 1404-184
Project: 2007-098-988

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 4-23-14
Date Analyzed: 4-23-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-184-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**247**	99	**240**	96	3	

Date of Report: April 24, 2014
Samples Submitted: April 22, 2014
Laboratory Reference: 1404-184
Project: 2007-098-988

% MOISTURE

Date Analyzed: 4-22-14

Client ID	Lab ID	% Moisture
L-PEX-49-10	04-184-01	14
L-PEX-50-8	04-184-02	26
L-PEX-51-10	04-184-03	19
L-PEX-52-7	04-184-04	20

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

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: 04-184

Company: HWA
Project Number: 2007-098-988
Project Name: Bothell Landing
Project Manager: Bryan
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	~~Total MTCA Metals~~ LEAD	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
1	L-PEX-49-10	4/22/14	1130	S	2		/		/										/			
2	-50-8		1140				/		/										/			
3	-51-10		1340				/		/										/			
4	-52-7		1350				/		/										/			

	Signature	Company	Date	Time
Relinquished		HWA	4/22/14	1430
Received		OSE	4/22/14	1430
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Environmental Inc.

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April 24, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1404-197

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on April 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: April 24, 2014
Samples Submitted: April 23, 2014
Laboratory Reference: 1404-197
Project: 2007-098-994

Case Narrative

Samples were collected on April 23, 2014 and received by the laboratory on April 23, 2014. 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.

cPAHs 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.

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: April 24, 2014
Samples Submitted: April 23, 2014
Laboratory Reference: 1404-197
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-53-6**					
Laboratory ID:	04-197-01					
Benzene	**ND**	0.020	EPA 8021B	4-23-14	4-23-14	
Toluene	**ND**	0.064	EPA 8021B	4-23-14	4-23-14	
Ethyl Benzene	**ND**	0.064	EPA 8021B	4-23-14	4-23-14	
m,p-Xylene	**ND**	0.064	EPA 8021B	4-23-14	4-23-14	
o-Xylene	**ND**	0.064	EPA 8021B	4-23-14	4-23-14	
Gasoline	**ND**	6.4	NWTPH-Gx	4-23-14	4-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*71-121*				
Client ID:	**L-PEX-54-9**					
Laboratory ID:	04-197-02					
Benzene	**ND**	0.020	EPA 8021B	4-23-14	4-23-14	
Toluene	**ND**	0.077	EPA 8021B	4-23-14	4-23-14	
Ethyl Benzene	**ND**	0.077	EPA 8021B	4-23-14	4-23-14	
m,p-Xylene	**ND**	0.077	EPA 8021B	4-23-14	4-23-14	
o-Xylene	**ND**	0.077	EPA 8021B	4-23-14	4-23-14	
Gasoline	**ND**	7.7	NWTPH-Gx	4-23-14	4-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*115*	*71-121*				
Client ID:	**L-PEX-55-9**					
Laboratory ID:	04-197-03					
Benzene	**ND**	0.020	EPA 8021B	4-23-14	4-23-14	
Toluene	**ND**	0.062	EPA 8021B	4-23-14	4-23-14	
Ethyl Benzene	**ND**	0.062	EPA 8021B	4-23-14	4-23-14	
m,p-Xylene	**ND**	0.062	EPA 8021B	4-23-14	4-23-14	
o-Xylene	**ND**	0.062	EPA 8021B	4-23-14	4-23-14	
Gasoline	**ND**	6.2	NWTPH-Gx	4-23-14	4-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*71-121*				

Date of Report: April 24, 2014
Samples Submitted: April 23, 2014
Laboratory Reference: 1404-197
Project: 2007-098-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0423S1					
Benzene	**ND**	0.020	EPA 8021B	4-23-14	4-23-14	
Toluene	**ND**	0.050	EPA 8021B	4-23-14	4-23-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	4-23-14	4-23-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	4-23-14	4-23-14	
o-Xylene	**ND**	0.050	EPA 8021B	4-23-14	4-23-14	
Gasoline	**ND**	5.0	NWTPH-Gx	4-23-14	4-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-184-01										
	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*	*81*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0423S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.879**	**0.924**	1.00	1.00		**88**	**92**	73-121	5	10	
Toluene	**0.895**	**0.935**	1.00	1.00		**90**	**94**	75-124	4	10	
Ethyl Benzene	**0.909**	**0.943**	1.00	1.00		**91**	**94**	75-125	4	9	
m,p-Xylene	**0.914**	**0.949**	1.00	1.00		**91**	**95**	75-126	4	9	
o-Xylene	**0.895**	**0.931**	1.00	1.00		**90**	**93**	74-123	4	8	
Surrogate:											
Fluorobenzene						*85*	*89*	*71-121*			

Date of Report: April 24, 2014
Samples Submitted: April 23, 2014
Laboratory Reference: 1404-197
Project: 2007-098-994

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-53-6**					
Laboratory ID:	04-197-01					
Diesel Range Organics	**ND**	30	NWTPH-Dx	4-23-14	4-23-14	
Lube Oil	**220**	61	NWTPH-Dx	4-23-14	4-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*78*	*50-150*				
Client ID:	**L-PEX-54-9**					
Laboratory ID:	04-197-02					
Diesel Range Organics	**ND**	36	NWTPH-Dx	4-23-14	4-23-14	
Lube Oil	**80**	71	NWTPH-Dx	4-23-14	4-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*78*	*50-150*				
Client ID:	**L-PEX-55-9**					
Laboratory ID:	04-197-03					
Diesel Range Organics	**ND**	32	NWTPH-Dx	4-23-14	4-23-14	
Lube Oil Range Organics	**ND**	65	NWTPH-Dx	4-23-14	4-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*76*	*50-150*				

Date of Report: April 24, 2014
Samples Submitted: April 23, 2014
Laboratory Reference: 1404-197
Project: 2007-098-994

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0423S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-23-14	4-23-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-23-14	4-23-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-197-01										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil	**177**	**152**	NA	NA		NA		NA	15	NA	
Surrogate:											
o-Terphenyl						*78*	*70*	*50-150*			

Date of Report: April 24, 2014
Samples Submitted: April 23, 2014
Laboratory Reference: 1404-197
Project: 2007-098-994

cPAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-54-9**					
Laboratory ID:	04-197-02					
Benzo[a]anthracene	**ND**	0.0095	EPA 8270D/SIM	4-23-14	4-24-14	
Chrysene	**ND**	0.0095	EPA 8270D/SIM	4-23-14	4-24-14	
Benzo[b]fluoranthene	**ND**	0.0095	EPA 8270D/SIM	4-23-14	4-24-14	
Benzo(j,k)fluoranthene	**ND**	0.0095	EPA 8270D/SIM	4-23-14	4-24-14	
Benzo[a]pyrene	**ND**	0.0095	EPA 8270D/SIM	4-23-14	4-24-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0095	EPA 8270D/SIM	4-23-14	4-24-14	
Dibenz[a,h]anthracene	**ND**	0.0095	EPA 8270D/SIM	4-23-14	4-24-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*91*	*43 - 116*				
Pyrene-d10	*90*	*33 - 124*				
Terphenyl-d14	*102*	*38 - 125*				

Date of Report: April 24, 2014
Samples Submitted: April 23, 2014
Laboratory Reference: 1404-197
Project: 2007-098-994

cPAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0423S1					
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	4-23-14	4-24-14	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	4-23-14	4-24-14	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	4-23-14	4-24-14	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	4-23-14	4-24-14	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	4-23-14	4-24-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270D/SIM	4-23-14	4-24-14	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	4-23-14	4-24-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*100*	*43 - 116*				
Pyrene-d10	*110*	*33 - 124*				
Terphenyl-d14	*112*	*38 - 125*				

Date of Report: April 24, 2014
Samples Submitted: April 23, 2014
Laboratory Reference: 1404-197
Project: 2007-098-994

cPAHs EPA 8270D/SIM
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:	04-201-03										
	MS	MSD	MS	MSD		MS	MSD				
Benzo[a]anthracene	**0.144**	**0.113**	0.0833	0.0833	0.0614	99	62	33 - 123	24	26	
Chrysene	**0.151**	**0.117**	0.0833	0.0833	0.0830	82	41	35 - 123	25	25	L
Benzo[b]fluoranthene	**0.194**	**0.132**	0.0833	0.0833	0.113	97	23	30 - 125	38	28	I,L
Benzo(j,k)fluoranthene	**0.117**	**0.0829**	0.0833	0.0833	0.0454	86	45	31 - 122	34	30	L
Benzo[a]pyrene	**0.161**	**0.117**	0.0833	0.0833	0.0728	106	53	29 - 125	32	28	L
Indeno(1,2,3-c,d)pyrene	**0.302**	**0.205**	0.0833	0.0833	0.253	59	-58	28 - 125	38	27	I,L
Dibenz[a,h]anthracene	**0.134**	**0.106**	0.0833	0.0833	0.0399	113	79	32 - 124	23	27	
Surrogate:											
2-Fluorobiphenyl						*93*	*82*	*43 - 116*			
Pyrene-d10						*87*	*77*	*33 - 124*			
Terphenyl-d14						*95*	*84*	*38 - 125*			
SPIKE BLANKS											
Laboratory ID:	SB0423S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzo[a]anthracene	**0.104**	**0.105**	0.0833	0.0833		125	126	58 - 126	1	13	
Chrysene	**0.0936**	**0.0925**	0.0833	0.0833		112	111	64 - 114	1	11	
Benzo[b]fluoranthene	**0.0963**	**0.0979**	0.0833	0.0833		116	118	52 - 125	2	19	
Benzo(j,k)fluoranthene	**0.0910**	**0.0931**	0.0833	0.0833		109	112	50 - 126	2	22	
Benzo[a]pyrene	**0.0955**	**0.0951**	0.0833	0.0833		115	114	43 - 123	0	16	
Indeno(1,2,3-c,d)pyrene	**0.0951**	**0.0960**	0.0833	0.0833		114	115	55 - 118	1	16	
Dibenz[a,h]anthracene	**0.0959**	**0.0966**	0.0833	0.0833		115	116	57 - 120	1	15	
Surrogate:											
2-Fluorobiphenyl						*102*	*103*	*43 - 116*			
Pyrene-d10						*106*	*106*	*33 - 124*			
Terphenyl-d14						*109*	*109*	*38 - 125*			

Date of Report: April 24, 2014
Samples Submitted: April 23, 2014
Laboratory Reference: 1404-197
Project: 2007-098-994

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-197-01					
Client ID:	**L-PEX-53-6**					
Lead	**25**	6.1	6010C	4-23-14	4-23-14	
Lab ID:	04-197-02					
Client ID:	**L-PEX-54-9**					
Lead	**55**	7.1	6010C	4-23-14	4-23-14	
Lab ID:	04-197-03					
Client ID:	**L-PEX-55-9**					
Lead	**ND**	6.5	6010C	4-23-14	4-23-14	

Date of Report: April 24, 2014
Samples Submitted: April 23, 2014
Laboratory Reference: 1404-197
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted:	4-23-14
Date Analyzed:	4-23-14
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0423SM2

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: April 24, 2014
Samples Submitted: April 23, 2014
Laboratory Reference: 1404-197
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 4-23-14
Date Analyzed: 4-23-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-197-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**20.6**	**18.8**	9	5.0	

Date of Report: April 24, 2014
Samples Submitted: April 23, 2014
Laboratory Reference: 1404-197
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 4-23-14
Date Analyzed: 4-23-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-197-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**250**	92	**253**	93	1	

Date of Report: April 24, 2014
Samples Submitted: April 23, 2014
Laboratory Reference: 1404-197
Project: 2007-098-994

% MOISTURE

Date Analyzed: 4-23-14

Client ID	Lab ID	% Moisture
L-PEX-53-6	04-197-01	18
L-PEX-54-9	04-197-02	30
L-PEX-55-9	04-197-03	23

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

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Chain of Custody

Page 1 of 1

Company: HWA
Project Number: 2007-095-994
Project Name: Bothell Landing
Project Manager: Sugata
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: 04-197

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)~~ CPAH	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	~~Total MTCA Metals~~ CEAD	TCLP Metals	HEM (oil and grease) 1664A						% Moisture
1	L-PEX-53-6	4/23/14	1210	S	2		X		X										X								/
2	L-PEX-54-9	〃	1220	〃	〃		X		X				X						X								/
3	L-PEX-55-9	〃	1230	〃	〃		X		X										X								/

	Signature	Company	Date	Time
Relinquished	Va Q	HWA	4/23/14	1312
Received	[signature]	OSE	4/23/14	1312
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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April 29, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1404-220

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on April 25, 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: April 29, 2014
Samples Submitted: April 25, 2014
Laboratory Reference: 1404-220
Project: 2007-098-994

Case Narrative

Samples were collected on April 25, 2014 and received by the laboratory on April 25, 2014. 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/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^oC and -20^oC 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: April 29, 2014
Samples Submitted: April 25, 2014
Laboratory Reference: 1404-220
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-56-9**					
Laboratory ID:	04-220-01					
Benzene	**ND**	0.020	EPA 8021B	4-25-14	4-28-14	
Toluene	**ND**	0.072	EPA 8021B	4-25-14	4-28-14	
Ethyl Benzene	**ND**	0.072	EPA 8021B	4-25-14	4-28-14	
m,p-Xylene	**ND**	0.072	EPA 8021B	4-25-14	4-28-14	
o-Xylene	**ND**	0.072	EPA 8021B	4-25-14	4-28-14	
Gasoline	**ND**	7.2	NWTPH-Gx	4-25-14	4-28-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*71-121*				

Date of Report: April 29, 2014
Samples Submitted: April 25, 2014
Laboratory Reference: 1404-220
Project: 2007-098-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0425S1					
Benzene	**ND**	0.020	EPA 8021B	4-25-14	4-28-14	
Toluene	**ND**	0.050	EPA 8021B	4-25-14	4-28-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	4-25-14	4-28-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	4-25-14	4-28-14	
o-Xylene	**ND**	0.050	EPA 8021B	4-25-14	4-28-14	
Gasoline	**ND**	5.0	NWTPH-Gx	4-25-14	4-28-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-220-01										
	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*	*87*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0425S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.904**	**0.915**	1.00	1.00		**90**	**92**	73-121	1	10	
Toluene	**0.925**	**0.939**	1.00	1.00		**93**	**94**	75-124	2	10	
Ethyl Benzene	**0.942**	**0.957**	1.00	1.00		**94**	**96**	75-125	2	9	
m,p-Xylene	**0.947**	**0.966**	1.00	1.00		**95**	**97**	75-126	2	9	
o-Xylene	**0.921**	**0.948**	1.00	1.00		**92**	**95**	74-123	3	8	
Surrogate:											
Fluorobenzene						*87*	*88*	*71-121*			

Date of Report: April 29, 2014
Samples Submitted: April 25, 2014
Laboratory Reference: 1404-220
Project: 2007-098-994

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-56-9**					
Laboratory ID:	04-220-01					
Diesel Range Organics	**ND**	31	NWTPH-Dx	4-25-14	4-25-14	
Lube Oil Range Organics	**ND**	63	NWTPH-Dx	4-25-14	4-25-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				

Date of Report: April 29, 2014
Samples Submitted: April 25, 2014
Laboratory Reference: 1404-220
Project: 2007-098-994

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0425S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-25-14	4-25-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-25-14	4-25-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-213-02										
	ORIG	DUP									
Diesel Range Organics	**2090**	**1200**	NA	NA		NA		NA	54	NA	
Lube Oil	**6080**	**4540**	NA	NA		NA		NA	29	NA	
Surrogate:											
o-Terphenyl						*77*	*109*	*50-150*			

Date of Report: April 29, 2014
Samples Submitted: April 25, 2014
Laboratory Reference: 1404-220
Project: 2007-098-994

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-220-01					
Client ID:	**L-PEX-56-9**					
Lead	**ND**	6.3	6010C	4-25-14	4-25-14	

Date of Report: April 29, 2014
Samples Submitted: April 25, 2014
Laboratory Reference: 1404-220
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 4-25-14
Date Analyzed: 4-25-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0425SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: April 29, 2014
Samples Submitted: April 25, 2014
Laboratory Reference: 1404-220
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 4-25-14
Date Analyzed: 4-25-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-208-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**9.90**	**9.65**	3	5.0	

Date of Report: April 29, 2014
Samples Submitted: April 25, 2014
Laboratory Reference: 1404-220
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 4-25-14
Date Analyzed: 4-25-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-208-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**258**	99	**255**	98	1	

Date of Report: April 29, 2014
Samples Submitted: April 25, 2014
Laboratory Reference: 1404-220
Project: 2007-098-994

% MOISTURE

Date Analyzed: 4-25-14

Client ID	Lab ID	% Moisture
L-PEX-56-9	04-220-01	20

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

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Chain of Custody

Page ______ of ______

Laboratory Number: 04-220

Company: HWA
Project Number: 2007 098 - 994
Project Name: Bothell Landing
Project Manager: Bugan
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	~~Total MTCA Metals~~ LEAD	TCLP Metals	HEM (oil and grease) 1664A						% Moisture
1	LP5x-56-9	4/25/14	1330	S	2		X		X										X								X

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	4/25/14	1355
Received	[signature]	OnSite	4/25/14	1355
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

OnSite
Environmental Inc.

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May 1, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1404-234

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on April 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: May 1, 2014
Samples Submitted: April 28, 2014
Laboratory Reference: 1404-234
Project: 2007-098-994

Case Narrative

Samples were collected on April 28, 2014 and received by the laboratory on April 28, 2014. 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/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^oC and -20^oC 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: May 1, 2014
Samples Submitted: April 28, 2014
Laboratory Reference: 1404-234
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-57-11**					
Laboratory ID:	04-234-01					
Benzene	**ND**	0.020	EPA 8021B	4-29-14	4-30-14	
Toluene	**ND**	0.066	EPA 8021B	4-29-14	4-30-14	
Ethyl Benzene	**ND**	0.066	EPA 8021B	4-29-14	4-30-14	
m,p-Xylene	**ND**	0.066	EPA 8021B	4-29-14	4-30-14	
o-Xylene	**ND**	0.066	EPA 8021B	4-29-14	4-30-14	
Gasoline	**ND**	6.6	NWTPH-Gx	4-29-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*80*	*71-121*				

Date of Report: May 1, 2014
Samples Submitted: April 28, 2014
Laboratory Reference: 1404-234
Project: 2007-098-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0429S1					
Benzene	**ND**	0.020	EPA 8021B	4-29-14	4-30-14	
Toluene	**ND**	0.050	EPA 8021B	4-29-14	4-30-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	4-29-14	4-30-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	4-29-14	4-30-14	
o-Xylene	**ND**	0.050	EPA 8021B	4-29-14	4-30-14	
Gasoline	**ND**	5.0	NWTPH-Gx	4-29-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*84*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-234-01										
	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						*80*	*77*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0429S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.04**	**1.11**	1.00	1.00		**104**	**111**	73-121	7	10	
Toluene	**1.07**	**1.13**	1.00	1.00		**107**	**113**	75-124	5	10	
Ethyl Benzene	**1.07**	**1.13**	1.00	1.00		**107**	**113**	75-125	5	9	
m,p-Xylene	**1.08**	**1.14**	1.00	1.00		**108**	**114**	75-126	5	9	
o-Xylene	**1.07**	**1.12**	1.00	1.00		**107**	**112**	74-123	5	8	
Surrogate:											
Fluorobenzene						*98*	*102*	*71-121*			

Date of Report: May 1, 2014
Samples Submitted: April 28, 2014
Laboratory Reference: 1404-234
Project: 2007-098-994

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-57-11**					
Laboratory ID:	04-234-01					
Diesel Range Organics	**ND**	32	NWTPH-Dx	4-28-14	4-28-14	
Lube Oil Range Organics	**ND**	63	NWTPH-Dx	4-28-14	4-28-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*80*	*50-150*				

Date of Report: May 1, 2014
Samples Submitted: April 28, 2014
Laboratory Reference: 1404-234
Project: 2007-098-994

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0428S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-28-14	4-28-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-28-14	4-28-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	04-234-01										
	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						*80*	*77*	*50-150*			

Date of Report: May 1, 2014
Samples Submitted: April 28, 2014
Laboratory Reference: 1404-234
Project: 2007-098-994

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-234-01					
Client ID:	**L-PEX-57-11**					
Lead	**ND**	6.3	6010C	4-28-14	4-28-14	

Date of Report: May 1, 2014
Samples Submitted: April 28, 2014
Laboratory Reference: 1404-234
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 4-28-14
Date Analyzed: 4-28-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0428SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: May 1, 2014
Samples Submitted: April 28, 2014
Laboratory Reference: 1404-234
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 4-28-14
Date Analyzed: 4-28-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-234-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: May 1, 2014
Samples Submitted: April 28, 2014
Laboratory Reference: 1404-234
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 4-28-14
Date Analyzed: 4-28-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-234-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**253**	101	**253**	101	0	

Date of Report: May 1, 2014
Samples Submitted: April 28, 2014
Laboratory Reference: 1404-234
Project: 2007-098-994

% MOISTURE

Date Analyzed: 4-28-14

Client ID	Lab ID	% Moisture
L-PEX-57-11	04-234-01	21

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

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

Laboratory Number: 04-234

Company: ~~2007~~ HWA
Project Number: 2007-098-994
Project Name: Boston Landing
Project Manager: Susan
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 LEAD	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A							% Moisture
1	L-PSA-57-11.	4/28/14	1215	S	2		X		X									X										✓

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	[signature]	HWA	4/28/14	1315	
Received	[signature]	OSE	4/28/14	1315	
Relinquished					
Received					
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite Environmental Inc.

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May 1, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-944
Laboratory Reference No. 1404-247

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on April 29, 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: May 1, 2014
Samples Submitted: April 29, 2014
Laboratory Reference: 1404-247
Project: 2007-098-944

Case Narrative

Samples were collected on April 29, 2014 and received by the laboratory on April 29, 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 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: May 1, 2014
Samples Submitted: April 29, 2014
Laboratory Reference: 1404-247
Project: 2007-098-944

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-58-8**					
Laboratory ID:	04-247-01					
Benzene	**ND**	0.020	EPA 8021B	4-29-14	4-30-14	
Toluene	**ND**	0.053	EPA 8021B	4-29-14	4-30-14	
Ethyl Benzene	**ND**	0.053	EPA 8021B	4-29-14	4-30-14	
m,p-Xylene	**ND**	0.053	EPA 8021B	4-29-14	4-30-14	
o-Xylene	**ND**	0.053	EPA 8021B	4-29-14	4-30-14	
Gasoline	**ND**	5.3	NWTPH-Gx	4-29-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*71-121*				
Client ID:	**L-PEX-59-8**					
Laboratory ID:	04-247-02					
Benzene	**ND**	0.020	EPA 8021B	4-29-14	4-30-14	
Toluene	**ND**	0.099	EPA 8021B	4-29-14	4-30-14	
Ethyl Benzene	**ND**	0.099	EPA 8021B	4-29-14	4-30-14	
m,p-Xylene	**ND**	0.099	EPA 8021B	4-29-14	4-30-14	
o-Xylene	**ND**	0.099	EPA 8021B	4-29-14	4-30-14	
Gasoline	**ND**	9.9	NWTPH-Gx	4-29-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*71-121*				
Client ID:	**L-PEX-60-5**					
Laboratory ID:	04-247-03					
Benzene	**0.61**	0.14	EPA 8021B	4-29-14	4-30-14	
Toluene	**1.1**	0.72	EPA 8021B	4-29-14	4-30-14	
Ethyl Benzene	**2.4**	0.72	EPA 8021B	4-29-14	4-30-14	
m,p-Xylene	**18**	0.72	EPA 8021B	4-29-14	4-30-14	
o-Xylene	**1.5**	0.72	EPA 8021B	4-29-14	4-30-14	
Gasoline	**4400**	72	NWTPH-Gx	4-29-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-121*				

Date of Report: May 1, 2014
Samples Submitted: April 29, 2014
Laboratory Reference: 1404-247
Project: 2007-098-944

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-61-5**					
Laboratory ID:	04-247-04					
Benzene	**0.38**	0.16	EPA 8021B	4-29-14	4-30-14	
Toluene	**ND**	0.80	EPA 8021B	4-29-14	4-30-14	
Ethyl Benzene	**1.8**	0.80	EPA 8021B	4-29-14	4-30-14	
m,p-Xylene	**15**	0.80	EPA 8021B	4-29-14	4-30-14	
o-Xylene	**0.94**	0.80	EPA 8021B	4-29-14	4-30-14	
Gasoline	**4000**	80	NWTPH-Gx	4-29-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*71-121*				

Date of Report: May 1, 2014
Samples Submitted: April 29, 2014
Laboratory Reference: 1404-247
Project: 2007-098-944

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0429S1					
Benzene	**ND**	0.020	EPA 8021B	4-29-14	4-30-14	
Toluene	**ND**	0.050	EPA 8021B	4-29-14	4-30-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	4-29-14	4-30-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	4-29-14	4-30-14	
o-Xylene	**ND**	0.050	EPA 8021B	4-29-14	4-30-14	
Gasoline	**ND**	5.0	NWTPH-Gx	4-29-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*84*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-234-01										
	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						*80*	*77*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0429S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.04**	**1.11**	1.00	1.00		**104**	**111**	73-121	7	10	
Toluene	**1.07**	**1.13**	1.00	1.00		**107**	**113**	75-124	5	10	
Ethyl Benzene	**1.07**	**1.13**	1.00	1.00		**107**	**113**	75-125	5	9	
m,p-Xylene	**1.08**	**1.14**	1.00	1.00		**108**	**114**	75-126	5	9	
o-Xylene	**1.07**	**1.12**	1.00	1.00		**107**	**112**	74-123	5	8	
Surrogate:											
Fluorobenzene						*98*	*102*	*71-121*			

Date of Report: May 1, 2014
Samples Submitted: April 29, 2014
Laboratory Reference: 1404-247
Project: 2007-098-944

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-58-8**					
Laboratory ID:	04-247-01					
Diesel Range Organics	**ND**	28	NWTPH-Dx	4-30-14	4-30-14	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**L-PEX-59-8**					
Laboratory ID:	04-247-02					
Diesel Range Organics	**ND**	31	NWTPH-Dx	4-30-14	4-30-14	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				
Client ID:	**L-PEX-60-5**					
Laboratory ID:	04-247-03					
Diesel Range Organics	**ND**	360	NWTPH-Dx	4-30-14	4-30-14	U1
Lube Oil	**260**	86	NWTPH-Dx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*71*	*50-150*				
Client ID:	**L-PEX-61-5**					
Laboratory ID:	04-247-04					
Diesel Range Organics	**ND**	2900	NWTPH-Dx	4-30-14	4-30-14	U1
Lube Oil	**830**	100	NWTPH-Dx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				

Date of Report: May 1, 2014
Samples Submitted: April 29, 2014
Laboratory Reference: 1404-247
Project: 2007-098-944

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0430S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-30-14	4-30-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*87*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-247-01										
	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*	*81*	*50-150*			

Date of Report: May 1, 2014
Samples Submitted: April 29, 2014
Laboratory Reference: 1404-247
Project: 2007-098-944

cPAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-59-8**					
Laboratory ID:	04-247-02					
Benzo[a]anthracene	**ND**	0.0082	EPA 8270D/SIM	4-29-14	4-29-14	
Chrysene	**ND**	0.0082	EPA 8270D/SIM	4-29-14	4-29-14	
Benzo[b]fluoranthene	**ND**	0.0082	EPA 8270D/SIM	4-29-14	4-29-14	
Benzo(j,k)fluoranthene	**ND**	0.0082	EPA 8270D/SIM	4-29-14	4-29-14	
Benzo[a]pyrene	**ND**	0.0082	EPA 8270D/SIM	4-29-14	4-29-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0082	EPA 8270D/SIM	4-29-14	4-29-14	
Dibenz[a,h]anthracene	**ND**	0.0082	EPA 8270D/SIM	4-29-14	4-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*63*	*43 - 116*				
Pyrene-d10	*69*	*33 - 124*				
Terphenyl-d14	*64*	*38 - 125*				

Date of Report: May 1, 2014
Samples Submitted: April 29, 2014
Laboratory Reference: 1404-247
Project: 2007-098-944

cPAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0429S1					
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	4-29-14	4-29-14	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	4-29-14	4-29-14	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	4-29-14	4-29-14	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	4-29-14	4-29-14	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	4-29-14	4-29-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270D/SIM	4-29-14	4-29-14	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	4-29-14	4-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*98*	*43 - 116*				
Pyrene-d10	*101*	*33 - 124*				
Terphenyl-d14	*99*	*38 - 125*				

Date of Report: May 1, 2014
Samples Submitted: April 29, 2014
Laboratory Reference: 1404-247
Project: 2007-098-944

cPAHs EPA 8270D/SIM
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:	SB0429S1									
	SB	SBD	SB	SBD	SB	SBD				
Benzo[a]anthracene	**0.0962**	**0.0957**	0.0833	0.0833	115	115	58 - 115	1	13	
Chrysene	**0.0703**	**0.0729**	0.0833	0.0833	84	88	64 - 114	4	11	
Benzo[b]fluoranthene	**0.0967**	**0.0978**	0.0833	0.0833	116	117	52 - 125	1	19	
Benzo(j,k)fluoranthene	**0.0863**	**0.0855**	0.0833	0.0833	104	103	50 - 126	1	22	
Benzo[a]pyrene	**0.0935**	**0.0943**	0.0833	0.0833	112	113	43 - 123	1	16	
Indeno(1,2,3-c,d)pyrene	**0.0787**	**0.0798**	0.0833	0.0833	94	96	55 - 118	1	16	
Dibenz[a,h]anthracene	**0.0774**	**0.0789**	0.0833	0.0833	93	95	57 - 120	2	15	
Surrogate:										
2-Fluorobiphenyl					*93*	*93*	*43 - 116*			
Pyrene-d10					*96*	*97*	*33 - 124*			
Terphenyl-d14					*91*	*91*	*38 - 125*			

Date of Report: May 1, 2014
Samples Submitted: April 29, 2014
Laboratory Reference: 1404-247
Project: 2007-098-944

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-247-01					
Client ID:	**L-PEX-58-8**					
Lead	**ND**	5.6	6010C	4-30-14	4-30-14	
Lab ID:	04-247-02					
Client ID:	**L-PEX-59-8**					
Lead	**ND**	6.2	6010C	4-30-14	4-30-14	
Lab ID:	04-247-03					
Client ID:	**L-PEX-60-5**					
Lead	**120**	8.6	6010C	4-30-14	4-30-14	
Lab ID:	04-247-04					
Client ID:	**L-PEX-61-5**					
Lead	**250**	10	6010C	4-30-14	4-30-14	

Date of Report: May 1, 2014
Samples Submitted: April 29, 2014
Laboratory Reference: 1404-247
Project: 2007-098-944

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 4-30-14
Date Analyzed: 4-30-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0430SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: May 1, 2014
Samples Submitted: April 29, 2014
Laboratory Reference: 1404-247
Project: 2007-098-944

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 4-30-14
Date Analyzed: 4-30-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-247-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: May 1, 2014
Samples Submitted: April 29, 2014
Laboratory Reference: 1404-247
Project: 2007-098-944

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 4-30-14
Date Analyzed: 4-30-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-247-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**245**	98	**248**	99	1	

Date of Report: May 1, 2014
Samples Submitted: April 29, 2014
Laboratory Reference: 1404-247
Project: 2007-098-944

% MOISTURE

Date Analyzed: 4-29-14

Client ID	Lab ID	% Moisture
L-PEX-58-8	04-247-01	10
L-PEX-59-8	04-247-02	19
L-PEX-60-5	04-247-03	42
L-PEX-61-5	04-247-04	51

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

OnSite Environmental Inc.

Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
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Chain of Custody

Page 1 of 1

Laboratory Number: 04-247

Company: HWA
Project Number: 2007-098-994
Project Name: Bothell Landing
Project Manager: Susan
Sampled by: A King

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) cPAH	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	~~Total MTCA Metals~~ LEAD	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
1	L-PEX-58-8	4/29/14	1430	S	2		/		/										\			-
2	-59-8		1438				/		/				/						\			-
3	-60-5		1440				/		/										\			-
4	-61-5		1445				/		/										\			-

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	4/29/14	1540
Received	[signature]	OSE	4/29/14	1540
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

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

May 2, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1404-252

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on April 30, 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: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

Case Narrative

Samples were collected on April 30, 2014 and received by the laboratory on April 30, 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 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: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TANK-BOT**					
Laboratory ID:	04-252-01					
Benzene	**0.39**	0.020	EPA 8021B	4-30-14	4-30-14	
Toluene	**0.090**	0.081	EPA 8021B	4-30-14	4-30-14	
Ethyl Benzene	**1.5**	0.081	EPA 8021B	4-30-14	4-30-14	
m,p-Xylene	**1.5**	0.081	EPA 8021B	4-30-14	4-30-14	
o-Xylene	**ND**	0.81	EPA 8021B	4-30-14	4-30-14	U1
Gasoline	**420**	8.1	NWTPH-Gx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*71-121*				
Client ID:	**L-TANK-E**					
Laboratory ID:	04-252-02					
Benzene	**ND**	0.020	EPA 8021B	4-30-14	4-30-14	
Toluene	**ND**	0.058	EPA 8021B	4-30-14	4-30-14	
Ethyl Benzene	**ND**	0.058	EPA 8021B	4-30-14	4-30-14	
m,p-Xylene	**ND**	0.058	EPA 8021B	4-30-14	4-30-14	
o-Xylene	**ND**	0.058	EPA 8021B	4-30-14	4-30-14	
Gasoline	**ND**	5.8	NWTPH-Gx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-121*				
Client ID:	**L-TANK-S**					
Laboratory ID:	04-252-03					
Benzene	**ND**	0.020	EPA 8021B	4-30-14	4-30-14	
Toluene	**ND**	0.057	EPA 8021B	4-30-14	4-30-14	
Ethyl Benzene	**ND**	0.057	EPA 8021B	4-30-14	4-30-14	
m,p-Xylene	**ND**	0.057	EPA 8021B	4-30-14	4-30-14	
o-Xylene	**ND**	0.057	EPA 8021B	4-30-14	4-30-14	
Gasoline	**ND**	5.7	NWTPH-Gx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-121*				

Date of Report: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-62-10**					
Laboratory ID:	04-252-04					
Benzene	**ND**	0.020	EPA 8021B	4-30-14	4-30-14	
Toluene	**ND**	0.039	EPA 8021B	4-30-14	4-30-14	
Ethyl Benzene	**ND**	0.039	EPA 8021B	4-30-14	4-30-14	
m,p-Xylene	**ND**	0.039	EPA 8021B	4-30-14	4-30-14	
o-Xylene	**ND**	0.039	EPA 8021B	4-30-14	4-30-14	
Gasoline	**ND**	3.9	NWTPH-Gx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-121*				
Client ID:	**L-PEX-63-7**					
Laboratory ID:	04-252-05					
Benzene	**ND**	0.020	EPA 8021B	4-30-14	4-30-14	
Toluene	**ND**	0.021	EPA 8021B	4-30-14	4-30-14	
Ethyl Benzene	**ND**	0.021	EPA 8021B	4-30-14	4-30-14	
m,p-Xylene	**ND**	0.021	EPA 8021B	4-30-14	4-30-14	
o-Xylene	**ND**	0.021	EPA 8021B	4-30-14	4-30-14	
Gasoline	**ND**	2.1	NWTPH-Gx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-121*				
Client ID:	**L-PEX-64-7**					
Laboratory ID:	04-252-06					
Benzene	**ND**	0.020	EPA 8021B	4-30-14	4-30-14	
Toluene	**ND**	0.058	EPA 8021B	4-30-14	4-30-14	
Ethyl Benzene	**ND**	0.058	EPA 8021B	4-30-14	4-30-14	
m,p-Xylene	**ND**	0.058	EPA 8021B	4-30-14	4-30-14	
o-Xylene	**ND**	0.058	EPA 8021B	4-30-14	4-30-14	
Gasoline	**ND**	5.8	NWTPH-Gx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*71-121*				

Date of Report: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-65-7**					
Laboratory ID:	04-252-07					
Benzene	**0.32**	0.020	EPA 8021B	4-30-14	4-30-14	
Toluene	**0.16**	0.035	EPA 8021B	4-30-14	4-30-14	
Ethyl Benzene	**2.4**	0.035	EPA 8021B	4-30-14	4-30-14	
m,p-Xylene	**2.1**	0.035	EPA 8021B	4-30-14	4-30-14	
o-Xylene	**0.077**	0.035	EPA 8021B	4-30-14	4-30-14	
Gasoline	**440**	18	NWTPH-Gx	4-30-14	5-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*115*	*71-121*				

Date of Report: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0430S2					
Benzene	**ND**	0.020	EPA 8021B	4-30-14	4-30-14	
Toluene	**ND**	0.050	EPA 8021B	4-30-14	4-30-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	4-30-14	4-30-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	4-30-14	4-30-14	
o-Xylene	**ND**	0.050	EPA 8021B	4-30-14	4-30-14	
Gasoline	**ND**	5.0	NWTPH-Gx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-252-02										
	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*	*98*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0430S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.05**	**1.14**	1.00	1.00		**105**	**114**	73-121	8	10	
Toluene	**1.04**	**1.13**	1.00	1.00		**104**	**113**	75-124	8	10	
Ethyl Benzene	**1.02**	**1.09**	1.00	1.00		**102**	**109**	75-125	7	9	
m,p-Xylene	**1.04**	**1.11**	1.00	1.00		**104**	**111**	75-126	7	9	
o-Xylene	**1.05**	**1.09**	1.00	1.00		**105**	**109**	74-123	4	8	
Surrogate:											
Fluorobenzene						*92*	*99*	*71-121*			

Date of Report: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-TANK-BOT**					
Laboratory ID:	04-252-01					
Diesel Range Organics	**ND**	27	NWTPH-Dx	4-30-14	4-30-14	
Lube Oil Range Organics	**ND**	54	NWTPH-Dx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				
Client ID:	**L-TANK-E**					
Laboratory ID:	04-252-02					
Diesel Range Organics	**ND**	29	NWTPH-Dx	4-30-14	4-30-14	
Lube Oil	**89**	59	NWTPH-Dx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				
Client ID:	**L-TANK-S**					
Laboratory ID:	04-252-03					
Diesel Range Organics	**ND**	28	NWTPH-Dx	4-30-14	4-30-14	
Lube Oil	**290**	56	NWTPH-Dx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				
Client ID:	**L-PEX-62-10**					
Laboratory ID:	04-252-04					
Diesel Range Organics	**ND**	31	NWTPH-Dx	4-30-14	4-30-14	
Lube Oil Range Organics	**ND**	63	NWTPH-Dx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				
Client ID:	**L-PEX-63-7**					
Laboratory ID:	04-252-05					
Diesel Range Organics	**ND**	27	NWTPH-Dx	4-30-14	4-30-14	
Lube Oil Range Organics	**ND**	54	NWTPH-Dx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**L-PEX-64-7**					
Laboratory ID:	04-252-06					
Diesel Range Organics	**ND**	29	NWTPH-Dx	4-30-14	4-30-14	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				

Date of Report: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-65-7**					
Laboratory ID:	04-252-07					
Diesel Range Organics	**ND**	31	NWTPH-Dx	4-30-14	4-30-14	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				

Date of Report: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0430S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-30-14	4-30-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*87*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-252-04										
	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						*89*	*87*	*50-150*			

Date of Report: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

cPAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**L-PEX-62-10**					
Laboratory ID:	04-252-04					
Benzo[a]anthracene	**ND**	0.0084	EPA 8270D/SIM	4-30-14	4-30-14	
Chrysene	**ND**	0.0084	EPA 8270D/SIM	4-30-14	4-30-14	
Benzo[b]fluoranthene	**ND**	0.0084	EPA 8270D/SIM	4-30-14	4-30-14	
Benzo(j,k)fluoranthene	**ND**	0.0084	EPA 8270D/SIM	4-30-14	4-30-14	
Benzo[a]pyrene	**ND**	0.0084	EPA 8270D/SIM	4-30-14	4-30-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0084	EPA 8270D/SIM	4-30-14	4-30-14	
Dibenz[a,h]anthracene	**ND**	0.0084	EPA 8270D/SIM	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*60*	*43 - 116*				
Pyrene-d10	*66*	*33 - 124*				
Terphenyl-d14	*60*	*38 - 125*				

Date of Report: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

cPAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0430S2					
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	4-30-14	4-30-14	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	4-30-14	4-30-14	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	4-30-14	4-30-14	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	4-30-14	4-30-14	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	4-30-14	4-30-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270D/SIM	4-30-14	4-30-14	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	4-30-14	4-30-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*84*	*43 - 116*				
Pyrene-d10	*92*	*33 - 124*				
Terphenyl-d14	*86*	*38 - 125*				

Date of Report: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

cPAHs EPA 8270D/SIM
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:	SB0430S2									
	SB	SBD	SB	SBD	SB	SBD				
Benzo[a]anthracene	**0.0805**	**0.0823**	0.0833	0.0833	97	99	58 - 115	2	13	
Chrysene	**0.0644**	**0.0665**	0.0833	0.0833	77	80	64 - 114	3	11	
Benzo[b]fluoranthene	**0.0787**	**0.0762**	0.0833	0.0833	94	91	52 - 125	3	19	
Benzo(j,k)fluoranthene	**0.0783**	**0.0849**	0.0833	0.0833	94	102	50 - 126	8	22	
Benzo[a]pyrene	**0.0802**	**0.0823**	0.0833	0.0833	96	99	43 - 123	3	16	
Indeno(1,2,3-c,d)pyrene	**0.0685**	**0.0709**	0.0833	0.0833	82	85	55 - 118	3	16	
Dibenz[a,h]anthracene	**0.0670**	**0.0698**	0.0833	0.0833	80	84	57 - 120	4	15	
Surrogate:										
2-Fluorobiphenyl					*83*	*86*	*43 - 116*			
Pyrene-d10					*91*	*93*	*33 - 124*			
Terphenyl-d14					*84*	*86*	*38 - 125*			

Date of Report: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-252-01					
Client ID:	**L-TANK-BOT**					
Lead	**16**	5.4	6010C	4-30-14	4-30-14	
Lab ID:	04-252-02					
Client ID:	**L-TANK-E**					
Lead	**57**	5.9	6010C	4-30-14	4-30-14	
Lab ID:	04-252-03					
Client ID:	**L-TANK-S**					
Lead	**44**	5.6	6010C	4-30-14	4-30-14	
Lab ID:	04-252-04					
Client ID:	**L-PEX-62-10**					
Lead	**ND**	6.3	6010C	4-30-14	4-30-14	
Lab ID:	04-252-05					
Client ID:	**L-PEX-63-7**					
Lead	**ND**	5.4	6010C	4-30-14	4-30-14	
Lab ID:	04-252-06					
Client ID:	**L-PEX-64-7**					
Lead	**ND**	5.7	6010C	4-30-14	4-30-14	
Lab ID:	04-252-07					
Client ID:	**L-PEX-65-7**					
Lead	**ND**	6.2	6010C	4-30-14	4-30-14	

Date of Report: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 4-30-14
Date Analyzed: 4-30-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0430SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 4-30-14
Date Analyzed: 4-30-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-247-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 4-30-14
Date Analyzed: 4-30-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-247-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**245**	98	**248**	99	1	

Date of Report: May 2, 2014
Samples Submitted: April 30, 2014
Laboratory Reference: 1404-252
Project: 2007-098-994

% MOISTURE

Date Analyzed: 4-30-14

Client ID	Lab ID	% Moisture
L-TANK-BOT	04-252-01	8
L-TANK-E	04-252-02	15
L-TANK-S	04-252-03	10
L-PEX-62-10	04-252-04	20
L-PEX-63-7	04-252-05	8
L-PEX-64-7	04-252-06	13
L-PEX-65-7	04-252-07	20

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

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Chain of Custody

Page 1 of 1

Company: HWA
Project Number: 2007-098-994
Project Name: Boeing Landing
Project Manager: Bugan
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: 04-252

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) CPAH	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total ~~MTCA~~ Metals (Lead)	TCLP Metals	HEM (oil and grease) 1664A						% Moisture
1	L-TANK-BOT	4/30/14	830	S	2		/		/										/								X
2	L-TANK-E		925				/		/										/								
3	L-TANK-S		840				/		/										/								
4	L-PEX-62-10		850				/		/				X						/								
5	L-PEX-63-7		855				/		/										/								
6	L-PEX-64-7		900				/		/										/								
7	L-PEX-65-7		905				/		/										/								

	Signature	Company	Date	Time
Relinquished	[signature]	HWA GeoSciences	4/30/14	
Received	[signature]	OSE	4/30/14	1100
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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May 2, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1405-005

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on May 1, 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: May 2, 2014
Samples Submitted: May 1, 2014
Laboratory Reference: 1405-005
Project: 2007-098-994

Case Narrative

Samples were collected on May 1, 2014 and received by the laboratory on May 1, 2014. 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/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^oC and -20^oC 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: May 2, 2014
Samples Submitted: May 1, 2014
Laboratory Reference: 1405-005
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-66-7**					
Laboratory ID:	05-005-01					
Benzene	**ND**	0.020	EPA 8021B	5-1-14	5-1-14	
Toluene	**ND**	0.059	EPA 8021B	5-1-14	5-1-14	
Ethyl Benzene	**ND**	0.059	EPA 8021B	5-1-14	5-1-14	
m,p-Xylene	**ND**	0.059	EPA 8021B	5-1-14	5-1-14	
o-Xylene	**ND**	0.059	EPA 8021B	5-1-14	5-1-14	
Gasoline	**ND**	5.9	NWTPH-Gx	5-1-14	5-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*71-121*				
Client ID:	**L-PEX-67-9**					
Laboratory ID:	05-005-02					
Benzene	**0.066**	0.020	EPA 8021B	5-1-14	5-1-14	
Toluene	**ND**	0.095	EPA 8021B	5-1-14	5-1-14	
Ethyl Benzene	**0.17**	0.095	EPA 8021B	5-1-14	5-1-14	
m,p-Xylene	**0.25**	0.095	EPA 8021B	5-1-14	5-1-14	
o-Xylene	**ND**	0.095	EPA 8021B	5-1-14	5-1-14	
Gasoline	**57**	9.5	NWTPH-Gx	5-1-14	5-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*112*	*71-121*				
Client ID:	**L-PEX-68-8**					
Laboratory ID:	05-005-03					
Benzene	**ND**	0.020	EPA 8021B	5-1-14	5-1-14	
Toluene	**ND**	0.064	EPA 8021B	5-1-14	5-1-14	
Ethyl Benzene	**ND**	0.064	EPA 8021B	5-1-14	5-1-14	
m,p-Xylene	**ND**	0.064	EPA 8021B	5-1-14	5-1-14	
o-Xylene	**ND**	0.064	EPA 8021B	5-1-14	5-1-14	
Gasoline	**ND**	6.4	NWTPH-Gx	5-1-14	5-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*106*	*71-121*				

Date of Report: May 2, 2014
Samples Submitted: May 1, 2014
Laboratory Reference: 1405-005
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-69-6**					
Laboratory ID:	05-005-04					
Benzene	**ND**	0.020	EPA 8021B	5-1-14	5-1-14	
Toluene	**ND**	0.062	EPA 8021B	5-1-14	5-1-14	
Ethyl Benzene	**ND**	0.062	EPA 8021B	5-1-14	5-1-14	
m,p-Xylene	**ND**	0.062	EPA 8021B	5-1-14	5-1-14	
o-Xylene	**ND**	0.062	EPA 8021B	5-1-14	5-1-14	
Gasoline	**ND**	6.2	NWTPH-Gx	5-1-14	5-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*117*	*71-121*				
Client ID:	**L-PEX-70-5**					
Laboratory ID:	05-005-05					
Benzene	**0.043**	0.020	EPA 8021B	5-1-14	5-1-14	
Toluene	**ND**	0.071	EPA 8021B	5-1-14	5-1-14	
Ethyl Benzene	**0.35**	0.071	EPA 8021B	5-1-14	5-1-14	
m,p-Xylene	**0.47**	0.071	EPA 8021B	5-1-14	5-1-14	
o-Xylene	**ND**	0.071	EPA 8021B	5-1-14	5-1-14	
Gasoline	**110**	7.1	NWTPH-Gx	5-1-14	5-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*112*	*71-121*				

Date of Report: May 2, 2014
Samples Submitted: May 1, 2014
Laboratory Reference: 1405-005
Project: 2007-098-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0501S2					
Benzene	**ND**	0.020	EPA 8021B	5-1-14	5-1-14	
Toluene	**ND**	0.050	EPA 8021B	5-1-14	5-1-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	5-1-14	5-1-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	5-1-14	5-1-14	
o-Xylene	**ND**	0.050	EPA 8021B	5-1-14	5-1-14	
Gasoline	**ND**	5.0	NWTPH-Gx	5-1-14	5-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-005-01										
	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						*104*	*104*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0501S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**1.09**	**1.08**	1.00	1.00		**109**	**108**	73-121	1	10	
Toluene	**1.11**	**1.09**	1.00	1.00		**111**	**109**	75-124	2	10	
Ethyl Benzene	**1.08**	**1.07**	1.00	1.00		**108**	**107**	75-125	1	9	
m,p-Xylene	**1.10**	**1.08**	1.00	1.00		**110**	**108**	75-126	2	9	
o-Xylene	**1.10**	**1.07**	1.00	1.00		**110**	**107**	74-123	3	8	
Surrogate:											
Fluorobenzene						*100*	*99*	*71-121*			

Date of Report: May 2, 2014
Samples Submitted: May 1, 2014
Laboratory Reference: 1405-005
Project: 2007-098-994

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-66-7**					
Laboratory ID:	05-005-01					
Diesel Range Organics	**ND**	29	NWTPH-Dx	5-1-14	5-1-14	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	5-1-14	5-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*72*	*50-150*				
Client ID:	**L-PEX-67-9**					
Laboratory ID:	05-005-02					
Diesel Range Organics	**ND**	35	NWTPH-Dx	5-1-14	5-2-14	
Lube Oil Range Organics	**ND**	71	NWTPH-Dx	5-1-14	5-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*52*	*50-150*				
Client ID:	**L-PEX-68-8**					
Laboratory ID:	05-005-03					
Diesel Range Organics	**ND**	31	NWTPH-Dx	5-1-14	5-1-14	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	5-1-14	5-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*59*	*50-150*				
Client ID:	**L-PEX-69-6**					
Laboratory ID:	05-005-04					
Diesel Range Organics	**ND**	31	NWTPH-Dx	5-1-14	5-2-14	
Lube Oil Range Organics	**ND**	63	NWTPH-Dx	5-1-14	5-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*76*	*50-150*				
Client ID:	**L-PEX-70-5**					
Laboratory ID:	05-005-05					
Diesel Range Organics	**ND**	32	NWTPH-Dx	5-1-14	5-1-14	
Lube Oil Range Organics	**ND**	64	NWTPH-Dx	5-1-14	5-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*63*	*50-150*				

Date of Report: May 2, 2014
Samples Submitted: May 1, 2014
Laboratory Reference: 1405-005
Project: 2007-098-994

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0501S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	5-1-14	5-1-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	5-1-14	5-1-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*96*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-005-03										
	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						*59*	*81*	*50-150*			

Date of Report: May 2, 2014
Samples Submitted: May 1, 2014
Laboratory Reference: 1405-005
Project: 2007-098-994

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	05-005-01					
Client ID:	**L-PEX-66-7**					
Lead	**ND**	5.9	6010C	5-1-14	5-1-14	
Lab ID:	05-005-02					
Client ID:	**L-PEX-67-9**					
Lead	**ND**	7.1	6010C	5-1-14	5-1-14	
Lab ID:	05-005-03					
Client ID:	**L-PEX-68-8**					
Lead	**ND**	6.2	6010C	5-1-14	5-1-14	
Lab ID:	05-005-04					
Client ID:	**L-PEX-69-6**					
Lead	**ND**	6.3	6010C	5-1-14	5-1-14	
Lab ID:	05-005-05					
Client ID:	**L-PEX-70-5**					
Lead	**ND**	6.4	6010C	5-1-14	5-1-14	

Date of Report: May 2, 2014
Samples Submitted: May 1, 2014
Laboratory Reference: 1405-005
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 5-1-14
Date Analyzed: 5-1-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0501SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: May 2, 2014
Samples Submitted: May 1, 2014
Laboratory Reference: 1405-005
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 5-1-14
Date Analyzed: 5-1-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-261-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: May 2, 2014
Samples Submitted: May 1, 2014
Laboratory Reference: 1405-005
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 5-1-14
Date Analyzed: 5-1-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-261-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**247**	99	**247**	99	0	

Date of Report: May 2, 2014
Samples Submitted: May 1, 2014
Laboratory Reference: 1405-005
Project: 2007-098-994

% MOISTURE

Date Analyzed: 5-1-14

Client ID	Lab ID	% Moisture
L-PEX-66-7	05-005-01	15
L-PEX-67-9	05-005-02	29
L-PEX-68-8	05-005-03	20
L-PEX-69-6	05-005-04	20
L-PEX-70-5	05-005-05	22

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

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Chain of Custody

Page (of)

Laboratory Number: 05-005

Company: Hwa
Project Number: 2007-098-994
Project Name: Bothell Landing
Project Manager: Susan
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	Total ~~MTCA Metals~~ LEAD	TCLP Metals	HEM (oil and grease) 1664A						% Moisture
1	L-Pow-66-7	5/1/14	1100	S	2		/		/										/								X
2	-67-9		1105				/		/										/								
3	-68-8		1110				/		/										/								
4	-69-6		1120				/		/										/								
5	-70-5		1130				/		/										/								

	Signature	Company	Date	Time
Relinquished	[signature]	Hwa	5/1/14	1225
Received		OSE	5/1/14	1225
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions:

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

May 7, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1405-031

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on May 5, 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: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-031
Project: 2007-098-994

Case Narrative

Samples were collected on May 5, 2014 and received by the laboratory on May 5, 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 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 MTCA Method A clean-up level of 0.030 ppm for Benzene is not achievable for sample L-PEX-76-7 due to the extremely low dry weight of the sample.

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: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-031
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-71-6**					
Laboratory ID:	05-031-01					
Benzene	**ND**	0.020	EPA 8021B	5-5-14	5-5-14	
Toluene	**ND**	0.049	EPA 8021B	5-5-14	5-5-14	
Ethyl Benzene	**ND**	0.049	EPA 8021B	5-5-14	5-5-14	
m,p-Xylene	**ND**	0.049	EPA 8021B	5-5-14	5-5-14	
o-Xylene	**ND**	0.049	EPA 8021B	5-5-14	5-5-14	
Gasoline	**ND**	4.9	NWTPH-Gx	5-5-14	5-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*107*	*71-121*				
Client ID:	**L-PEX-72-6**					
Laboratory ID:	05-031-02					
Benzene	**ND**	0.020	EPA 8021B	5-5-14	5-5-14	
Toluene	**ND**	0.048	EPA 8021B	5-5-14	5-5-14	
Ethyl Benzene	**ND**	0.048	EPA 8021B	5-5-14	5-5-14	
m,p-Xylene	**ND**	0.048	EPA 8021B	5-5-14	5-5-14	
o-Xylene	**ND**	0.048	EPA 8021B	5-5-14	5-5-14	
Gasoline	**ND**	4.8	NWTPH-Gx	5-5-14	5-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*71-121*				
Client ID:	**L-PEX-73-6**					
Laboratory ID:	05-031-03					
Benzene	**ND**	0.020	EPA 8021B	5-5-14	5-5-14	
Toluene	**ND**	0.056	EPA 8021B	5-5-14	5-5-14	
Ethyl Benzene	**ND**	0.056	EPA 8021B	5-5-14	5-5-14	
m,p-Xylene	**ND**	0.056	EPA 8021B	5-5-14	5-5-14	
o-Xylene	**ND**	0.056	EPA 8021B	5-5-14	5-5-14	
Gasoline	**ND**	5.6	NWTPH-Gx	5-5-14	5-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*71-121*				

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-031
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-74-5**					
Laboratory ID:	05-031-04					
Benzene	**ND**	0.020	EPA 8021B	5-5-14	5-5-14	
Toluene	**ND**	0.060	EPA 8021B	5-5-14	5-5-14	
Ethyl Benzene	**ND**	0.060	EPA 8021B	5-5-14	5-5-14	
m,p-Xylene	**ND**	0.060	EPA 8021B	5-5-14	5-5-14	
o-Xylene	**ND**	0.060	EPA 8021B	5-5-14	5-5-14	
Gasoline	**9.8**	6.0	NWTPH-Gx	5-5-14	5-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*109*	*71-121*				
Client ID:	**L-PEX-75-7**					
Laboratory ID:	05-031-05					
Benzene	**ND**	0.020	EPA 8021B	5-5-14	5-5-14	
Toluene	**ND**	0.090	EPA 8021B	5-5-14	5-5-14	
Ethyl Benzene	**ND**	0.090	EPA 8021B	5-5-14	5-5-14	
m,p-Xylene	**ND**	0.090	EPA 8021B	5-5-14	5-5-14	
o-Xylene	**ND**	0.090	EPA 8021B	5-5-14	5-5-14	
Gasoline	**ND**	9.0	NWTPH-Gx	5-5-14	5-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*109*	*71-121*				
Client ID:	**L-PEX-76-7**					
Laboratory ID:	05-031-06					
Benzene	**ND**	0.072	EPA 8021B	5-5-14	5-5-14	
Toluene	**ND**	0.36	EPA 8021B	5-5-14	5-5-14	
Ethyl Benzene	**ND**	0.36	EPA 8021B	5-5-14	5-5-14	
m,p-Xylene	**1.2**	0.36	EPA 8021B	5-5-14	5-5-14	
o-Xylene	**ND**	0.36	EPA 8021B	5-5-14	5-5-14	
Gasoline	**130**	36	NWTPH-Gx	5-5-14	5-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*110*	*71-121*				

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-031
Project: 2007-098-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0505S1					
Benzene	**ND**	0.020	EPA 8021B	5-5-14	5-5-14	
Toluene	**ND**	0.050	EPA 8021B	5-5-14	5-5-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	5-5-14	5-5-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	5-5-14	5-5-14	
o-Xylene	**ND**	0.050	EPA 8021B	5-5-14	5-5-14	
Gasoline	**ND**	5.0	NWTPH-Gx	5-5-14	5-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-031-01										
	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						*107*	*112*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0505S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.897**	**0.914**	1.00	1.00		**90**	**91**	73-121	2	10	
Toluene	**0.897**	**0.911**	1.00	1.00		**90**	**91**	75-124	2	10	
Ethyl Benzene	**0.890**	**0.898**	1.00	1.00		**89**	**90**	75-125	1	9	
m,p-Xylene	**0.892**	**0.907**	1.00	1.00		**89**	**91**	75-126	2	9	
o-Xylene	**0.872**	**0.888**	1.00	1.00		**87**	**89**	74-123	2	8	
Surrogate:											
Fluorobenzene						*84*	*86*	*71-121*			

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Samples Submitted: May 5, 2014
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NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-71-6**					
Laboratory ID:	05-031-01					
Diesel Range Organics	**ND**	29	NWTPH-Dx	5-5-14	5-5-14	X1
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	5-5-14	5-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				
Client ID:	**L-PEX-72-6**					
Laboratory ID:	05-031-02					
Diesel Range Organics	**ND**	30	NWTPH-Dx	5-5-14	5-5-14	X1
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	5-5-14	5-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*100*	*50-150*				
Client ID:	**L-PEX-73-6**					
Laboratory ID:	05-031-03					
Diesel Range Organics	**ND**	30	NWTPH-Dx	5-5-14	5-5-14	X1
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	5-5-14	5-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*96*	*50-150*				
Client ID:	**L-PEX-74-5**					
Laboratory ID:	05-031-04					
Diesel Range Organics	**ND**	160	NWTPH-Dx	5-5-14	5-5-14	X1
Lube Oil	**800**	330	NWTPH-Dx	5-5-14	5-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				
Client ID:	**L-PEX-75-7**					
Laboratory ID:	05-031-05					
Diesel Range Organics	**ND**	36	NWTPH-Dx	5-5-14	5-5-14	X1
Lube Oil Range Organics	**ND**	71	NWTPH-Dx	5-5-14	5-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*87*	*50-150*				
Client ID:	**L-PEX-76-7**					
Laboratory ID:	05-031-06					
Diesel Range Organics	**ND**	100	NWTPH-Dx	5-5-14	5-5-14	X1
Lube Oil Range Organics	**ND**	200	NWTPH-Dx	5-5-14	5-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
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Project: 2007-098-994

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0505S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	5-5-14	5-5-14	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	5-5-14	5-5-14	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*99*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	05-031-01									
	ORIG	DUP								
Diesel Range	**ND**	**ND**	NA	NA		NA	NA	NA	NA	X1
Lube Oil Range	**ND**	**ND**	NA	NA		NA	NA	NA	NA	X1
Surrogate:										
o-Terphenyl						*85 99*	*50-150*			

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-031
Project: 2007-098-994

cPAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-73-6**					
Laboratory ID:	05-031-03					
Benzo[a]anthracene	**ND**	0.0079	EPA 8270D/SIM	5-5-14	5-5-14	
Chrysene	**ND**	0.0079	EPA 8270D/SIM	5-5-14	5-5-14	
Benzo[b]fluoranthene	**ND**	0.0079	EPA 8270D/SIM	5-5-14	5-5-14	
Benzo(j,k)fluoranthene	**ND**	0.0079	EPA 8270D/SIM	5-5-14	5-5-14	
Benzo[a]pyrene	**ND**	0.0079	EPA 8270D/SIM	5-5-14	5-5-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0079	EPA 8270D/SIM	5-5-14	5-5-14	
Dibenz[a,h]anthracene	**ND**	0.0079	EPA 8270D/SIM	5-5-14	5-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*81*	*43 - 116*				
Pyrene-d10	*90*	*33 - 124*				
Terphenyl-d14	*82*	*38 - 125*				

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
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Project: 2007-098-994

cPAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-76-7**					
Laboratory ID:	05-031-06					
Benzo[a]anthracene	**ND**	0.027	EPA 8270D/SIM	5-5-14	5-5-14	
Chrysene	**ND**	0.027	EPA 8270D/SIM	5-5-14	5-5-14	
Benzo[b]fluoranthene	**ND**	0.027	EPA 8270D/SIM	5-5-14	5-5-14	
Benzo(j,k)fluoranthene	**ND**	0.027	EPA 8270D/SIM	5-5-14	5-5-14	
Benzo[a]pyrene	**ND**	0.027	EPA 8270D/SIM	5-5-14	5-5-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.027	EPA 8270D/SIM	5-5-14	5-5-14	
Dibenz[a,h]anthracene	**ND**	0.027	EPA 8270D/SIM	5-5-14	5-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*67*	*43 - 116*				
Pyrene-d10	*70*	*33 - 124*				
Terphenyl-d14	*81*	*38 - 125*				

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
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Project: 2007-098-994

cPAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0505S1					
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	5-5-14	5-5-14	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	5-5-14	5-5-14	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	5-5-14	5-5-14	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	5-5-14	5-5-14	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	5-5-14	5-5-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270D/SIM	5-5-14	5-5-14	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	5-5-14	5-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*91*	*43 - 116*				
Pyrene-d10	*104*	*33 - 124*				
Terphenyl-d14	*98*	*38 - 125*				

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-031
Project: 2007-098-994

cPAHs EPA 8270D/SIM
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:	05-031-03										
	MS	MSD	MS	MSD		MS	MSD				
Benzo[a]anthracene	**0.0728**	**0.0681**	0.0833	0.0833	ND	87	82	33 - 123	7	26	
Chrysene	**0.0729**	**0.0738**	0.0833	0.0833	ND	88	89	35 - 123	1	25	
Benzo[b]fluoranthene	**0.0647**	**0.0619**	0.0833	0.0833	ND	78	74	30 - 125	4	28	
Benzo(j,k)fluoranthene	**0.0875**	**0.0866**	0.0833	0.0833	ND	105	104	31 - 122	1	30	
Benzo[a]pyrene	**0.0842**	**0.0828**	0.0833	0.0833	ND	101	99	29 - 125	2	28	
Indeno(1,2,3-c,d)pyrene	**0.0720**	**0.0707**	0.0833	0.0833	ND	86	85	28 - 125	2	27	
Dibenz[a,h]anthracene	**0.0717**	**0.0702**	0.0833	0.0833	ND	86	84	32 - 124	2	27	
Surrogate:											
2-Fluorobiphenyl						*86*	*84*	*43 - 116*			
Pyrene-d10						*94*	*93*	*33 - 124*			
Terphenyl-d14						*85*	*84*	*38 - 125*			

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-031
Project: 2007-098-994

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	05-031-01					
Client ID:	**L-PEX-71-6**					
Lead	**ND**	5.8	6010C	5-5-14	5-5-14	
Lab ID:	05-031-02					
Client ID:	**L-PEX-72-6**					
Lead	**ND**	5.9	6010C	5-5-14	5-5-14	
Lab ID:	05-031-03					
Client ID:	**L-PEX-73-6**					
Lead	**ND**	5.9	6010C	5-5-14	5-5-14	
Lab ID:	05-031-04					
Client ID:	**L-PEX-74-5**					
Lead	**67**	6.5	6010C	5-5-14	5-5-14	
Lab ID:	05-031-05					
Client ID:	**L-PEX-75-7**					
Lead	**29**	7.1	6010C	5-5-14	5-5-14	
Lab ID:	05-031-06					
Client ID:	**L-PEX-76-7**					
Lead	**ND**	20	6010C	5-5-14	5-5-14	

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-031
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 5-5-14
Date Analyzed: 5-5-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0505SM2

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-031
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 5-5-14
Date Analyzed: 5-5-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 05-031-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**5.90**	NA	5.0	

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-031
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 5-5-14
Date Analyzed: 5-5-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 05-031-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**274**	109	**267**	107	2	

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-031
Project: 2007-098-994

% MOISTURE

Date Analyzed: 5-5-14

Client ID	Lab ID	% Moisture
L-PEX-71-6	05-031-01	14
L-PEX-72-6	05-031-02	15
L-PEX-73-6	05-031-03	15
L-PEX-74-5	05-031-04	24
L-PEX-75-7	05-031-05	30
L-PEX-76-7	05-031-06	75

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

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

May 7, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1405-032

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on May 5, 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: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-032
Project: 2007-098-994

Case Narrative

Samples were collected on May 5, 2014 and received by the laboratory on May 5, 2014. 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: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-032
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-77-7**					
Laboratory ID:	05-032-01					
Benzene	**ND**	0.020	EPA 8021B	5-5-14	5-5-14	
Toluene	**ND**	0.062	EPA 8021B	5-5-14	5-5-14	
Ethyl Benzene	**ND**	0.062	EPA 8021B	5-5-14	5-5-14	
m,p-Xylene	**ND**	0.062	EPA 8021B	5-5-14	5-5-14	
o-Xylene	**ND**	0.062	EPA 8021B	5-5-14	5-5-14	
Gasoline	**ND**	6.2	NWTPH-Gx	5-5-14	5-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*110*	*71-121*				
Client ID:	**L-PEX-78-10**					
Laboratory ID:	05-032-02					
Benzene	**ND**	0.020	EPA 8021B	5-5-14	5-5-14	
Toluene	**ND**	0.067	EPA 8021B	5-5-14	5-5-14	
Ethyl Benzene	**ND**	0.067	EPA 8021B	5-5-14	5-5-14	
m,p-Xylene	**ND**	0.067	EPA 8021B	5-5-14	5-5-14	
o-Xylene	**ND**	0.067	EPA 8021B	5-5-14	5-5-14	
Gasoline	**ND**	6.7	NWTPH-Gx	5-5-14	5-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*118*	*71-121*				

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-032
Project: 2007-098-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0505S1					
Benzene	**ND**	0.020	EPA 8021B	5-5-14	5-5-14	
Toluene	**ND**	0.050	EPA 8021B	5-5-14	5-5-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	5-5-14	5-5-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	5-5-14	5-5-14	
o-Xylene	**ND**	0.050	EPA 8021B	5-5-14	5-5-14	
Gasoline	**ND**	5.0	NWTPH-Gx	5-5-14	5-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-031-01										
	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						*107*	*112*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0505S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.897**	**0.914**	1.00	1.00		**90**	**91**	73-121	2	10	
Toluene	**0.897**	**0.911**	1.00	1.00		**90**	**91**	75-124	2	10	
Ethyl Benzene	**0.890**	**0.898**	1.00	1.00		**89**	**90**	75-125	1	9	
m,p-Xylene	**0.892**	**0.907**	1.00	1.00		**89**	**91**	75-126	2	9	
o-Xylene	**0.872**	**0.888**	1.00	1.00		**87**	**89**	74-123	2	8	
Surrogate:											
Fluorobenzene						*84*	*86*	*71-121*			

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-032
Project: 2007-098-994

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-77-7**					
Laboratory ID:	05-032-01					
Diesel Range Organics	**ND**	32	NWTPH-Dx	5-5-14	5-5-14	
Lube Oil Range Organics	**ND**	63	NWTPH-Dx	5-5-14	5-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*75*	*50-150*				
Client ID:	**L-PEX-78-10**					
Laboratory ID:	05-032-02					
Diesel Range Organics	**ND**	31	NWTPH-Dx	5-5-14	5-5-14	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	5-5-14	5-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*84*	*50-150*				

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-032
Project: 2007-098-994

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0505S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	5-5-14	5-5-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	5-5-14	5-5-14	
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:	05-031-01										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	X1
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	X1
Surrogate:											
o-Terphenyl						*85*	*99*	*50-150*			

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-032
Project: 2007-098-994

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	05-032-01					
Client ID:	**L-PEX-77-7**					
Lead	**ND**	6.3	6010C	5-5-14	5-5-14	
Lab ID:	05-032-02					
Client ID:	**L-PEX-78-10**					
Lead	**ND**	6.1	6010C	5-5-14	5-5-14	

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-032
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 5-5-14
Date Analyzed: 5-5-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0505SM2

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-032
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 5-5-14
Date Analyzed: 5-5-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 05-031-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**5.90**	NA	5.0	

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-032
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 5-5-14
Date Analyzed: 5-5-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 05-031-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**274**	109	**267**	107	2	

Date of Report: May 7, 2014
Samples Submitted: May 5, 2014
Laboratory Reference: 1405-032
Project: 2007-098-994

% MOISTURE

Date Analyzed: 5-5-14

Client ID	Lab ID	% Moisture
L-PEX-77-7	05-032-01	21
L-PEX-78-10	05-032-02	18

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

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

May 12, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1405-065

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on May 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: May 12, 2014
Samples Submitted: May 8, 2014
Laboratory Reference: 1405-065
Project: 2007-098-994

Case Narrative

Samples were collected on May 8, 2014 and received by the laboratory on May 8, 2014. 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/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^oC and -20^oC until extraction or analysis.

Sample L-PEX-79-6 was extracted from a 4-ounce jar for analysis; some loss of volatiles may have occurred.

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: May 12, 2014
Samples Submitted: May 8, 2014
Laboratory Reference: 1405-065
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-79-6**					
Laboratory ID:	05-065-01					
Benzene	**0.26**	0.027	EPA 8021B	5-9-14	5-9-14	
Toluene	**0.21**	0.14	EPA 8021B	5-9-14	5-9-14	
Ethyl Benzene	**0.40**	0.14	EPA 8021B	5-9-14	5-9-14	
m,p-Xylene	**2.9**	0.14	EPA 8021B	5-9-14	5-9-14	
o-Xylene	**ND**	0.14	EPA 8021B	5-9-14	5-9-14	
Gasoline	**730**	14	NWTPH-Gx	5-9-14	5-9-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*71-121*				
Client ID:	**L-PEX-80-8**					
Laboratory ID:	05-065-02					
Benzene	**ND**	0.020	EPA 8021B	5-8-14	5-8-14	
Toluene	**ND**	0.076	EPA 8021B	5-8-14	5-8-14	
Ethyl Benzene	**ND**	0.076	EPA 8021B	5-8-14	5-8-14	
m,p-Xylene	**ND**	0.076	EPA 8021B	5-8-14	5-8-14	
o-Xylene	**ND**	0.076	EPA 8021B	5-8-14	5-8-14	
Gasoline	**ND**	7.6	NWTPH-Gx	5-8-14	5-8-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*84*	*71-121*				
Client ID:	**L-PEX-81-6**					
Laboratory ID:	05-065-03					
Benzene	**ND**	0.020	EPA 8021B	5-8-14	5-8-14	
Toluene	**ND**	0.066	EPA 8021B	5-8-14	5-8-14	
Ethyl Benzene	**ND**	0.066	EPA 8021B	5-8-14	5-8-14	
m,p-Xylene	**ND**	0.066	EPA 8021B	5-8-14	5-8-14	
o-Xylene	**ND**	0.066	EPA 8021B	5-8-14	5-8-14	
Gasoline	**ND**	6.6	NWTPH-Gx	5-8-14	5-8-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*80*	*71-121*				

Date of Report: May 12, 2014
Samples Submitted: May 8, 2014
Laboratory Reference: 1405-065
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-82-9**					
Laboratory ID:	05-065-04					
Benzene	**ND**	0.020	EPA 8021B	5-8-14	5-8-14	
Toluene	**ND**	0.091	EPA 8021B	5-8-14	5-8-14	
Ethyl Benzene	**ND**	0.091	EPA 8021B	5-8-14	5-8-14	
m,p-Xylene	**ND**	0.091	EPA 8021B	5-8-14	5-8-14	
o-Xylene	**ND**	0.091	EPA 8021B	5-8-14	5-8-14	
Gasoline	**ND**	9.1	NWTPH-Gx	5-8-14	5-8-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*71-121*				
Client ID:	**L-PEX-83-6**					
Laboratory ID:	05-065-05					
Benzene	**ND**	0.020	EPA 8021B	5-8-14	5-9-14	
Toluene	**ND**	0.065	EPA 8021B	5-8-14	5-9-14	
Ethyl Benzene	**ND**	0.065	EPA 8021B	5-8-14	5-9-14	
m,p-Xylene	**ND**	0.065	EPA 8021B	5-8-14	5-9-14	
o-Xylene	**ND**	0.065	EPA 8021B	5-8-14	5-9-14	
Gasoline	**ND**	6.5	NWTPH-Gx	5-8-14	5-9-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*71-121*				

Date of Report: May 12, 2014
Samples Submitted: May 8, 2014
Laboratory Reference: 1405-065
Project: 2007-098-994

NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0508S1					
Benzene	**ND**	0.020	EPA 8021B	5-8-14	5-8-14	
Toluene	**ND**	0.050	EPA 8021B	5-8-14	5-8-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	5-8-14	5-8-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	5-8-14	5-8-14	
o-Xylene	**ND**	0.050	EPA 8021B	5-8-14	5-8-14	
Gasoline	**ND**	5.0	NWTPH-Gx	5-8-14	5-8-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*79*	*71-121*				
Laboratory ID:	MB0509S1					
Benzene	**ND**	0.020	EPA 8021B	5-9-14	5-9-14	
Toluene	**ND**	0.050	EPA 8021B	5-9-14	5-9-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	5-9-14	5-9-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	5-9-14	5-9-14	
o-Xylene	**ND**	0.050	EPA 8021B	5-9-14	5-9-14	
Gasoline	**ND**	5.0	NWTPH-Gx	5-9-14	5-9-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*81*	*71-121*				

Date of Report: May 12, 2014
Samples Submitted: May 8, 2014
Laboratory Reference: 1405-065
Project: 2007-098-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-065-02										
	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						*84*	*80*	*71-121*			
Laboratory ID:	05-065-01										
	ORIG	DUP									
Benzene	**0.219**	**0.201**	NA	NA		NA		NA	9	30	
Toluene	**0.172**	**0.138**	NA	NA		NA		NA	22	30	
Ethyl Benzene	**0.334**	**0.307**	NA	NA		NA		NA	8	30	
m,p-Xylene	**2.40**	**2.45**	NA	NA		NA		NA	2	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**606**	**561**	NA	NA		NA		NA	8	30	
Surrogate:											
Fluorobenzene						*93*	*78*	*71-121*			
SPIKE BLANKS											
Laboratory ID:	SB0508S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.863**	**0.894**	1.00	1.00		**86**	**89**	73-121	4	10	
Toluene	**0.858**	**0.891**	1.00	1.00		**86**	**89**	75-124	4	10	
Ethyl Benzene	**0.861**	**0.895**	1.00	1.00		**86**	**90**	75-125	4	9	
m,p-Xylene	**0.864**	**0.899**	1.00	1.00		**86**	**90**	75-126	4	9	
o-Xylene	**0.846**	**0.877**	1.00	1.00		**85**	**88**	74-123	4	8	
Surrogate:											
Fluorobenzene						*78*	*78*	*71-121*			
Laboratory ID:	SB0509S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.924**	**0.944**	1.00	1.00		**92**	**94**	73-121	2	10	
Toluene	**0.915**	**0.952**	1.00	1.00		**92**	**95**	75-124	4	10	
Ethyl Benzene	**0.938**	**0.951**	1.00	1.00		**94**	**95**	75-125	1	9	
m,p-Xylene	**0.942**	**0.950**	1.00	1.00		**94**	**95**	75-126	1	9	
o-Xylene	**0.899**	**0.943**	1.00	1.00		**90**	**94**	74-123	5	8	
Surrogate:											
Fluorobenzene						*83*	*85*	*71-121*			

Date of Report: May 12, 2014
Samples Submitted: May 8, 2014
Laboratory Reference: 1405-065
Project: 2007-098-994

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-79-6**					
Laboratory ID:	05-065-01					
Diesel Range Organics	**ND**	1100	NWTPH-Dx	5-8-14	5-8-14	U1
Lube Oil	**65**	60	NWTPH-Dx	5-8-14	5-8-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**L-PEX-80-8**					
Laboratory ID:	05-065-02					
Diesel Range Organics	**ND**	32	NWTPH-Dx	5-8-14	5-8-14	
Lube Oil Range Organics	**ND**	65	NWTPH-Dx	5-8-14	5-8-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*97*	*50-150*				
Client ID:	**L-PEX-81-6**					
Laboratory ID:	05-065-03					
Diesel Range Organics	**ND**	30	NWTPH-Dx	5-8-14	5-8-14	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	5-8-14	5-8-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				
Client ID:	**L-PEX-82-9**					
Laboratory ID:	05-065-04					
Diesel Range Organics	**ND**	36	NWTPH-Dx	5-8-14	5-8-14	
Lube Oil Range Organics	**ND**	73	NWTPH-Dx	5-8-14	5-8-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*84*	*50-150*				
Client ID:	**L-PEX-83-6**					
Laboratory ID:	05-065-05					
Diesel Range Organics	**ND**	29	NWTPH-Dx	5-8-14	5-8-14	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	5-8-14	5-8-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				

Date of Report: May 12, 2014
Samples Submitted: May 8, 2014
Laboratory Reference: 1405-065
Project: 2007-098-994

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0508S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	5-8-14	5-8-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	5-8-14	5-8-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-065-01										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	U1
Lube Oil	**53.8**	**51.9**	NA	NA		NA		NA	4	NA	
Surrogate:											
o-Terphenyl						*88*	*85*	*50-150*			

Date of Report: May 12, 2014
Samples Submitted: May 8, 2014
Laboratory Reference: 1405-065
Project: 2007-098-994

cPAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-80-8**					
Laboratory ID:	05-065-02					
Benzo[a]anthracene	**ND**	0.0086	EPA 8270D/SIM	5-8-14	5-8-14	
Chrysene	**ND**	0.0086	EPA 8270D/SIM	5-8-14	5-8-14	
Benzo[b]fluoranthene	**ND**	0.0086	EPA 8270D/SIM	5-8-14	5-8-14	
Benzo(j,k)fluoranthene	**ND**	0.0086	EPA 8270D/SIM	5-8-14	5-8-14	
Benzo[a]pyrene	**ND**	0.0086	EPA 8270D/SIM	5-8-14	5-8-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0086	EPA 8270D/SIM	5-8-14	5-8-14	
Dibenz[a,h]anthracene	**ND**	0.0086	EPA 8270D/SIM	5-8-14	5-8-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*69*	*43 - 116*				
Pyrene-d10	*81*	*33 - 124*				
Terphenyl-d14	*82*	*38 - 125*				

Date of Report: May 12, 2014
Samples Submitted: May 8, 2014
Laboratory Reference: 1405-065
Project: 2007-098-994

cPAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0508S1					
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	5-8-14	5-8-14	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	5-8-14	5-8-14	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	5-8-14	5-8-14	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	5-8-14	5-8-14	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	5-8-14	5-8-14	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270D/SIM	5-8-14	5-8-14	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	5-8-14	5-8-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*81*	*43 - 116*				
Pyrene-d10	*93*	*33 - 124*				
Terphenyl-d14	*94*	*38 - 125*				

Date of Report: May 12, 2014
Samples Submitted: May 8, 2014
Laboratory Reference: 1405-065
Project: 2007-098-994

cPAHs EPA 8270D/SIM
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:	05-065-02										
	MS	MSD	MS	MSD		MS	MSD				
Benzo[a]anthracene	**0.0724**	**0.0722**	0.0833	0.0833	ND	87	87	33 - 123	0	26	
Chrysene	**0.0622**	**0.0610**	0.0833	0.0833	ND	75	73	35 - 123	2	25	
Benzo[b]fluoranthene	**0.0658**	**0.0653**	0.0833	0.0833	ND	79	78	30 - 125	1	28	
Benzo(j,k)fluoranthene	**0.0631**	**0.0628**	0.0833	0.0833	ND	76	75	31 - 122	0	30	
Benzo[a]pyrene	**0.0667**	**0.0656**	0.0833	0.0833	ND	80	79	29 - 125	2	28	
Indeno(1,2,3-c,d)pyrene	**0.0632**	**0.0627**	0.0833	0.0833	ND	76	75	28 - 125	1	27	
Dibenz[a,h]anthracene	**0.0605**	**0.0599**	0.0833	0.0833	ND	73	72	32 - 124	1	27	
Surrogate:											
2-Fluorobiphenyl						*75*	*71*	*43 - 116*			
Pyrene-d10						*85*	*83*	*33 - 124*			
Terphenyl-d14						*86*	*85*	*38 - 125*			

Date of Report: May 12, 2014
Samples Submitted: May 8, 2014
Laboratory Reference: 1405-065
Project: 2007-098-994

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	05-065-01					
Client ID:	**L-PEX-79-6**					
Lead	**ND**	6.0	6010C	5-8-14	5-8-14	
Lab ID:	05-065-02					
Client ID:	**L-PEX-80-8**					
Lead	**ND**	6.5	6010C	5-8-14	5-8-14	
Lab ID:	05-065-03					
Client ID:	**L-PEX-81-6**					
Lead	**ND**	6.0	6010C	5-8-14	5-8-14	
Lab ID:	05-065-04					
Client ID:	**L-PEX-82-9**					
Lead	**ND**	7.3	6010C	5-8-14	5-8-14	
Lab ID:	05-065-05					
Client ID:	**L-PEX-83-6**					
Lead	**ND**	5.8	6010C	5-8-14	5-8-14	

Date of Report: May 12, 2014
Samples Submitted: May 8, 2014
Laboratory Reference: 1405-065
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 5-8-14
Date Analyzed: 5-8-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0508SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: May 12, 2014
Samples Submitted: May 8, 2014
Laboratory Reference: 1405-065
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 5-8-14
Date Analyzed: 5-8-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 05-065-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: May 12, 2014
Samples Submitted: May 8, 2014
Laboratory Reference: 1405-065
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 5-8-14
Date Analyzed: 5-8-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 05-065-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**239**	96	**236**	94	1	

Date of Report: May 12, 2014
Samples Submitted: May 8, 2014
Laboratory Reference: 1405-065
Project: 2007-098-994

% MOISTURE

Date Analyzed: 5-8-14

Client ID	Lab ID	% Moisture
L-PEX-79-6	05-065-01	17
L-PEX-80-8	05-065-02	23
L-PEX-81-6	05-065-03	17
L-PEX-82-9	05-065-04	31
L-PEX-83-6	05-065-05	14

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

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: 05-065

Company: HWA
Project Number: 2007-098-994
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: "

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) cPAH	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total ~~MTCA Metals~~ LWAO	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
1	L-P5a-79-6	5/8/14	1045	S	2		/		/										/			—
2	L-P5a-80-8		1050				/		/				X						/			—
3	L-P5a-81-6		1055				/		/										/			—
4	L-P5a-82-9		1100				/		/										/			—
5	L-P5a-83-6		1105				/		/										/			—

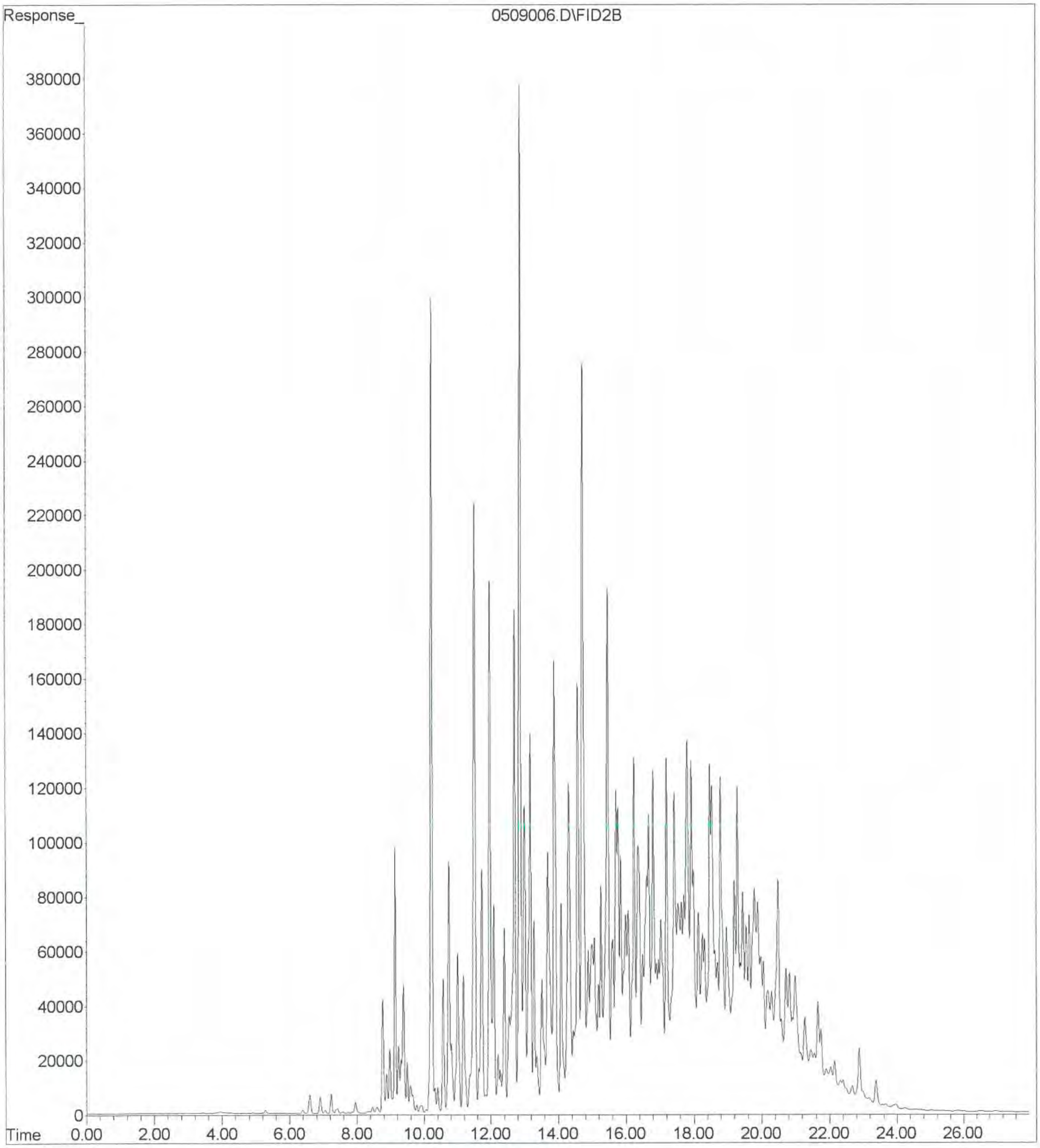
	Signature	Company	Date	Time
Relinquished	[signature]	HWA	5/8/14	1240
Received	[signature]	OSE	5/8/14	1240
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

```
File        : X:\BTEX\HOPE\DATA\H140509\0509006.D
Operator    :
Acquired    :  9 May 2014  12:52     using AcqMethod 140423B.M
Instrument  :   HOPE
Sample Name: 05-065-01t 1:100
Misc Info   : V2-34-07
Vial Number: 6
```



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File        : X:\BTEX\HOPE\DATA\H140508\0508009.D
Operator    :
Acquired    :  8 May 2014  16:10      using AcqMethod 140423B.M
Instrument  :   HOPE
Sample Name: 05-065-02s
Misc Info   : V2-34-07
Vial Number: 9
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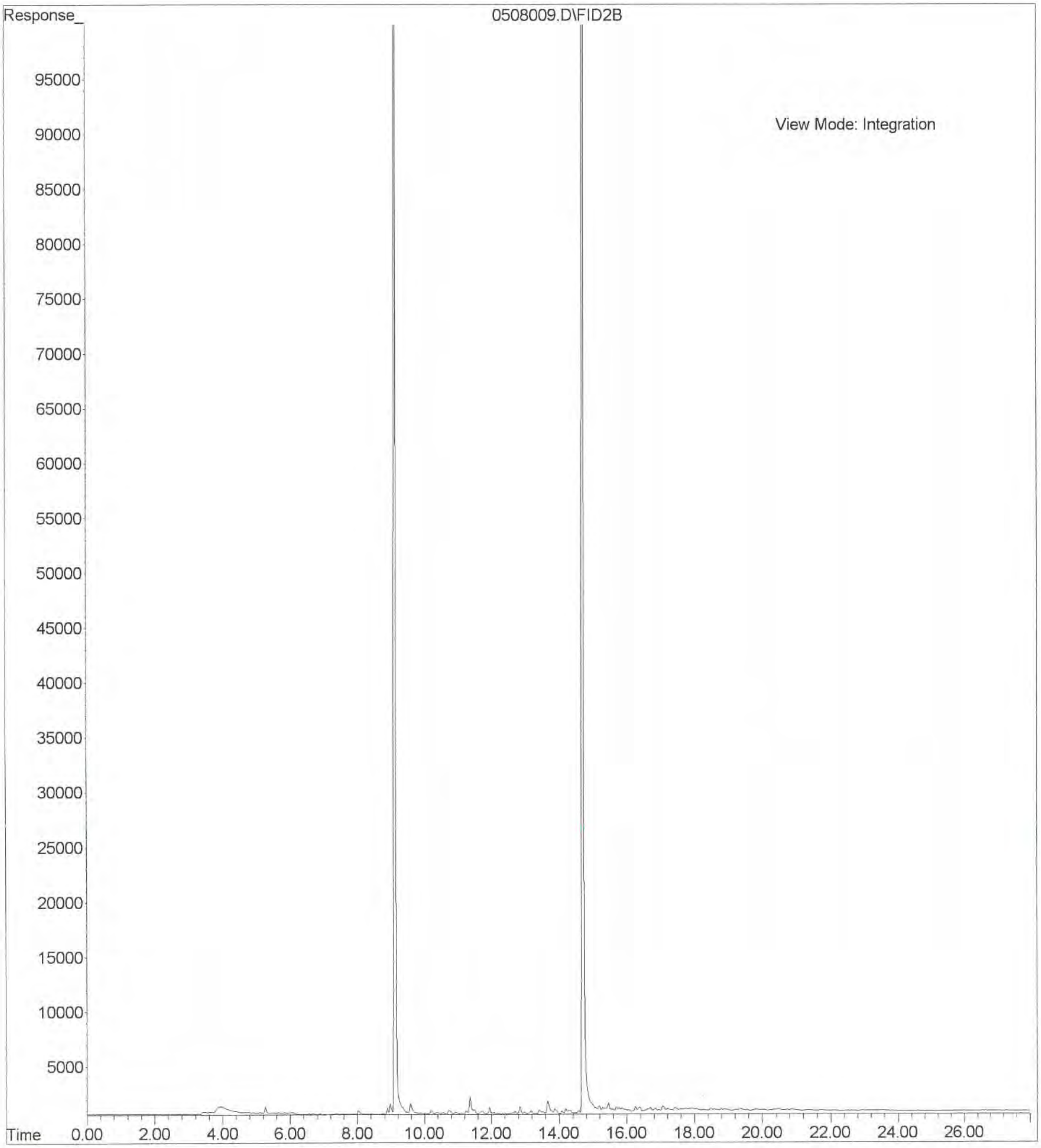

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File         : X:\BTEX\HOPE\DATA\H140508\0508011.D
Operator     :
Acquired     :  8 May 2014  17:18     using AcqMethod 140423B.M
Instrument :   HOPE
Sample Name: 05-065-03s
Misc Info  : V2-34-07
Vial Number: 11
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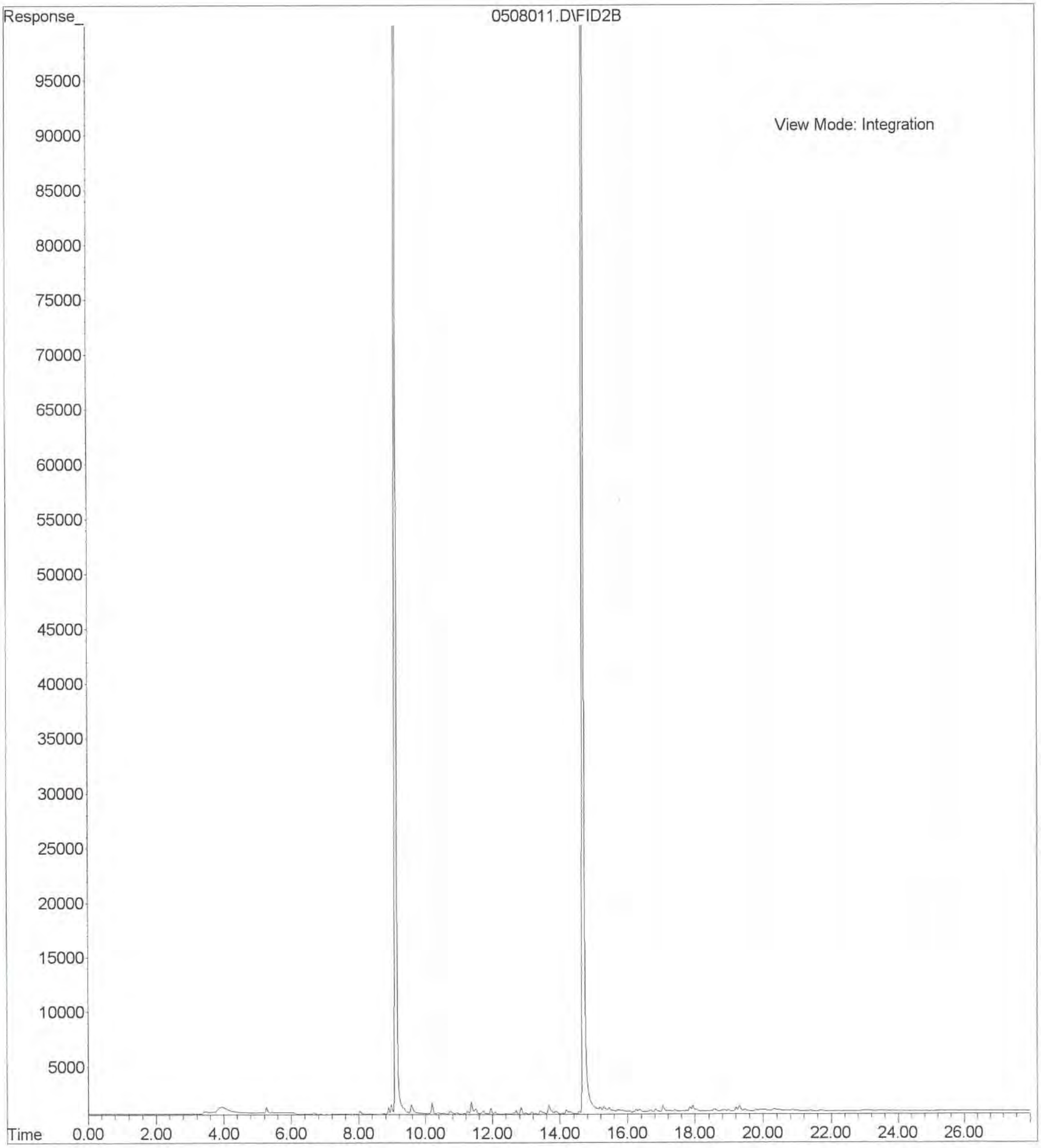

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File        : X:\BTEX\HOPE\DATA\H140508\0508012.D
Operator    :
Acquired    :  8 May 2014  17:52     using AcqMethod 140423B.M
Instrument  :   HOPE
Sample Name: 05-065-04s
Misc Info   : V2-34-07
Vial Number: 12
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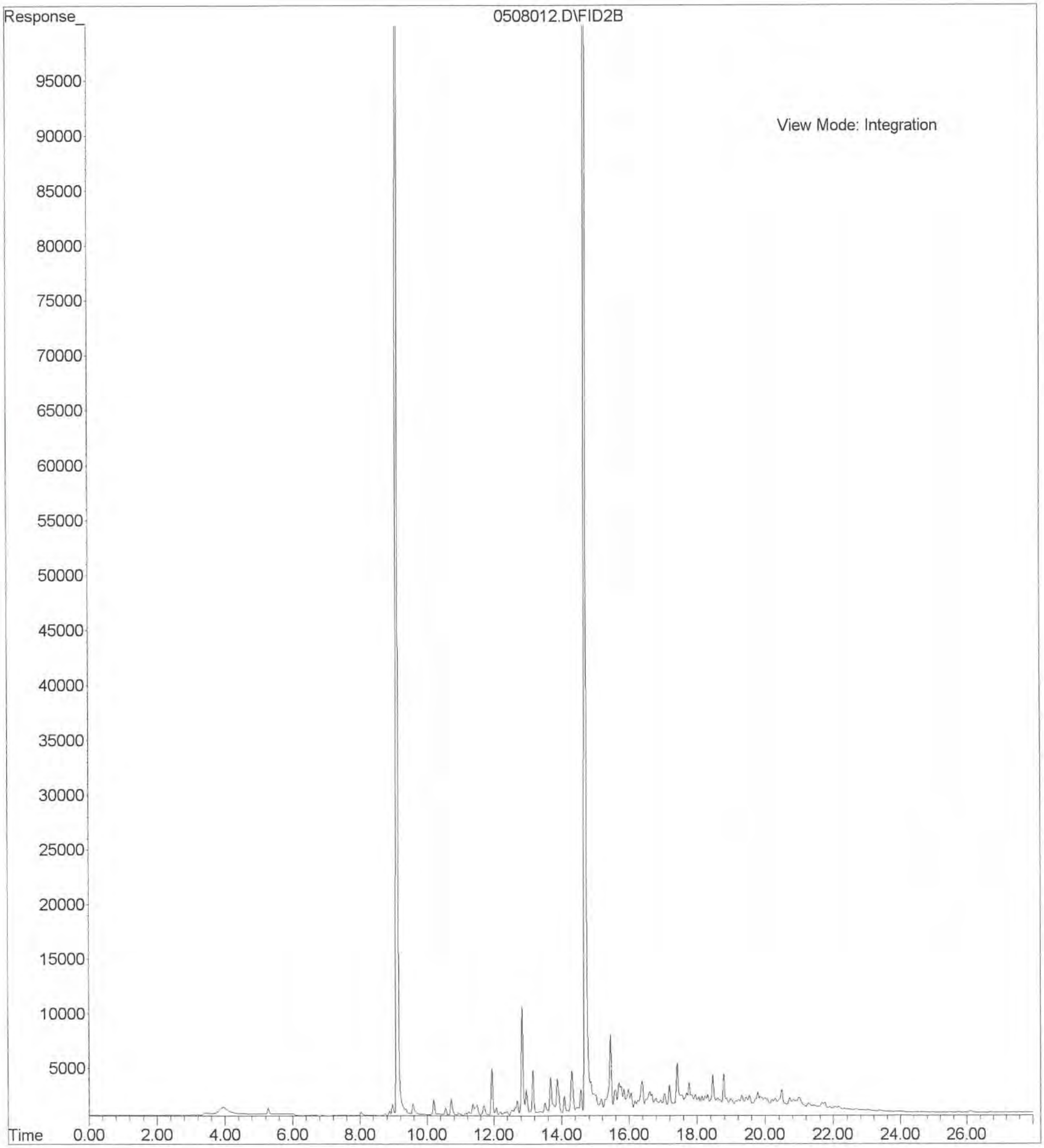
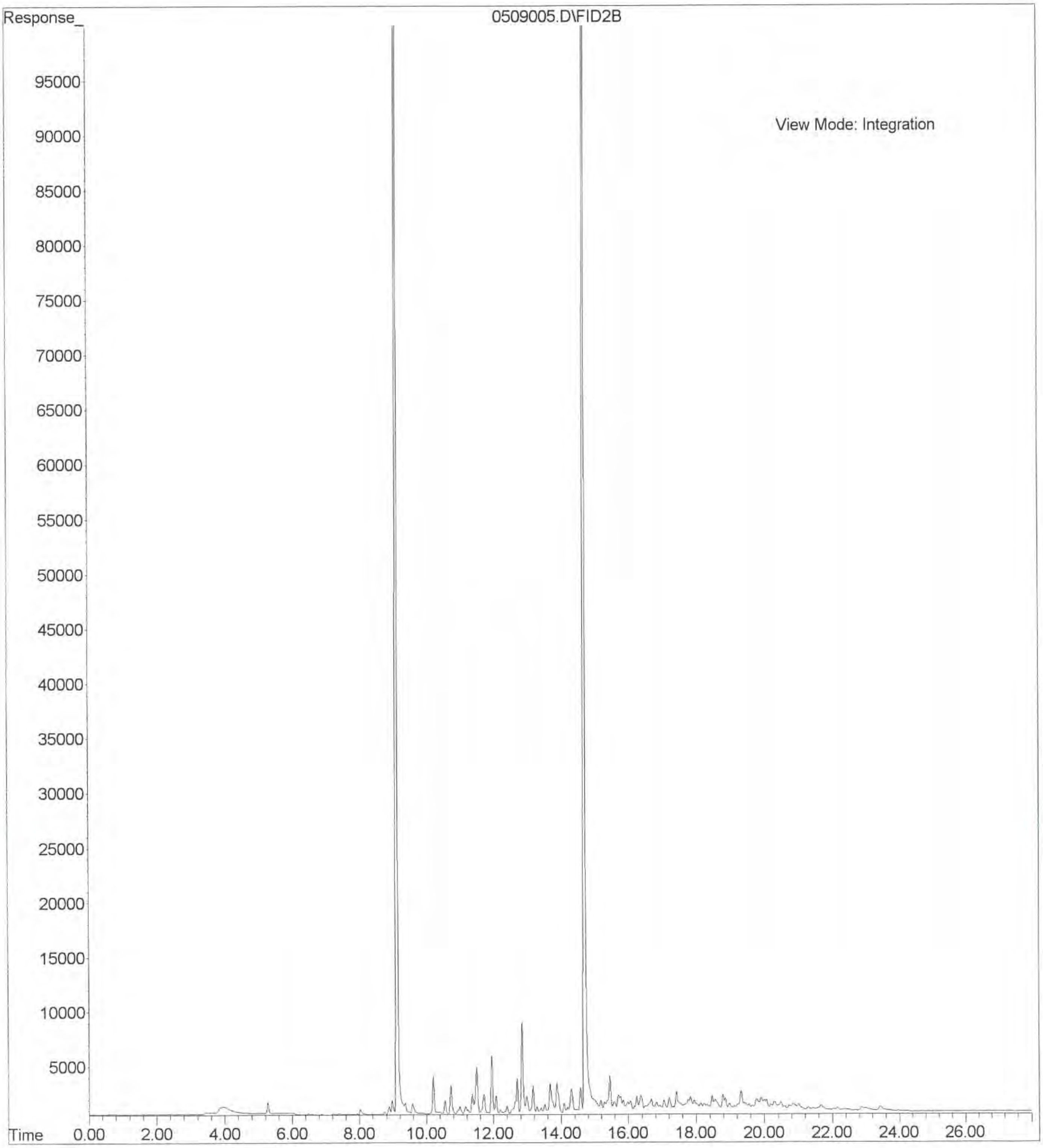
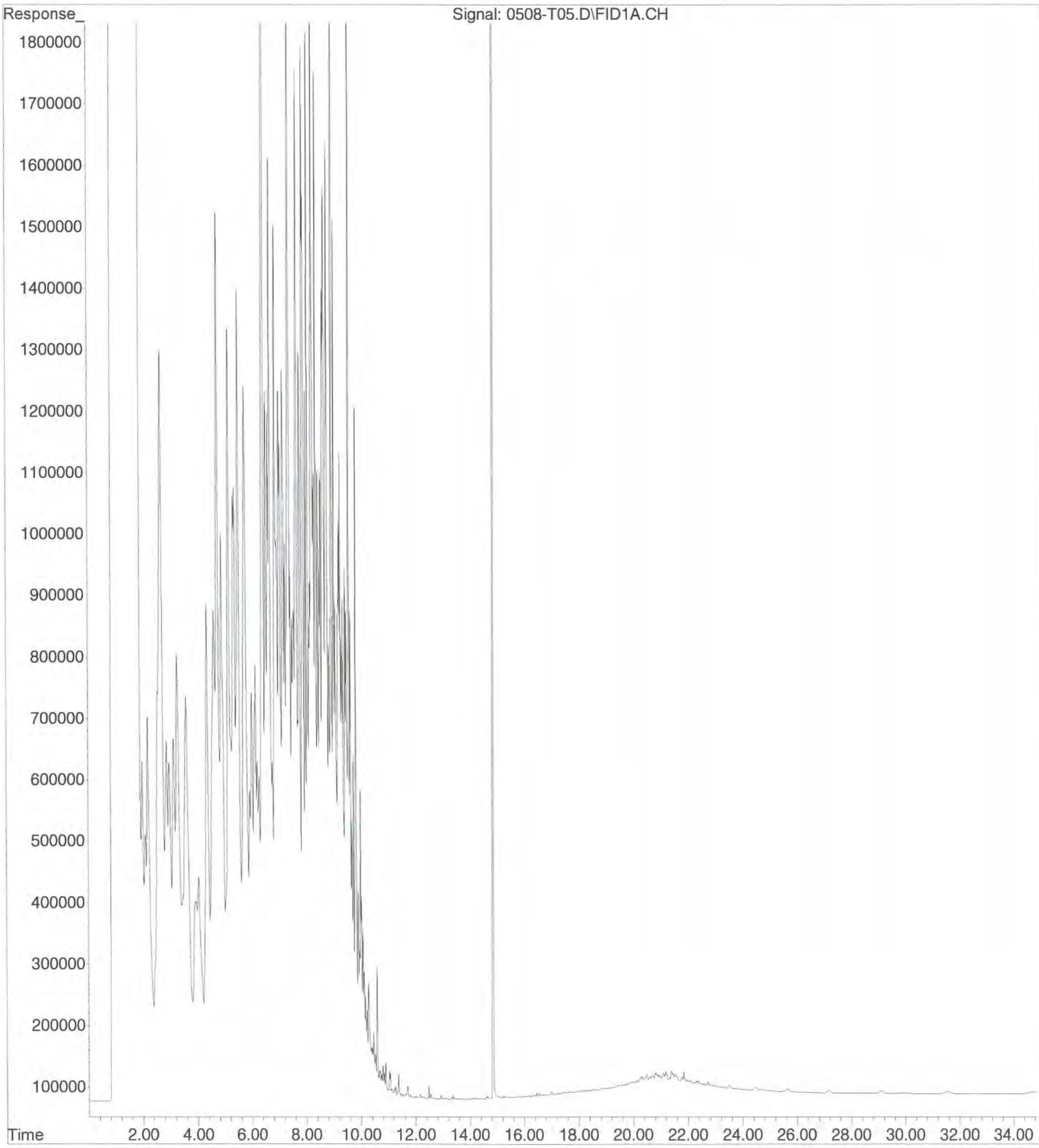


File   : X:\BTEX\HOPE\DATA\H140509\0509005.D
Operator   :
Acquired   : 9 May 2014 12:11   using AcqMethod 140423B.M
Instrument :   HOPE
Sample Name: 05-065-05s RR
Misc Info   : V2-34-07
Vial Number: 5



File   :X:\DIESELS\TERI\DATA\T140508\0508-T05.D
Operator   : ZT
Acquired   : 08 May 2014 14:33   using AcqMethod T140401F.M
Instrument :   Teri
Sample Name: 05-065-01
Misc Info :
Vial Number: 5



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File        :X:\DIESELS\TERI\DATA\T140508.SEC\0508-T54.D
Operator    : ZT
Acquired    : 08 May 2014  13:51      using AcqMethod T140401F.M
Instrument  :   Teri
Sample Name: 05-065-02
Misc Info   :
Vial Number: 54
```

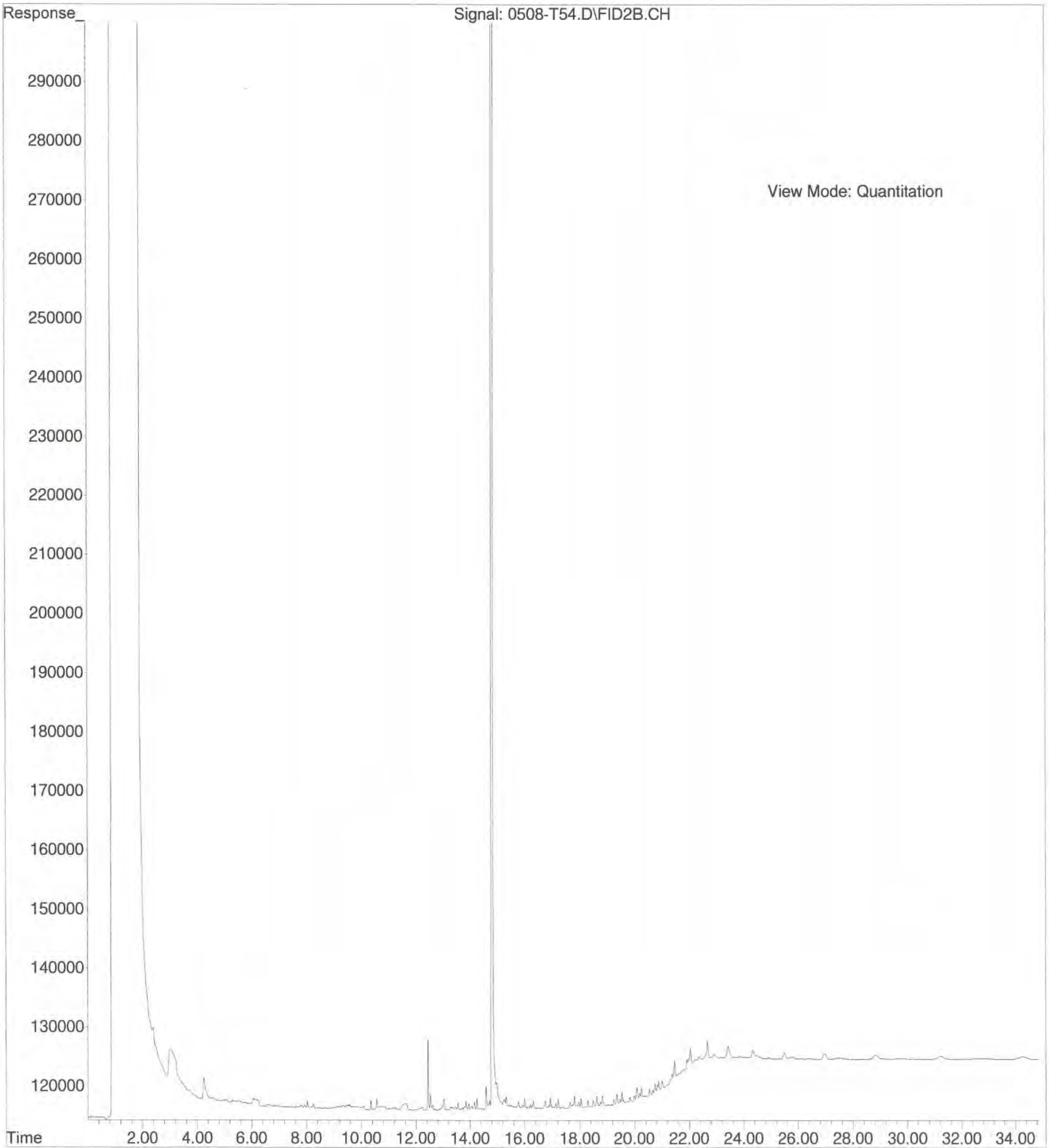

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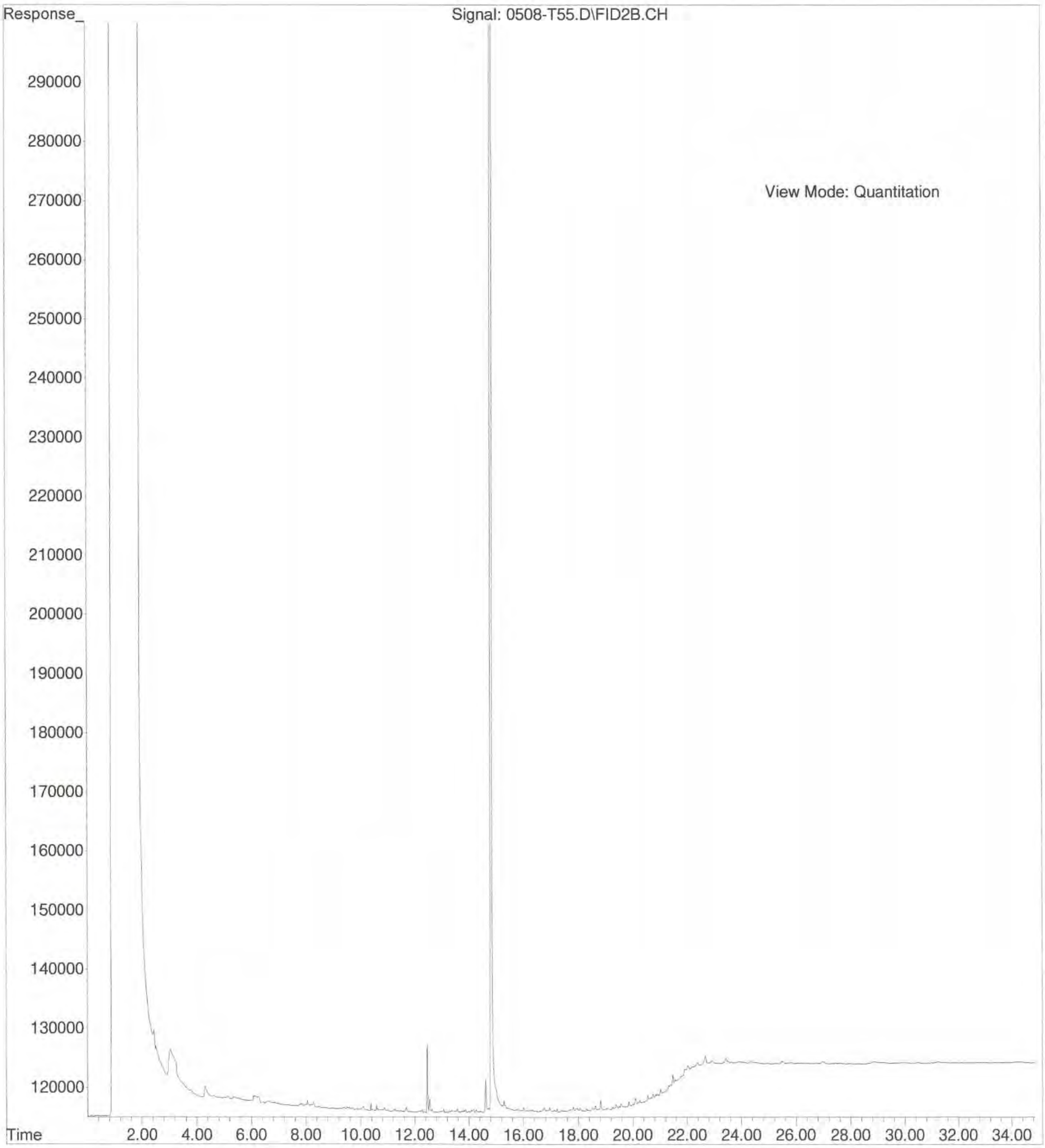
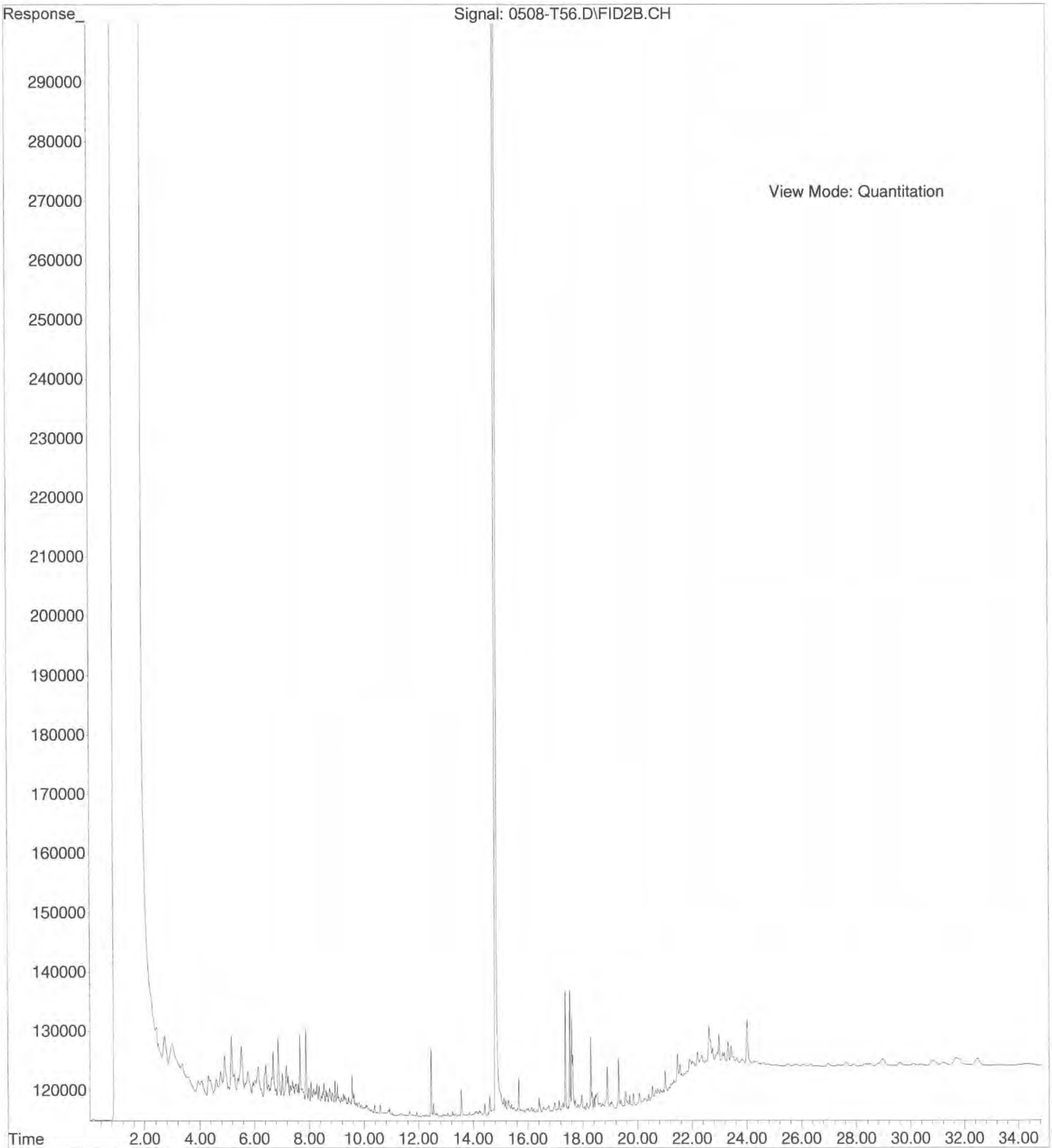
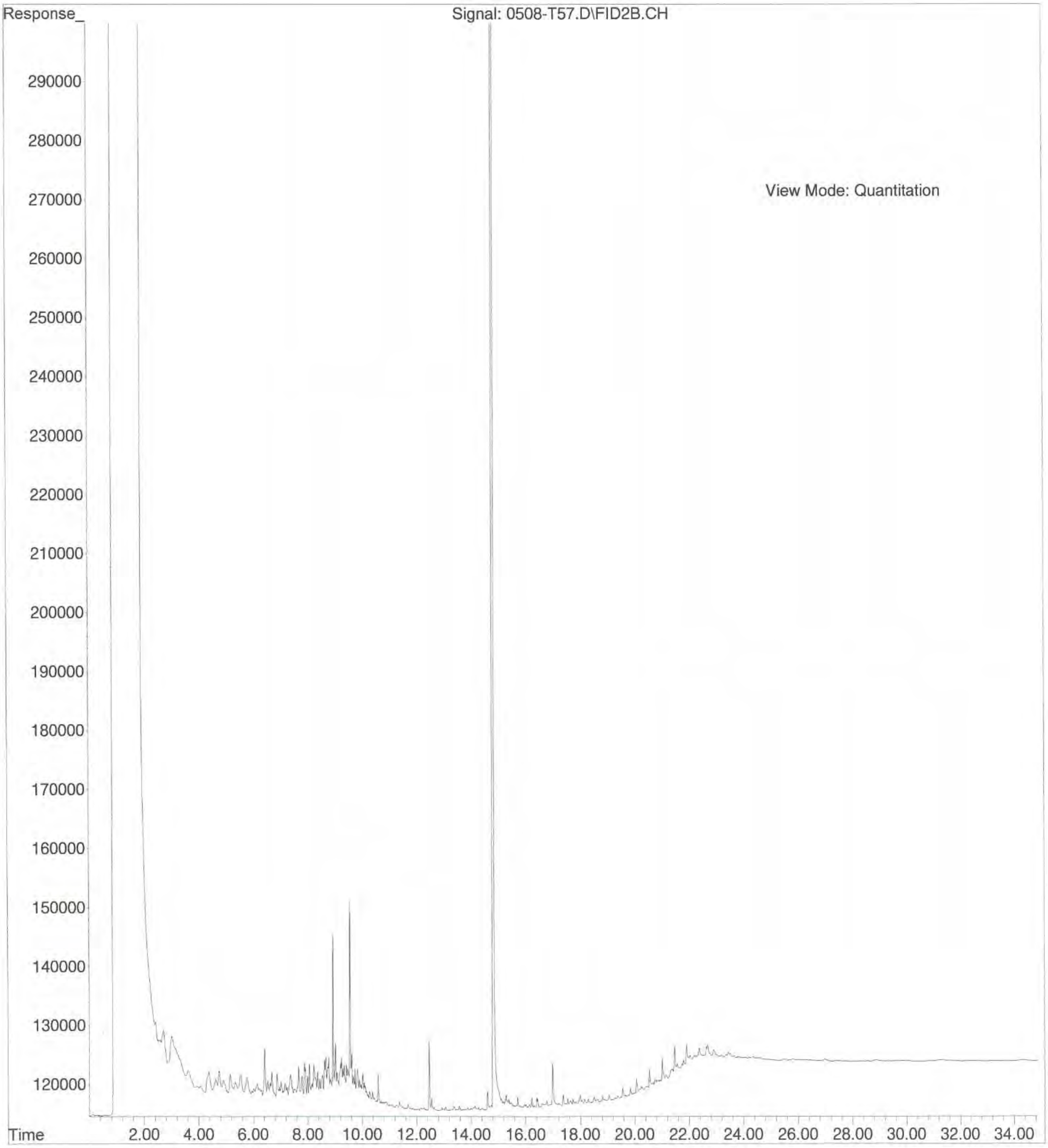
Operator    : ZT
Acquired    : 08 May 2014  14:33     using AcqMethod T140401F.M
Instrument :   Teri
Sample Name: 05-065-03
Misc Info  :
Vial Number: 55
```



```
File         :X:\DIESELS\TERI\DATA\T140508.SEC\0508-T56.D
Operator     : ZT
Acquired     : 08 May 2014  15:16     using AcqMethod T140401F.M
Instrument :   Teri
Sample Name: 05-065-04
Misc Info  :
Vial Number: 56
```



File   :X:\DIESELS\TERI\DATA\T140508.SEC\0508-T57.D
Operator   : ZT
Acquired   : 08 May 2014 15:59   using AcqMethod T140401F.M
Instrument :   Teri
Sample Name: 05-065-05
Misc Info :
Vial Number: 57



OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

May 15, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1405-111

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on May 14, 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: May 15, 2014
Samples Submitted: May 14, 2014
Laboratory Reference: 1405-111
Project: 2007-098-994

Case Narrative

Samples were collected on May 14, 2014 and received by the laboratory on May 14, 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 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: May 15, 2014
Samples Submitted: May 14, 2014
Laboratory Reference: 1405-111
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-84-6**					
Laboratory ID:	05-111-01					
Benzene	**ND**	0.020	EPA 8021B	5-14-14	5-14-14	
Toluene	**ND**	0.060	EPA 8021B	5-14-14	5-14-14	
Ethyl Benzene	**ND**	0.060	EPA 8021B	5-14-14	5-14-14	
m,p-Xylene	**ND**	0.060	EPA 8021B	5-14-14	5-14-14	
o-Xylene	**ND**	0.060	EPA 8021B	5-14-14	5-14-14	
Gasoline	**ND**	6.0	NWTPH-Gx	5-14-14	5-14-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*71-121*				

Date of Report: May 15, 2014
Samples Submitted: May 14, 2014
Laboratory Reference: 1405-111
Project: 2007-098-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0514S1					
Benzene	**ND**	0.020	EPA 8021B	5-14-14	5-14-14	
Toluene	**ND**	0.050	EPA 8021B	5-14-14	5-14-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	5-14-14	5-14-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	5-14-14	5-14-14	
o-Xylene	**ND**	0.050	EPA 8021B	5-14-14	5-14-14	
Gasoline	**ND**	5.0	NWTPH-Gx	5-14-14	5-14-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-111-01										
	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						*101*	*105*	*71-121*			
MATRIX SPIKES											
Laboratory ID:	05-078-10										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**1.06**	**1.13**	1.00	1.00	ND	**106**	**113**	64-130	6	18	
Toluene	**1.07**	**1.14**	1.00	1.00	ND	**107**	**114**	71-133	6	15	
Ethyl Benzene	**1.06**	**1.14**	1.00	1.00	ND	**106**	**114**	72-133	7	17	
m,p-Xylene	**1.07**	**1.14**	1.00	1.00	ND	**107**	**114**	74-131	6	20	
o-Xylene	**1.06**	**1.11**	1.00	1.00	ND	**106**	**111**	69-133	5	12	
Surrogate:											
Fluorobenzene						*104*	*106*	*71-121*			

Date of Report: May 15, 2014
Samples Submitted: May 14, 2014
Laboratory Reference: 1405-111
Project: 2007-098-994

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-84-6**					
Laboratory ID:	05-111-01					
Diesel Range Organics	**ND**	31	NWTPH-Dx	5-14-14	5-14-14	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	5-14-14	5-14-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*80*	*50-150*				

Date of Report: May 15, 2014
Samples Submitted: May 14, 2014
Laboratory Reference: 1405-111
Project: 2007-098-994

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0514S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	5-14-14	5-14-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	5-14-14	5-14-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-098-04										
	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						*86*	*78*	*50-150*			

Date of Report: May 15, 2014
Samples Submitted: May 14, 2014
Laboratory Reference: 1405-111
Project: 2007-098-994

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	05-111-01					
Client ID:	**L-PEX-84-6**					
Lead	**ND**	6.2	6010C	5-14-14	5-14-14	

Date of Report: May 15, 2014
Samples Submitted: May 14, 2014
Laboratory Reference: 1405-111
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 5-14-14
Date Analyzed: 5-14-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0514SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: May 15, 2014
Samples Submitted: May 14, 2014
Laboratory Reference: 1405-111
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 5-14-14
Date Analyzed: 5-14-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 05-107-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: May 15, 2014
Samples Submitted: May 14, 2014
Laboratory Reference: 1405-111
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 5-14-14
Date Analyzed: 5-14-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 05-107-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**237**	95	**243**	97	3	

Date of Report: May 15, 2014
Samples Submitted: May 14, 2014
Laboratory Reference: 1405-111
Project: 2007-098-994

% MOISTURE

Date Analyzed: 5-14-14

Client ID	Lab ID	% Moisture
L-PEX-84-6	05-111-01	19

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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

Laboratory Number: 05-111

Company: Hwa
Project Number: 2007-098-994
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: x

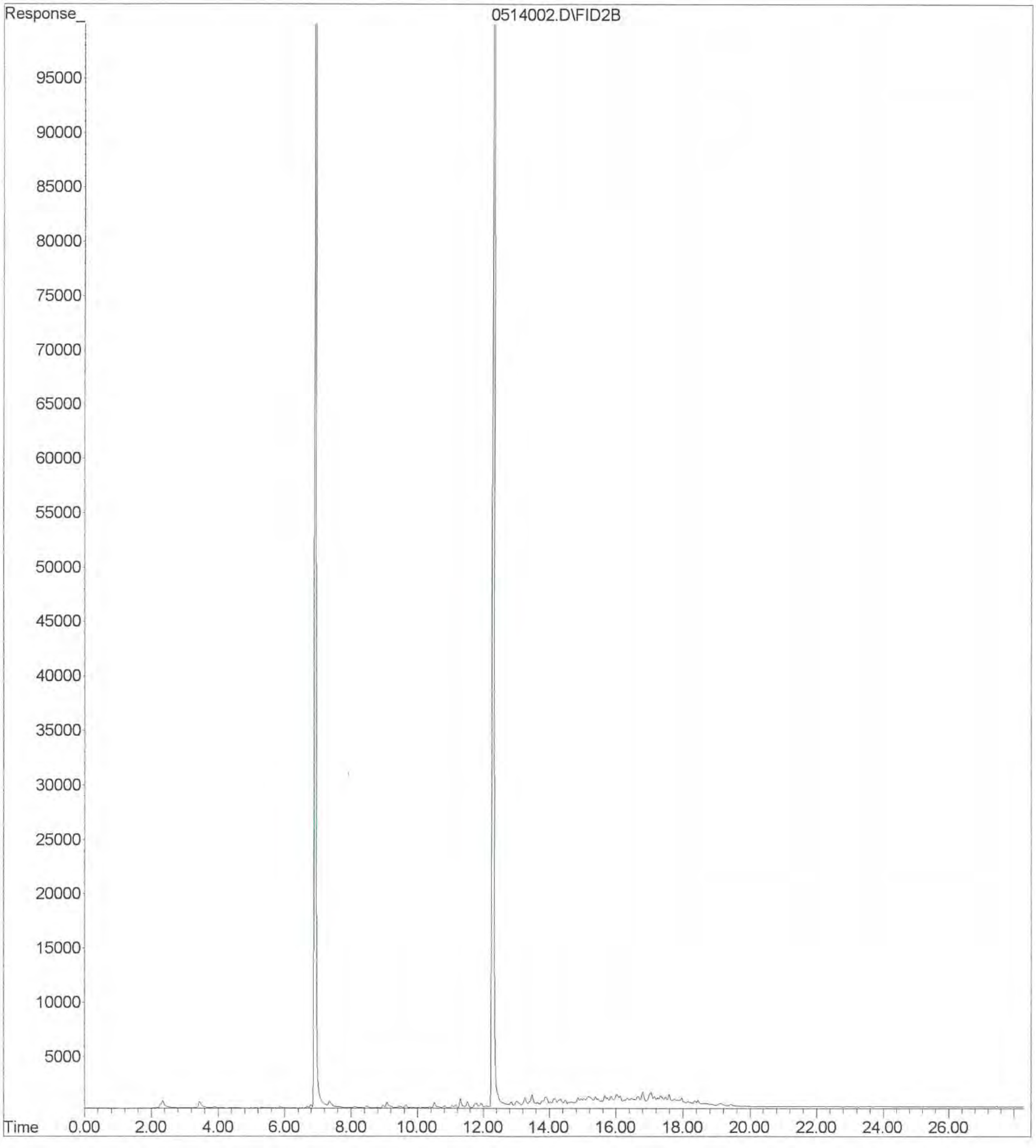
Turnaround Request (in working days)
(Check One)
- [x] Same Day
- [x] 1 Day
- [ ] 2 Days
- [ ] 3 Days
- [ ] Standard (7 Days) (TPH analysis 5 Days)
- [ ] ______ (other)

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~~ Lead	TCLP Metals	HEM (oil and grease) 1664A						% Moisture
1	L-BJa-84-6	5/14/14	930	S	2		X		X										X								✓

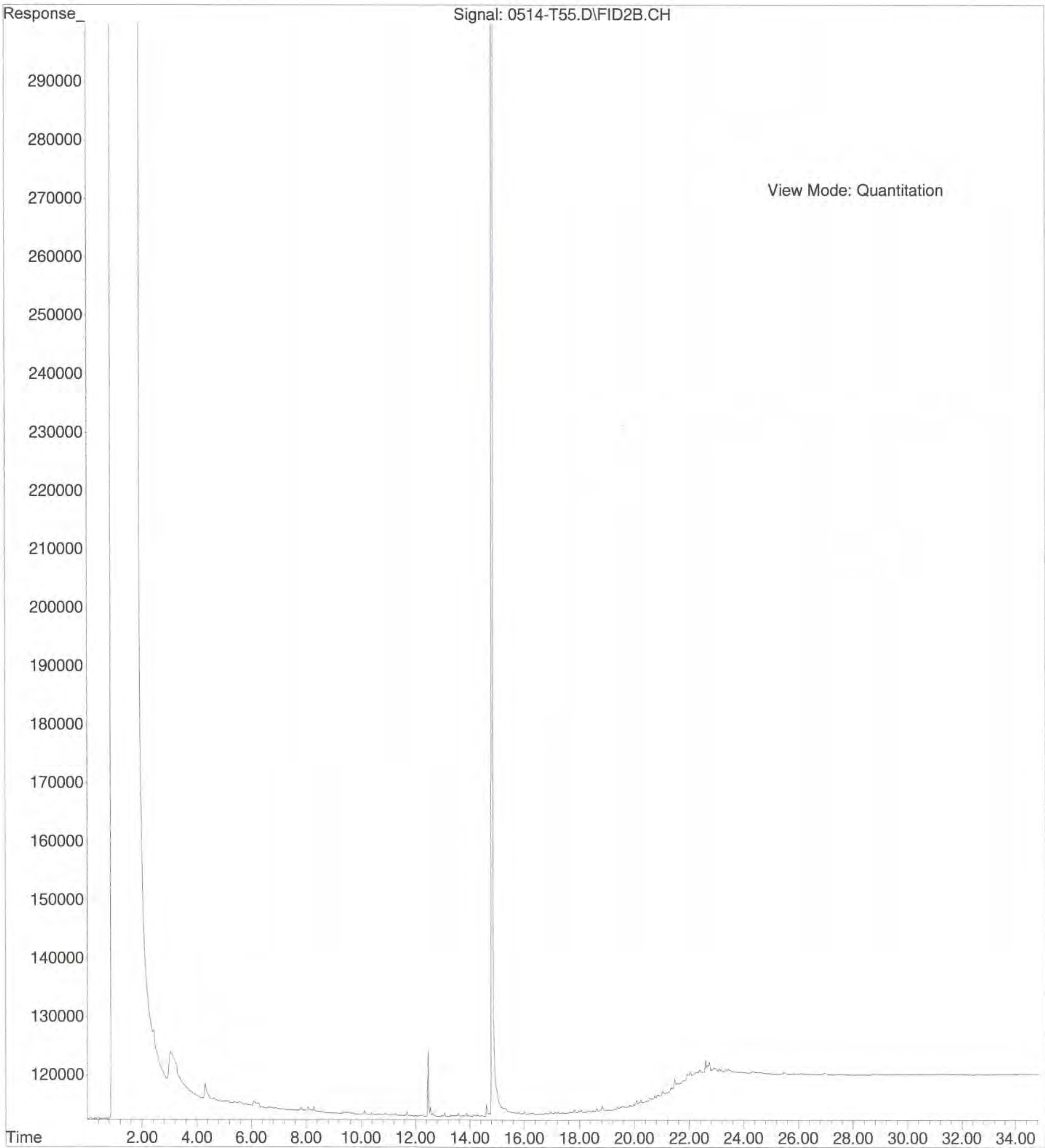
	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		Hwa	5/14/14	1005	Same Day = 9/BETX
Received			5/14/14	1005	
Relinquished					
Received					
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

```
File        : X:\BTEX\DARYL\DATA\D140514\0514002.D
Operator    :
Acquired    : 14 May 2014  11:38     using AcqMethod 140508B.M
Instrument :   Daryl
Sample Name: 05-111-01s
Misc Info   : V2-34-07
Vial Number: 2
```



File   :X:\DIESELS\TERI\DATA\T140514.SEC\0514-T55.D
Operator   : ZT
Acquired   : 14 May 2014 12:41   using AcqMethod T140401F.M
Instrument :   Teri
Sample Name: 05-111-01
Misc Info   :
Vial Number: 55



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June 6, 2014

Vance Atkins
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-994
Laboratory Reference No. 1406-042

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on June 5, 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 6, 2014
Samples Submitted: June 5, 2014
Laboratory Reference: 1406-042
Project: 2007-098-994

Case Narrative

Samples were collected on June 5, 2014 and received by the laboratory on June 5, 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 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: June 6, 2014
Samples Submitted: June 5, 2014
Laboratory Reference: 1406-042
Project: 2007-098-994

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-85-5**					
Laboratory ID:	06-042-01					
Benzene	**0.17**	0.024	EPA 8021B	6-5-14	6-5-14	
Toluene	**ND**	0.12	EPA 8021B	6-5-14	6-5-14	
Ethyl Benzene	**0.53**	0.12	EPA 8021B	6-5-14	6-5-14	
m,p-Xylene	**2.3**	0.12	EPA 8021B	6-5-14	6-5-14	
o-Xylene	**ND**	0.60	EPA 8021B	6-5-14	6-5-14	
Gasoline	**480**	12	NWTPH-Gx	6-5-14	6-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*71-121*				
Client ID:	**L-PEX-86-5**					
Laboratory ID:	06-042-02					
Benzene	**ND**	0.020	EPA 8021B	6-5-14	6-5-14	
Toluene	**ND**	0.068	EPA 8021B	6-5-14	6-5-14	
Ethyl Benzene	**ND**	0.068	EPA 8021B	6-5-14	6-5-14	
m,p-Xylene	**ND**	0.068	EPA 8021B	6-5-14	6-5-14	
o-Xylene	**ND**	0.068	EPA 8021B	6-5-14	6-5-14	
Gasoline	**ND**	6.8	NWTPH-Gx	6-5-14	6-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*107*	*71-121*				
Client ID:	**L-PEX-87-7**					
Laboratory ID:	06-042-03					
Benzene	**ND**	0.020	EPA 8021B	6-5-14	6-5-14	
Toluene	**ND**	0.076	EPA 8021B	6-5-14	6-5-14	
Ethyl Benzene	**ND**	0.076	EPA 8021B	6-5-14	6-5-14	
m,p-Xylene	**ND**	0.076	EPA 8021B	6-5-14	6-5-14	
o-Xylene	**ND**	0.076	EPA 8021B	6-5-14	6-5-14	
Gasoline	**ND**	7.6	NWTPH-Gx	6-5-14	6-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*71-121*				

Date of Report: June 6, 2014
Samples Submitted: June 5, 2014
Laboratory Reference: 1406-042
Project: 2007-098-994

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0605S1					
Benzene	**ND**	0.020	EPA 8021B	6-5-14	6-5-14	
Toluene	**ND**	0.050	EPA 8021B	6-5-14	6-5-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	6-5-14	6-5-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	6-5-14	6-5-14	
o-Xylene	**ND**	0.050	EPA 8021B	6-5-14	6-5-14	
Gasoline	**ND**	5.0	NWTPH-Gx	6-5-14	6-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*71-121*				

SPIKE BLANKS

Laboratory ID:	SB0605S1									
	SB	SBD	SB	SBD	SB	SBD				
Benzene	**1.04**	**1.09**	1.00	1.00	**104**	**109**	73-121	5	10	
Toluene	**1.05**	**1.10**	1.00	1.00	**105**	**110**	75-124	5	10	
Ethyl Benzene	**1.05**	**1.11**	1.00	1.00	**105**	**111**	75-125	6	9	
m,p-Xylene	**1.06**	**1.12**	1.00	1.00	**106**	**112**	75-126	6	9	
o-Xylene	**1.07**	**1.12**	1.00	1.00	**107**	**112**	74-123	5	8	
Surrogate:										
Fluorobenzene					*99*	*104*	*71-121*			

Date of Report: June 6, 2014
Samples Submitted: June 5, 2014
Laboratory Reference: 1406-042
Project: 2007-098-994

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-85-5**					
Laboratory ID:	06-042-01					
Diesel Range Organics	**ND**	49	NWTPH-Dx	6-5-14	6-5-14	U1
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	6-5-14	6-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				
Client ID:	**L-PEX-86-5**					
Laboratory ID:	06-042-02					
Diesel Range Organics	**ND**	30	NWTPH-Dx	6-5-14	6-5-14	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	6-5-14	6-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				
Client ID:	**L-PEX-87-7**					
Laboratory ID:	06-042-03					
Diesel Range Organics	**ND**	32	NWTPH-Dx	6-5-14	6-5-14	
Lube Oil Range Organics	**ND**	63	NWTPH-Dx	6-5-14	6-5-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				

Date of Report: June 6, 2014
Samples Submitted: June 5, 2014
Laboratory Reference: 1406-042
Project: 2007-098-994

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0605S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	6-5-14	6-5-14	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	6-5-14	6-5-14	
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:	06-042-02										
	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						*82*	*79*	*50-150*			

Date of Report: June 6, 2014
Samples Submitted: June 5, 2014
Laboratory Reference: 1406-042
Project: 2007-098-994

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	06-042-01					
Client ID:	**L-PEX-85-5**					
Lead	**ND**	5.9	6010C	6-6-14	6-6-14	
Lab ID:	06-042-02					
Client ID:	**L-PEX-86-5**					
Lead	**ND**	6.0	6010C	6-6-14	6-6-14	
Lab ID:	06-042-03					
Client ID:	**L-PEX-87-7**					
Lead	**ND**	6.3	6010C	6-6-14	6-6-14	

Date of Report: June 6, 2014
Samples Submitted: June 5, 2014
Laboratory Reference: 1406-042
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted:	6-6-14
Date Analyzed:	6-6-14
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0606SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: June 6, 2014
Samples Submitted: June 5, 2014
Laboratory Reference: 1406-042
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 6-6-14
Date Analyzed: 6-6-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 06-033-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: June 6, 2014
Samples Submitted: June 5, 2014
Laboratory Reference: 1406-042
Project: 2007-098-994

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 6-6-14
Date Analyzed: 6-6-14

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 06-033-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**238**	95	**236**	94	1	

Date of Report: June 6, 2014
Samples Submitted: June 5, 2014
Laboratory Reference: 1406-042
Project: 2007-098-994

% MOISTURE

Date Analyzed: 6-5-14

Client ID	Lab ID	% Moisture
L-PEX-85-5	06-042-01	16
L-PEX-86-5	06-042-02	17
L-PEX-87-7	06-042-03	21

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

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Chain of Custody

Page 1 of 1

Laboratory Number: 06-042

Company: HWA
Project Number: 2007-098-944
Project Name: Bothell Landing
Project Manager: Atkins
Sampled by: "

Turnaround Request (in working days)
(Check One)
☐ Same Day ☒ ~~1 Day~~
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ______ (other)

Analyses requested: 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 (LSAP); TCLP Metals; HEM (oil and grease) 1664A; % Moisture

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-Gx/BTEX	NWTPH-Dx	Total ~~MTCA~~ Metals LSAP	% Moisture
1	L-P3a-85-5	6/5/14	1230	S	2	/	/	/	/
2	L-P3a-86-5	"	1235	"	"	/	/	/	/
3	LP5a-57-7	"	1245	"	"	/	/	/	/

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	6/5/14	1320
Received	[signature]	OSE	6/5/14	1320
Relinquished				
Received				
Relinquished				
Received				

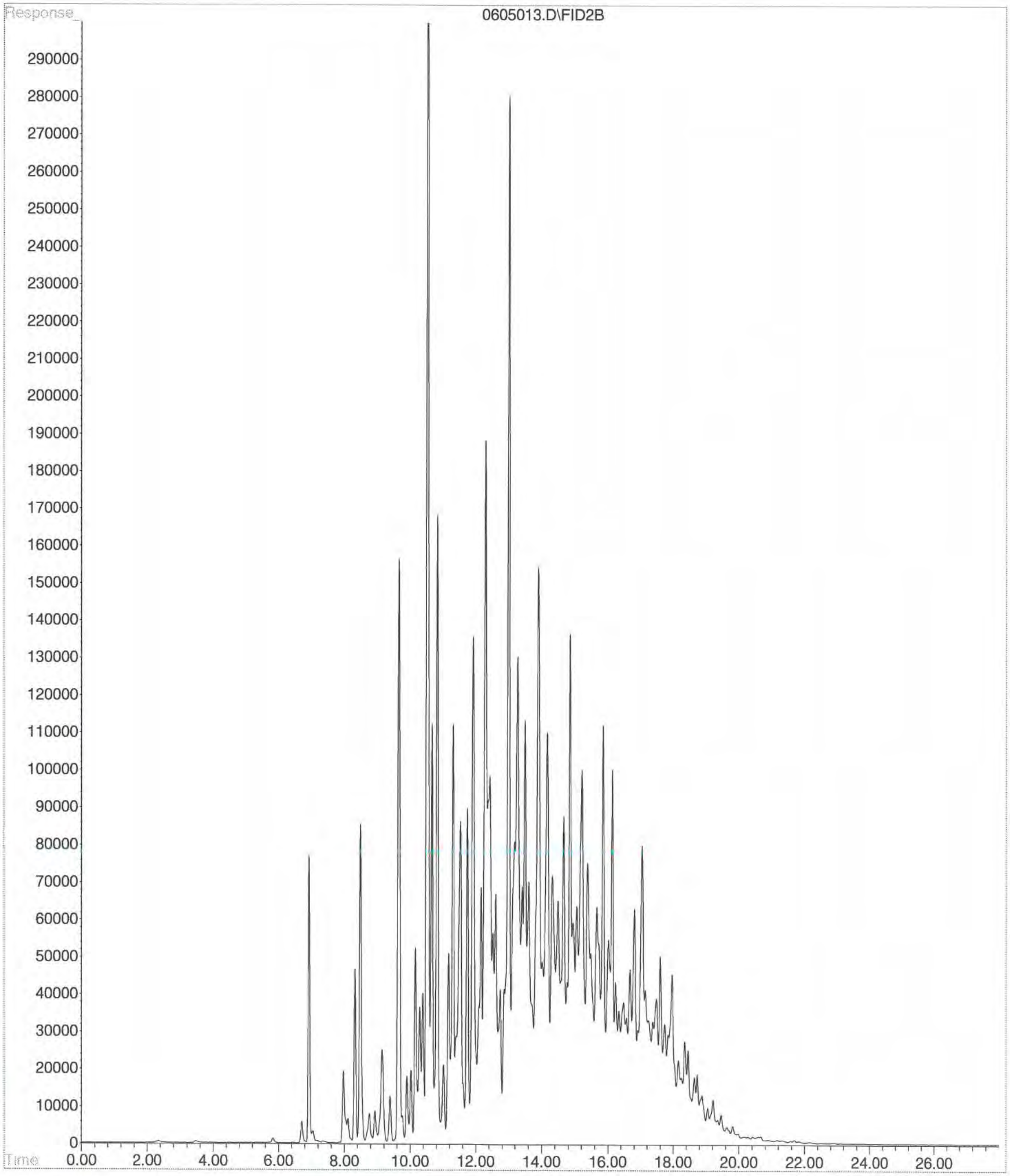
Reviewed/Date
Reviewed/Date

Comments/Special Instructions

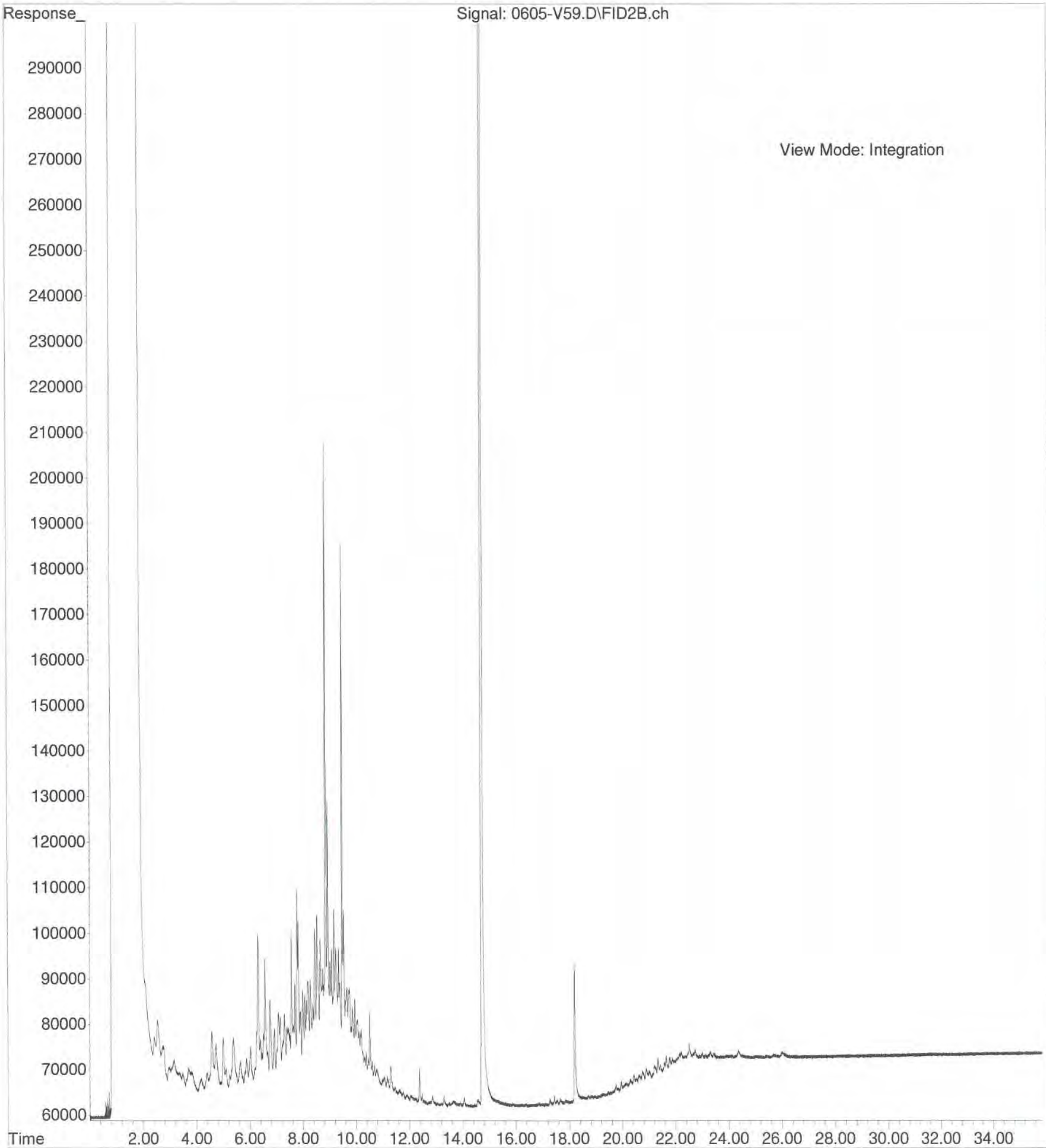
Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

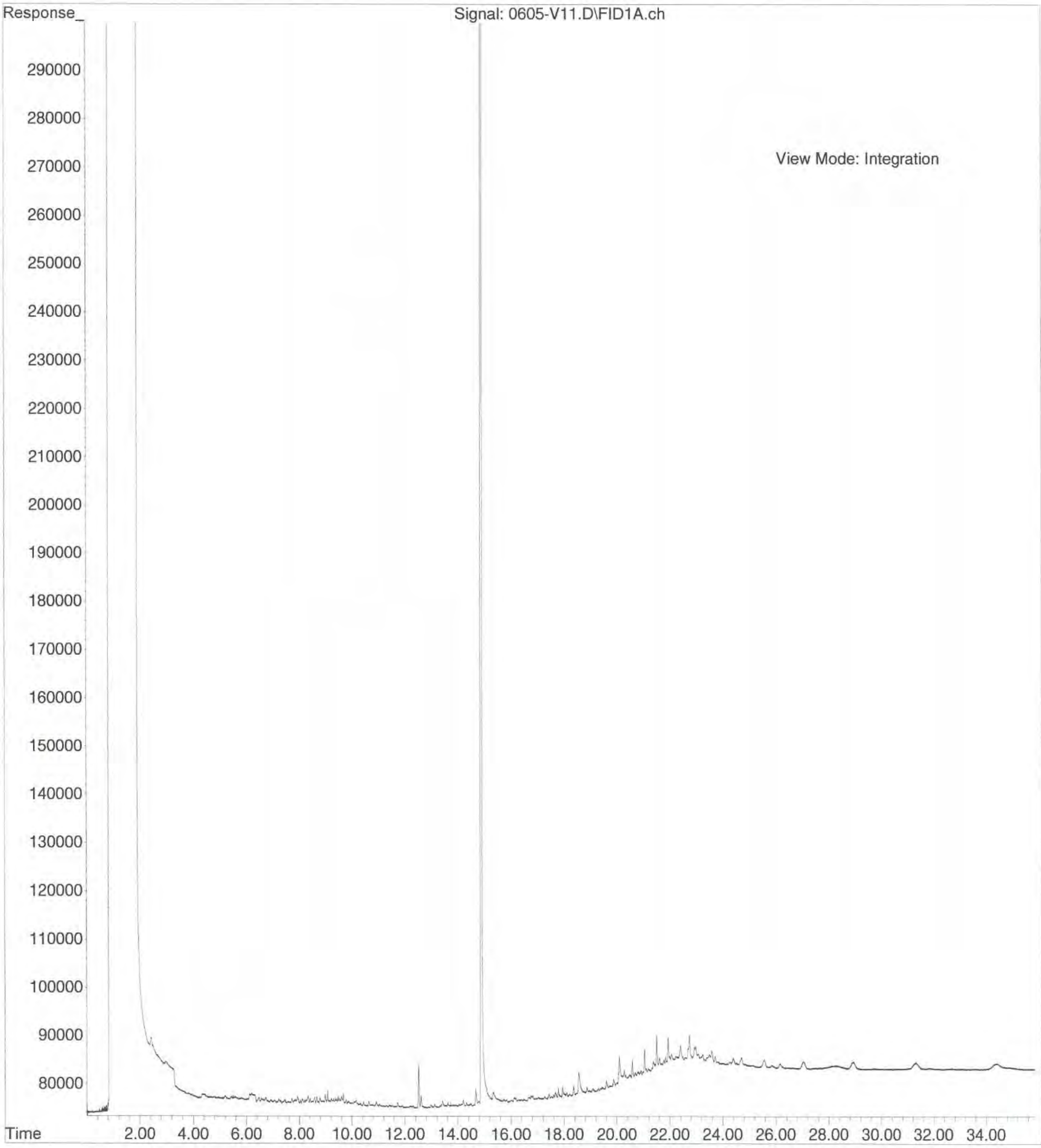
```
File        : X:\BTEX\DARYL\DATA\D140605\0605013.D
Operator    :
Acquired    :  5 Jun 2014  19:29     using AcqMethod 140519B.M
Instrument  :   Daryl
Sample Name: 06-042-01s 1:100
Misc Info   : V2-34-26
Vial Number: 13
```



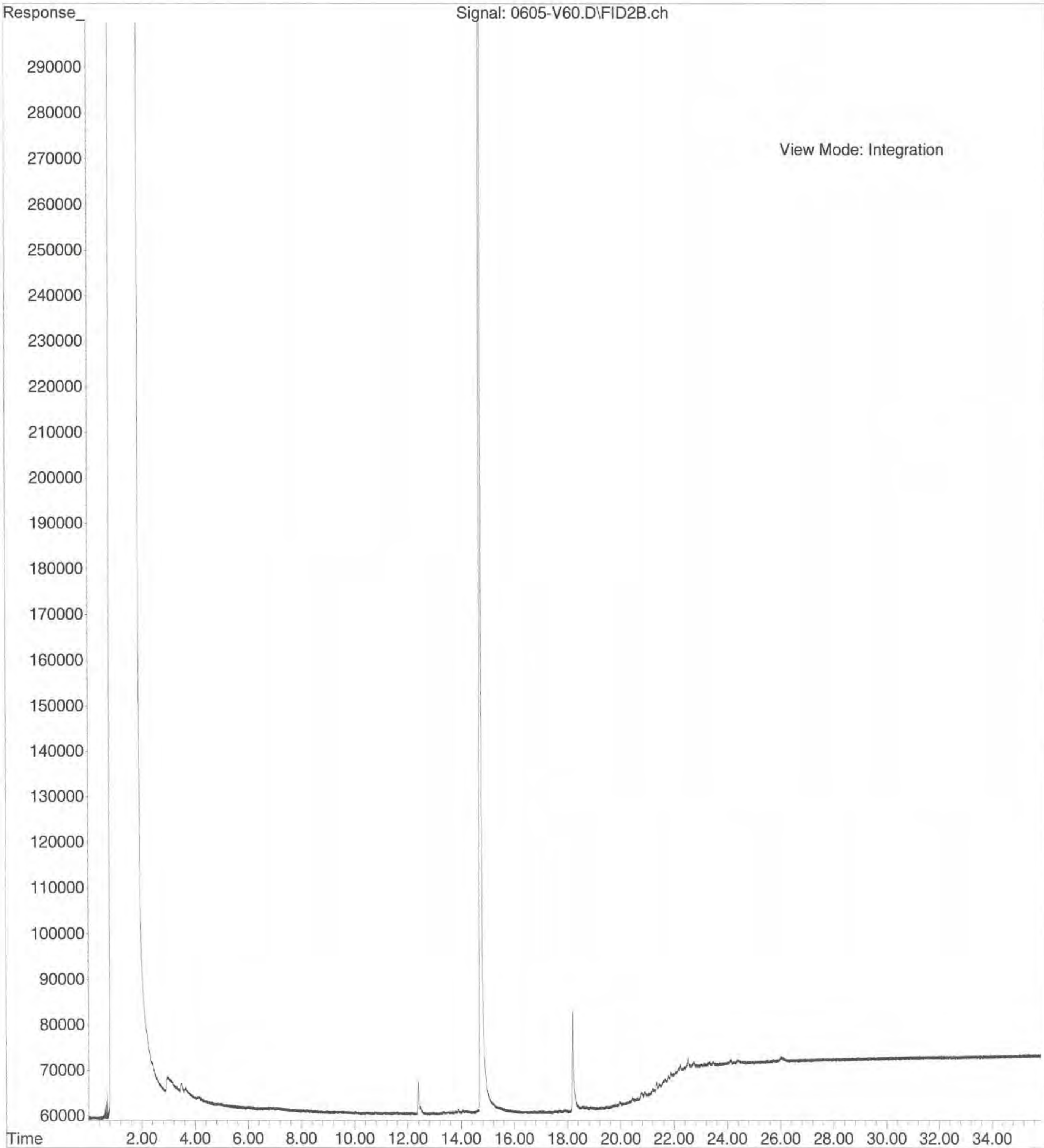
File   :X:\DIESELS\VIGO\DATA\V140605.SEC\0605-V59.D
Operator   :
Acquired   : 5 Jun 2014 17:16   using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 06-042-01
Misc Info   :
Vial Number: 59



File   :X:\DIESELS\VIGO\DATA\V140605\0605-V11.D
Operator   :
Acquired   : 5 Jun 2014 18:39   using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 06-042-02
Misc Info :
Vial Number: 11



File   :X:\DIESELS\VIGO\DATA\V140605.SEC\0605-V60.D
Operator   :
Acquired   : 5 Jun 2014 17:57   using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 06-042-03
Misc Info   :
Vial Number: 60



APPENDIX C

DATA QUALITY ASSESSMENT

Introduction

This appendix presents a data quality assessment for the Bothell Landing 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 Landing site cleanup: field and laboratory. Both components followed Washington Department of Ecology guidance (Ecology, 2004). Also, the *Compliance Monitoring Quality Assurance Project Plan, Bothell Landing Site* (Appendix B, 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.

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* on six instances during the cleanup:

1. Two 5035A vials submitted on September 21, 2010 for halogenated volatile organic compound (HVOC) analysis (samples L-PEX-1-6 and its duplicate L-DUP-092110) contained too little soil for the lab to perform a matrix spike / matrix spike duplicate (MS/MSD) QC check.
2. One 5035A vial submitted on September 24, 2010 for halogenated volatile organic compound (HVOC) analysis (sample L-PEX-13-14) contained too little soil for the lab to perform a MS/MSD QC check.
3. One 5035A vial submitted on September 27, 2010 for halogenated volatile organic compound (HVOC) analysis (sample L-PEX-17-9) contained too little soil for the lab to perform a MS/MSD QC check.

4. All sixteen 5035A vials submitted on August 19, 2013 for halogenated volatile organic compound (HVOC) analysis (samples TP-L1 through TP-L7) contained too little soil for the lab to perform a MS/MSD QC check.
5. WTPH-Gx and BTEX sample L-PEX-79-6 collected on May 8, 2014 was extracted in the lab from a 4-ounce jar for analysis instead of being collected in the field via EPA Method 5035A; some loss of volatiles may have occurred. However this was not a final soil cleanup confirmation sample because the area represented by this sample was subsequently excavated (see cleanup report Table 2).
6. The frequency of collecting duplicate soil samples in the field was less than specified in the *Compliance Monitoring Quality Assurance Project Plan* – the frequency was one duplicate per 63 soil samples whereas the Project Plan specified one duplicate sample per 20 soil samples. This oversight happened due to the intermittent cleanup efforts in 2013 and 2014 when sampling typically entailed collecting only a few samples during each of many cleanup events.

As discussed below in the Data Verification section of this appendix, these oversights were not thought to have significantly compromise the reported analytical results.

Laboratory QC Methods

OnSite Environmental Inc. of Redmond, Washington performed all sample analyses. OnSite Environmental is accredited by the Washington Department of Ecology (Accreditation #C591-10) for all analyses performed for the interim action cleanup.

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:

$$\text{Percent Recovery (\%R)} = 100*(X_s/C_t)$$

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.

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 conducts studies annually for all accredited test methods to determine its PQLs. Except for the instances bulleted below OnSite Environmental's routine PQLs for all interim action analyses were lower than regulatory cleanup levels thus ensuring confirmation of successful cleanup.

- A PQL of 0.03 mg/Kg for benzene (the MTCA Method A clean-up level) was not achievable for samples L-PEX-25-8 and L-PEX-34-9, due to the high moisture content of the samples. Reporting levels were 0/048 and 0.033,only slightly higher than the Method A clean-up level, and no TPH or other aromatics were detected in these samples.
- A PQL of 0.03 mg/Kg for benzene was not achievable for sample L-PEX-76-7 due to the extremely low dry weight of the sample. However, the area represented by this sample was subsequently excavated during site cleanup (see Table 2 of the cleanup report).
- There were numerous instances of elevated PQLs for analytes other than benzene (U1 flags) due to interferences present in the samples. However, the elevated PQLs were below MTCA cleanup levels.

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

One hundred ninety 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
- HVOCs - Halogenated volatile organic hydrocarbons by EPA Method 8260B
- PAHs - Polynuclear aromatic hydrocarbons by EPA Method 8270D/SIM
- PCBs - Polychlorinated biphenyls by EPA Method 8082
- NWVPH/NWEPH - Ecology methods VPH and EPH for volatile and extractable petroleum hydrocarbon fractions

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. 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:

- **Samples L-PEX-1-6, L-DUP-092110, L-PEX-13-14, PEX-17-9, and TP-L1 through TP-L7:** Method 5035A vials submitted for halogenated volatile organic compound (HVOC) analysis (Method 8260B) contained too little soil for the lab to perform a MS/MSD QC check on these samples. However, the method blank and SB/SBD QC checks were in control. The HVOC concentrations in these samples were either below PQLs or were significantly below site cleanup levels. It is HWA's opinion that this QC issue did not compromise the analytical data for HVOCs or the conclusion that the site was successfully cleaned up.
- **Sample L-PEX-8-10:** OnSite Environmental, not being Ecology certified for NWEPH analysis, couriered the sample to ALS Environmental in Everett where

both the NWEPH and NWVPH analyses were performed. ALS flagged values for C12-C13 aromatics and C8-C12 aliphatic ranges for overlap corrections (C1 flag) with advice that the values should be ignored. However, HWA used the reported approximate values to calculate a Method B risk-based soil cleanup level (see Appendix A) because having no data for these hydrocarbon ranges would have biased the calculated cleanup levels towards heavier hydrocarbon compounds.

- **Samples L-PEX-16-11, L-PEX-17-9, L-PEX-18-14, L-DUP-092710, L-PEX-19-10:** The naphthalene recovery for the 8270D (PAHs) MS/MSD QC analysis was outside of the lab's control limits (an I Flag). This QC issue arose because the QC sample for the batch had elevated concentrations of these PAHs; the QC sample was from the site of another client of OnSite Environmental. The lab reported that the SB/SBD pair extracted with this batch had all parameters in control, and that no further action was deemed necessary.
- **Samples L-PEX-16-11, L-PEX-17-9, L-PEX-18-14, L-DUP-092710, L-PEX-19-10:** The RPD for the 8270D MS/MSD QC analysis was outside of the control limits for multiple PAHs (an L Flag). This QC issue arose because the QC sample for the batch had elevated concentrations of these PAHs; the QC sample was from the site of another client of OnSite Environmental. The lab reported that the SB/SBD pair extracted with this batch had all parameters in control, and that no further action was deemed necessary.
- **Samples L-PEX-16-11, L-PEX-17-9, L-PEX-18-14, L-DUP-092710, L-PEX-19-10:** The MS/MSD recoveries for the 7471A (mercury) analysis were outside control limits (a V Flag) due to matrix inhomogeniety. The samples were re-extracted and re-analyzed with similar results; the spike blank and duplicate QC checks were within control. It is HWA's opinion that this QC issue did not compromise the analytical data for mercury or the conclusion that the site was successfully cleaned up.
- **Samples L-TP-1-2, L-PEX-5-6:** Hydrocarbons in the gasoline range impacted the diesel range result (an M Flag). This QC issue arose due to gasoline and diesel's overlapping hydrocarbon ranges, and resulted in the reported concentration of the less dominant product (diesel) being slightly higher than may actually be the case. The areas represented by samples L-TP-1-2 and L-PEX-5-6 were subsequently excavated. Consequently, this QC issue did not compromise the conclusion that the site was successfully cleaned up.
- **Samples L-TP-1-2, L-TP-1-8, L-TP-10-4, L-PEX-5-6, L-PEX-8-10, TP-L2-8, L-PEX-29-7:** Hydrocarbons indicative of heavier fuels were present in the sample and impacted the gasoline result (an O Flag). This QC issue arose due to gasoline and diesel's overlapping hydrocarbon ranges, and resulted in the reported concentration of the less dominant product (gasoline) being slightly higher than

may actually be the case. The areas represented by all of these samples except L-PEX-8-10 were subsequently excavated. L-PEX-8 was in a small pocket of TPH concentrations left in place under the Horse Creek pipe pending its eventual removal. Consequently, this QC issue did not compromise the conclusion that the site was successfully cleaned up.

- **Sample L-TP-6-7, L-PEX-14-9, L-PEX-16-11, L-PEX-17-9, L-PEX-18-14, L-DUP-092710, L-PEX-19-10, L-PEX-25-8:** One surrogate recovery for the QC check of the 8270D/SIM analysis was outside of the control limits (Q flag). However, this was within allowance of the lab's standard operating procedure as long as the recovery was above 10 percent. The lab personnel though that no further action was deemed necessary. Consequently, this QC issue did not compromise the conclusion that the site was successfully cleaned up.
- **Numerous Samples:** The practical quantitation limit in these samples was elevated due to interferences present in the samples (U1 flag). The quantitation limit was not raised above the applicable cleanup level. Consequently, this QC issue did not compromise the conclusion that the site was successfully cleaned up**.**
- **Samples L-TP-1-2, L-PEX-22-9:** The sample chromatogram for these samples was similar to mineral spirits with diesel (Z flag). The flag for this confirmation sample was advisory and not an indication of a QC issue that may have compromised the conclusion that the site was successfully cleaned up.

  Sample TP-L7-7: The surrogate standard dibromofluoromethane was lower than the control limits due to sample matrix effects. However, the soil represented by sample TP-L7-7 was subsequently excavated during site cleanup.
- **Samples TP-L1 through TP-L7**: The duplicate RPD for chromium was outside control limits due to sample inhomogeneity. The duplicate sample was re-extracted and re-analyzed with similar results. HWA thinks that this QC issue is inconsequential because the reported chromium concentrations for these samples were more than an order of magnitude below site cleanup levels.
- **Sample L-PEX-25-8:** For the WTPH-Gx and BTEX analyses the concentration of the surrogate standard fluorobenzene was greater than the control limits (a Q flag); the laboratory cited no reason for this. HWA thinks that this QC issue is inconsequential because the reported WTPH-Gx and BTEX concentrations were all non-detect at concentrations less than site-specific MTCA Method B cleanup levels.
- **Samples L-PEX-53-6, L-PEX-54-9, L-PEX-55-9:** For the cPAH analyses of these samples the MS/MSD pair had several recoveries fall outside of control limits which the lab believed to be caused by sample matrix. The SB/SBD pair extracted with this batch had all parameters in control, thus the lab thought no further action was deemed necessary.

Evaluation of Field Duplicate Sample Results

Field duplicate samples were collected at an approximate frequency of one duplicate per 63 samples, a frequency greater than 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-1 summarizes the analytical results of the field duplicate samples where one or more COPC were detected. As can be seen, field duplicate sample analytical results were generally within the quality criteria listed above except for:

- Duplicates PEX-1-6/L-DUP-092110 which had major disagreement in the NWTPH-Gx, total naphthalenes, and cPAH results.
- Duplicates L-PEX-16-11/L-DUP-092710 which had major disagreement in the total chromium results.

Other results were within the quality criteria. HWA attributes field duplicate variability to uneven distribution of COPCs over short distances, but as Table C-1 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 one exception noted above, field QC procedures were followed. The exception is 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.
- 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.

References

Grant, C.G, T.F. Jenkins, and A.R. Mudambi, 1996, *Comparison Criteria for Environmental Chemical Analyses of Split Samples Sent to Different Laboratories-Corps of Engineers Archived Data*, U.S. Army Corps of Engineers Cold Regions & Environmental Research Laboratory, Hanover NH. CRREL Special Report No. 96-9, May 1996.

Flory, D., 2000, *What is "Good" Data*, Quality Assurance Associates (www.qaallc.com/gooddata.html)

Parametrix, 2010, *Interim Action Work Plan, Bothell Landing Site, Revision No.2*, Prepared for City of Bothell, April 2010.

OnSite Environmental, 2008, *Quality Assurance Manual, Revision No. 9.2*, November 19, 2008 (www.onsite-env.com/pdf/QA.pdf)

PMI, 2008, *A Guide to the Project Management Body of Knowledge – Fourth Edition* (ANSI/PMI 99-001-2008), Project Management Institute (www.pmi.org).

Quality Assurance Associates, 2010, *Understanding Laboratory Reporting Limits*. (www.qaallc.com/replimit.html)

Washington Department of Ecology, 2004, *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies,* Publication No. 04-03-030.

Table C-1
Evaluation of Field Duplicate Sample Results

Sample Location	Diesel	Oil	Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Total Naphthalenes	cPAHs TEC	PCBs	HVOCs	Notes
L-TP-12-4	<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054													
L-Dup-091710	<28	<56	<5.5	<0.020	<0.055	<0.055	<0.055													
Ratio of Non-detects[1]	1.0	0.93	0.98	1.0	0.98	0.98	0.98													
RPDs[2] for Detects																				
L-PEX-1-6	<28	<57	13	<0.020	<0.067	<0.067	<0.067	<11	50	<0.57	29	6.4	<0.28	<11	<0.57	0.491	0.020	All <0.057	All <0.0059	
L-DUP-092110	<29	<58	35	<0.020	<0.065	<0.065	<0.065	<12	47	<0.58	27	8.3	<0.29	<12	<0.58	0.205	0.000	All <0.058	All <0.0056	
Ratio of Non-detects	1.0	0.98	0.37	1.0	1.03	1.03	1.03	0.92	1.06	0.98	1.06	1.06	0.97	0.92	0.98	1.06	1.06	0.98	1.05	
RPDs for Detects			-91.7%						6.2%		7.1%	-25.9%				82.2%	200.0%			
L-PEX-16-11	<31	<62	<7.0	<0.020	<0.070	<0.070	<0.070	<12	30	<0.62	26	<6.2	<0.31	<12	<0.62	<0.025	0.000			
L-DUP-092710	<31	<62	<7.4	<0.020	<0.074	<0.074	<0.074	<12	34	<0.62	17	<6.2	<0.31	<12	<0.62	<0.025	0.000			
Ratio of Non-detects	1.0	1.0	0.95	1.0	0.95	0.95	0.95	1.0	1.06	1.0	1.06	1.0	1.0	1.0	1.0	1.0	1.0			
RPDs for Detects									-12.5%		41.9%									

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 INTERIM ACTION SOIL CLEANUP

Photo 1 – Excavation limit looking north to SR 522. Note peat layer on excavation floor. Extent of excavation was limited to maintain the structural integrity of SR 522 and related sidewalk and utilities

Photo 2 – Uncovered abandoned storm drain pipe in northeast corner of excavation

Photo 3 – Buried debris in west end of excavation below Rotunda Park (looking to northwest)

Photo 4 – Buried debris in west end of excavation below Rotunda Park (looking to northwest)

Photo 5 – Exposed abandoned storm drain side connection to Horse Creek Culvert in western extent of excavation (looking southwest)

Photo 6 – Using a vactor truck to excavate an exploration borehole adjacent to Horse Creek culvert

Photo 7 – Exposed manhole to Horse Creek culvert (looking to south)

Photo 8 – Pumping ground water out of excavation (looking to east)

Photo 9 – Monitoring wells MW-3 (left) and MW-4 (right) prior to decommissioning by excavation (looking to northeast)

Photo 10 –Excavation along west side to SR-527, October 2013

Photo 11 –Wooden cribbing uncovered and removed during excavation west of SR-527

Photo 12 – Excavation along west side of SR-527, view north

Photo 13 –Detail of cribbing and soils at base of excavation.

Photo 14 –Excavation along east side of SR-527 and Main Street

Photo 15 –Former duct bank (subsequently removed) south edge of Main Street.

Photo 16 – Excavation along east side of SR-527, showing native soils

Photo 17 – Excavation along east side of SR-527, showing native soils

Photo 18 – Excavation along former SR-522, view east

Photo 19 – Excavation along former SR-522, view north

Photo 20 – Loading stockpiled soils excavated at Triangle Park vicinity

Photo 21 – UST exposed during remedial soil excavation. Tank end is visible in sidewall below excavator track.

Photo 22 – Detail of UST end and underlying soils

Photo 23 – UST during removal for ongoing soil excavation

Photo 24 – 300-gallon UST after removal

Photo 25 – UST emptied of soils and crushed for disposal

Photo 26 – Overexcavation of soils adjacent to and underlying Main Street

Photo 27 – Excavation of soils along project limit, north edge of former SR-522, view east

APPENDIX E

UST DOCUMENTS

UNDERGROUND STORAGE TANK
Closure and Site Assessment Notice

WASHINGTON STATE DEPARTMENT OF ECOLOGY

See back of form for instructions

FOR OFFICE USE ONLY
Site ID #: ______
Facility Site ID #: ______

Please ✓ the appropriate box(es)
☐ Temporary Tank Closure ☐ Change-In-Service ☑ Permanent Tank Closure ☒ Site Check/Site Assessment

Site Information

Site ID Number ______
(Available from Ecology if the tanks are registered)
Site/Business Name City of Bothell Triangle Park
Site Address 10001 Main Street
Street
City/State Bothell, WA
Zip Code 98011 Telephone (__) ______

Owner Information

UST Owner/Operator City of Bothell
Mailing Address 9654 NE 182nd St
Street
______
P.O. Box
City/State Bothell WA
Zip Code 98011 Telephone (425) 486-2768

Owners Signature Walter Moultrie for City of Bothell (PW)

Tank Closure/Change-In-Service Company

Service Company Clear Creek Contractors
Certified Supervisor Nathan Hoffman Decommissioning Certification No. 8209012
Supervisor's Signature [signature] Date 5-2-14
Address 3919 88TH NE ST
Street / P.O. Box
Marysville WA 98270 Telephone (360) 659 4446
City / State / Zip Code

Site Check/Site Assessor

Certified Site Assessor Vance Atkins – HWA Geo Sciences
Address 21312 30th Dr SE #110
Street / P.O. Box
Bothell WA 98021 Telephone (425) 774-0106
City / State / Zip Code

Tank Information

Tank ID	Closure Date	Closure Method	Tank Capacity	Substance Stored
1	5/2/14	Removal	300	gasoline

Contamination Present at the Time of Closure

☒ Yes ☐ No ☐ Unknown
Check unknown if no obvious contamination was observed and sample results have not yet been received from analytical lab.

☒ Yes ☐ No
If contamination is present, has the release been reported to the appropriate regional office?

To receive this document in an alternative format, contact the Toxics Cleanup Program at 360-407-7170 (voice) or 1-800-833-6388 OR 711 (TTY)

ECY 020-94 (Rev. 2-06)

WASHINGTON STATE DEPARTMENT OF ECOLOGY

UNDERGROUND STORAGE TANK
Site Check/Site Assessment Checklist

FOR OFFICE USE ONLY
Site #: ____________
Facility Site ID #: ____________

INSTRUCTIONS

When a release has not been confirmed and reported, this Site Check/Site Assessment Checklist must be completed and signed by a person certified by ICC or a Washington registered professional engineer who is competent, by means of examination, experience, or education, to perform site assessments. **The results of the site check or site assessment must be included with this checklist.** This form must be submitted to Ecology at the address shown below within 30 days after completion of the site check/site assessment.

SITE INFORMATION: Include the Ecology site ID number if the tanks are registered with Ecology. This number may be found on the tank owner's invoice or tank permit.

TANK INFORMATION: Please list all tanks for which the site check or site assessment is being conducted. Use the owner's tank ID numbers if available, and indicate tank capacity and substance stored.

REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT: Please check the appropriate item.

CHECKLIST: Please initial each item in the appropriate box.

SITE ASSESSOR INFORMATION: This information must be signed by the registered site assessor who is responsible for conducting the site check/site assessment.

Underground Storage Tank Section
Department of Ecology
PO Box 47655
Olympia WA 98504-7655

SITE INFORMATION

Site ID Number (Available from Ecology if the tanks are registered): ____________

Site/Business Name: City of Bothell Triangle Park

Site Address: 10001 Main Street (Street)   Telephone: ( ) ____________

Bothell (City)   WA (State)   (Zip Code)

TANK INFORMATION

Tank ID No.	Tank Capacity	Substance Stored
1	300	Gasoline

REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT

Check one:

______ Investigate suspected release due to on-site environmental contamination.
______ Investigate suspected release due to off-site environmental contamination.
______ Extend temporary closure of UST system for more than 12 months.
______ UST system undergoing change-in-service.
__✓__ UST system permanently closed with tank removed.
______ Abandoned tank containing product.
______ Required by Ecology or delegated agency for UST system closed before 12/22/88.
______ Other (describe): ____________

CHECKLIST

Each item of the following checklist shall be initialed by the person registered with the Department of Ecology whose signature appears below.	YES	NO
1. The location of the UST site is shown on a vicinity map.	✓	
2. A brief summary of information obtained during the site inspection is provided. (see Section 3.2 in site assessment guidance)	✓	
3. A summary of UST system data is provided. (see Section 3.1.)	✓	
4. The soils characteristics at the UST site are described. (see Section 5.2)	✓	
5. Is there any apparent groundwater in the tank excavation?		✓
6. A brief description of the surrounding land use is provided. (see Section 3.1)	✓	
7. Information has been provided indicating the number and types of samples collected, methods used to collect and analyze the samples, and the name and address of the laboratory used to perform the analyses.	✓	
8. A sketch or sketches showing the following items is provided:		
- location and ID number for all field samples collected	✓	
- groundwater samples distinguished from soil samples (if applicable) N/A		
- samples collected from stockpiled excavated soil N/A		
- tank and piping locations and limits of excavation pit	✓	
- adjacent structures and streets	✓	
- approximate locations of any on-site and nearby utilities	✓	
9. If sampling procedures different from those specified in the guidance were used, has justification for using these alternative sampling procedures been provided? (see Section 3.4) N/A		
10. A table is provided showing laboratory results for each sample collected including; sample ID number, constituents analyzed for and corresponding concentration, analytical method and detection limit for that method.	✓	
11. Any factors that may have compromised the quality of the data or validity of the results are described.	✓	

12. The results of this site check/site assessment indicate that a confirmed release of a regulated substance has occurred.	✓	

SITE ASSESSOR INFORMATION

Vance Atkins — Person registered with Ecology

HWA GeoSciences — Firm Affiliated with

Business Address: 21312 30th DR SE #110 (Street) Telephone: (425) 774-0106

Bothell (City) WA (State) 98021 (Zip Code)

I hereby certify that I have been in responsible charge of performing the site check/site assessment described above. Persons submitting false information are subject to penalties under Chapter 173.360 WAC.

5/5/14 — Date

[signature] — Signature of Person Registered with Ecology

If you need this publication in an alternate format, please contact Toxics Cleanup Program at (360) 407-7170. For persons with a speech or hearing impairment call 711 for relay service or 800-833-6388 for TTY.

2570

Clearcreek CONTRACTORS Environmental/Civil

3203 15th Street
Everett, WA 98201

Ph. (425) 252-5800
Fx. (425) 252-1093

Clearcreek CONTRACTORS Environmental/Civil

JOB #	JOB NAME	SITE ADDRESS
214041	BOTHELL UST	18120 Bothell Way NE [illegible]

GENERATOR NAME	GENERATOR MAILING ADDRESS	GENERATOR CONTACT INFORMATION
City of Bothell		

PUMP & RINSE / CLEANING CERTIFICATE

DATE	SIZE & DIMENSIONS OF TANK OR STRUCTURE	DESCRIBE CONTENTS	PUMP/RINSE YES NO / CLEANED YES NO	LIQUID QTY	SOLIDS QTY
5-2-14	500 GAL UST	EMPTY	PUMP/RINSE YES NO / CLEANED YES NO		
			PUMP/RINSE YES NO / CLEANED YES NO		
			PUMP/RINSE YES NO / CLEANED YES NO		

NOTES	WORK PERFORMED BY / WORKER SIGNATURE
PREVIOUSLY CLEANED + DECOMMISSIONED	INSPECTED BY NATHAN HOFFMAN CCC / [signature]

LIQUID / SOLIDS BILL OF LADING

DATE	TRUCK #	DRIVER	LIQUID DESCRIPTION AND QUANTITY	SOLID DESCRIPTION AND QUANTITY
	TRLR #	DISPOSAL/RECYCLING FACILITY	LIQUID PROFILE #	SOLIDS PROFILE #

NOTES	
	GENERATOR'S SIGNATURE CONFIRMS THIS MATERIAL IS NOT REGULATED UNDER WAC-173-303 OR 40CFR PART 261 & 40CFR PART 760 GENERATOR SIGNATURE
	DRIVER SIGNATURE
	FACILITY SIGNATURE

UST CORRECTIVE ACTION CERTIFICATION

I certify that the petroleum contaminated debris and media that fail the test for Toxicity Characteristic Waste codes D018-D043 is exempt under 40CFR 261.4 and is subject to the corrective action regulation under 40 CFR 280.

GENERATOR NAME   GENERATOR SIGNATURE   DATE

DISPOSAL CERTIFICATE

DATE	TRUCK #	DRIVER	ITEM(S) DESCRIPTION
5-2-14		NATHAN HOFFMAN	500 GALLON UST
	TRLR #	DISPOSAL/RECYCLING FACILITY	
		EVERETT RECYCLE	

NOTES	
TO BE RECYCLED AT LATER DATE	DRIVER SIGNATURE: [signature]
	FACILITY SIGNATURE

APPENDIX F

SOIL DISPOSAL CERIFICATES

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
Bothell Landing Parcel
Bothell WA. 98011

and transported to:

CEMEX Soil Remediation Facility
6300 Glenwood Ave.
Everett WA 98203

From 09/09/2010 through 10/11/2010

A total of 3556.50 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

DEPARTMENT OF PUBLIC WORKS
SOLID WASTE DIVISION
1600 – 13th Avenue South
Kelso, WA 98626
TEL (360) 577-3030
FAX (360) 636-0845
Washington Relay Service 711 or (888) 833-8633

www.co.cowlitz.wa.us/publicworks/

KLB Construction
PO Box 158
Mukilteo, WA 98275

Subject: Contaminated Soils Disposal

To Whom It May Concern:

KLB Construction delivered contaminated soils for disposal to the Cowlitz County Headquarters Landfill. The project location was the Intersection of Bothell Way NE & Main Street (SE Quadrant). There was a total of 107 loads and 3,317.95 tons delivered (load summary attached).

I can be reached at 360-430-1806, if you have any questions.

Sincerely,

Larry Fulcher
Western Washington Waste Systems, LLC
Contractor for Cowlitz County

Cowlitz County---Solid Waste Accounting
Transaction Listing - By Billing Account

FROM: Tuesday, April 01, 2014 TO: Saturday, May 31, 2014
For Selected Accounts and All Sites

By Billing Account

Trans. #	Site	Account	Truck #	Trailer #	Date Out	Time Out	Net Weight	Tran	Pay	Veh	Org	Mat	Dest	Tip Fee	Special $	Tax $	Total Fee
								-----------Type Codes----------									
Billing Acct #		***7369***	***KLB Const***														
437235	LF	7369	7369	0	04-10-2014	8:53:00 AM	29.96	1	1	13	26	56	32	539.28	0	0	539.28
437530	LF	7369	7369	0	04-21-2014	11:46:00 AM	22.23	1	1	13	26	56	32	400.14	0	0	400.14
437531	LF	7369	7369	0	04-21-2014	11:50:00 AM	24.58	1	1	13	26	56	32	442.44	0	0	442.44
437532	LF	7369	7369	0	04-21-2014	11:55:00 AM	27.70	1	1	13	26	56	32	498.6	0	0	498.6
437534	LF	7369	7369	0	04-21-2014	11:58:00 AM	30.47	1	1	13	26	56	32	548.46	0	0	548.46
437535	LF	7369	7369	0	04-21-2014	12:05:00 PM	29.24	1	1	13	26	56	32	526.32	0	0	526.32
437566	LF	7369	7369	0	04-22-2014	8:29:00 AM	23.25	1	1	13	26	56	32	418.5	0	0	418.5
437567	LF	7369	7369	0	04-22-2014	8:32:00 AM	31.70	1	1	13	26	56	32	570.6	0	0	570.6
437568	LF	7369	7369	0	04-22-2014	8:34:00 AM	29.18	1	1	13	26	56	32	525.24	0	0	525.24
437569	LF	7369	7369	0	04-22-2014	8:36:00 AM	23.55	1	1	13	26	56	32	423.9	0	0	423.9
437570	LF	7369	7369	0	04-22-2014	8:42:00 AM	32.02	1	1	13	26	56	32	576.36	0	0	576.36
437571	LF	7369	7369	0	04-22-2014	9:02:00 AM	23.44	1	1	13	26	56	32	421.92	0	0	421.92
437572	LF	7369	7369	0	04-22-2014	9:09:00 AM	23.02	1	1	13	26	56	32	414.36	0	0	414.36
437586	LF	7369	7369	0	04-22-2014	1:32:00 PM	30.92	1	1	13	26	56	32	556.56	0	0	556.56
437609	LF	7369	7369	0	04-22-2014	2:09:00 PM	31.65	1	1	13	26	56	32	569.7	0	0	569.7
437610	LF	7369	7369	0	04-22-2014	2:12:00 PM	27.79	1	1	13	26	56	32	500.22	0	0	500.22
437611	LF	7369	7369	0	04-22-2014	2:13:00 PM	28.71	1	1	13	26	56	32	516.78	0	0	516.78
437612	LF	7369	7369	0	04-22-2014	2:35:00 PM	23.57	1	1	13	26	56	32	424.26	0	0	424.26
437629	LF	7369	7369	0	04-23-2014	1:56:00 PM	29.84	1	1	13	26	56	32	537.12	0	0	537.12
437630	LF	7369	7369	0	04-23-2014	1:57:00 PM	30.84	1	1	13	26	56	32	555.12	0	0	555.12
437631	LF	7369	7369	0	04-23-2014	1:58:00 PM	28.20	1	1	13	26	56	32	507.6	0	0	507.6
437632	LF	7369	7369	0	04-23-2014	1:59:00 PM	33.91	1	1	13	26	56	32	610.38	0	0	610.38
437633	LF	7369	7369	0	04-23-2014	1:59:00 PM	29.51	1	1	13	26	56	32	531.18	0	0	531.18
437634	LF	7369	7369	0	04-23-2014	2:00:00 PM	32.15	1	1	13	26	56	32	578.7	0	0	578.7
437635	LF	7369	7369	0	04-23-2014	2:01:00 PM	31.64	1	1	13	26	56	32	569.52	0	0	569.52
437636	LF	7369	7369	0	04-23-2014	2:09:00 PM	31.00	1	1	13	26	56	32	558	0	0	558

By Billing Account

Trans. #	Site	Account	Truck #	Trailer #	Date Out	Time Out	Net Weight	Tran	Pay	Veh	Org	Mat	Dest	Tip Fee	Special $	Tax $	Total Fee
								-----------Type Codes----------									
437637	LF	7369	7369	0	04-23-2014	2:11:00 PM	26.46	1	1	13	26	56	32	476.28	0	0	476.28
437638	LF	7369	7369	0	04-23-2014	2:12:00 PM	30.42	1	1	13	26	56	32	547.56	0	0	547.56
437703	LF	7369	7369	0	04-24-2014	2:18:00 PM	30.32	1	1	13	26	56	32	545.76	0	0	545.76
437704	LF	7369	7369	0	04-24-2014	2:20:00 PM	36.93	1	1	13	26	56	32	664.74	0	0	664.74
437705	LF	7369	7369	0	04-24-2014	2:25:00 PM	35.08	1	1	13	26	56	32	631.44	0	0	631.44
437706	LF	7369	7369	0	04-24-2014	2:26:00 PM	35.24	1	1	13	26	56	32	634.32	0	0	634.32
437707	LF	7369	7369	0	04-24-2014	2:27:00 PM	31.45	1	1	13	26	56	32	566.1	0	0	566.1
437708	LF	7369	7369	0	04-24-2014	2:28:00 PM	36.35	1	1	13	26	56	32	654.3	0	0	654.3
437719	LF	7369	7369	0	04-25-2014	8:37:00 AM	34.95	1	1	13	26	56	32	629.1	0	0	629.1
437720	LF	7369	7369	0	04-25-2014	8:38:00 AM	30.15	1	1	13	26	56	32	542.7	0	0	542.7
437721	LF	7369	7369	0	04-25-2014	8:40:00 AM	28.05	1	1	13	26	56	32	504.9	0	0	504.9
437722	LF	7369	7369	0	04-25-2014	8:42:00 AM	30.48	1	1	13	26	56	32	548.64	0	0	548.64
437723	LF	7369	7369	0	04-25-2014	8:42:00 AM	29.81	1	1	13	26	56	32	536.58	0	0	536.58
437763	LF	7369	7369	0	04-28-2014	8:34:00 AM	32.86	1	1	13	26	56	32	591.48	0	0	591.48
437764	LF	7369	7369	0	04-28-2014	8:39:00 AM	32.67	1	1	13	26	56	32	588.06	0	0	588.06
437765	LF	7369	7369	0	04-28-2014	8:46:00 AM	31.82	1	1	13	26	56	32	572.76	0	0	572.76
437766	LF	7369	7369	0	04-28-2014	8:47:00 AM	34.12	1	1	13	26	56	32	614.16	0	0	614.16
437767	LF	7369	7369	0	04-28-2014	9:01:00 AM	31.36	1	1	13	26	56	32	564.48	0	0	564.48
437769	LF	7369	7369	0	04-28-2014	10:14:00 AM	29.67	1	1	13	26	56	32	534.06	0	0	534.06
437770	LF	7369	7369	0	04-28-2014	10:16:00 AM	34.48	1	1	13	26	56	32	620.64	0	0	620.64
437773	LF	7369	7369	0	04-28-2014	10:26:00 AM	35.64	1	1	13	26	56	32	641.52	0	0	641.52
437778	LF	7369	7369	0	04-28-2014	12:18:00 PM	28.96	1	1	13	26	56	32	521.28	0	0	521.28
437779	LF	7369	7369	0	04-28-2014	12:45:00 PM	9.54	1	1	13	26	56	32	171.72	0	0	171.72
437780	LF	7369	7369	0	04-28-2014	12:49:00 PM	35.90	1	1	13	26	56	32	646.2	0	0	646.2
437781	LF	7369	7369	0	04-28-2014	12:50:00 PM	30.88	1	1	13	26	56	32	555.84	0	0	555.84
437812	LF	7369	7369	0	04-29-2014	8:28:00 AM	35.20	1	1	13	26	56	32	633.6	0	0	633.6
437813	LF	7369	7369	0	04-29-2014	8:36:00 AM	29.69	1	1	13	26	56	32	534.42	0	0	534.42
437814	LF	7369	7369	0	04-29-2014	8:43:00 AM	27.38	1	1	13	26	56	32	492.84	0	0	492.84
437815	LF	7369	7369	0	04-29-2014	11:45:00 AM	33.32	1	1	13	26	56	32	599.76	0	0	599.76
437816	LF	7369	7369	0	04-29-2014	11:47:00 AM	35.94	1	1	13	26	56	32	646.92	0	0	646.92
437817	LF	7369	7369	0	04-29-2014	11:47:00 AM	31.94	1	1	13	26	56	32	574.92	0	0	574.92
437818	LF	7369	7369	0	04-29-2014	11:50:00 AM	34.09	1	1	13	26	56	32	613.62	0	0	613.62

By Billing Account

Trans. #	Site	Account	Truck #	Trailer #	Date Out	Time Out	Net Weight	Tran	Pay	Veh	Org	Mat	Dest	Tip Fee	Special $	Tax $	Total Fee
								-----------Type Codes----------									
437819	LF	7369	7369	0	04-29-2014	11:53:00 AM	31.42	1	1	13	26	56	32	565.56	0	0	565.56
437820	LF	7369	7369	0	04-29-2014	12:02:00 PM	30.63	1	1	13	26	56	32	551.34	0	0	551.34
437821	LF	7369	7369	0	04-29-2014	12:05:00 PM	33.49	1	1	13	26	56	32	602.82	0	0	602.82
437848	LF	7369	7369	0	04-29-2014	2:22:00 PM	28.70	1	1	13	26	56	32	516.6	0	0	516.6
437849	LF	7369	7369	0	04-29-2014	2:24:00 PM	31.44	1	1	13	26	56	32	565.92	0	0	565.92
437850	LF	7369	7369	0	04-29-2014	2:26:00 PM	29.15	1	1	13	26	56	32	524.7	0	0	524.7
437851	LF	7369	7369	0	04-29-2014	2:26:00 PM	31.38	1	1	13	26	56	32	564.84	0	0	564.84
437865	LF	7369	7369	0	04-30-2014	12:55:00 PM	30.96	1	1	13	26	56	32	557.28	0	0	557.28
437866	LF	7369	7369	0	04-30-2014	1:05:00 PM	26.80	1	1	13	26	56	32	482.4	0	0	482.4
437867	LF	7369	7369	0	04-30-2014	1:05:00 PM	31.57	1	1	13	26	56	32	568.26	0	0	568.26
437868	LF	7369	7369	0	04-30-2014	1:06:00 PM	32.63	1	1	13	26	56	32	587.34	0	0	587.34
437869	LF	7369	7369	0	04-30-2014	1:11:00 PM	37.68	1	1	13	26	56	32	678.24	0	0	678.24
437870	LF	7369	7369	0	04-30-2014	1:17:00 PM	33.76	1	1	13	26	56	32	607.68	0	0	607.68
437871	LF	7369	7369	0	04-30-2014	1:21:00 PM	26.61	1	1	13	26	56	32	478.98	0	0	478.98
437872	LF	7369	7369	0	04-30-2014	1:22:00 PM	36.78	1	1	13	26	56	32	662.04	0	0	662.04
437873	LF	7369	7369	0	04-30-2014	1:23:00 PM	31.09	1	1	13	26	56	32	559.62	0	0	559.62
437874	LF	7369	7369	0	04-30-2014	1:23:00 PM	34.93	1	1	13	26	56	32	628.74	0	0	628.74
437883	LF	7369	7369	0	04-30-2014	2:20:00 PM	35.57	1	1	13	26	56	32	640.26	0	0	640.26
437939	LF	7369	7369	0	05-01-2014	10:00:00 AM	34.47	1	1	13	26	56	32	620.46	0	0	620.46
437940	LF	7369	7369	0	05-01-2014	10:01:00 AM	31.31	1	1	13	26	56	32	563.58	0	0	563.58
437941	LF	7369	7369	0	05-01-2014	10:03:00 AM	28.59	1	1	13	26	56	32	514.62	0	0	514.62
437946	LF	7369	7369	0	05-01-2014	11:24:00 AM	35.25	1	1	13	26	56	32	634.5	0	0	634.5
437955	LF	7369	7369	0	05-02-2014	9:08:00 AM	28.19	1	1	13	26	56	32	507.42	0	0	507.42
437956	LF	7369	7369	0	05-02-2014	9:10:00 AM	33.03	1	1	13	26	56	32	594.54	0	0	594.54
437957	LF	7369	7369	0	05-02-2014	9:37:00 AM	31.13	1	1	13	26	56	32	560.34	0	0	560.34
437962	LF	7369	7369	0	05-02-2014	9:45:00 AM	32.16	1	1	13	26	56	32	578.88	0	0	578.88
437963	LF	7369	7369	0	05-02-2014	9:46:00 AM	31.05	1	1	13	26	56	32	558.9	0	0	558.9
437969	LF	7369	7369	0	05-02-2014	12:06:00 PM	28.35	1	1	13	26	56	32	510.3	0	0	510.3
437970	LF	7369	7369	0	05-02-2014	12:07:00 PM	26.81	1	1	13	26	56	32	482.58	0	0	482.58
437971	LF	7369	7369	0	05-02-2014	12:08:00 PM	31.74	1	1	13	26	56	32	571.32	0	0	571.32
438005	LF	7369	7369	0	05-05-2014	7:46:00 AM	34.90	1	1	13	26	56	32	628.2	0	0	628.2
438007	LF	7369	7369	0	05-05-2014	9:16:00 AM	34.81	1	1	13	26	56	32	626.58	0	0	626.58

By Billing Account

Trans. #	Site	Account	Truck #	Trailer #	Date Out	Time Out	Net Weight	-----------Type Codes---------- Tran	Pay	Veh	Org	Mat	Dest	Tip Fee	Special $	Tax $	Total Fee
438008	LF	7369	7369	0	05-05-2014	12:45:00 PM	39.36	1	1	13	26	56	32	708.48	0	0	708.48
438009	LF	7369	7369	0	05-05-2014	1:12:00 PM	36.30	1	1	13	26	56	32	653.4	0	0	653.4
438010	LF	7369	7369	0	05-05-2014	1:13:00 PM	37.51	1	1	13	26	56	32	675.18	0	0	675.18
438106	LF	7369	7369	0	05-08-2014	8:05:00 AM	26.84	1	1	13	26	56	32	483.12	0	0	483.12
438107	LF	7369	7369	0	05-08-2014	8:14:00 AM	29.88	1	1	13	26	56	32	537.84	0	0	537.84
438108	LF	7369	7369	0	05-08-2014	8:23:00 AM	30.67	1	1	13	26	56	32	552.06	0	0	552.06
438109	LF	7369	7369	0	05-08-2014	8:24:00 AM	31.16	1	1	13	26	56	32	560.88	0	0	560.88
438149	LF	7369	7369	0	05-09-2014	7:52:00 AM	30.94	1	1	13	26	56	32	556.92	0	0	556.92
438150	LF	7369	7369	0	05-09-2014	7:56:00 AM	30.57	1	1	13	26	56	32	550.26	0	0	550.26
438151	LF	7369	7369	0	05-09-2014	8:02:00 AM	31.58	1	1	13	26	56	32	568.44	0	0	568.44
438155	LF	7369	7369	0	05-09-2014	8:24:00 AM	29.80	1	1	13	26	56	32	536.4	0	0	536.4
438157	LF	7369	7369	0	05-09-2014	8:34:00 AM	32.26	1	1	13	26	56	32	580.68	0	0	580.68
438158	LF	7369	7369	0	05-09-2014	8:36:00 AM	31.60	1	1	13	26	56	32	568.8	0	0	568.8
438161	LF	7369	7369	0	05-09-2014	8:50:00 AM	28.14	1	1	13	26	56	32	506.52	0	0	506.52
438162	LF	7369	7369	0	05-09-2014	8:53:00 AM	32.09	1	1	13	26	56	32	577.62	0	0	577.62
438360	LF	7369	7369	0	05-16-2014	7:38:00 AM	33.91	1	1	13	26	56	32	610.38	0	0	610.38
438361	LF	7369	7369	0	05-16-2014	7:40:00 AM	37.74	1	1	13	26	56	32	679.32	0	0	679.32
# of Transactions	107				**Total Tons:**		3,317.95	**Total $:**			$59,723.10			$0.00	$0.00		$59,723.10

Report Totals:

# of Transactions 107	**Total Tons:** 3,317.95	**Total $:**	$59,723.10	$0.00	$0.00	$59,723.10

HWA GEOSCIENCES INC.
Geotechnical Engineering • Hydrogeology • Geoenvironmental Services • Inspection and Testing

November 6, 2015
HWA Project No. 2007-098 Task 2010

Washington Department of Ecology, Toxics Cleanup Program
3190 – 160th Avenue SE
Bellevue, Washington 98008

Attention: Jerome B. Cruz, Ph.D.

**Subject: Addendum No. 1 to Interim Action Cleanup Report, (HWA, 9/1/14)
Bothell Landing Site, Bothell, WA**

Dear Dr. Cruz:

This letter is Addendum No. 1 to the previously submitted Interim Action Cleanup Report for the Bothell Landing site in Bothell, Washington (the Site). Site location and vicinity are shown on Figure 1.

INTRODUCTION

The Interim Action Cleanup Report (HWA, 9/2/14) was submitted to the Washington Department of Ecology (Ecology) on September 2, 2015 pursuant to an Agreed Order between the City and the Washington Department of Ecology (Ecology) for the Bothell Landing Site. The interim action cleanup included excavation of approximately 6,874 tons of petroleum-contaminated soil during two separate interim action cleanups performed in 2010 and 2013/2014, but did not include a portion of work along the north eastern property line due to lack of access permissions from the adjacent property owner.

This addendum documents the soil removal that was performed in 2015, following the acquisition of permission to access the adjacent private property. The addendum describes the results of recent soil excavation, sampling and testing that were performed in order to confirm removal of petroleum hydrocarbons in soil in an area that was not accessible during previous interim actions. Petroleum hydrocarbons exceeding cleanup levels were detected in one confirmation sample collected at the limits of the interim action soil excavation performed in 2014, but further excavation was limited by the property boundary. Details regarding the scope and results of the 2010 and 2013/2014 interim actions can be found in the Interim Action Cleanup Report (HWA, 9/2/2014) which was previously submitted to Ecology. The following sections of this addendum describe the results of recent cleanup activities and provide data indicating that petroleum hydrocarbons in the vicinity of the former confirmation sample have been removed, and that the interim action is now complete.

21312 30th Drive SE
Suite 110
Bothell, WA 98021-7010
Tel: 425.774.0106
Fax: 425.774.2714
www.hwageo.com

BACKGROUND

The City performed two interim action soil cleanups in 2010 and 2013/2014 that were coordinated with improvements to SR522 and/or Bothell Way NE. The approximate limits of the previous soil excavations are shown on Figure 2. The depth of the excavations ranged from approximately six to 12 feet bgs.

In the course of the 2013/2014 cleanups 34 excavation sidewall and 28 five excavation bottom samples were collected from the cleanup areas to confirm soil cleanup. Confirmation samples collected from the excavations documented that Site cleanup levels were achieved, with the exception of one location (sample L-PEX-85) where further excavation could not be performed because the City did not have permission to extend the excavation onto adjoining private property.

Environmental Resources Management (ERM) performed a subsurface investigation in February 2015 on the adjoining private property to evaluate soil and groundwater quality to support a property transfer (ERM, 3/12/15). This property (King County tax parcel no. 0826059096) houses a Baskin Robbins restaurant. ERM advanced three soil borings (ERM-1, ERM-2 and ERM-3) at locations north, northeast, and east of the former location of L-PEX-85. Soil and groundwater samples were collected from each boring and submitted for chemical analysis, including total petroleum hydrocarbons (TPH), total metals, volatile organic compounds (VOCs), and selected semivolatile organic compounds (SVOCs). Concentrations of TPH, total metals, VOCs and SVOCs did not exceed Model Toxics Control Act (MTCA) Method A cleanup levels for these constituents. No TPH, VOCs, or SVOCs were detected above laboratory reporting limits. Based on the analytical results, ERM concluded that there was no evidence of contamination in soil or groundwater at the locations sampled. Copies of the tabulated analytical results for soil and groundwater samples (Tables 1 and 2) from the ERM report are included in Appendix A.

SOIL EXCAVATION AND SAMPLING

The City obtained access to the private property in 2015, and soil excavation was performed in the vicinity of former soil sample L-PEX-85 on September 19 and 28, 2015. Excavation was performed by 3 Kings Environmental of Battle Ground, Washington using a tack-mounted excavator. Excavation activities removed soil north, east and west of the former L-PEX-85 sample location, thereby extending the former limits of the 2014 interim action excavation to remove the localized zone of petroleum-contaminated soil in the vicinity of L-PEX-85. The excavation was rectangular, measuring approximately 8 feet long, 5 feet wide, and 7.5 feet deep. The excavation extended in a northeast direction onto the adjacent private property that houses Baskin Robbins, approximately 5 feet past the former location of confirmation sample L-PEX-85. Excavated soil was enclosed in plastic sheeting and temporarily stockpiled on site.

Three confirmation samples were collected, one each from the north, east and west sides of the excavation, and each at approximately 5 feet below ground surface (bgs). Sample depth corresponded to the depth of former confirmation sample L-PEX-85, which was collected at 5 feet bgs from the northeast side of the 2014 interim action soil cleanup excavation (see Figure 2). Samples were transported to OnSite Environmental of Redmond, Washington for chemical analysis.

Approximately 8.7 tons of soil were removed from the excavation and transported to Republic Services transfer station in Seattle, Washington for landfill disposal. A copy of the soil disposal documentation is included in Appendix B. The excavation was backfilled with imported fill, compacted with a hoe pack and paved.

LABORATORY ANALYSIS

Laboratory analysis of the soil samples was performed by OnSite Environmental and included the following:

- Total petroleum hydrocarbons as gasoline (TPHg) using Ecology Northwest method NWTPH-G;
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA method 8260C; and,
- TPH as diesel (TPHd) and TPH as oil (TPHo) using Ecology Northwest method NWTPH-Dx.

Analytical results for soil samples from the supplemental soil excavation, and for interim action confirmation sample L-PEX-85, are summarized in Table 1. A copy of the original laboratory report is included in Appendix C.

DATA EVLUATION AND RESULTS

Analytical results for the three confirmation samples collected from the 2015 excavation investigation indicate no TPH or BTEX detected above laboratory reporting limits or established Site cleanup levels, which are MTCA Method A cleanup levels.

The absence of TPH and BTEX in each of the samples collected during the supplemental excavation are evidence that the excavation was successful in removing the localized TPH and BTEX concentrations at the location of former sample L-PEX-85.

Further excavation or other remedial actions do not appear warranted based on the analytical results for the three confirmation samples.

CONCLUSIONS

This supplemental soil excavation was performed by the City of Bothell to remove TPH and BTEX concentrations that were detected in a soil sample collected on the northeast side of the interim action soil excavation performed at the Site during a previous construction phase. Approximately 8.7 tons of soil from 0 to 7.5 feet depth were excavated and transported to Republic Services facility in Seattle, Washington for disposal. Three soil samples were collected from the sides of the supplemental excavation to evaluate if the excavation was of sufficient size to remove the localized zone of TPH and BTEX that was present at that location. Analytical results for these samples indicate no detectable concentrations of TPH or BTEX above the laboratory reporting limits. The excavation was then backfilled and paved.

This represents the final phase of the interim action by the City of Bothell at the Bothell Landing site. In conclusion, there are no remaining TPH-contaminated soils at the site.

REFERENCES

HWA Geosciences Inc. 2014. *Interim Action Cleanup Report, Bothell Landing Site, Bothell, Washington*, dated September 2, 2014.

Environmental Resources Management, 2015. *Phase II Environmental Site Assessment Report, 10005 Main Street, Bothell, Washington*, dated March 12, 2015.

CLOSING

We appreciate the opportunity to provide our services to you on this project. Please feel free to call us if you have any questions or need more information.

Sincerely,
HWA GEOSCIENCES INC.

Jeff Thompson LG, LEG
Environmental Group Manager

Arnie Sugar, LG, LHG
Principal Hydrogeologist

Attachments:

Table 1	Analytical Results for Soil Samples
Figure 1	Site Location and Vicinity Map
Figure 2	Extent of 2014 Interim Action Cleanup and 2015 Supplemental Excavation
Figure 3	Confirmation Sample Locations, 2015 Supplemental Soil Excavation
Appendix A	Copy of Previous Analytical Results (ERM, 2015)
Appendix B	Copy of Soil Disposal Documentation
Appendix C	Copy of Analytical Reports

TABLE 1
ANALYTICAL RESULTS FOR SOIL SAMPLES
SUPPLEMENTAL SOIL EXCAVATION, SEPTEMBER 2015
BOTHELL LANDING SITE
BOTHELL, WA

Sample ID	Sample Depth (feet)	Source, Date	NWTPH-G	NWTPH-D	NWTPH-O	Benzene	Toluene	Ethylbenzene	Xylenes
EX-N	5	Confirmation Sample Supplemental Soil Excavation (HWA, 2015)	<6.9	<31	<62	<0.02	<0.069	<0.069	<0.069
EX-W	5	Confirmation Sample Supplemental Soil Excavation (HWA, 2015)	<8.9	<35	**87**	<0.02	<0.089	<0.089	<0.089
EX-E	5	Confirmation Sample Supplemental Soil Excavation (HWA, 2015)	<7.3	<32	<64	<0.02	<0.073	<0.073	<0.073
L-PEX-85		Confirmation Sample Interim Action Soil Cleanup (HWA, 2014) Now Removed	<49	<59	**480**	**0.17**	**<0.12**	**0.53**	**2.3**
MTCA Method A/B Cleanup Level [2,3]			**30/100***	**2,000**	**2,000**	**0.03**	**7**	**6**	**9**

Notes:

All concentrations are in milligrams per kilogram (mg/kg) unless otherwise noted.

<: Not detected at laboratory's reporting limit

N/A: not applicable

Blank: no data in a cell indicates the analysis was not perfomred on that sample.

Bold: Analyte Detected

Bold/Highlighted: Analyte detected above MTCA soil cleanup level

- Sample from area that was subsequently excavated

MTCA: Model Toxics Control Act regulation (Washington Administrative Code 173-340)

* The MTCA Method A cleanup level = 100 mg/kg for gasoline mixtures without benzene, and where the total of ethylbenzene, toluene, and xylenes are less than 1% of the gasoline mixture. The cleanup level for all other gasoline mixtures = 30 mg/kg.

2. Washington Model Toxics Control Act Method A (Table 740-1) soil cleanup level for unrestricted land use, shown for reference only
3. Washington Model Toxics Control Act Method B (CLARC) soil cleanup level, shown for reference only
   These cleanup levels may not apply at this site, and are provided as a screening level indication of the environmental quality of the site only.
4. Dangerous Waste Criteria - Dangerous Waste limit shown for TCLP results, Chapter 173-303 WAC

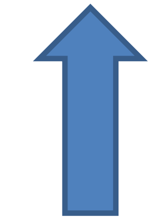


Figure modified from Google (2015). All locations, boundaries, areas and other images shown here should be considered approximate until verified.

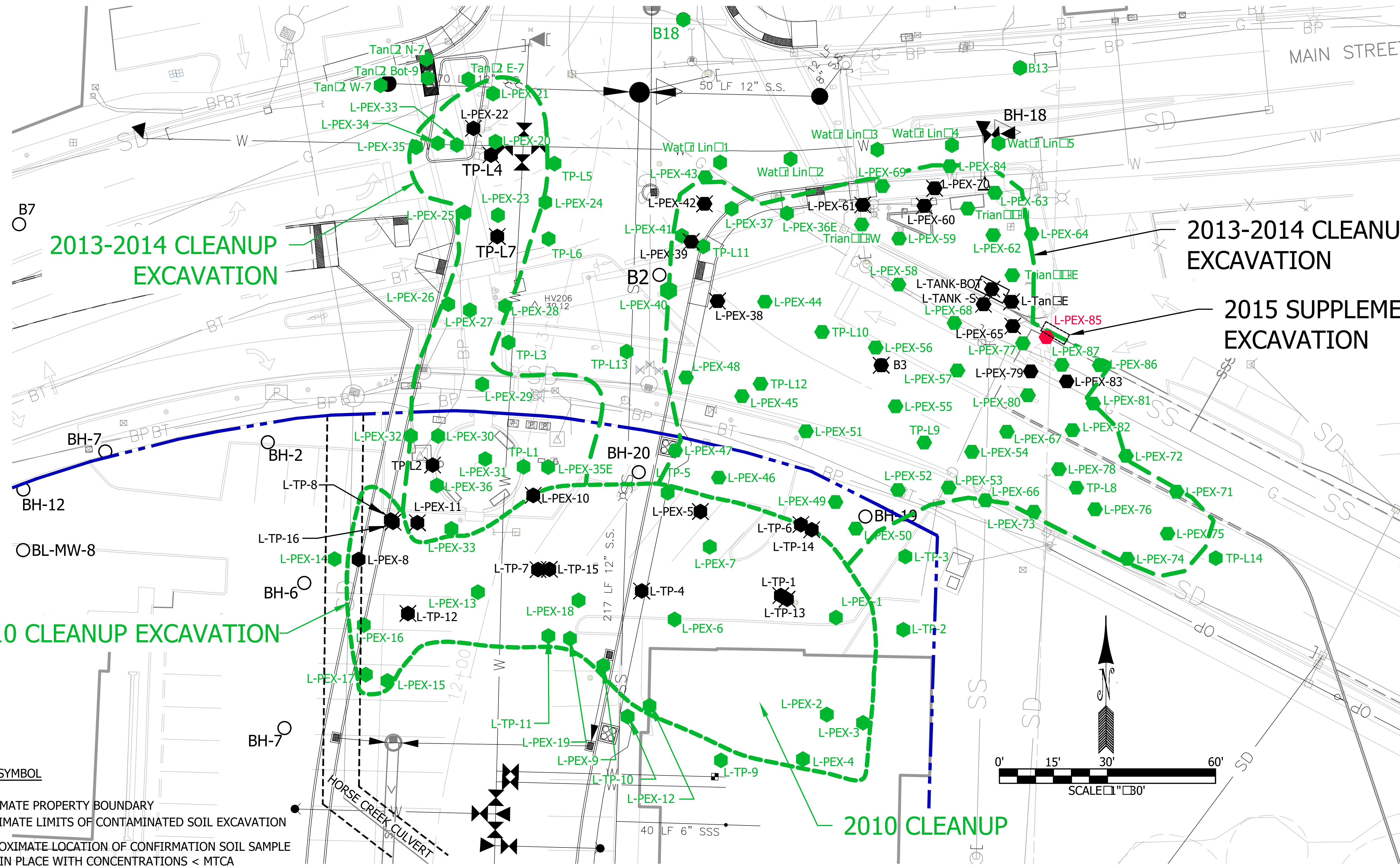
HWA GEOSCIENCES INC.

SITE LOCATION AND VICINITY MAP

BOTHELL LANDING SITE
BOTHELL, WASHINGTON

FIGURE NO.
1

PROJECT NO.
2007-098



EXPLANATION OF SYMBOL

APPROXIMATE PROPERTY BOUNDARY

APPROXIMATE LIMITS OF CONTAMINATED SOIL EXCAVATION

L-PEX-9 APPROXIMATE LOCATION OF CONFIRMATION SOIL SAMPLE LEFT IN PLACE WITH CONCENTRATIONS < MTCA

L-TP-6 APPROXIMATE LOCATION OF CONFIRMATION SOIL SAMPLE LEFT IN PLACE WITH CONCENTRATIONS ≥ MTCA

L-TP-9 APPROXIMATE LOCATION OF SOIL SAMPLE IN AREA THAT WAS SUBSEQUENTLY EXCAVATED

L-TP-9 PRE-INTERIM ACTION SOIL SAMPLE MEETING MTCA CLEANUP LEVELS

BASE MAP PROVIDED BY PARAMETRIX

HWA GEOSCIENCES INC.

BOTHELL LANDING SITE
BOTHELL, WASHINGTON

EXTENT OF 2014 INTERIM ACTION CLEANUP AND 2015 SUPPLEMENTAL EXCAVATION

DRAWN BY EFK	FIGURE NO. 2
CHECK BY JS	PROJECT NO.
DATE 10.02.15	2007-098 T2010

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD 2007-098\HWA 2007-098-21 T994.DWG <BOTHELL LA□DI□G O□L□ FIG 4 □17□> Plotted: 10/12/2015 12:08 AM

0' 10' 20' 40'
SCALE□1"□20'

EXPLANATION OF SYMBOLS

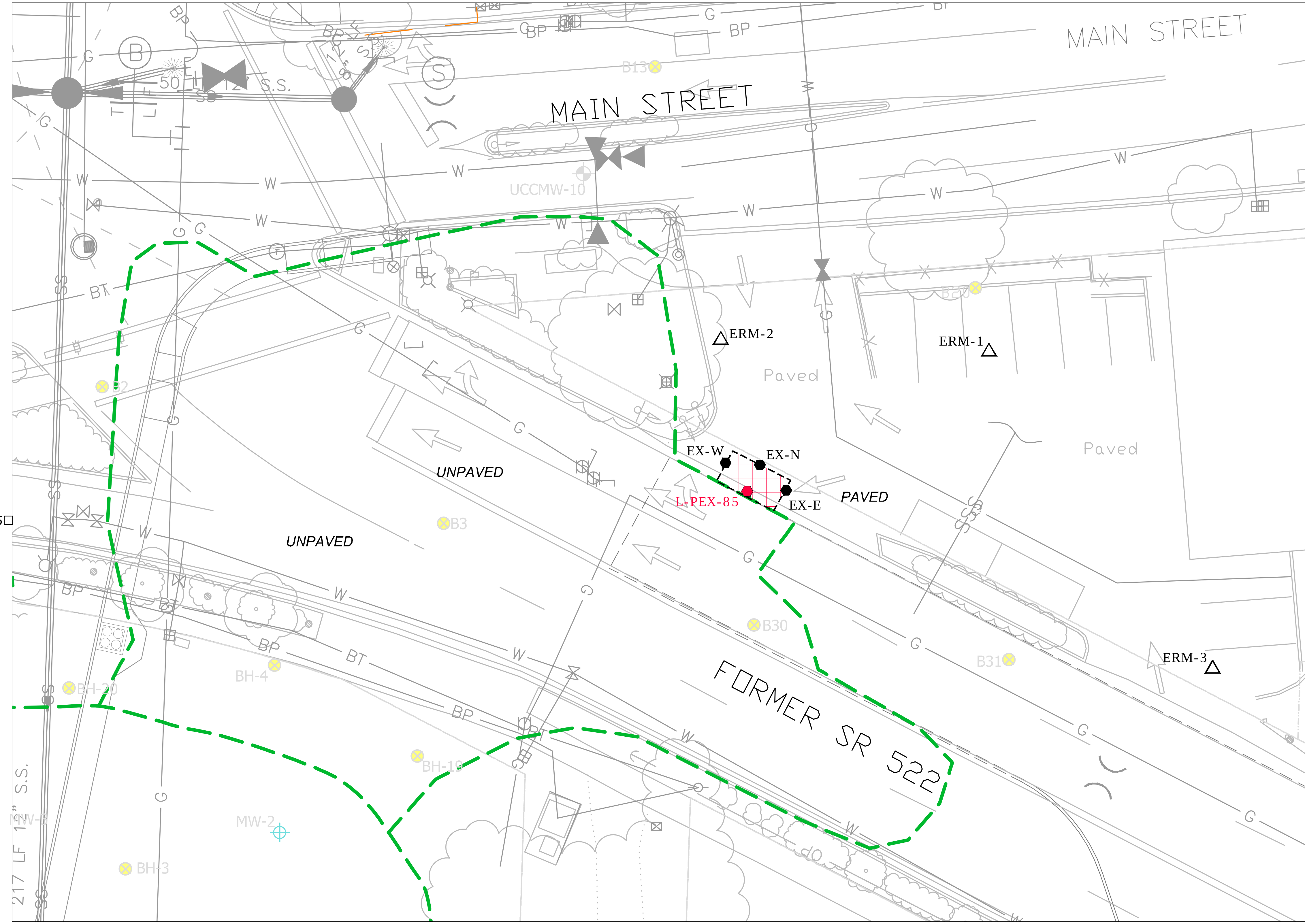
R□□diat□d Ar□a □ac□□□□ □t□c□an □oi□□

L-PEX-85 For□□ con□□ation □oi□□a□□□□□o□ int□ri□ action □oi□□xcavation, A□ri□2014

EX-N Con□□ation □oi□□a□□□□o□ □□□□□□□□ta□ □oi□□xcavation, S□□□□□□ 2015

ERM-3 S□□□□ac□Soi□Sa□□□□Location □ERM, 2015□

Soi□R□□□diation Ar□a, S□□□□□□ 2015



HWA GEOSCIENCES INC.

BOTHELL LANDING SITE
BOTHELL, WASHINGTON

CONFIRMATION SAMPLE LOCATIONS 2015 SUPPLEMENTAL SOIL EXCAVATION

DRAWN BY EFK	FIGURE NO. 3
CHECK BY JT	PROJECT NO.
DATE 10.11.15	2007-098 T2010

APPENDIX A

COPY OF PREVIOUS ANALYTICAL RESULTS (ERM, 2015)

Chemical Name	Sample Location	ERM-1		ERM-2		ERM-3		Preliminary Screening Levels		TEF
	Sample ID	ERM-1-3.5	ERM-1-20	ERM-2-5	ERM-2-9	ERM-3-5	ERM-3-9			
	Sample Depth	3.5 feet bgs	20 ft bgs	5 ft bgs	9 ft bgs	5 ft bgs	9 ft bgs			
	Sample Date	2/24/2015	2/24/2015	2/24/2015	2/24/2015	2/24/2015	2/24/2015	MTCA A & MTCA B	Background[5]	
Diesel-Range Organics by Method NWTPH-Dx										
Diesel Range Organics	mg/kg	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U	2,000	--	--
Motor Oil Range Organics (C24-C36)	mg/kg	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	2,000	--	--
Gasoline-Range Organics by Method NWTPH-Gx										--
Gasoline Range Organics	mg/kg	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U	100	--	--
Metals by USEPA Method SW6020										
Arsenic	mg/kg	1.9	4.2	1.9	2.2	2.5	3.8	20	7	--
Barium	mg/kg	51	39	23	50	68	44	16,000[1]	--	--
Cadmium	mg/kg	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	2	1	--
Chromium	mg/kg	31	27	24	37	37	26	19[2]/2,000[3]	48	--
Lead	mg/kg	2.1	1.7	2.7	2.2	1.7	1.7	250	24	--
Selenium	mg/kg	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	400[1]	--	--
Silver	mg/kg	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	400[1]	--	--
Mercury by USEPA Method SW7471										
Mercury	mg/kg	< 0.020 U	< 0.020 U	0.032	0.025	< 0.020 U	< 0.020 U	2	--	--
Volatile Organic Compounds by USEPA Method SW8260C										
1,1,1-Trichloroethane	µg/kg	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	2,000	--	--
Benzene	µg/kg	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	30	--	--
Ethylbenzene	µg/kg	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	6,000	--	--
Ethylene dibromide	µg/kg	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	5	--	--
Methyl tert-butyl ether	µg/kg	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	100	--	--
Methylene chloride	µg/kg	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	20	--	--
Naphthalene	µg/kg	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	5,000	--	--
Tetrachloroethene	µg/kg	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	50	--	--
Toluene	µg/kg	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	7,000	--	--
Trichloroethene	µg/kg	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	30	--	--
Vinyl chloride	µg/kg	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	240[1]	--	--
Semi-Volatile Organic Compounds by USEPA Method SW8270D										
Benzo(a)anthracene	µg/kg	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	1,370[1]	--	0.1
Benzo(a)pyrene	µg/kg	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	100	--	1.0
Benzo(b)fluoranthene	µg/kg	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	1,370[1]	--	0.1
Benzo(k)fluoranthene	µg/kg	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	13,700[1]	--	0.1
Chrysene	µg/kg	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	137,000[1]	--	0.0
Dibenzo(a,h)anthracene	µg/kg	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	137[1]	--	0.1
Indeno(1,2,3-cd)pyrene	µg/kg	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	1,370[1]	--	0.1
Naphthalene	µg/kg	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	5,000	--	
Benzo(a)pyrene TEQ (ND=0)[4]		0	0	0	0	0	0	100	--	--
Benzo(a)pyrene TEQ (ND=1/2DL)[4]		75.5	75.5	75.5	75.5	75.5	75.5	100	--	--

Notes:
(1) Model Toxics Control Act Method B Soil Cleanup Level, Non-carcinogenic risk.
(2) MTCA Method A Soil Cleanup Level for Chromium VI for Unrestricted Land Use.
(3) MTCA Method A Soil Cleanup Level for Chromium III for Unrestricted Land Use.
(4) Toxicity Equivalency Quotient calculations for carcinogenic polycyclic aromatic hydrocarbons (cPAHs; WAC 173-340-200) using benzo(a)pyrene as the reference chemical. If all compounds non-detect, then detection limit equal to maximum detection limit (modified by chemical's toxicity factor).
(5) Background metals concentrations for the Puget Sound area per the *Natural Background Soil Metals Concentrations in Washington State, Department of Ecology Publication No. #94-115, October 1994*.

Key:
-- = Not applicable
µg/kg = Micrograms per kilogram
mg/kg = Milligrams per kilogram
MTCA A = Model Toxics Control Act Method A Soil Cleanup Level for Unrestricted Land Use
MTCA B = Model Toxics Control Act Method B Soil Cleanup Level
NV = No value
TEF = Toxicity Equivalency Factor
USEPA = United States Environmental Protection Agency

TABLE 2

Summary of Grab Groundwater Analytical Data
Phase II ESA
10005 Main Street
Bothell, Washington

Chemical Name	Sample Name	ERM-1-W		ERM-2-W		ERM-3-W		Preliminary Screening Level	TEF
	Sample Date	2/24/2015		2/24/2015		2/24/2015		MTCA A	
Diesel-Range Organics by Method NWTPH-Dx									
Diesel-Range Organics	µg/L	< 130	U	< 130	U	< 130	U	500	--
Motor Oil Range Organics (C24-C36)	µg/L	< 250	U	< 250	U	< 250	U	500	--
Gasoline-Range Organics by Method NWTPH-Gx									
Gasoline Range Organics	µg/L	< 50	U	< 50	U	< 50	U	1,000	--
Volatile Organic Compounds by USEPA Method SW8260C									
1,1,1-Trichloroethane	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	200	--
1,2-Dichloroethane	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	5	--
Benzene	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	5	--
Ethylbenzene	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	700	--
Ethylene dibromide	µg/L	< 0.010	U	< 0.010	U	< 0.010	U	0.01	--
Methyl tert-butyl ether	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	20	--
Methylene chloride	µg/L	< 5.0	U	< 5.0	U	< 5.0	U	5	--
Naphthalene	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	160	--
Tetrachloroethene	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	5	--
Toluene	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	1,000	--
Trichloroethene	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	5	--
Vinyl chloride	µg/L	< 0.20	U	< 0.20	U	< 0.20	U	0.2	--
Semi-Volatile Organic Compounds by USEPA Method SW8270D									
Benzo(a)anthracene	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	NV	0.1
Benzo(a)pyrene	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	0.1	1
Benzo(b)fluoranthene	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	NV	0.1
Benzo(k)fluoranthene	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	NV	0.1
Chrysene	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	NV	0.01
Dibenzo(a,h)anthracene	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	NV	0.1
Indeno(1,2,3-cd)pyrene	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	NV	0.1
Naphthalene	µg/L	< 2.0	U	< 2.0	U	< 2.0	U	160	--
Benzo(a)pyrene TEQ (ND=0)(1)	µg/L	0		0		0		0.1	--
Benzo(a)pyrene TEQ (ND=1/2DL)(1)	µg/L	1.51		1.51		1.51		0.1	--

Notes:

Light grey-shaded values indicate that the method detection limit exceeds the screening level.

(1) Toxicity Equivalency Quotient calculations for carcinogenic polycyclic aromatic hydrocarbons (cPAHs; WAC 173-340-200) using benzo(a)pyrene as the reference chemical. If all compounds non-detect, then detection limit equal to maximum detection limit (modified by chemical's toxicity factor).

Key:

-- = Not applicable
µg/L = Micrograms per Liter
MTCA A = Model Toxics Control Act Method A Groundwater Cleanup Level for Unrestricted Land Use
NV = No value
TEF = Toxicity Equivalency Factor
USEPA = United States Environmental Protection Agency

APPENDIX B

COPY OF SOIL DISPOSAL DOCUMENTATION

AGENT SPECIAL WASTE SERVICE AGREEMENT
NON-HAZARDOUS WASTES

REPUBLIC SERVICES

Special Waste Profile Number: 4178 15 15597

Agent Billing Information

Name: 3 Kings Environmental
Address: 1311 SE Grace Avenue
City: Battle Ground
State: Washington Zip: 98604
Phone: 360-907-4515 Fax: 360-666-8202
Contact: Brett MacDonald

Republic Waste Location (Company)

Regional Disposal Company
4178 Roosevelt Regional MSW LF WA
500 Roosevelt Grade Road
Roosevelt WA 99356

Project: City of Bothell
County and State of Origin: King County, WA
Generator Address: 9654 NE 182nd St Bothell WA 98011

1. Special Waste Service. Subject to the terms and conditions contained herein, the Company and the Agent agree to be legally bound hereby and the Company agrees to accept at its Facility, Acceptable Waste (hereinafter referred to as "Special Waste" or "Waste") delivered by Agent, and which is acceptable to the Company as herein provided.

2. Acceptable Waste Only those Special Wastes described in Paragraph 3 herein and in any Special Waste Profile(s) which number is identical to the contract number referenced above, and which Profile(s) are hereby incorporated by reference herein, and which Waste is subsequently approved by the Company and is otherwise in accordance with all laws, regulations and permits, shall be acceptable for disposal at the Facility ("Acceptable Waste").

3. (A) Rates for Disposal:

Waste	Disposal Method	Disposal Rate:	Fees / Taxes / Misc.	Transportation
Petroleum Contaminated Soil	Landfill	$45.00 per Ton	NA	NA

Additional Information: *** This profile will expire on September 16 2016 ***

Agent shall also be liable for all taxes, fees, or other charges imposed by federal, state, local or provincial laws and regulations. Cannot Exceed Daily Volume of N/A Without Prior Approval of Company.

(B) Incorporation by Reference. In addition to Special Waste Profile(s), the following documents are incorporated by reference into this Agreement as if fully set forth herein.

1) Bill of Lading LW-15231

2)

4. Term of Agreement. This Agreement is effective for 12 months, commencing 9/16/2015 and shall automatically be renewed for a similar term thereafter unless either party shall give written notice (via certified mail) of termination to the other party at least thirty (30) days prior written notice.

THE COMPANY AND THE AGENT, IN CONSIDERATION OF THE MUTUAL OBLIGATIONS CONTAINED HEREIN, AGREE THAT THIS IS A LEGALLY BINDING AGREEMENT WHICH IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON THIS PAGE AND ON THE REVERSE SIDE OF THIS DOCUMENT. IN ADDITION, THE AGENT IS CERTIFYING THE ATTACHED TERMS AND CONDITIONS HAVE BEEN REVIEWED AND INITIALLED AT THE BOTTOM OF THE PAGE.

AGENT

SIGNATURE (AUTHORIZED REPRESENTATIVE)

Brett MacDonald Geologist

NAME AND TITLE (PLEASE PRINT)

9/18/2015

DATE

REPUBLIC SERVICES, INC/COMPANY

SIGNATURE (AUTHORIZED REPRESENTATIVE)

Leslie Whiteman

NAME AND TITLE (PLEASE PRINT)

9/18/15

DATE

Detail Contract Activity Report

All Ticket Types

January 01, 2015 to October 07, 2015

History and Waiting

Specific Contract: LW-15231

LW-15231

Ticket Date	Customer	Material	Billing Quantity
######	929555 012646 - 3 Kings Environmental,	SW-CONT SOIL	8.71 TN

Tickets Items Reported: 1

Material	Weight Inbound	Outbound	
VH - SW-	8.71	0.00	T

APPENDIX C

COPY OF ANALYTICAL REPORTS

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 18, 2015

Jeff Thompson
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-2010
Laboratory Reference No. 1509-142

Dear Jeff:

Enclosed are the analytical results and associated quality control data for samples submitted on September 16, 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: September 18, 2015
Samples Submitted: September 16, 2015
Laboratory Reference: 1509-142
Project: 2007-098-2010

Case Narrative

Samples were collected on September 16, 2015 and received by the laboratory on September 16, 2015. They were maintained at the laboratory at a temperature of 2^oC to 6^oC.

Please note that any and 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.

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^oC and -20^oC 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 18, 2015
Samples Submitted: September 16, 2015
Laboratory Reference: 1509-142
Project: 2007-098-2010

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EX-N**					
Laboratory ID:	09-142-01					
Benzene	**ND**	0.020	EPA 8021B	9-16-15	9-16-15	
Toluene	**ND**	0.069	EPA 8021B	9-16-15	9-16-15	
Ethyl Benzene	**ND**	0.069	EPA 8021B	9-16-15	9-16-15	
m,p-Xylene	**ND**	0.069	EPA 8021B	9-16-15	9-16-15	
o-Xylene	**ND**	0.069	EPA 8021B	9-16-15	9-16-15	
Gasoline	**ND**	6.9	NWTPH-Gx	9-16-15	9-16-15	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***92***	***68-123***				
Client ID:	**EX-W**					
Laboratory ID:	09-142-02					
Benzene	**ND**	0.020	EPA 8021B	9-16-15	9-16-15	
Toluene	**ND**	0.089	EPA 8021B	9-16-15	9-16-15	
Ethyl Benzene	**ND**	0.089	EPA 8021B	9-16-15	9-16-15	
m,p-Xylene	**ND**	0.089	EPA 8021B	9-16-15	9-16-15	
o-Xylene	**ND**	0.089	EPA 8021B	9-16-15	9-16-15	
Gasoline	**ND**	8.9	NWTPH-Gx	9-16-15	9-16-15	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***98***	***68-123***				
Client ID:	**EX-E**					
Laboratory ID:	09-142-03					
Benzene	**ND**	0.020	EPA 8021B	9-16-15	9-16-15	
Toluene	**ND**	0.073	EPA 8021B	9-16-15	9-16-15	
Ethyl Benzene	**ND**	0.073	EPA 8021B	9-16-15	9-16-15	
m,p-Xylene	**ND**	0.073	EPA 8021B	9-16-15	9-16-15	
o-Xylene	**ND**	0.073	EPA 8021B	9-16-15	9-16-15	
Gasoline	**ND**	7.3	NWTPH-Gx	9-16-15	9-16-15	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***91***	***68-123***				

Date of Report: September 18, 2015
Samples Submitted: September 16, 2015
Laboratory Reference: 1509-142
Project: 2007-098-2010

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0916S2					
Benzene	**ND**	0.020	EPA 8021B	9-16-15	9-16-15	
Toluene	**ND**	0.050	EPA 8021B	9-16-15	9-16-15	
Ethyl Benzene	**ND**	0.050	EPA 8021B	9-16-15	9-16-15	
m,p-Xylene	**ND**	0.050	EPA 8021B	9-16-15	9-16-15	
o-Xylene	**ND**	0.050	EPA 8021B	9-16-15	9-16-15	
Gasoline	**ND**	5.0	NWTPH-Gx	9-16-15	9-16-15	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***77***	***68-123***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-142-01										
	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***	***93***	***68-123***			
SPIKE BLANKS											
Laboratory ID:	SB0916S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.878**	**0.914**	1.00	1.00		**88**	**91**	75-117	4	13	
Toluene	**0.876**	**0.912**	1.00	1.00		**88**	**91**	78-118	4	12	
Ethyl Benzene	**0.857**	**0.896**	1.00	1.00		**86**	**90**	78-118	4	12	
m,p-Xylene	**0.869**	**0.908**	1.00	1.00		**87**	**91**	78-121	4	13	
o-Xylene	**0.862**	**0.901**	1.00	1.00		**86**	**90**	77-119	4	13	
Surrogate:											
Fluorobenzene						***80***	***83***	***68-123***			

Date of Report: September 18, 2015
Samples Submitted: September 16, 2015
Laboratory Reference: 1509-142
Project: 2007-098-2010

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EX-N**					
Laboratory ID:	09-142-01					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-16-15	9-16-15	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	9-16-15	9-16-15	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***92***	***50-150***				
Client ID:	**EX-W**					
Laboratory ID:	09-142-02					
Diesel Range Organics	**ND**	35	NWTPH-Dx	9-16-15	9-16-15	
Lube Oil Range Organics	**87**	71	NWTPH-Dx	9-16-15	9-16-15	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**EX-E**					
Laboratory ID:	09-142-03					
Diesel Range Organics	**ND**	32	NWTPH-Dx	9-16-15	9-16-15	
Lube Oil Range Organics	**ND**	64	NWTPH-Dx	9-16-15	9-16-15	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***73***	***50-150***				

Date of Report: September 18, 2015
Samples Submitted: September 16, 2015
Laboratory Reference: 1509-142
Project: 2007-098-2010

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0916S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-16-15	9-16-15	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-16-15	9-16-15	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***99***	***50-150***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-057-06										
	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						***103***	***88***	***50-150***			

Date of Report: September 18, 2015
Samples Submitted: September 16, 2015
Laboratory Reference: 1509-142
Project: 2007-098-2010

% MOISTURE

Date Analyzed: 9-16-15

Client ID	Lab ID	% Moisture
EX-N	09-142-01	20
EX-W	09-142-02	29
EX-E	09-142-03	22

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

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

Turnaround Request (in working days)
(Check One)
- [ ] Same Day
- [X] Day
- [X] 2 Days
- [ ] 3 Days
- [ ] Standard (7 Days) (TPH analysis 5 Days)
- [ ] ____________ (other)

Laboratory Number: 09-142

Company: HWA Geosciences
Project Number: 2007.098.2010
Project Name: Bothell / Lot EFG
Project Manager: Jeff Thompson
Sampled by: JST

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						% Moisture
1	EX-N	9/16/15	1050	Soil	6		X		X																		X
2	EX-W	↓	1100	↓	↓		X		X																		↓
3	EX-E	↓	1110	↓	↓		X		X																		↓

	Signature	Company	Date	Time
Relinquished	[illegible]	HWA	9/16/15	1250
Received	[illegible]	OSE	9/16/15	1250
Relinquished				
Received				
Relinquished				
Received				

Comments/Special Instructions:

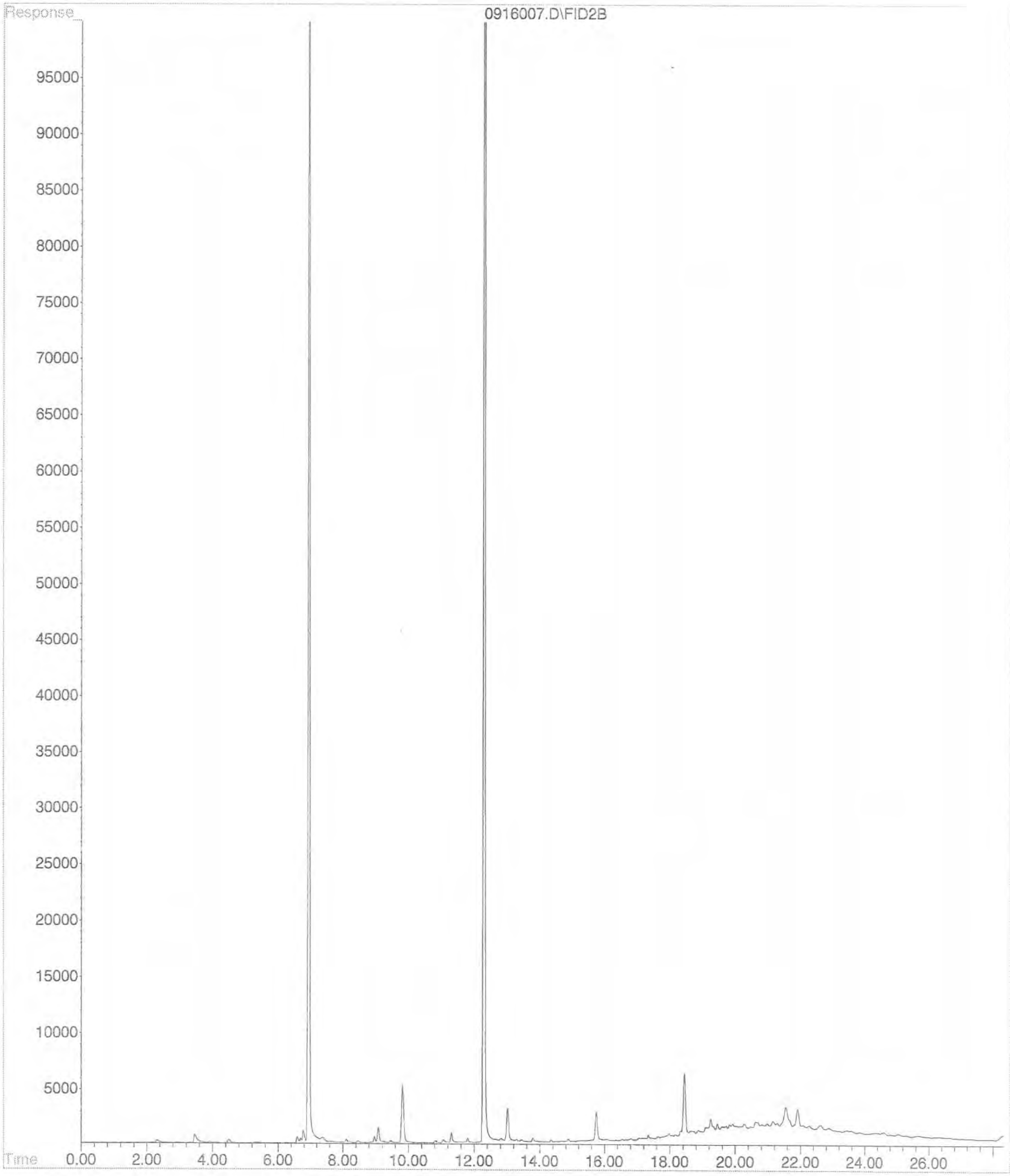
Reviewed/Date

Reviewed/Date

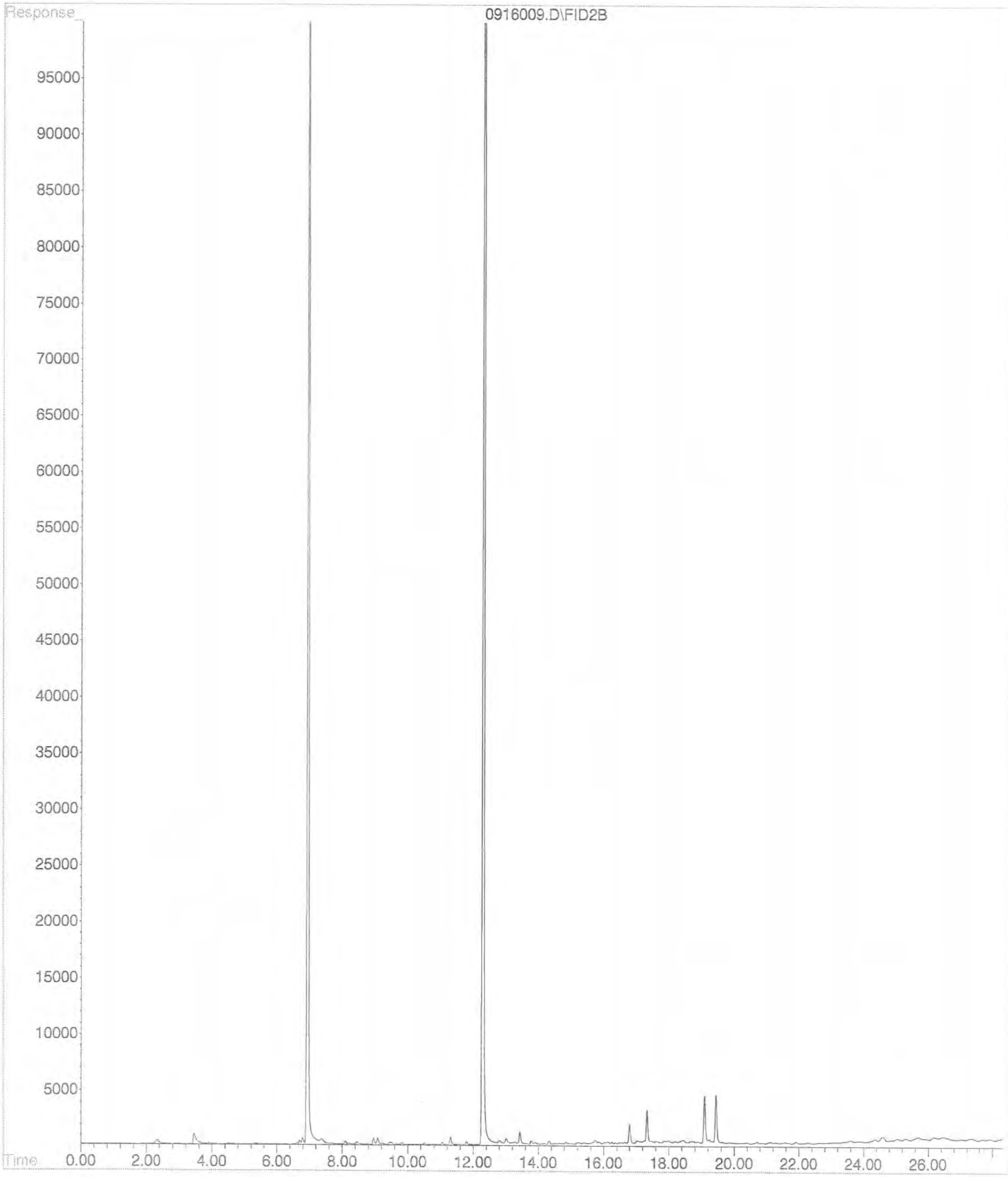
Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

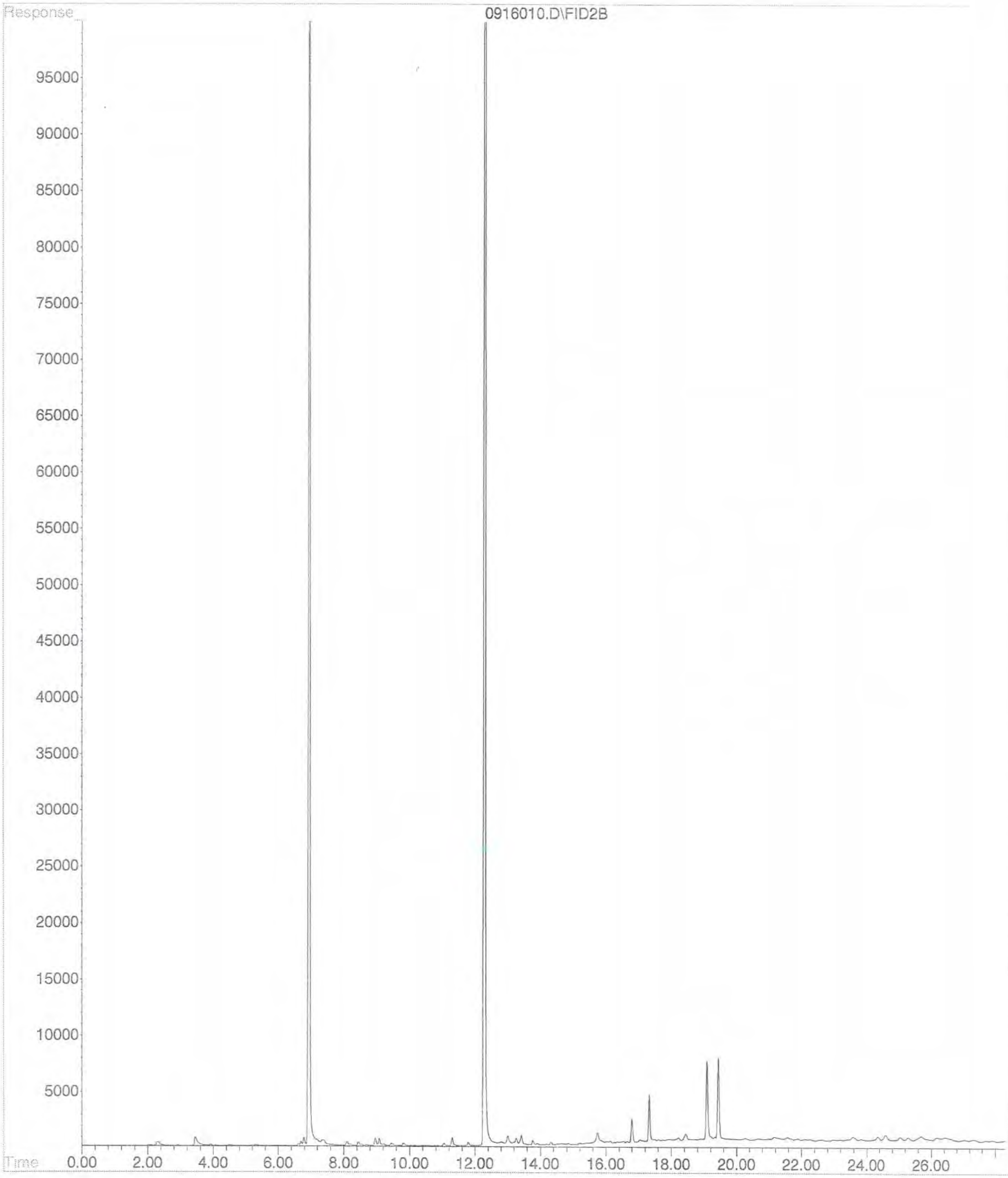
```
File        : X:\BTEX\DARYL\DATA\D150916\0916007.D
Operator    :
Acquired    : 16 Sep 2015  17:54      using AcqMethod 150709B.M
Instrument  :   Daryl
Sample Name: 09-142-01s
Misc Info  : V2-37-21
Vial Number: 7
```



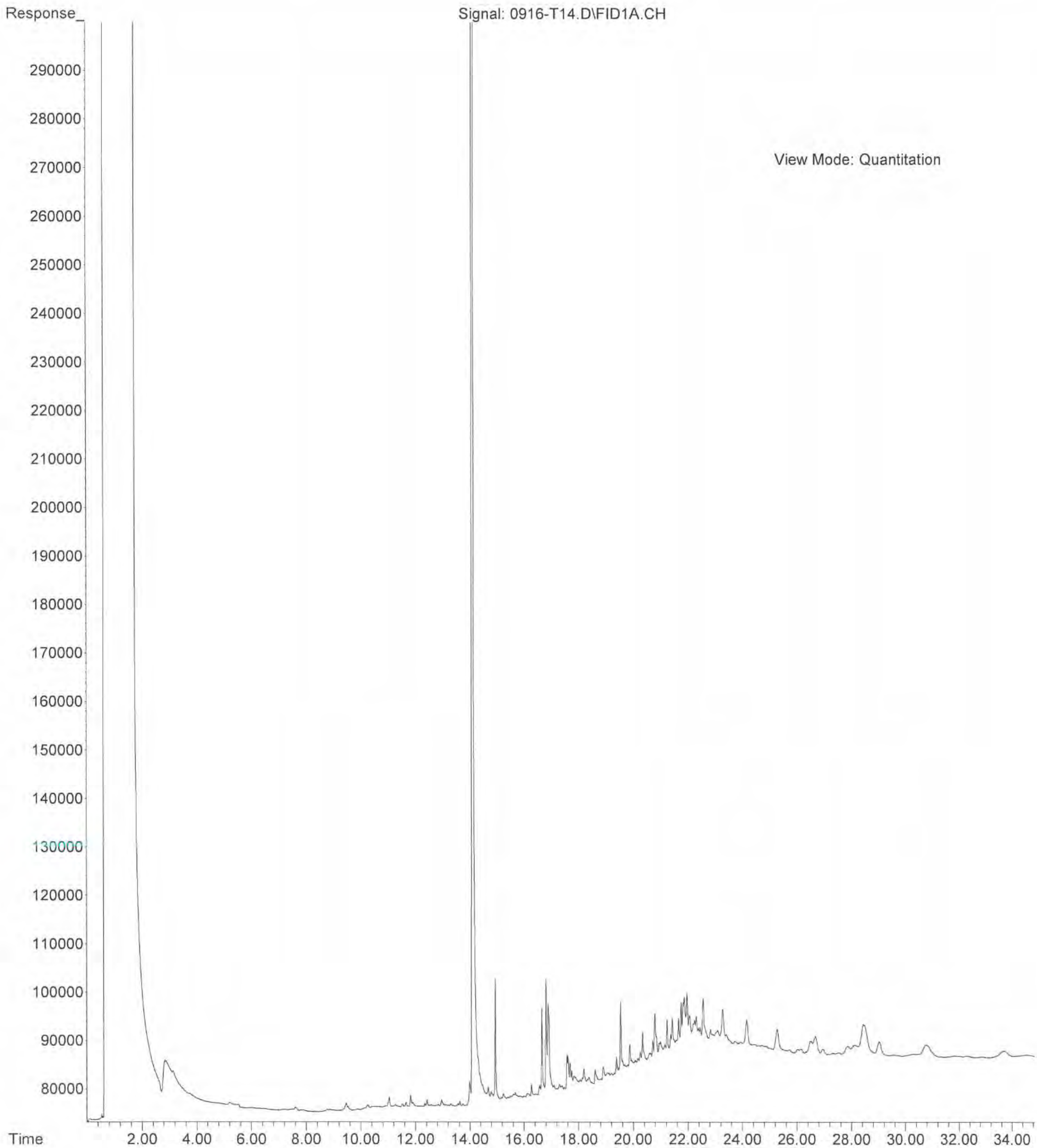
File   : X:\BTEX\DARYL\DATA\D150916\0916009.D
Operator   :
Acquired   : 16 Sep 2015 19:01   using AcqMethod 150709B.M
Instrument :   Daryl
Sample Name: 09-142-02s
Misc Info   : V2-37-21
Vial Number: 9



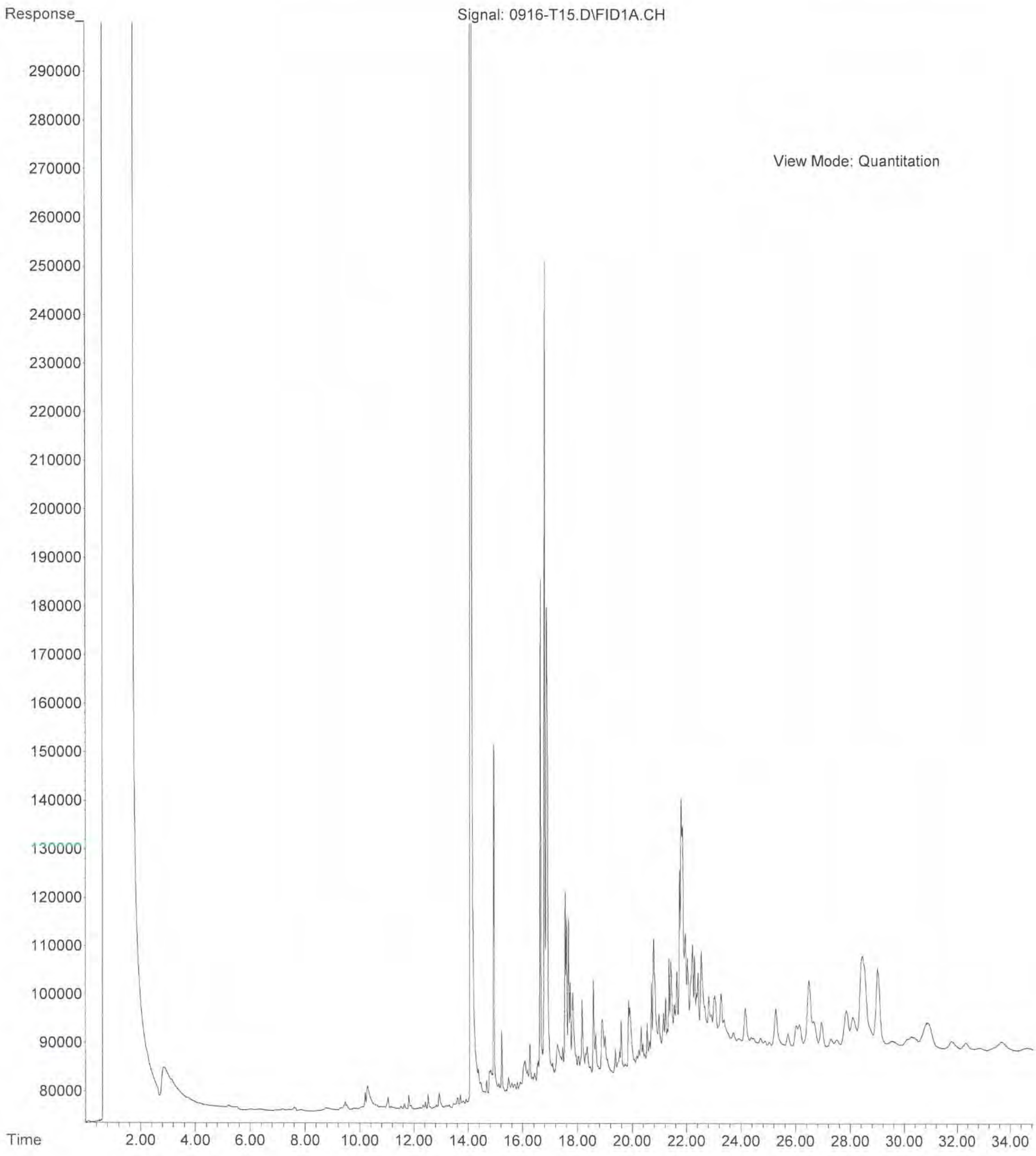
File   : X:\BTEX\DARYL\DATA\D150916\0916010.D
Operator   :
Acquired   : 16 Sep 2015 19:34   using AcqMethod 150709B.M
Instrument :   Daryl
Sample Name: 09-142-03s
Misc Info : V2-37-21
Vial Number: 10



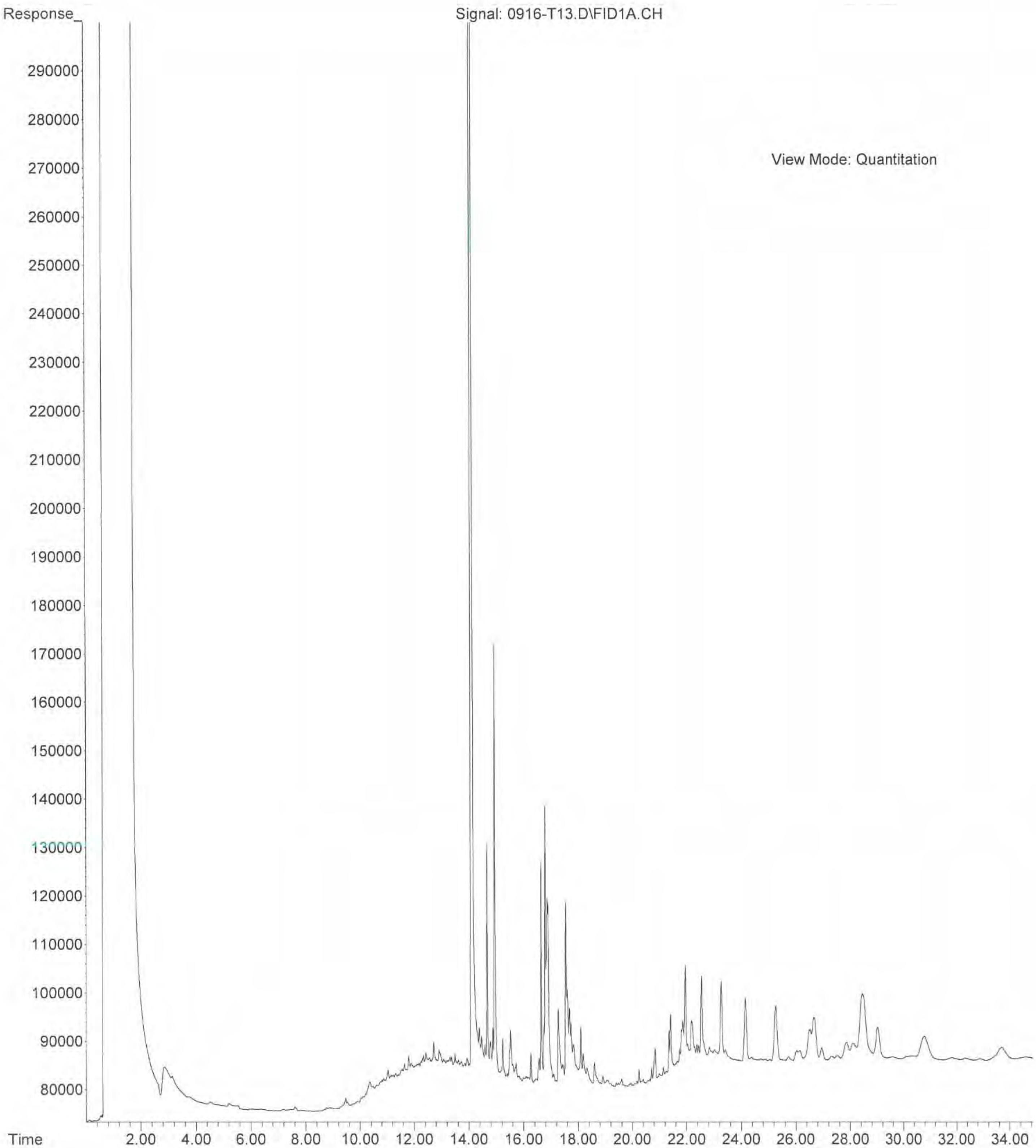
File   :X:\DIESELS\TERI\DATA\T150916\0916-T14.D
Operator   : ZT
Acquired   : 17 Sep 2015   0:04   using AcqMethod T150713F.M
Instrument :   Teri
Sample Name: 09-142-01
Misc Info   :
Vial Number: 14



```
File        :X:\DIESELS\TERI\DATA\T150916\0916-T15.D
Operator    : ZT
Acquired    : 17 Sep 2015   0:47     using AcqMethod T150713F.M
Instrument :   Teri
Sample Name: 09-142-02
Misc Info   :
Vial Number: 15
```



File   :X:\DIESELS\TERI\DATA\T150916\0916-T13.D
Operator   : ZT
Acquired   : 16 Sep 2015 23:21   using AcqMethod T150713F.M
Instrument :   Teri
Sample Name: 09-142-03
Misc Info   :
Vial Number: 13



March 14, 2017
HWA Project No. 2007-098-2043

Washington State Department of Ecology
3190 160th Ave SE
Bellevue, WA 98008

Attention: Jerome Cruz, Ph.D.

Subject: **Bothell Landing Site**
Residual Soil Excavation Report

Dear Dr. Cruz:

This letter report describes additional remedial excavation activities that occurred at the Bothell Landing Site, located in Bothell, Washington (Figure 1).

1.0 INTRODUCTION

1.1 BACKGROUND

The Bothell Landing Site currently consists of portions of undeveloped lots and public rights-of-way in Bothell, Washington. The City of Bothell (City) is currently the owner of the Bothell Landing Site (herein referred to as the Site). An Agreed Order, number DE 6294, as amended in April 2010, was entered between the City and the Washington State Department of Ecology (Ecology).

The City has completed several phases of total petroleum hydrocarbon (TPH) soil cleanup via excavation at the Site, which were conducted under a 2010 Interim Action Work Plan. These included soil cleanups in 2010, 2013/2014, and 2015. This phasing was necessary in order to access impacted soils beneath the former (prior to 2010) and new (operational in 2013) roadways, and on private properties.

Following these interim action soil cleanups, a draft Final RIFS report that was submitted to Ecology in April 2016 described one area had soils remaining with cleanup level exceedances, namely the area of L-PEX-8 (under the Horse Creek culvert). This area is not accessible for excavation and was addressed in the draft Cleanup Action Plan via engineering and institutional controls (i.e., capping with roadway and implementing a restrictive covenant). This was the only known remnant contamination at the time.

However, in July 2016, the City informed Ecology that as part of their due diligence, a prospective developer represented by Farallon Consulting (Farallon) had encountered petroleum contaminated soils during a Limited Subsurface Investigation on the on the eastern portion of the Bothell Landing Site.

21312 30th Drive SE
Suite 110
Bothell, WA 98021-7010
Tel: 425.774.0106
Fax: 425.774.2714
www.hwageo.com

The City subsequently met with Ecology and submitted a "Residual Soil Excavation Work Plan" (October 12, 2016), thereafter receiving Ecology's concurrence to implement the remediation work. The work consisted of excavation and off-site disposal of all impacted soils.

According to Farallon's report, soil samples collected from five borings indicated that residual petroleum impacted soils above Ecology's Model Toxic Control Act (MTCA) Method A cleanup levels were present in one of the soil borings, FB-8, that was located near the western border of the vacant lot (Figure 2). A soil sample collected from 7.5 feet below ground surface (bgs) in FB-8 exhibited diesel, oil, and gasoline-range total petroleum hydrocarbons (TPHd, TPHo, and TPHg, respectively) at concentrations of 3,100 milligrams per kilogram (mg/kg), 2,900 mg/kg, and 720 mg/kg, respectively. Benzene was not detected above the laboratory detection limit in this soil sample. Soil cleanup levels established for the Site are the more stringent of MTCA Method A or B, and are shown on Table 1. The cleanup level for TPHd and TPHo is 2,000 mg/kg and the Site TPHg cleanup level is 30 mg/kg. TPHg was detected at 580 mg/kg in a soil sample collected from 10 feet bgs in FB-8. TPHd and TPHo were detected below cleanup levels in the 10 foot bgs soil sample and benzene was not detected. No petroleum hydrocarbons were detected above cleanup levels in the sample collected from 5 feet bgs in boring FB-8. Petroleum hydrocarbons and benzene were all non-detect for the FB-8 soil sample collected from 13.7 feet bgs.

Based on the results of the Farallon FB-8 boring, a residual soil excavation interim action was conducted to address the remaining TPH contaminated soils at the Bothell Landing Site. Upon completion of the remediation work, Ecology requires that the post-remediation results contained in this March 14 letter report be incorporated into the Final RI/FS report. The Final RI/FS report will also include truck manifests, haulage documentation and photo documentation. Additionally, it will include the results from the Farallon report as relates to this site, as well as an update to the TEE language as needed. The following sections describe the cleanup.

2.0 SITE REMEDIATION

2.1 PRE-EXCAVATION ACTIVITIES

Based on background information and analytical data from previous studies conducted at the Site, Contaminants of Concern (COC) expected to be found in soils near boring FB-8 are petroleum hydrocarbons (gasoline, diesel, and oil range).

The City engaged a construction contractor, Interwest Construction Inc. (Contractor) of Burlington, Washington to perform the interim action soil cleanup in January 2017. HWA personnel monitored the cleanup activities and sampled soil to confirm successful cleanup.

Prior to excavation activities at the Site, HWA personnel reviewed documentation of previous investigations and remedial excavations to assess the lateral and vertical extent of TPH-impacted soils in the vicinity of the Farallon FB-8 boring. HWA then marked the estimated excavation area and completed utility locates to identify all public and private underground utilities.

2.2 SOIL EXCAVATION

The Contractor excavated contaminated soil at the Site on January 11 and 13, 2017. Confirmation soil samples were collected from the bottom of the remedial excavation on January 17, 2017. HWA personnel directed the cleanup based upon prior investigations and remedial excavation activities, 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.

Contaminated soil was generally excavated to depths ranging between 8.5 and 11 feet below ground surface (bgs), which was found to meet the cleanup levels. The approximate limits of soil excavation are shown on Figure 2. The apparent overlap of the 2017 excavation boundary with the former 2010 excavation boundary on the figure is due to the sloped excavations. The dashed lines represent top of sloped sidewalls. Impacted soils excavated in 2017 within the apparent 2010 excavation boundary were generally below the 2010 excavation limits. Photographs 1 and 2 in Appendix A depict the final excavation.

The Contractor excavated and transported 391.2 tons of soil to the CEMEX USA (formerly Rinker) Inert Materials Landfill facility in Everett, Washington for thermal desorption treatment followed by permitted landfill disposal. Copies of the CEMEX Release of Liability/Certificate of Disposal and truck tickets for the soil are presented in Appendix B. The CEMEX Release of Liability/Certificate of Disposal includes soil from a nearby project therefore the total shows as 1325.42 tons of soil, only 391.2 of which are from the Bothell Landing excavation.

2.3 CONFIRMATION SAMPLING

HWA collected a total of 16 excavation sidewall and 5 excavation bottom samples to confirm soil cleanup (Table 1). Of the 16 sidewall samples, 2 of the sample locations were over-excavated due to laboratory results indicating contaminants of concern (COCs) were above Site cleanup levels. Figure 2 depicts confirmation sample locations. Laboratory results and certificates are included in Appendix C. Table 1 includes the soil sample analytical results from the 2017 residual soil cleanup as well as soil sample results from previous investigations and remedial excavations at the Bothell Landing Site. Table 1 confirms that the 2017 residual soil cleanup interim action achieved the Site cleanup levels.

Data Quality Evaluation. HWA reviewed quality control results of the analytical data. Surrogate recoveries, laboratory duplicates, spike blanks, spike blank duplicates, matrix spikes, and matrix spike duplicates were all within specified control limits with the following exceptions:

- NWTPH-Gx Analysis
  - Samples L-PEX-88-7.5 and L-PEX-89-7.5; O flag - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- NWTPH-Dx Analysis
  - Samples L-PEX-88-7.5 and L-PEX-89-7.5; M1 flag - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
  - Samples L-PEX-88-7.5, L-PEX-89-7.5, L-PEX-96-8.5, and L-PEX-97-8.5; U1 flag – The practical quantitation limit is elevated due to interferences present in the sample and dilution required to quantitate high levels of TPH present..
  - Sample L-PEX-88-7.5; S flag - Surrogate recovery data was not available due to the necessary dilution of the samples, which contained elevated levels of TPH (i.e., the amount of surrogate was too low relative to the amount of TPH present and could not be detected).
  - Samples with X1 flag - extracts were treated with a Sulfuric acid/Silica gel cleanup procedure to reduce interference from the naturally occurring organic matter in the samples.

OnSite did not flag any other results with qualifiers, which would indicate that a given result was suspect. Laboratory method blank analyses were all below detection limits.

The analyses of the excavation soil samples collected on January 11, 13, and 17, 2017 and backfill soil samples collected on January 10, 2017 were determined to be acceptable for their intended use.

2.4 GROUND WATER MANAGEMENT

The excavation depths reached between approximately 8.5 and 11 feet bgs. Minimal perched ground water seepage was encountered at a depth of approximately 8 feet bgs in the excavation. In addition, precipitation that occurred during excavation activities accumulated in the excavation. The Contractor managed the water accumulation by pumping water from the excavation into a holding tank, allowing sediments to settle, testing, and discharging of the water utilizing an existing King County Industrial Waste Division permit obtained by the Contractor for temporary discharge of water generated during dewatering activities.

3.0 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 Wetlands Creations, who mined the soils from their facility in Monroe, Washington (i.e., native quarry materials not excavated or reused from any developed property). One sample of the backfill was tested for TPHd, TPHo, TPHg, and BTEX, and did not contain any of these constituents above laboratory reporting limits. Appendix C contains the laboratory report, which also includes backfill samples from other areas, and backfill samples that did contain TPH and were subsequently rejected and not used as backfill.

The select borrow was 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. Due to softer soils (peat) encountered in the bottom of the excavation, the first two lifts of backfill were placed and spread in layers of approximately two-feet of uncompacted thickness. Subsequent backfill lifts were placed and spread in layers not more than 10 inches in uncompacted thickness. The excavation area was then covered with straw for erosion control.

We appreciate the opportunity to provide our services to you on this project. Please feel free to call us if you have any questions or need more information.

Sincerely,
HWA GEOSCIENCES INC.

Nicole Kapise
Senior Environmental Geologist

Arnie Sugar, LG, LHG
Principal Hydrogeologist

Figures:

Figure 1: Bothell Landing Site Vicinity
Figure 2: Bothell Landing Excavation Area

Appendices:

Appendix A: Site Photographs
Appendix B: CEMEX Release of Liability/Certificate of Disposal
Appendix C: Laboratory Reports

TABLE 1
SOIL CLEANUP ANALYTICAL RESULTS
BOTHELL LANDING SITE
(all results in milligrams per kilogram (mg/kg))

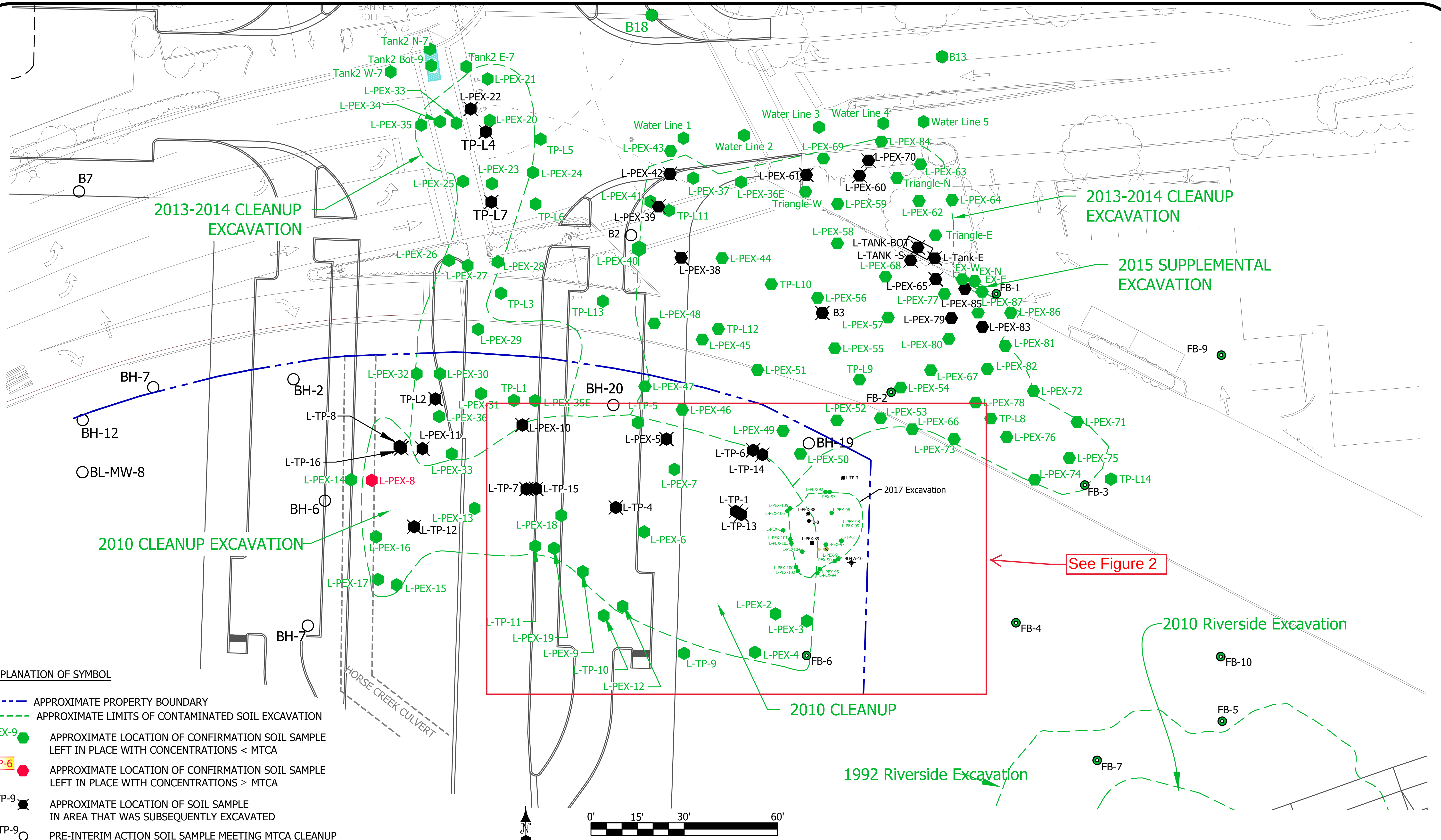
Sample Location	Sample Depth ft bgs	Confirmation Samples[1]		Diesel	Oil	Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes	Total Naphthalenes[2]	cPAHs TEC[3]	PCBs	HVOCs	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	NOTES
		Sidewall	Bottom																				
2010 Cleanup																							
L-TP-1-2	2			340	420	300	<0.023	<0.12	<0.12	0.20	0.076	0.000											
L-TP-1-8	8			6300	<530	1200	0.34	<.29	1.3	1.5	70.91	0.000											
L-TP-2-3	3	X		<27	<53	<5.5	<0.020	<0.055	<0.055	<0.055													
L-TP-2-8	8		X	<31	<61	<6.7	<0.020	<0.067	<0.067	<0.067													
L-TP-3-4	4	X		<28	<55	<6.1	<0.020	<0.061	<0.061	<0.061													
L-TP-3-7	7		X	<31	<62	<6.5	<0.020	<0.065	<0.065	<0.065													
L-TP-4-4	4	X		<27	<55	<5.7	<0.020	<0.057	<0.057	<0.057	<0.022	0.000											
L-TP-4-7	7		X	<28	<56	<5.5	<0.020	<0.055	<0.055	<0.055	<0.023	0.000											
L-TP-5-2	2	X		<28	<56	8.1	<0.020	<0.065	<0.065	<0.065	<0.022	0.000											
L-TP-5-6	6		X	200	<61	<6.0	<0.020	<0.060	<0.30	0.23	0.118	0.000											
L-TP-6-3	3			<76	550	67	<0.025	<0.13	<0.13	<0.13	0.279	0.001											
L-TP-6-7	7			<34	<57	42	<0.025	<0.12	<0.12	<0.12	0.219	0.000											
L-TP-7-2	2			<43	160	120	0.29	<0.11	0.68	0.29	1.63	0.001											
L-TP-7-7	7			<1000	4200	11	0.088	<0.055	<0.055	<0.055	7.58	0.018											
L-TP-8-2	2			32	130	<5.4	<0.020	<0.054	<0.054	<0.054	<0.022	0.000											
L-TP-8-7	7			<850	<59	7800	5.8	3.6	35	40	2.17	0.000											
L-TP-9-4	4	X		<27	<54	<5.3	<0.020	<0.053	<0.053	<0.053													
L-TP-9-8	8		X	<30	<59	<7.2	<0.020	<0.072	<0.072	<0.072													
L-TP-10-4	4	X		77	470	8.6	<0.020	<0.061	<0.061	<0.061													
L-TP-10-8	8		X	<29	<57	<5.4	<0.020	<0.054	<0.054	<0.054													
L-TP-11-4	4	X		<47	350	<6.0	<0.020	<0.060	<0.060	<0.060													
L-TP-11-8	8		X	<30	<60	<6.8	<0.020	<0.068	<0.068	<0.068													
L-TP-12-4	4	X		<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054													
L-TP-12-8	8		X	<35	280	<8.4	<0.020	<0.084	<0.084	<0.084													
L-TP-13-8	8		X	<30	<60						<0.024	0.000											
L-TP-14-3	3			<28	<55						0.202	0.000											
L-TP-15-7	7			<540	2500						12.29	0.019											
L-TP-16-8	8		X	<37	100						0.46	0.000											
L-TP-17-1	1			<29	110																		Contractor was concerned about possible contam from Hertz site
L-TP-17-3	3	X		<27	<55																		Contractor was concerned about possible contam from Hertz site
L-TP-17-6	6		X	<77	160																		Contractor was concerned about possible contam from Hertz site
L-TP-18-1	1			<31	140																		Contractor was concerned about possible contam from Hertz site
L-TP-18-3	3	X		<31	<61																		Contractor was concerned about possible contam from Hertz site
L-TP-19-1	1			<33	160																		Contractor was concerned about possible contam from Hertz site
L-TP-19-3	3	X		<29	<58																		Contractor was concerned about possible contam from Hertz site
L-TP-20-2	2	X		<86	370																		Contractor was concerned about possible contam from Hertz site
L-TP-21-2	2	X		<30	<61																		Contractor was concerned about possible contam from Hertz site
L-TP-21-5	5		X	<73	180																		
L-PEX-1-6	6		X	<28	<57	13	<0.020	<0.067	<0.067	<0.067	0.491	0.020	All <0.057	All <0.0059	<11	50	<0.57	29	6.4	<0.28	<11	<0.57	Northeast sidewall
L-PEX-2-10	10		X	<38	120	<10	<0.020	<0.10	<0.10	<0.10	<0.03	0.000			<15	61	<0.76	28	10	<0.38	<15	<0.76	
L-PEX-3-6	6	X		<31	<63	<7.1	<0.020	<0.071	<0.071	<0.071	<0.025	0.000			<13	37	<0.63	19	<6.3	<0.31	<13	<0.63	
L-PEX-4-6	6	X		<30	<59	<7.3	<0.020	<0.073	<0.073	<0.073	<0.024	0.000			<12	58	<0.59	40	<5.9	<0.29	<12	<0.59	
L-PEX-5-6	6	X		360	310	140	<0.020	<0.087	0.13	0.44	4.61	0.001			<14	86	<0.68	9.5	29	<0.34	<14	<0.68	
L-PEX-6-11	11		X	<40	<80	<11	<0.023	<0.11	<0.11	<0.11	<0.033	0.000	All <0.080	All <0.0076	<16	39	<0.80	24	<8.0	<0.40	<16	<0.80	
L-PEX-7-11	11		X	<33	<66	<8.5	<0.020	<0.085	<0.085	<0.085	<0.026	0.000			<13	100	<0.66	34	<6.6	<0.33	<13	<0.66	
L-PEX-8-10	10	X		<96	330	130	0.21	0.082	0.47	0.87	0.092	0.001			<12	36	<0.58	23	31	<0.29	<12	<0.58	
L-PEX-9-10	10	X		<29	<58	<5.7	<0.020	<0.057	<0.057	<0.057	0.108	0.000			<12	44	<0.58	29	<5.8	<.29	<12	<0.58	
L-PEX-10-8	8	X		<1800	2700	3100	23	2.6	43	165													
L-PEX-11-8	8	X		<31	80	32	<0.020	<0.079	0.083	0.15	0.059	0.002			<12	31	<0.61	15	9.6	<0.31	<12	<0.61	
L-PEX-12-6	6	X		<29	<57	<5.3	<0.020	<0.053	<0.053	<0.053	<0.023	0.000			<11	66	<0.57	14	<5.7	<0.29	<11	<0.57	
L-PEX-13-14	14		X	<34	<68	<8.3	<0.020	<0.083	<0.083	<0.083	<0.027	0.000	All <0.068	All <0.0063	<14	41	<0.68	29	<6.8	<0.34	<14	<0.68	
L-PEX-14-9	9	X		<28	<56	15	<0.020	<0.051	0.055	0.098	<0.022	0.000			<11	31	<0.56	20	7.6	<0.28	<11	<0.56	Sample of backfill on west side of Horse Creek culvert
L-PEX-15-9.5	9.5	X		<40	170	<5.2	<0.020	<0.052	<0.052	<0.052	<0.024	0.000			<12	22	<0.60	10	8.1	<0.30	<12	<0.60	West sidewall at limit of excavation near Horse Creek culvert
L-PEX-16-11	11		X	<31	<62	<7.0	<0.020	<0.070	<0.070	<0.070	<0.025	0.000			<12	30	<0.62	26	<6.2	<0.31	<12	<0.62	
L-PEX-17-9	9	X		<32	<64	<7.8	<0.020	<0.078	<0.078	<0.078	<0.025	0.000	All <0.064	All <0.0060	<13	67	<0.64	3.6	<6.4	<0.32	<13	<0.64	
L-PEX-18-14	14		X	<33	94	<8.6	<0.020	<0.086	<0.086	<0.086	0.062	0.000			<13	43	<0.67	19	<6.7	<0.33	<13	<0.067	
L-PEX-19-10	10	X		<28	<56	<5.2	<0.020	<0.052	<0.052	<0.052	<0.022	0.000			<11	43	<0.56	22	11	<0.28	<11	<0.56	
Stockpile																							
L-TP-4-4	4			<27	<55	<5.7	<0.020	<0.057	<0.057	<0.057	<0.022	0.000											
L-TP-11-4	4			<47	350	<6.0	<0.020	<0.060	<0.060	<0.060													
L-TP-12-4	4			<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054													
L-TP-14-3	3			<28	<55						0.202	0.000											
PH-3	7			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-3	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-8	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-8	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-9	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-9	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-11	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-12	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-12	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-14	2.5			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													

2013-2014 Cleanup																							
West Side 527 Excavation																							
August 2013 Test Pits																							
TP-L1-4	4			**110**	**160**	**8.6**	<0.020	<0.061	<0.061	<0.061				ND	<11	**67**	<0.56	**50**	**45**	<0.28	<11	<1..1	Characterization only, soils left in place
TP-L1-7	7			<29	**130**	<5.2	<0.020	<0.052	<0.052	<0.052				ND	<11	**52**	<0.57	**41**	**26**	<0.29	<11	<1..1	Characterization only, soils left in place
TP-L1-10	10			<37	<75	<9.8	<0.020	<0.098	<0.098	<0.098				ND	<15	**60**	<0.75	**41**	<7.5	<0.37	<15	<1..5	Characterization only, soils left in place
TP-L2-5	5			<59	**290**	<4.9	<0.020	<0.049	<0.049	<0.049				ND	<11	**50**	<0.57	**36**	**20**	<0.28	<11	<1..1	
TP-L2-8	8			**73**	**180**	**60**	<0.020	<0.075	**0.12**	**0.16**				ND	<13	**61**	<0.65	**34**	**18**	<0.33	<13	<1.3	
TP-L3-5	5			<37	**160**	<9.3	<0.020	<0.093	<0.093	<0.093				ND	<15	**65**	<0.73	**35**	<7.3	<0.36	<15	<1.5	Characterization only, soils left in place
TP-L3-10	10			<31	<62	<5.9	<0.020	<0.059	<0.059	<0.059				ND	<12	**61**	<0.62	**19**	<6.2	<0.31	<12	<1.2	Characterization only, soils left in place
TP-L4-5	5			<31	<62	<6	<0.020	<0.060	<0.060	<0.060				ND	<12	**62**	<0.62	**32**	<6.2	<0.31	<12	<1.2	
TP-L4-8	8			<41	<81	<11	**0.079**	<0.11	<0.11	<0.11				**0.0017 Chlorobenzene**	<16	**130**	<0.81	**57**	**12**	<0.41	<16	<1.6	
TP-L5-4	4	X		<28	<55	<6.2	<0.020	<0.062	<0.062	<0.062				ND	<11	**35**	<0.55	**26**	<5.5	<0.28	<11	<1.1	
TP-L5-8	8			<41	<81	<10	**0.0025**	<0.1	<0.1	<0.1				ND	<16	**95**	<0.81	**43**	**15**	<0.40	<16	<1.6	Characterization only, soils left in place
TP-L6-4	4	X		<29	**76**	<6.1	<0.020	<0.061	<0.061	<0.061				**0.00099 PCE**	<12	**65**	<0.58	**41**	**12**	<0.29	<12	<1.2	
TP-L6-9	9			<34	**75**	<8.2	<0.020	<0.082	<0.082	<0.082				ND	<14	**71**	<0.68	**33**	**11**	<0.34	<14	<1.4	Characterization only, soils left in place
TP-L7-4	4			<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054				ND	<11	**55**	<0.55	**30**	**12**	<0.28	<11	<1.1	
TP-L7-7	7			<54	**180**	**290**	**0.056**	<0.17	**1.3**	**1.4**				ND	<11	**180**	<1.1	**25**	**37**	<0.54	<22	<2.2	
TP-L7-8	8			<48	<92	**17**	<0.020	<0.13	<0.13	<0.13				ND	<18	**30**	<0.92	**14**	<9.2	<0.46	<18	<1.8	
October 2013 Soil Excavation																							
L-PEX-20-11	11		X			<7.9	<0.020	<0.079	<0.079	<0.079													
L-PEX-21-9	9	X				<10	<0.020	<0.10	<0.10	<0.10													
L-PEX-22-9	9			<81	**150**	**210**	<0.020	<0.076	<0.076	<0.076					<13	**80**	<0.66	**42**	**19**	<0.33	<13	<1.3	
L-PEX-23-11	11		X			<6	<0.020	<0.060	<0.060	<0.060													
L-PEX-24-9	9	X				<8	<0.020	<0.080	<0.080	<0.080													
L-PEX-25-8	8	X				<24	<0.048	<0.24	<0.24	<0.24													
L-PEX-26-9	9	X				<7.5	<0.020	<0.075	<0.075	<0.075													
L-PEX-27-12	12		X	<35	<70	<8.3	<0.020	<0.083	<0.083	<0.083					<14	**99**	<0.70	**62**	<7.0	<0.35	<14	<1.4	
L-PEX-28-9	9	X		<39	**170**	<10	<0.020	<0.10	<0.10	<0.10					<16	**54**	<0.78	**39**	<7.8	<0.39	<16	<1.6	
L-PEX-29-7	7	X				**6.4**	<0.020	<0.056	<0.056	<0.056													
L-PEX-30-11	11					**42**	<0.020	<0.1	<0.1	**0.13**													
L-PEX-31-9	9	X				<5.9	<0.020	<0.059	<0.059	<0.059													
L-PEX-32-9	9	X				<5.5	<0.020	<0.055	<0.055	<0.055													
L-PEX-33-8	8		X	<28	**110**	<5.2	<0.020	<0.052	<0.052	<0.052					<11	**42**	<0.57	**46**	**17**	<0.28	<11	<1.1	
L-PEX-34-9	9	X				<16	<0.033	<0.16	<0.16	<0.16													
L-PEX-35-7	7	X				<6.1	<0.020	<0.061	<0.061	<0.061													
L-PEX-36-12	12		X			<6.9	<0.020	<0.069	<0.069	<0.069													
East Side 527 Excavation																							
January 2014 Test Pits																							
TP-L8-4	4			<540	**82**	**1800**	**0.023**	**0.081**	**0.81**	**4.7**									<5.9				
TP-L8-8	8		X	<30	<60	<6.6	<0.02	<0.066	<0.066	<0.066									<6				
TP-L9-4	4			<120	**170**	**54**	**0.02**	<0.072	<0.072	<0.072									<6.4				
TP-L9-8	8			<36	<72	**360**	**0.15**	**0.13**	**0.3**	<0.89									<7.2				
TP-L10-4	4			<1500	**72**	**8100**	**1.7**	**2**	**6.2**	**28**									<6.1				
TP-L10-9	9		X	<29	<58	<5.5	<0.02	<0.055	<0.055	<0.055									<5.7				
TP-L11-4	4			<1500	**460**	**2000**	<0.024	<0.12	**0.73**	**2.7**									<9.2				
TP-L11-9	9		X	<33	<65	<7.2	<0.02	<0.075	<0.075	<0.075									<6.5				
TP-L12-4	4			<160	**110**	**1000**	**0.059**	**0.19**	**0.68**	**0.3**									<6.9				
TP-L12-9	9		X	<32	<63	<7	<0.02	<0.007	<0.007	<0.007									<6.3				
TP-L13-4	4			<32	<65	<6.6	<0.02	<0.066	<0.066	<0.066									**13**				Characterization only, soils left in place
TP-L13-7	7			<33	<66	<8.1	<0.02	<0.081	<0.081	<0.081									<6.6				Characterization only, soils left in place
TP-L14-4	4	X		<31	<62	<6.1	<0.02	<0.061	<0.061	<0.061									<6.2				
TP-L14-8	8			<30	<61	<6.4	<0.02	<0.064	<0.064	<0.064									<6.1				
January 22, 2014 Test Pits, Triangle Park																							
Triangle-W5	5			<49	<58	**270**	<0.026	<0.13	**1**	**0.93**									<6.1				
Triangle-W8	8		X			<11	<0.021	<0.11	<0.11	<0.11									<5.6				
Triangle-E5	5			<110	<58	**1200**	**0.6**	**0.3**	**6.5**	**4.7**									<5.8				
Triangle-E8	8		X			<7.1	<0.02	<0.071	<0.071	<0.071									<6.2				
Triangle-N4	4			<1600	**5200**	**410**	<0.02	<0.097	**0.7**	**1**									**120**				
Triangle-N6	6			<29	<58	**16**	<0.02	<0.10	<0.10	<0.10									<5.7				
Triangle-N7	7		X			<4.8	<0.02	<0.048	<0.048	<0.048									<5.7				
February, 2014 Water Line Characterization Samples																							
Water Line-1-6	6			<30	<59	<6.3	<0.02	<0.063	<0.063	<0.063									<5.9				Characterization only, soils left in place
Water Line-2-4	4			<30	<60	<6.2	<0.02	<0.062	<0.062	<0.062									<6.0				Characterization only, soils left in place
Water Line-2-7 1/2	7.5			<32	<65	<7.4	<0.02	<0.074	<0.074	<0.074									<6.5				Characterization only, soils left in place
Water Line-3-4	4			**45**	**260**	<5.7	<0.02	<0.057	<0.057	<0.057									**22**				Characterization only, soils left in place
Water Line-3-6	6			<40	<81	<11	<0.02	<0.11	<0.11	<0.11									<8.0				Characterization only, soils left in place
Water Line-4-4	4			<39	<71	<8.7	<0.02	<0.087	<0.087	<0.087									<7.1				Characterization only, soils left in place
Water Line-4-6	6			<31	<63	<6.7	<0.02	<0.064	<0.064	<0.064									<6.3				Characterization only, soils left in place
Water Line-5-4	4			<44	**250**	<7.2	<0.02	<0.072	<0.072	<0.072									**33**				Characterization only, soils left in place
Water Line-5-6	6			<42	**85**	<11	<0.02	<0.11	<0.11	<0.11									**12**				Characterization only, soils left in place
January-April 2014 Soil Excavations																							
L-PEX-35E-11	11		X			<6.4	<0.02	<0.064	<0.064	<0.064	<0.024	<0.012							<6				
L-PEX-36E-6	6	X		<32	<64	<6.5	<0.02	<0.065	<0.065	<0.065	<0.026	<0.013											
L-PEX-37-6	6	X		<30	<61	<12	<0.024	<0.12	<0.12	<0.12	**0.011**	<0.012											
L-PEX-38-6	6			<36	**76**	**150**	<0.02	<0.084	**0.3**	**0.54**													
L-PEX-39-4	4			<890	**81**	**1700**	<0.029	<0.15	**3**	**3.8**													
L-PEX-40-4	4	X		<33	<67	<8.2	<0.02	<0.082	<0.082	<0.082									**7.7**				
L-PEX-41-8	8	X		<32	<64	<6.2	<0.02	<0.062	<0.062	<0.062									<6.4				
L-PEX-42-5	5			<180	<67	**510**	<0.02	<0.080	**0.4**	**0.88**									**8.2**				
L-PEX-43-7	7	X		<62	<31	<6.2	<0.02	<0.062	<0.062	<0.062		<0.012							<6.2				
L-PEX-44-8	8		X	<37	<73	<9.3	<0.02	<0.093	<0.093	<0.093									<7.3				
L-PEX-45-9	9		X	<40	<80	<10	<0.021	<0.10	<0.10	<0.10									<8.0				

L-PEX-46-10	10		X	<39	<78	<9.8	<0.02	<0.098	<0.098	<0.098		<0.015							<7.8				
L-PEX-47-7	7	X		<29	<58	**17**	<0.02	<0.049	<0.049	<0.049									<5.8				
L-PEX-48-7	7	X		<40	**100**	<11	<0.022	<0.11	<0.11	<0.11									<8.0				
L-PEX-49-10	10		X	<29	<58	<5.4	<0.02	<0.054	<0.054	<0.054									<5.8				
L-PEX-50-8	8	X		<34	<68	<7.3	<0.02	<0.073	<0.073	<0.073									<6.8				
L-PEX-51-10	10		X	<31	<62	<6.5	<0.02	<0.065	<0.065	<0.065									<6.1				
L-PEX-52-7	7	X		<31	**210**	<7.3	<0.02	<0.073	<0.073	<0.073									**24**				
L-PEX-53-6	6	X		<30	**220**	<6.4	<0.02	<0.064	<0.064	<0.064									**25**				
L-PEX-54-9	9		X	<36	**80**	<7.7	<0.02	<0.077	<0.077	<0.077		<0.014							**55**				
L-PEX-55-9	9		X	<32	<65	<6.2	<0.02	<0.062	<0.062	<0.062									<6.5				
L-PEX-56-9	9		X	<31	<63	<7.2	<0.02	<0.072	<0.072	<0.072									<6.3				
L-PEX-57-11	11		X	<32	<63	<6.6	<0.02	<0.066	<0.066	<0.066									<6.3				
L-PEX-58-8	8		X	<28	<56	<5.3	<0.02	<0.053	<0.053	<0.053									<5.6				
L-PEX-59-8	8		X	<31	<62	<9.9	<0.02	<0.099	<0.099	<0.099		<0.012							<6.2				
L-PEX-60-5	5			<360	**260**	**4400**	**0.61**	**1.1**	**2.8**	**19.5**									**120**				
L-PEX-61-5	5			<2900	**830**	**4000**	**0.38**	<0.08	**1.8**	**15.94**									**250**				
L-PEX-62-10	10		X	<31	<63	<3.9	<0.02	<0.039	<0.039	<0.039		<0.013							<6.3				
L-PEX-63-7	7	X		<27	<54	<2.1	<0.02	<0.021	<0.021	<0.021									<5.4				
L-PEX-64-7	7	X		<29	<57	<5.8	<0.02	<0.058	<0.058	<0.058									<5.7				
L-PEX-65-7	7			<31	<62	**440**	**0.32**	**0.16**	**2.4**	**2.177**									<6.2				
L-PEX-66-7	7	X		<29	<59	<5.9	<0.02	<0.059	<0.059	<0.059									<5.9				
L-PEX-67-9	9		X	<35	<71	<9.5	<0.02	<0.095	<0.095	<0.095									<7.1				
L-PEX-68-8	8		X	<31	<62	<6.4	<0.02	<0.064	<0.064	<0.064									<6.2				
L-PEX-69-6	6	X		<31	<63	<6.2	<0.02	<0.062	<0.062	<0.062									<6.3				
L-PEX-70-5	5			<32	<64	**110**	**0.048**	<0.071	**0.35**	**0.47**									<6.4				
L-PEX-71-6	6	X		<29	<58	<4.9	<0.02	<0.049	<0.049	<0.049									<5.8				
L-PEX-72-6	6	X		<30	<59	<4.8	<0.02	<0.048	<0.048	<0.048									<5.9				
L-PEX-73-6	6	X		<30	<59	<5.6	<0.02	<0.056	<0.056	<0.056		<0.012							<5.9				
L-PEX-74-5	5	X		<160	**800**	**9.8**	<0.02	<0.06	<0.06	<0.06									**67**				
L-PEX-75-7	7		X	<36	<71	<9	<0.02	<0.09	<0.09	<0.09									**29**				
L-PEX-76-7	7			<100	<200	**130**	<0.072	<0.36	<0.36	**1.2**		<0.041							<20				
L-PEX-77-7	7	X		<32	<63	<6.2	<0.02	<0.062	<0.062	<0.062									<6.3				
L-PEX-78-10	10		X	<31	<61	<6.7	<0.02	<0.067	<0.067	<0.067									<6.1				
L-PEX-79-6	6	X		<1110	**65**	**730**	**0.26**	**0.21**	**0.4**	**2.9**									<6.0				
L-PEX-80-8	8		X	<32	<65	<7.6	<0.02	<0.076	<0.076	<0.076		<0.013							<6.5				
L-PEX-81-6	6	X		<30	<60	<6.6	<0.02	<0.066	<0.066	<0.066									<6.0				
L-PEX-82-9	9		X	<36	<73	<9.1	<0.02	<0.091	<0.091	<0.091									<7.3				
L-PEX-83-6	6	X		<29	<58	<6.5	<0.02	<0.065	<0.065	<0.065									<5.8				
L-PEX-84-6	6	X		<31	<62	<6	<0.02	<0.06	<0.06	<0.06									<6.2				
L-PEX-85-5	5	X		<49	<59	**480**	**0.17**	**<0.12**	**0.53**	**2.3**									<5.9				
L-PEX-86-5	5	X		<30	<60	<6.8	<0.02	<0.068	<0.068	<0.068									<6.0				
L-PEX-87-7	7		X	<32	<63	<7.6	<0.02	<0.076	<0.076	<0.076									<6.3				
April 30, 2014 UST Site Assessment Samples																							
L-TANK-BOT	8			<27	<54	**420**	**0.39**	**0.09**	**1.5**	**1.5**									**16**				
L-TANK-E	5			<29	**89**	<5.8	<0.2	<0.058	<0.058	<0.058									**57**				
L-TANK-S	5			<28	**290**	<5.7	<0.02	<0.057	<0.057	<0.057									**44**				
												2017 Residual Soil Cleanup											
L-PEX-88-7.5	7.5	X		<4800	**8100**	**2500**	**0.075**	<0.32	**3.2**	**5.3**													
L-PEX-89-7.5	7.5	X		<96	**140**	**170**	<0.02	<0.064	<0.064	**0.215**													
L-PEX-90-5	5	X		<26	**71**	<5.1	<0.020	<0.051	<0.051	<0.051													
L-PEX-91-8	8	X		<31	<62	<6.7	<0.020	<0.067	<0.067	<0.067													
L-PEX-92-5	5	X		**33**	**210**	<5.2	<0.020	<0.052	<0.052	<0.052													
L-PEX-93-8	8	X		<29	**80**	<5.5	<0.020	<0.055	<0.055	<0.055													
L-PEX-94-5	5	X		<27	**240**	<4.9	<0.020	<0.049	<0.049	<0.049													
L-PEX-95-8	8	X		<30	<61	<6.5	<0.020	<0.065	<0.065	<0.065													
L-PEX-96-8.5	8.5		X	<89	**1100**	**22**	<0.030	<0.15	<0.15	**0.19**													
L-PEX-97-8.5	8.5		X	<100	**1400**	<17	<0.034	<0.17	<0.17	<0.17													
L-PEX-98-5	5	X		<32	<63	<7.4	<0.020	<0.074	<0.074	<0.074													
L-PEX-99-8	8	X		<31	**120**	<6.6	<0.020	<0.066	<0.066	<0.066													
L-PEX-100-8	8	X		<28	<56	<5.5	<0.020	<0.055	<0.055	<0.055													
L-PEX-101-8	8	X		<29	<58	<5.8	<0.020	<0.058	<0.058	<0.058													
L-PEX-102-5	5	X		<27	**230**	<5.1	<0.020	<0.051	<0.051	<0.051													
L-PEX-103-5	5	X		<27	**230**	<5.6	<0.020	<0.056	<0.056	<0.056													
L-PEX-104-9	9		X	<44	**140**	<11	<0.023	<0.11	<0.11	<0.11													
L-PEX-105-5	5	X		<28	**88**	<5.0	<0.020	<0.050	<0.050	<0.050													
L-PEX-106-8	8	X		<28	**190**	<5.1	<0.020	<0.051	<0.051	<0.051													
L-PEX-107-11	11		X	<40	**100**	<10	<0.020	<0.10	<0.10	<0.10													
L-PEX-108-11	11		X	<39	<78	<9.5	<0.020	<0.095	<0.095	<0.095													
2017 Residual Soil Cleanup Backfill																							
Backfill #2	NA	NA	NA	<27	<55	<4.3	<0.020	<0.043	<0.043	<0.043													
Monitoring Wells																							
BLMW-11	14					<13	<0.020	<0.13	<0.13	<0.13													
BLMW-12	9					<11	<0.022	<0.11	<0.11	<0.11													
BLMW-12	11					<6.4	<0.020	<0.064	<0.064	<0.064													
MTCA Method A Cleanup Level[4]				2000		100/30[5]	0.03	7	6	9	5	0.100	1	0.03[6]	20	NA	2	2000/19[7]	250	2	NA	NA	
MTCA Method B Cleanup Level[8]				3130		84	18	6,400	800	160,000			0.5		24	16,000	80	120,000	NA	24	400	400	
Background[9]				NA		NA	NA	NA	NA	NA	NA	NA	NA		7	255	1	48	24	0.07	0.78	0.61	

Notes:

< - Not detected at laboratory's reporting limit
Blank - Sample was not analyzed for this constituent
NA - Not applicable
Bold - Analyte Detected
- Sample in area that was subsequently excavated
Analytical data for stockpile samples PH-3 through PH-14 are from Kleinfelder (1999)
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
6 - The MTCA Method A soil cleanup level is 0.03 mg/kg for TCE, 0.05 mg/kg for PCE, and 2 mg/kg for TCA
7 - 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
8 - 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
9 - Background metals concentrations per *Natural Background Soil Metals Concentrations in Washington State* (Ecology, 1994) for the Puget Sound area



HWA GEOSCIENCES INC.

BOTHELL LANDING SITE
BOTHELL, WASHINGTON

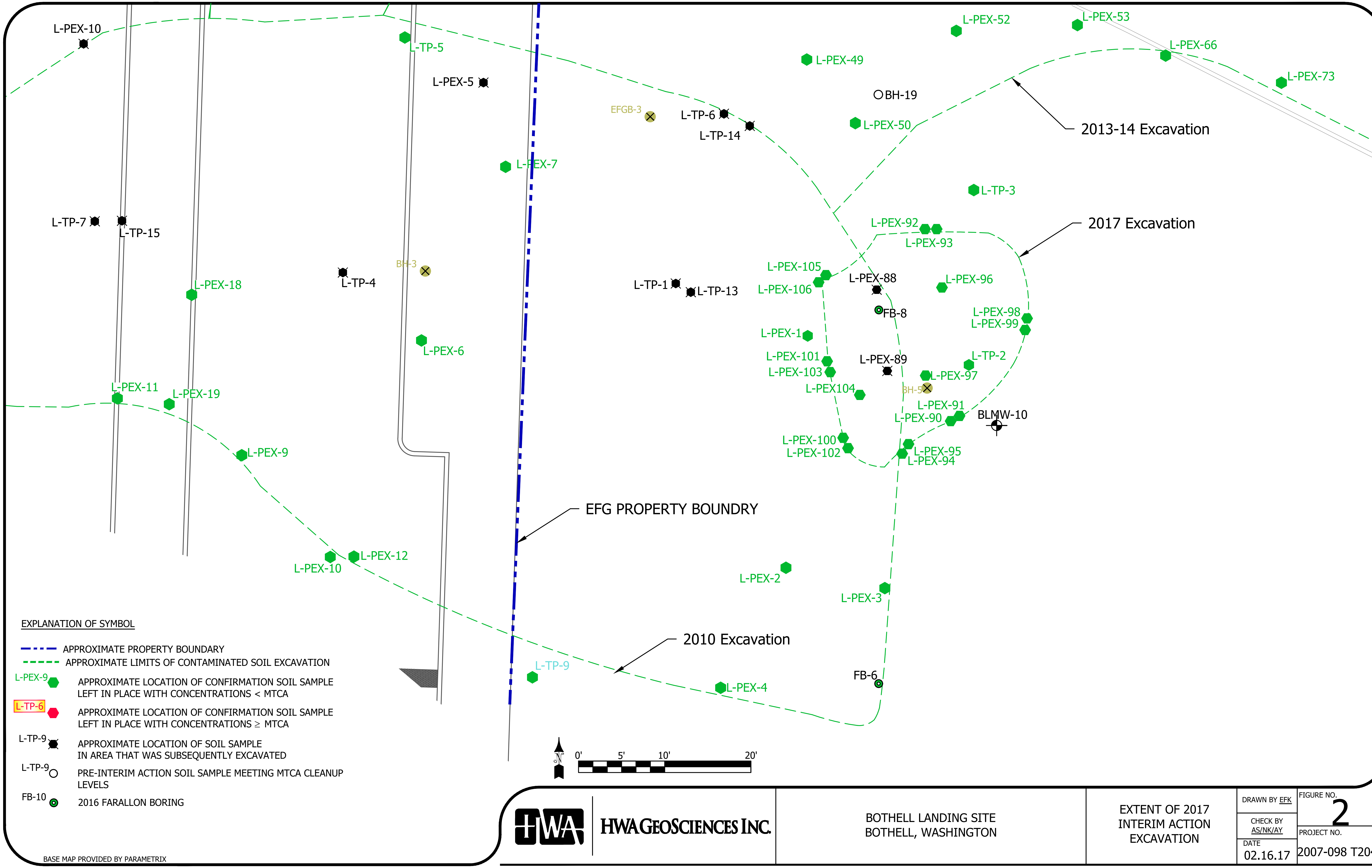
EXTENT OF ALL INTERIM ACTION EXCAVATIONS

DRAWN BY EFK
CHECK BY AS
DATE 02.16.17

FIGURE NO. 1
PROJECT NO. 2007-098 T2020

BASE MAP PROVIDED BY PARAMETRIX

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD 2007-098\HWA 2007-098-21 T2043.DWG <BOTHELL LANDING ONLY FIG 4 (19)> Plotted: 3/8/2017 2:57 PM



S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD 2007-098\HWA 2007-098-21 T2043.DWG <RiverSide 2017 FIG 4> Plotted: 3/8/2017 2:50 PM

APPENDIX A

Photograph 1: View facing west toward the final boundaries of the 2017 Bothell Landing remedial excavation. Photograph taken prior to pumping water that had accumulated in the excavation.

Photograph 2: View facing south toward the 2017 Bothell Landing remedial excavation during backfilling activities. Brown Baker tank utilized for storing water pumped from the excavation visible in the background.

APPENDIX B

Weighed At: Soil Remediation

1876090459

CEMEX 6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/11/2017

Ship To: 50030282 - INTERWEST CONSTRUCTION INC-VARIOUS VARI(
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2273889 - ICI30T,INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 34.56 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 1

In: 9:14 am

Out: 9:27 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	110,340	55.17	50.05
Tare:	41,220	20.61	18.70
Net:	69,120	34.56	31.35

Today Loads: 1

Today Qty: 34.56 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 DECIMAL

SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

Weighed At: Soil Remediation

1876090464

CEMEX

6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/11/2017

Ship To: 50030282 - INTERWEST CONSTRUCTION INC-VARIOUS VARI(
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST. BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2273889 - ICI30T.INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 32.84 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 2

In:

Out: 10:31 am

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tne
Gross:	106,900	53.45	48.49
Tare:	41,220	20.61	18.70
Net:	65,680	32.84	29.79

* P. T

Today Loads: 2

Today Qty: 67.40 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

Weighed At: Soil Remediation

6300 Glenwood Ave

CEMEX Everett, WA 98213

1876090471

Location: 1876

Order: 41092719 Dispatch: 0 Date: 01/11/2017

Ship To: 50030282 - INTERWEST CONSTRUCTION INC-VARIOUS VARI(
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY PO: VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2273889 - ICI30T,INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 34.35 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 1

In:

Out: 11:52 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	109,920	54.96	49.86
Tare:	41,220	20.61	18.70
Net:	68,700	34.35	31.16

* P. T.

Today Loads: 3

Today Qty: 101.75 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

1876090462

Weighed At: Soil Remediation
6300 Glenwood Ave
Everett, WA 98213

CEMEX

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/11/2017
Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST. BOTHELL
EVERETT, WA 98203
Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier:
Vehicle: 2314320 - ICI45T.INTERWEST CONSTRUCTION
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 28.52 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Regan, Angelique S
Scale: 1
In: 9:28 am
Out: 9:38 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	98,640	49.32	44.74
Tare:	41,600	20.80	18.87
Net:	57,040	28.52	25.87

Today Loads: 1
Today Qty: 28.52 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

Weighed At: Soil Remediation

1876090463

CEMEX
6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/11/2017

Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2030856 - ICI20T.INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 30.74 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan Angelique S

Scale: 1

In: 9:47 am

Out: 10:00 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	103,560	51.78	46.97
Tare:	42,080	21.04	19.09
Net:	61,480	30.74	27.89

Today Loads: 2

Today Qty: 59.26 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 DECIMAL:

SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

Weighed At: Soil Remediation

1876090465

CEMEX 6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/11/2017

Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST. BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2314320 - ICI45T.INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 34.58 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 2

In:

Out: 10:41 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	110,760	55.38	50.24
Tare:	41,600	20.80	18.87
Net:	69,160	34.58	31.37

* P. T

Today Loads: 3

Today Qty: 93.84 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

1876090468

Weighed At: Soil Remediation
6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/11/2017
Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203
Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2030856 - ICI20T,INTERWEST CONSTRUCTION
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 30.83 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 1
In:
Out: 11:13 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	103,740	51.87	47.06
Tare:	42,080	21.04	19.09
Net:	61,660	30.83	27.97

* P. T.

Today Loads: 4
Today Qty: 124.67 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

Weighed At: Soil Remediation

1876090475

CEMEX 6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/11/2017

Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST. BOTHELL
EVERETT. WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2314320 - ICI45T,INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 35.81 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 1

In:

Out: 12:06 pm

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	113,220	56.61	51.36
Tare:	41,600	20.80	18.87
Net:	71,620	35.81	32.49

* P. T.

Today Loads: 5

Today Qty: 160.48 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

Weighed At: Soil Remediation

1876090478

CEMEX

6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/11/2017

Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2030856 - ICI20T,INTERWEST CONSTRUCTION
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 29.74 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 1
In:
Out: 12:31 pm

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	101,560	50.78	46.07
Tare:	42,080	21.04	19.09
Net:	59,480	29.74	26.98

* P. T.

Today Loads: 6
Today Qty: 190.22 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

Weighed At: Soil Remediation

1876090513

CEMEX 6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/13/2017

Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2300571 - ICI42T,INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 33.65 ton

Weighmaster: CEMEX

Deputy Weighmaster: Regan, Angelique S

Scale: 1

In: 9:28 am

Out: 9:58 am

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tne
Gross:	108,380	54.19	49.16
Tare:	41,080	20.54	18.63
Net:	67,300	33.65	30.53

Today Loads: 1

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

Weighed At: Soil Remediation
1876090521

CEMEX
6300 Glenwood Ave
Everett, WA 98213
Location: 1876

Order: 41092719 Dispatch: 0 Date: 01/13/2017
Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203
Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY PO: VERBAL C. ARMSTROMG
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2300571 - ICI42T.INTERWEST CONSTRUCTION
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 34.03 ton
— DRIVER ON AT TARE & GROSS —

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

	lb	ton	tne
Gross:	109,140	54.57	49.51
Tare:	41,080	20.54	18.63
Net:	68,060	34.03	30.87

* P. T.

Scale: 2
In:
Out: 11:32 am

Today Loads: 2
Today Qty: 67.68 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

Weighed At: Soil Remediation

1876090540

CEMEX 6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/13/2017

Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2300571 - ICI42T,INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 31.55 ton

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	104.120	52.06	47.23
Tare:	41,020	20.51	18.61
Net:	63,100	31.55	28.62

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 1

In: 1:09 pm

Out: 1:23 pm

Today Loads: 3

Today Qty: 99.23 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

Release of Liability/Certificate of Disposal

Interwest Construction Inc. & their client: are released from liability for all petroleum contaminated soil originating from:

Multiway Project #1093, Phase II
18200 Bothell Way NE
Bothell WA. 98011

and transported to:

CEMEX Soil Remediation Facility
6300 Glenwood Ave.
Everett WA 98203

From 01/10/2017 through 01/19/2017

A total of 1325.42 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: February 28th, 2017

Larry W. Baker

Larry W. Baker

CEMEX USA
Operations Manager
Soil Remediation Division
6300 Glenwood AVE ,
Everett WA, 98213
(425)-356-6619

APPENDIX C

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

January 13, 2017

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-2043
Laboratory Reference No. 1701-056

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on January 11, 2017.

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 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

Case Narrative

Samples were collected on January 11, 2017 and received by the laboratory on January 11, 2017. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and 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.

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: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-88-7.5**					
Laboratory ID:	01-056-01					
Benzene	**0.075**	0.064	EPA 8021B	1-11-17	1-12-17	
Toluene	**ND**	0.32	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**3.2**	0.32	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**5.3**	0.32	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.32	EPA 8021B	1-11-17	1-11-17	
Gasoline	**2500**	130	NWTPH-Gx	1-11-17	1-11-17	O
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*63-124*				
Client ID:	**L-PEX-89-7.5**					
Laboratory ID:	01-056-02					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-12-17	
Toluene	**ND**	0.064	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.064	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**0.15**	0.064	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**0.065**	0.064	EPA 8021B	1-11-17	1-11-17	
Gasoline	**170**	6.4	NWTPH-Gx	1-11-17	1-11-17	O
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*63-124*				
Client ID:	**L-PEX-90-5**					
Laboratory ID:	01-056-03					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-12-17	
Toluene	**ND**	0.051	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.051	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.051	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.051	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.1	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*63-124*				

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-91-8**					
Laboratory ID:	01-056-04					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-12-17	
Toluene	**ND**	0.067	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.067	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.067	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.067	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	6.7	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*63-124*				
Client ID:	**L-PEX-92-5**					
Laboratory ID:	01-056-05					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-12-17	
Toluene	**ND**	0.052	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.052	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.052	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.052	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.2	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*63-124*				
Client ID:	**L-PEX-93-8**					
Laboratory ID:	01-056-06					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-12-17	
Toluene	**ND**	0.055	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.055	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.055	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.055	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.5	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*109*	*63-124*				

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-94-5**					
Laboratory ID:	01-056-07					
Benzene	**ND**	0.020	EPA 8021B	1-12-17	1-12-17	
Toluene	**ND**	0.049	EPA 8021B	1-12-17	1-12-17	
Ethyl Benzene	**ND**	0.049	EPA 8021B	1-12-17	1-12-17	
m,p-Xylene	**ND**	0.049	EPA 8021B	1-12-17	1-12-17	
o-Xylene	**ND**	0.049	EPA 8021B	1-12-17	1-12-17	
Gasoline	**ND**	4.9	NWTPH-Gx	1-12-17	1-12-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*63-124*				
Client ID:	**L-PEX-95-8**					
Laboratory ID:	01-056-08					
Benzene	**ND**	0.020	EPA 8021B	1-12-17	1-12-17	
Toluene	**ND**	0.065	EPA 8021B	1-12-17	1-12-17	
Ethyl Benzene	**ND**	0.065	EPA 8021B	1-12-17	1-12-17	
m,p-Xylene	**ND**	0.065	EPA 8021B	1-12-17	1-12-17	
o-Xylene	**ND**	0.065	EPA 8021B	1-12-17	1-12-17	
Gasoline	**ND**	6.5	NWTPH-Gx	1-12-17	1-12-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*63-124*				
Client ID:	**L-PEX-96-8.5**					
Laboratory ID:	01-056-09					
Benzene	**ND**	0.030	EPA 8021B	1-12-17	1-12-17	
Toluene	**ND**	0.15	EPA 8021B	1-12-17	1-12-17	
Ethyl Benzene	**ND**	0.15	EPA 8021B	1-12-17	1-12-17	
m,p-Xylene	**0.19**	0.15	EPA 8021B	1-12-17	1-12-17	
o-Xylene	**ND**	0.15	EPA 8021B	1-12-17	1-12-17	
Gasoline	**22**	15	NWTPH-Gx	1-12-17	1-12-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*63-124*				

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-97-8.5**					
Laboratory ID:	01-056-10					
Benzene	**ND**	0.034	EPA 8021B	1-12-17	1-12-17	
Toluene	**ND**	0.17	EPA 8021B	1-12-17	1-12-17	
Ethyl Benzene	**ND**	0.17	EPA 8021B	1-12-17	1-12-17	
m,p-Xylene	**ND**	0.17	EPA 8021B	1-12-17	1-12-17	
o-Xylene	**ND**	0.17	EPA 8021B	1-12-17	1-12-17	
Gasoline	**ND**	17	NWTPH-Gx	1-12-17	1-12-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*63-124*				
Client ID:	**L-PEX-98-5**					
Laboratory ID:	01-056-11					
Benzene	**ND**	0.020	EPA 8021B	1-12-17	1-12-17	
Toluene	**ND**	0.074	EPA 8021B	1-12-17	1-12-17	
Ethyl Benzene	**ND**	0.074	EPA 8021B	1-12-17	1-12-17	
m,p-Xylene	**ND**	0.074	EPA 8021B	1-12-17	1-12-17	
o-Xylene	**ND**	0.074	EPA 8021B	1-12-17	1-12-17	
Gasoline	**ND**	7.4	NWTPH-Gx	1-12-17	1-12-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*63-124*				
Client ID:	**L-PEX-99-8**					
Laboratory ID:	01-056-12					
Benzene	**ND**	0.020	EPA 8021B	1-12-17	1-12-17	
Toluene	**ND**	0.066	EPA 8021B	1-12-17	1-12-17	
Ethyl Benzene	**ND**	0.066	EPA 8021B	1-12-17	1-12-17	
m,p-Xylene	**ND**	0.066	EPA 8021B	1-12-17	1-12-17	
o-Xylene	**ND**	0.066	EPA 8021B	1-12-17	1-12-17	
Gasoline	**ND**	6.6	NWTPH-Gx	1-12-17	1-12-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*63-124*				

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0111S2					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.0	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*63-124*				
Laboratory ID:	MB0112S1					
Benzene	**ND**	0.020	EPA 8021B	1-12-17	1-12-17	
Toluene	**ND**	0.050	EPA 8021B	1-12-17	1-12-17	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-12-17	1-12-17	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-12-17	1-12-17	
o-Xylene	**ND**	0.050	EPA 8021B	1-12-17	1-12-17	
Gasoline	**ND**	5.0	NWTPH-Gx	1-12-17	1-12-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*63-124*				

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-044-13										
	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						*89*	*90*	*63-124*			
Laboratory ID:	01-056-07										
	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*	*101*	*63-124*			
SPIKE BLANKS											
Laboratory ID:	SB0111S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.913**	**0.970**	1.00	1.00		**91**	**97**	70-124	6	12	
Toluene	**0.905**	**0.963**	1.00	1.00		**91**	**96**	73-119	6	12	
Ethyl Benzene	**0.887**	**0.945**	1.00	1.00		**89**	**95**	74-117	6	12	
m,p-Xylene	**0.893**	**0.954**	1.00	1.00		**89**	**95**	75-117	7	13	
o-Xylene	**0.896**	**0.955**	1.00	1.00		**90**	**96**	75-116	6	12	
Surrogate:											
Fluorobenzene						*106*	*106*	*63-124*			
Laboratory ID:	SB0112S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.866**	**0.858**	1.00	1.00		**87**	**86**	70-124	1	12	
Toluene	**0.865**	**0.857**	1.00	1.00		**87**	**86**	73-119	1	12	
Ethyl Benzene	**0.848**	**0.842**	1.00	1.00		**85**	**84**	74-117	1	12	
m,p-Xylene	**0.866**	**0.861**	1.00	1.00		**87**	**86**	75-117	1	13	
o-Xylene	**0.870**	**0.864**	1.00	1.00		**87**	**86**	75-116	1	12	
Surrogate:											
Fluorobenzene						*102*	*97*	*63-124*			

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-88-7.5**					
Laboratory ID:	01-056-01					
Diesel Range Organics	**ND**	4800	NWTPH-Dx	1-11-17	1-11-17	M1,U1
Lube Oil	**8100**	610	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	---	*50-150*				S
Client ID:	**L-PEX-89-7.5**					
Laboratory ID:	01-056-02					
Diesel Range Organics	**ND**	96	NWTPH-Dx	1-11-17	1-11-17	M1,U1
Lube Oil	**140**	62	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*67*	*50-150*				
Client ID:	**L-PEX-90-5**					
Laboratory ID:	01-056-03					
Diesel Range Organics	**ND**	26	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**71**	53	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				
Client ID:	**L-PEX-91-8**					
Laboratory ID:	01-056-04					
Diesel Range Organics	**ND**	31	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*84*	*50-150*				
Client ID:	**L-PEX-92-5**					
Laboratory ID:	01-056-05					
Diesel Range Organics	**33**	27	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**210**	54	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*102*	*50-150*				
Client ID:	**L-PEX-93-8**					
Laboratory ID:	01-056-06					
Diesel Range Organics	**ND**	29	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**80**	59	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-94-5**					
Laboratory ID:	01-056-07					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**240**	54	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*100*	*50-150*				
Client ID:	**L-PEX-95-8**					
Laboratory ID:	01-056-08					
Diesel Range Organics	**ND**	30	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				
Client ID:	**L-PEX-96-8.5**					
Laboratory ID:	01-056-09					
Diesel Range Organics	**ND**	89	NWTPH-Dx	1-11-17	1-11-17	U1,X1
Lube Oil	**1100**	110	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				
Client ID:	**L-PEX-97-8.5**					
Laboratory ID:	01-056-10					
Diesel Range Organics	**ND**	100	NWTPH-Dx	1-11-17	1-11-17	U1,X1
Lube Oil	**1400**	120	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**L-PEX-98-5**					
Laboratory ID:	01-056-11					
Diesel Range Organics	**ND**	32	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil Range Organics	**ND**	63	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*80*	*50-150*				
Client ID:	**L-PEX-99-8**					
Laboratory ID:	01-056-12					
Diesel Range Organics	**ND**	31	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**120**	62	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0111S3					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*102*	*50-150*				
Laboratory ID:	MB0111S3					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-11-17	1-11-17	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*108*	*50-150*				
Laboratory ID:	MB0111S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-11-17	1-11-17	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-056-01										
	ORIG	DUP									
Diesel Range Organics	**ND**	**ND**	NA	NA		NA		NA	NA	NA	M1,U1
Lube Oil	**6670**	**6400**	NA	NA		NA		NA	4	NA	
Surrogate:											
o-Terphenyl						---	---	*50-150*			S,S
Laboratory ID:	01-056-03										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil	**67.4**	**59.1**	NA	NA		NA		NA	13	NA	
Surrogate:											
o-Terphenyl						*82*	*98*	*50-150*			
Laboratory ID:	01-044-02										
	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						*76*	*70*	*50-150*			

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

% MOISTURE

Date Analyzed: 1-11-17

Client ID	Lab ID	% Moisture
L-PEX-88-7.5	01-056-01	17
L-PEX-89-7.5	01-056-02	19
L-PEX-90-5	01-056-03	5
L-PEX-91-8	01-056-04	19
L-PEX-92-5	01-056-05	8
L-PEX-93-8	01-056-06	15
L-PEX-94-5	01-056-07	8
L-PEX-95-8	01-056-08	18
L-PEX-96-8.5	01-056-09	55
L-PEX-97-8.5	01-056-10	58
L-PEX-98-5	01-056-11	21
L-PEX-99-8	01-056-12	20

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

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

Laboratory Number: 01-056

Company: HWA GeoSciences
Project Number: 2007-098-2043
Project Name: Landing
Project Manager: Arnie Sugar
Sampled by: Austin York

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 (☐ Acid / SG Clean-up)*	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	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					% Moisture
1	L-PEX-88-7.5	1/11/17	10:15	Soil	2		X		X																		
2	L-PEX-89-7.5		10:40				X		X																		
3	L-PEX-90-5		11:55				X		X																		
4	L-PEX-91-8		11:58				X		X																		
5	L-PEX-92-5		12:05				X		X																		
6	L PEX-93-8		12:08				X		X																		
7	LPEX-94-5		1325				X		X																		
8	LPEX-95-8		1330				X		X																		
9	LPEX-96-8.5		1335				X		X																		
10	LPEX-97-8.5		1340				X		X																		

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	1/11/17	14:50
Received	[signature]	OSE	1/11/17	1450
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Silica Gel Clean up on
L-PEX-96-8.5
L-PEX-97-8.5

Data Package: Standard ☒ Level III ☐ Level IV ☐

Chromatograms with final report ☒ Electronic Data Deliverables (EDDs) ☒

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

Company: HWA GeoSciences
Project Number: 2007-098-2043
Project Name: Landing
Project Manager: Arnie Sugar
Sampled by: Austin York

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: 01-056

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	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					% Moisture
11	LPEX-98-5'	1-11-17	1345	Soil	2		X	~~X~~	X																		X
12	LPEX-99-8'	1-11-17	1350	↓	↓		X	~~X~~	X																		↓

	Signature	Company	Date	Time
Relinquished	Nicole Raykin	HWA	1/11/17	14:50
Received		OSE	1/11/17	1450
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☒ Level III ☐ Level IV ☐

Chromatograms with final report ☒ Electronic Data Deliverables (EDDs) ☒

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

January 17, 2017

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1701-074

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on January 13, 2017.

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, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

Case Narrative

Samples were collected on January 13, 2017 and received by the laboratory on January 13, 2017. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and 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.

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: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-100-8'**					
Laboratory ID:	01-074-01					
Benzene	**ND**	0.020	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.055	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.055	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.055	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.055	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	5.5	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*84*	*63-124*				
Client ID:	**L-PEX-101-8'**					
Laboratory ID:	01-074-02					
Benzene	**ND**	0.020	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.058	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.058	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.058	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.058	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	5.8	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*108*	*63-124*				
Client ID:	**L-PEX-102-5'**					
Laboratory ID:	01-074-03					
Benzene	**ND**	0.020	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	5.1	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*63-124*				

Date of Report: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-103-5'**					
Laboratory ID:	01-074-04					
Benzene	**ND**	0.020	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.056	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.056	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.056	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.056	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	5.6	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*63-124*				
Client ID:	**L-PEX-104-9'**					
Laboratory ID:	01-074-05					
Benzene	**ND**	0.023	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.11	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.11	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.11	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.11	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	11	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*63-124*				
Client ID:	**L-PEX-105-5'**					
Laboratory ID:	01-074-06					
Benzene	**ND**	0.020	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	5.0	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*63-124*				

Date of Report: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-106-8'**					
Laboratory ID:	01-074-07					
Benzene	**ND**	0.020	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	5.1	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*63-124*				

Date of Report: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
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:	MB0116S1					
Benzene	**ND**	0.020	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	5.0	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*63-124*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-074-01										
	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						*84*	*73*	*63-124*			
SPIKE BLANKS											
Laboratory ID:	SB0116S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.891**	**0.921**	1.00	1.00		**89**	**92**	70-124	3	12	
Toluene	**0.880**	**0.912**	1.00	1.00		**88**	**91**	73-119	4	12	
Ethyl Benzene	**0.861**	**0.893**	1.00	1.00		**86**	**89**	74-117	4	12	
m,p-Xylene	**0.867**	**0.901**	1.00	1.00		**87**	**90**	75-117	4	13	
o-Xylene	**0.872**	**0.903**	1.00	1.00		**87**	**90**	75-116	3	12	
Surrogate:											
Fluorobenzene						*100*	*103*	*63-124*			

Date of Report: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-100-8'**					
Laboratory ID:	01-074-01					
Diesel Range Organics	**ND**	28	NWTPH-Dx	1-13-17	1-13-17	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	1-13-17	1-13-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*81*	*50-150*				
Client ID:	**L-PEX-101-8'**					
Laboratory ID:	01-074-02					
Diesel Range Organics	**ND**	29	NWTPH-Dx	1-13-17	1-13-17	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	1-13-17	1-13-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				
Client ID:	**L-PEX-102-5'**					
Laboratory ID:	01-074-03					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-13-17	1-13-17	
Lube Oil	**230**	54	NWTPH-Dx	1-13-17	1-13-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*84*	*50-150*				
Client ID:	**L-PEX-103-5'**					
Laboratory ID:	01-074-04					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-13-17	1-13-17	
Lube Oil	**230**	54	NWTPH-Dx	1-13-17	1-13-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				
Client ID:	**L-PEX-104-9'**					
Laboratory ID:	01-074-05					
Diesel Range Organics	**ND**	44	NWTPH-Dx	1-13-17	1-16-17	X1
Lube Oil Range Organics	**140**	88	NWTPH-Dx	1-13-17	1-16-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				
Client ID:	**L-PEX-105-5'**					
Laboratory ID:	01-074-06					
Diesel Range Organics	**ND**	28	NWTPH-Dx	1-13-17	1-13-17	
Lube Oil	**88**	56	NWTPH-Dx	1-13-17	1-13-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				

Date of Report: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**L-PEX-106-8'**					
Laboratory ID:	01-074-07					
Diesel Range Organics	**ND**	28	NWTPH-Dx	1-13-17	1-13-17	
Lube Oil	**190**	56	NWTPH-Dx	1-13-17	1-13-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				

Date of Report: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0113S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-13-17	1-13-17	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-13-17	1-13-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Laboratory ID:	MB0113S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-13-17	1-13-17	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-13-17	1-13-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-074-01										
	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						*81*	*86*	*50-150*			

Date of Report: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

% MOISTURE

Date Analyzed: 1-13-17

Client ID	Lab ID	% Moisture
L-PEX-100-8'	01-074-01	10
L-PEX-101-8'	01-074-02	14
L-PEX-102-5'	01-074-03	8
L-PEX-103-5'	01-074-04	8
L-PEX-104-9'	01-074-05	43
L-PEX-105-5'	01-074-06	10
L-PEX-106-8'	01-074-07	11

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

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

Laboratory Number: 01-074

Company: HWA GeoSciences
Project Number: 2007-098
Project Name: Landing
Project Manager: Arnie Sugar
Sampled by: Austin York

Turnaround Request (in working days) (Check One)
- [ ] Same Day
- [x] 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	% Moisture
1	L-PEX-100-8'	1/13/17	9:15	Soil	2		X		X													X
2	L-PEX-101-8'		10:00				X		X													
3	L-PEX-102-5'		11:00				X		X													
4	L-PEX-103-5'		11:10				X		X													
5	L-PEX-104-9'		11:15				X		X													
6	L-PEX-105-5'		11:25				X		X													
7	L PEX-106-8'		11:30				X		X													

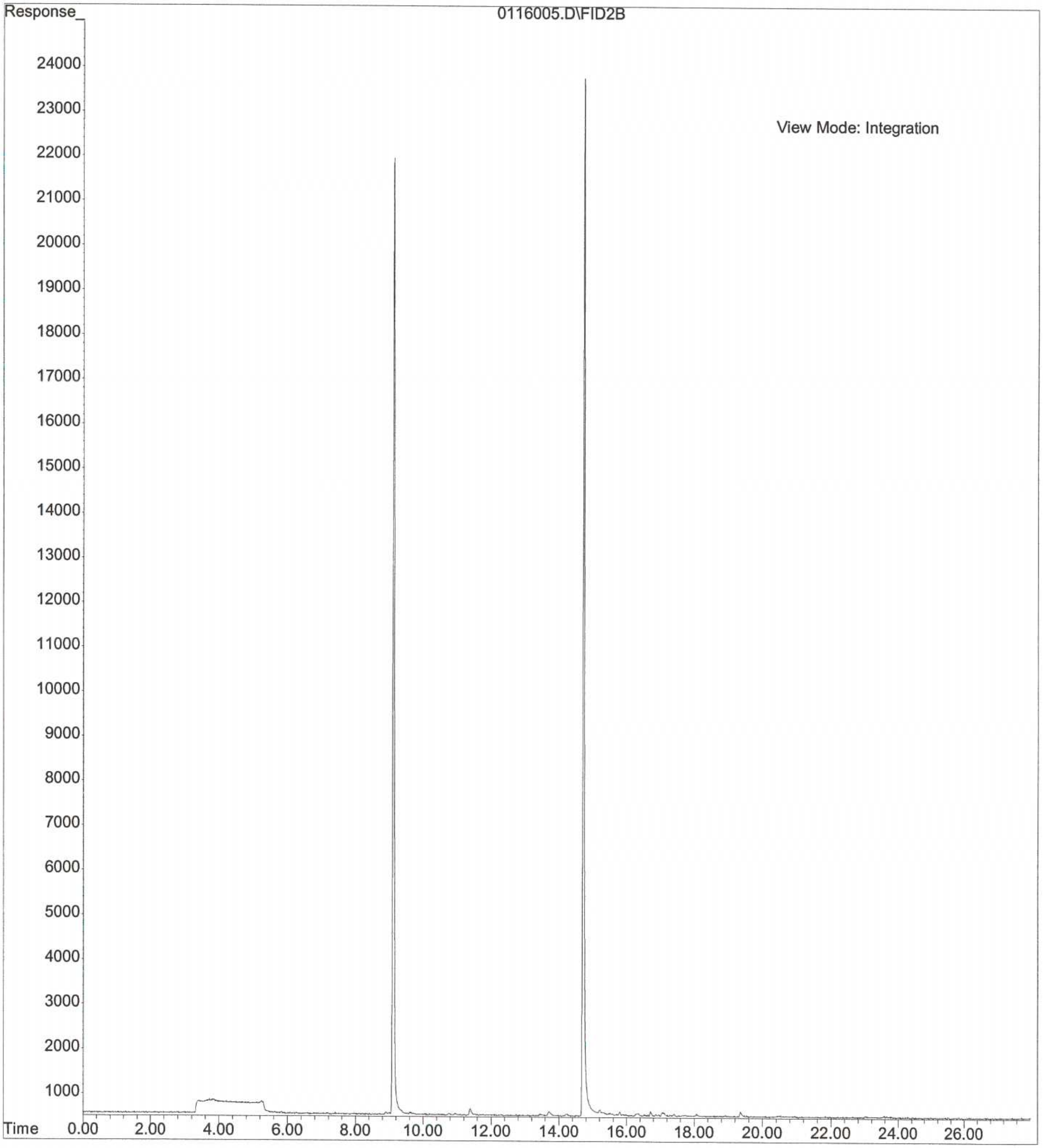
	Signature	Company	Date	Time
Relinquished	[signature]	HWA	1/13/17	15:10
Received	[signature]	OSE	1/13/17	1520
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Silica gel cleanup on L-PEX-104-9'

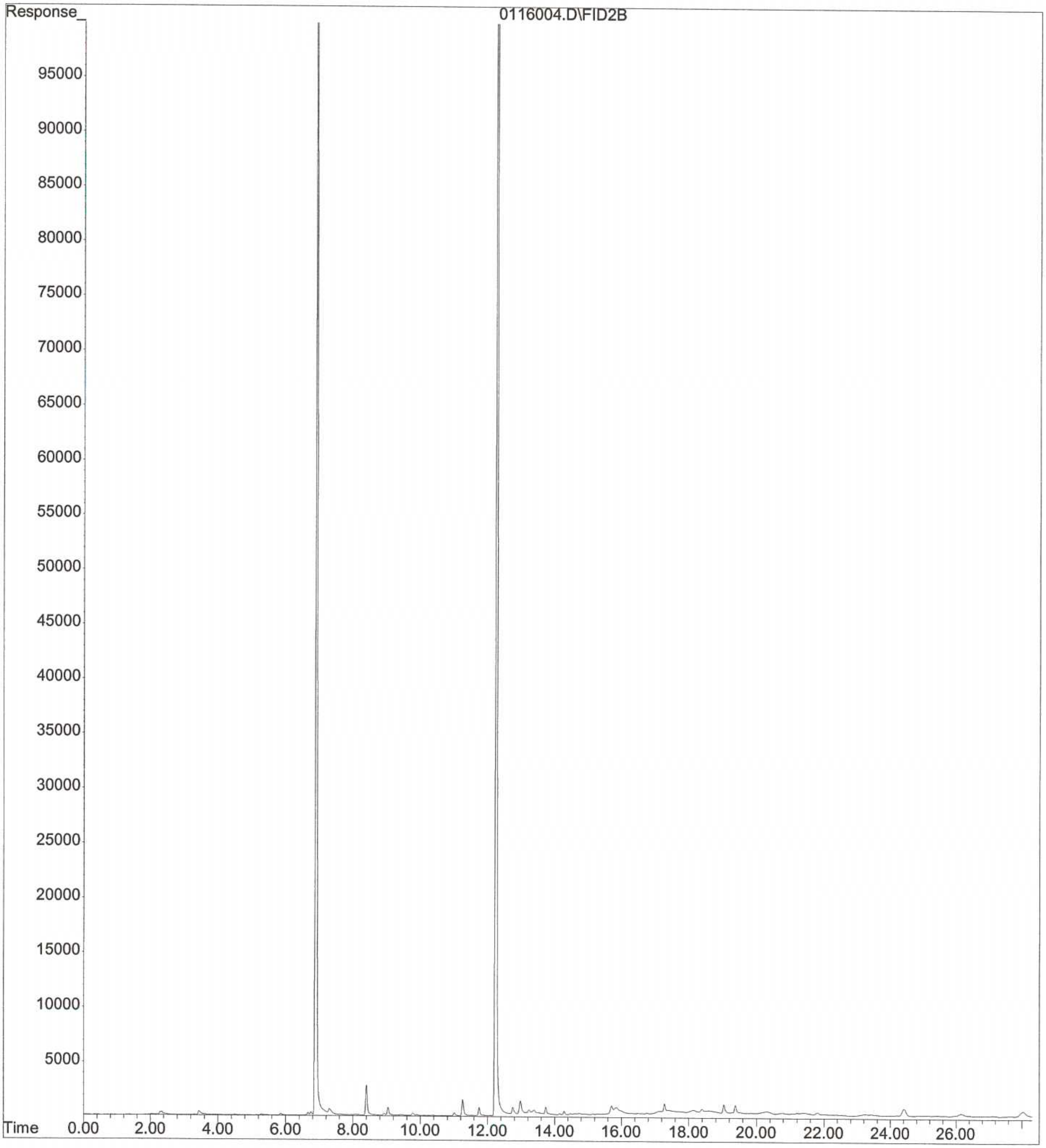
Chromatograms with final report [x]

Data Package: Standard [x] Level III [ ] Level IV [ ] Electronic Data Deliverables (EDDs) [x] ______

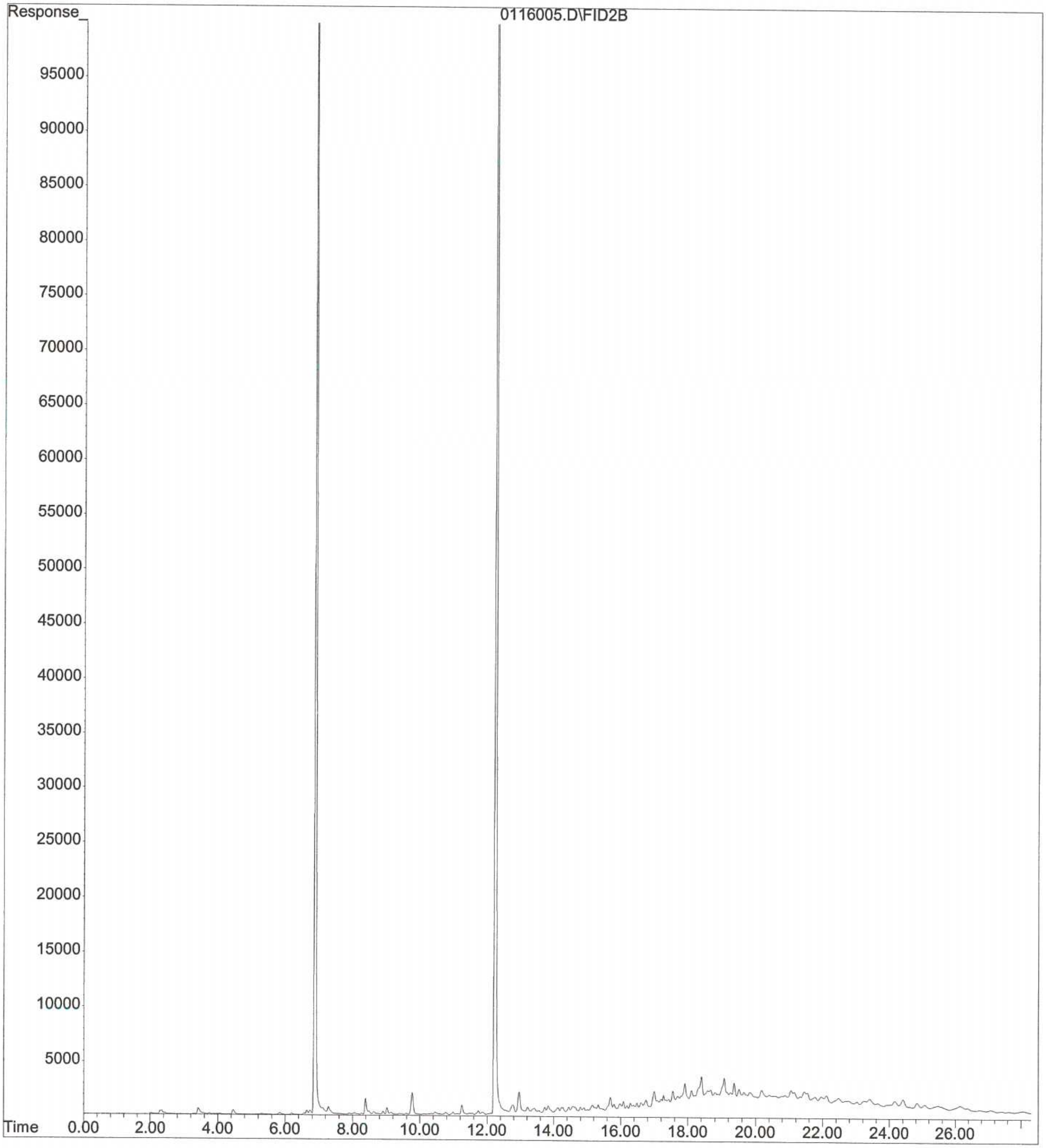
File   : X:\BTEX\HOPE\DATA\H170116\0116005.D
Operator   :
Acquired   : 16 Jan 2017   9:53   using AcqMethod 161103B.M
Instrument :   Hope
Sample Name: 01-074-01s
Misc Info :
Vial Number: 5



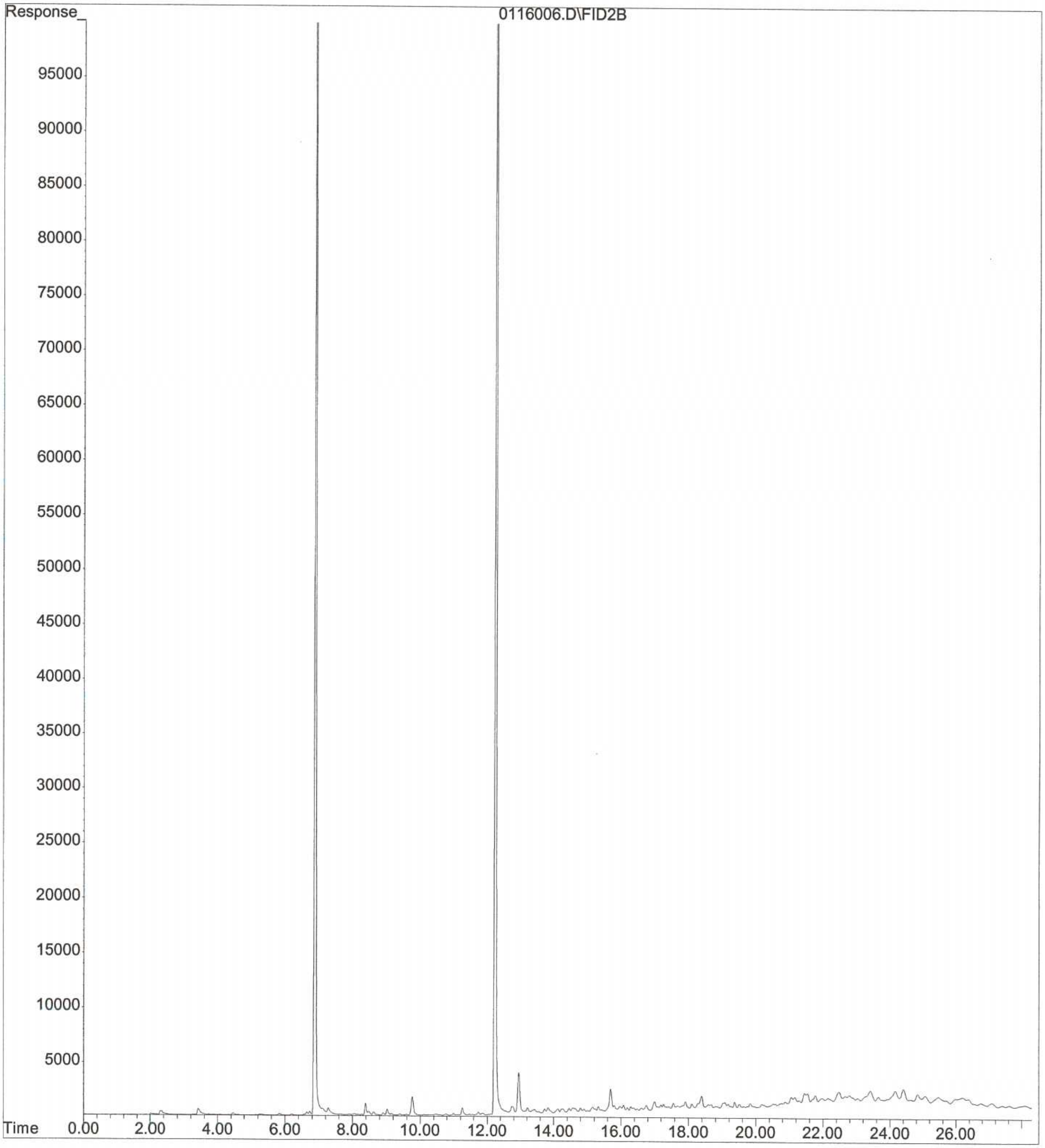
File   : X:\BTEX\DARYL\DATA\D170116\0116004.D
Operator   :
Acquired   : 16 Jan 2017 10:35   using AcqMethod 161207VG.M
Instrument :   Daryl
Sample Name: 01-074-02s
Misc Info :
Vial Number: 4



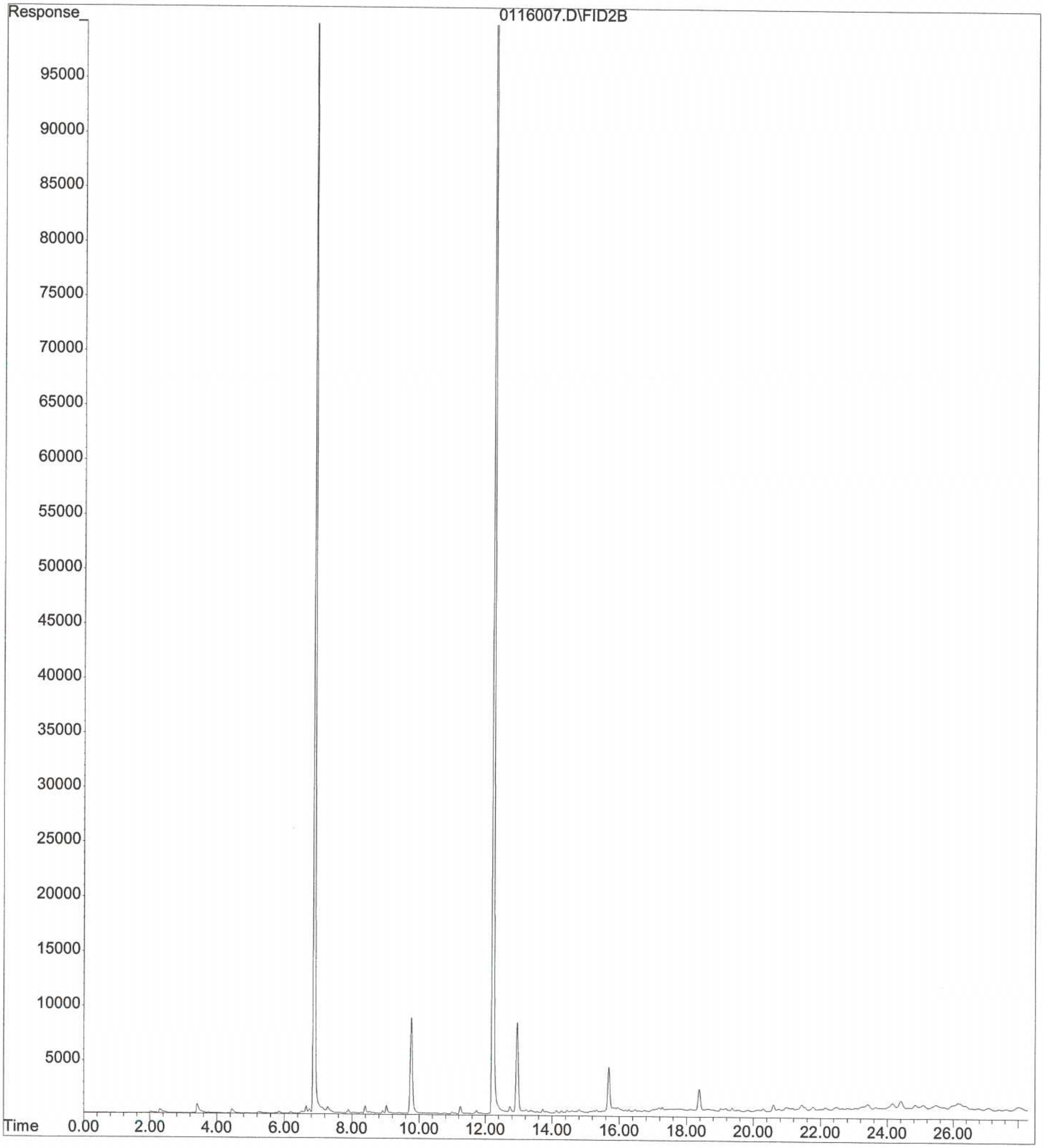
File : X:\BTEX\DARYL\DATA\D170116\0116005.D
Operator :
Acquired : 16 Jan 2017 11:09 using AcqMethod 161207VG.M
Instrument : Daryl
Sample Name: 01-074-03s
Misc Info :
Vial Number: 5



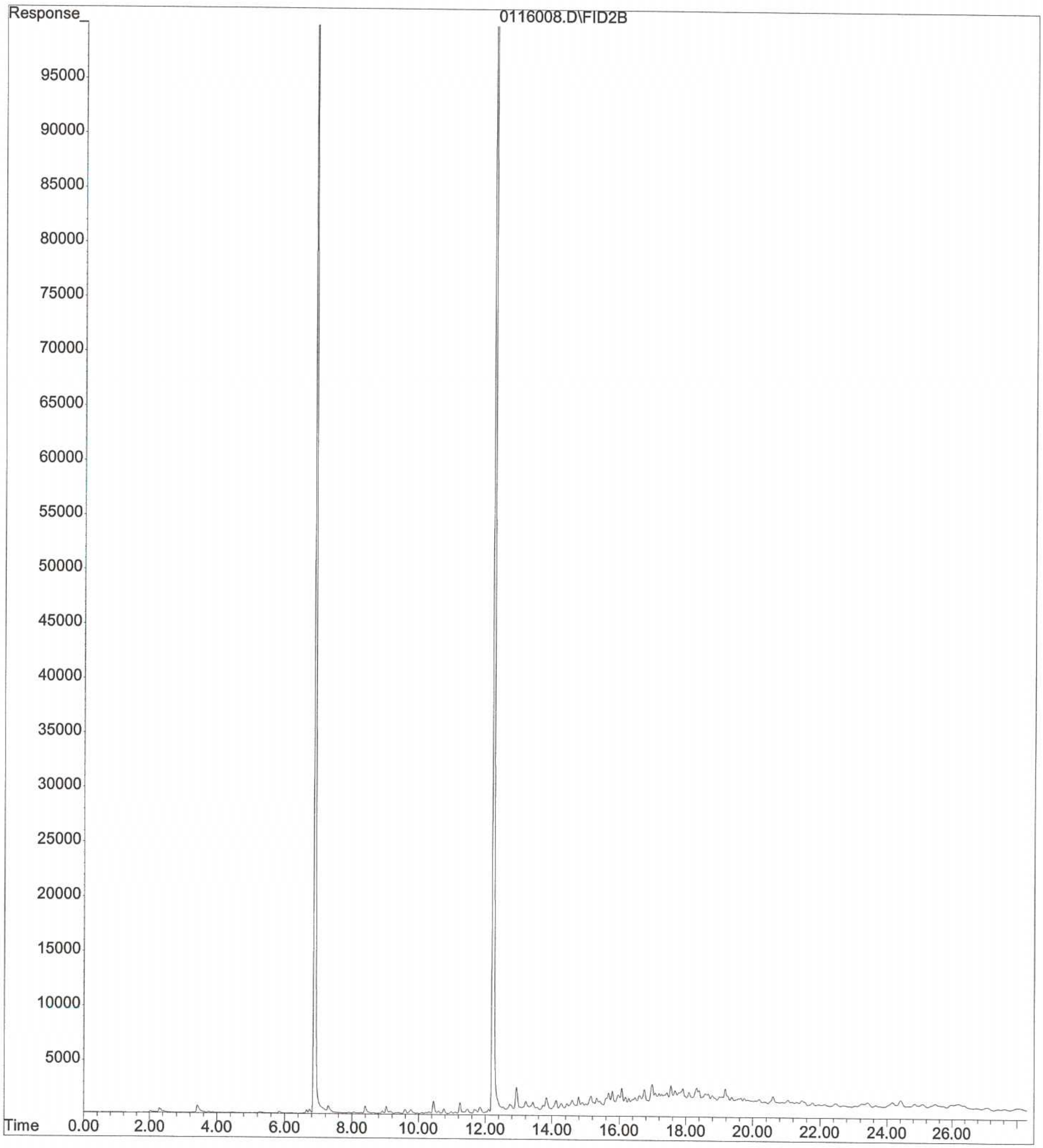
```
File        : X:\BTEX\DARYL\DATA\D170116\0116006.D
Operator    :
Acquired    : 16 Jan 2017  11:42     using AcqMethod 161207VG.M
Instrument  :   Daryl
Sample Name: 01-074-04s
Misc Info   :
Vial Number: 6
```



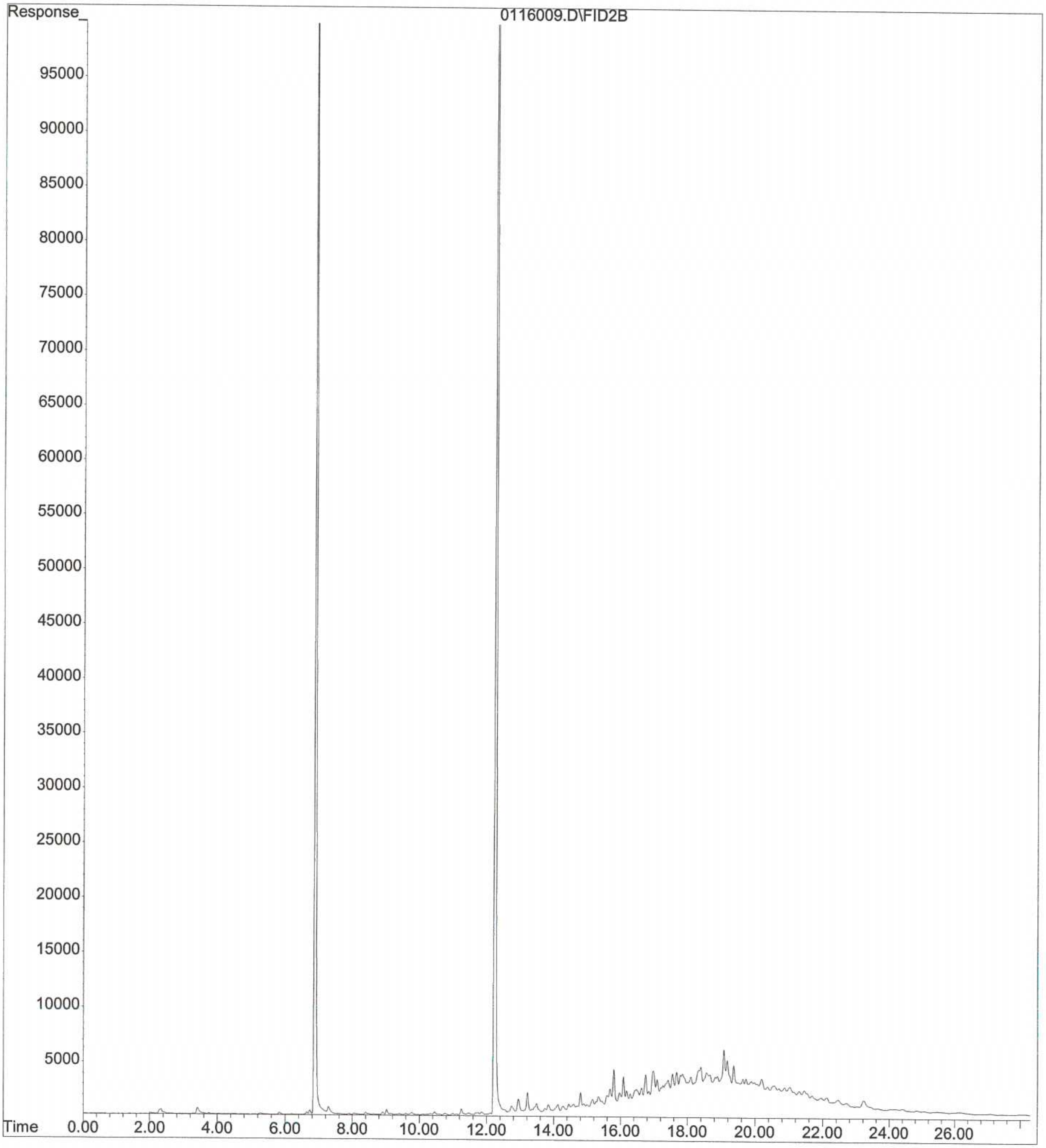
File : X:\BTEX\DARYL\DATA\D170116\0116007.D
Operator :
Acquired : 16 Jan 2017 12:16 using AcqMethod 161207VG.M
Instrument : Daryl
Sample Name: 01-074-05s
Misc Info :
Vial Number: 7



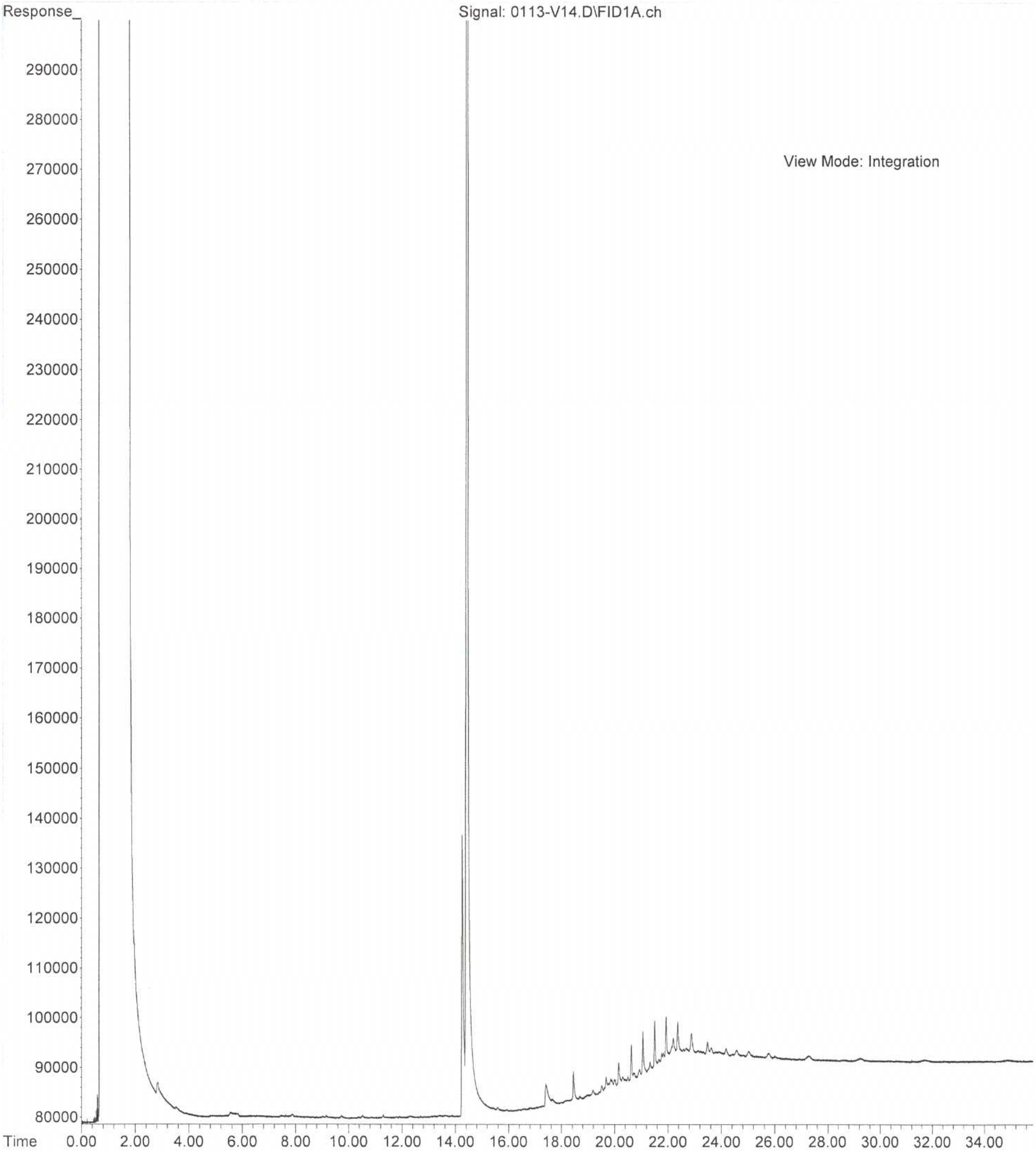
File   : X:\BTEX\DARYL\DATA\D170116\0116008.D
Operator   :
Acquired   : 16 Jan 2017 12:49   using AcqMethod 161207VG.M
Instrument :   Daryl
Sample Name: 01-074-06s
Misc Info :
Vial Number: 8



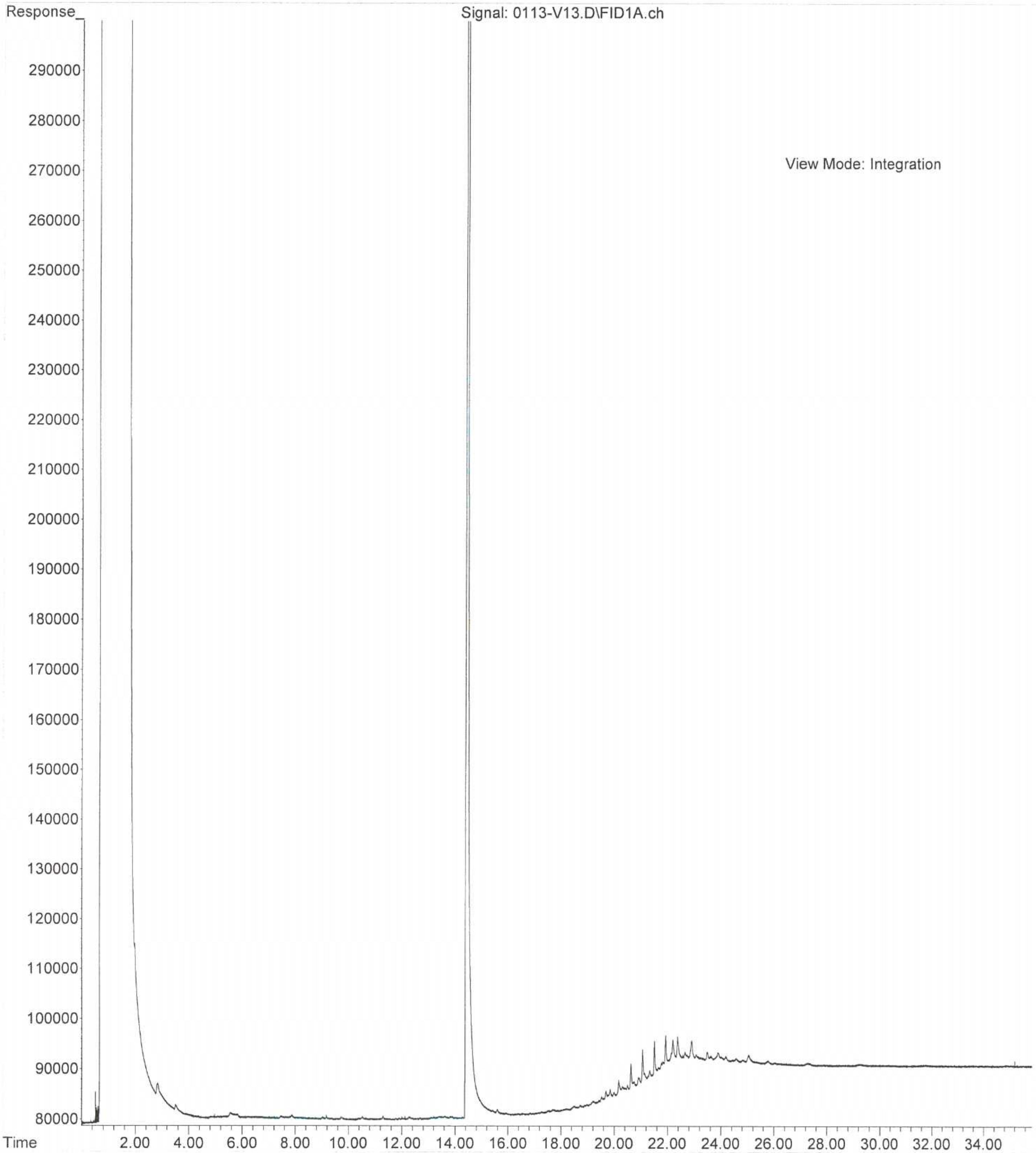
File   : X:\BTEX\DARYL\DATA\D170116\0116009.D
Operator   :
Acquired   : 16 Jan 2017 13:23   using AcqMethod 161207VG.M
Instrument :   Daryl
Sample Name: 01-074-07s
Misc Info :
Vial Number: 9



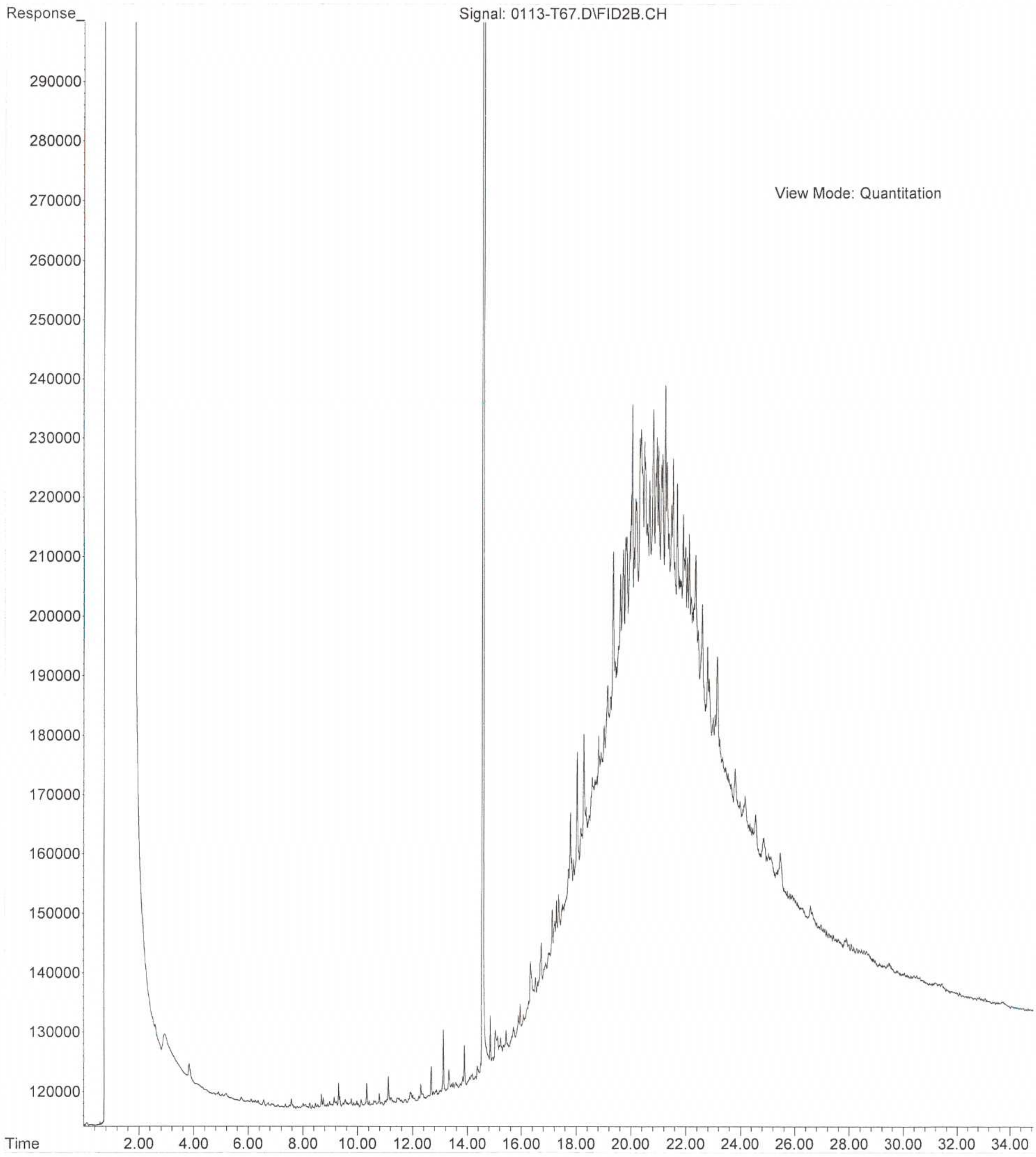
```
File       :X:\DIESELS\VIGO\DATA\V170113\0113-V14.D
Operator   :
Acquired   : 13 Jan 2017  20:15     using AcqMethod V160602F.M
Instrument :   Vigo
Sample Name: 01-074-01
Misc Info  :
Vial Number: 14
```



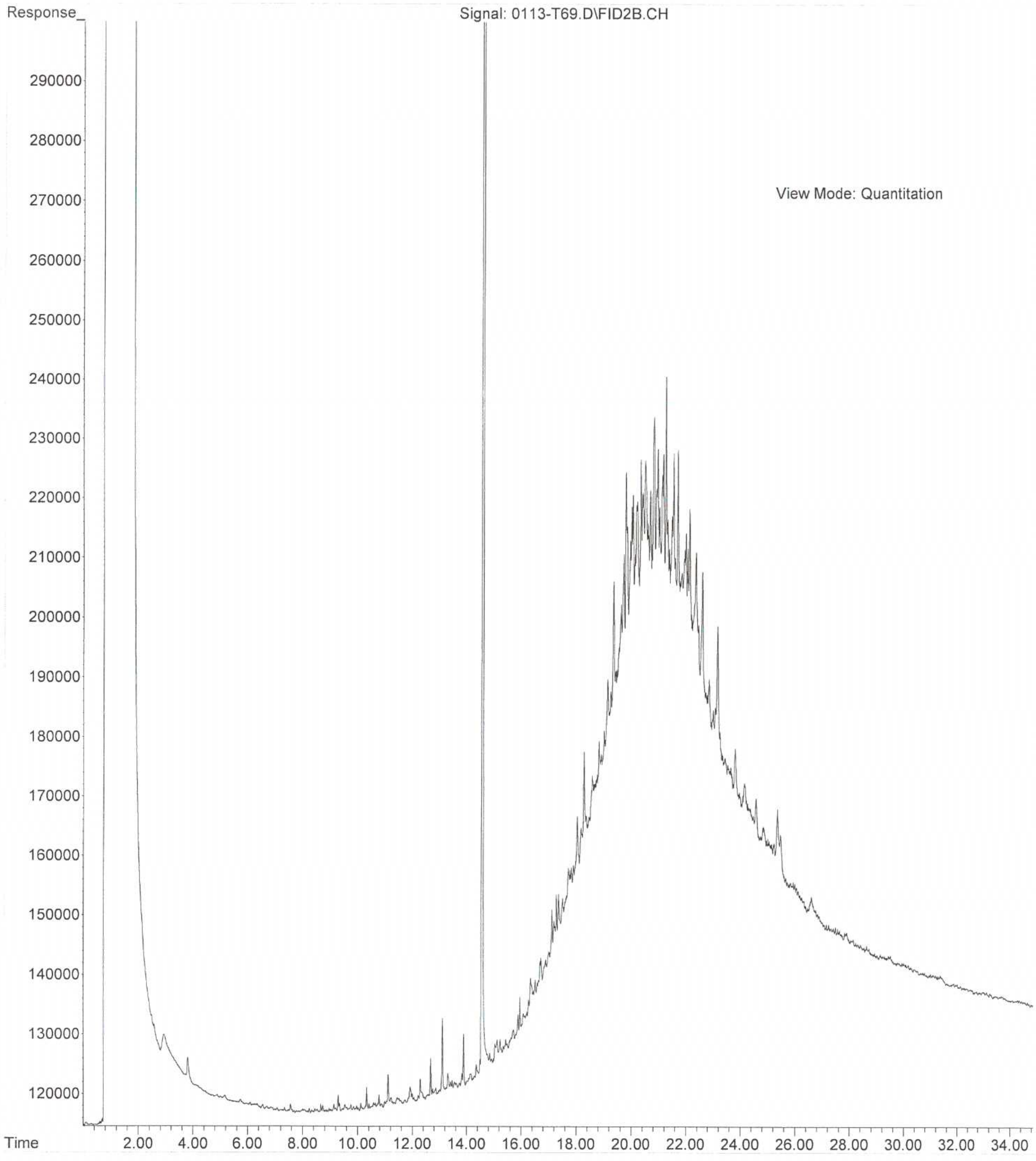
File   :X:\DIESELS\VIGO\DATA\V170113\0113-V13.D
Operator   :
Acquired   : 13 Jan 2017   19:34   using AcqMethod V160602F.M
Instrument :   Vigo
Sample Name: 01-074-02
Misc Info   :
Vial Number: 13



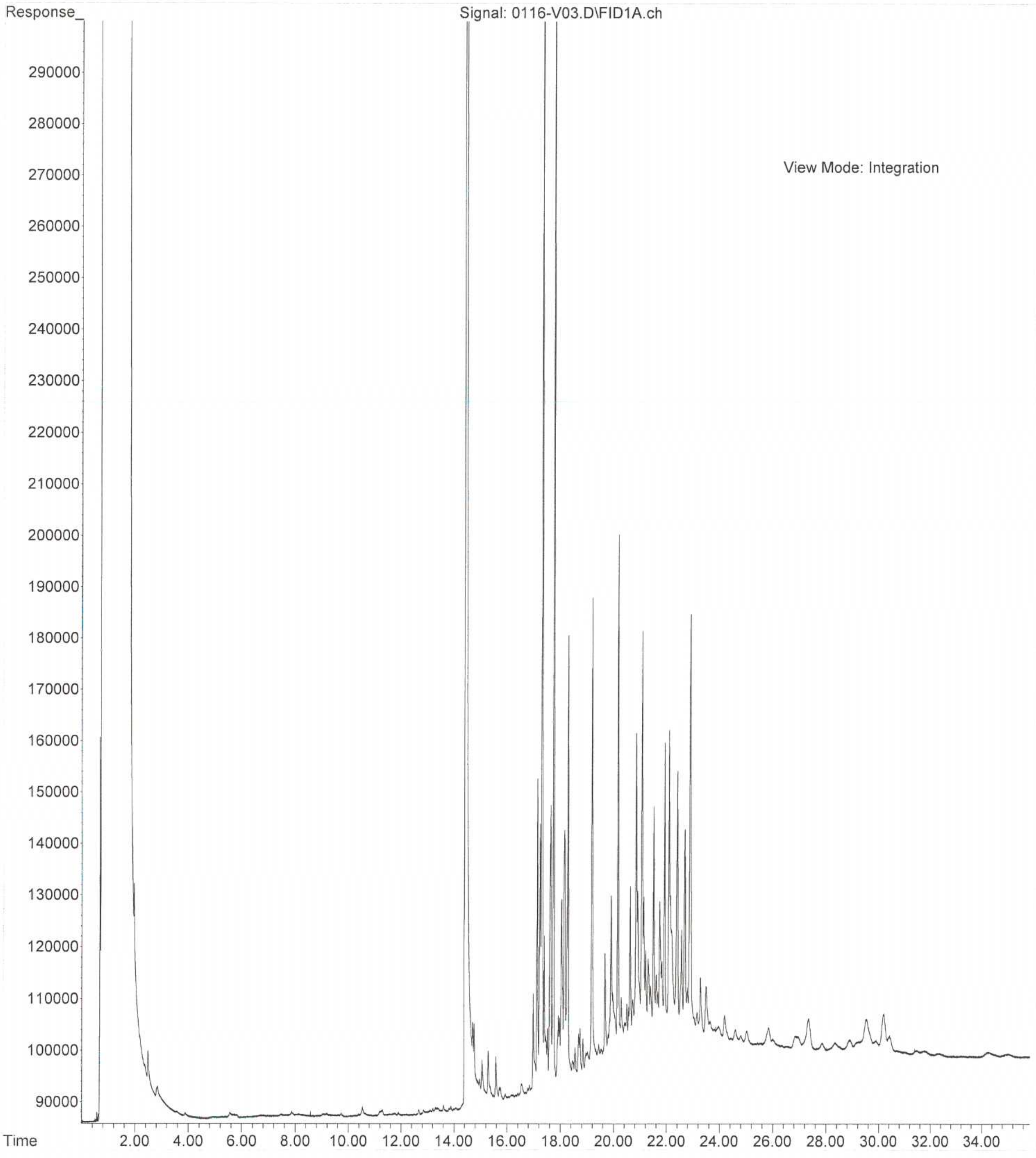
File   :X:\DIESELS\TERI\DATA\T170113.SEC\0113-T67.D
Operator   : ZT
Acquired   : 13 Jan 2017   23:12   using AcqMethod T161216F.M
Instrument :   Teri
Sample Name: 01-074-03
Misc Info   :
Vial Number: 67



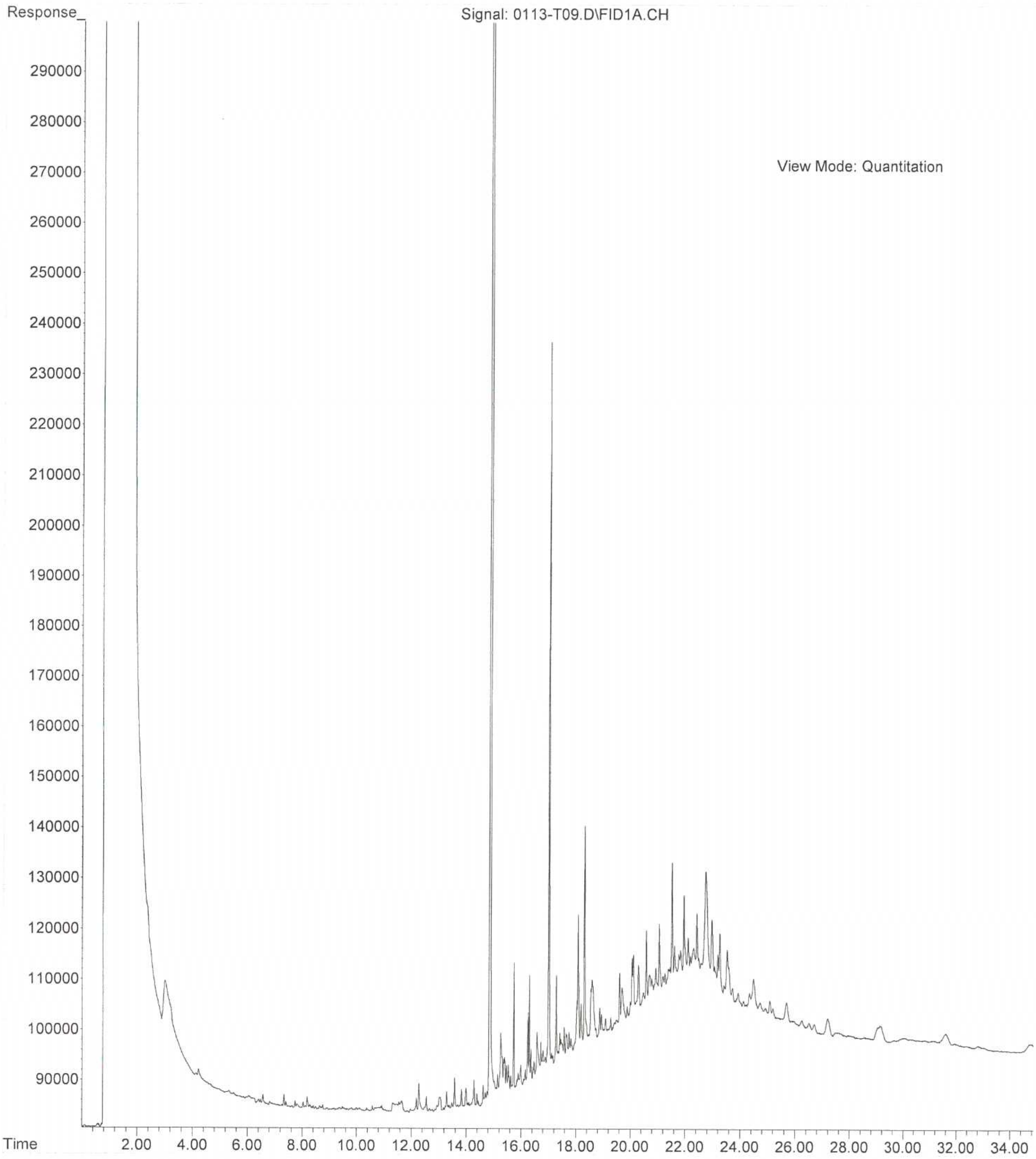
```
File        :X:\DIESELS\TERI\DATA\T170113.SEC\0113-T69.D
Operator    : ZT
Acquired    : 14 Jan 2017   0:36     using AcqMethod T161216F.M
Instrument :   Teri
Sample Name: 01-074-04
Misc Info   :
Vial Number: 69
```



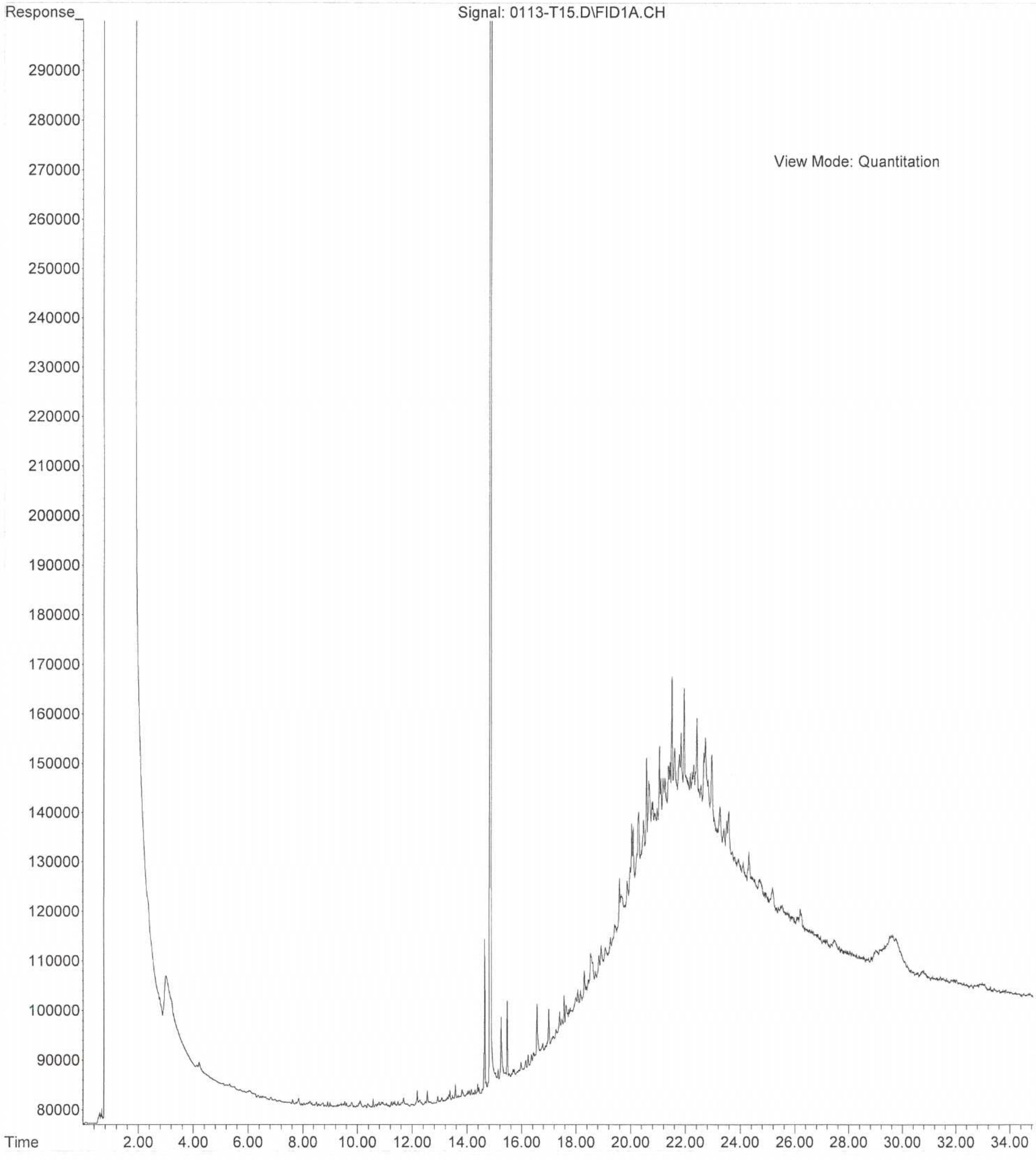
```
File        :X:\DIESELS\VIGO\DATA\V170116\0116-V03.D
Operator    :
Acquired    : 16 Jan 2017  11:32    using AcqMethod V160602F.M
Instrument :   Vigo
Sample Name: 01-074-05 ACU
Misc Info   :
Vial Number: 3
```



File   :X:\DIESELS\TERI\DATA\T170113\0113-T09.D
Operator   : ZT
Acquired   : 13 Jan 2017 17:37   using AcqMethod T161216F.M
Instrument :   Teri
Sample Name: 01-074-06
Misc Info   :
Vial Number: 9



File   :X:\DIESELS\TERI\DATA\T170113\0113-T15.D
Operator   : ZT
Acquired   : 13 Jan 2017   21:48   using AcqMethod T161216F.M
Instrument :   Teri
Sample Name: 01-074-07
Misc Info   :
Vial Number: 15



OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

January 18, 2017

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-2044
Laboratory Reference No. 1701-090

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on January 17, 2017.

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 18, 2017
Samples Submitted: January 17, 2017
Laboratory Reference: 1701-090
Project: 2007-098-2044

Case Narrative

Samples were collected on January 17, 2017 and received by the laboratory on January 17, 2017. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and 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.

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: January 18, 2017
Samples Submitted: January 17, 2017
Laboratory Reference: 1701-090
Project: 2007-098-2044

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-107-11'**					
Laboratory ID:	01-090-01					
Benzene	**ND**	0.020	EPA 8021B	1-17-17	1-17-17	
Toluene	**ND**	0.10	EPA 8021B	1-17-17	1-17-17	
Ethyl Benzene	**ND**	0.10	EPA 8021B	1-17-17	1-17-17	
m,p-Xylene	**ND**	0.10	EPA 8021B	1-17-17	1-17-17	
o-Xylene	**ND**	0.10	EPA 8021B	1-17-17	1-17-17	
Gasoline	**ND**	10	NWTPH-Gx	1-17-17	1-17-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*113*	*63-124*				
Client ID:	**L-PEX-108-11'**					
Laboratory ID:	01-090-02					
Benzene	**ND**	0.020	EPA 8021B	1-17-17	1-17-17	
Toluene	**ND**	0.095	EPA 8021B	1-17-17	1-17-17	
Ethyl Benzene	**ND**	0.095	EPA 8021B	1-17-17	1-17-17	
m,p-Xylene	**ND**	0.095	EPA 8021B	1-17-17	1-17-17	
o-Xylene	**ND**	0.095	EPA 8021B	1-17-17	1-17-17	
Gasoline	**ND**	9.5	NWTPH-Gx	1-17-17	1-17-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*63-124*				

Date of Report: January 18, 2017
Samples Submitted: January 17, 2017
Laboratory Reference: 1701-090
Project: 2007-098-2044

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0117S1					
Benzene	**ND**	0.020	EPA 8021B	1-17-17	1-17-17	
Toluene	**ND**	0.050	EPA 8021B	1-17-17	1-17-17	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-17-17	1-17-17	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-17-17	1-17-17	
o-Xylene	**ND**	0.050	EPA 8021B	1-17-17	1-17-17	
Gasoline	**ND**	5.0	NWTPH-Gx	1-17-17	1-17-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*63-124*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-079-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**0.0585**	**0.0562**	NA	NA		NA		NA	4	30	
m,p-Xylene	**0.143**	**0.133**	NA	NA		NA		NA	7	30	
o-Xylene	**0.0646**	**0.0547**	NA	NA		NA		NA	17	30	
Gasoline	**111**	**122**	NA	NA		NA		NA	9	30	
Surrogate:											
Fluorobenzene						*102*	*100*	*63-124*			
SPIKE BLANKS											
Laboratory ID:	SB0117S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.862**	**0.858**	1.00	1.00		**86**	**86**	70-124	0	12	
Toluene	**0.858**	**0.856**	1.00	1.00		**86**	**86**	73-119	0	12	
Ethyl Benzene	**0.839**	**0.836**	1.00	1.00		**84**	**84**	74-117	0	12	
m,p-Xylene	**0.852**	**0.852**	1.00	1.00		**85**	**85**	75-117	0	13	
o-Xylene	**0.856**	**0.849**	1.00	1.00		**86**	**85**	75-116	1	12	
Surrogate:											
Fluorobenzene						*101*	*97*	*63-124*			

Date of Report: January 18, 2017
Samples Submitted: January 17, 2017
Laboratory Reference: 1701-090
Project: 2007-098-2044

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-107-11'**					
Laboratory ID:	01-090-01					
Diesel Range Organics	**ND**	40	NWTPH-Dx	1-17-17	1-17-17	X1
Lube Oil	**100**	79	NWTPH-Dx	1-17-17	1-17-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				
Client ID:	**L-PEX-108-11'**					
Laboratory ID:	01-090-02					
Diesel Range Organics	**ND**	39	NWTPH-Dx	1-17-17	1-17-17	X1
Lube Oil Range Organics	**ND**	78	NWTPH-Dx	1-17-17	1-17-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*99*	*50-150*				

Date of Report: January 18, 2017
Samples Submitted: January 17, 2017
Laboratory Reference: 1701-090
Project: 2007-098-2044

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0117S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-17-17	1-17-17	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-17-17	1-17-17	X1
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:	01-077-07										
	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*	*89*	*50-150*			

Date of Report: January 18, 2017
Samples Submitted: January 17, 2017
Laboratory Reference: 1701-090
Project: 2007-098-2044

% MOISTURE

Date Analyzed: 1-17-17

Client ID	Lab ID	% Moisture
L-PEX-107-11'	01-090-01	37
L-PEX-108-11'	01-090-02	36

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

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

Laboratory Number: 01-090

Company: HWA GeoSciences
Project Number: 2007-098-2044
Project Name: Landing
Project Manager: Arnie Sugar
Sampled by: Austin York

Turnaround Request (in working days)
(Check One)
- [ ] Same Day
- [x] 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						% Moisture
1	L-PEX-107-11'	1/17/17	8:30	Soil	2		X	~~X~~	X																		X
2	L-PEX-108-11'	↓	8:35	↓	2		X	~~X~~	X																		X

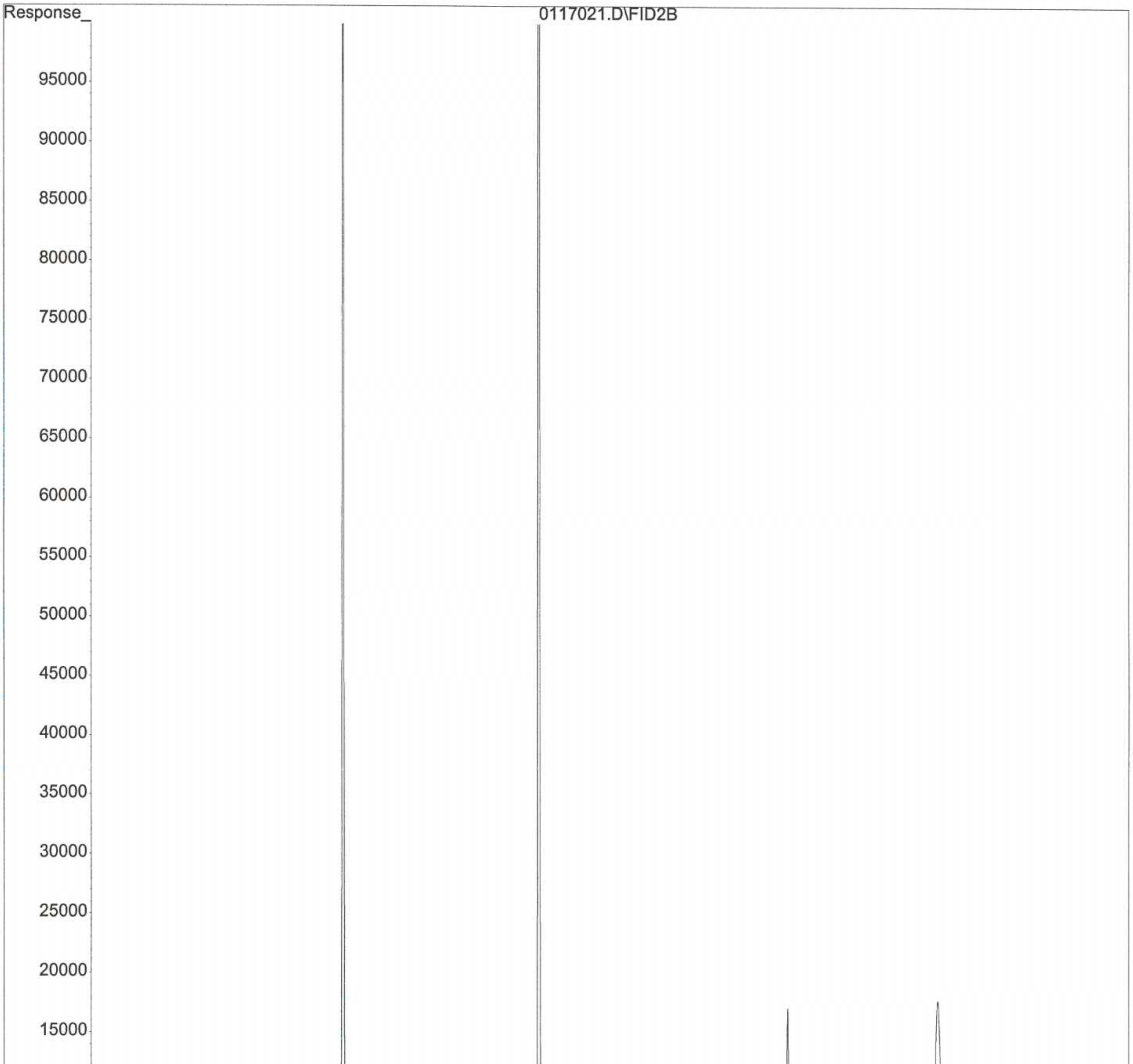
	Signature	Company	Date	Time
Relinquished	[signature]	HWA	1/17/17	12:50
Received	[signature]	OSE	1/17/17	1250
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* silica gel clean up on Dx

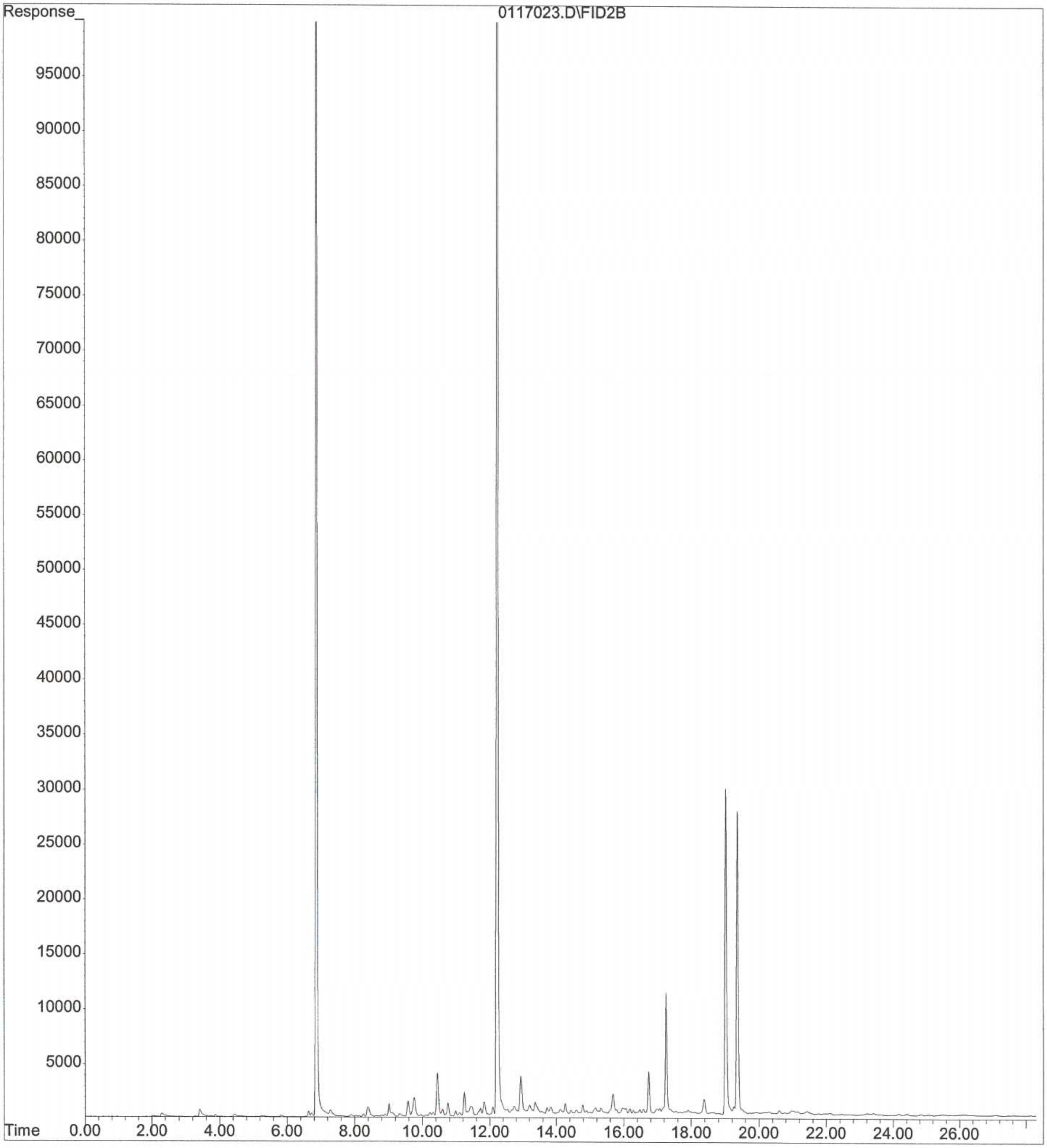
Chromatograms with final report [x]

Data Package: Standard [x] Level III [ ] Level IV [ ] Electronic Data Deliverables (EDDs) [x] ______

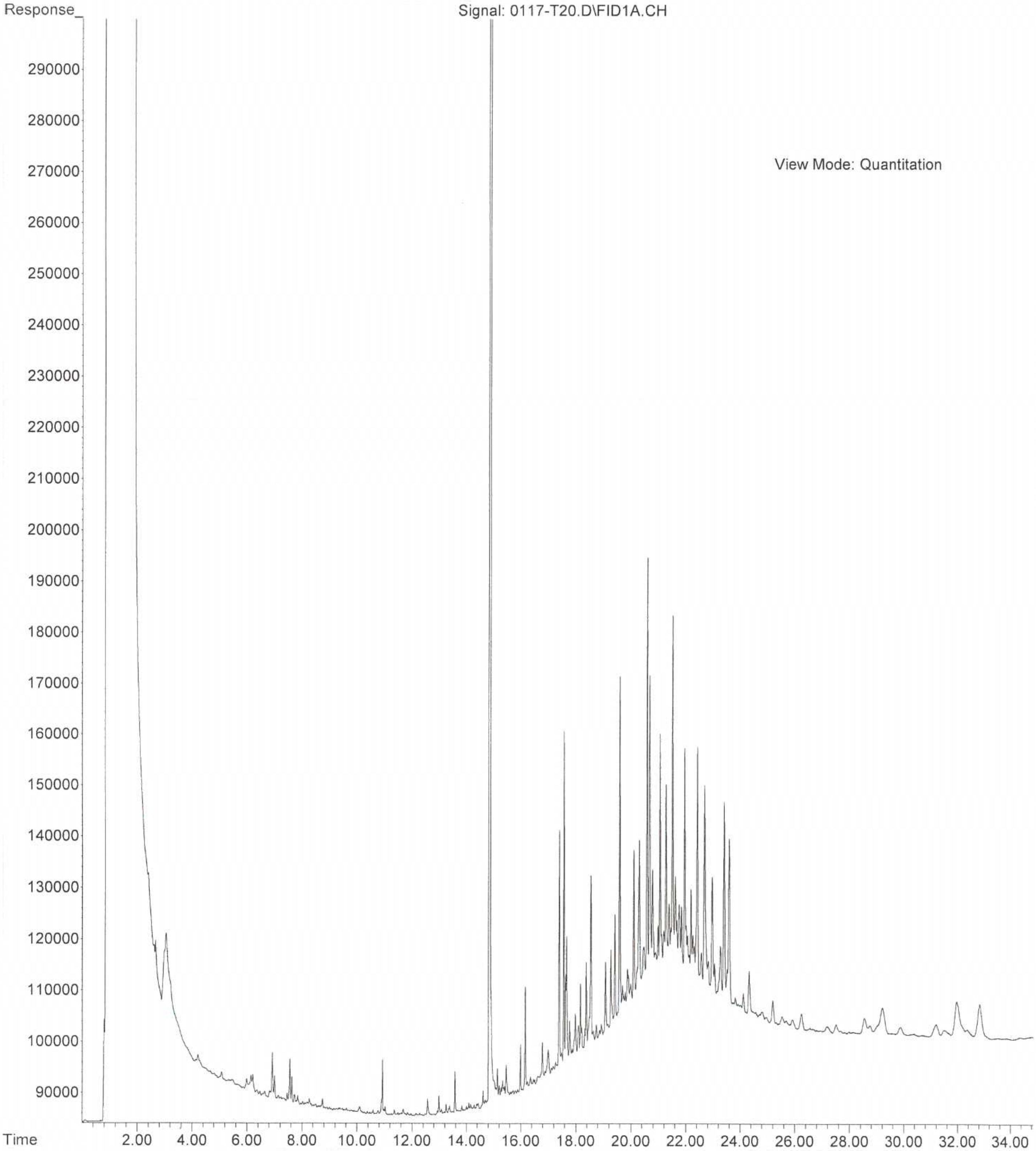
File : X:\BTEX\DARYL\DATA\D170117\0117021.D
Operator :
Acquired : 17 Jan 2017 19:27 using AcqMethod 161207VG.M
Instrument : Daryl
Sample Name: 01-090-01s
Misc Info :
Vial Number: 21



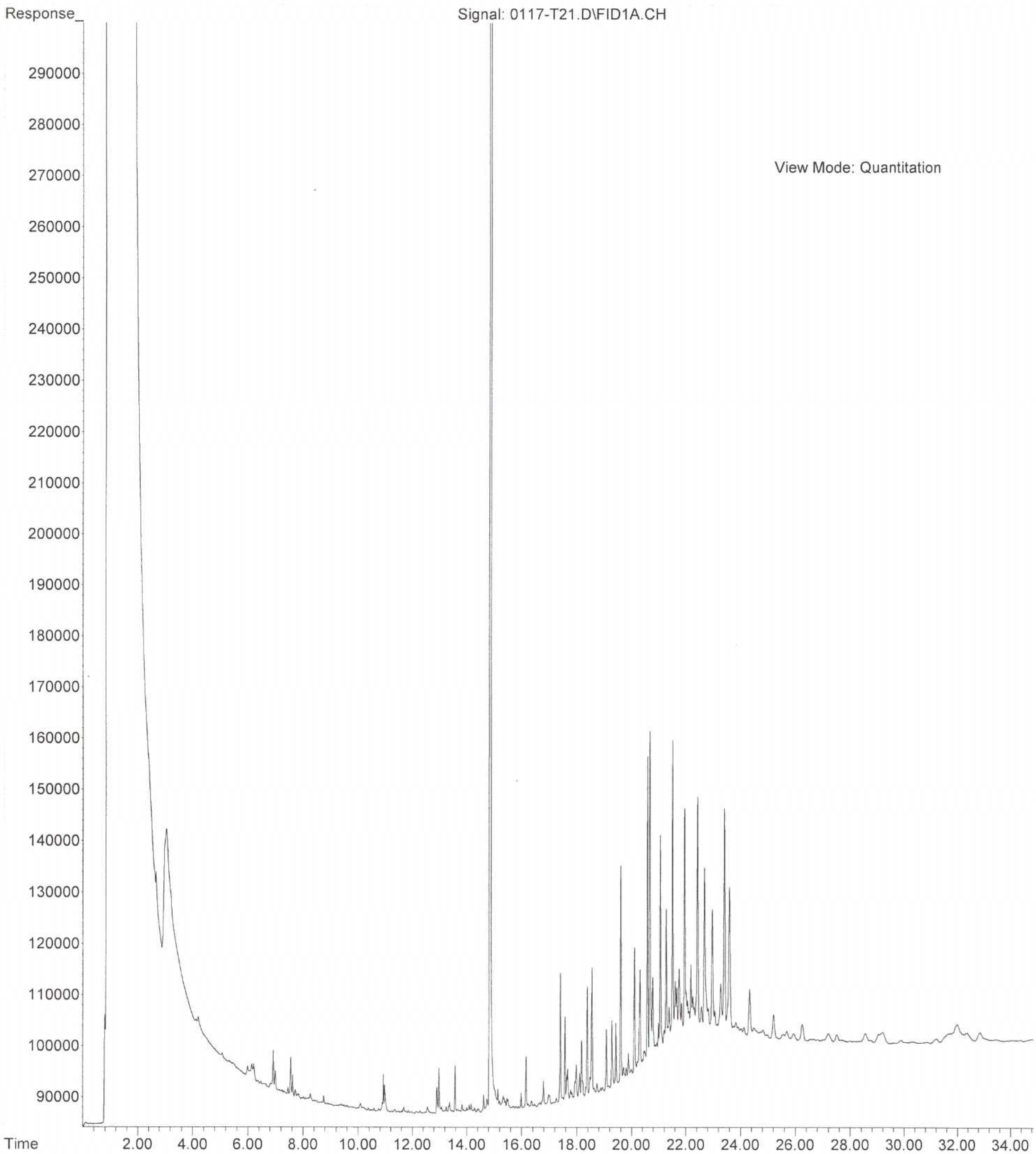
File   : X:\BTEX\DARYL\DATA\D170117\0117023.D
Operator   :
Acquired   : 17 Jan 2017 20:33   using AcqMethod 161207VG.M
Instrument : Daryl
Sample Name: 01-090-02s
Misc Info   :
Vial Number: 23



```
File        :X:\DIESELS\TERI\DATA\T170117\0117-T20.D
Operator    : ZT
Acquired    : 17 Jan 2017  23:54     using AcqMethod T161216F.M
Instrument :   Teri
Sample Name: 01-090-01
Misc Info  :
Vial Number: 20
```



File   :X:\DIESELS\TERI\DATA\T170117\0117-T21.D
Operator   : ZT
Acquired   : 18 Jan 2017   0:36   using AcqMethod T161216F.M
Instrument :   Teri
Sample Name: 01-090-02
Misc Info   :
Vial Number: 21



OnSite
Environmental Inc.
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January 12, 2017

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re:	Analytical Data for Project 2007-098-2044
	Laboratory Reference No. 1701-044

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on January 10, 2017.

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 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

Case Narrative

Samples were collected on January 10, 2017 and received by the laboratory on January 10, 2017. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and 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.

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: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Backfill #1**					
Laboratory ID:	01-044-01					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.042	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.042	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.042	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.042	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	4.2	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*63-124*				
Client ID:	**Backfill #2**					
Laboratory ID:	01-044-02					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.043	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.043	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.043	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.043	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	4.3	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*63-124*				
Client ID:	**REX-B1-11'**					
Laboratory ID:	01-044-03					
Benzene	**ND**	0.080	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.40	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.40	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**1.1**	0.40	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.40	EPA 8021B	1-11-17	1-11-17	
Gasoline	**44**	40	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*63-124*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**REX-B2-11'**					
Laboratory ID:	01-044-04					
Benzene	**ND**	0.080	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.40	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.40	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**32**	0.40	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**0.58**	0.40	EPA 8021B	1-11-17	1-11-17	
Gasoline	**150**	40	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*81*	*63-124*				
Client ID:	**REX-1-10'**					
Laboratory ID:	01-044-05					
Benzene	**0.064**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**0.097**	0.071	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**0.32**	0.071	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**0.40**	0.071	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**0.24**	0.071	EPA 8021B	1-11-17	1-11-17	
Gasoline	**420**	7.1	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*63-124*				
Client ID:	**REX-EW-10'**					
Laboratory ID:	01-044-06					
Benzene	**0.089**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**0.18**	0.059	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**0.44**	0.059	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**0.80**	0.059	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**0.39**	0.059	EPA 8021B	1-11-17	1-11-17	
Gasoline	**420**	5.9	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*63-124*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**REX-EW-5'**					
Laboratory ID:	01-044-07					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.056	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.056	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.056	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.056	EPA 8021B	1-11-17	1-11-17	
Gasoline	**15**	5.6	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*63-124*				
Client ID:	**REX-SW-10'**					
Laboratory ID:	01-044-08					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.063	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.063	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.063	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.063	EPA 8021B	1-11-17	1-11-17	
Gasoline	**34**	6.3	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*63-124*				
Client ID:	**REX-SW-5'**					
Laboratory ID:	01-044-09					
Benzene	**0.040**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.060	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.060	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**0.080**	0.060	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.060	EPA 8021B	1-11-17	1-11-17	
Gasoline	**18**	6.0	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*63-124*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**REX-WW-10'**					
Laboratory ID:	01-044-10					
Benzene	**1.6**	0.056	EPA 8021B	1-11-17	1-11-17	
Toluene	**1.5**	0.28	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**1.7**	0.28	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**5.2**	0.28	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**1.3**	0.28	EPA 8021B	1-11-17	1-11-17	
Gasoline	**3200**	110	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*63-124*				
Client ID:	**REX-WW-5'**					
Laboratory ID:	01-044-11					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.4	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*63-124*				
Client ID:	**REX-NW-10'**					
Laboratory ID:	01-044-12					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.068	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.068	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.068	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.068	EPA 8021B	1-11-17	1-11-17	
Gasoline	**11**	6.8	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*107*	*63-124*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**REX-NW-5'**					
Laboratory ID:	01-044-13					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.4	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*63-124*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0111S1					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.0	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*63-124*				
Laboratory ID:	MB0111S2					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.0	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*63-124*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-044-12										
	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	**8.78**	**10.1**	NA	NA		NA		NA	14	30	
Surrogate:											
Fluorobenzene						*107*	*107*	*63-124*			
Laboratory ID:	01-044-13										
	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						*89*	*90*	*63-124*			
SPIKE BLANKS											
Laboratory ID:	SB0111S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.913**	**0.970**	1.00	1.00		**91**	**97**	70-124	6	12	
Toluene	**0.905**	**0.963**	1.00	1.00		**91**	**96**	73-119	6	12	
Ethyl Benzene	**0.887**	**0.945**	1.00	1.00		**89**	**95**	74-117	6	12	
m,p-Xylene	**0.893**	**0.954**	1.00	1.00		**89**	**95**	75-117	7	13	
o-Xylene	**0.896**	**0.955**	1.00	1.00		**90**	**96**	75-116	6	12	
Surrogate:											
Fluorobenzene						*106*	*106*	*63-124*			

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Backfill #1**					
Laboratory ID:	01-044-01					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**240**	54	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				
Client ID:	**Backfill #2**					
Laboratory ID:	01-044-02					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*76*	*50-150*				
Client ID:	**REX-B1-11'**					
Laboratory ID:	01-044-03					
Diesel Range Organics	**ND**	110	NWTPH-Dx	1-11-17	1-11-17	X1
Lube Oil Range Organics	**500**	220	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*74*	*50-150*				
Client ID:	**REX-B2-11'**					
Laboratory ID:	01-044-04					
Diesel Range Organics	**ND**	110	NWTPH-Dx	1-11-17	1-11-17	X1
Lube Oil Range Organics	**760**	220	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**REX-1-10'**					
Laboratory ID:	01-044-05					
Diesel Range Organics	**ND**	87	NWTPH-Dx	1-11-17	1-11-17	U1,M1
Lube Oil	**300**	61	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*72*	*50-150*				
Client ID:	**REX-EW-10'**					
Laboratory ID:	01-044-06					
Diesel Range Organics	**ND**	70	NWTPH-Dx	1-11-17	1-11-17	U1,M1
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**REX-EW-5'**					
Laboratory ID:	01-044-07					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**86**	53	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				
Client ID:	**REX-SW-10'**					
Laboratory ID:	01-044-08					
Diesel Range Organics	**ND**	73	NWTPH-Dx	1-11-17	1-11-17	U1,M1
Lube Oil	**240**	60	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*78*	*50-150*				
Client ID:	**REX-SW-5'**					
Laboratory ID:	01-044-09					
Diesel Range Organics	**ND**	460	NWTPH-Dx	1-11-17	1-11-17	U1
Lube Oil	**3500**	300	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*78*	*50-150*				
Client ID:	**REX-WW-10'**					
Laboratory ID:	01-044-10					
Diesel Range Organics	**ND**	890	NWTPH-Dx	1-11-17	1-11-17	U1,M1
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*78*	*50-150*				
Client ID:	**REX-WW-5'**					
Laboratory ID:	01-044-11					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil Range Organics	**ND**	54	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				
Client ID:	**REX-NW-10'**					
Laboratory ID:	01-044-12					
Diesel Range Organics	**ND**	32	NWTPH-Dx	1-11-17	1-11-17	X1
Lube Oil Range Organics	**ND**	64	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**REX-NW-5'**					
Laboratory ID:	01-044-13					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**70**	55	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0111S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				
Laboratory ID:	MB0111S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-11-17	1-11-17	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-044-01										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil	**223**	**190**	NA	NA		NA		NA	16	NA	
Surrogate:											
o-Terphenyl						*79*	*78*	*50-150*			
Laboratory ID:	01-044-02										
	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						*76*	*70*	*50-150*			

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

% MOISTURE

Date Analyzed: 1-10-17

Client ID	Lab ID	% Moisture
Backfill #1	01-044-01	7
Backfill #2	01-044-02	8
REX-B1-11'	01-044-03	78
REX-B2-11'	01-044-04	78
REX-1-10'	01-044-05	17
REX-EW-10'	01-044-06	17
REX-EW-5'	01-044-07	6
REX-SW-10'	01-044-08	17
REX-SW-5'	01-044-09	15
REX-WW-10'	01-044-10	13
REX-WW-5'	01-044-11	8
REX-NW-10'	01-044-12	21
REX-NW-5'	01-044-13	9

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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 GeoSciences
Project Number: 2007-098-2044
Project Name: Riverside
Project Manager: Arnie Sugar
Sampled by: Austin York

Turnaround Request (in working days)
(Check One)
- [x] Same Day
- [ ] ~~1 Day~~ DB
- [ ] 2 Days
- [ ] 3 Days
- [ ] Standard (7 Days) (TPH analysis 5 Days)
- [ ] ______ (other)

Laboratory Number: 01-044

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up) *	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	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					% Moisture
1	Backfill #1	1/10/17	12:00	Soil	2		X		X																		X
2	Backfill #2		15:50				X		X																		
3	REX-B1-11'		11:15				X		X																		
4	REX-B2-11'		11:20				X		X																		
5	REX-1-10'		9:30				X		X																		
6	REX-EW-10'		15:15				X		X																		
7	REX-EW-5'		15:20				X		X																		
8	REX-SW-10'		15:25				X		X																		
9	REX-SW-5'		15:30				X		X																		
10	REX-WW-10'		15:35				X		X																		

	Signature	Company	Date	Time
Relinquished	[illegible]	HWA	1/10/17	17:10
Received	[illegible]	OSE	1/10/17	1710
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Silica gel clean up on
REX-B1-11'
REX-B2-11'
REX-NW-10'

Data Package: Standard ☒ Level III ☐ Level IV ☐

Chromatograms with final report ☒ Electronic Data Deliverables (EDDs) ☒

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Chain of Custody

Laboratory Number: 01-044

Company: HWA GeoSciences
Project Number: 2007-098-2043
Project Name: Riverside
Project Manager: Arnie Sugar
Sampled by: Austin York

Turnaround Request (in working days)
(Check One)
[X] Same Day ?? ~~[X] 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 ([ ] Acid / SG Clean-up) *	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	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					% Moisture
11	REX-WW-5'	1/10/17	15:40	Soil	2		X		X																		X
12	REX-NW-10'	↓	15:45	↓	↓		X		X																		↓
13	REX-NW-5'	↓	15:50	↓	↓		X		X																		↓

	Signature	Company	Date	Time
Relinquished	Nizah Kapi	HWA	1/10/17	17:10
Received	[signature]	OSE	1/10/17	1710
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Silica gel cleanup on
REX-B1-11'
REX-B2-11'
REX-NW-10'

Data Package: Standard [X] Level III [ ] Level IV [ ]
Chromatograms with final report [X] Electronic Data Deliverables (EDDs) [X]

APPENDIX F

DETERMINATION OF RISK-BASED CLEANUP LEVELS FOR THE SITE

HWA GEOSCIENCES INC.

November 4, 2010
HWA Project No. 2007 098-920

City of Bothell
9654 NE 182nd St.
Bothell, Washington 98021

Attention:Nduta Mbuthia, Project Engineer, Public Works Capital Projects

Subject: **CLEANUP LEVEL DETERMINATION**
Bothell Landing 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 Landing 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 Landing site in 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

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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 Landing 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 absence of buildings over affected areas. The ground water to surface water pathway was also not evaluated, as the site remedial investigation indicated TPH-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 Landing 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 Landing Site

Release area	Former east USTs	Former west USTs		
TPH Type	Gasoline and diesel	Gasoline and diesel		
Sample	L-TP-13-8	L-TP-14-3	L-TP-15-7	L-TP-16-8
Calculated Method B TPH cleanup level for direct skin contact (mg/Kg)	3,740	3,130	5,225	3,908
Most stringent soil risk criterion for direct skin contact	Hazard Index	Hazard Index	Hazard Index	Hazard Index
Method B soil TPH concentration protective of ground water (mg/Kg)	246	145	84	149
Most stringent soil risk criterion for protection of ground water	Hazard Index	Hazard Index	Benzene MCL Risk 1E-6	Hazard Index
Method A soil cleanup levels (mg/Kg)	30[1] (G) 2000 (D) 2000 (O) 0.03 (Benzene) 7 (Toluene) 6 (Ethylbenzene) 9 (Xylenes) 5 (Naphthalenes)[2] 0.10 (cPAHs TEC)[3]			
Maximum value detected on site after cleanup[4]	13 (G) <40 (D) 120 (O) <0.02 (Benzene) <0.11 (Toluene) <0.11 (Ethylbenzene) <0.11 (Xylenes) 0.49 (Naphthalenes) 0.02 (cPAHs TEC)			
Cleanup levels met?	Method A Yes Method B Yes TCs Yes[5]	Method A Yes Method B Yes TCs Yes	Method A Yes Method B Yes[6] TCs Yes	Method A Yes Method B Yes TCs Yes

Notes:
1 - Cleanup level for gasoline mixtures with benzene
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 - 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

5 - TCs: Cleanup levels for all target compounds (PAHs, EDB, EDC, MTBE, benzene, naphthalenes) were met as indicated by laboratory analysis for the individual compounds
6 - Method B TPH risk-based cleanup level of 84 mg/Kg no longer applicable because of benzene-contaminated soil having been removed

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 two 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 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).

November 4, 2010
HWA Project No. 2007 098-920

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

Arnie Sugar, LG, LHG
President

State of Washington
Geologist
Hydrogeologist
327
Licensed Geologist
NORMAN C. NIELSEN
11/4/10

Norm Nielsen, LG, LHG, PMP
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: 10/13/10
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-15-7

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	6.9000	0.30%
AL_EC >6-8	48	2.06%
AL_EC >8-10	57	2.44%
AL_EC >10-12	77	3.30%
AL_EC >12-16	85	3.64%
AL_EC >16-21	120	5.14%
AL_EC >21-34	1300	55.71%
AR_EC >8-10	19.000	0.81%
AR_EC >10-12	39.0000	1.67%
AR_EC >12-16	59	2.53%
AR_EC >16-21	78.0000	3.34%
AR_EC >21-34	430.0000	18.43%
Benzene	0.82	0.04%
Toluene	0.00011	0.00%
Ethylbenzene	0.62	0.03%
Total Xylenes	0.64	0.03%
Naphthalene	0.29	0.01%
1-Methyl Naphthalene	3.4	0.15%
2-Methyl Naphthalene	8.6	0.37%
n-Hexane	0.0603	0.00%
MTBE	0.00017	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.029	0.00%
Benzo(b)fluoranthene	0.028	0.00%
Benzo(k)fluoranthene	0.011	0.00%
Benzo(a)pyrene	0.01	0.00%
Chrysene	0.1	0.00%
Dibenz(a,h)anthracene	0.000342	0.00%
Indeno(1,2,3-cd)pyrene	0.0091	0.00%
Sum	2333.518022	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 Landing 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: 10/13/2010
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-15-7
Measured Soil TPH Concentration, mg/kg: **2,333.518**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc RISK @	HI @	Does Measured Soil Conc Pass or Fail?
Protection of Soil Direct Contact: Human Health	Method B	5,225	2.26E-07	4.47E-01	Pass
	Method C	70,606	5.09E-08	3.30E-02	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	84	7.72E-05	2.54E+00	Fail
	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	5,225.24	70,606.27
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	5.23E+03	5.06E-07	1.00E+00	YES	7.06E+04	1.54E-06	1.00E+00
Total Risk=1E-5	*NO*	1.03E+05	1.00E-05	1.98E+01	*NO*	4.58E+05	1.00E-05	6.49E+00
Risk of Benzene= 1E-6	*NO*	5.17E+04	5.00E-06	9.89E+00	NA			
Risk of cPAHs mixture= 1E-6	*NO*	1.29E+04	1.25E-06	2.47E+00				
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	Benzene MCL = 5 ug/L
Protective Ground Water Concentration, ug/L	65.42
Protective Soil Concentration, mg/kg	83.55

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	*NO*	1.31E+02	2.14E-05	1.00E+00	3.22E+02
Total Risk = 1E-5	*NO*	8.78E+01	1.00E-05	5.82E-01	1.37E+02
Total Risk = 1E-6	YES	1.49E+01	1.00E-06	8.20E-02	1.28E+01
Risk of cPAHs mixture= 1E-5	*NO*	2.76E+02	1.29E-04	3.86E+00	100% NAPL
Benzene MCL = 5 ug/L	YES	6.54E+01	6.29E-06	4.09E-01	8.35E+01
MTBE = 20 ug/L	*NO*	2.76E+02	1.29E-04	3.86E+00	100% NAPL

Note: 100% NAPL is 74000 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	2.76E+02	1.29E-04	3.86E+00	**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: 10/19/10
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-13-8

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	5	13.00%
AL_EC >6-8	5	13.00%
AL_EC >8-10	5	13.00%
AL_EC >10-12	2.3	5.98%
AL_EC >12-16	2.3	5.98%
AL_EC >16-21	2.3	5.98%
AL_EC >21-34	2.3	5.98%
AR_EC >8-10	5.000	13.00%
AR_EC >10-12	2.3000	5.98%
AR_EC >12-16	2.3	5.98%
AR_EC >16-21	2.3000	5.98%
AR_EC >21-34	2.3000	5.98%
Benzene	0.0000159	0.00%
Toluene	0.000011	0.00%
Ethylbenzene	0.0000096	0.00%
Total Xylenes	0.0000297	0.00%
Naphthalene	0.0000256	0.00%
1-Methyl Naphthalene	0.0000151	0.00%
2-Methyl Naphthalene	0.0000307	0.00%
n-Hexane	0.0603	0.16%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.0000338	0.00%
Benzo(b)fluoranthene	0.000039	0.00%
Benzo(k)fluoranthene	0.0000308	0.00%
Benzo(a)pyrene	0.0000261	0.00%
Chrysene	0.00003	0.00%
Dibenz(a,h)anthracene	0.0000342	0.00%
Indeno(1,2,3-cd)pyrene	0.0000373	0.00%
Sum	38.4606688	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 Landing 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: 10/19/2010
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-13-8
Measured Soil TPH Concentration, mg/kg: **38.461**

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	3,740	4.24E-10	1.03E-02	Pass
	Method C	57,049	1.05E-10	6.74E-04	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	246	3.52E-09	4.36E-01	Pass
	Target TPH GW Conc. @ 800 ug/L	317	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	**3,740.19**	**57,048.58**
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	3.74E+03	4.13E-08	1.00E+00	YES	5.70E+04	1.56E-07	1.00E+00
Total Risk=1E-5	*NO*	9.06E+05	1.00E-05	2.42E+02	*NO*	3.65E+06	1.00E-05	6.40E+01
Risk of Benzene= 1E-6	*NO*	4.39E+07	4.85E-04	1.17E+04	NA			
Risk of cPAHs mixture= 1E-6	*NO*	9.08E+04	1.00E-06	2.43E+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	**HI=1**
Protective Ground Water Concentration, ug/L	**751.03**
Protective Soil Concentration, mg/kg	**246.15**

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	7.51E+02	1.87E-08	1.00E+00	2.46E+02
Total Risk = 1E-5	*NO*	1.00E+03	7.72E-08	1.14E+00	100% NAPL
Total Risk = 1E-6	*NO*	1.00E+03	7.72E-08	1.14E+00	100% NAPL
Risk of cPAHs mixture= 1E-5	*NO*	1.00E+03	7.72E-08	1.14E+00	100% NAPL
Benzene MCL = 5 ug/L	*NO*	1.00E+03	7.72E-08	1.14E+00	100% NAPL
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	8.00E+02	2.27E-08	1.04E+00	**3.17E+02**

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/20/10
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-16-8

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	0.05	0.03%
AL_EC >6-8	13	6.78%
AL_EC >8-10	22	11.48%
AL_EC >10-12	30	15.66%
AL_EC >12-16	0.3525	0.18%
AL_EC >16-21	0.3582	0.19%
AL_EC >21-34	55	28.70%
AR_EC >8-10	27	14.09%
AR_EC >10-12	12	6.26%
AR_EC >12-16	5.2	2.71%
AR_EC >16-21	0.5115	0.27%
AR_EC >21-34	25	13.05%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0.62	0.32%
Naphthalene	0.14	0.07%
1-Methyl Naphthalene	0.14	0.07%
2-Methyl Naphthalene	0.18	0.09%
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	0.0000338	0.00%
Benzo(b)fluoranthene	0.000039	0.00%
Benzo(k)fluoranthene	0.0000308	0.00%
Benzo(a)pyrene	0.0000261	0.00%
Chrysene	0.00003	0.00%
Dibenz(a,h)anthracene	0.0000342	0.00%
Indeno(1,2,3-cd)pyrene	0.0000373	0.00%
Sum	191.6107312	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 Landing 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: 10/20/2010
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-16-8
Measured Soil TPH Concentration, mg/kg: **191.611**

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	3,813	4.24E-10	5.03E-02	Pass
	Method C	63,625	1.05E-10	3.01E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	142	1.80E-12	1.12E+00	Fail
	Target TPH GW Conc. @ 800 ug/L	1,146	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	**3,812.88**	**63,625.40**
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	3.81E+03	8.43E-09	1.00E+00	YES	6.36E+04	3.49E-08	1.00E+00
Total Risk=1E-5	*NO*	4.52E+06	1.00E-05	1.19E+03	*NO*	1.82E+07	1.00E-05	2.86E+02
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	*NO*	4.52E+05	1.00E-06	1.19E+02				
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	**HI=1**
Protective Ground Water Concentration, ug/L	**490.51**
Protective Soil Concentration, mg/kg	**141.99**

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	4.91E+02	1.92E-12	1.00E+00	1.42E+02
Total Risk = 1E-5	*NO*	8.67E+02	1.42E-12	1.60E+00	100% NAPL
Total Risk = 1E-6	*NO*	8.67E+02	1.42E-12	1.60E+00	100% NAPL
Risk of cPAHs mixture= 1E-5	*NO*	8.67E+02	1.42E-12	1.60E+00	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 72000 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	8.00E+02	1.49E-12	1.51E+00	**1.15E+03**

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/20/10
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-14-3

Notes for Data Entry | Set Default Hydrogeology
Clear All Soil Concentration Data Entry Cells
Restore All Soil Concentration Data cleared previously

REMARK:
Bothell Landing site pot hole sample
MTCA Method A cleanup level = 800 mg/Kg because benzene was detected in ground water in onsite monitoring wells

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	5.0	8.30%
AL_EC >6-8	5.0	8.30%
AL_EC >8-10	5.0	8.30%
AL_EC >10-12	5.0	8.30%
AL_EC >12-16	5.0	8.30%
AL_EC >16-21	5.0	8.30%
AL_EC >21-34	5.0	8.30%
AR_EC >8-10	5.0	8.30%
AR_EC >10-12	5.0	8.30%
AR_EC >12-16	5.0	8.30%
AR_EC >16-21	5.0	8.30%
AR_EC >21-34	5.0	8.30%
Benzene	0	0.00%
Toluene	0	0.00%
Ethylbenzene	0	0.00%
Total Xylenes	0	0.00%
Naphthalene	0.022	0.04%
1-Methyl Naphthalene	0.05	0.08%
2-Methyl Naphthalene	0.13	0.22%
n-Hexane	0.0603	0.10%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.0000338	0.00%
Benzo(b)fluoranthene	0.000039	0.00%
Benzo(k)fluoranthene	0.0000308	0.00%
Benzo(a)pyrene	0.0000261	0.00%
Chrysene	0.00003	0.00%
Dibenz(a,h)anthracene	0.0000342	0.00%
Indeno(1,2,3-cd)pyrene	0.0000373	0.00%
Sum	60.2625312	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

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 10/20/2010
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-14-3
Measured Soil TPH Concentration, mg/kg: **60.263**

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	3,130	4.24E-10	1.93E-02	Pass
	Method C	46,166	1.05E-10	1.31E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	145	7.53E-12	6.66E-01	Pass
	Target TPH GW Conc. @ 800 ug/L	19,329	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	**3,130.29**	**46,165.84**
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	3.13E+03	2.20E-08	1.00E+00	YES	4.62E+04	8.06E-08	1.00E+00
Total Risk=1E-5	*NO*	1.42E+06	1.00E-05	4.55E+02	*NO*	5.73E+06	1.00E-05	1.24E+02
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	*NO*	1.42E+05	1.00E-06	4.55E+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	**HI=1**
Protective Ground Water Concentration, ug/L	**475.46**
Protective Soil Concentration, mg/kg	**144.90**

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	4.75E+02	5.63E-12	1.00E+00	1.45E+02
Total Risk = 1E-5	*NO*	8.02E+02	3.89E-12	1.34E+00	100% NAPL
Total Risk = 1E-6	*NO*	8.02E+02	3.89E-12	1.34E+00	100% NAPL
Risk of cPAHs mixture= 1E-5	*NO*	8.02E+02	3.89E-12	1.34E+00	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 72000 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	8.00E+02	3.90E-12	1.33E+00	**1.93E+04**

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 10/19/10

Site Name: Bothell Crossroads, Bothell Landing Site

Sample Name: L-TP-13-8

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	5.0	8.03%
AL_EC >6-8	5.0	8.03%
AL_EC >8-10	5.0	8.03%
AL_EC >10-12	5.0	8.03%
AL_EC >12-16	5.0	8.03%
AL_EC >16-21	5.0	8.03%
AL_EC >21-34	5.0	8.03%
AR_EC >8-10	5.0	8.03%
AR_EC >10-12	5.0	8.03%
AR_EC >12-16	5.0	8.03%
AR_EC >16-21	5.0	8.03%
AR_EC >21-34	5.0	8.03%
Benzene	0.02	0.03%
Toluene	0.5	0.80%
Ethylbenzene	0.5	0.80%
Total Xylenes	0.5	0.80%
Naphthalene	0.008	0.01%
1-Methyl Naphthalene	0.008	0.01%
2-Methyl Naphthalene	0.008	0.01%
n-Hexane	0.2	0.32%
MTBE	0.5	0.80%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.008	0.01%
Benzo(b)fluoranthene	0.008	0.01%
Benzo(k)fluoranthene	0.008	0.01%
Benzo(a)pyrene	0.008	0.01%
Chrysene	0.008	0.01%
Dibenz(a,h)anthracene	0.008	0.01%
Indeno(1,2,3-cd)pyrene	0.008	0.01%
Sum	62.3	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 Landing 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: 10/19/2010
Site Name: Bothell Crossroads, Bothell Landing Site
Sample Name: L-TP-13-8
Measured Soil TPH Concentration, mg/kg: **62.300**

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc RISK @	HI @	Does Measured Soil Conc Pass or Fail?
Protection of Soil Direct Contact: Human Health	Method B	535	1.18E-07	1.91E-02	Pass
	Method C	21,424	2.91E-08	1.30E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protectior	11	4.33E-06	9.05E-01	Fail
	Target TPH GW Conc. @ 800 ug/L	102	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	534.66	21,423.87
Most Stringent Criterion	Risk of cPAHs mixture= 1E-6	Total Risk=1E-5

Soil Criteria	Protective Soil Concentration @Method B Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Protective Soil Concentration @Method C Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI=1	*NO*	3.26E+03	6.15E-06	1.00E+00	*NO*	4.79E+04	2.24E-05	1.00E+00
Total Risk=1E-5	*NO*	5.30E+03	1.00E-05	1.63E+00	YES	2.14E+04	1.00E-05	4.47E-01
Risk of Benzene= 1E-6	*NO*	5.66E+04	1.07E-04	1.74E+01	NA			
Risk of cPAHs mixture= 1E-6	YES	5.35E+02	1.01E-06	1.64E-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	MTBE = 20 ug/L
Protective Ground Water Concentration, ug/L	117.04
Protective Soil Concentration, mg/kg	10.59

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B Most Stringent?	TPH Conc, ug/L	RISK @	HI @	Protective Soil Conc, mg/kg
HI=1	*NO*	6.29E+02	4.99E-06	1.00E+00	7.24E+01
Total Risk = 1E-5	*NO*	1.04E+03	1.00E-05	1.51E+00	1.55E+02
Total Risk = 1E-6	*NO*	1.53E+02	1.00E-06	2.62E-01	1.39E+01
Risk of cPAHs mixture= 1E-5	*NO*	2.85E+04	6.63E-05	3.55E+00	100% NAPL
Benzene MCL = 5 ug/L	*NO*	7.49E+02	6.29E-06	1.16E+00	9.27E+01
MTBE = 20 ug/L	YES	1.17E+02	7.61E-07	2.02E-01	1.06E+01

Note: 100% NAPL is 72000 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 TPH Conc, ug/L	Risk @	HI @	Protective Soil Conc, mg/kg
Target TPH GW Conc = 800 ug/L	8.00E+02	6.88E-06	1.23E+00	**1.02E+02**

March 14, 2017
HWA Project No. 2007-098-2043

Washington State Department of Ecology
3190 160th Ave SE
Bellevue, WA 98008

Attention: Jerome Cruz, Ph.D.

Subject: **Bothell Landing Site**
Residual Soil Excavation Report

Dear Dr. Cruz:

This letter report describes additional remedial excavation activities that occurred at the Bothell Landing Site, located in Bothell, Washington (Figure 1).

1.0 INTRODUCTION

1.1 BACKGROUND

The Bothell Landing Site currently consists of portions of undeveloped lots and public rights-of-way in Bothell, Washington. The City of Bothell (City) is currently the owner of the Bothell Landing Site (herein referred to as the Site). An Agreed Order, number DE 6294, as amended in April 2010, was entered between the City and the Washington State Department of Ecology (Ecology).

The City has completed several phases of total petroleum hydrocarbon (TPH) soil cleanup via excavation at the Site, which were conducted under a 2010 Interim Action Work Plan. These included soil cleanups in 2010, 2013/2014, and 2015. This phasing was necessary in order to access impacted soils beneath the former (prior to 2010) and new (operational in 2013) roadways, and on private properties.

Following these interim action soil cleanups, a draft Final RIFS report that was submitted to Ecology in April 2016 described one area had soils remaining with cleanup level exceedances, namely the area of L-PEX-8 (under the Horse Creek culvert). This area is not accessible for excavation and was addressed in the draft Cleanup Action Plan via engineering and institutional controls (i.e., capping with roadway and implementing a restrictive covenant). This was the only known remnant contamination at the time.

However, in July 2016, the City informed Ecology that as part of their due diligence, a prospective developer represented by Farallon Consulting (Farallon) had encountered petroleum contaminated soils during a Limited Subsurface Investigation on the on the eastern portion of the Bothell Landing Site.

The City subsequently met with Ecology and submitted a "Residual Soil Excavation Work Plan" (October 12, 2016), thereafter receiving Ecology's concurrence to implement the remediation work. The work consisted of excavation and off-site disposal of all impacted soils.

According to Farallon's report, soil samples collected from five borings indicated that residual petroleum impacted soils above Ecology's Model Toxic Control Act (MTCA) Method A cleanup levels were present in one of the soil borings, FB-8, that was located near the western border of the vacant lot (Figure 2). A soil sample collected from 7.5 feet below ground surface (bgs) in FB-8 exhibited diesel, oil, and gasoline-range total petroleum hydrocarbons (TPHd, TPHo, and TPHg, respectively) at concentrations of 3,100 milligrams per kilogram (mg/kg), 2,900 mg/kg, and 720 mg/kg, respectively. Benzene was not detected above the laboratory detection limit in this soil sample. Soil cleanup levels established for the Site are the more stringent of MTCA Method A or B, and are shown on Table 1. The cleanup level for TPHd and TPHo is 2,000 mg/kg and the Site TPHg cleanup level is 30 mg/kg. TPHg was detected at 580 mg/kg in a soil sample collected from 10 feet bgs in FB-8. TPHd and TPHo were detected below cleanup levels in the 10 foot bgs soil sample and benzene was not detected. No petroleum hydrocarbons were detected above cleanup levels in the sample collected from 5 feet bgs in boring FB-8. Petroleum hydrocarbons and benzene were all non-detect for the FB-8 soil sample collected from 13.7 feet bgs.

Based on the results of the Farallon FB-8 boring, a residual soil excavation interim action was conducted to address the remaining TPH contaminated soils at the Bothell Landing Site. Upon completion of the remediation work, Ecology requires that the post-remediation results contained in this March 14 letter report be incorporated into the Final RI/FS report. The Final RI/FS report will also include truck manifests, haulage documentation and photo documentation. Additionally, it will include the results from the Farallon report as relates to this site, as well as an update to the TEE language as needed. The following sections describe the cleanup.

2.0 SITE REMEDIATION

2.1 PRE-EXCAVATION ACTIVITIES

Based on background information and analytical data from previous studies conducted at the Site, Contaminants of Concern (COC) expected to be found in soils near boring FB-8 are petroleum hydrocarbons (gasoline, diesel, and oil range).

The City engaged a construction contractor, Interwest Construction Inc. (Contractor) of Burlington, Washington to perform the interim action soil cleanup in January 2017. HWA personnel monitored the cleanup activities and sampled soil to confirm successful cleanup.

Prior to excavation activities at the Site, HWA personnel reviewed documentation of previous investigations and remedial excavations to assess the lateral and vertical extent of TPH-impacted soils in the vicinity of the Farallon FB-8 boring. HWA then marked the estimated excavation area and completed utility locates to identify all public and private underground utilities.

2.2 SOIL EXCAVATION

The Contractor excavated contaminated soil at the Site on January 11 and 13, 2017. Confirmation soil samples were collected from the bottom of the remedial excavation on January 17, 2017. HWA personnel directed the cleanup based upon prior investigations and remedial excavation activities, 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.

Contaminated soil was generally excavated to depths ranging between 8.5 and 11 feet below ground surface (bgs), which was found to meet the cleanup levels. The approximate limits of soil excavation are shown on Figure 2. The apparent overlap of the 2017 excavation boundary with the former 2010 excavation boundary on the figure is due to the sloped excavations. The dashed lines represent top of sloped sidewalls. Impacted soils excavated in 2017 within the apparent 2010 excavation boundary were generally below the 2010 excavation limits. Photographs 1 and 2 in Appendix A depict the final excavation.

The Contractor excavated and transported 391.2 tons of soil to the CEMEX USA (formerly Rinker) Inert Materials Landfill facility in Everett, Washington for thermal desorption treatment followed by permitted landfill disposal. Copies of the CEMEX Release of Liability/Certificate of Disposal and truck tickets for the soil are presented in Appendix B. The CEMEX Release of Liability/Certificate of Disposal includes soil from a nearby project therefore the total shows as 1325.42 tons of soil, only 391.2 of which are from the Bothell Landing excavation.

2.3 CONFIRMATION SAMPLING

HWA collected a total of 16 excavation sidewall and 5 excavation bottom samples to confirm soil cleanup (Table 1). Of the 16 sidewall samples, 2 of the sample locations were over-excavated due to laboratory results indicating contaminants of concern (COCs) were above Site cleanup levels. Figure 2 depicts confirmation sample locations. Laboratory results and certificates are included in Appendix C. Table 1 includes the soil sample analytical results from the 2017 residual soil cleanup as well as soil sample results from previous investigations and remedial excavations at the Bothell Landing Site. Table 1 confirms that the 2017 residual soil cleanup interim action achieved the Site cleanup levels.

Data Quality Evaluation. HWA reviewed quality control results of the analytical data. Surrogate recoveries, laboratory duplicates, spike blanks, spike blank duplicates, matrix spikes, and matrix spike duplicates were all within specified control limits with the following exceptions:

- NWTPH-Gx Analysis
  - Samples L-PEX-88-7.5 and L-PEX-89-7.5; O flag - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- NWTPH-Dx Analysis
  - Samples L-PEX-88-7.5 and L-PEX-89-7.5; M1 flag - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
  - Samples L-PEX-88-7.5, L-PEX-89-7.5, L-PEX-96-8.5, and L-PEX-97-8.5; U1 flag – The practical quantitation limit is elevated due to interferences present in the sample and dilution required to quantitate high levels of TPH present..
  - Sample L-PEX-88-7.5; S flag - Surrogate recovery data was not available due to the necessary dilution of the samples, which contained elevated levels of TPH (i.e., the amount of surrogate was too low relative to the amount of TPH present and could not be detected).
  - Samples with X1 flag - extracts were treated with a Sulfuric acid/Silica gel cleanup procedure to reduce interference from the naturally occurring organic matter in the samples.

OnSite did not flag any other results with qualifiers, which would indicate that a given result was suspect. Laboratory method blank analyses were all below detection limits.

The analyses of the excavation soil samples collected on January 11, 13, and 17, 2017 and backfill soil samples collected on January 10, 2017 were determined to be acceptable for their intended use.

2.4 GROUND WATER MANAGEMENT

The excavation depths reached between approximately 8.5 and 11 feet bgs. Minimal perched ground water seepage was encountered at a depth of approximately 8 feet bgs in the excavation. In addition, precipitation that occurred during excavation activities accumulated in the excavation. The Contractor managed the water accumulation by pumping water from the excavation into a holding tank, allowing sediments to settle, testing, and discharging of the water utilizing an existing King County Industrial Waste Division permit obtained by the Contractor for temporary discharge of water generated during dewatering activities.

3.0 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 Wetlands Creations, who mined the soils from their facility in Monroe, Washington (i.e., native quarry materials not excavated or reused from any developed property). One sample of the backfill was tested for TPHd, TPHo, TPHg, and BTEX, and did not contain any of these constituents above laboratory reporting limits. Appendix C contains the laboratory report, which also includes backfill samples from other areas, and backfill samples that did contain TPH and were subsequently rejected and not used as backfill.

The select borrow was 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. Due to softer soils (peat) encountered in the bottom of the excavation, the first two lifts of backfill were placed and spread in layers of approximately two-feet of uncompacted thickness. Subsequent backfill lifts were placed and spread in layers not more than 10 inches in uncompacted thickness. The excavation area was then covered with straw for erosion control.

We appreciate the opportunity to provide our services to you on this project. Please feel free to call us if you have any questions or need more information.

Sincerely,
HWA GEOSCIENCES INC.

Nicole Kapise
Senior Environmental Geologist

Arnie Sugar, LG, LHG
Principal Hydrogeologist

Figures:

Figure 1: Bothell Landing Site Vicinity
Figure 2: Bothell Landing Excavation Area

Appendices:

Appendix A: Site Photographs
Appendix B: CEMEX Release of Liability/Certificate of Disposal
Appendix C: Laboratory Reports

TABLE 1
SOIL CLEANUP ANALYTICAL RESULTS
BOTHELL LANDING SITE
(all results in milligrams per kilogram (mg/kg))

		Confirmation Samples[1]																					
Sample Location	Sample Depth ft bgs	Sidewall	Bottom	Diesel	Oil	Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes	Total Naphthalenes[2]	cPAHs TEC[3]	PCBs	HVOCs	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	NOTES
2010 Cleanup																							
L-TP-1-2	2			**340**	**420**	**300**	<0.023	<0.12	<0.12	**0.20**	**0.076**	0.000											
L-TP-1-8	8			**6300**	<530	**1200**	**0.34**	<.29	**1.3**	**1.5**	**70.91**	0.000											
L-TP-2-3	3	X		<27	<53	<5.5	<0.020	<0.055	<0.055	<0.055													
L-TP-2-8	8		X	<31	<61	<6.7	<0.020	<0.067	<0.067	<0.067													
L-TP-3-4	4	X		<28	<55	<6.1	<0.020	<0.061	<0.061	<0.061													
L-TP-3-7	7		X	<31	<62	<6.5	<0.020	<0.065	<0.065	<0.065													
L-TP-4-4	4	X		<27	<55	<5.7	<0.020	<0.057	<0.057	<0.057	<0.022	0.000											
L-TP-4-7	7		X	<28	<56	<5.5	<0.020	<0.055	<0.055	<0.055	<0.023	0.000											
L-TP-5-2	2	X		<28	<56	**8.1**	<0.020	<0.065	<0.065	<0.065	<0.022	0.000											
L-TP-5-6	6		X	**200**	<61	<6.0	<0.020	<0.060	<0.30	**0.23**	**0.118**	0.000											
L-TP-6-3	3			<76	**550**	**67**	<0.025	<0.13	<0.13	<0.13	**0.279**	**0.001**											
L-TP-6-7	7			<34	<57	**42**	<0.025	<0.12	<0.12	<0.12	**0.219**	0.000											
L-TP-7-2	2			<43	**160**	**120**	**0.29**	<0.11	**0.68**	**0.29**	**1.63**	**0.001**											
L-TP-7-7	7			<1000	**4200**	**11**	**0.088**	<0.055	<0.055	<0.055	**7.58**	**0.018**											
L-TP-8-2	2			**32**	**130**	<5.4	<0.020	<0.054	<0.054	<0.054	<0.022	0.000											
L-TP-8-7	7			<850	<59	**7800**	**5.8**	**3.6**	**35**	**40**	**2.17**	0.000											
L-TP-9-4	4	X		<27	<54	<5.3	<0.020	<0.053	<0.053	<0.053													
L-TP-9-8	8		X	<30	<59	<7.2	<0.020	<0.072	<0.072	<0.072													
L-TP-10-4	4	X		**77**	**470**	**8.6**	<0.020	<0.061	<0.061	<0.061													
L-TP-10-8	8		X	<29	<57	<5.4	<0.020	<0.054	<0.054	<0.054													
L-TP-11-4	4	X		<47	**350**	<6.0	<0.020	<0.060	<0.060	<0.060													
L-TP-11-8	8		X	<30	<60	<6.8	<0.020	<0.068	<0.068	<0.068													
L-TP-12-4	4	X		<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054													
L-TP-12-8	8		X	<35	**280**	<8.4	<0.020	<0.084	<0.084	<0.084													
L-TP-13-8	8		X	<30	<60						<0.024	0.000											
L-TP-14-3	3			<28	<55						**0.202**	0.000											
L-TP-15-7	7			<540	**2500**						**12.29**	**0.019**											
L-TP-16-8	8		X	<37	**100**						**0.46**	0.000											
L-TP-17-1	1			<29	**110**																		Contractor was concerned about possible contam from Hertz site
L-TP-17-3	3	X		<27	<55																		Contractor was concerned about possible contam from Hertz site
L-TP-17-6	6		X	<77	**160**																		Contractor was concerned about possible contam from Hertz site
L-TP-18-1	1			<31	**140**																		Contractor was concerned about possible contam from Hertz site
L-TP-18-3	3	X		<31	<61																		Contractor was concerned about possible contam from Hertz site
L-TP-19-1	1			<33	**160**																		Contractor was concerned about possible contam from Hertz site
L-TP-19-3	3	X		<29	<58																		Contractor was concerned about possible contam from Hertz site
L-TP-20-2	2	X		<86	**370**																		Contractor was concerned about possible contam from Hertz site
L-TP-21-2	2	X		<30	<61																		Contractor was concerned about possible contam from Hertz site
L-TP-21-5	5		X	<73	**180**																		
L-PEX-1-6	6		X	<28	<57	**13**	<0.020	<0.067	<0.067	<0.067	**0.491**	**0.020**	All <0.057	All <0.0059	<11	**50**	<0.57	**29**	**6.4**	<0.28	<11	<0.57	Northeast sidewall
L-PEX-2-10	10		X	<38	**120**	<10	<0.020	<0.10	<0.10	<0.10	<0.03	0.000			<15	**61**	<0.76	**28**	**10**	<0.38	<15	<0.76	
L-PEX-3-6	6	X		<31	<63	<7.1	<0.020	<0.071	<0.071	<0.071	<0.025	0.000			<13	**37**	<0.63	**19**	<6.3	<0.31	<13	<0.63	
L-PEX-4-6	6	X		<30	<59	<7.3	<0.020	<0.073	<0.073	<0.073	<0.024	0.000			<12	**58**	<0.59	**40**	<5.9	<0.29	<12	<0.59	
L-PEX-5-6	6	X		**360**	**310**	**140**	<0.020	<0.087	**0.13**	**0.44**	**4.61**	**0.001**			<14	**86**	<0.68	**9.5**	**29**	<0.34	<14	<0.68	
L-PEX-6-11	11		X	<40	<80	<11	<0.023	<0.11	<0.11	<0.11	<0.033	0.000	All <0.080	All <0.0076	<16	**39**	<0.80	**24**	<8.0	<0.40	<16	<0.80	
L-PEX-7-11	11		X	<33	<66	<8.5	<0.020	<0.085	<0.085	<0.085	<0.026	0.000			<13	**100**	<0.66	**34**	<6.6	<0.33	<13	<0.66	
L-PEX-8-10	10	X		<96	**330**	**130**	**0.21**	**0.082**	**0.47**	**0.87**	**0.092**	**0.001**			<12	**36**	<0.58	**23**	**31**	<0.29	<12	<0.58	
L-PEX-9-10	10	X		<29	<58	<5.7	<0.020	<0.057	<0.057	<0.057	**0.108**	0.000			<12	**44**	<0.58	**29**	<5.8	<.29	<12	<0.58	
L-PEX-10-8	8	X		<1800	**2700**	**3100**	**23**	**2.6**	**43**	**165**													
L-PEX-11-8	8	X		<31	**80**	**32**	<0.020	<0.079	**0.083**	**0.15**	**0.059**	0.002			<12	**31**	<0.61	**15**	**9.6**	<0.31	<12	<0.61	
L-PEX-12-6	6	X		<29	<57	<5.3	<0.020	<0.053	<0.053	<0.053	<0.023	0.000			<11	**66**	<0.57	**14**	<5.7	<0.29	<11	<0.57	
L-PEX-13-14	14		X	<34	<68	<8.3	<0.020	<0.083	<0.083	<0.083	<0.027	0.000	All <0.068	All <0.0063	<14	**41**	<0.68	**29**	<6.8	<0.34	<14	<0.68	
L-PEX-14-9	9	X		<28	<56	**15**	<0.020	<0.051	**0.055**	**0.098**	<0.022	0.000			<11	**31**	<0.56	**20**	**7.6**	<0.28	<11	<0.56	Sample of backfill on west side of Horse Creek culvert
L-PEX-15-9.5	9.5	X		<40	**170**	<5.2	<0.020	<0.052	<0.052	<0.052	<0.024	0.000			<12	**22**	<0.60	**10**	**8.1**	<0.30	<12	<0.60	West sidewall at limit of excavation near Horse Creek culvert
L-PEX-16-11	11		X	<31	<62	<7.0	<0.020	<0.070	<0.070	<0.070	<0.025	0.000			<12	**30**	<0.62	**26**	<6.2	<0.31	<12	<0.62	
L-PEX-17-9	9	X		<32	<64	<7.8	<0.020	<0.078	<0.078	<0.078	<0.025	0.000	All <0.064	All <0.0060	<13	**67**	<0.64	**3.6**	<6.4	<0.32	<13	<0.64	
L-PEX-18-14	14		X	<33	**94**	<8.6	<0.020	<0.086	<0.086	<0.086	**0.062**	0.000			<13	**43**	<0.67	**19**	<6.7	<0.33	<13	<0.067	
L-PEX-19-10	10	X		<28	<56	<5.2	<0.020	<0.052	<0.052	<0.052	<0.022	0.000			<11	**43**	<0.56	**22**	**11**	<0.28	<11	<0.56	
Stockpile																							
L-TP-4-4	4			<27	<55	<5.7	<0.020	<0.057	<0.057	<0.057	<0.022	0.000											
L-TP-11-4	4			<47	**350**	<6.0	<0.020	<0.060	<0.060	<0.060													
L-TP-12-4	4			<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054													
L-TP-14-3	3			<28	<55						**0.202**	0.000											
PH-3	7			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-3	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-8	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-8	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-9	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-9	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-11	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-12	6			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-12	9			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													
PH-14	2.5			<20	<40	<10	<0.05	<0.05	<0.05	<0.05													

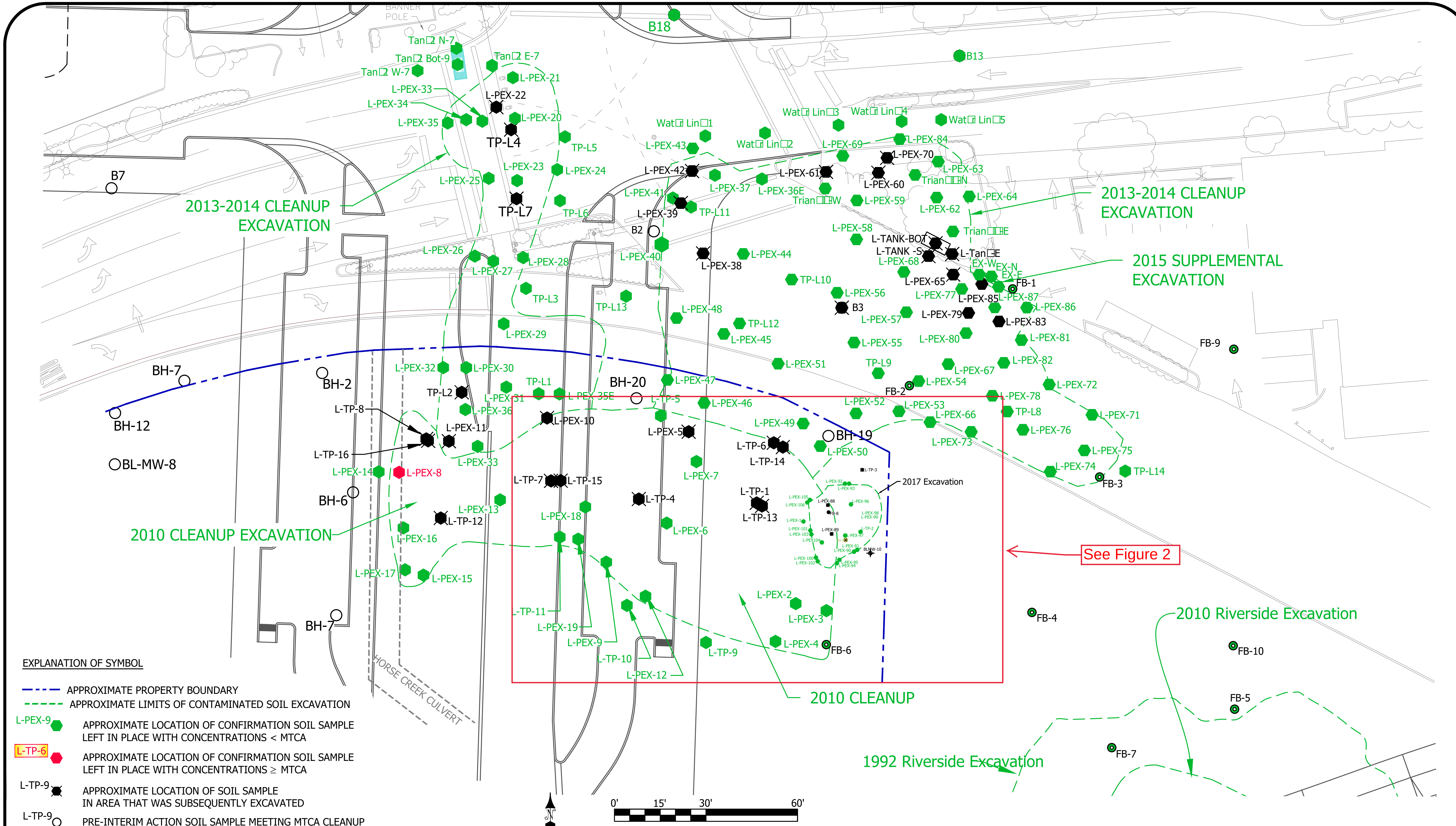
2013-2014 Cleanup

West Side 527 Excavation

August 2013 Test Pits																							
TP-L1-4	4			110	160	8.6	<0.020	<0.061	<0.061	<0.061				ND	<11	67	<0.56	50	45	<0.28	<11	<1..1	Characterization only, soils left in place
TP-L1-7	7			<29	130	<5.2	<0.020	<0.052	<0.052	<0.052				ND	<11	52	<0.57	41	26	<0.29	<11	<1..1	Characterization only, soils left in place
TP-L1-10	10			<37	<75	<9.8	<0.020	<0.098	<0.098	<0.098				ND	<15	60	<0.75	41	<7.5	<0.37	<15	<1..5	Characterization only, soils left in place
TP-L2-5	5			<59	290	<4.9	<0.020	<0.049	<0.049	<0.049				ND	<11	50	<0.57	36	20	<0.28	<11	<1..1	
TP-L2-8	8			73	180	60	<0.020	<0.075	0.12	0.16				ND	<13	61	<0.65	34	18	<0.33	<13	<1.3	
TP-L3-5	5			<37	160	<9.3	<0.020	<0.093	<0.093	<0.093				ND	<15	65	<0.73	35	<7.3	<0.36	<15	<1.5	Characterization only, soils left in place
TP-L3-10	10			<31	<62	<5.9	<0.020	<0.059	<0.059	<0.059				ND	<12	61	<0.62	19	<6.2	<0.31	<12	<1.2	Characterization only, soils left in place
TP-L4-5	5			<31	<62	<6	<0.020	<0.060	<0.060	<0.060				ND	<12	62	<0.62	32	<6.2	<0.31	<12	<1.2	
TP-L4-8	8			<41	<81	<11	0.079	<0.11	<0.11	<0.11				0.0017 Chlorobenzene	<16	130	<0.81	57	12	<0.41	<16	<1.6	
TP-L5-4	4	X		<28	<55	<6.2	<0.020	<0.062	<0.062	<0.062				ND	<11	35	<0.55	26	<5.5	<0.28	<11	<1.1	
TP-L5-8	8			<41	<81	<10	0.0025	<0.1	<0.1	<0.1				ND	<16	95	<0.81	43	15	<0.40	<16	<1.6	Characterization only, soils left in place
TP-L6-4	4	X		<29	76	<6.1	<0.020	<0.061	<0.061	<0.061				0.00099 PCE	<12	65	<0.58	41	12	<0.29	<12	<1.2	
TP-L6-9	9			<34	75	<8.2	<0.020	<0.082	<0.082	<0.082				ND	<14	71	<0.68	33	11	<0.34	<14	<1.4	Characterization only, soils left in place
TP-L7-4	4			<28	<55	<5.4	<0.020	<0.054	<0.054	<0.054				ND	<11	55	<0.55	30	12	<0.28	<11	<1.1	
TP-L7-7	7			<54	180	290	0.056	<0.17	1.3	1.4				ND	<11	180	<1.1	25	37	<0.54	<22	<2.2	
TP-L7-8	8			<48	<92	17	<0.020	<0.13	<0.13	<0.13				ND	<18	30	<0.92	14	<9.2	<0.46	<18	<1.8	
October 2013 Soil Excavation																							
L-PEX-20-11	11		X			<7.9	<0.020	<0.079	<0.079	<0.079													
L-PEX-21-9	9	X				<10	<0.020	<0.10	<0.10	<0.10													
L-PEX-22-9	9			<81	150	210	<0.020	<0.076	<0.076	<0.076					<13	80	<0.66	42	19	<0.33	<13	<1.3	
L-PEX-23-11	11		X			<6	<0.020	<0.060	<0.060	<0.060													
L-PEX-24-9	9	X				<8	<0.020	<0.080	<0.080	<0.080													
L-PEX-25-8	8	X				<24	<0.048	<0.24	<0.24	<0.24													
L-PEX-26-9	9	X				<7.5	<0.020	<0.075	<0.075	<0.075													
L-PEX-27-12	12		X	<35	<70	<8.3	<0.020	<0.083	<0.083	<0.083					<14	99	<0.70	62	<7.0	<0.35	<14	<1.4	
L-PEX-28-9	9	X		<39	170	<10	<0.020	<0.10	<0.10	<0.10					<16	54	<0.78	39	<7.8	<0.39	<16	<1.6	
L-PEX-29-7	7	X				6.4	<0.020	<0.056	<0.056	<0.056													
L-PEX-30-11	11					42	<0.020	<0.1	<0.1	0.13													
L-PEX-31-9	9	X				<5.9	<0.020	<0.059	<0.059	<0.059													
L-PEX-32-9	9	X				<5.5	<0.020	<0.055	<0.055	<0.055													
L-PEX-33-8	8		X	<28	110	<5.2	<0.020	<0.052	<0.052	<0.052					<11	42	<0.57	46	17	<0.28	<11	<1.1	
L-PEX-34-9	9	X				<16	<0.033	<0.16	<0.16	<0.16													
L-PEX-35-7	7	X				<6.1	<0.020	<0.061	<0.061	<0.061													
L-PEX-36-12	12		X			<6.9	<0.020	<0.069	<0.069	<0.069													
East Side 527 Excavation																							
January 2014 Test Pits																							
TP-L8-4	4			<540	82	1800	0.023	0.081	0.81	4.7									<5.9				
TP-L8-8	8		X	<30	<60	<6.6	<0.02	<0.066	<0.066	<0.066									<6				
TP-L9-4	4			<120	170	54	0.02	<0.072	<0.072	<0.072									<6.4				
TP-L9-8	8			<36	<72	360	0.15	0.13	0.3	<0.89									<7.2				
TP-L10-4	4			<1500	72	8100	1.7	2	6.2	28									<6.1				
TP-L10-9	9		X	<29	<58	<5.5	<0.02	<0.055	<0.055	<0.055									<5.7				
TP-L11-4	4			<1500	460	2000	<0.024	<0.12	0.73	2.7									<9.2				
TP-L11-9	9		X	<33	<65	<7.2	<0.02	<0.075	<0.075	<0.075									<6.5				
TP-L12-4	4			<160	110	1000	0.059	0.19	0.68	0.3									<6.9				
TP-L12-9	9		X	<32	<63	<7	<0.02	<0.007	<0.007	<0.007									<6.3				
TP-L13-4	4			<32	<65	<6.6	<0.02	<0.066	<0.066	<0.066									13				Characterization only, soils left in place
TP-L13-7	7			<33	<66	<8.1	<0.02	<0.081	<0.081	<0.081									<6.6				Characterization only, soils left in place
TP-L14-4	4	X		<31	<62	<6.1	<0.02	<0.061	<0.061	<0.061									<6.2				
TP-L14-8	8			<30	<61	<6.4	<0.02	<0.064	<0.064	<0.064									<6.1				
January 22, 2014 Test Pits, Triangle Park																							
Triangle-W5	5			<49	<58	270	<0.026	<0.13	1	0.93									<6.1				
Triangle-W8	8		X			<11	<0.021	<0.11	<0.11	<0.11									<5.6				
Triangle-E5	5			<110	<58	1200	0.6	0.3	6.5	4.7									<5.8				
Triangle-E8	8		X			<7.1	<0.02	<0.071	<0.071	<0.071									<6.2				
Triangle-N4	4			<1600	5200	410	<0.02	<0.097	0.7	1									120				
Triangle-N6	6			<29	<58	16	<0.02	<0.10	<0.10	<0.10									<5.7				
Triangle-N7	7		X			<4.8	<0.02	<0.048	<0.048	<0.048									<5.7				
February, 2014 Water Line Characterization Samples																							
Water Line-1-6	6			<30	<59	<6.3	<0.02	<0.063	<0.063	<0.063									<5.9				Characterization only, soils left in place
Water Line-2-4	4			<30	<60	<6.2	<0.02	<0.062	<0.062	<0.062									<6.0				Characterization only, soils left in place
Water Line-2-7 1/2	7.5			<32	<65	<7.4	<0.02	<0.074	<0.074	<0.074									<6.5				Characterization only, soils left in place
Water Line-3-4	4			45	260	<5.7	<0.02	<0.057	<0.057	<0.057									22				Characterization only, soils left in place
Water Line-3-6	6			<40	<81	<11	<0.02	<0.11	<0.11	<0.11									<8.0				Characterization only, soils left in place
Water Line-4-4	4			<39	<71	<8.7	<0.02	<0.087	<0.087	<0.087									<7.1				Characterization only, soils left in place
Water Line-4-6	6			<31	<63	<6.7	<0.02	<0.064	<0.064	<0.064									<6.3				Characterization only, soils left in place
Water Line-5-4	4			<44	250	<7.2	<0.02	<0.072	<0.072	<0.072									33				Characterization only, soils left in place
Water Line-5-6	6			<42	85	<11	<0.02	<0.11	<0.11	<0.11									12				Characterization only, soils left in place
January-April 2014 Soil Excavations																							
L-PEX-35E-11	11		X			<6.4	<0.02	<0.064	<0.064	<0.064	<0.024	<0.012							<6				
L-PEX-36E-6	6	X		<32	<64	<6.5	<0.02	<0.065	<0.065	<0.065	<0.026	<0.013											
L-PEX-37-6	6	X		<30	<61	<12	<0.024	<0.12	<0.12	<0.12	0.011	<0.012											
L-PEX-38-6	6			<36	76	150	<0.02	<0.084	0.3	0.54													
L-PEX-39-4	4			<890	81	1700	<0.029	<0.15	3	3.8													
L-PEX-40-4	4	X		<33	<67	<8.2	<0.02	<0.082	<0.082	<0.082									7.7				
L-PEX-41-8	8	X		<32	<64	<6.2	<0.02	<0.062	<0.062	<0.062									<6.4				
L-PEX-42-5	5			<180	<67	510	<0.02	<0.080	0.4	0.88									8.2				
L-PEX-43-7	7	X		<62	<31	<6.2	<0.02	<0.062	<0.062	<0.062		<0.012							<6.2				
L-PEX-44-8	8		X	<37	<73	<9.3	<0.02	<0.093	<0.093	<0.093									<7.3				
L-PEX-45-9	9		X	<40	<80	<10	<0.021	<0.10	<0.10	<0.10									<8.0				

L-PEX-46-10	10		X	<39	<78	<9.8	<0.02	<0.098	<0.098	<0.098		<0.015							<7.8			
L-PEX-47-7	7	X		<29	<58	**17**	<0.02	<0.049	<0.049	<0.049									<5.8			
L-PEX-48-7	7	X		<40	**100**	<11	<0.022	<0.11	<0.11	<0.11									<8.0			
L-PEX-49-10	10		X	<29	<58	<5.4	<0.02	<0.054	<0.054	<0.054									<5.8			
L-PEX-50-8	8	X		<34	<68	<7.3	<0.02	<0.073	<0.073	<0.073									<6.8			
L-PEX-51-10	10		X	<31	<62	<6.5	<0.02	<0.065	<0.065	<0.065									<6.1			
L-PEX-52-7	7	X		<31	**210**	<7.3	<0.02	<0.073	<0.073	<0.073									**24**			
L-PEX-53-6	6	X		<30	**220**	<6.4	<0.02	<0.064	<0.064	<0.064									**25**			
L-PEX-54-9	9		X	<36	**80**	<7.7	<0.02	<0.077	<0.077	<0.077		<0.014							**55**			
L-PEX-55-9	9		X	<32	<65	<6.2	<0.02	<0.062	<0.062	<0.062									<6.5			
L-PEX-56-9	9		X	<31	<63	<7.2	<0.02	<0.072	<0.072	<0.072									<6.3			
L-PEX-57-11	11		X	<32	<63	<6.6	<0.02	<0.066	<0.066	<0.066									<6.3			
L-PEX-58-8	8		X	<28	<56	<5.3	<0.02	<0.053	<0.053	<0.053									<5.6			
L-PEX-59-8	8		X	<31	<62	<9.9	<0.02	<0.099	<0.099	<0.099		<0.012							<6.2			
L-PEX-60-5	5			<360	**260**	**4400**	**0.61**	**1.1**	**2.8**	**19.5**									**120**			
L-PEX-61-5	5			<2900	**830**	**4000**	**0.38**	<0.08	**1.8**	**15.94**									**250**			
L-PEX-62-10	10		X	<31	<63	<3.9	<0.02	<0.039	<0.039	<0.039		<0.013							<6.3			
L-PEX-63-7	7	X		<27	<54	<2.1	<0.02	<0.021	<0.021	<0.021									<5.4			
L-PEX-64-7	7	X		<29	<57	<5.8	<0.02	<0.058	<0.058	<0.058									<5.7			
L-PEX-65-7	7			<31	<62	**440**	**0.32**	**0.16**	**2.4**	**2.177**									<6.2			
L-PEX-66-7	7	X		<29	<59	<5.9	<0.02	<0.059	<0.059	<0.059									<5.9			
L-PEX-67-9	9		X	<35	<71	<9.5	<0.02	<0.095	<0.095	<0.095									<7.1			
L-PEX-68-8	8		X	<31	<62	<6.4	<0.02	<0.064	<0.064	<0.064									<6.2			
L-PEX-69-6	6	X		<31	<63	<6.2	<0.02	<0.062	<0.062	<0.062									<6.3			
L-PEX-70-5	5			<32	<64	**110**	**0.048**	<0.071	**0.35**	**0.47**									<6.4			
L-PEX-71-6	6	X		<29	<58	<4.9	<0.02	<0.049	<0.049	<0.049									<5.8			
L-PEX-72-6	6	X		<30	<59	<4.8	<0.02	<0.048	<0.048	<0.048									<5.9			
L-PEX-73-6	6	X		<30	<59	<5.6	<0.02	<0.056	<0.056	<0.056		<0.012							<5.9			
L-PEX-74-5	5	X		<160	**800**	**9.8**	<0.02	<0.06	<0.06	<0.06									**67**			
L-PEX-75-7	7		X	<36	<71	<9	<0.02	<0.09	<0.09	<0.09									**29**			
L-PEX-76-7	7			<100	<200	**130**	<0.072	<0.36	<0.36	**1.2**		<0.041							<20			
L-PEX-77-7	7	X		<32	<63	<6.2	<0.02	<0.062	<0.062	<0.062									<6.3			
L-PEX-78-10	10		X	<31	<61	<6.7	<0.02	<0.067	<0.067	<0.067									<6.1			
L-PEX-79-6	6	X		<1110	**65**	**730**	**0.26**	**0.21**	**0.4**	**2.9**									<6.0			
L-PEX-80-8	8		X	<32	<65	<7.6	<0.02	<0.076	<0.076	<0.076		<0.013							<6.5			
L-PEX-81-6	6	X		<30	<60	<6.6	<0.02	<0.066	<0.066	<0.066									<6.0			
L-PEX-82-9	9		X	<36	<73	<9.1	<0.02	<0.091	<0.091	<0.091									<7.3			
L-PEX-83-6	6	X		<29	<58	<6.5	<0.02	<0.065	<0.065	<0.065									<5.8			
L-PEX-84-6	6	X		<31	<62	<6	<0.02	<0.06	<0.06	<0.06									<6.2			
L-PEX-85-5	5	X		<49	<59	**480**	**0.17**	**<0.12**	**0.53**	**2.3**									<5.9			
L-PEX-86-5	5	X		<30	<60	<6.8	<0.02	<0.068	<0.068	<0.068									<6.0			
L-PEX-87-7	7		X	<32	<63	<7.6	<0.02	<0.076	<0.076	<0.076									<6.3			
April 30, 2014 UST Site Assessment Samples																						
L-TANK-BOT	8			<27	<54	**420**	**0.39**	**0.09**	**1.5**	**1.5**									**16**			
L-TANK-E	5			<29	**89**	<5.8	<0.2	<0.058	<0.058	<0.058									**57**			
L-TANK-S	5			<28	**290**	<5.7	<0.02	<0.057	<0.057	<0.057									**44**			
												2017 Residual Soil Cleanup										
L-PEX-88-7.5	7.5	X		<4800	**8100**	**2500**	**0.075**	<0.32	**3.2**	**5.3**												
L-PEX-89-7.5	7.5	X		<96	**140**	**170**	<0.02	<0.064	<0.064	**0.215**												
L-PEX-90-5	5	X		<26	**71**	<5.1	<0.020	<0.051	<0.051	<0.051												
L-PEX-91-8	8	X		<31	<62	<6.7	<0.020	<0.067	<0.067	<0.067												
L-PEX-92-5	5	X		**33**	**210**	<5.2	<0.020	<0.052	<0.052	<0.052												
L-PEX-93-8	8	X		<29	**80**	<5.5	<0.020	<0.055	<0.055	<0.055												
L-PEX-94-5	5	X		<27	**240**	<4.9	<0.020	<0.049	<0.049	<0.049												
L-PEX-95-8	8	X		<30	<61	<6.5	<0.020	<0.065	<0.065	<0.065												
L-PEX-96-8.5	8.5		X	<89	**1100**	**22**	<0.030	<0.15	<0.15	**0.19**												
L-PEX-97-8.5	8.5		X	<100	**1400**	<17	<0.034	<0.17	<0.17	<0.17												
L-PEX-98-5	5	X		<32	<63	<7.4	<0.020	<0.074	<0.074	<0.074												
L-PEX-99-8	8	X		<31	**120**	<6.6	<0.020	<0.066	<0.066	<0.066												
L-PEX-100-8	8	X		<28	<56	<5.5	<0.020	<0.055	<0.055	<0.055												
L-PEX-101-8	8	X		<29	<58	<5.8	<0.020	<0.058	<0.058	<0.058												
L-PEX-102-5	5	X		<27	**230**	<5.1	<0.020	<0.051	<0.051	<0.051												
L-PEX-103-5	5	X		<27	**230**	<5.6	<0.020	<0.056	<0.056	<0.056												
L-PEX-104-9	9		X	<44	**140**	<11	<0.023	<0.11	<0.11	<0.11												
L-PEX-105-5	5	X		<28	**88**	<5.0	<0.020	<0.050	<0.050	<0.050												
L-PEX-106-8	8	X		<28	**190**	<5.1	<0.020	<0.051	<0.051	<0.051												
L-PEX-107-11	11		X	<40	**100**	<10	<0.020	<0.10	<0.10	<0.10												
L-PEX-108-11	11		X	<39	<78	<9.5	<0.020	<0.095	<0.095	<0.095												
2017 Residual Soil Cleanup Backfill																						
Backfill #2	NA	NA	NA	<27	<55	<4.3	<0.020	<0.043	<0.043	<0.043												
Monitoring Wells																						
BLMW-11	14					<13	<0.020	<0.13	<0.13	<0.13												
BLMW-12	9					<11	<0.022	<0.11	<0.11	<0.11												
BLMW-12	11					<6.4	<0.020	<0.064	<0.064	<0.064												
MTCA Method A Cleanup Level[4]				2000		100/30[5]	0.03	7	6	9	5	0.100	1	0.03[6]	20	NA	2	2000/19[7]	250	2	NA	NA
MTCA Method B Cleanup Level[8]				3130		84	18	6,400	800	160,000			0.5		24	16,000	80	120,000	NA	24	400	400
Background[9]				NA		NA	NA	NA	NA	NA	NA	NA	NA		7	255	1	48	24	0.07	0.78	0.61

Notes:
< - Not detected at laboratory's reporting limit
Blank - Sample was not analyzed for this constituent
NA - Not applicable
Bold - Analyte Detected
- Sample in area that was subsequently excavated
Analytical data for stockpile samples PH-3 through PH-14 are from Kleinfelder (1999)
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
6 - The MTCA Method A soil cleanup level is 0.03 mg/kg for TCE, 0.05 mg/kg for PCE, and 2 mg/kg for TCA
7 - 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
8 - 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
9 - Background metals concentrations per *Natural Background Soil Metals Concentrations in Washington State* (Ecology, 1994) for the Puget Sound area



EXPLANATION OF SYMBOL

APPROXIMATE PROPERTY BOUNDARY

APPROXIMATE LIMITS OF CONTAMINATED SOIL EXCAVATION

L-PEX-9 APPROXIMATE LOCATION OF CONFIRMATION SOIL SAMPLE LEFT IN PLACE WITH CONCENTRATIONS < MTCA

L-TP-6 APPROXIMATE LOCATION OF CONFIRMATION SOIL SAMPLE LEFT IN PLACE WITH CONCENTRATIONS ≥ MTCA

L-TP-9 APPROXIMATE LOCATION OF SOIL SAMPLE IN AREA THAT WAS SUBSEQUENTLY EXCAVATED

L-TP-9 PRE-INTERIM ACTION SOIL SAMPLE MEETING MTCA CLEANUP LEVELS

FB-10 2016 FARALLON BORING

BASE MAP PROVIDED BY PARAMETRIX

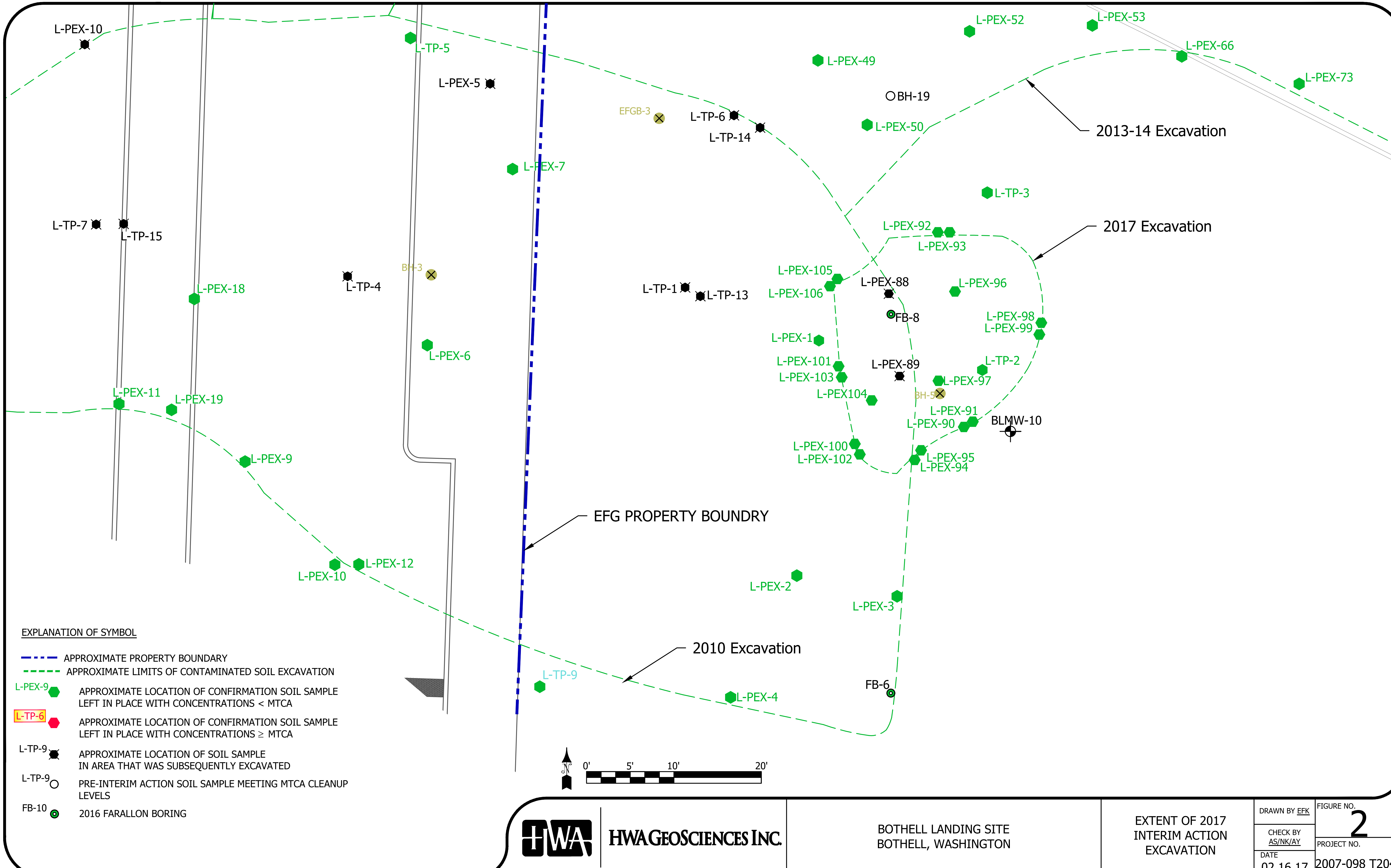
HWA GEOSCIENCES INC.

BOTHELL LANDING SITE
BOTHELL, WASHINGTON

EXTENT OF ALL INTERIM ACTION EXCAVATIONS

DRAWN BY EFK	FIGURE NO. 1
CHECK BY AS	PROJECT NO.
DATE 02.16.17	2007-098 T2020

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD 2007-098\HWA 2007-098-21 T2043.DWG <BOTHELL LA□DI□G O□L□ FIG 4 □19□> Plotted: 3/8/2017 2:57 PM



HWA GEOSCIENCES INC.

BOTHELL LANDING SITE
BOTHELL, WASHINGTON

EXTENT OF 2017 INTERIM ACTION EXCAVATION

DRAWN BY EFK	FIGURE NO. 2
CHECK BY AS/NK/AY	PROJECT NO. 2007-098 T2043
DATE 02.16.17	

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD 2007-098\HWA 2007-098-21 T2043.DWG <RiverSide 2017 FIG 4> Plotted: 3/8/2017 2:50 PM

APPENDIX A

Photograph 1: View facing west toward the final boundaries of the 2017 Bothell Landing remedial excavation. Photograph taken prior to pumping water that had accumulated in the excavation.

Photograph 2: View facing south toward the 2017 Bothell Landing remedial excavation during backfilling activities. Brown Baker tank utilized for storing water pumped from the excavation visible in the background.

APPENDIX B

Weighed At: Soil Remediation

1876090459

CEMEX 6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 Dispatch: 0 Date: 01/11/2017

Ship To: 50030282 - INTERWEST CONSTRUCTION INC-VARIOUS VARI(
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY PO: VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2273889 - ICI30T,INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 34.56 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 1

In: 9:14 am

Out: 9:27 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	110,340	55.17	50.05
Tare:	41,220	20.61	18.70
Net:	69,120	34.56	31.35

Today Loads: 1

Today Qty: 34.56 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 DECIMAL

SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

Weighed At: Soil Remediation

1876090464

CEMEX

6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/11/2017

Ship To: 50030282 - INTERWEST CONSTRUCTION INC-VARIOUS VARI(
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST. BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2273889 - ICI30T.INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 32.84 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 2

In:

Out: 10:31 am

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tne
Gross:	106,900	53.45	48.49
Tare:	41,220	20.61	18.70
Net:	65,680	32.84	29.79

* P. T

Today Loads: 2

Today Qty: 67.40 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

Weighed At: Soil Remediation

1876090471

CEMEX 6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/11/2017

Ship To: 50030282 - INTERWEST CONSTRUCTION INC-VARIOUS VARI(
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2273889 - ICI30T,INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 34.35 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 1

In:

Out: 11:52 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	109,920	54.96	49.86
Tare:	41,220	20.61	18.70
Net:	68,700	34.35	31.16

* P. T.

Today Loads: 3

Today Qty: 101.75 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

Weighed At: Soil Remediation

1876090462

6300 Glenwood Ave

CEMEX Everett, WA 98213

Location: 1876

Order: 41092719 Dispatch: 0 Date: 01/11/2017

Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST. BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY PO: VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier:

Vehicle: 2314320 - ICI45T,INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 28.52 ton

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	98,640	49.32	44.74
Tare:	41,600	20.80	18.87
Net:	57,040	28.52	25.87

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 1

In: 9:28 am

Out: 9:38 am

Today Loads: 1

Today Qty: 28.52 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

Weighed At: Soil Remediation

1876090463

CEMEX 6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/11/2017

Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2030856 - ICI20T.INTERWEST CONSTRUCTION
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 30.74 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan Angelique S

Scale: 1
In: 9:47 am
Out: 10:00 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	103,560	51.78	46.97
Tare:	42,080	21.04	19.09
Net:	61,480	30.74	27.89

Today Loads: 2
Today Qty: 59.26 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 DECIMAL:

SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

Weighed At: Soil Remediation

1876090465

CEMEX

6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 Dispatch: 0 Date: 01/11/2017

Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST. BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY PO: VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2314320 - ICI45T.INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 34.58 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 2

In:

Out: 10:41 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	110,760	55.38	50.24
Tare:	41,600	20.80	18.87
Net:	69,160	34.58	31.37

* P. T

Today Loads: 3

Today Qty: 93.84 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

Weighed At: Soil Remediation
6300 Glenwood Ave
Everett, WA 98213

1876090468

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/11/2017
Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203
Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2030856 - ICI20T,INTERWEST CONSTRUCTION
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 30.83 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 1
In:
Out: 11:13 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	103,740	51.87	47.06
Tare:	42,080	21.04	19.09
Net:	61,660	30.83	27.97

* P. T.

Today Loads: 4
Today Qty: 124.67 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

Weighed At: Soil Remediation 1876090475

CEMEX 6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/11/2017

Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST. BOTHELL
EVERETT. WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2314320 - ICI45T,INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 35.81 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 1

In:

Out: 12:06 pm

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	113,220	56.61	51.36
Tare:	41,600	20.80	18.87
Net:	71,620	35.81	32.49

* P. T.

Today Loads: 5

Today Qty: 160.48 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

Weighed At: Soil Remediation

1876090478

CEMEX
6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/11/2017

Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2030856 - ICI20T,INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 29.74 ton

— DRIVER ON AT TARE & GROSS —

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

	lb	ton	tne
Gross:	101,560	50.78	46.07
Tare:	42,080	21.04	19.09
Net:	59,480	29.74	26.98

* P. T.

Scale: 1

In:

Out: 12:31 pm

Today Loads: 6

Today Qty: 190.22 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

1876090513

Weighed At: Soil Remediation
6300 Glenwood Ave
Everett, WA 98213

CEMEX

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/13/2017

Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2300571 - ICI42T,INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 33.65 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 1

In: 9:28 am

Out: 9:58 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	108,380	54.19	49.16
Tare:	41,080	20.54	18.63
Net:	67,300	33.65	30.53

Today Loads: 1

Today Qty: 33.65 ton

0.00

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

1/13/

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

Weighed At: Soil Remediation

1876090521

CEMEX 6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/13/2017

Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203

Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG

Product: 1192508 - CLASS 3 SOIL DUMPED BY TON

Carrier: -

Vehicle: 2300571 - ICI42T.INTERWEST CONSTRUCTION

Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 34.03 ton

— DRIVER ON AT TARE & GROSS —

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

	lb	ton	tne
Gross:	109,140	54.57	49.51
Tare:	41,080	20.54	18.63
Net:	68,060	34.03	30.87

* P. T.

Scale: 2

In:

Out: 11:32 am

Today Loads: 2

Today Qty: 67.68 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

Weighed At: Soil Remediation

1876090540

CEMEX 6300 Glenwood Ave
Everett, WA 98213

Location: 1876

Order: 41092719 **Dispatch:** 0 **Date:** 01/13/2017
Ship To: 50048842 - INTERWEST CONST-MULTI-WAY BOTHELL AGG:M
P:76:MULTI-WAY BOTHELL
MAIN ST & 88TH ST, BOTHELL
EVERETT, WA 98203
Instruct: CLASS 3 TO EVERETT SOIL REMEDIATION

Job #: 1093 MULTIWAY **PO:** VERBAL C. ARMSTROMG
Product: 1192508 - CLASS 3 SOIL DUMPED BY TON
Carrier: -
Vehicle: 2300571 - ICI42T,INTERWEST CONSTRUCTION
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 31.55 ton

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	104,120	52.06	47.23
Tare:	41,020	20.51	18.61
Net:	63,100	31.55	28.62

Weighmaster:
CEMEX

Deputy Weighmaster:
Regan, Angelique S

Scale: 1
In: 1:09 pm
Out: 1:23 pm

Today Loads: 3
Today Qty: 99.23 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

Release of Liability/Certificate of Disposal

Interwest Construction Inc. & their client: are released from liability for all petroleum contaminated soil originating from:

Multiway Project #1093, Phase II
18200 Bothell Way NE
Bothell WA. 98011

and transported to:

CEMEX Soil Remediation Facility
6300 Glenwood Ave.
Everett WA 98203

From 01/10/2017 through 01/19/2017

A total of 1325.42 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: February 28th, 2017

Larry W. Baker

Larry W. Baker

CEMEX USA
Operations Manager
Soil Remediation Division
6300 Glenwood AVE ,
Everett WA, 98213
(425)-356-6619

APPENDIX C

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

January 13, 2017

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-2043
Laboratory Reference No. 1701-056

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on January 11, 2017.

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 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

Case Narrative

Samples were collected on January 11, 2017 and received by the laboratory on January 11, 2017. They were maintained at the laboratory at a temperature of $2^{o}C$ to $6^{o}C$.

Please note that any and 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.

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: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-88-7.5**					
Laboratory ID:	01-056-01					
Benzene	**0.075**	0.064	EPA 8021B	1-11-17	1-12-17	
Toluene	**ND**	0.32	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**3.2**	0.32	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**5.3**	0.32	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.32	EPA 8021B	1-11-17	1-11-17	
Gasoline	**2500**	130	NWTPH-Gx	1-11-17	1-11-17	O
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*63-124*				
Client ID:	**L-PEX-89-7.5**					
Laboratory ID:	01-056-02					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-12-17	
Toluene	**ND**	0.064	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.064	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**0.15**	0.064	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**0.065**	0.064	EPA 8021B	1-11-17	1-11-17	
Gasoline	**170**	6.4	NWTPH-Gx	1-11-17	1-11-17	O
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*63-124*				
Client ID:	**L-PEX-90-5**					
Laboratory ID:	01-056-03					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-12-17	
Toluene	**ND**	0.051	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.051	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.051	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.051	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.1	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*63-124*				

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-91-8**					
Laboratory ID:	01-056-04					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-12-17	
Toluene	**ND**	0.067	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.067	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.067	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.067	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	6.7	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*63-124*				
Client ID:	**L-PEX-92-5**					
Laboratory ID:	01-056-05					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-12-17	
Toluene	**ND**	0.052	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.052	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.052	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.052	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.2	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*63-124*				
Client ID:	**L-PEX-93-8**					
Laboratory ID:	01-056-06					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-12-17	
Toluene	**ND**	0.055	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.055	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.055	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.055	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.5	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*109*	*63-124*				

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-94-5**					
Laboratory ID:	01-056-07					
Benzene	**ND**	0.020	EPA 8021B	1-12-17	1-12-17	
Toluene	**ND**	0.049	EPA 8021B	1-12-17	1-12-17	
Ethyl Benzene	**ND**	0.049	EPA 8021B	1-12-17	1-12-17	
m,p-Xylene	**ND**	0.049	EPA 8021B	1-12-17	1-12-17	
o-Xylene	**ND**	0.049	EPA 8021B	1-12-17	1-12-17	
Gasoline	**ND**	4.9	NWTPH-Gx	1-12-17	1-12-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*63-124*				
Client ID:	**L-PEX-95-8**					
Laboratory ID:	01-056-08					
Benzene	**ND**	0.020	EPA 8021B	1-12-17	1-12-17	
Toluene	**ND**	0.065	EPA 8021B	1-12-17	1-12-17	
Ethyl Benzene	**ND**	0.065	EPA 8021B	1-12-17	1-12-17	
m,p-Xylene	**ND**	0.065	EPA 8021B	1-12-17	1-12-17	
o-Xylene	**ND**	0.065	EPA 8021B	1-12-17	1-12-17	
Gasoline	**ND**	6.5	NWTPH-Gx	1-12-17	1-12-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*63-124*				
Client ID:	**L-PEX-96-8.5**					
Laboratory ID:	01-056-09					
Benzene	**ND**	0.030	EPA 8021B	1-12-17	1-12-17	
Toluene	**ND**	0.15	EPA 8021B	1-12-17	1-12-17	
Ethyl Benzene	**ND**	0.15	EPA 8021B	1-12-17	1-12-17	
m,p-Xylene	**0.19**	0.15	EPA 8021B	1-12-17	1-12-17	
o-Xylene	**ND**	0.15	EPA 8021B	1-12-17	1-12-17	
Gasoline	**22**	15	NWTPH-Gx	1-12-17	1-12-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*63-124*				

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-97-8.5**					
Laboratory ID:	01-056-10					
Benzene	**ND**	0.034	EPA 8021B	1-12-17	1-12-17	
Toluene	**ND**	0.17	EPA 8021B	1-12-17	1-12-17	
Ethyl Benzene	**ND**	0.17	EPA 8021B	1-12-17	1-12-17	
m,p-Xylene	**ND**	0.17	EPA 8021B	1-12-17	1-12-17	
o-Xylene	**ND**	0.17	EPA 8021B	1-12-17	1-12-17	
Gasoline	**ND**	17	NWTPH-Gx	1-12-17	1-12-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*63-124*				
Client ID:	**L-PEX-98-5**					
Laboratory ID:	01-056-11					
Benzene	**ND**	0.020	EPA 8021B	1-12-17	1-12-17	
Toluene	**ND**	0.074	EPA 8021B	1-12-17	1-12-17	
Ethyl Benzene	**ND**	0.074	EPA 8021B	1-12-17	1-12-17	
m,p-Xylene	**ND**	0.074	EPA 8021B	1-12-17	1-12-17	
o-Xylene	**ND**	0.074	EPA 8021B	1-12-17	1-12-17	
Gasoline	**ND**	7.4	NWTPH-Gx	1-12-17	1-12-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*63-124*				
Client ID:	**L-PEX-99-8**					
Laboratory ID:	01-056-12					
Benzene	**ND**	0.020	EPA 8021B	1-12-17	1-12-17	
Toluene	**ND**	0.066	EPA 8021B	1-12-17	1-12-17	
Ethyl Benzene	**ND**	0.066	EPA 8021B	1-12-17	1-12-17	
m,p-Xylene	**ND**	0.066	EPA 8021B	1-12-17	1-12-17	
o-Xylene	**ND**	0.066	EPA 8021B	1-12-17	1-12-17	
Gasoline	**ND**	6.6	NWTPH-Gx	1-12-17	1-12-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*63-124*				

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0111S2					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.0	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*63-124*				
Laboratory ID:	MB0112S1					
Benzene	**ND**	0.020	EPA 8021B	1-12-17	1-12-17	
Toluene	**ND**	0.050	EPA 8021B	1-12-17	1-12-17	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-12-17	1-12-17	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-12-17	1-12-17	
o-Xylene	**ND**	0.050	EPA 8021B	1-12-17	1-12-17	
Gasoline	**ND**	5.0	NWTPH-Gx	1-12-17	1-12-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*63-124*				

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-044-13										
	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						*89*	*90*	*63-124*			
Laboratory ID:	01-056-07										
	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*	*101*	*63-124*			
SPIKE BLANKS											
Laboratory ID:	SB0111S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.913**	**0.970**	1.00	1.00		**91**	**97**	70-124	6	12	
Toluene	**0.905**	**0.963**	1.00	1.00		**91**	**96**	73-119	6	12	
Ethyl Benzene	**0.887**	**0.945**	1.00	1.00		**89**	**95**	74-117	6	12	
m,p-Xylene	**0.893**	**0.954**	1.00	1.00		**89**	**95**	75-117	7	13	
o-Xylene	**0.896**	**0.955**	1.00	1.00		**90**	**96**	75-116	6	12	
Surrogate:											
Fluorobenzene						*106*	*106*	*63-124*			
Laboratory ID:	SB0112S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.866**	**0.858**	1.00	1.00		**87**	**86**	70-124	1	12	
Toluene	**0.865**	**0.857**	1.00	1.00		**87**	**86**	73-119	1	12	
Ethyl Benzene	**0.848**	**0.842**	1.00	1.00		**85**	**84**	74-117	1	12	
m,p-Xylene	**0.866**	**0.861**	1.00	1.00		**87**	**86**	75-117	1	13	
o-Xylene	**0.870**	**0.864**	1.00	1.00		**87**	**86**	75-116	1	12	
Surrogate:											
Fluorobenzene						*102*	*97*	*63-124*			

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-88-7.5**					
Laboratory ID:	01-056-01					
Diesel Range Organics	**ND**	4800	NWTPH-Dx	1-11-17	1-11-17	M1,U1
Lube Oil	**8100**	610	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	---	*50-150*				S
Client ID:	**L-PEX-89-7.5**					
Laboratory ID:	01-056-02					
Diesel Range Organics	**ND**	96	NWTPH-Dx	1-11-17	1-11-17	M1,U1
Lube Oil	**140**	62	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*67*	*50-150*				
Client ID:	**L-PEX-90-5**					
Laboratory ID:	01-056-03					
Diesel Range Organics	**ND**	26	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**71**	53	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				
Client ID:	**L-PEX-91-8**					
Laboratory ID:	01-056-04					
Diesel Range Organics	**ND**	31	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*84*	*50-150*				
Client ID:	**L-PEX-92-5**					
Laboratory ID:	01-056-05					
Diesel Range Organics	**33**	27	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**210**	54	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*102*	*50-150*				
Client ID:	**L-PEX-93-8**					
Laboratory ID:	01-056-06					
Diesel Range Organics	**ND**	29	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**80**	59	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-94-5**					
Laboratory ID:	01-056-07					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**240**	54	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*100*	*50-150*				
Client ID:	**L-PEX-95-8**					
Laboratory ID:	01-056-08					
Diesel Range Organics	**ND**	30	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				
Client ID:	**L-PEX-96-8.5**					
Laboratory ID:	01-056-09					
Diesel Range Organics	**ND**	89	NWTPH-Dx	1-11-17	1-11-17	U1,X1
Lube Oil	**1100**	110	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				
Client ID:	**L-PEX-97-8.5**					
Laboratory ID:	01-056-10					
Diesel Range Organics	**ND**	100	NWTPH-Dx	1-11-17	1-11-17	U1,X1
Lube Oil	**1400**	120	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**L-PEX-98-5**					
Laboratory ID:	01-056-11					
Diesel Range Organics	**ND**	32	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil Range Organics	**ND**	63	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*80*	*50-150*				
Client ID:	**L-PEX-99-8**					
Laboratory ID:	01-056-12					
Diesel Range Organics	**ND**	31	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**120**	62	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0111S3					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*102*	*50-150*				
Laboratory ID:	MB0111S3					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-11-17	1-11-17	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*108*	*50-150*				
Laboratory ID:	MB0111S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-11-17	1-11-17	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-056-01										
	ORIG	DUP									
Diesel Range Organics	**ND**	**ND**	NA	NA		NA		NA	NA	NA	M1,U1
Lube Oil	**6670**	**6400**	NA	NA		NA		NA	4	NA	
Surrogate:											
o-Terphenyl						*---*	*---*	*50-150*			S,S
Laboratory ID:	01-056-03										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil	**67.4**	**59.1**	NA	NA		NA		NA	13	NA	
Surrogate:											
o-Terphenyl						*82*	*98*	*50-150*			
Laboratory ID:	01-044-02										
	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						*76*	*70*	*50-150*			

Date of Report: January 13, 2017
Samples Submitted: January 11, 2017
Laboratory Reference: 1701-056
Project: 2007-098-2043

% MOISTURE

Date Analyzed: 1-11-17

Client ID	Lab ID	% Moisture
L-PEX-88-7.5	01-056-01	17
L-PEX-89-7.5	01-056-02	19
L-PEX-90-5	01-056-03	5
L-PEX-91-8	01-056-04	19
L-PEX-92-5	01-056-05	8
L-PEX-93-8	01-056-06	15
L-PEX-94-5	01-056-07	8
L-PEX-95-8	01-056-08	18
L-PEX-96-8.5	01-056-09	55
L-PEX-97-8.5	01-056-10	58
L-PEX-98-5	01-056-11	21
L-PEX-99-8	01-056-12	20

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

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

Company: HWA GeoSciences
Project Number: 2007-098-2043
Project Name: Landing
Project Manager: Arnie Sugar
Sampled by: Austin York

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: 01-056

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up) *	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	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					% Moisture
1	L-PEX-88-7.5	1/11/17	10:15	Soil	2		X		X																		
2	L-PEX-89-7.5		10:40				X		X																		
3	L-PEX-90-5		11:55				X		X																		
4	L-PEX-91-8		11:58				X		X																		
5	L-PEX-92-5		12:05				X		X																		
6	L PEX-93-8		12:08				X		X																		
7	LPEX-94-5		1325				X		X																		
8	LPEX-95-8		1330				X		X																		
9	LPEX-96-8.5		1335				X		X																		
10	LPEX-97-8.5		1340				X		X																		

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	1/11/17	14:50
Received	[signature]	OSE	1/11/17	1450
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Silica Gel Clean up on
L-PEX-96-8.5
L-PEX-97-8.5

Data Package: Standard ☒ Level III ☐ Level IV ☐
Chromatograms with final report ☒ Electronic Data Deliverables (EDDs) ☒

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

Laboratory Number: 01-056

Company: HWA GeoSciences
Project Number: 2007-098-2043
Project Name: Landing
Project Manager: Arnie Sugar
Sampled by: Austin York

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 (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	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					% Moisture
11	LPEX-98-5'	1-11-17	1345	Soil	2		X	~~X~~	X																		X
12	LPEX-99-8'	1-11-17	1350	↓	↓		X	~~X~~	X																		↓

	Signature	Company	Date	Time
Relinquished	[illegible]	HWA	1/11/17	14:50
Received	[illegible]	[illegible]	1/11/17	1450
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☒ Level III ☐ Level IV ☐
Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☒

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

January 17, 2017

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098
Laboratory Reference No. 1701-074

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on January 13, 2017.

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, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

Case Narrative

Samples were collected on January 13, 2017 and received by the laboratory on January 13, 2017. They were maintained at the laboratory at a temperature of $2^{o}C$ to $6^{o}C$.

Please note that any and 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.

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: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-100-8'**					
Laboratory ID:	01-074-01					
Benzene	**ND**	0.020	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.055	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.055	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.055	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.055	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	5.5	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*84*	*63-124*				
Client ID:	**L-PEX-101-8'**					
Laboratory ID:	01-074-02					
Benzene	**ND**	0.020	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.058	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.058	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.058	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.058	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	5.8	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*108*	*63-124*				
Client ID:	**L-PEX-102-5'**					
Laboratory ID:	01-074-03					
Benzene	**ND**	0.020	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	5.1	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*63-124*				

Date of Report: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-103-5'**					
Laboratory ID:	01-074-04					
Benzene	**ND**	0.020	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.056	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.056	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.056	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.056	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	5.6	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*63-124*				
Client ID:	**L-PEX-104-9'**					
Laboratory ID:	01-074-05					
Benzene	**ND**	0.023	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.11	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.11	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.11	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.11	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	11	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*63-124*				
Client ID:	**L-PEX-105-5'**					
Laboratory ID:	01-074-06					
Benzene	**ND**	0.020	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	5.0	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*63-124*				

Date of Report: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-106-8'**					
Laboratory ID:	01-074-07					
Benzene	**ND**	0.020	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.051	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	5.1	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*63-124*				

Date of Report: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
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:	MB0116S1					
Benzene	**ND**	0.020	EPA 8021B	1-16-17	1-16-17	
Toluene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
o-Xylene	**ND**	0.050	EPA 8021B	1-16-17	1-16-17	
Gasoline	**ND**	5.0	NWTPH-Gx	1-16-17	1-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*63-124*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-074-01										
	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						*84*	*73*	*63-124*			
SPIKE BLANKS											
Laboratory ID:	SB0116S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.891**	**0.921**	1.00	1.00		**89**	**92**	70-124	3	12	
Toluene	**0.880**	**0.912**	1.00	1.00		**88**	**91**	73-119	4	12	
Ethyl Benzene	**0.861**	**0.893**	1.00	1.00		**86**	**89**	74-117	4	12	
m,p-Xylene	**0.867**	**0.901**	1.00	1.00		**87**	**90**	75-117	4	13	
o-Xylene	**0.872**	**0.903**	1.00	1.00		**87**	**90**	75-116	3	12	
Surrogate:											
Fluorobenzene						*100*	*103*	*63-124*			

Date of Report: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-100-8'**					
Laboratory ID:	01-074-01					
Diesel Range Organics	**ND**	28	NWTPH-Dx	1-13-17	1-13-17	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	1-13-17	1-13-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*81*	*50-150*				
Client ID:	**L-PEX-101-8'**					
Laboratory ID:	01-074-02					
Diesel Range Organics	**ND**	29	NWTPH-Dx	1-13-17	1-13-17	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	1-13-17	1-13-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				
Client ID:	**L-PEX-102-5'**					
Laboratory ID:	01-074-03					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-13-17	1-13-17	
Lube Oil	**230**	54	NWTPH-Dx	1-13-17	1-13-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*84*	*50-150*				
Client ID:	**L-PEX-103-5'**					
Laboratory ID:	01-074-04					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-13-17	1-13-17	
Lube Oil	**230**	54	NWTPH-Dx	1-13-17	1-13-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				
Client ID:	**L-PEX-104-9'**					
Laboratory ID:	01-074-05					
Diesel Range Organics	**ND**	44	NWTPH-Dx	1-13-17	1-16-17	X1
Lube Oil Range Organics	**140**	88	NWTPH-Dx	1-13-17	1-16-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				
Client ID:	**L-PEX-105-5'**					
Laboratory ID:	01-074-06					
Diesel Range Organics	**ND**	28	NWTPH-Dx	1-13-17	1-13-17	
Lube Oil	**88**	56	NWTPH-Dx	1-13-17	1-13-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				

Date of Report: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-106-8'**					
Laboratory ID:	01-074-07					
Diesel Range Organics	**ND**	28	NWTPH-Dx	1-13-17	1-13-17	
Lube Oil	**190**	56	NWTPH-Dx	1-13-17	1-13-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				

Date of Report: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0113S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-13-17	1-13-17	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-13-17	1-13-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Laboratory ID:	MB0113S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-13-17	1-13-17	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-13-17	1-13-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-074-01										
	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						*81*	*86*	*50-150*			

Date of Report: January 17, 2017
Samples Submitted: January 13, 2017
Laboratory Reference: 1701-074
Project: 2007-098

% MOISTURE

Date Analyzed: 1-13-17

Client ID	Lab ID	% Moisture
L-PEX-100-8'	01-074-01	10
L-PEX-101-8'	01-074-02	14
L-PEX-102-5'	01-074-03	8
L-PEX-103-5'	01-074-04	8
L-PEX-104-9'	01-074-05	43
L-PEX-105-5'	01-074-06	10
L-PEX-106-8'	01-074-07	11

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

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

Laboratory Number: 01-074

Company: HWA GeoSciences
Project Number: 2007-098
Project Name: Landing
Project Manager: Arnie Sugar
Sampled by: Austin York

Turnaround Request (in working days) (Check One)

- [ ] Same Day
- [x] 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						% Moisture
1	L-PEX-100-8'	1/13/17	9:15	Soil	2		X		X																		X
2	L-PEX-101-8'		10:00				X		X																		
3	L-PEX-102-5'		11:00				X		X																		
4	L-PEX-103-5'		11:10				X		X																		
5	L-PEX-104-9'		11:15				X		X																		
6	L-PEX-105-5'		11:25				X		X																		
7	L PEX-106-8'		11:30				X		X																		

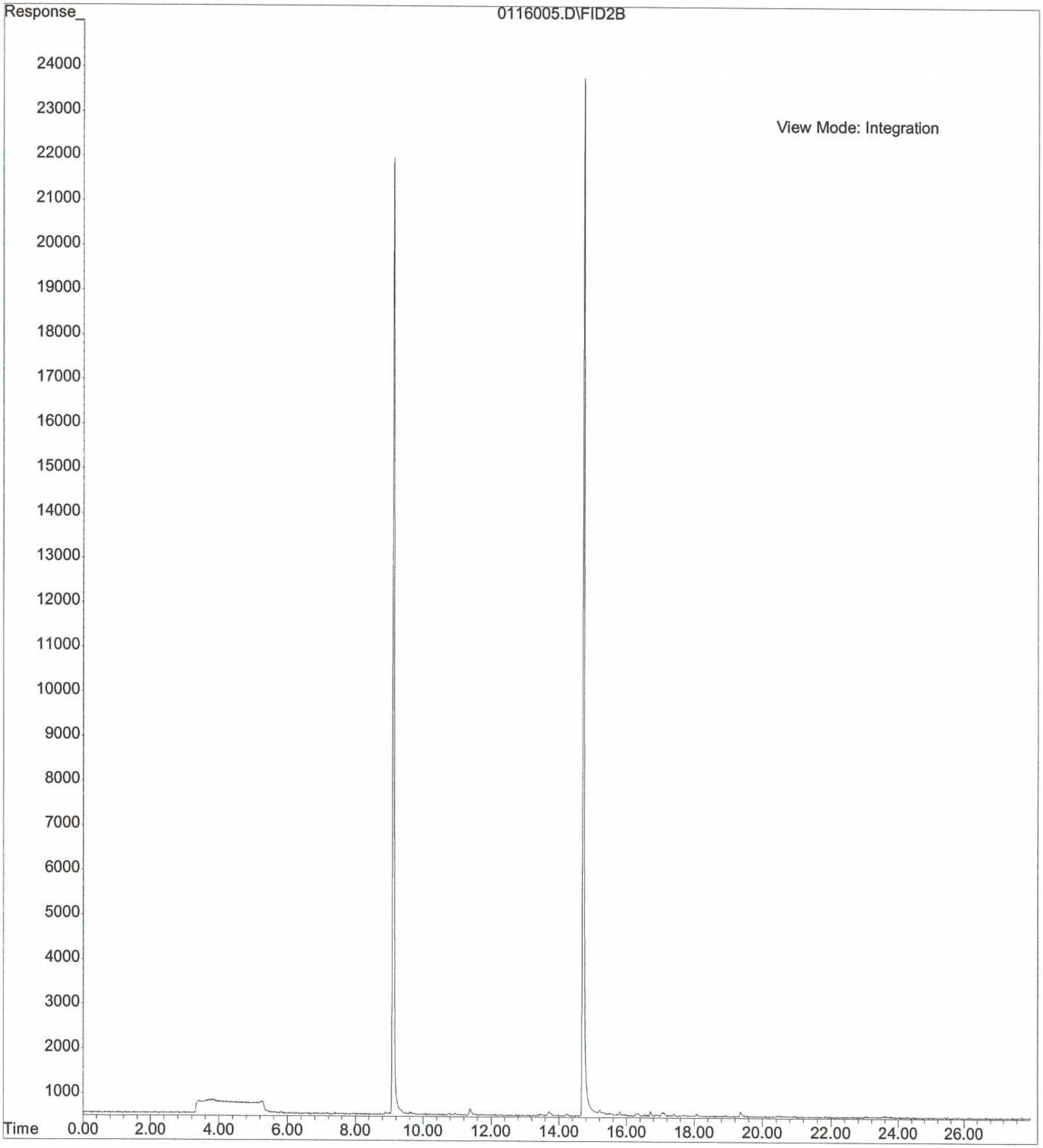
	Signature	Company	Date	Time
Relinquished	Noah Papin	HWA	1/13/17	15:10
Received		OSE	1/13/17	1520
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Silica gel cleanup on L-PEX-104-9'

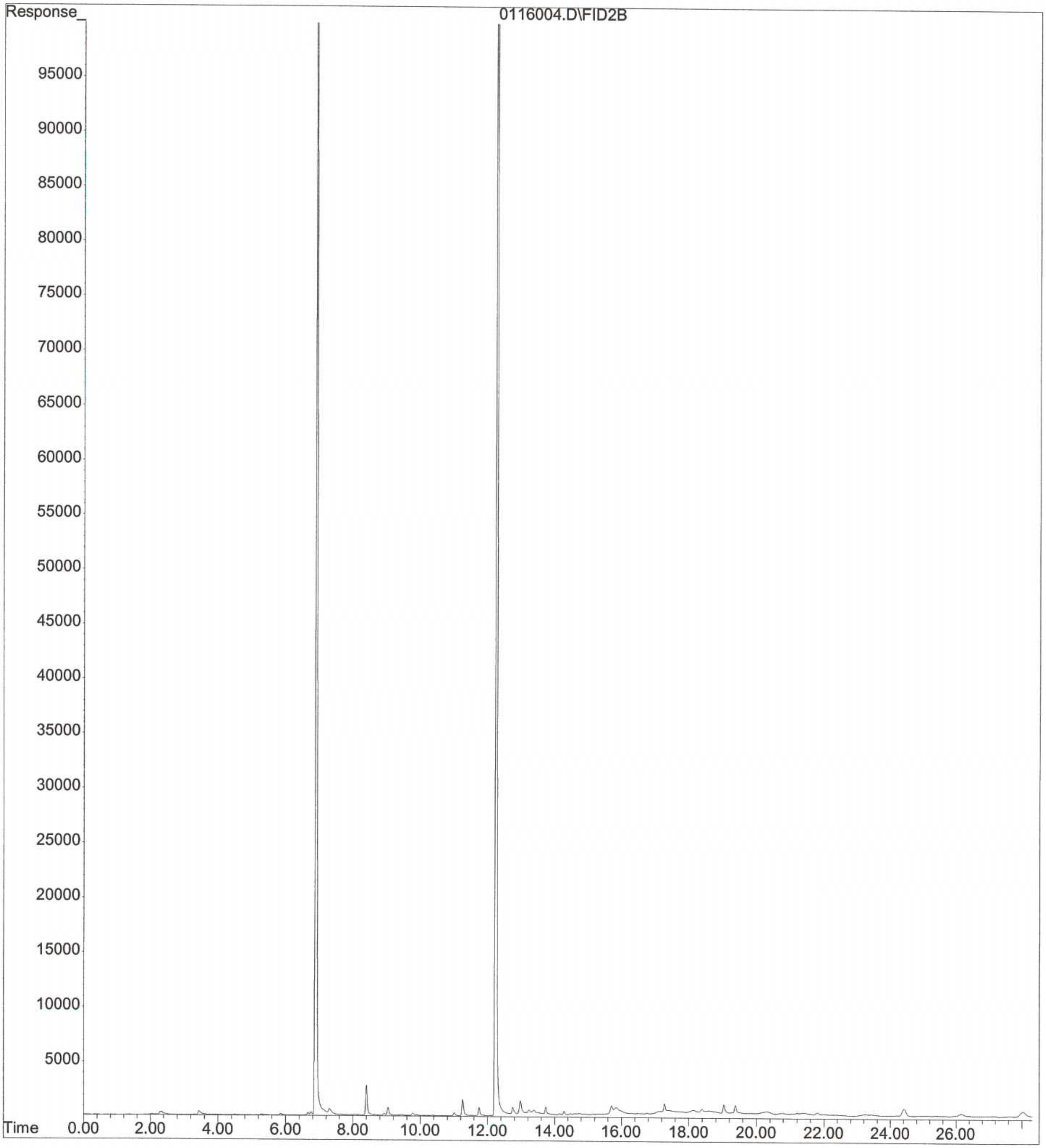
Chromatograms with final report [x]

Data Package: Standard [x] Level III [ ] Level IV [ ] Electronic Data Deliverables (EDDs) [x] ______

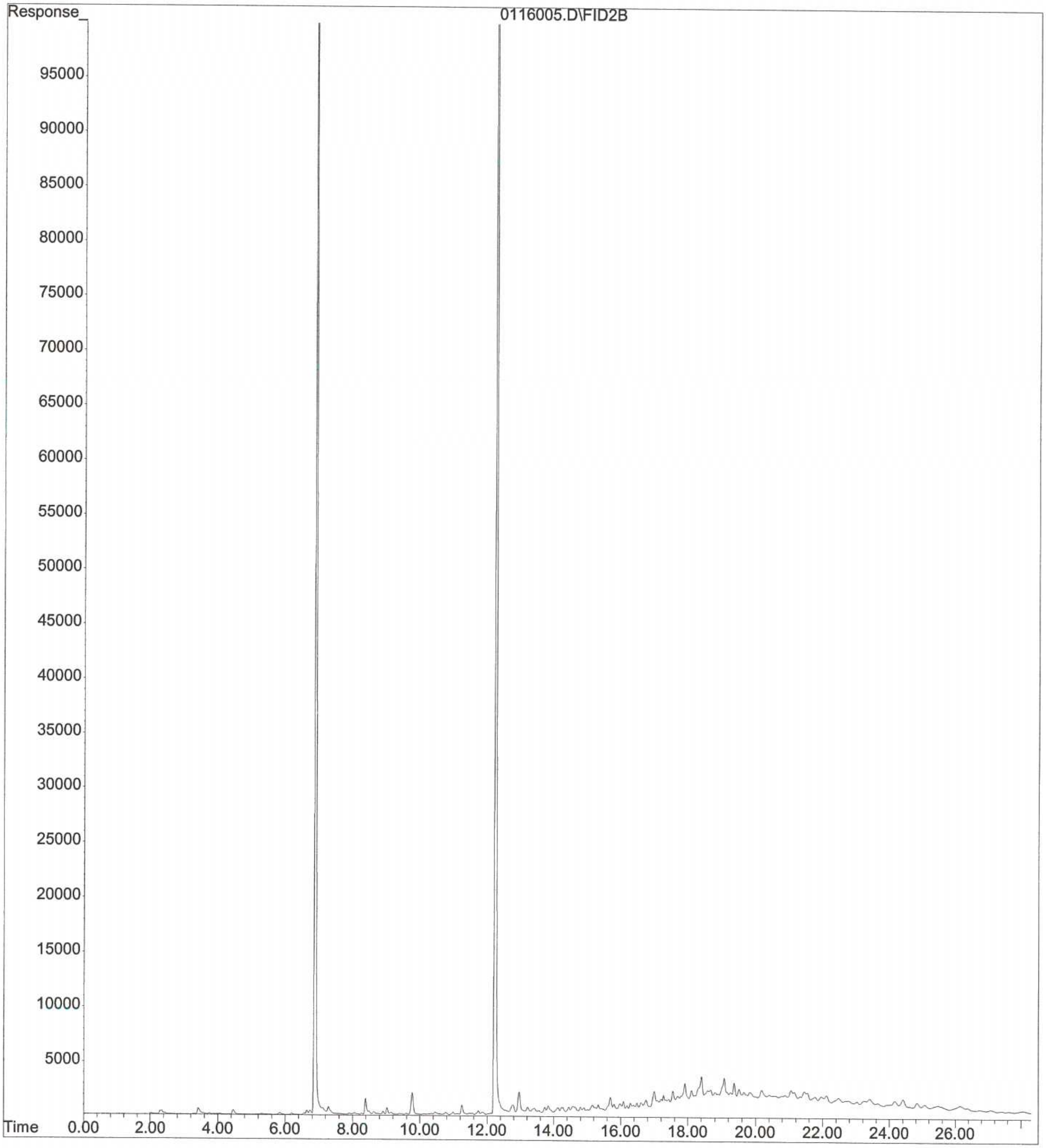
File   : X:\BTEX\HOPE\DATA\H170116\0116005.D
Operator   :
Acquired   : 16 Jan 2017   9:53   using AcqMethod 161103B.M
Instrument :   Hope
Sample Name: 01-074-01s
Misc Info :
Vial Number: 5



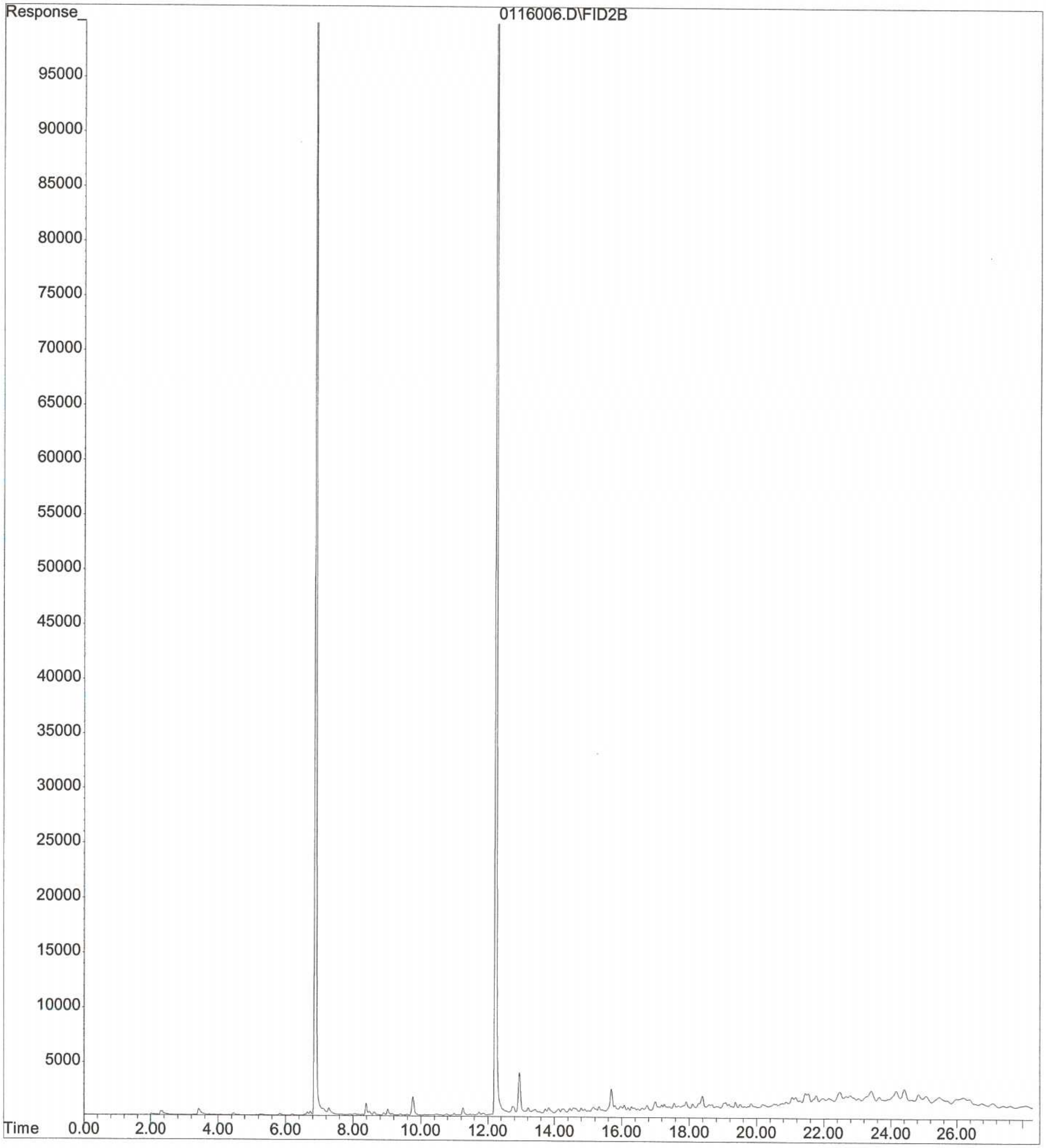
File   : X:\BTEX\DARYL\DATA\D170116\0116004.D
Operator   :
Acquired   : 16 Jan 2017 10:35   using AcqMethod 161207VG.M
Instrument :   Daryl
Sample Name: 01-074-02s
Misc Info :
Vial Number: 4



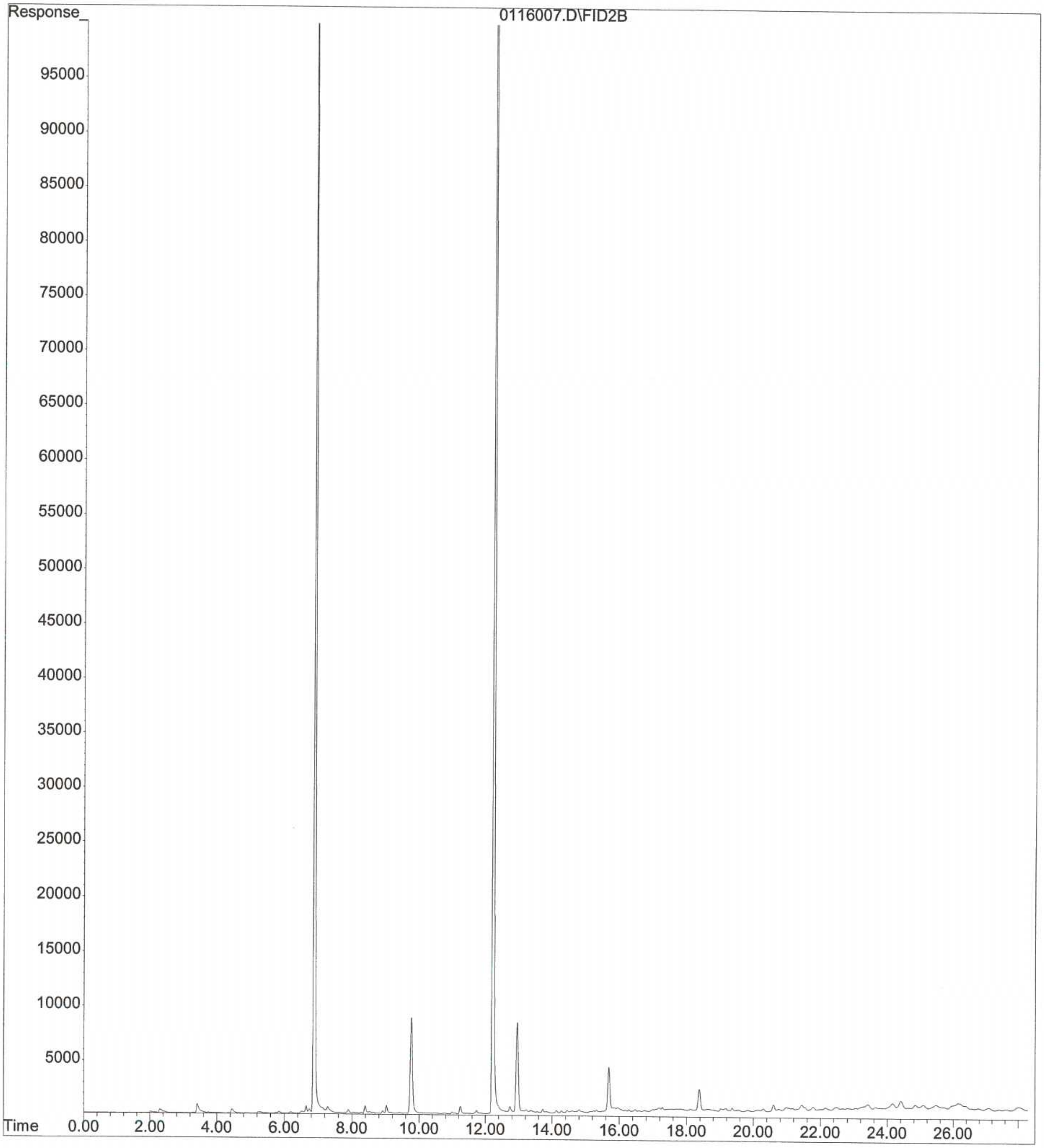
File : X:\BTEX\DARYL\DATA\D170116\0116005.D
Operator :
Acquired : 16 Jan 2017 11:09 using AcqMethod 161207VG.M
Instrument : Daryl
Sample Name: 01-074-03s
Misc Info :
Vial Number: 5



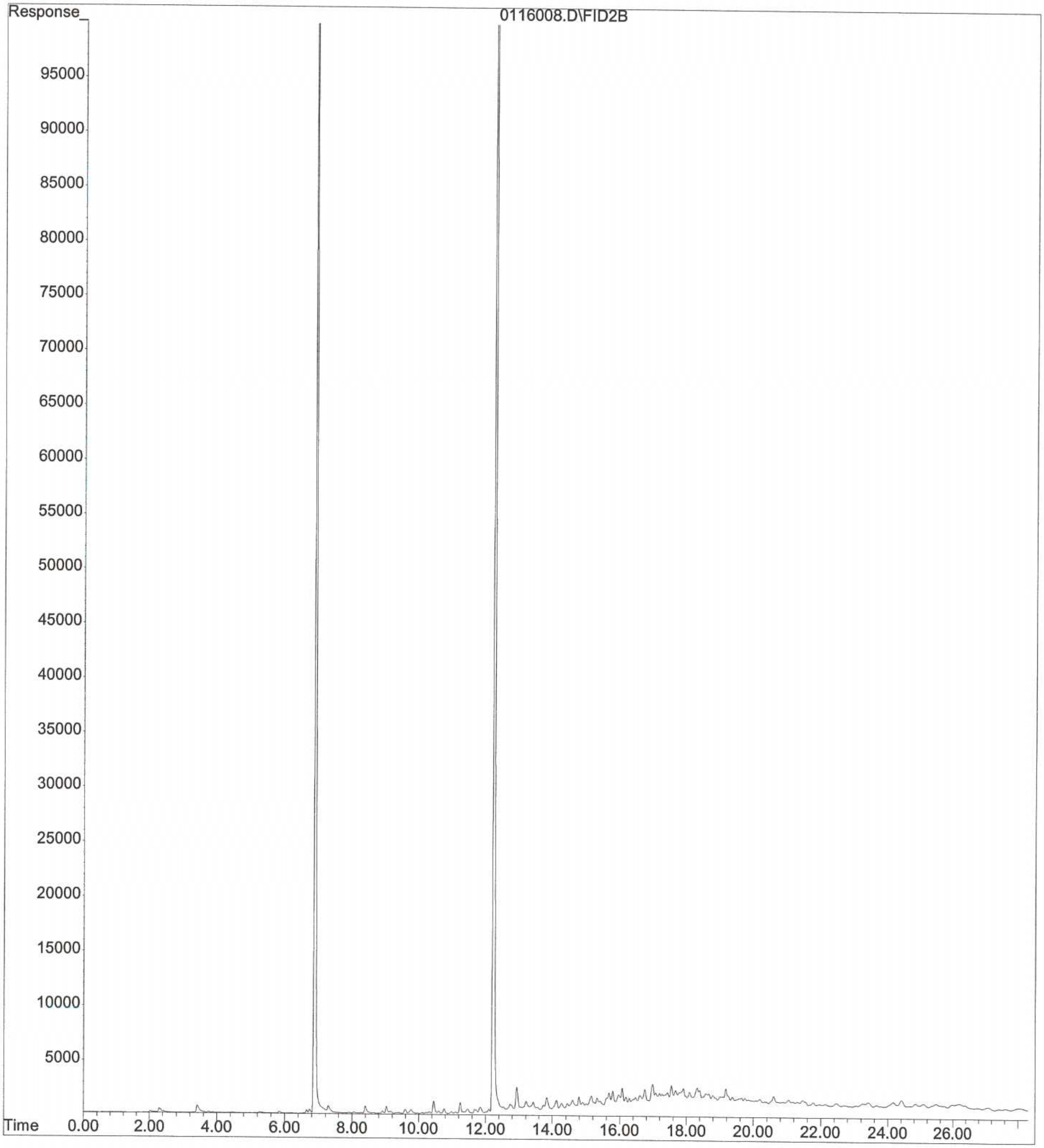
File   : X:\BTEX\DARYL\DATA\D170116\0116006.D
Operator   :
Acquired   : 16 Jan 2017 11:42   using AcqMethod 161207VG.M
Instrument :   Daryl
Sample Name: 01-074-04s
Misc Info :
Vial Number: 6



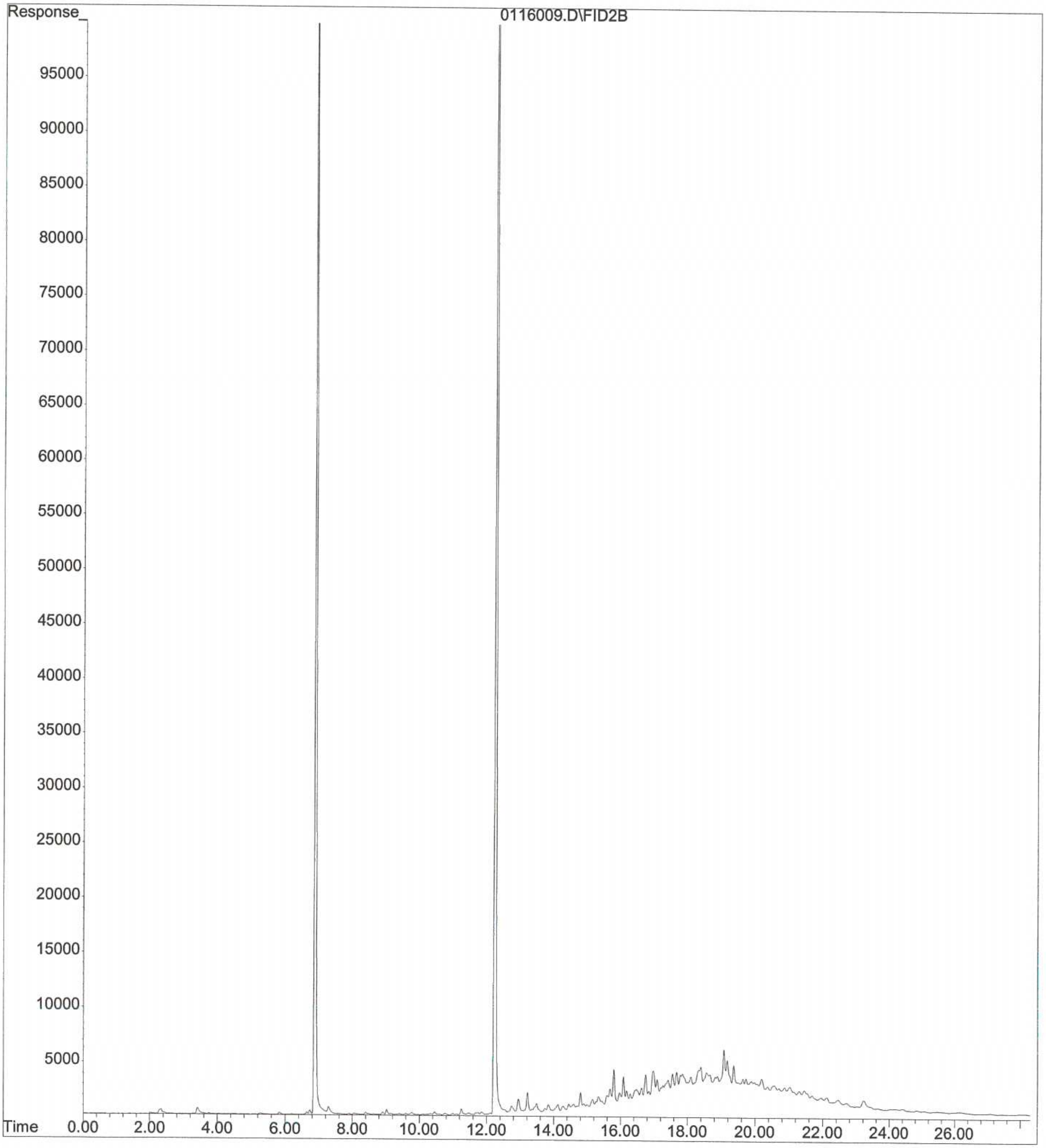
File : X:\BTEX\DARYL\DATA\D170116\0116007.D
Operator :
Acquired : 16 Jan 2017 12:16 using AcqMethod 161207VG.M
Instrument : Daryl
Sample Name: 01-074-05s
Misc Info :
Vial Number: 7



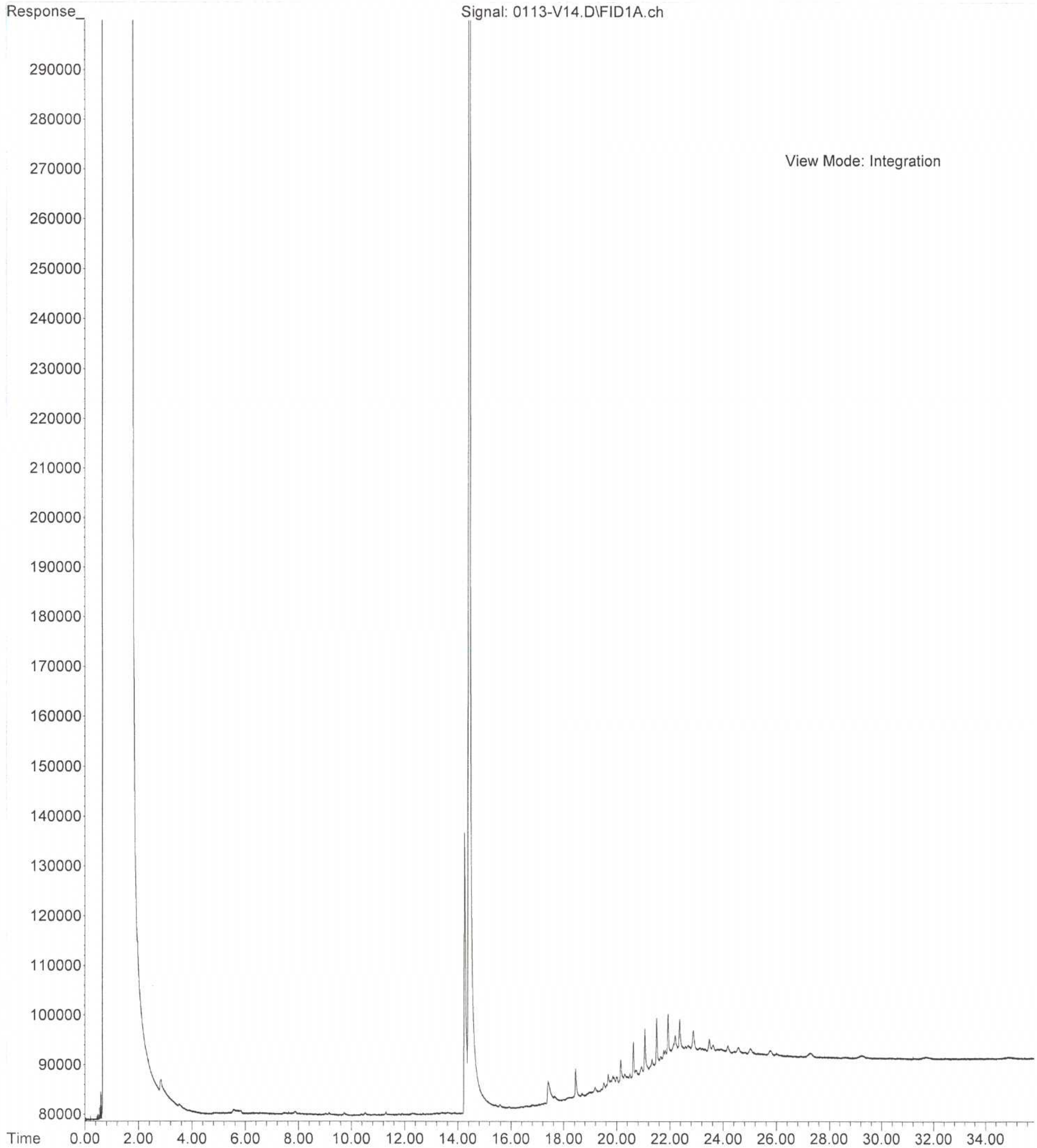
File : X:\BTEX\DARYL\DATA\D170116\0116008.D
Operator :
Acquired : 16 Jan 2017 12:49 using AcqMethod 161207VG.M
Instrument : Daryl
Sample Name: 01-074-06s
Misc Info :
Vial Number: 8



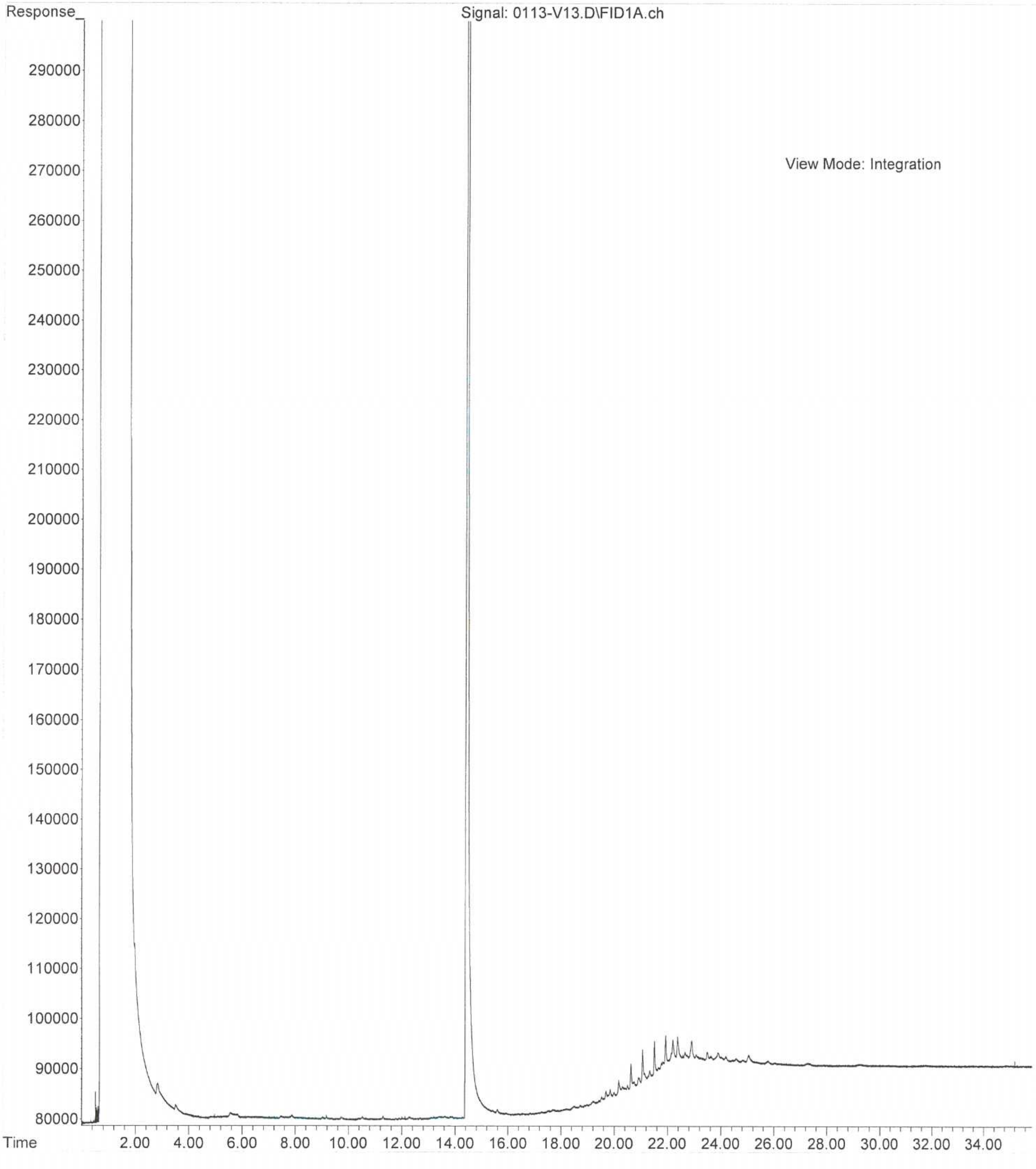
File   : X:\BTEX\DARYL\DATA\D170116\0116009.D
Operator   :
Acquired   : 16 Jan 2017 13:23   using AcqMethod 161207VG.M
Instrument :   Daryl
Sample Name: 01-074-07s
Misc Info :
Vial Number: 9



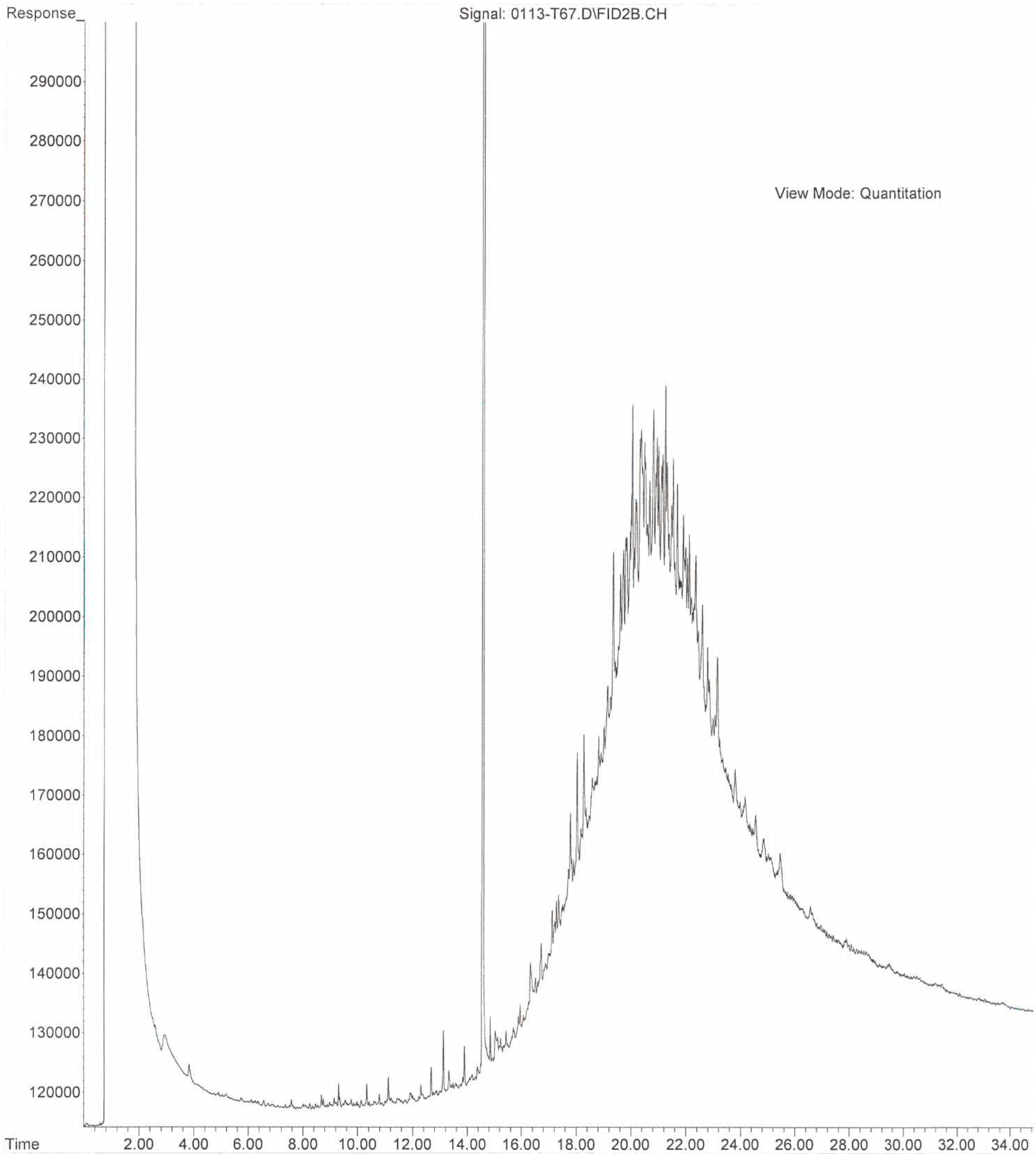
File :X:\DIESELS\VIGO\DATA\V170113\0113-V14.D
Operator :
Acquired : 13 Jan 2017 20:15 using AcqMethod V160602F.M
Instrument : Vigo
Sample Name: 01-074-01
Misc Info :
Vial Number: 14



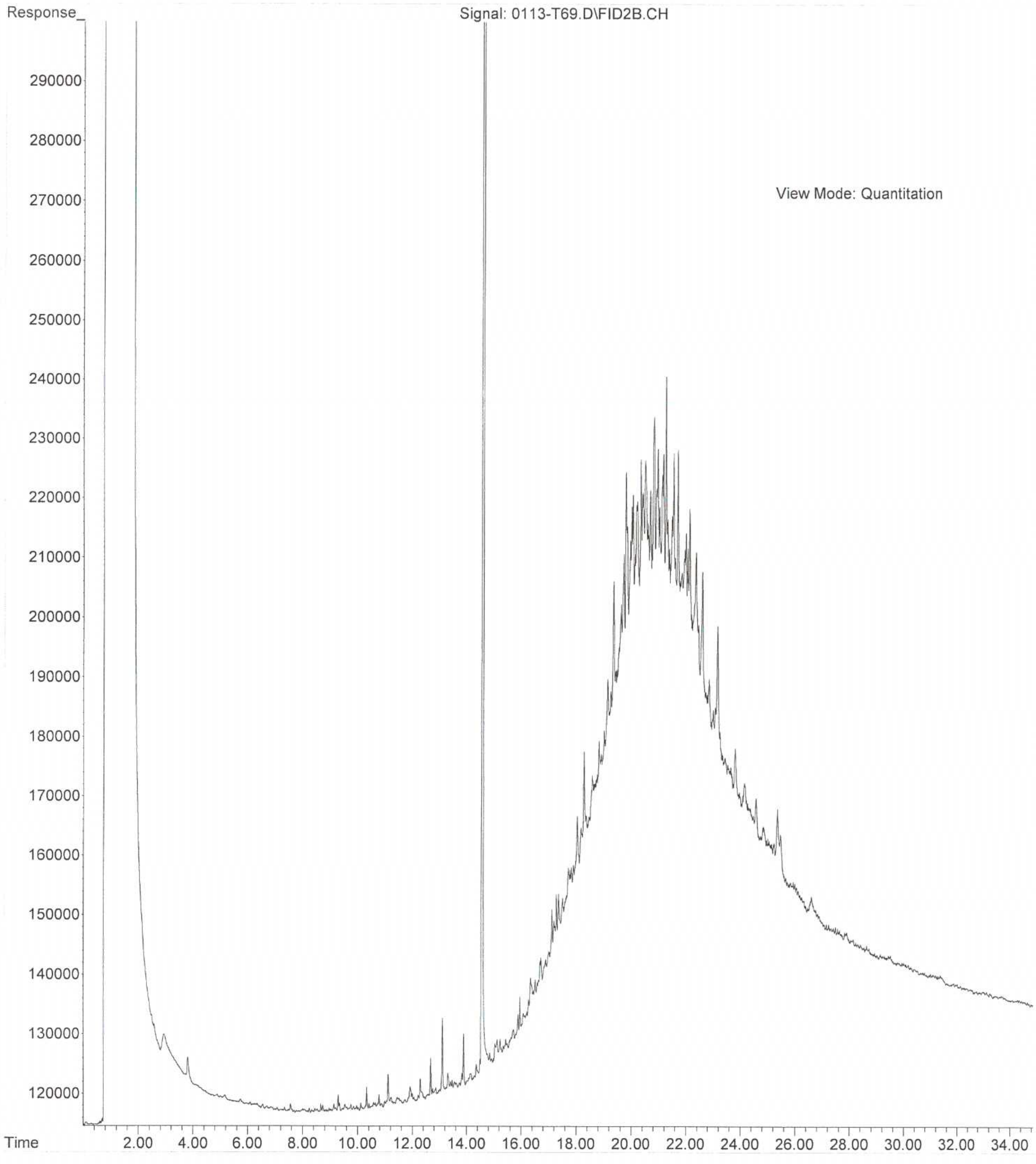
File   :X:\DIESELS\VIGO\DATA\V170113\0113-V13.D
Operator   :
Acquired   : 13 Jan 2017 19:34   using AcqMethod V160602F.M
Instrument :   Vigo
Sample Name: 01-074-02
Misc Info   :
Vial Number: 13



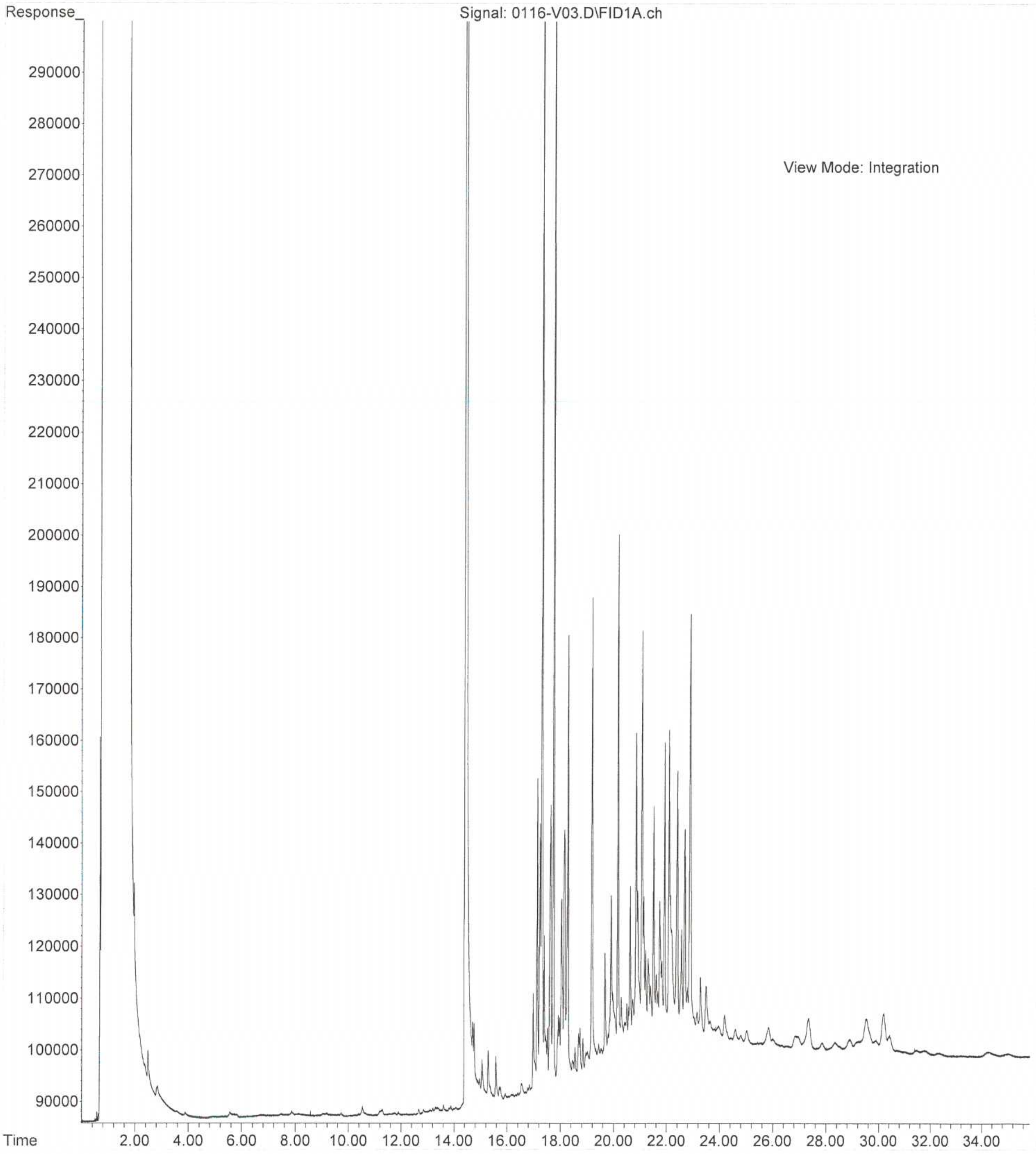
```
File        :X:\DIESELS\TERI\DATA\T170113.SEC\0113-T67.D
Operator    : ZT
Acquired    : 13 Jan 2017   23:12     using AcqMethod T161216F.M
Instrument :   Teri
Sample Name: 01-074-03
Misc Info  :
Vial Number: 67
```



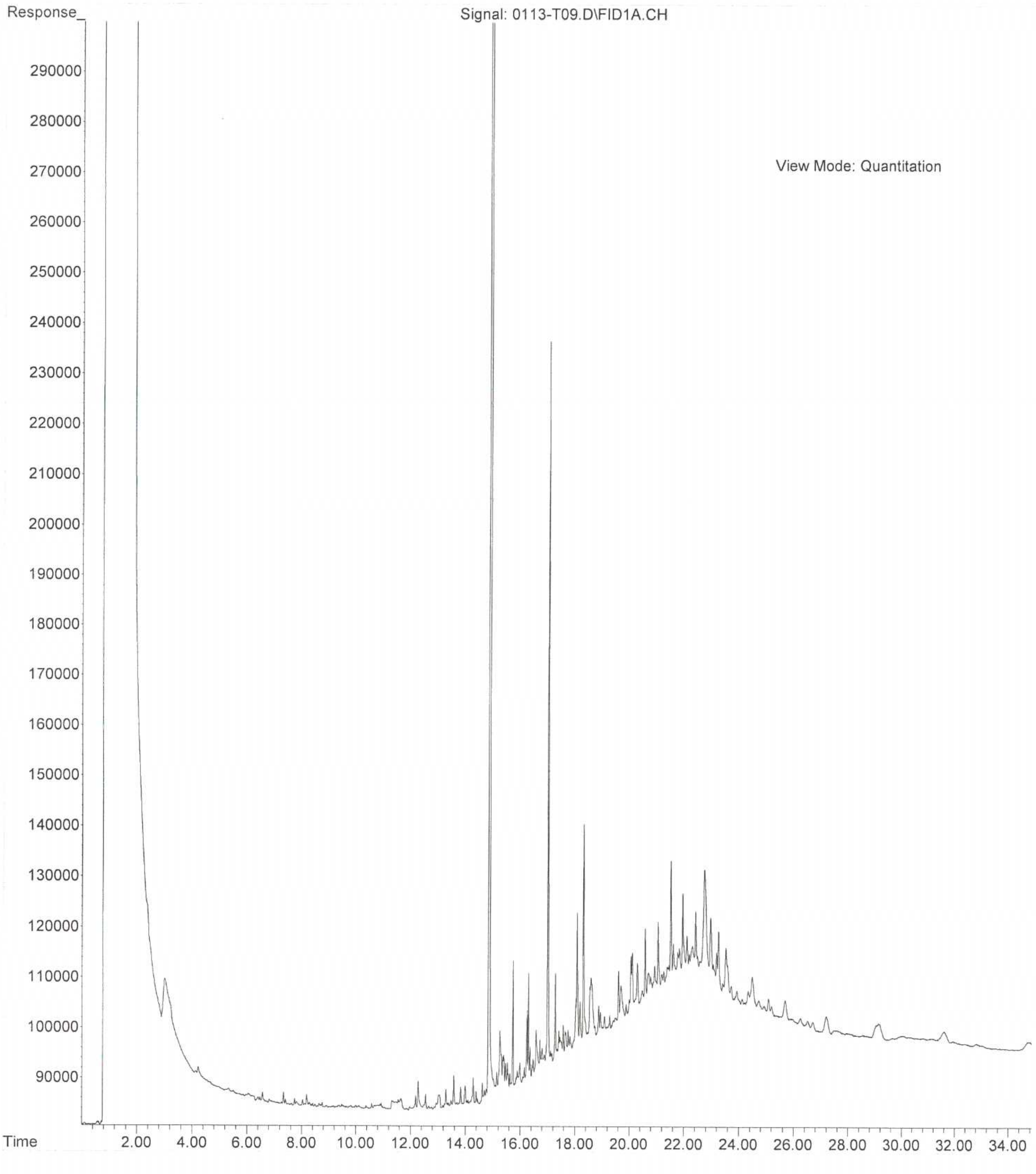
File   :X:\DIESELS\TERI\DATA\T170113.SEC\0113-T69.D
Operator   : ZT
Acquired   : 14 Jan 2017   0:36   using AcqMethod T161216F.M
Instrument :   Teri
Sample Name: 01-074-04
Misc Info   :
Vial Number: 69



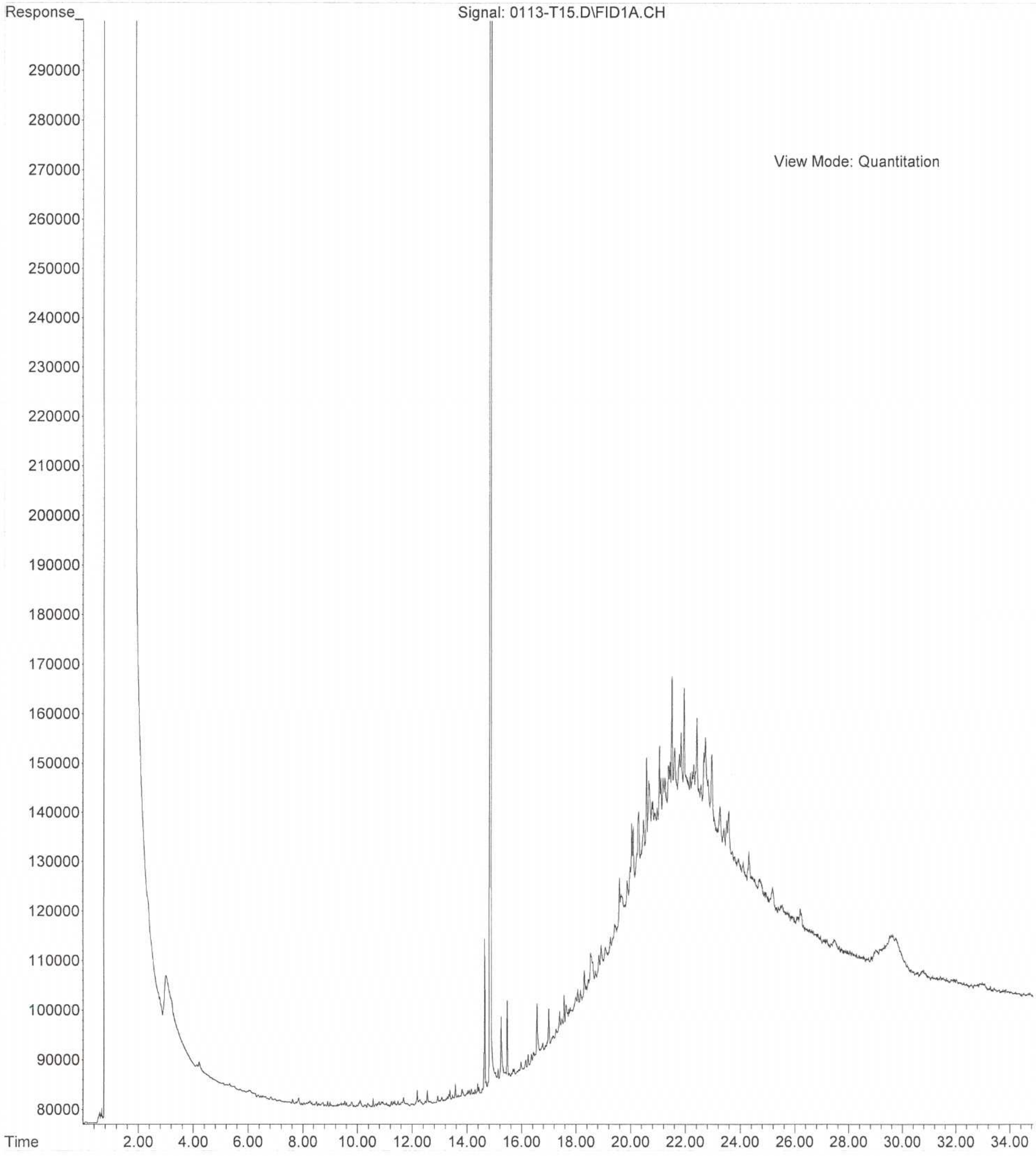
```
File        :X:\DIESELS\VIGO\DATA\V170116\0116-V03.D
Operator    :
Acquired    : 16 Jan 2017  11:32     using AcqMethod V160602F.M
Instrument :   Vigo
Sample Name: 01-074-05 ACU
Misc Info   :
Vial Number: 3
```



```
File        :X:\DIESELS\TERI\DATA\T170113\0113-T09.D
Operator    : ZT
Acquired    : 13 Jan 2017  17:37     using AcqMethod T161216F.M
Instrument :   Teri
Sample Name: 01-074-06
Misc Info  :
Vial Number: 9
```



```
File        :X:\DIESELS\TERI\DATA\T170113\0113-T15.D
Operator    : ZT
Acquired    : 13 Jan 2017  21:48     using AcqMethod T161216F.M
Instrument :    Teri
Sample Name: 01-074-07
Misc Info  :
Vial Number: 15
```



OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

January 18, 2017

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-2044
Laboratory Reference No. 1701-090

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on January 17, 2017.

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 18, 2017
Samples Submitted: January 17, 2017
Laboratory Reference: 1701-090
Project: 2007-098-2044

Case Narrative

Samples were collected on January 17, 2017 and received by the laboratory on January 17, 2017. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and 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.

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: January 18, 2017
Samples Submitted: January 17, 2017
Laboratory Reference: 1701-090
Project: 2007-098-2044

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-107-11'**					
Laboratory ID:	01-090-01					
Benzene	**ND**	0.020	EPA 8021B	1-17-17	1-17-17	
Toluene	**ND**	0.10	EPA 8021B	1-17-17	1-17-17	
Ethyl Benzene	**ND**	0.10	EPA 8021B	1-17-17	1-17-17	
m,p-Xylene	**ND**	0.10	EPA 8021B	1-17-17	1-17-17	
o-Xylene	**ND**	0.10	EPA 8021B	1-17-17	1-17-17	
Gasoline	**ND**	10	NWTPH-Gx	1-17-17	1-17-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*113*	*63-124*				
Client ID:	**L-PEX-108-11'**					
Laboratory ID:	01-090-02					
Benzene	**ND**	0.020	EPA 8021B	1-17-17	1-17-17	
Toluene	**ND**	0.095	EPA 8021B	1-17-17	1-17-17	
Ethyl Benzene	**ND**	0.095	EPA 8021B	1-17-17	1-17-17	
m,p-Xylene	**ND**	0.095	EPA 8021B	1-17-17	1-17-17	
o-Xylene	**ND**	0.095	EPA 8021B	1-17-17	1-17-17	
Gasoline	**ND**	9.5	NWTPH-Gx	1-17-17	1-17-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*63-124*				

Date of Report: January 18, 2017
Samples Submitted: January 17, 2017
Laboratory Reference: 1701-090
Project: 2007-098-2044

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0117S1					
Benzene	**ND**	0.020	EPA 8021B	1-17-17	1-17-17	
Toluene	**ND**	0.050	EPA 8021B	1-17-17	1-17-17	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-17-17	1-17-17	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-17-17	1-17-17	
o-Xylene	**ND**	0.050	EPA 8021B	1-17-17	1-17-17	
Gasoline	**ND**	5.0	NWTPH-Gx	1-17-17	1-17-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*63-124*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-079-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**0.0585**	**0.0562**	NA	NA		NA		NA	4	30	
m,p-Xylene	**0.143**	**0.133**	NA	NA		NA		NA	7	30	
o-Xylene	**0.0646**	**0.0547**	NA	NA		NA		NA	17	30	
Gasoline	**111**	**122**	NA	NA		NA		NA	9	30	
Surrogate:											
Fluorobenzene						*102*	*100*	*63-124*			
SPIKE BLANKS											
Laboratory ID:	SB0117S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.862**	**0.858**	1.00	1.00		**86**	**86**	70-124	0	12	
Toluene	**0.858**	**0.856**	1.00	1.00		**86**	**86**	73-119	0	12	
Ethyl Benzene	**0.839**	**0.836**	1.00	1.00		**84**	**84**	74-117	0	12	
m,p-Xylene	**0.852**	**0.852**	1.00	1.00		**85**	**85**	75-117	0	13	
o-Xylene	**0.856**	**0.849**	1.00	1.00		**86**	**85**	75-116	1	12	
Surrogate:											
Fluorobenzene						*101*	*97*	*63-124*			

Date of Report: January 18, 2017
Samples Submitted: January 17, 2017
Laboratory Reference: 1701-090
Project: 2007-098-2044

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**L-PEX-107-11'**					
Laboratory ID:	01-090-01					
Diesel Range Organics	**ND**	40	NWTPH-Dx	1-17-17	1-17-17	X1
Lube Oil	**100**	79	NWTPH-Dx	1-17-17	1-17-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				
Client ID:	**L-PEX-108-11'**					
Laboratory ID:	01-090-02					
Diesel Range Organics	**ND**	39	NWTPH-Dx	1-17-17	1-17-17	X1
Lube Oil Range Organics	**ND**	78	NWTPH-Dx	1-17-17	1-17-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*99*	*50-150*				

Date of Report: January 18, 2017
Samples Submitted: January 17, 2017
Laboratory Reference: 1701-090
Project: 2007-098-2044

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0117S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-17-17	1-17-17	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-17-17	1-17-17	X1
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:	01-077-07										
	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*	*89*	*50-150*			

Date of Report: January 18, 2017
Samples Submitted: January 17, 2017
Laboratory Reference: 1701-090
Project: 2007-098-2044

% MOISTURE

Date Analyzed: 1-17-17

Client ID	Lab ID	% Moisture
L-PEX-107-11'	01-090-01	37
L-PEX-108-11'	01-090-02	36

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

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

Laboratory Number: 01-090

Company: HWA GeoSciences
Project Number: 2007-098-2044
Project Name: Landing
Project Manager: Arnie Sugar
Sampled by: Austin York

Turnaround Request (in working days)
(Check One)
- [ ] Same Day
- [x] 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						% Moisture
1	L-PEX-107-11'	1/17/17	8:30	Soil	2		X	~~X~~	X																		X
2	L-PEX-108-11'	↓	8:35	↓	2		X	~~X~~	X																		X

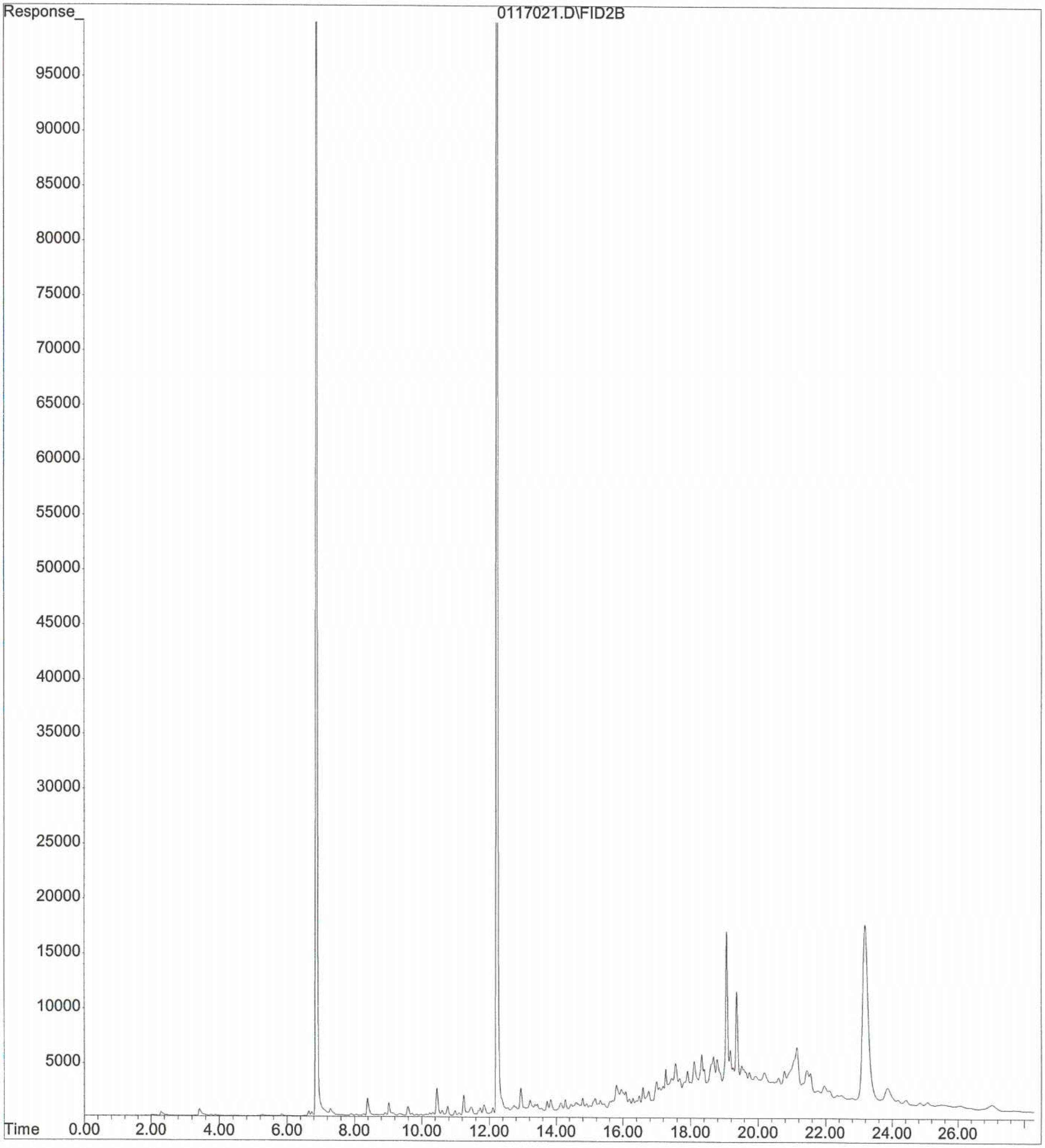
	Signature	Company	Date	Time
Relinquished	[illegible]	HWA	1/17/17	12:50
Received	[illegible]	OSE	1/17/17	1250
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Silica gel clean up on Dx

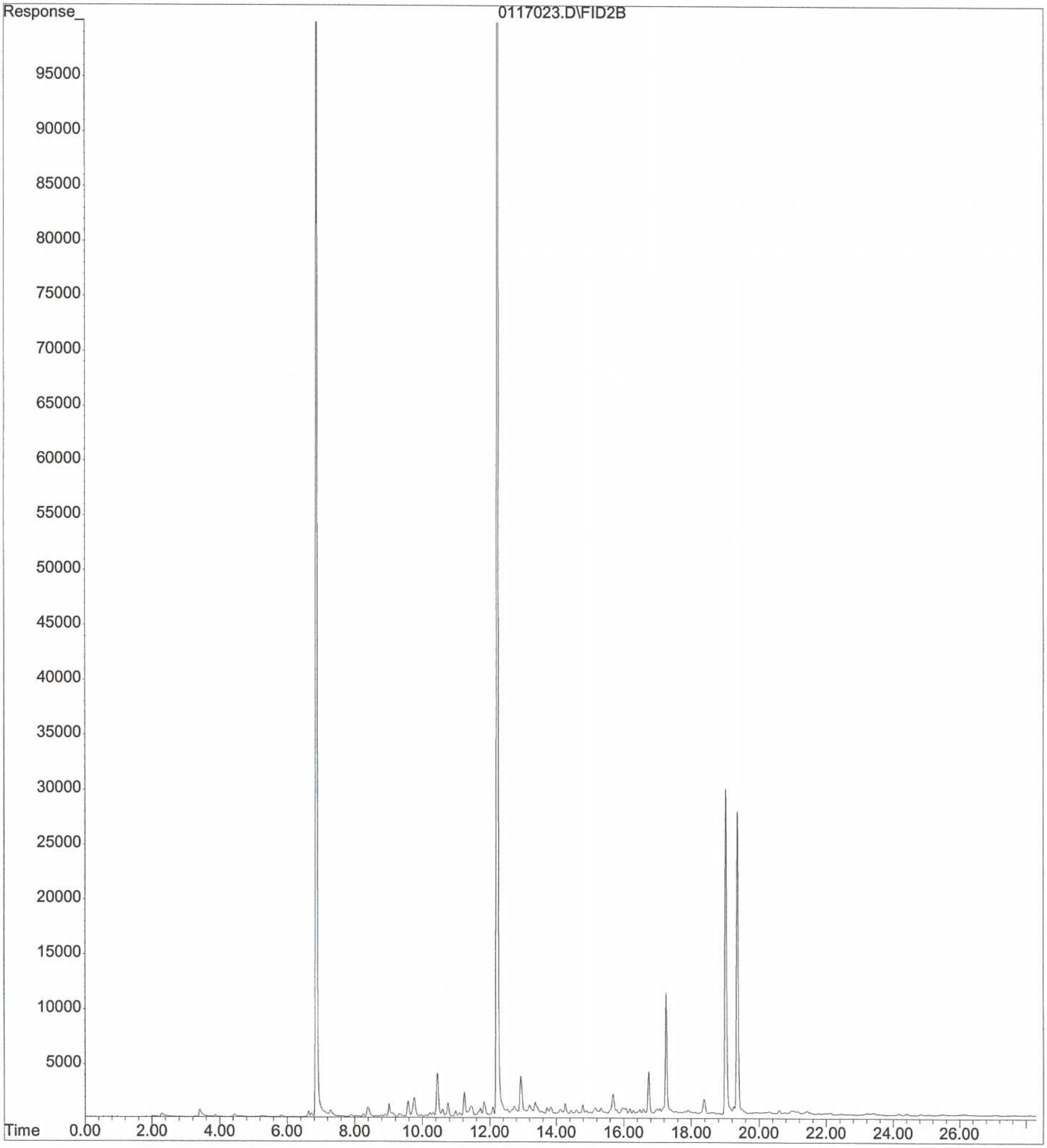
Chromatograms with final report [x]

Data Package: Standard [x] Level III [ ] Level IV [ ] Electronic Data Deliverables (EDDs) [x] ______

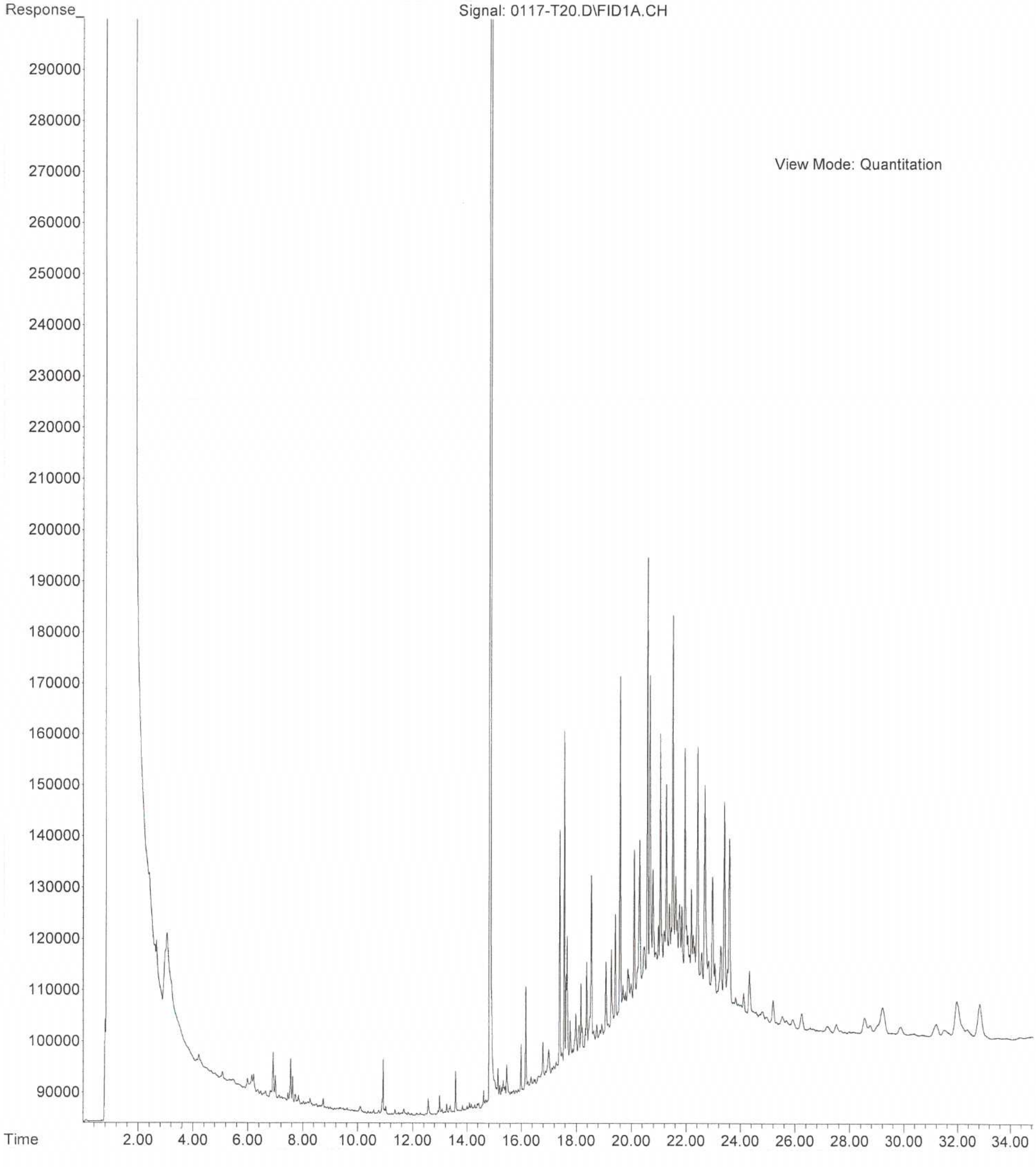
File : X:\BTEX\DARYL\DATA\D170117\0117021.D
Operator :
Acquired : 17 Jan 2017 19:27 using AcqMethod 161207VG.M
Instrument : Daryl
Sample Name: 01-090-01s
Misc Info :
Vial Number: 21



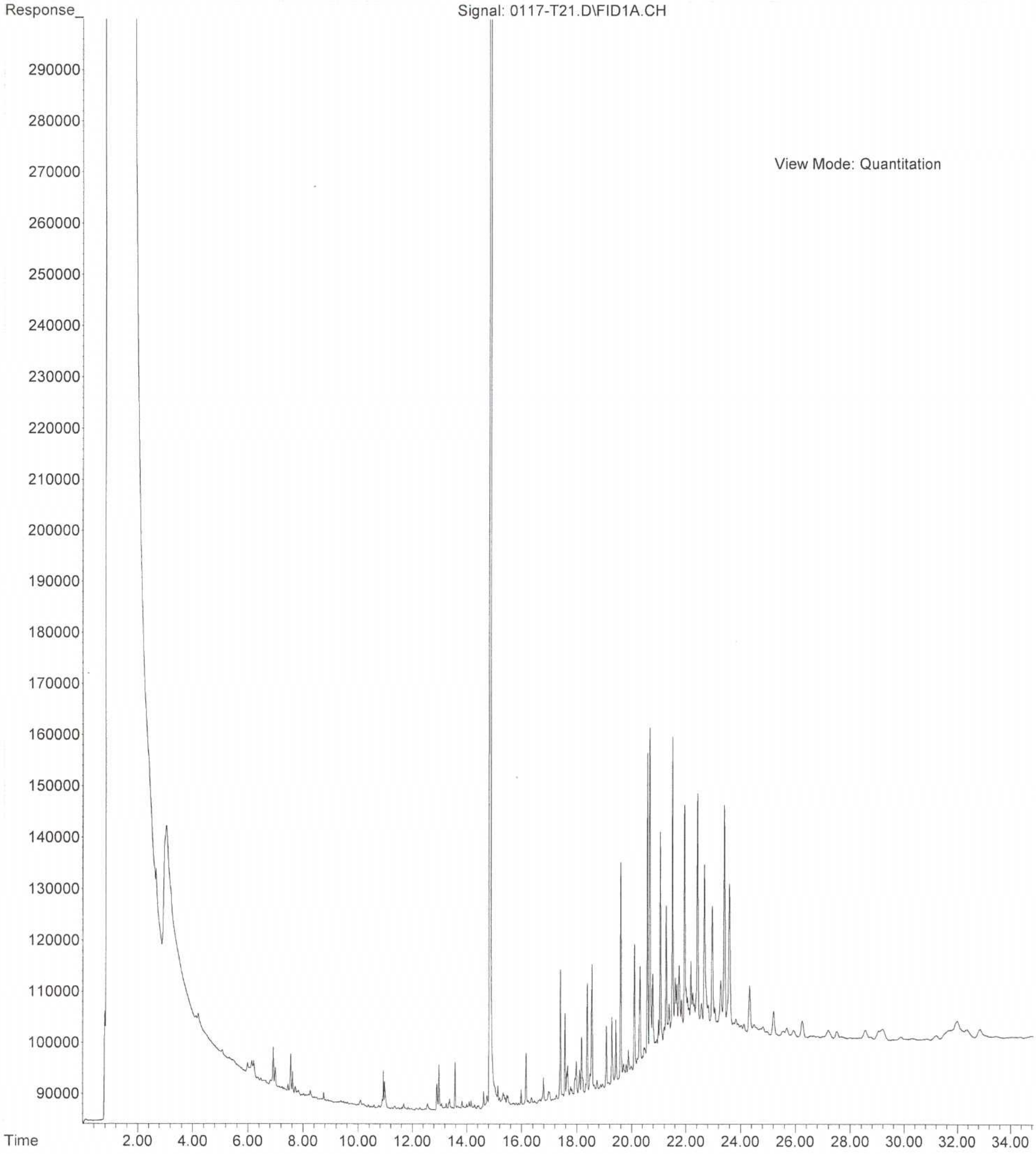
File   : X:\BTEX\DARYL\DATA\D170117\0117023.D
Operator   :
Acquired   : 17 Jan 2017 20:33   using AcqMethod 161207VG.M
Instrument :   Daryl
Sample Name: 01-090-02s
Misc Info :
Vial Number: 23



File   :X:\DIESELS\TERI\DATA\T170117\0117-T20.D
Operator   : ZT
Acquired   : 17 Jan 2017 23:54   using AcqMethod T161216F.M
Instrument :   Teri
Sample Name: 01-090-01
Misc Info :
Vial Number: 20



File   :X:\DIESELS\TERI\DATA\T170117\0117-T21.D
Operator   : ZT
Acquired   : 18 Jan 2017   0:36   using AcqMethod T161216F.M
Instrument :   Teri
Sample Name: 01-090-02
Misc Info   :
Vial Number: 21



OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

January 12, 2017

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-2044
Laboratory Reference No. 1701-044

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on January 10, 2017.

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 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

Case Narrative

Samples were collected on January 10, 2017 and received by the laboratory on January 10, 2017. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and 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.

<u>NWTPH Gx/BTEX Analysis</u>

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: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Backfill #1**					
Laboratory ID:	01-044-01					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.042	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.042	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.042	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.042	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	4.2	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*63-124*				
Client ID:	**Backfill #2**					
Laboratory ID:	01-044-02					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.043	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.043	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.043	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.043	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	4.3	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*63-124*				
Client ID:	**REX-B1-11'**					
Laboratory ID:	01-044-03					
Benzene	**ND**	0.080	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.40	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.40	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**1.1**	0.40	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.40	EPA 8021B	1-11-17	1-11-17	
Gasoline	**44**	40	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*63-124*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**REX-B2-11'**					
Laboratory ID:	01-044-04					
Benzene	**ND**	0.080	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.40	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.40	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**32**	0.40	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**0.58**	0.40	EPA 8021B	1-11-17	1-11-17	
Gasoline	**150**	40	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*81*	*63-124*				
Client ID:	**REX-1-10'**					
Laboratory ID:	01-044-05					
Benzene	**0.064**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**0.097**	0.071	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**0.32**	0.071	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**0.40**	0.071	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**0.24**	0.071	EPA 8021B	1-11-17	1-11-17	
Gasoline	**420**	7.1	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*63-124*				
Client ID:	**REX-EW-10'**					
Laboratory ID:	01-044-06					
Benzene	**0.089**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**0.18**	0.059	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**0.44**	0.059	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**0.80**	0.059	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**0.39**	0.059	EPA 8021B	1-11-17	1-11-17	
Gasoline	**420**	5.9	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*63-124*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**REX-EW-5'**					
Laboratory ID:	01-044-07					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.056	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.056	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.056	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.056	EPA 8021B	1-11-17	1-11-17	
Gasoline	**15**	5.6	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*63-124*				
Client ID:	**REX-SW-10'**					
Laboratory ID:	01-044-08					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.063	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.063	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.063	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.063	EPA 8021B	1-11-17	1-11-17	
Gasoline	**34**	6.3	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*63-124*				
Client ID:	**REX-SW-5'**					
Laboratory ID:	01-044-09					
Benzene	**0.040**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.060	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.060	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**0.080**	0.060	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.060	EPA 8021B	1-11-17	1-11-17	
Gasoline	**18**	6.0	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*63-124*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**REX-WW-10'**					
Laboratory ID:	01-044-10					
Benzene	**1.6**	0.056	EPA 8021B	1-11-17	1-11-17	
Toluene	**1.5**	0.28	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**1.7**	0.28	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**5.2**	0.28	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**1.3**	0.28	EPA 8021B	1-11-17	1-11-17	
Gasoline	**3200**	110	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*63-124*				
Client ID:	**REX-WW-5'**					
Laboratory ID:	01-044-11					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.4	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*63-124*				
Client ID:	**REX-NW-10'**					
Laboratory ID:	01-044-12					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.068	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.068	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.068	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.068	EPA 8021B	1-11-17	1-11-17	
Gasoline	**11**	6.8	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*107*	*63-124*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**REX-NW-5'**					
Laboratory ID:	01-044-13					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.054	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.4	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*63-124*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0111S1					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.0	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*63-124*				
Laboratory ID:	MB0111S2					
Benzene	**ND**	0.020	EPA 8021B	1-11-17	1-11-17	
Toluene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
o-Xylene	**ND**	0.050	EPA 8021B	1-11-17	1-11-17	
Gasoline	**ND**	5.0	NWTPH-Gx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*63-124*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	01-044-12										
	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	**8.78**	**10.1**	NA	NA		NA		NA	14	30	
Surrogate:											
Fluorobenzene						*107*	*107*	*63-124*			
Laboratory ID:	01-044-13										
	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						*89*	*90*	*63-124*			
SPIKE BLANKS											
Laboratory ID:	SB0111S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.913**	**0.970**	1.00	1.00		**91**	**97**	70-124	6	12	
Toluene	**0.905**	**0.963**	1.00	1.00		**91**	**96**	73-119	6	12	
Ethyl Benzene	**0.887**	**0.945**	1.00	1.00		**89**	**95**	74-117	6	12	
m,p-Xylene	**0.893**	**0.954**	1.00	1.00		**89**	**95**	75-117	7	13	
o-Xylene	**0.896**	**0.955**	1.00	1.00		**90**	**96**	75-116	6	12	
Surrogate:											
Fluorobenzene						*106*	*106*	*63-124*			

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Backfill #1**					
Laboratory ID:	01-044-01					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**240**	54	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				
Client ID:	**Backfill #2**					
Laboratory ID:	01-044-02					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*76*	*50-150*				
Client ID:	**REX-B1-11'**					
Laboratory ID:	01-044-03					
Diesel Range Organics	**ND**	110	NWTPH-Dx	1-11-17	1-11-17	X1
Lube Oil Range Organics	**500**	220	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*74*	*50-150*				
Client ID:	**REX-B2-11'**					
Laboratory ID:	01-044-04					
Diesel Range Organics	**ND**	110	NWTPH-Dx	1-11-17	1-11-17	X1
Lube Oil Range Organics	**760**	220	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**REX-1-10'**					
Laboratory ID:	01-044-05					
Diesel Range Organics	**ND**	87	NWTPH-Dx	1-11-17	1-11-17	U1,M1
Lube Oil	**300**	61	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*72*	*50-150*				
Client ID:	**REX-EW-10'**					
Laboratory ID:	01-044-06					
Diesel Range Organics	**ND**	70	NWTPH-Dx	1-11-17	1-11-17	U1,M1
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*79*	*50-150*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**REX-EW-5'**					
Laboratory ID:	01-044-07					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**86**	53	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				
Client ID:	**REX-SW-10'**					
Laboratory ID:	01-044-08					
Diesel Range Organics	**ND**	73	NWTPH-Dx	1-11-17	1-11-17	U1,M1
Lube Oil	**240**	60	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*78*	*50-150*				
Client ID:	**REX-SW-5'**					
Laboratory ID:	01-044-09					
Diesel Range Organics	**ND**	460	NWTPH-Dx	1-11-17	1-11-17	U1
Lube Oil	**3500**	300	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*78*	*50-150*				
Client ID:	**REX-WW-10'**					
Laboratory ID:	01-044-10					
Diesel Range Organics	**ND**	890	NWTPH-Dx	1-11-17	1-11-17	U1,M1
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*78*	*50-150*				
Client ID:	**REX-WW-5'**					
Laboratory ID:	01-044-11					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil Range Organics	**ND**	54	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				
Client ID:	**REX-NW-10'**					
Laboratory ID:	01-044-12					
Diesel Range Organics	**ND**	32	NWTPH-Dx	1-11-17	1-11-17	X1
Lube Oil Range Organics	**ND**	64	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**REX-NW-5'**					
Laboratory ID:	01-044-13					
Diesel Range Organics	**ND**	27	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil	**70**	55	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*77*	*50-150*				

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0111S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-11-17	1-11-17	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-11-17	1-11-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				
Laboratory ID:	MB0111S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	1-11-17	1-11-17	X1
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	1-11-17	1-11-17	X1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-044-01										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil	**223**	**190**	NA	NA		NA		NA	16	NA	
Surrogate:											
o-Terphenyl						*79*	*78*	*50-150*			
Laboratory ID:	01-044-02										
	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						*76*	*70*	*50-150*			

Date of Report: January 12, 2017
Samples Submitted: January 10, 2017
Laboratory Reference: 1701-044
Project: 2007-098-2044

% MOISTURE

Date Analyzed: 1-10-17

Client ID	Lab ID	% Moisture
Backfill #1	01-044-01	7
Backfill #2	01-044-02	8
REX-B1-11'	01-044-03	78
REX-B2-11'	01-044-04	78
REX-1-10'	01-044-05	17
REX-EW-10'	01-044-06	17
REX-EW-5'	01-044-07	6
REX-SW-10'	01-044-08	17
REX-SW-5'	01-044-09	15
REX-WW-10'	01-044-10	13
REX-WW-5'	01-044-11	8
REX-NW-10'	01-044-12	21
REX-NW-5'	01-044-13	9

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

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

Company: HWA GeoSciences
Project Number: ~~2007~~-098-2044
Project Name: Riverside
Project Manager: Arnie Sugar
Sampled by: Austin York

Turnaround Request (in working days)
(Check One)
[X] Same Day   ~~[X] 1 Day~~ DB
[ ] 2 Days   [ ] 3 Days
[ ] Standard (7 Days) (TPH analysis 5 Days)
[ ] ________ (other)

Laboratory Number: 01-044

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up) *	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	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					% Moisture
1	Backfill #1	1/10/17	12:00	Soil	2		X		X																		X
2	Backfill #2		15:50				X		X																		
3	REX-B1-11'		11:15				X		X																		
4	REX-B2-11'		11:20				X		X																		
5	REX-1-10'		9:30				X		X																		
6	REX-EW-10'		15:15				X		X																		
7	REX-EW-5'		15:20				X		X																		
8	REX-SW-10'		15:25				X		X																		
9	REX-SW-5'		15:30				X		X																		
10	REX-WW-10'		15:35				X		X																		

	Signature	Company	Date	Time
Relinquished	Nicole Kapin	HWA	1/10/17	17:10
Received	[signature]	OSE	1/10/17	1710
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Silica gel clean up on
REX-B1-11'
REX-B2-11'
REX-NW-10'

Data Package: Standard [X] Level III ☐ Level IV ☐
Chromatograms with final report [X] Electronic Data Deliverables (EDDs) [X]

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

Laboratory Number: 01-044

Company: HWA GeoSciences
Project Number: 2007-098-2043
Project Name: Riverside
Project Manager: Arnie Sugar
Sampled by: Austin York

Turnaround Request (in working days)
(Check One)
- [x] Same Day ~~[x] 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 (☐ Acid / SG Clean-up) *	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	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					% Moisture
11	REX-WW-5'	1/10/17	15:40	Soil	2		X		X																		X
12	REX-NW-10'	↓	15:45	↓	↓		X		X																		↓
13	REX-NW-5'	↓	15:50	↓	↓		X		X																		↓

	Signature	Company	Date	Time
Relinquished	Nizah Kapin	HWA	1/10/17	17:10
Received	[signature]	OSE	1/10/17	1710
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Silica gel cleanup on
REX-B1-11'
REX-B2-11'
REX-NW-10'

Data Package: Standard [x] Level III ☐ Level IV ☐
Chromatograms with final report [x] Electronic Data Deliverables (EDDs) [x]

APPENDIX G
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^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/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^oC and -20^oC 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^oC and -20^oC 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
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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
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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
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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
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Project: 2007-98-998

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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
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
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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
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Project: 2007-98-998

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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
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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
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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
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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

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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
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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

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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*				

Date of Report: January 17, 2014
Samples Submitted: January 9, 2014
Laboratory Reference: 1401-054
Project: 2007-98-998

HALOGENATED VOLATILES EPA 8260C
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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
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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
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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

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

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

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	BLMW-12-11	1/8/14	9:40		5		X				X																X
7	BLMW-12-9	1/8/14	9:25		5		X				X																X

	Signature	Company	Date	Time
Relinquished	[signature]	HWA	1/9/14	1400
Received	[signature]	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

January 21, 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. 1401-083

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on January 14, 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 21, 2014
Samples Submitted: January 14, 2014
Laboratory Reference: 1401-083
Project: 2007-098-998

Case Narrative

Samples were collected on January 13, 2014 and received by the laboratory on January 14, 2014. 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/BTEX and Halogenated Volatiles EPA 8260C (soil) 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^oC and -20^oC 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: January 21, 2014
Samples Submitted: January 14, 2014
Laboratory Reference: 1401-083
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW-19-12.5**					
Laboratory ID:	01-083-01					
Benzene	**ND**	0.020	EPA 8021B	1-20-14	1-20-14	
Toluene	**ND**	0.052	EPA 8021B	1-20-14	1-20-14	
Ethyl Benzene	**ND**	0.052	EPA 8021B	1-20-14	1-20-14	
m,p-Xylene	**ND**	0.052	EPA 8021B	1-20-14	1-20-14	
o-Xylene	**ND**	0.052	EPA 8021B	1-20-14	1-20-14	
Gasoline	**ND**	5.2	NWTPH-Gx	1-20-14	1-20-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*71-121*				
Client ID:	**BLMW-11-14**					
Laboratory ID:	01-083-02					
Benzene	**ND**	0.027	EPA 8021B	1-20-14	1-20-14	
Toluene	**ND**	0.13	EPA 8021B	1-20-14	1-20-14	
Ethyl Benzene	**ND**	0.13	EPA 8021B	1-20-14	1-20-14	
m,p-Xylene	**ND**	0.13	EPA 8021B	1-20-14	1-20-14	
o-Xylene	**ND**	0.13	EPA 8021B	1-20-14	1-20-14	
Gasoline	**ND**	13	NWTPH-Gx	1-20-14	1-20-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*107*	*71-121*				

Date of Report: January 21, 2014
Samples Submitted: January 14, 2014
Laboratory Reference: 1401-083
Project: 2007-098-998

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0120S1					
Benzene	**ND**	0.020	EPA 8021B	1-20-14	1-20-14	
Toluene	**ND**	0.050	EPA 8021B	1-20-14	1-20-14	
Ethyl Benzene	**ND**	0.050	EPA 8021B	1-20-14	1-20-14	
m,p-Xylene	**ND**	0.050	EPA 8021B	1-20-14	1-20-14	
o-Xylene	**ND**	0.050	EPA 8021B	1-20-14	1-20-14	
Gasoline	**ND**	5.0	NWTPH-Gx	1-20-14	1-20-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*71-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-083-01										
	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						*101*	*96*	*71-121*			
MATRIX SPIKES											
Laboratory ID:	01-083-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**0.816**	**0.864**	1.00	1.00	ND	**82**	**86**	64-130	6	18	
Toluene	**0.836**	**0.883**	1.00	1.00	ND	**84**	**88**	71-133	5	15	
Ethyl Benzene	**0.833**	**0.887**	1.00	1.00	ND	**83**	**89**	72-133	6	17	
m,p-Xylene	**0.834**	**0.893**	1.00	1.00	ND	**83**	**89**	74-131	7	20	
o-Xylene	**0.824**	**0.893**	1.00	1.00	ND	**82**	**89**	69-133	8	12	
Surrogate:											
Fluorobenzene						*104*	*106*	*71-121*			

Date of Report: January 21, 2014
Samples Submitted: January 14, 2014
Laboratory Reference: 1401-083
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Equipment Blank**					
Laboratory ID:	01-083-03					
Benzene	**ND**	1.0	EPA 8021B	1-17-14	1-17-14	
Toluene	**ND**	1.0	EPA 8021B	1-17-14	1-17-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	1-17-14	1-17-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	1-17-14	1-17-14	
o-Xylene	**ND**	1.0	EPA 8021B	1-17-14	1-17-14	
Gasoline	**ND**	100	NWTPH-Gx	1-17-14	1-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*71-112*				
Client ID:	**Trip Blank**					
Laboratory ID:	01-083-04					
Benzene	**ND**	1.0	EPA 8021B	1-17-14	1-17-14	
Toluene	**ND**	1.0	EPA 8021B	1-17-14	1-17-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	1-17-14	1-17-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	1-17-14	1-17-14	
o-Xylene	**ND**	1.0	EPA 8021B	1-17-14	1-17-14	
Gasoline	**ND**	100	NWTPH-Gx	1-17-14	1-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*71-112*				

Date of Report: January 21, 2014
Samples Submitted: January 14, 2014
Laboratory Reference: 1401-083
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:	MB0117W1					
Benzene	**ND**	1.0	EPA 8021B	1-17-14	1-17-14	
Toluene	**ND**	1.0	EPA 8021B	1-17-14	1-17-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	1-17-14	1-17-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	1-17-14	1-17-14	
o-Xylene	**ND**	1.0	EPA 8021B	1-17-14	1-17-14	
Gasoline	**ND**	100	NWTPH-Gx	1-17-14	1-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*71-112*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-083-03										
	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						*85*	*84*	*71-112*			
MATRIX SPIKES											
Laboratory ID:	01-083-03										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**53.2**	**55.4**	50.0	50.0	ND	**106**	**111**	78-120	4	12	
Toluene	**53.6**	**55.4**	50.0	50.0	ND	**107**	**111**	80-121	3	12	
Ethyl Benzene	**53.3**	**54.3**	50.0	50.0	ND	**107**	**109**	81-120	2	13	
m,p-Xylene	**52.7**	**53.4**	50.0	50.0	ND	**105**	**107**	81-119	1	13	
o-Xylene	**52.6**	**52.1**	50.0	50.0	ND	**105**	**104**	79-117	1	13	
Surrogate:											
Fluorobenzene						*98*	*98*	*71-112*			

Date of Report: January 21, 2014
Samples Submitted: January 14, 2014
Laboratory Reference: 1401-083
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW-19-12.5**					
Laboratory ID:	01-083-01					
Dichlorodifluoromethane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Chloromethane	ND	0.0042	EPA 8260C	1-15-14	1-15-14	
Vinyl Chloride	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Bromomethane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Chloroethane	ND	0.0042	EPA 8260C	1-15-14	1-15-14	
Trichlorofluoromethane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
1,1-Dichloroethene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Iodomethane	ND	0.0042	EPA 8260C	1-15-14	1-15-14	
Methylene Chloride	ND	0.0042	EPA 8260C	1-15-14	1-15-14	
(trans) 1,2-Dichloroethene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
1,1-Dichloroethane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
2,2-Dichloropropane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
(cis) 1,2-Dichloroethene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Bromochloromethane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Chloroform	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
1,1,1-Trichloroethane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Carbon Tetrachloride	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
1,1-Dichloropropene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
1,2-Dichloroethane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Trichloroethene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
1,2-Dichloropropane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Dibromomethane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Bromodichloromethane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
2-Chloroethyl Vinyl Ether	ND	0.0042	EPA 8260C	1-15-14	1-15-14	
(cis) 1,3-Dichloropropene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
(trans) 1,3-Dichloropropene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	

Date of Report: January 21, 2014
Samples Submitted: January 14, 2014
Laboratory Reference: 1401-083
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW-19-12.5**					
Laboratory ID:	01-083-01					
1,1,2-Trichloroethane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Tetrachloroethene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
1,3-Dichloropropane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Dibromochloromethane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
1,2-Dibromoethane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Chlorobenzene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
1,1,1,2-Tetrachloroethane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Bromoform	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Bromobenzene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
1,1,2,2-Tetrachloroethane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
1,2,3-Trichloropropane	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
2-Chlorotoluene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
4-Chlorotoluene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
1,3-Dichlorobenzene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
1,4-Dichlorobenzene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
1,2-Dichlorobenzene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
1,2-Dibromo-3-chloropropane	ND	0.0042	EPA 8260C	1-15-14	1-15-14	
1,2,4-Trichlorobenzene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Hexachlorobutadiene	ND	0.0042	EPA 8260C	1-15-14	1-15-14	
1,2,3-Trichlorobenzene	ND	0.00083	EPA 8260C	1-15-14	1-15-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*99*	*65-129*				
Toluene-d8	*107*	*77-122*				
4-Bromofluorobenzene	*99*	*73-124*				

Date of Report: January 21, 2014
Samples Submitted: January 14, 2014
Laboratory Reference: 1401-083
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-11-14**					
Laboratory ID:	01-083-02					
Dichlorodifluoromethane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Chloromethane	ND	0.011	EPA 8260C	1-15-14	1-15-14	
Vinyl Chloride	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Bromomethane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Chloroethane	ND	0.011	EPA 8260C	1-15-14	1-15-14	
Trichlorofluoromethane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
1,1-Dichloroethene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Iodomethane	ND	0.011	EPA 8260C	1-15-14	1-15-14	
Methylene Chloride	ND	0.011	EPA 8260C	1-15-14	1-15-14	
(trans) 1,2-Dichloroethene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
1,1-Dichloroethane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
2,2-Dichloropropane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
(cis) 1,2-Dichloroethene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Bromochloromethane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Chloroform	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
1,1,1-Trichloroethane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Carbon Tetrachloride	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
1,1-Dichloropropene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
1,2-Dichloroethane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Trichloroethene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
1,2-Dichloropropane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Dibromomethane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Bromodichloromethane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
2-Chloroethyl Vinyl Ether	ND	0.011	EPA 8260C	1-15-14	1-15-14	
(cis) 1,3-Dichloropropene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
(trans) 1,3-Dichloropropene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	

Date of Report: January 21, 2014
Samples Submitted: January 14, 2014
Laboratory Reference: 1401-083
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-11-14**					
Laboratory ID:	01-083-02					
1,1,2-Trichloroethane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Tetrachloroethene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
1,3-Dichloropropane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Dibromochloromethane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
1,2-Dibromoethane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Chlorobenzene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
1,1,1,2-Tetrachloroethane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Bromoform	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Bromobenzene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
1,1,2,2-Tetrachloroethane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
1,2,3-Trichloropropane	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
2-Chlorotoluene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
4-Chlorotoluene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
1,3-Dichlorobenzene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
1,4-Dichlorobenzene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
1,2-Dichlorobenzene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
1,2-Dibromo-3-chloropropane	ND	0.011	EPA 8260C	1-15-14	1-15-14	
1,2,4-Trichlorobenzene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Hexachlorobutadiene	ND	0.011	EPA 8260C	1-15-14	1-15-14	
1,2,3-Trichlorobenzene	ND	0.0022	EPA 8260C	1-15-14	1-15-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*98*	*65-129*				
Toluene-d8	*103*	*77-122*				
4-Bromofluorobenzene	*89*	*73-124*				

Date of Report: January 21, 2014
Samples Submitted: January 14, 2014
Laboratory Reference: 1401-083
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0115S1					
Dichlorodifluoromethane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Chloromethane	ND	0.0050	EPA 8260C	1-15-14	1-15-14	
Vinyl Chloride	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Bromomethane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Chloroethane	ND	0.0050	EPA 8260C	1-15-14	1-15-14	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Iodomethane	ND	0.0050	EPA 8260C	1-15-14	1-15-14	
Methylene Chloride	ND	0.0050	EPA 8260C	1-15-14	1-15-14	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Bromochloromethane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Chloroform	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Trichloroethene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Dibromomethane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Bromodichloromethane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
2-Chloroethyl Vinyl Ether	ND	0.0050	EPA 8260C	1-15-14	1-15-14	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	

Date of Report: January 21, 2014
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Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0115S1					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Tetrachloroethene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Dibromochloromethane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Chlorobenzene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Bromoform	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Bromobenzene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
2-Chlorotoluene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
4-Chlorotoluene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260C	1-15-14	1-15-14	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	1-15-14	1-15-14	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	1-15-14	1-15-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*102*	*65-129*				
Toluene-d8	*109*	*77-122*				
4-Bromofluorobenzene	*102*	*73-124*				

Date of Report: January 21, 2014
Samples Submitted: January 14, 2014
Laboratory Reference: 1401-083
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
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:	01-083-01										
	MS	MSD	MS	MSD		MS	MSD				
1,1-Dichloroethene	**0.0262**	**0.0278**	0.0367	0.0334	ND	71	83	57-140	15	17	
Benzene	**0.0270**	**0.0270**	0.0367	0.0334	ND	74	81	62-124	9	15	
Trichloroethene	**0.0267**	**0.0269**	0.0367	0.0334	ND	73	81	59-116	10	15	
Toluene	**0.0286**	**0.0285**	0.0367	0.0334	ND	78	85	62-114	9	16	
Chlorobenzene	**0.0289**	**0.0277**	0.0367	0.0334	ND	79	83	57-122	5	18	
Surrogate:											
Dibromofluoromethane						*94*	*91*	*65-129*			
Toluene-d8						*101*	*99*	*77-122*			
4-Bromofluorobenzene						*95*	*95*	*73-124*			

Date of Report: January 21, 2014
Samples Submitted: January 14, 2014
Laboratory Reference: 1401-083
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Equipment Blank**					
Laboratory ID:	01-083-03					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Chloromethane	ND	1.0	EPA 8260C	1-14-14	1-14-14	
Vinyl Chloride	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Bromomethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Chloroethane	ND	1.0	EPA 8260C	1-14-14	1-14-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Iodomethane	ND	1.0	EPA 8260C	1-14-14	1-14-14	
Methylene Chloride	ND	1.0	EPA 8260C	1-14-14	1-14-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Bromochloromethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Chloroform	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Trichloroethene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Dibromomethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Bromodichloromethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	1-14-14	1-14-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	1-14-14	1-14-14	

Date of Report: January 21, 2014
Samples Submitted: January 14, 2014
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HALOGENATED VOLATILES EPA 8260C
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Equipment Blank**					
Laboratory ID:	01-083-03					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Tetrachloroethene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Dibromochloromethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Chlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Bromoform	ND	1.0	EPA 8260C	1-14-14	1-14-14	
Bromobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	1-14-14	1-14-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*81*	*62-122*				
Toluene-d8	*101*	*70-120*				
4-Bromofluorobenzene	*95*	*71-120*				

Date of Report: January 21, 2014
Samples Submitted: January 14, 2014
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Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Trip Blank**					
Laboratory ID:	01-083-04					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Chloromethane	ND	1.0	EPA 8260C	1-14-14	1-14-14	
Vinyl Chloride	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Bromomethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Chloroethane	ND	1.0	EPA 8260C	1-14-14	1-14-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Iodomethane	ND	1.0	EPA 8260C	1-14-14	1-14-14	
Methylene Chloride	ND	1.0	EPA 8260C	1-14-14	1-14-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Bromochloromethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Chloroform	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Trichloroethene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Dibromomethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Bromodichloromethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	1-14-14	1-14-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	1-14-14	1-14-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Trip Blank**					
Laboratory ID:	01-083-04					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Tetrachloroethene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Dibromochloromethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Chlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Bromoform	ND	1.0	EPA 8260C	1-14-14	1-14-14	
Bromobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	1-14-14	1-14-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*79*	*62-122*				
Toluene-d8	*101*	*70-120*				
4-Bromofluorobenzene	*95*	*71-120*				

Date of Report: January 21, 2014
Samples Submitted: January 14, 2014
Laboratory Reference: 1401-083
Project: 2007-098-998

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METHOD BLANK QUALITY CONTROL
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0114W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Chloromethane	ND	1.0	EPA 8260C	1-14-14	1-14-14	
Vinyl Chloride	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Bromomethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Chloroethane	ND	1.0	EPA 8260C	1-14-14	1-14-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Iodomethane	ND	1.0	EPA 8260C	1-14-14	1-14-14	
Methylene Chloride	ND	1.0	EPA 8260C	1-14-14	1-14-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Bromochloromethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Chloroform	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Trichloroethene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Dibromomethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Bromodichloromethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	1-14-14	1-14-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	1-14-14	1-14-14	

Date of Report: January 21, 2014
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HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0114W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Tetrachloroethene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Dibromochloromethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Chlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Bromoform	ND	1.0	EPA 8260C	1-14-14	1-14-14	
Bromobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	1-14-14	1-14-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	1-14-14	1-14-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	1-14-14	1-14-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*102*	*62-122*				
Toluene-d8	*102*	*70-120*				
4-Bromofluorobenzene	*96*	*71-120*				

Date of Report: January 21, 2014
Samples Submitted: January 14, 2014
Laboratory Reference: 1401-083
Project: 2007-098-998

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:	01-083-03										
	MS	MSD	MS	MSD		MS	MSD				
1,1-Dichloroethene	**10.3**	**10.1**	10.0	10.0	ND	103	101	57-133	2	15	
Benzene	**11.0**	**11.0**	10.0	10.0	ND	110	110	78-117	0	15	
Trichloroethene	**10.5**	**10.4**	10.0	10.0	ND	105	104	77-120	1	15	
Toluene	**10.6**	**10.5**	10.0	10.0	ND	106	105	80-115	1	15	
Chlorobenzene	**10.8**	**10.9**	10.0	10.0	ND	108	109	80-122	1	15	
Surrogate:											
Dibromofluoromethane						*78*	*82*	*62-122*			
Toluene-d8						*102*	*101*	*70-120*			
4-Bromofluorobenzene						*92*	*95*	*71-120*			

Date of Report: January 21, 2014
Samples Submitted: January 14, 2014
Laboratory Reference: 1401-083
Project: 2007-098-998

% MOISTURE

Date Analyzed: 1-15-14

Client ID	Lab ID	% Moisture
HZMW-19-12.5	01-083-01	14
BLMW-11-14	01-083-02	46

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

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

Laboratory Number: 01-083

Company: HWA
Project Number: 2007-098-998
Project Name: Area Wide Monitoring
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-19-12.5	1/13/14	9:45	soil	11		X				X										X
2	BLMW-11-14	1/13/14	12:40	soil	5		X				X										X
3	Equipment Blank	1/13/14	10:45	water	6		X				X										
4	Trip Blank	1/13/14	13:40	water	3		X				X										

	Signature	Company	Date	Time
Relinquished	[illegible]	HWA GeoSciences	1/14/14	8:45am
Received	Van	[illegible]	1/14	1:35
Relinquished	Van	[illegible]	1/14	1:50
Received	[illegible]	[illegible]	1/14/14	1:50
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
For QC, do MS/MSD test on sample HZMW-19-12.5

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 21, 2014

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-996
Laboratory Reference No. 1403-095

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on March 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: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

Case Narrative

Samples were collected on March 13, 2014 and received by the laboratory on March 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: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BB-3**					
Laboratory ID:	03-095-01					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Chloromethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Vinyl Chloride	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Bromomethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Chloroethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Iodomethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Methylene Chloride	ND	1.3	EPA 8260C	3-17-14	3-17-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Bromochloromethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Chloroform	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Trichloroethene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Dibromomethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Bromodichloromethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
2-Chloroethyl Vinyl Ether	ND	1.9	EPA 8260C	3-17-14	3-17-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-17-14	3-17-14	

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BB-3**					
Laboratory ID:	03-095-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Tetrachloroethene	0.30	0.20	EPA 8260C	3-17-14	3-17-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Dibromochloromethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Chlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Bromoform	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Bromobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*102*	*62-122*				
Toluene-d8	*99*	*70-120*				
4-Bromofluorobenzene	*98*	*71-120*				

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**UCCMW-4**					
Laboratory ID:	03-095-02					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Chloromethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Vinyl Chloride	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Bromomethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Chloroethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Iodomethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Methylene Chloride	ND	1.3	EPA 8260C	3-17-14	3-17-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Bromochloromethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Chloroform	0.52	0.20	EPA 8260C	3-17-14	3-17-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Trichloroethene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Dibromomethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Bromodichloromethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
2-Chloroethyl Vinyl Ether	ND	1.9	EPA 8260C	3-17-14	3-17-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-17-14	3-17-14	

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**UCCMW-4**					
Laboratory ID:	03-095-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Tetrachloroethene	0.88	0.20	EPA 8260C	3-17-14	3-17-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Dibromochloromethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Chlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Bromoform	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Bromobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*101*	*62-122*				
Toluene-d8	*100*	*70-120*				
4-Bromofluorobenzene	*97*	*71-120*				

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

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:	03-095-03					
Dichlorodifluoromethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Chloromethane	ND	5.0	EPA 8260C	3-17-14	3-17-14	
Vinyl Chloride	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Bromomethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Chloroethane	ND	5.0	EPA 8260C	3-17-14	3-17-14	
Trichlorofluoromethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,1-Dichloroethene	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Iodomethane	ND	5.0	EPA 8260C	3-17-14	3-17-14	
Methylene Chloride	ND	6.5	EPA 8260C	3-17-14	3-17-14	
(trans) 1,2-Dichloroethene	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,1-Dichloroethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
2,2-Dichloropropane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
(cis) 1,2-Dichloroethene	120	1.0	EPA 8260C	3-17-14	3-17-14	
Bromochloromethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Chloroform	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,1,1-Trichloroethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Carbon Tetrachloride	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,1-Dichloropropene	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,2-Dichloroethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Trichloroethene	30	1.0	EPA 8260C	3-17-14	3-17-14	
1,2-Dichloropropane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Dibromomethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Bromodichloromethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
2-Chloroethyl Vinyl Ether	ND	9.5	EPA 8260C	3-17-14	3-17-14	
(cis) 1,3-Dichloropropene	ND	1.0	EPA 8260C	3-17-14	3-17-14	
(trans) 1,3-Dichloropropene	ND	1.0	EPA 8260C	3-17-14	3-17-14	

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1**					
Laboratory ID:	03-095-03					
1,1,2-Trichloroethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Tetrachloroethene	130	1.0	EPA 8260C	3-17-14	3-17-14	
1,3-Dichloropropane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Dibromochloromethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,2-Dibromoethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Chlorobenzene	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,1,1,2-Tetrachloroethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Bromoform	ND	5.0	EPA 8260C	3-17-14	3-17-14	
Bromobenzene	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,1,2,2-Tetrachloroethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,2,3-Trichloropropane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
2-Chlorotoluene	ND	1.0	EPA 8260C	3-17-14	3-17-14	
4-Chlorotoluene	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,3-Dichlorobenzene	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,4-Dichlorobenzene	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,2-Dichlorobenzene	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,2-Dibromo-3-chloropropane	ND	5.0	EPA 8260C	3-17-14	3-17-14	
1,2,4-Trichlorobenzene	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Hexachlorobutadiene	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,2,3-Trichlorobenzene	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*93*	*62-122*				
Toluene-d8	*94*	*70-120*				
4-Bromofluorobenzene	*90*	*71-120*				

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

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:	MB0317W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Chloromethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Vinyl Chloride	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Bromomethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Chloroethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Iodomethane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Methylene Chloride	ND	1.3	EPA 8260C	3-17-14	3-17-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Bromochloromethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Chloroform	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Trichloroethene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Dibromomethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Bromodichloromethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
2-Chloroethyl Vinyl Ether	ND	1.9	EPA 8260C	3-17-14	3-17-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-17-14	3-17-14	

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0317W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Tetrachloroethene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Dibromochloromethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Chlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Bromoform	ND	1.0	EPA 8260C	3-17-14	3-17-14	
Bromobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	3-17-14	3-17-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	3-17-14	3-17-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	3-17-14	3-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*100*	*62-122*				
Toluene-d8	*99*	*70-120*				
4-Bromofluorobenzene	*98*	*71-120*				

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

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:	03-095-01										
	MS	MSD	MS	MSD		MS	MSD				
1,1-Dichloroethene	**10.0**	**9.93**	10.0	10.0	ND	100	99	57-133	0	15	
Benzene	**9.68**	**9.70**	10.0	10.0	ND	97	97	78-117	0	15	
Trichloroethene	**10.0**	**10.2**	10.0	10.0	ND	100	102	77-120	2	15	
Toluene	**9.67**	**9.78**	10.0	10.0	ND	97	98	80-115	1	15	
Chlorobenzene	**10.3**	**10.5**	10.0	10.0	ND	103	105	80-122	2	15	
Surrogate:											
Dibromofluoromethane						*102*	*101*	*62-122*			
Toluene-d8						*99*	*99*	*70-120*			
4-Bromofluorobenzene						*98*	*98*	*71-120*			

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

NITRATE (as Nitrogen)
EPA 353.2

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BB-3**					
Laboratory ID:	03-095-01					
Nitrate	**3.5**	0.050	EPA 353.2	3-14-14	3-14-14	

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**UCCMW-4**					
Laboratory ID:	03-095-02					
Nitrate	**ND**	0.050	EPA 353.2	3-14-14	3-14-14	

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1**					
Laboratory ID:	03-095-03					
Nitrate	**4.4**	0.050	EPA 353.2	3-14-14	3-14-14	

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

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:	MB0314W1					
Nitrate	**ND**	0.050	EPA 353.2	3-14-14	3-14-14	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	03-094-01								
	ORIG	DUP							
Nitrate	**0.386**	**0.430**	NA	NA	NA	NA	11	16	
MATRIX SPIKE									
Laboratory ID:	03-094-01								
	MS		MS		MS				
Nitrate	**2.71**		2.00	0.386	116	84-119	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0314W1								
	SB		SB		SB				
Nitrate	**2.17**		2.00	NA	109	86-114	NA	NA	

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

SULFATE
ASTM D516-07

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BB-3**					
Laboratory ID:	03-095-01					
Sulfate	**20**	5.0	ASTM D516-07	3-18-14	3-18-14	

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**UCCMW-4**					
Laboratory ID:	03-095-02					
Sulfate	**8.1**	5.0	ASTM D516-07	3-18-14	3-18-14	

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1**					
Laboratory ID:	03-095-03					
Sulfate	**27**	10	ASTM D516-07	3-18-14	3-18-14	

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

SULFATE
ASTM D516-07
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0318W2					
Sulfate	**ND**	5.0	ASTM D516-07	3-18-14	3-18-14	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	03-094-01								
	ORIG	DUP							
Sulfate	**16.7**	**17.6**	NA	NA	NA	NA	5	10	
MATRIX SPIKE									
Laboratory ID:	03-094-01								
	MS		MS		MS				
Sulfate	**38.1**		20.0	16.7	107	82-123	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0318W2								
	SB		SB		SB				
Sulfate	**10.8**		10.0	NA	108	91-114	NA	NA	

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

TOTAL ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BB-3**					
Laboratory ID:	03-095-01					
Total Organic Carbon	**ND**	1.0	SM 5310B	3-20-14	3-20-14	
Client ID:	**UCCMW-4**					
Laboratory ID:	03-095-02					
Total Organic Carbon	**ND**	1.0	SM 5310B	3-20-14	3-20-14	
Client ID:	**MW-1**					
Laboratory ID:	03-095-03					
Total Organic Carbon	**ND**	1.0	SM 5310B	3-20-14	3-20-14	

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

TOTAL ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0320W1					
Total Organic Carbon	**ND**	1.0	SM 5310B	3-20-14	3-20-14	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	03-094-01								
	ORIG	DUP							
Total Organic Carbon	**1.51**	**1.54**	NA	NA	NA	NA	2	15	
MATRIX SPIKE									
Laboratory ID:	03-094-01								
	MS		MS		MS				
Total Organic Carbon	**11.7**		10.0	1.51	102	70-124	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0320W1								
	SB		SB		SB				
Total Organic Carbon	**10.3**		10.0	NA	103	91-119	NA	NA	

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

DISSOLVED GASES
RSK 175

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BB-3**					
Laboratory ID:	03-095-01					
Methane	**ND**	0.50	RSK 175	3-18-14	3-18-14	
Ethane	**ND**	0.50	RSK 175	3-18-14	3-18-14	
Ethene	**ND**	0.50	RSK 175	3-18-14	3-18-14	
Client ID:	**UCCMW-4**					
Laboratory ID:	03-095-02					
Methane	**ND**	0.50	RSK 175	3-18-14	3-18-14	
Ethane	**ND**	0.50	RSK 175	3-18-14	3-18-14	
Ethene	**ND**	0.50	RSK 175	3-18-14	3-18-14	
Client ID:	**MW-1**					
Laboratory ID:	03-095-03					
Methane	**ND**	0.50	RSK 175	3-18-14	3-18-14	
Ethane	**ND**	0.50	RSK 175	3-18-14	3-18-14	
Ethene	**ND**	0.50	RSK 175	3-18-14	3-18-14	

Date of Report: March 21, 2014
Samples Submitted: March 13, 2014
Laboratory Reference: 1403-095
Project: 2007-098-996

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:	MB0318W1					
Methane	**ND**	0.50	RSK 175	3-18-14	3-18-14	
Ethane	**ND**	0.50	RSK 175	3-18-14	3-18-14	
Ethene	**ND**	0.50	RSK 175	3-18-14	3-18-14	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0318W1										
	SB	SBD	SB	SBD		SB	SBD				
Methane	**4.13**	**4.57**	4.42	4.42	N/A	**93**	**103**	75-125	10	25	
Ethane	**7.56**	**8.64**	8.32	8.32	N/A	**91**	**104**	75-125	13	25	
Ethene	**7.54**	**9.26**	7.77	7.77	N/A	**97**	**119**	75-125	20	25	

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

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: 03-095

Company: HWA
Project Number: 2007-098-996
Project Name: Bothell
Project Manager: Bugsm
Sampled by: Atkiny

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	Nitrate	Sulfate	TOC	Methane/Ethane/Ethene		% Moisture
1	BB-3	3/13/14	1115	W	2						/											/	/	/	/		
2	UCC MW-4	↓	1215	W	7						/											/	/	/	/		
3	MW-1	↓	1315	W	7						/											/	/	/	/		

	Signature	Company	Date	Time
Relinquished	[signature]	HWA GeoSciences	3/13/14	3pm
Received	[signature]	Speedy #4	3/13/14	3pm
Relinquished	[signature]	Speedy #4	3/13/14	325pm
Received	[signature]	OSE	3/13/14	1525
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

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

June 20, 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. 1406-118

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on June 12, 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 20, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118
Project: 2007-098-998

Case Narrative

Samples were collected on June 11 and 12, 2014 and received by the laboratory on June 12, 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 20, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-11**					
Laboratory ID:	06-118-01					
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*				
Client ID:	**MW-1**					
Laboratory ID:	06-118-02					
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*				
Client ID:	**BLMW-12**					
Laboratory ID:	06-118-03					
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 20, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118
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:	06-118-04					
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	*97*	*71-112*				

Date of Report: June 20, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118
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*			

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NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-11**					
Laboratory ID:	06-118-01					
Diesel Range Organics	**0.28**	0.26	NWTPH-Dx	6-17-14	6-17-14	
Lube Oil	**0.47**	0.41	NWTPH-Dx	6-17-14	6-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				
Client ID:	**MW-1**					
Laboratory ID:	06-118-02					
Diesel Range Organics	**ND**	0.28	NWTPH-Dx	6-17-14	6-17-14	
Lube Oil Range Organics	**ND**	0.45	NWTPH-Dx	6-17-14	6-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				
Client ID:	**BLMW-12**					
Laboratory ID:	06-118-03					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	6-17-14	6-17-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	6-17-14	6-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*96*	*50-150*				

Date of Report: June 20, 2014
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NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0617W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	6-17-14	6-17-14	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	6-17-14	6-17-14	
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:	06-118-01										
	ORIG	DUP									
Diesel Range Organics	**0.278**	**0.278**	NA	NA		NA		NA	0	NA	
Lube Oil	**0.466**	**0.450**	NA	NA		NA		NA	3	NA	
Surrogate:											
o-Terphenyl						*89*	*96*	*50-150*			

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-11**					
Laboratory ID:	06-118-01					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chloromethane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Vinyl Chloride	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromomethane	ND	0.35	EPA 8260C	6-17-14	6-17-14	
Chloroethane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Iodomethane	ND	2.1	EPA 8260C	6-17-14	6-17-14	
Methylene Chloride	ND	1.0	EPA 8260C	6-17-14	6-17-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromochloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chloroform	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Trichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Dibromomethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromodichloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	6-17-14	6-17-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-11**					
Laboratory ID:	06-118-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Tetrachloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Dibromochloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromoform	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Bromobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*100*	*62-122*				
Toluene-d8	*96*	*70-120*				
4-Bromofluorobenzene	*98*	*71-120*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1**					
Laboratory ID:	06-118-02					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chloromethane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Vinyl Chloride	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromomethane	ND	0.35	EPA 8260C	6-17-14	6-17-14	
Chloroethane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Iodomethane	ND	2.1	EPA 8260C	6-17-14	6-17-14	
Methylene Chloride	ND	1.0	EPA 8260C	6-17-14	6-17-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromochloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chloroform	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Trichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Dibromomethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromodichloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	6-17-14	6-17-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1**					
Laboratory ID:	06-118-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Tetrachloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Dibromochloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromoform	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Bromobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*95*	*62-122*				
Toluene-d8	*95*	*70-120*				
4-Bromofluorobenzene	*96*	*71-120*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-12**					
Laboratory ID:	06-118-03					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chloromethane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Vinyl Chloride	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromomethane	ND	0.35	EPA 8260C	6-17-14	6-17-14	
Chloroethane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Iodomethane	ND	2.1	EPA 8260C	6-17-14	6-17-14	
Methylene Chloride	ND	1.0	EPA 8260C	6-17-14	6-17-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromochloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chloroform	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Trichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Dibromomethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromodichloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	6-17-14	6-17-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-12**					
Laboratory ID:	06-118-03					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Tetrachloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Dibromochloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromoform	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Bromobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*94*	*62-122*				
Toluene-d8	*99*	*70-120*				
4-Bromofluorobenzene	*97*	*71-120*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Trip Blank**					
Laboratory ID:	06-118-04					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chloromethane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Vinyl Chloride	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromomethane	ND	0.35	EPA 8260C	6-17-14	6-17-14	
Chloroethane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Iodomethane	ND	2.1	EPA 8260C	6-17-14	6-17-14	
Methylene Chloride	ND	1.0	EPA 8260C	6-17-14	6-17-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromochloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chloroform	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Trichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Dibromomethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromodichloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	6-17-14	6-17-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	

Date of Report: June 20, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Trip Blank**					
Laboratory ID:	06-118-04					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Tetrachloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Dibromochloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromoform	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Bromobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*97*	*62-122*				
Toluene-d8	*101*	*70-120*				
4-Bromofluorobenzene	*99*	*71-120*				

Date of Report: June 20, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118
Project: 2007-098-998

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:	MB0617W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chloromethane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Vinyl Chloride	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromomethane	ND	0.35	EPA 8260C	6-17-14	6-17-14	
Chloroethane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Iodomethane	ND	2.1	EPA 8260C	6-17-14	6-17-14	
Methylene Chloride	ND	1.0	EPA 8260C	6-17-14	6-17-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromochloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chloroform	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Trichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Dibromomethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromodichloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	6-17-14	6-17-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	

Date of Report: June 20, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0617W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Tetrachloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Dibromochloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromoform	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Bromobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*96*	*62-122*				
Toluene-d8	*96*	*70-120*				
4-Bromofluorobenzene	*100*	*71-120*				

Date of Report: June 20, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0617W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**9.29**	**8.84**	10.0	10.0	93	88	63-142	5	17	
Benzene	**9.10**	**8.60**	10.0	10.0	91	86	78-125	6	15	
Trichloroethene	**8.02**	**7.55**	10.0	10.0	80	76	75-125	6	15	
Toluene	**9.38**	**8.81**	10.0	10.0	94	88	80-125	6	15	
Chlorobenzene	**9.07**	**8.63**	10.0	10.0	91	86	80-140	5	15	
Surrogate:										
Dibromofluoromethane					*92*	*92*	*62-122*			
Toluene-d8					*95*	*94*	*70-120*			
4-Bromofluorobenzene					*95*	*95*	*71-120*			

Date of Report: June 20, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118
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:	06-118-01					
Client ID:	**BLMW-11**					
Arsenic	**150**	3.0	200.8		6-16-14	
Cadmium	**ND**	4.0	200.8		6-16-14	
Chromium	**ND**	10	200.8		6-16-14	
Lead	**ND**	1.0	200.8		6-16-14	
Lab ID:	06-118-02					
Client ID:	**MW-1**					
Arsenic	**6.6**	3.0	200.8		6-16-14	
Cadmium	**ND**	4.0	200.8		6-16-14	
Chromium	**ND**	10	200.8		6-16-14	
Lead	**ND**	1.0	200.8		6-16-14	
Lab ID:	06-118-03					
Client ID:	**BLMW-12**					
Arsenic	**120**	3.0	200.8		6-16-14	
Cadmium	**ND**	4.0	200.8		6-16-14	
Chromium	**ND**	10	200.8		6-16-14	
Lead	**ND**	1.0	200.8		6-16-14	

Date of Report: June 20, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118
Project: 2007-098-998

DISSOLVED METALS
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
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Lead	200.8	**ND**	1.0

Date of Report: June 20, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118
Project: 2007-098-998

DISSOLVED METALS
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	**8.06**	**8.33**	3	3.0	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	

Date of Report: June 20, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118
Project: 2007-098-998

DISSOLVED METALS
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	
Cadmium	200	**204**	102	**204**	102	0	
Chromium	200	**196**	98	**198**	99	1	
Lead	200	**190**	95	**192**	96	1	

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

OnSite Environmental Inc.
Analytical Laboratory Testing Services
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Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Laboratory Number: 06-118

Company: HWA GeoSciences
Project Number: 2007-098-998
Project Name: Area Wide Monitoring, Loading
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	Dissolved As, Cd, Cr, Pb	Total As, Cd, Cr, Pb				% Moisture
1	BL MW-11	6/11/14	14:05	W	9		X		X		X											X	↓				
2	MW-1	6/11/14	16:28	↓	↓		X		X		X											X	Hold				
3	BL MW-12	6/12/14	9:26	↓	↓		X		X		X											X	↓				
4	Trip Blank	6/12/14	10:40	↓	2		X				X												↓				

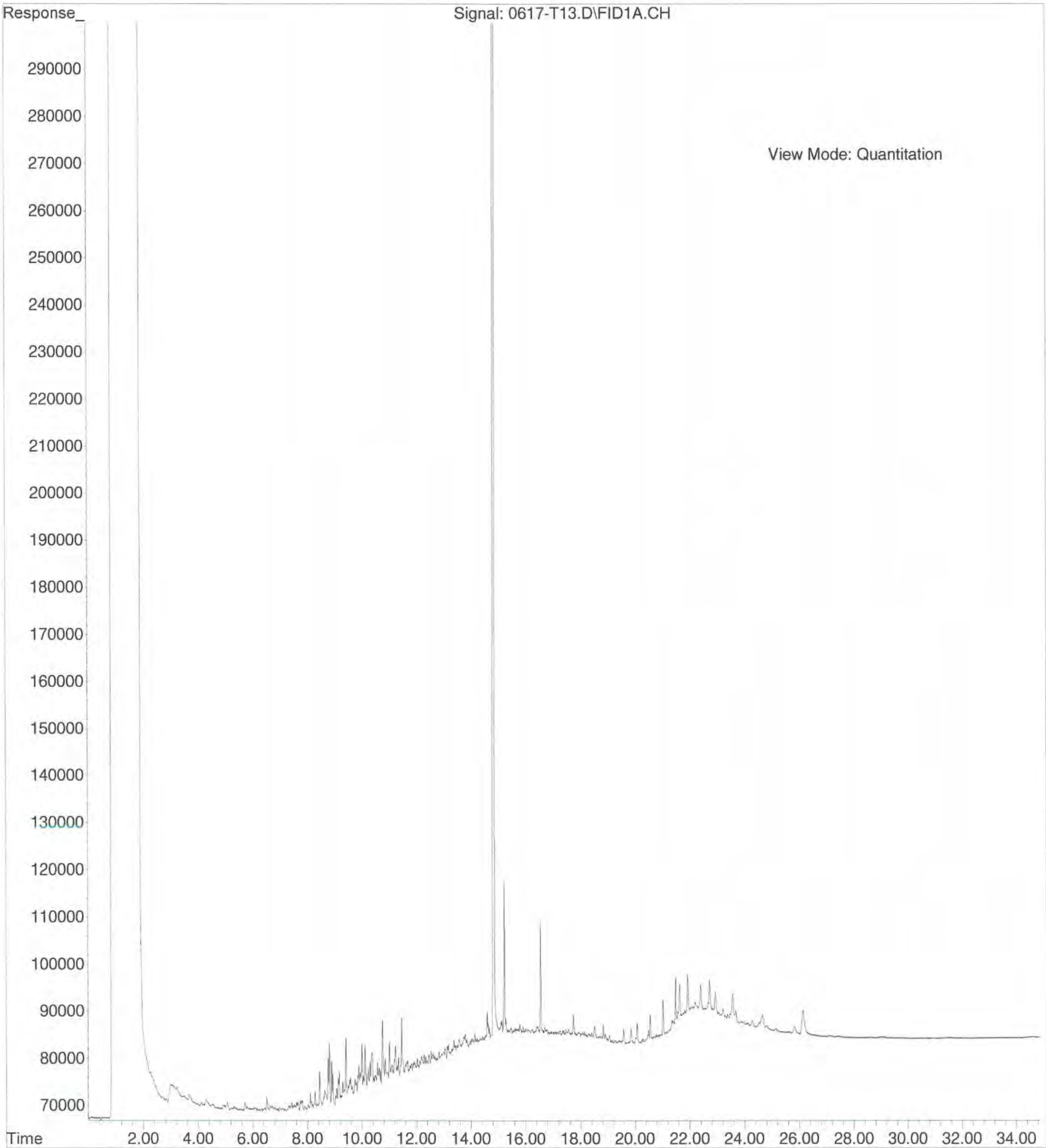
	Signature	Company	Date	Time
Relinquished	[signature]	HWA GeoSciences	6/12/14	1:53pm
Received	Pat Miller	Speedy	6-12-14	1:55
Relinquished	Pat Miller	Speedy	6-12-14	2:35
Received	[signature]	OSE	6/12/14	1435
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

File   :X:\DIESELS\TERI\DATA\T140617\0617-T13.D
Operator   : ZT
Acquired   : 17 Jun 2014 19:56   using AcqMethod T140401F.M
Instrument :   Teri
Sample Name: 06-118-01
Misc Info :
Vial Number: 13



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July 29, 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. 1406-118B

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on June 12, 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: July 29, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118B
Project: 2007-098-998

Case Narrative

Samples were collected on June 11 and 12, 2014 and received by the laboratory on June 12, 2014. 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: July 29, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118B
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:	06-118-01					
Client ID:	**BLMW-11**					
Arsenic	**150**	3.3	200.8	7-24-14	7-24-14	
Lab ID:	06-118-02					
Client ID:	**MW-1**					
Arsenic	**10**	3.3	200.8	7-24-14	7-24-14	
Lab ID:	06-118-03					
Client ID:	**BLMW-12**					
Arsenic	**130**	3.3	200.8	7-24-14	7-24-14	

Date of Report: July 29, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118B
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 7-24-14
Date Analyzed: 7-24-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0724WM1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3

Date of Report: July 29, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118B
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 7-24-14
Date Analyzed: 7-24-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 07-116-05

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.3	

Date of Report: July 29, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118B
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 7-24-14
Date Analyzed: 7-24-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 07-116-05

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	111	**110**	99	**117**	105	6	

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

OnSite Environmental Inc.
Analytical Laboratory Testing Services
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Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Laboratory Number: 06-118

Company: HWA GeoSciences
Project Number: 2007-098-998
Project Name: Area Wide Monitoring, Loading
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	Dissolved As, Cd, Cr, Pb	Total As, Cd, Cr, Pb		TOTAL ARSENIC		% Moisture
1	BL MW-11	6/11/14	14:05	W	9		X		X		X											X	Hold		⊗		
2	MW-1	6/11/14	16:28	↓	↓		X		X		X											X	↓		⊗		
3	BL MW-12	6/12/14	9:26	↓	↓		X		X		X											X	↓		⊗		
4	Trip Blank	6/12/14	10:40	↓	2		X				X																

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	[signature]	HWA GeoSciences	6/12/14	1:53pm	⊗ Added 7/21/14. DB (STA)
Received	[signature]	Speedy	6-12-14	1:55	
Relinquished	Pat Miller	Speedy	6-12-14	2:35	
Received	[signature]	OSE	6/12/14	1435	
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

OnSite
Environmental Inc.

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August 12, 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. 1406-118C

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on June 12, 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: August 12, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118C
Project: 2007-098-998

Case Narrative

Samples were collected on June 11 and 12, 2014 and received by the laboratory on June 12, 2014. 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: August 12, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118C
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:	06-118-01					
Client ID:	**BLMW-11**					
Cadmium	**ND**	4.4	200.8	7-24-14	7-24-14	
Chromium	**ND**	11	200.8	7-24-14	7-24-14	
Lead	**ND**	1.1	200.8	7-24-14	7-24-14	
Lab ID:	06-118-02					
Client ID:	**MW-1**					
Cadmium	**ND**	4.4	200.8	7-24-14	7-24-14	
Chromium	**19**	11	200.8	7-24-14	7-24-14	
Lead	**20**	1.1	200.8	7-24-14	7-24-14	
Lab ID:	06-118-03					
Client ID:	**BLMW-12**					
Cadmium	**ND**	4.4	200.8	7-24-14	7-24-14	
Chromium	**ND**	11	200.8	7-24-14	7-24-14	
Lead	**1.3**	1.1	200.8	7-24-14	7-24-14	

Date of Report: August 12, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118C
Project: 2007-098-998

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 7-24-14
Date Analyzed: 7-24-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0724WM1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Lead	200.8	**ND**	1.1

Date of Report: August 12, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118C
Project: 2007-098-998

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 7-24-14
Date Analyzed: 7-24-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 07-116-05

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: August 12, 2014
Samples Submitted: June 12, 2014
Laboratory Reference: 1406-118C
Project: 2007-098-998

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 7-24-14
Date Analyzed: 7-24-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 07-116-05

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	111	**110**	99	**115**	104	5	
Chromium	111	**104**	93	**109**	98	5	
Lead	111	**105**	94	**111**	100	6	

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

OnSite Environmental Inc.

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Chain of Custody

Page 1 of 1

Laboratory Number: 06-118

Company: HWA GeoSciences
Project Number: 2007-098-998
Project Name: Area Wide Monitoring, Loading
Project Manager: Arnie Sagar
Sampled by: Norm Nielsen

Turnaround Request (in working days)
(Check One)
- [ ] Same Day
- [ ] 1 Day
- [ ] 2 Days
- [ ] 3 Days
- [x] 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	Dissolved As, Cd, Cr, Pb	Total As, Cd, Cr, Pb		TOTAL ARSENIC	TOTAL Cd, Cr, Pb	% Moisture
1	BL MW-11	6/11/14	14:05	W	9		X		X		X											X	Hold		X	O	
2	MW-1	6/11/14	16:28				X	\	X		X											X			X	O	
3	BL MW-12	6/12/14	9:26				X		X		X											X			X	O	
4	Trip Blank	6/12/14	10:40		2		X				X																

	Signature	Company	Date	Time
Relinquished	[signature]	HWA GeoSciences	6/12/14	1:53pm
Received	Pat Mil[signature]	Speedy	6-12-14	1:55
Relinquished	Pat Miller	Speedy	6-12-14	2:35
Received	[signature]	OSE	6/12/14	1435
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

(X) Added 7/21/14. DB (STA)
O Added 8/4/14. DB (STA)

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

June 20, 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. 1406-129

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 20, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-129
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^{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: June 20, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-129
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-10**					
Laboratory ID:	06-129-01					
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 20, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-129
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 20, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-129
Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-10**					
Laboratory ID:	06-129-01					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	6-14-14	6-17-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	6-14-14	6-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				

Date of Report: June 20, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-129
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 20, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-129
Project: 2007-098-998

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:	06-129-01					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chloromethane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Vinyl Chloride	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromomethane	ND	0.35	EPA 8260C	6-17-14	6-17-14	
Chloroethane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Iodomethane	ND	2.1	EPA 8260C	6-17-14	6-17-14	
Methylene Chloride	ND	1.0	EPA 8260C	6-17-14	6-17-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromochloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chloroform	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Trichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Dibromomethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromodichloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	6-17-14	6-17-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	

Date of Report: June 20, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-129
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-10**					
Laboratory ID:	06-129-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Tetrachloroethene	4.0	0.20	EPA 8260C	6-17-14	6-17-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Dibromochloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromoform	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Bromobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*98*	*62-122*				
Toluene-d8	*100*	*70-120*				
4-Bromofluorobenzene	*98*	*71-120*				

Date of Report: June 20, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-129
Project: 2007-098-998

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:	MB0617W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chloromethane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Vinyl Chloride	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromomethane	ND	0.35	EPA 8260C	6-17-14	6-17-14	
Chloroethane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Iodomethane	ND	2.1	EPA 8260C	6-17-14	6-17-14	
Methylene Chloride	ND	1.0	EPA 8260C	6-17-14	6-17-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromochloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chloroform	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Trichloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Dibromomethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromodichloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	6-17-14	6-17-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-17-14	6-17-14	

Date of Report: June 20, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-129
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0617W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Tetrachloroethene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Dibromochloromethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Chlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Bromoform	ND	1.0	EPA 8260C	6-17-14	6-17-14	
Bromobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	6-17-14	6-17-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	6-17-14	6-17-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	6-17-14	6-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*96*	*62-122*				
Toluene-d8	*96*	*70-120*				
4-Bromofluorobenzene	*100*	*71-120*				

Date of Report: June 20, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-129
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0617W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**9.29**	**8.84**	10.0	10.0	93	88	63-142	5	17	
Benzene	**9.10**	**8.60**	10.0	10.0	91	86	78-125	6	15	
Trichloroethene	**8.02**	**7.55**	10.0	10.0	80	76	75-125	6	15	
Toluene	**9.38**	**8.81**	10.0	10.0	94	88	80-125	6	15	
Chlorobenzene	**9.07**	**8.63**	10.0	10.0	91	86	80-140	5	15	
Surrogate:										
Dibromofluoromethane					*92*	*92*	*62-122*			
Toluene-d8					*95*	*94*	*70-120*			
4-Bromofluorobenzene					*95*	*95*	*71-120*			

Date of Report: June 20, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-129
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:	06-129-01					
Client ID:	**BLMW-10**					
Arsenic	**ND**	3.0	200.8		6-16-14	
Cadmium	**ND**	4.0	200.8		6-16-14	
Chromium	**ND**	10	200.8		6-16-14	
Lead	**ND**	1.0	200.8		6-16-14	

Date of Report: June 20, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-129
Project: 2007-098-998

DISSOLVED METALS
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
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Lead	200.8	**ND**	1.0

Date of Report: June 20, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-129
Project: 2007-098-998

DISSOLVED METALS
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	**8.06**	**8.33**	3	3.0	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	

Date of Report: June 20, 2014
Samples Submitted: June 13, 2014
Laboratory Reference: 1406-129
Project: 2007-098-998

DISSOLVED METALS
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	
Cadmium	200	**204**	102	**204**	102	0	
Chromium	200	**196**	98	**198**	99	1	
Lead	200	**190**	95	**192**	96	1	

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

06-129

Chain of Custody and Laboratory Anaylsis Request

DATE: 6/13/14
PAGE: 1 of 1

2007-098

PROJECT NAME: AreaWide Monitoring, Landing #: 998
SAMPLERS NAME: Norm Nielsen PHONE: 206-450-0552
SAMPLERS SIGNATURE: [signature] DATE: 6/13/14
HWA CONTACT: Arnie Sagar PHONE:

ANALYSIS REQUESTED

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-Gx/BTEX	NWTPH-Dx	HVOCs	Total As, Cd, Cr, Pb	Dissolved As, Cd, Cr, Pb									EDD	REMARKS
BLMW-10	6/13/14	8:02	W	1	9	X	X	X	HOLD	X										

TURNAROUND TIME
☐ DAYS
☒ STANDARD

PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	Chrissi Fisk	[signature]	HWA GeoSciences	6/13/14	2:52pm	
Received by:	K. TRIBBLE	[signature]	Speedy	6/13/14	252	
Relinquished by:	K TRIBBLE	[signature]	Speedy	6/13/14	341	
Received by:	M VOUN	[signature]	OSE	6/13/14	1541	

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

June 24, 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. 1406-141

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on June 16, 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 24, 2014
Samples Submitted: June 16, 2014
Laboratory Reference: 1406-141
Project: 2007-098-998

Case Narrative

Samples were collected on June 13 and 16, 2014 and received by the laboratory on June 16, 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 24, 2014
Samples Submitted: June 16, 2014
Laboratory Reference: 1406-141
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Dup 6/13/14**					
Laboratory ID:	06-141-01					
Benzene	**ND**	1.0	EPA 8021B	6-17-14	6-17-14	
Toluene	**ND**	1.0	EPA 8021B	6-17-14	6-17-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	6-17-14	6-17-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	6-17-14	6-17-14	
o-Xylene	**ND**	1.0	EPA 8021B	6-17-14	6-17-14	
Gasoline	**ND**	100	NWTPH-Gx	6-17-14	6-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*71-112*				
Client ID:	**BLMW-9**					
Laboratory ID:	06-141-02					
Benzene	**ND**	1.0	EPA 8021B	6-17-14	6-17-14	
Toluene	**ND**	1.0	EPA 8021B	6-17-14	6-17-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	6-17-14	6-17-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	6-17-14	6-17-14	
o-Xylene	**ND**	1.0	EPA 8021B	6-17-14	6-17-14	
Gasoline	**ND**	100	NWTPH-Gx	6-17-14	6-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*71-112*				

Date of Report: June 24, 2014
Samples Submitted: June 16, 2014
Laboratory Reference: 1406-141
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:	MB0617W1					
Benzene	**ND**	1.0	EPA 8021B	6-17-14	6-17-14	
Toluene	**ND**	1.0	EPA 8021B	6-17-14	6-17-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	6-17-14	6-17-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	6-17-14	6-17-14	
o-Xylene	**ND**	1.0	EPA 8021B	6-17-14	6-17-14	
Gasoline	**ND**	100	NWTPH-Gx	6-17-14	6-17-14	
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:	06-141-01										
	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*	*97*	*71-112*			
SPIKE BLANKS											
Laboratory ID:	SB0617W1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**50.4**	**51.4**	50.0	50.0		**101**	**103**	86-116	2	11	
Toluene	**51.5**	**51.9**	50.0	50.0		**103**	**104**	86-117	1	12	
Ethyl Benzene	**51.7**	**51.9**	50.0	50.0		**103**	**104**	86-118	0	13	
m,p-Xylene	**51.8**	**52.2**	50.0	50.0		**104**	**104**	86-118	1	14	
o-Xylene	**51.4**	**51.9**	50.0	50.0		**103**	**104**	85-117	1	14	
Surrogate:											
Fluorobenzene						*98*	*97*	*71-112*			

Date of Report: June 24, 2014
Samples Submitted: June 16, 2014
Laboratory Reference: 1406-141
Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Dup 6/13/14**					
Laboratory ID:	06-141-01					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	6-17-14	6-17-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	6-17-14	6-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*75*	*50-150*				
Client ID:	**BLMW-9**					
Laboratory ID:	06-141-02					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	6-17-14	6-17-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	6-17-14	6-17-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*81*	*50-150*				

Date of Report: June 24, 2014
Samples Submitted: June 16, 2014
Laboratory Reference: 1406-141
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:	MB0617W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	6-17-14	6-17-14	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	6-17-14	6-17-14	
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:	06-141-01										
	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						*75*	*88*	*50-150*			

Date of Report: June 24, 2014
Samples Submitted: June 16, 2014
Laboratory Reference: 1406-141
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Dup 6/13/14**					
Laboratory ID:	06-141-01					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Chloromethane	ND	1.0	EPA 8260C	6-18-14	6-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Bromomethane	ND	0.39	EPA 8260C	6-18-14	6-18-14	
Chloroethane	ND	1.0	EPA 8260C	6-18-14	6-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Iodomethane	ND	2.1	EPA 8260C	6-18-14	6-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	6-18-14	6-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Chloroform	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Trichloroethene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Dibromomethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	6-18-14	6-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-18-14	6-18-14	

Date of Report: June 24, 2014
Samples Submitted: June 16, 2014
Laboratory Reference: 1406-141
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Dup 6/13/14**					
Laboratory ID:	06-141-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Bromoform	ND	1.0	EPA 8260C	6-18-14	6-18-14	
Bromobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	6-18-14	6-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*94*	*62-122*				
Toluene-d8	*98*	*70-120*				
4-Bromofluorobenzene	*101*	*71-120*				

Date of Report: June 24, 2014
Samples Submitted: June 16, 2014
Laboratory Reference: 1406-141
Project: 2007-098-998

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:	06-141-02					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Chloromethane	ND	1.0	EPA 8260C	6-18-14	6-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Bromomethane	ND	0.39	EPA 8260C	6-18-14	6-18-14	
Chloroethane	ND	1.0	EPA 8260C	6-18-14	6-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Iodomethane	ND	2.1	EPA 8260C	6-18-14	6-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	6-18-14	6-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Chloroform	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Trichloroethene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Dibromomethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	6-18-14	6-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-18-14	6-18-14	

Date of Report: June 24, 2014
Samples Submitted: June 16, 2014
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HALOGENATED VOLATILES EPA 8260C
Page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-9**					
Laboratory ID:	06-141-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Bromoform	ND	1.0	EPA 8260C	6-18-14	6-18-14	
Bromobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	6-18-14	6-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*97*	*62-122*				
Toluene-d8	*101*	*70-120*				
4-Bromofluorobenzene	*101*	*71-120*				

Date of Report: June 24, 2014
Samples Submitted: June 16, 2014
Laboratory Reference: 1406-141
Project: 2007-098-998

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:	MB0618W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Chloromethane	ND	1.0	EPA 8260C	6-18-14	6-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Bromomethane	ND	0.39	EPA 8260C	6-18-14	6-18-14	
Chloroethane	ND	1.0	EPA 8260C	6-18-14	6-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Iodomethane	ND	2.1	EPA 8260C	6-18-14	6-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	6-18-14	6-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Chloroform	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Trichloroethene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Dibromomethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	6-18-14	6-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-18-14	6-18-14	

Date of Report: June 24, 2014
Samples Submitted: June 16, 2014
Laboratory Reference: 1406-141
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0618W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Bromoform	ND	1.0	EPA 8260C	6-18-14	6-18-14	
Bromobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	6-18-14	6-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	6-18-14	6-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	6-18-14	6-18-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*97*	*62-122*				
Toluene-d8	*98*	*70-120*				
4-Bromofluorobenzene	*98*	*71-120*				

Date of Report: June 24, 2014
Samples Submitted: June 16, 2014
Laboratory Reference: 1406-141
Project: 2007-098-998

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:	06-073-02										
	MS	MSD	MS	MSD		MS	MSD				
1,1-Dichloroethene	**8.27**	**9.02**	10.0	10.0	ND	83	90	57-133	9	15	
Benzene	**8.59**	**8.85**	10.0	10.0	ND	86	89	78-117	3	15	
Trichloroethene	**8.09**	**7.78**	10.0	10.0	ND	81	78	77-120	4	15	
Toluene	**9.24**	**9.02**	10.0	10.0	ND	92	90	80-115	2	15	
Chlorobenzene	**8.74**	**8.61**	10.0	10.0	ND	87	86	80-122	1	15	
Surrogate:											
Dibromofluoromethane						*93*	*96*	*62-122*			
Toluene-d8						*97*	*96*	*70-120*			
4-Bromofluorobenzene						*95*	*97*	*71-120*			

Date of Report: June 24, 2014
Samples Submitted: June 16, 2014
Laboratory Reference: 1406-141
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:	06-141-01					
Client ID:	**Dup 6/13/14**					
Arsenic	**3.2**	3.0	200.8		6-24-14	
Cadmium	**ND**	4.0	200.8		6-24-14	
Chromium	**ND**	10	200.8		6-24-14	
Lead	**ND**	1.0	200.8		6-24-14	
Lab ID:	06-141-02					
Client ID:	**BLMW-9**					
Arsenic	**ND**	3.0	200.8		6-24-14	
Cadmium	**ND**	4.0	200.8		6-24-14	
Chromium	**ND**	10	200.8		6-24-14	
Lead	**ND**	1.0	200.8		6-24-14	

Date of Report: June 24, 2014
Samples Submitted: June 16, 2014
Laboratory Reference: 1406-141
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed:	6-24-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0618F1

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: June 24, 2014
Samples Submitted: June 16, 2014
Laboratory Reference: 1406-141
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed: 6-24-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 06-141-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**3.24**	**3.60**	10	3.0	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	

Date of Report: June 24, 2014
Samples Submitted: June 16, 2014
Laboratory Reference: 1406-141
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed: 6-24-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 06-141-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**234**	115	**235**	116	0	
Cadmium	200	**231**	116	**225**	112	3	
Chromium	200	**192**	96	**187**	93	3	
Lead	200	**204**	102	**205**	102	0	

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

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

Company: HWA GeoSciences
Project Number: 2007-098-998
Project Name: AreaWide Monitoring, Landing
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: 06-141

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 As, Cd, Cr, Pb	Dissolved As, Cd, Cr, Pb				% Moisture
1	Dup 6/13/14	6/13/14	14:20	W	9		X		X		X											Hold	X				
2	BL MW-9	6/16/14	10:20	W	9		X		X		X												X				

	Signature	Company	Date	Time
Relinquished	[illegible]	HWA GeoSciences	6-16-14	13:35
Received	[illegible]	Speedy Msngr	6-16-14	1335
Relinquished	[illegible]	" "	6-16-14	1402
Received	[illegible]	OSE	6/16/14	1402
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

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

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 $2^{o}C$ 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 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
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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
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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*			

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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*				

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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
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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*			

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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	

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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	

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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

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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	

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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	

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Samples Submitted: September 11, 2014
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Project: 2007-098-2008

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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	

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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*				

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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	

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Samples Submitted: September 11, 2014
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Project: 2007-098-2008

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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*				

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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	

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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*				

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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	

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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*				

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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	

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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*				

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Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
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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	

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Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
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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*			

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

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: KAtt DATE: 9/11/14
HWA CONTACT: Arnie Sugar PHONE:

TURNAROUND TIME
☐ DAYS
☑ STANDARD

ANALYSIS REQUESTED

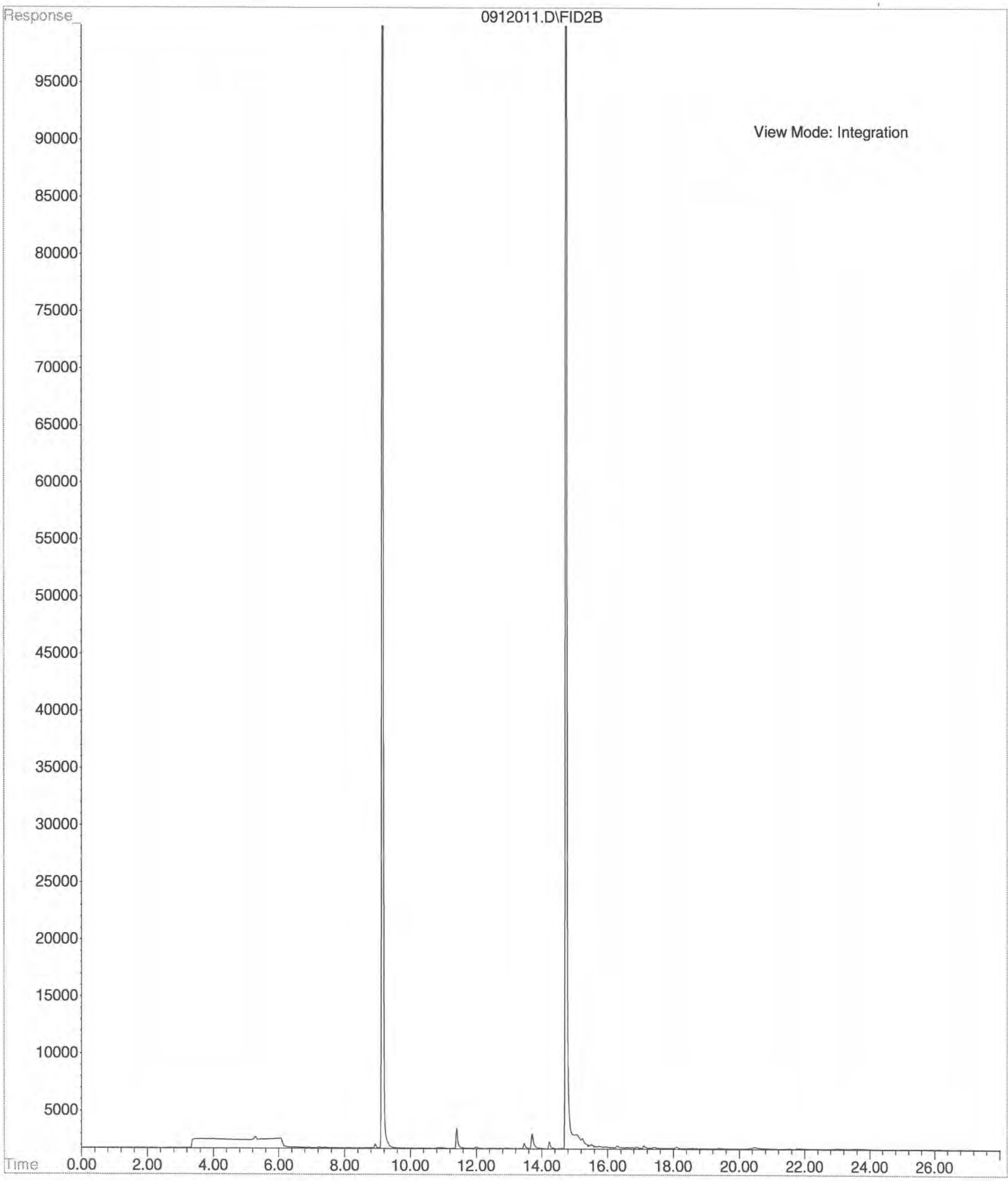
	HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPHG	Dx	BTEX	Total Metals	Diss Metals	HVOCs	EDD	REMARKS
1	BPMW4	9/9/14	930	W		7	\	\	\	\	\			Run D initially
2	BPMW5	⎮	1245	W		7	\	\	\	\	\			Archive T metals
3	BLMW11	⎮	545	W		9	\	\	\	\	\	\		
4	BLMW8	9/10/14	900	W		9	\	\	\	\	\	\		Metals:
5	BLMW7	⎮	1015	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	KAtt	HWA	9/11/14	830	
Received by: T Har	T Harrl	Speed	9-11-14	833	
Relinquished by: T H	T Harle	Speed	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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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
```

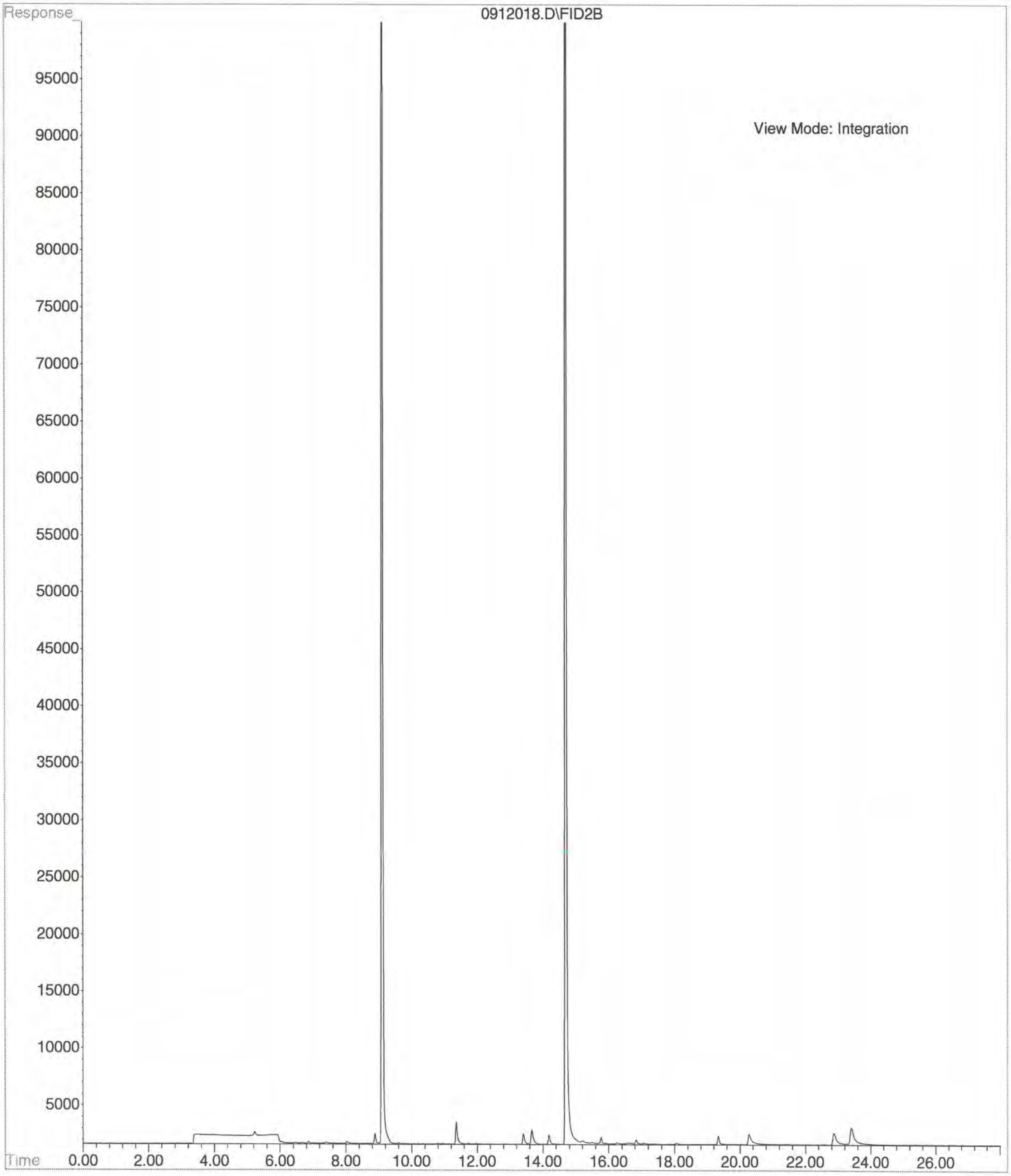

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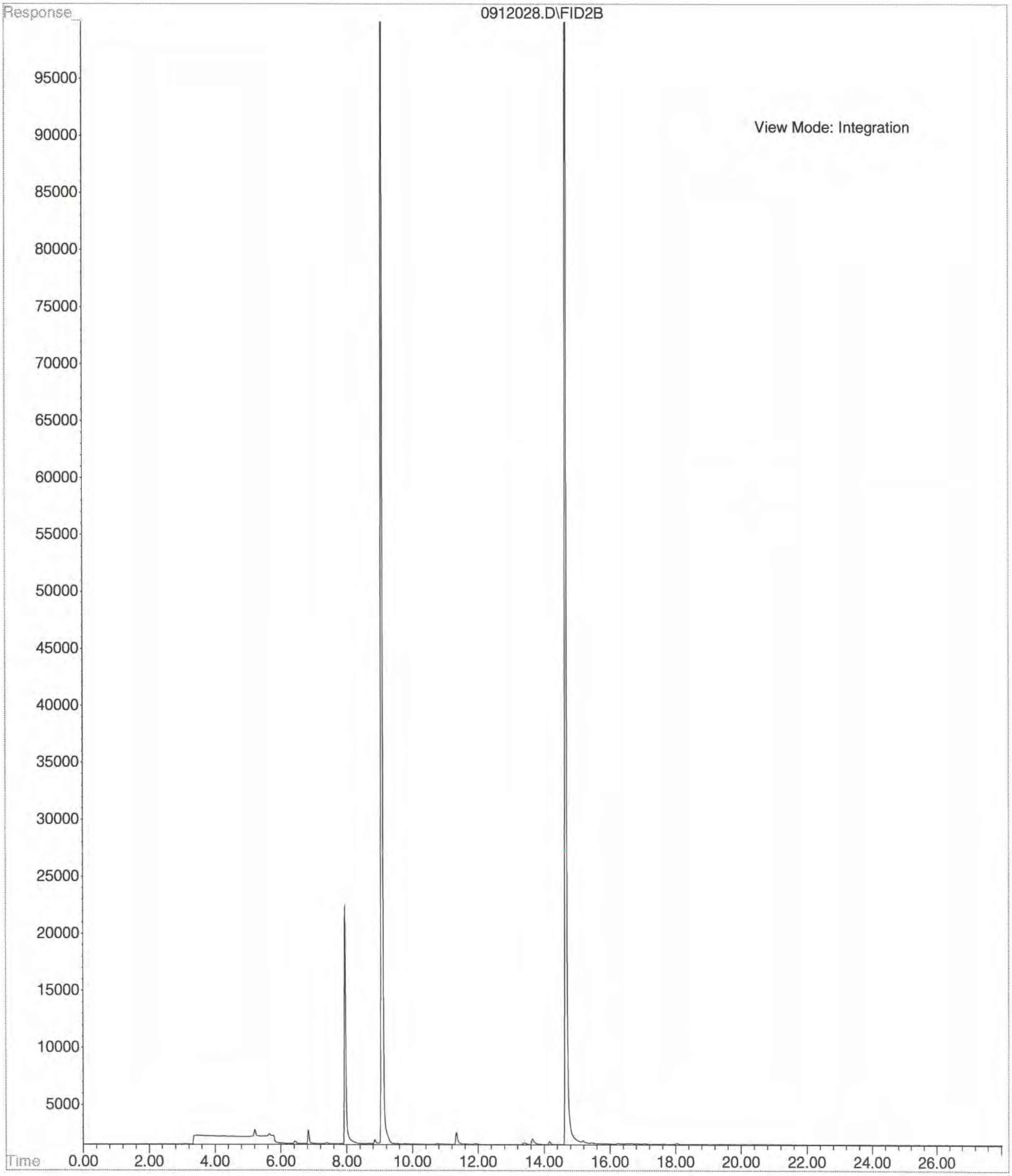
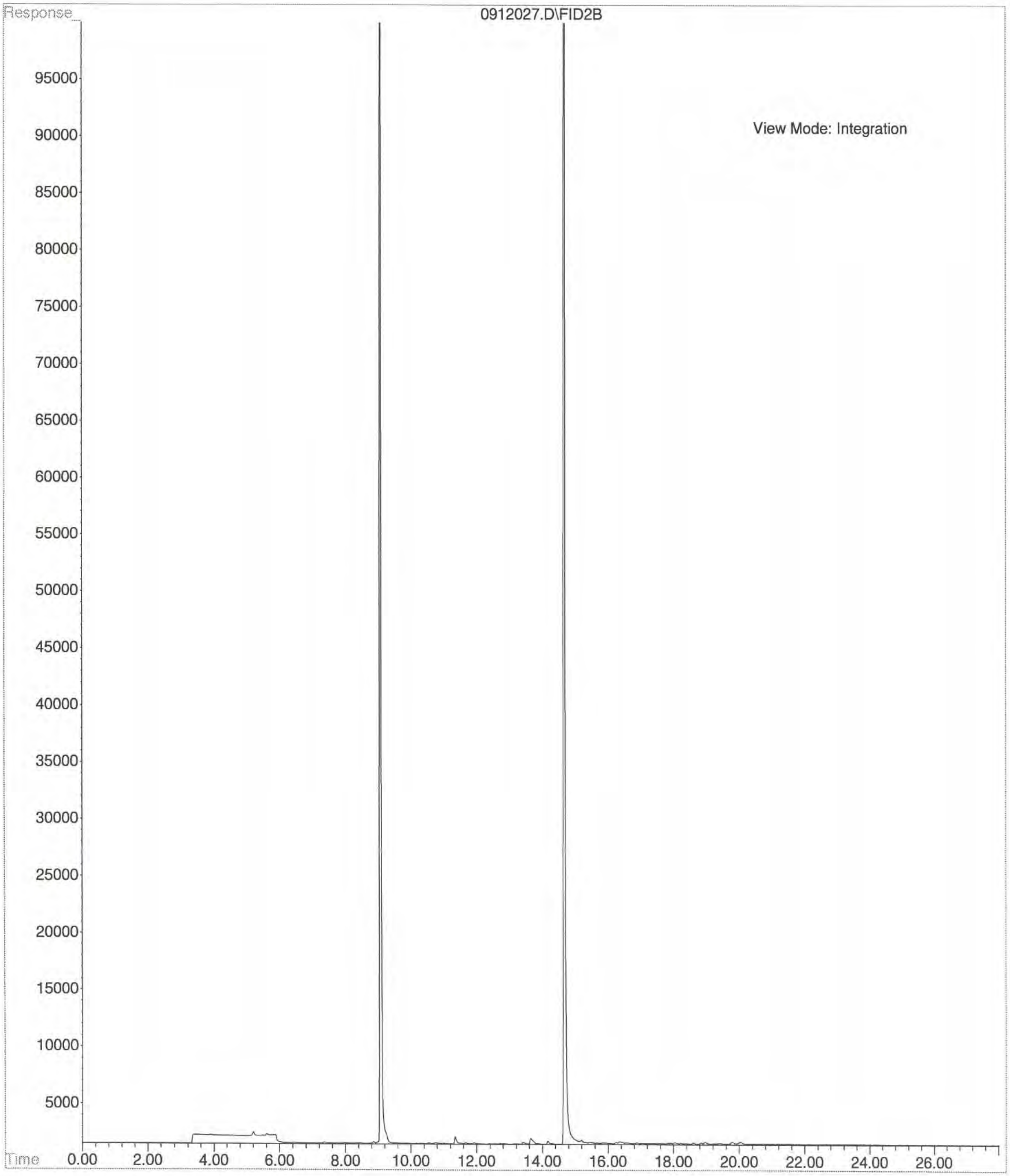
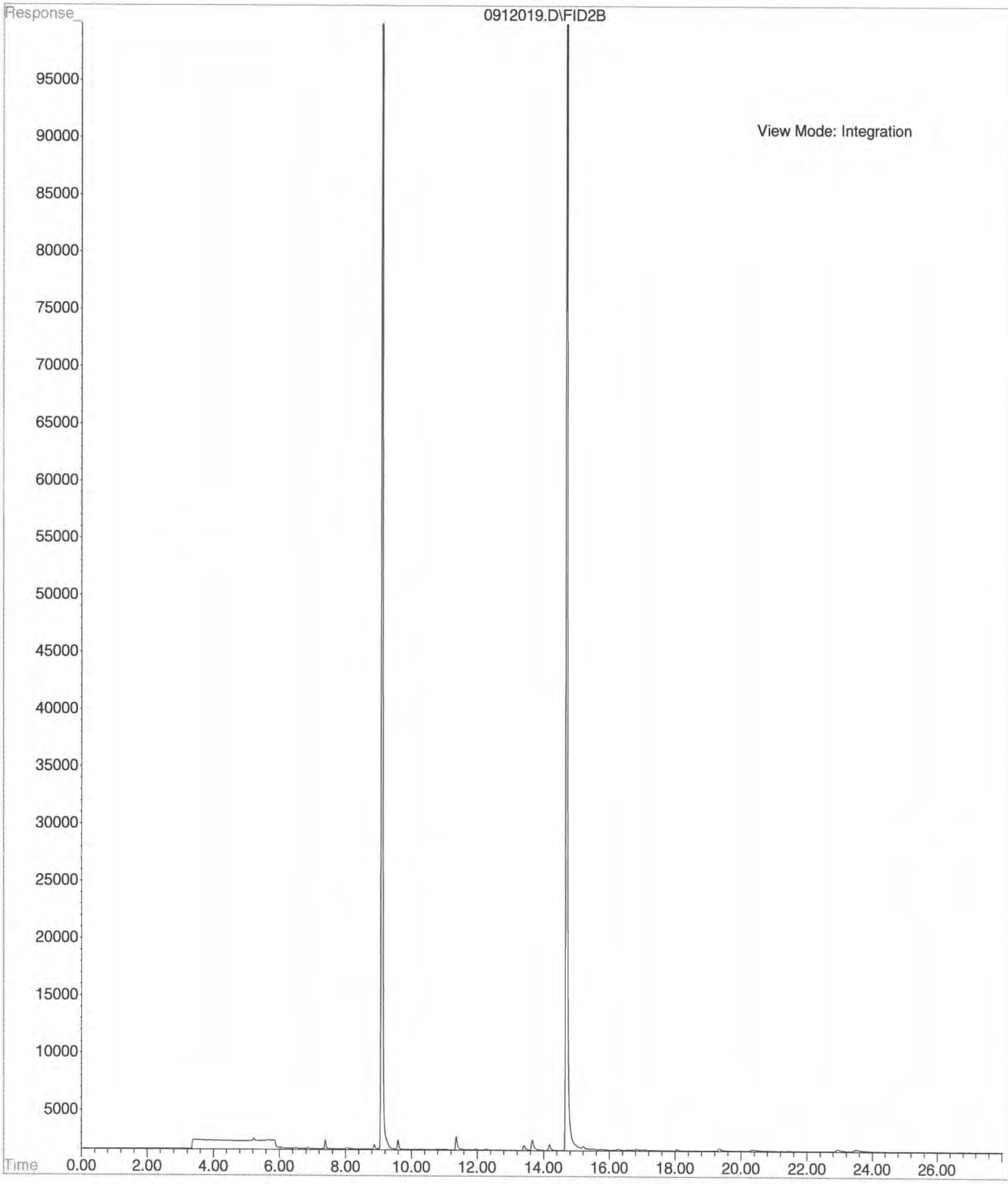
Operator    :
Acquired    : 13 Sep 2014   2:17     using AcqMethod 140822B.M
Instrument :    HOPE
Sample Name: 09-107-03f
Misc Info   : V2-35-19
Vial Number: 28
```



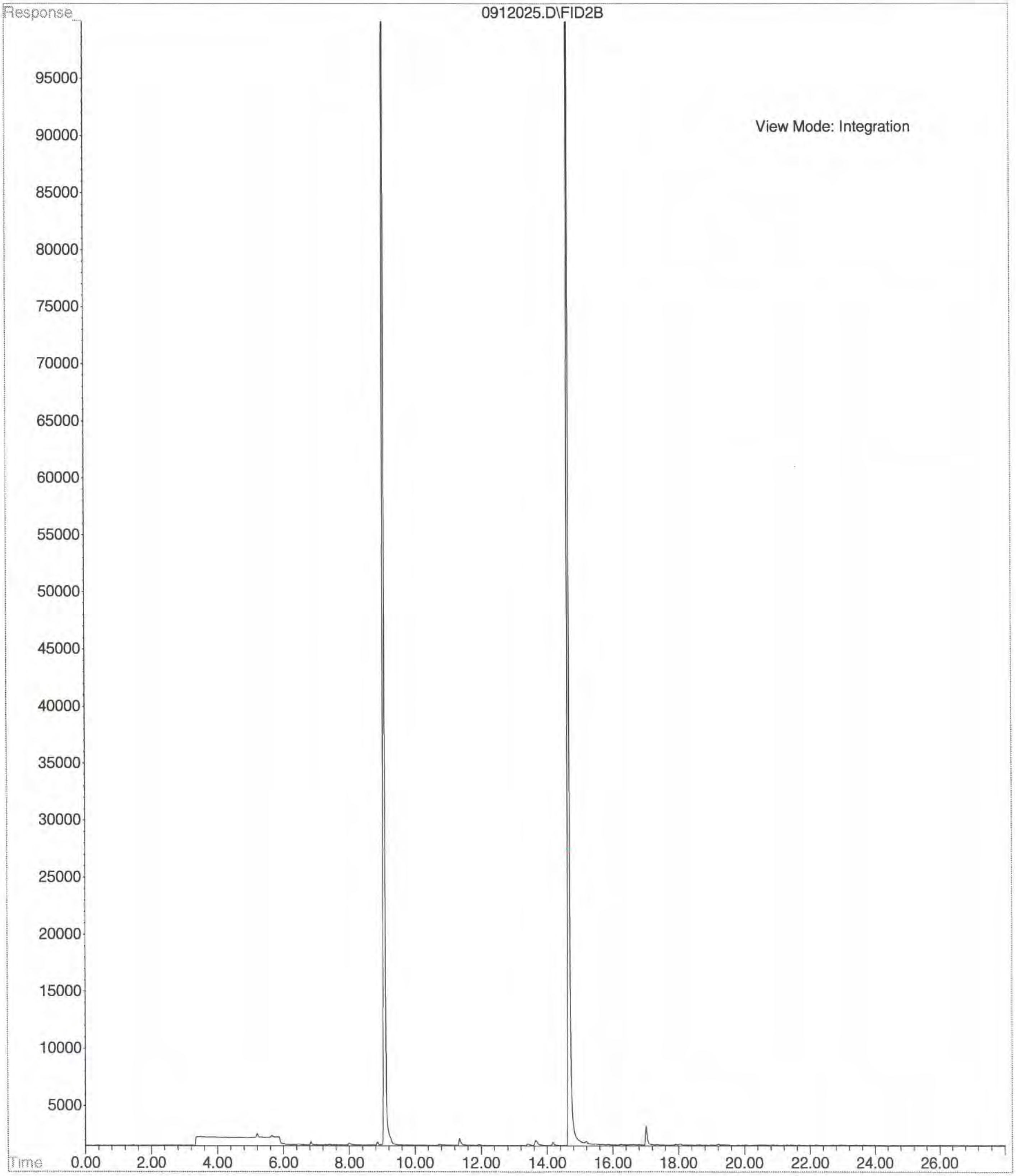
File : X:\BTEX\HOPE\DATA\H140912\0912027.D
Operator :
Acquired : 13 Sep 2014 1:44 using AcqMethod 140822B.M
Instrument : HOPE
Sample Name: 09-107-04f
Misc Info : V2-35-19
Vial Number: 27



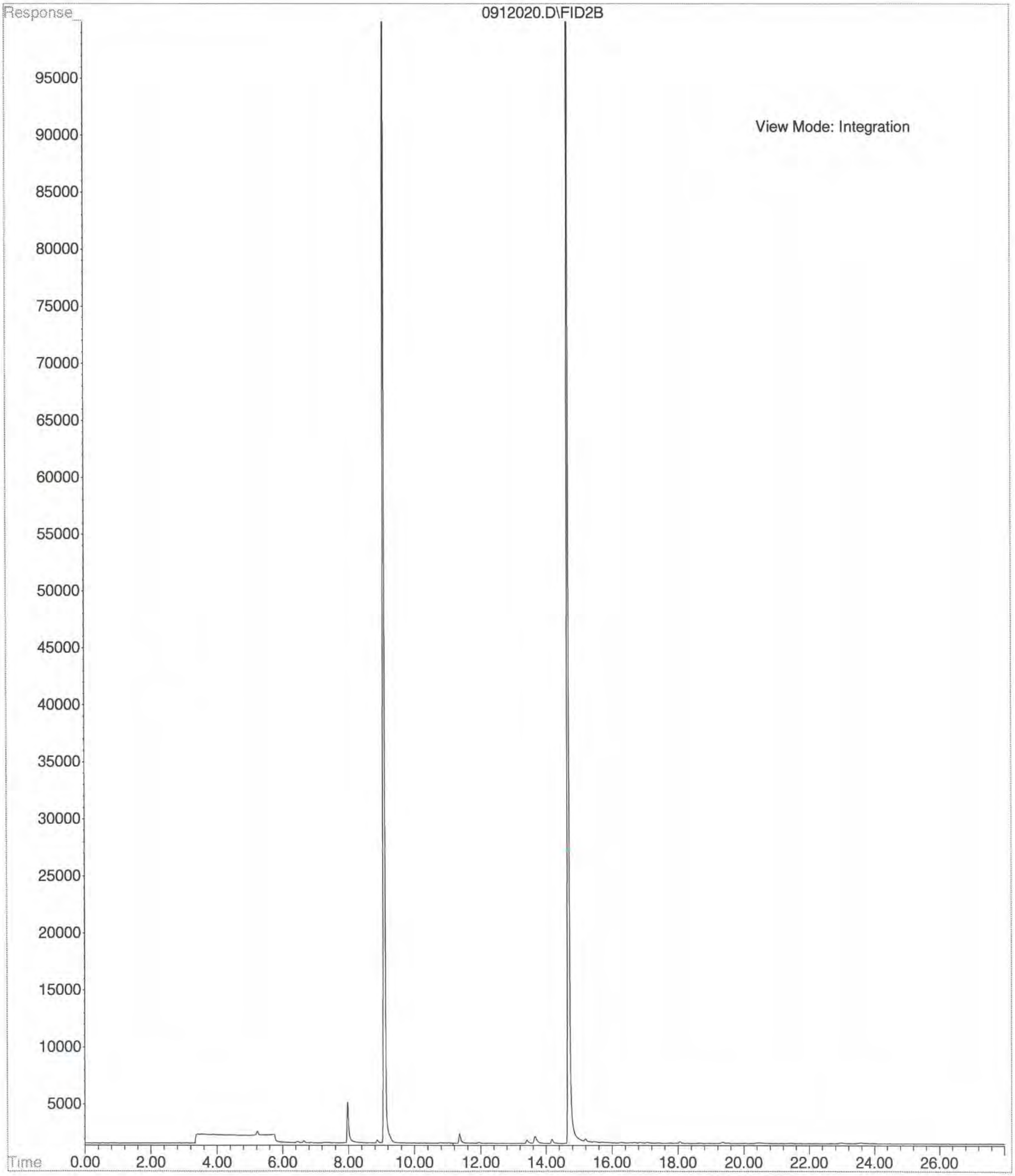
File : X:\BTEX\HOPE\DATA\H140912\0912019.D
Operator :
Acquired : 12 Sep 2014 21:18 using AcqMethod 140822B.M
Instrument : HOPE
Sample Name: 09-107-05f
Misc Info : V2-35-19
Vial Number: 19



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



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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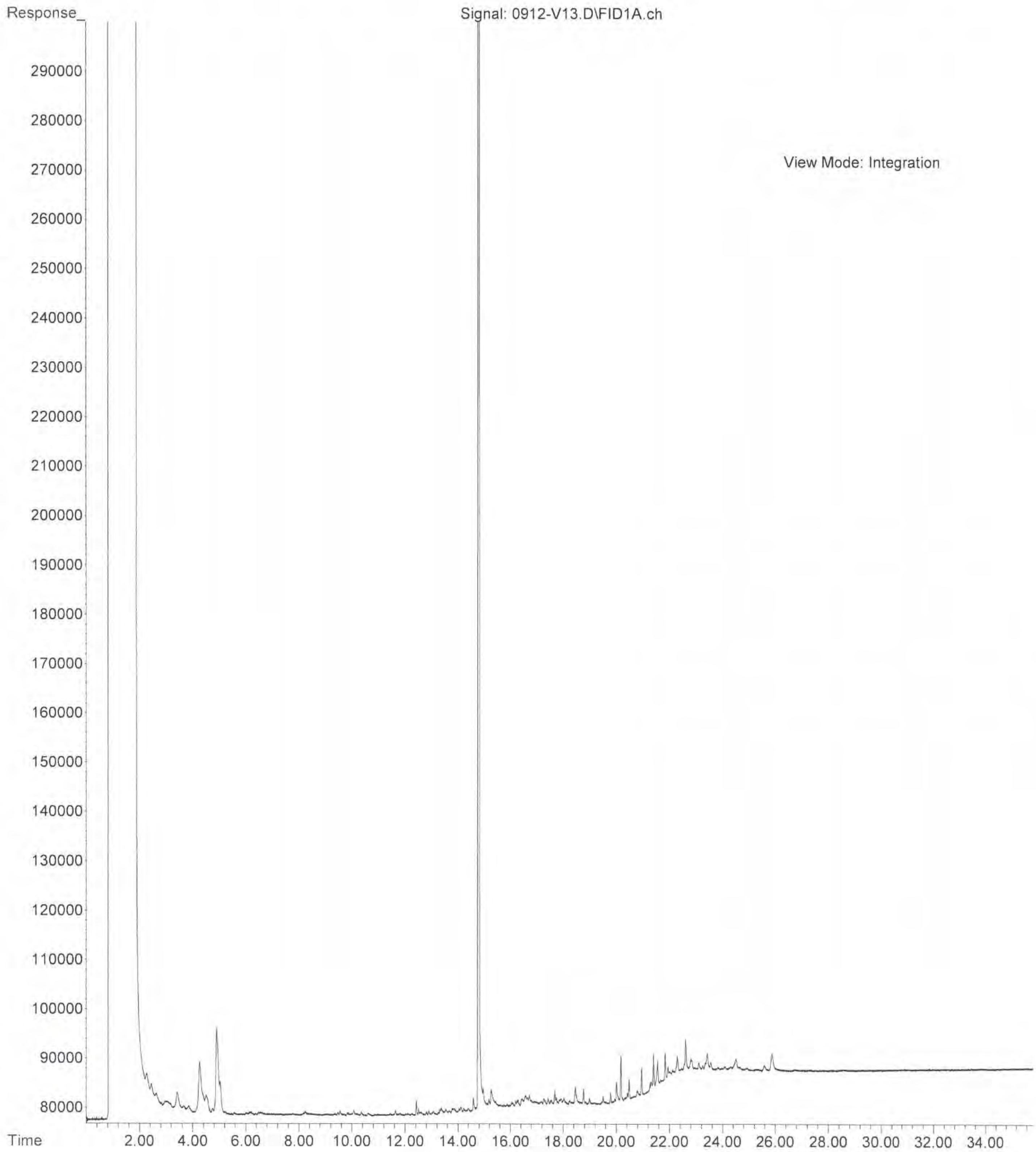
Operator   :
Acquired   : 12 Sep 2014 19:08   using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-01
Misc Info   :
Vial Number: 13



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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
```

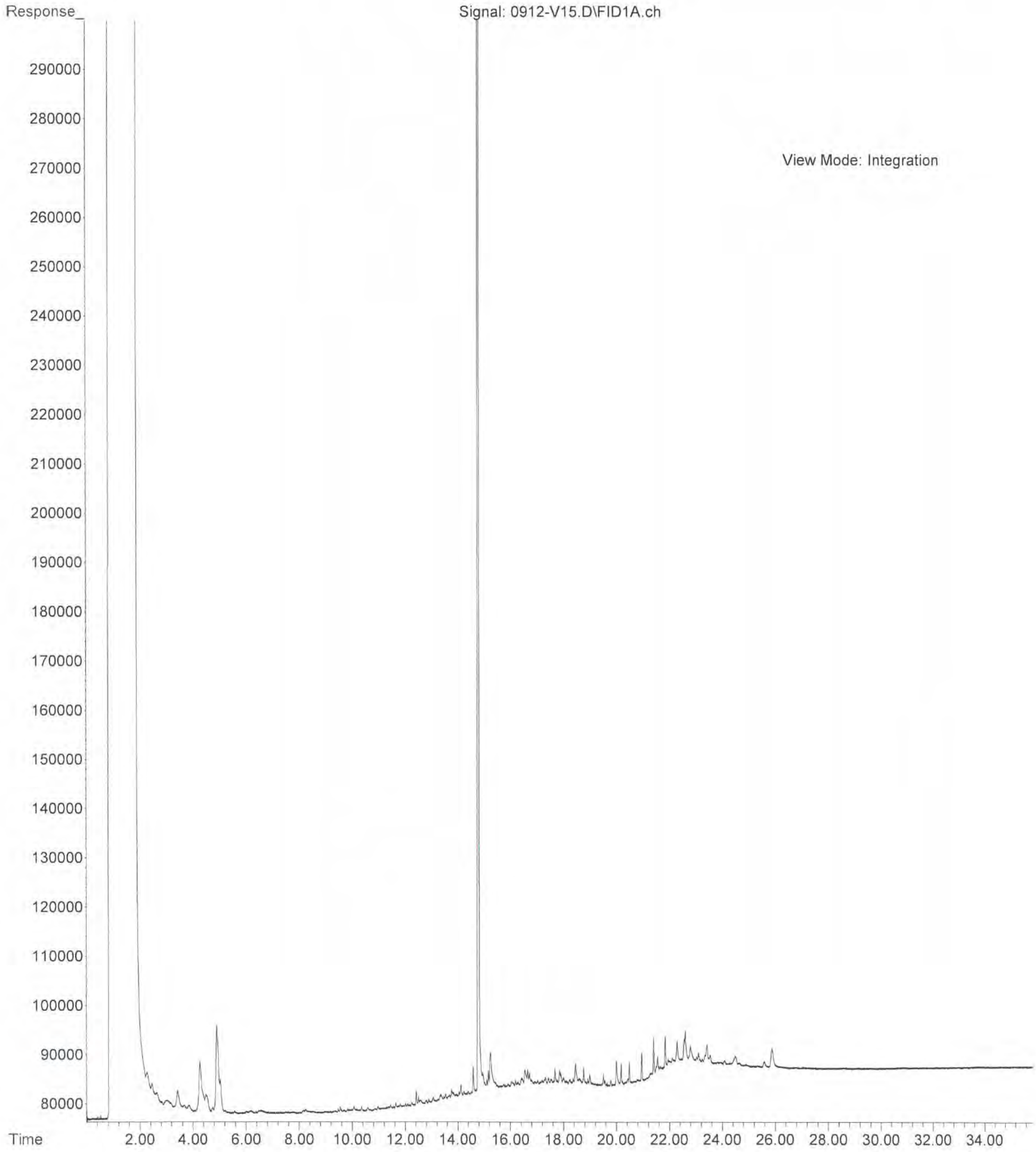

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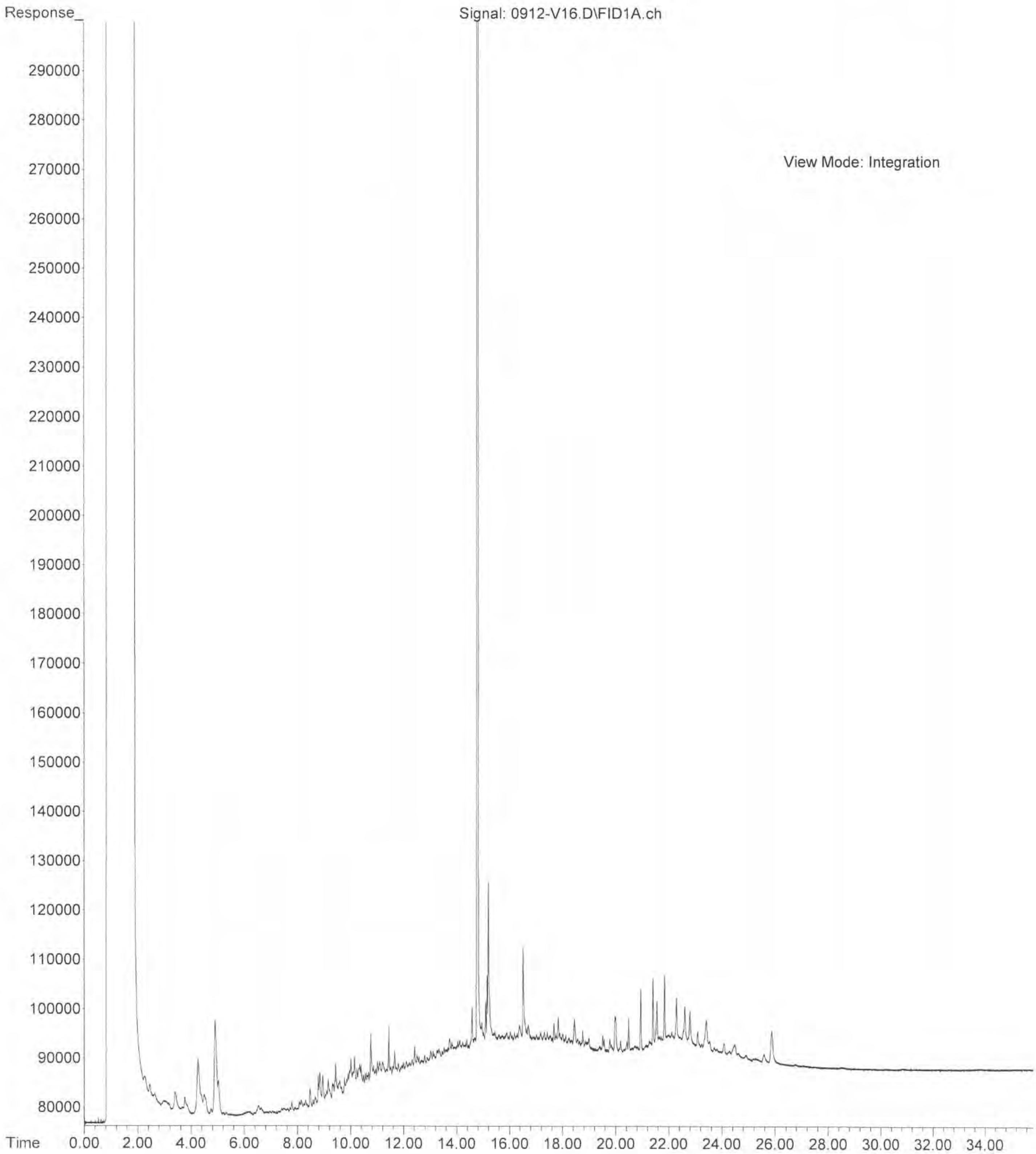
File        :C:\msdchem\2\DATA\V140912\0912-V16.D
Operator    :
Acquired    : 12 Sep 2014  21:11     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-03
Misc Info  :
Vial Number: 16
```



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Operator    :
Acquired    : 12 Sep 2014  21:52     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-04
Misc Info  :
Vial Number: 17
```

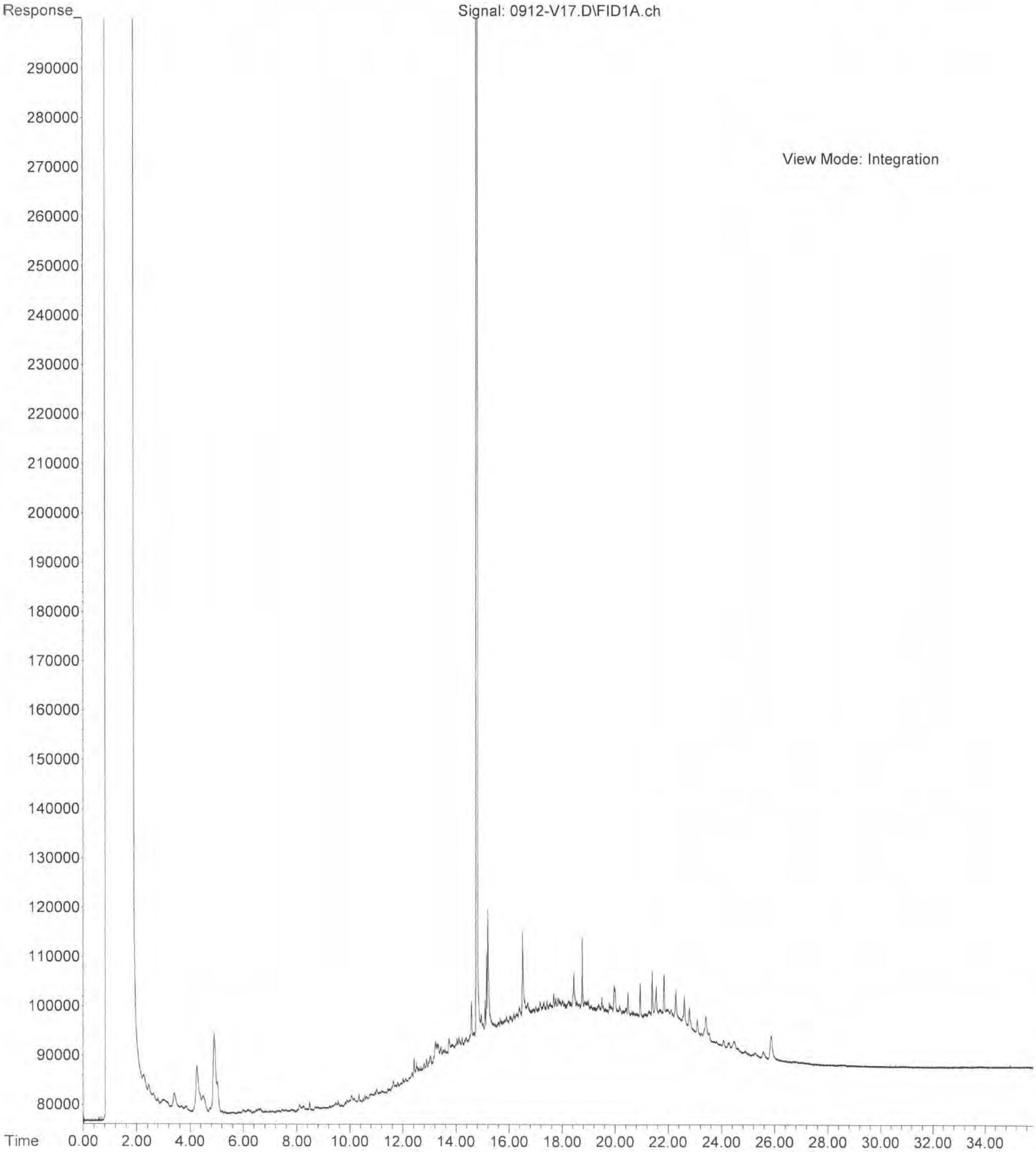

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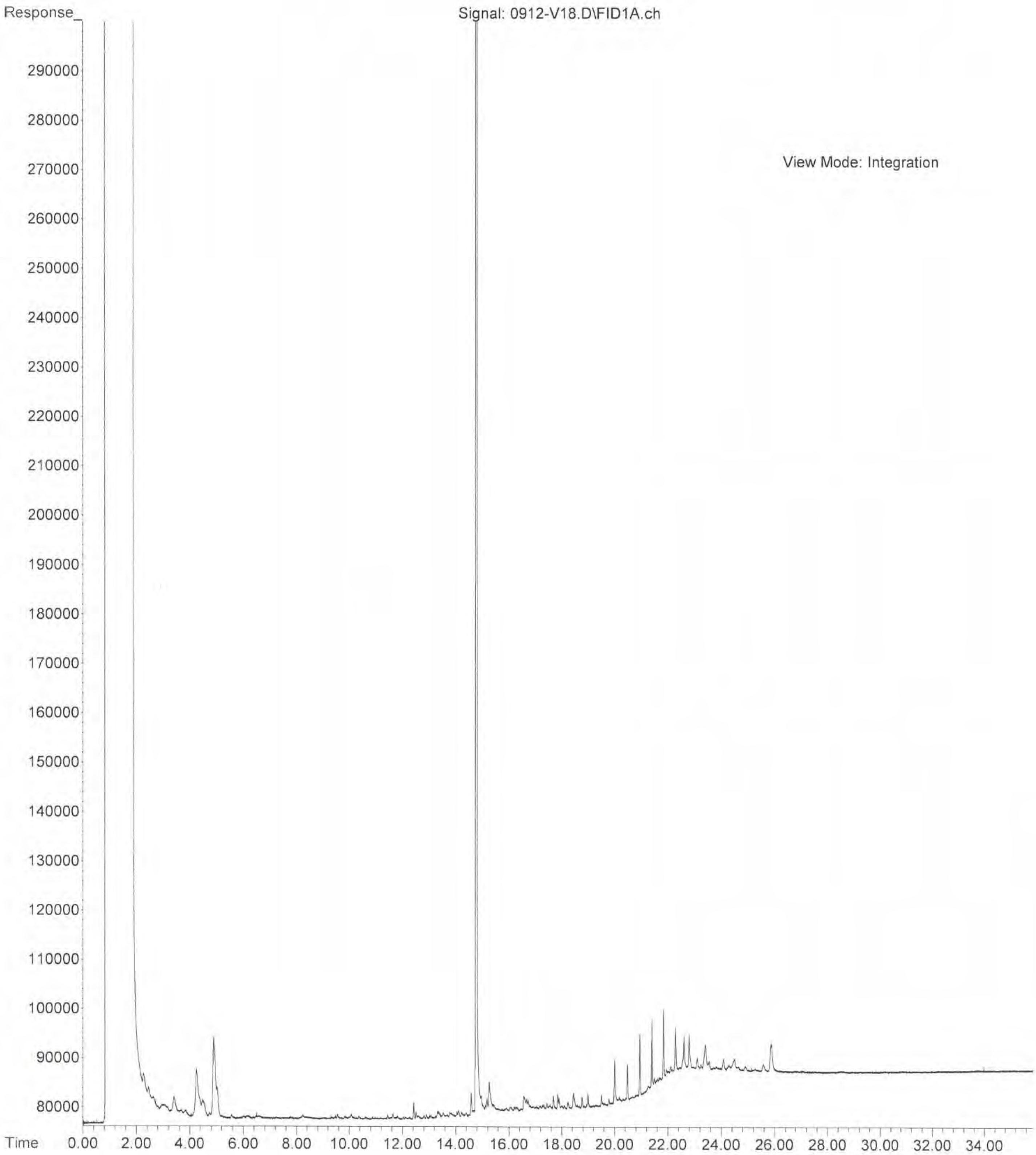
Operator    :
Acquired    : 12 Sep 2014  22:34     using AcqMethod V140210F.M
Instrument  :   Vigo
Sample Name: 09-107-05
Misc Info   :
Vial Number: 18
```



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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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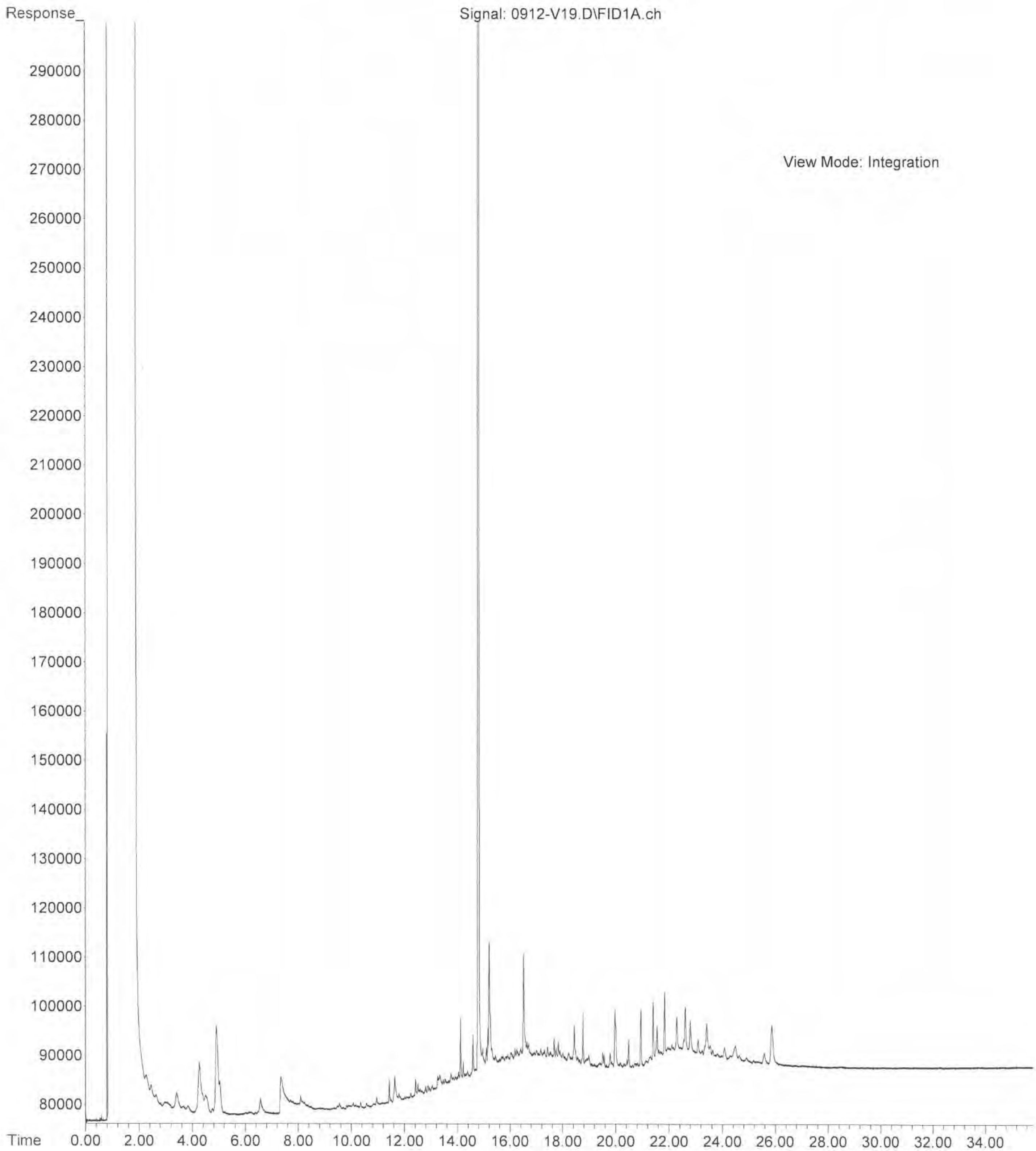

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Operator   :
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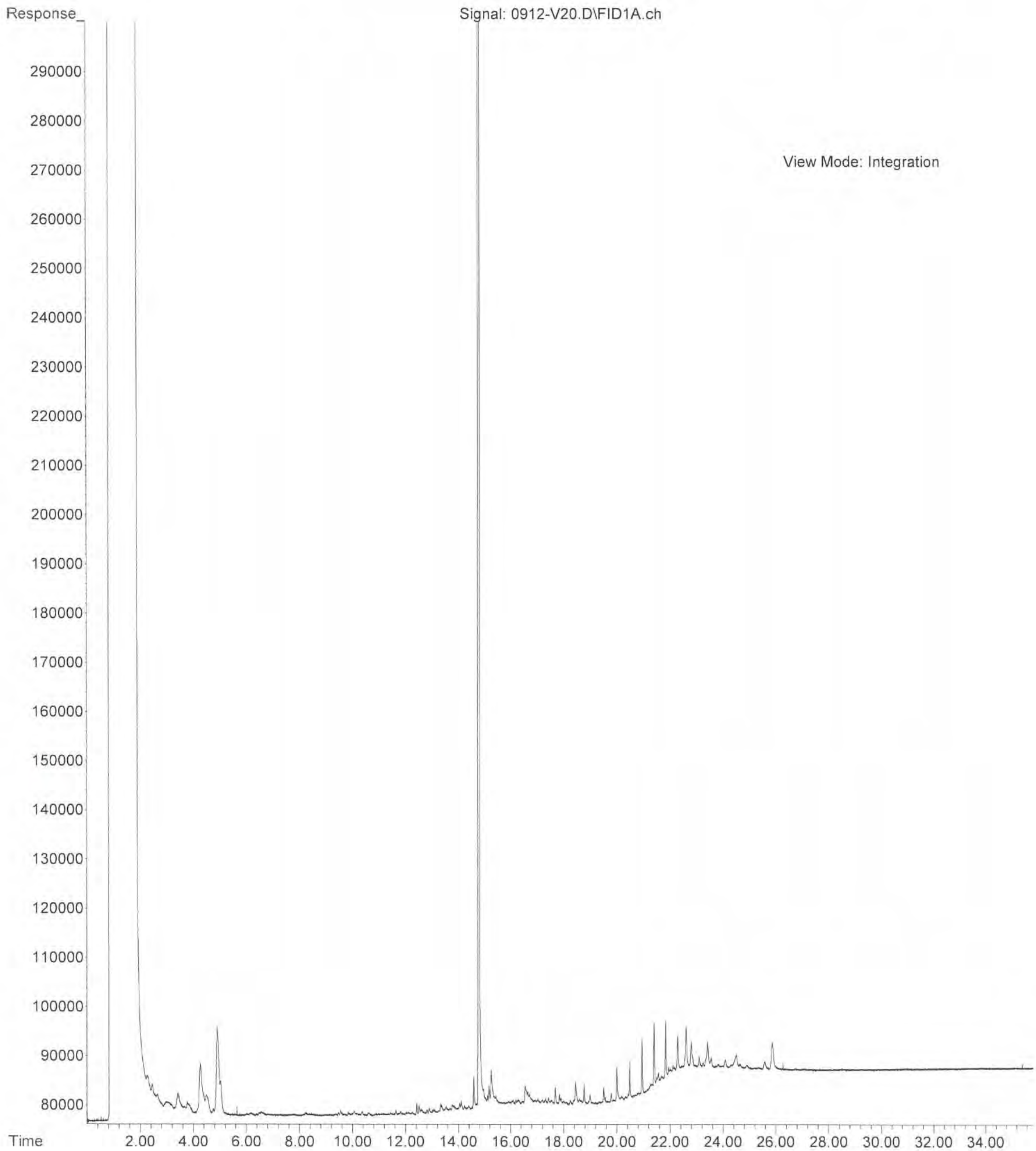
Instrument :   Vigo
Sample Name: 09-107-07
Misc Info :
Vial Number: 20



OnSite
Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 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^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 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
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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*				

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	

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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	

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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

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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	

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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
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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	

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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*				

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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	

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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*				

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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	

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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
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Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
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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
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Project: 2007-098-2008

HALOGENATED VOLATILES EPA 8260C
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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
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HALOGENATED VOLATILES EPA 8260C
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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
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HALOGENATED VOLATILES EPA 8260C
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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
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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*			

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

Chain of Custody and Laboratory Anaylsis Request

DATE: ______
PAGE: ___ of ___

09-107

PROJECT NAME: Bothell Paint / Bothell Landing #: 2007098 2008
SAMPLERS NAME: KStilson PHONE:
SAMPLERS SIGNATURE: KA [signature] DATE: 9/11/14
HWA CONTACT: Arnie Sugar PHONE:

TURNAROUND TIME
☐ DAYS
☑ STANDARD

ANALYSIS REQUESTED

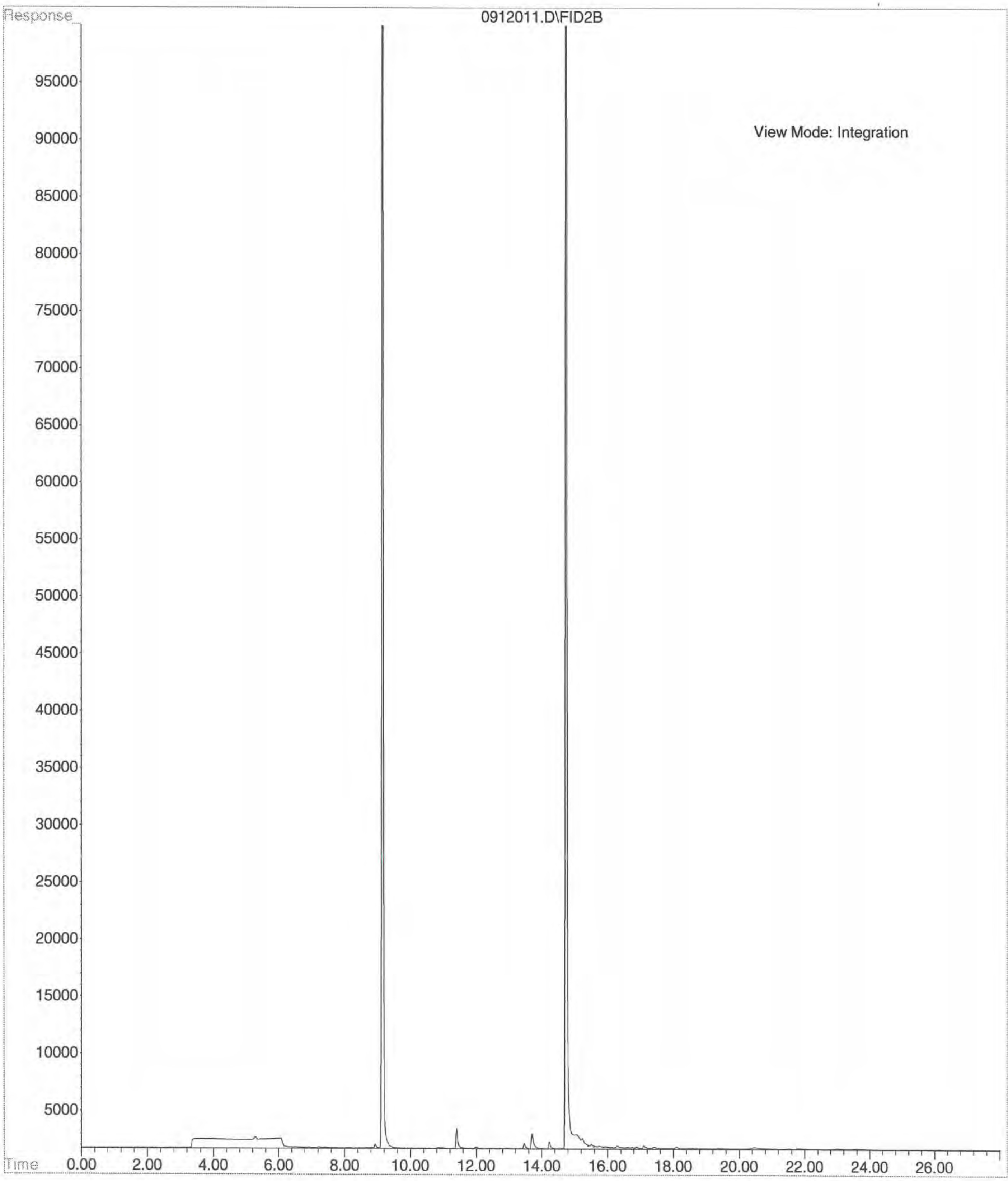
	HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPHG	Dx	BTEX	Total Metals	Diss Metals	HVOCs								EDD	REMARKS
1	BPMW4	9/9/14	930	W		7	\	\	\	\	\										Run D initially
2	BPMW5		1245	W		7	\	\	\	\	\										Archive T metals
3	BLMW11		545	W		9	\	\	\	\	\	\									
4	BLMW8	9/10/14	900	W		9	\	\	\	\	\	\									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 Unpresesed poly please filter @ Lab

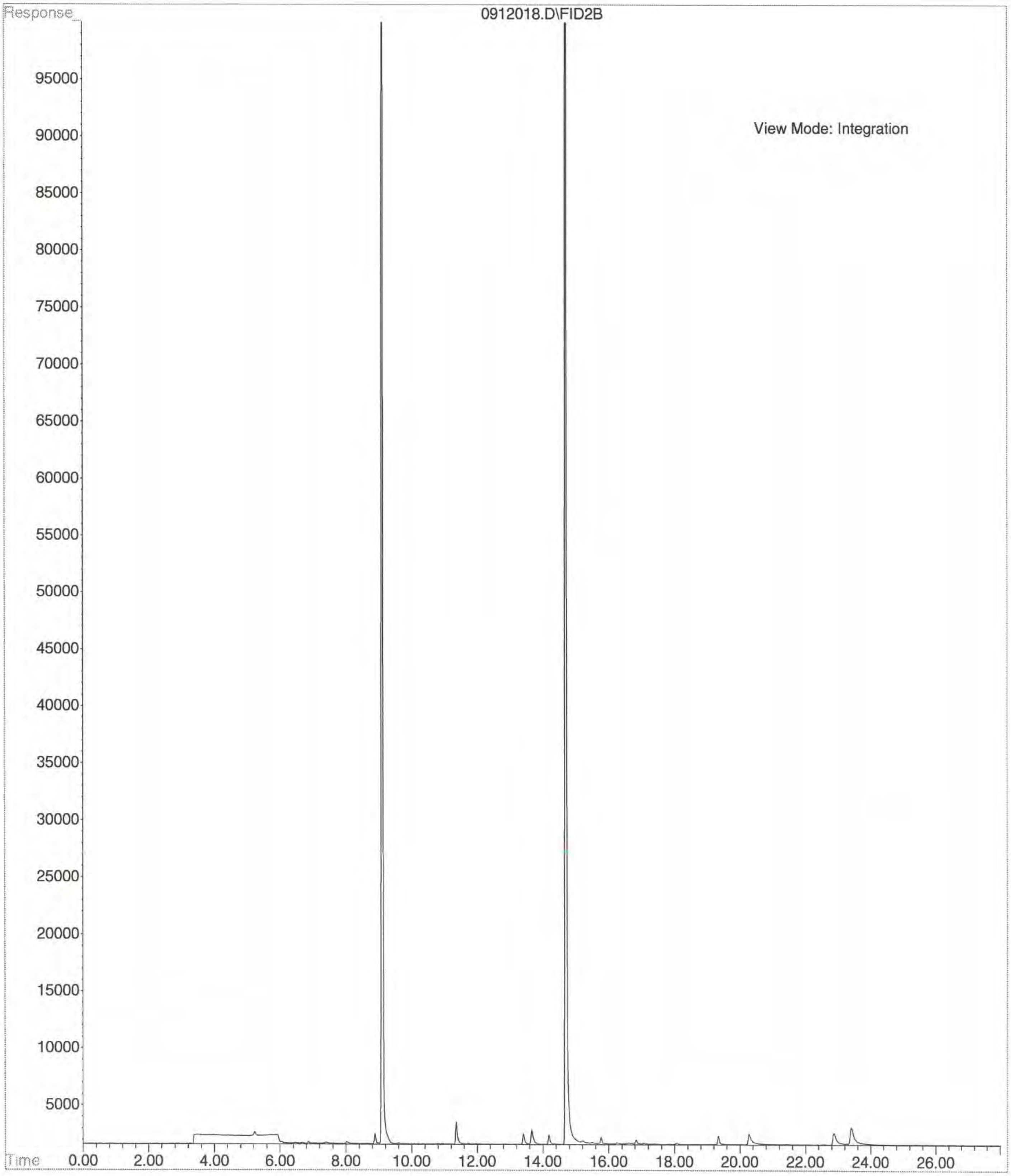
PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	KStilson	KA [signature]	HWA	9/11/14	830	
Received by:	T Ha[illegible]	T HARAL	Speed	9-11-14	832	
Relinquished by:	T H[illegible]	T HAnle	Speed	9/11/14	930	
Received by:	alex armantrout	Alex Armantrout	OSE	9/11	930	

DISTRIBUTION: WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler

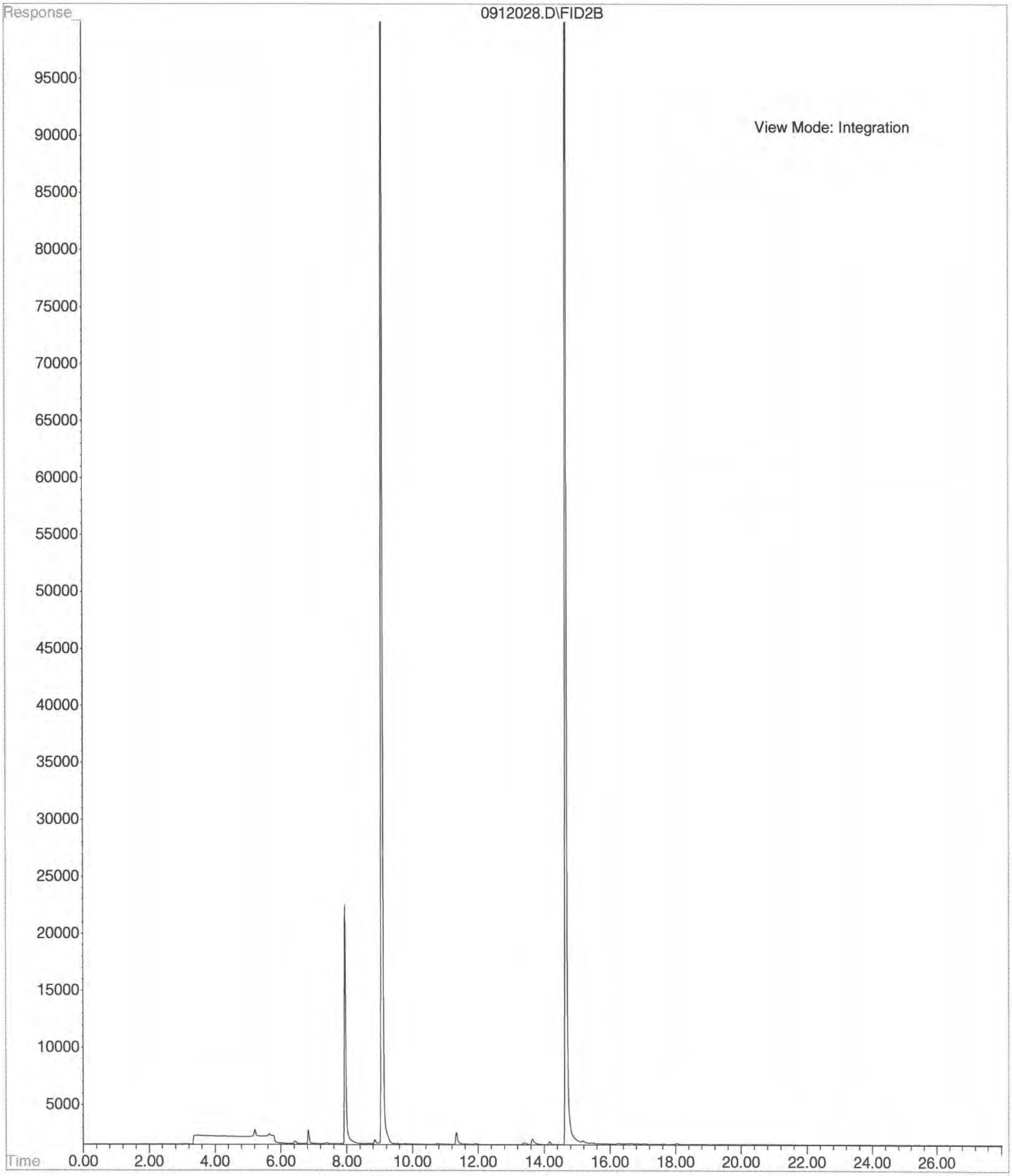
File : X:\BTEX\HOPE\DATA\H140912\0912011.D
Operator :
Acquired : 12 Sep 2014 16:43 using AcqMethod 140822B.M
Instrument : HOPE
Sample Name: 09-107-01f
Misc Info : V2-35-19
Vial Number: 11



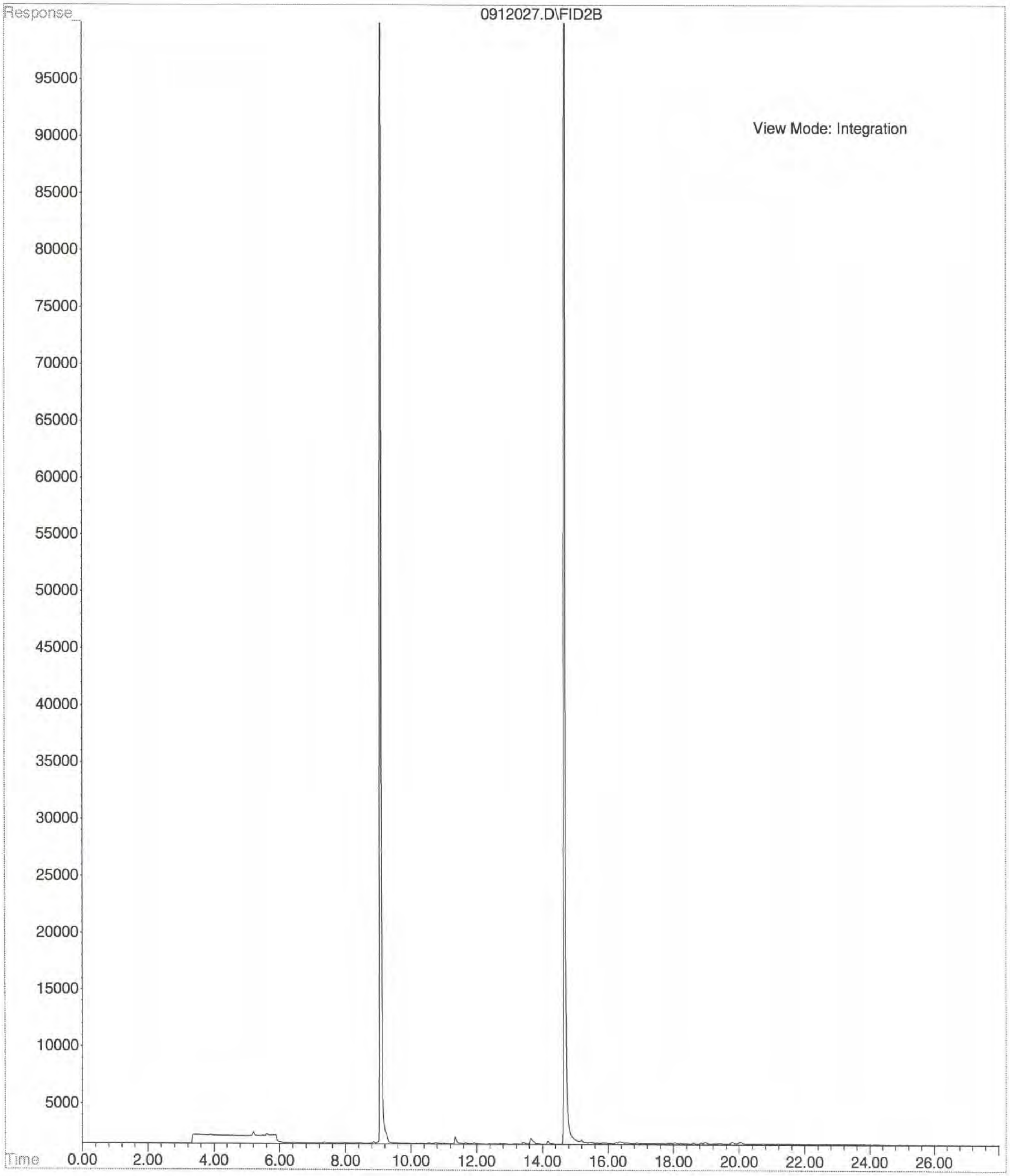
File : X:\BTEX\HOPE\DATA\H140912\0912018.D
Operator :
Acquired : 12 Sep 2014 20:45 using AcqMethod 140822B.M
Instrument : HOPE
Sample Name: 09-107-02f
Misc Info : V2-35-19
Vial Number: 18



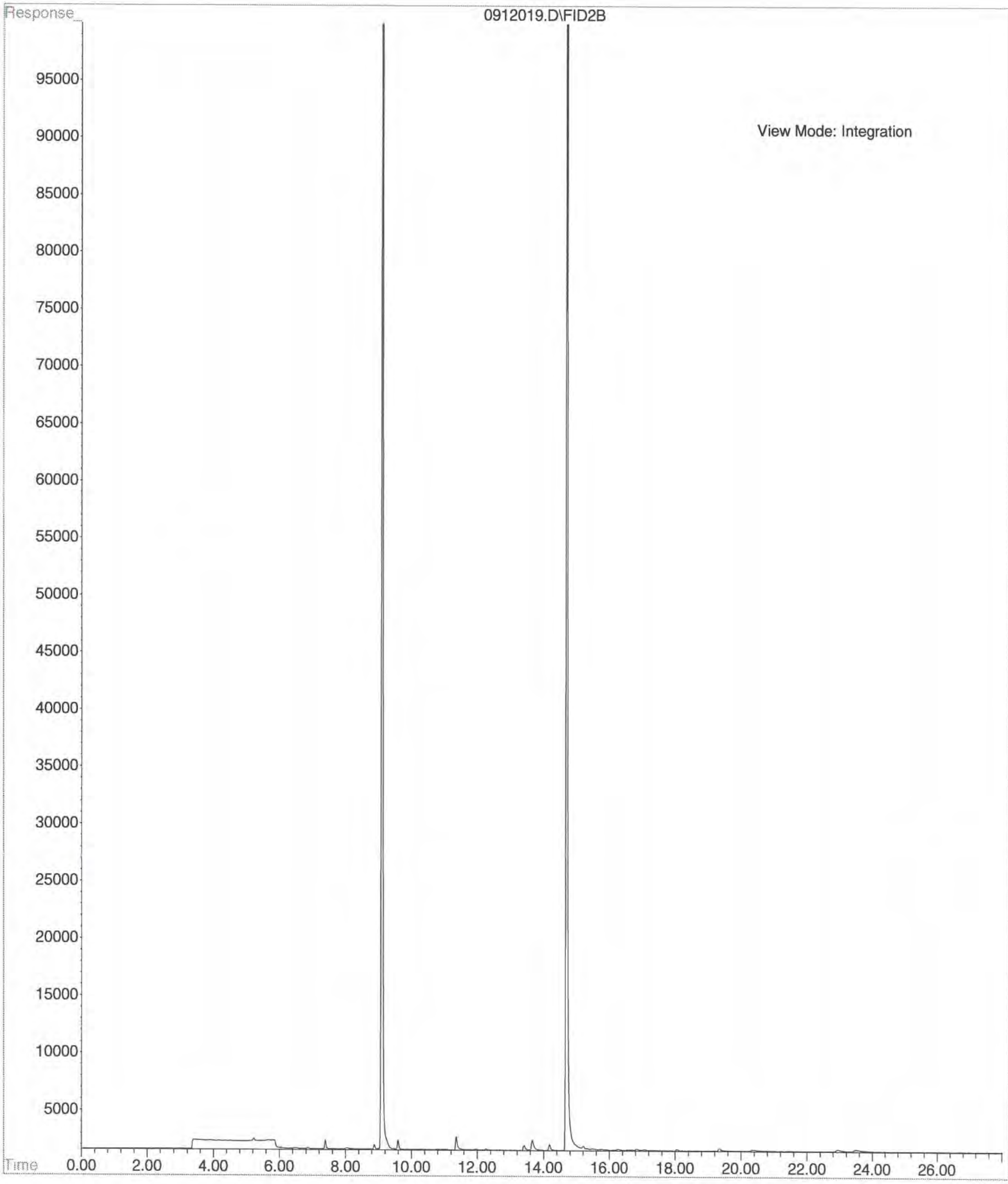
File   : X:\BTEX\HOPE\DATA\H140912\0912028.D
Operator   :
Acquired   : 13 Sep 2014   2:17   using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-03f
Misc Info   : V2-35-19
Vial Number: 28



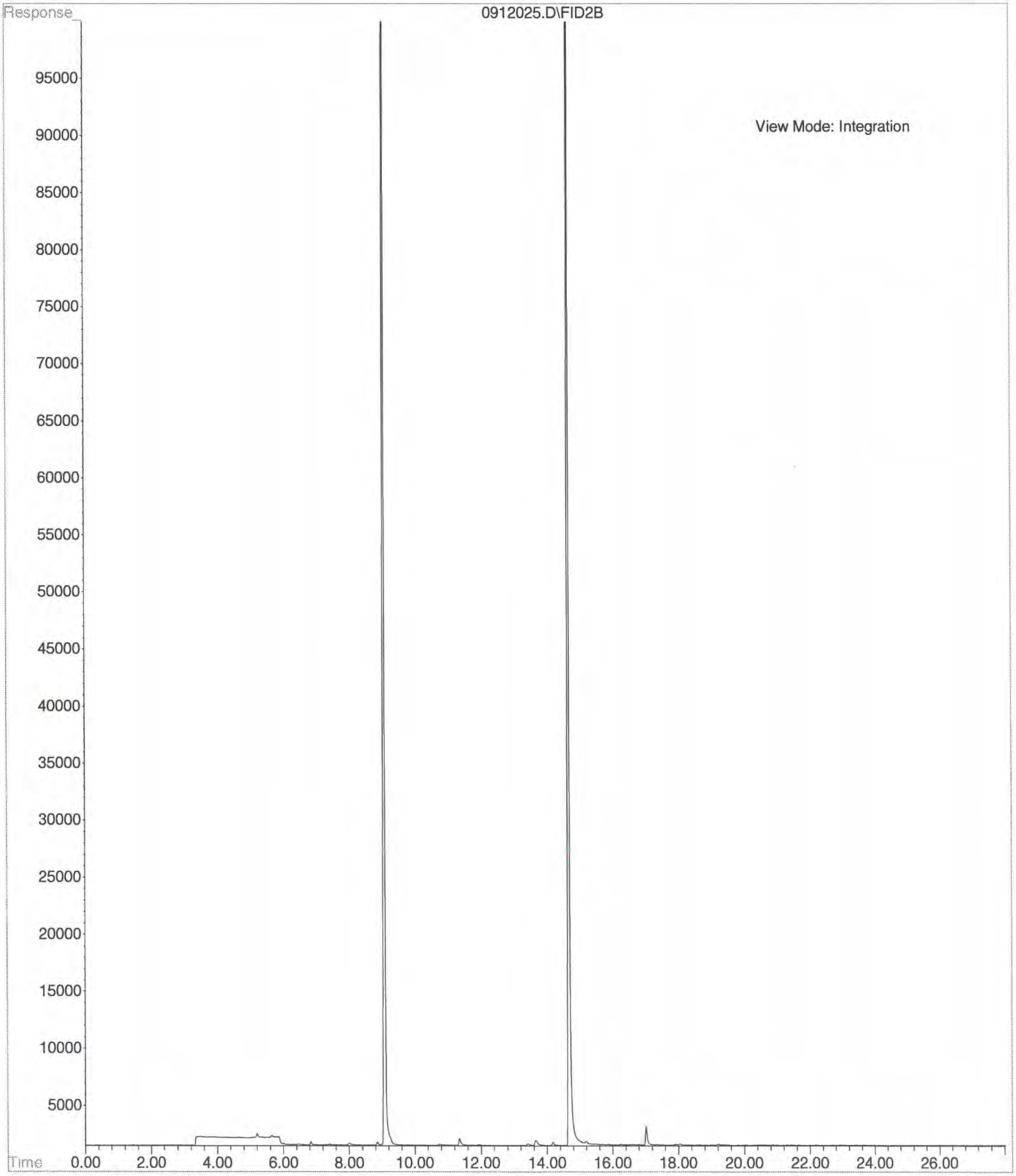
File   : X:\BTEX\HOPE\DATA\H140912\0912027.D
Operator   :
Acquired   : 13 Sep 2014   1:44   using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-04f
Misc Info : V2-35-19
Vial Number: 27



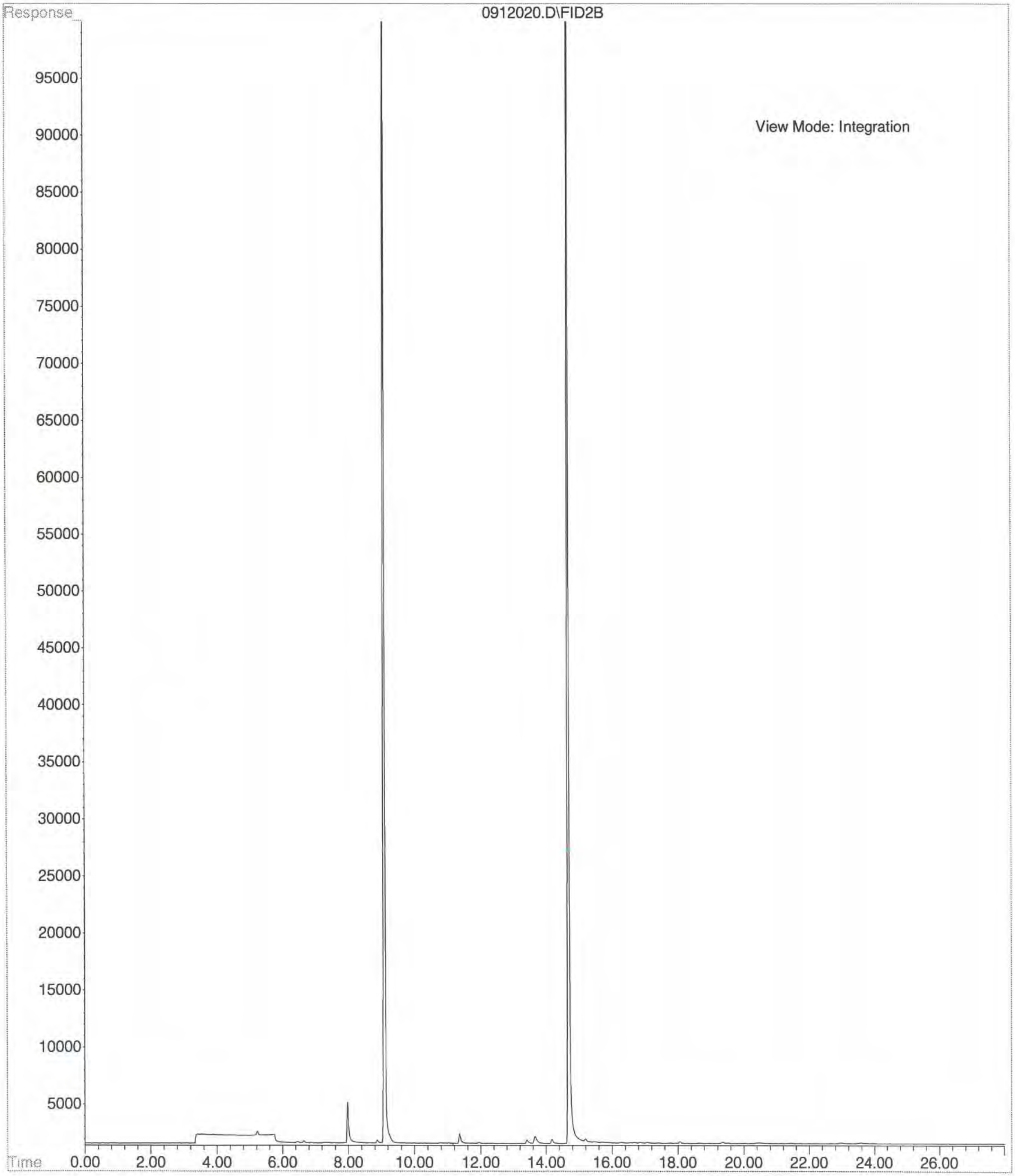
File   : X:\BTEX\HOPE\DATA\H140912\0912019.D
Operator   :
Acquired   : 12 Sep 2014 21:18   using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-05f
Misc Info : V2-35-19
Vial Number: 19



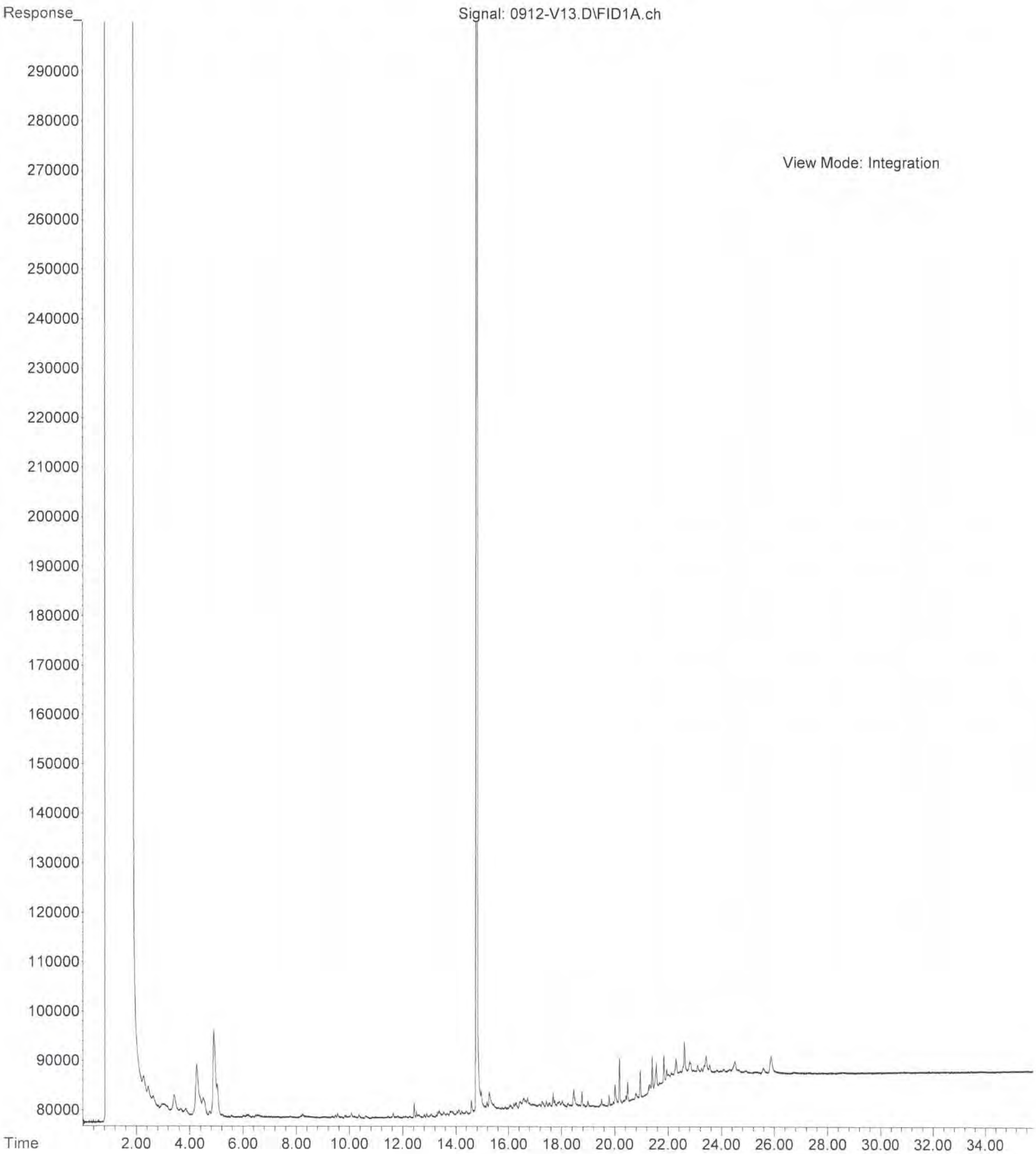
File   : X:\BTEX\HOPE\DATA\H140912\0912025.D
Operator   :
Acquired   : 13 Sep 2014 00:38   using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-06f
Misc Info : V2-35-19
Vial Number: 25



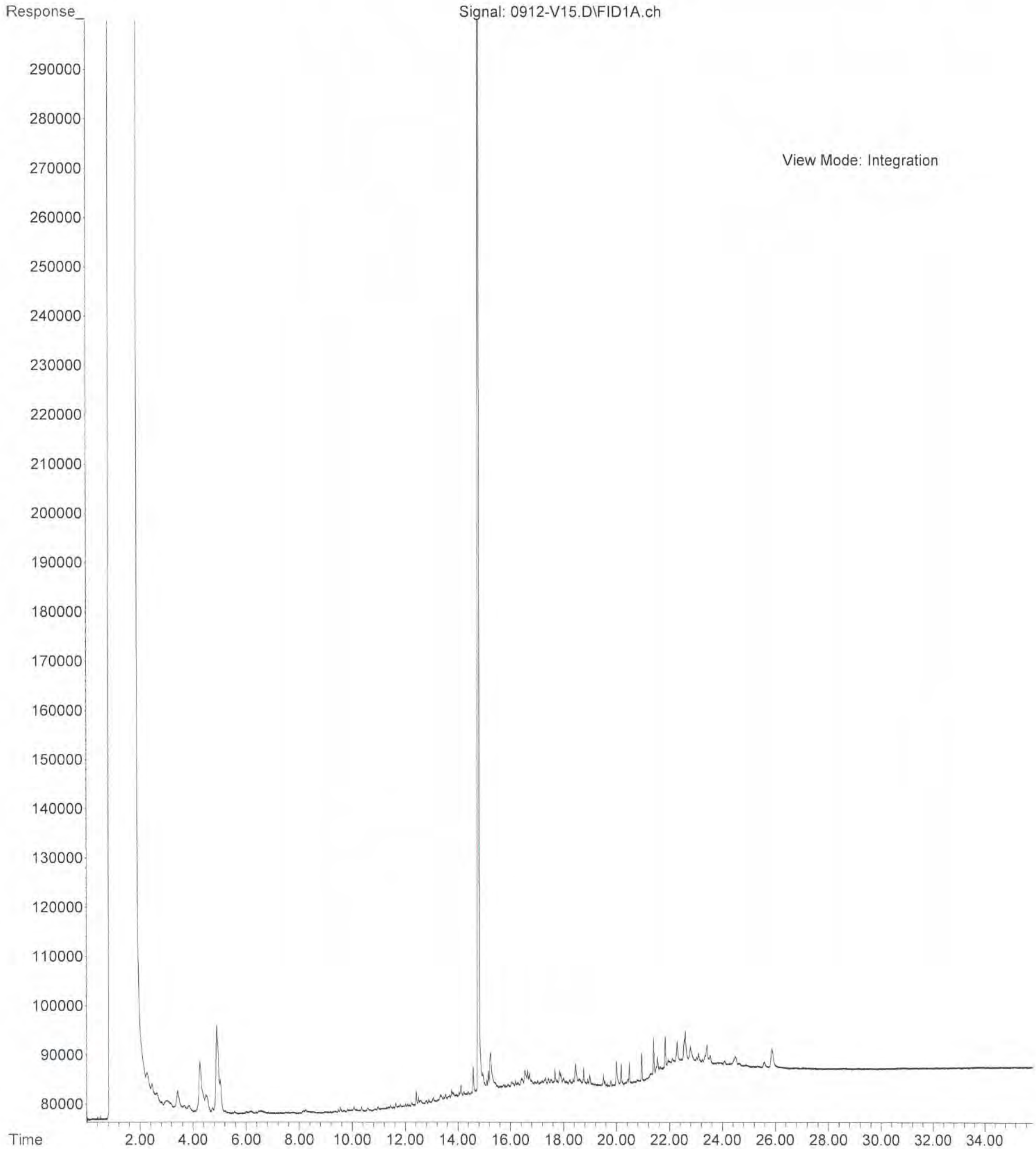
File   : X:\BTEX\HOPE\DATA\H140912\0912020.D
Operator   :
Acquired   : 12 Sep 2014 21:52   using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-107-07f
Misc Info : V2-35-19
Vial Number: 20



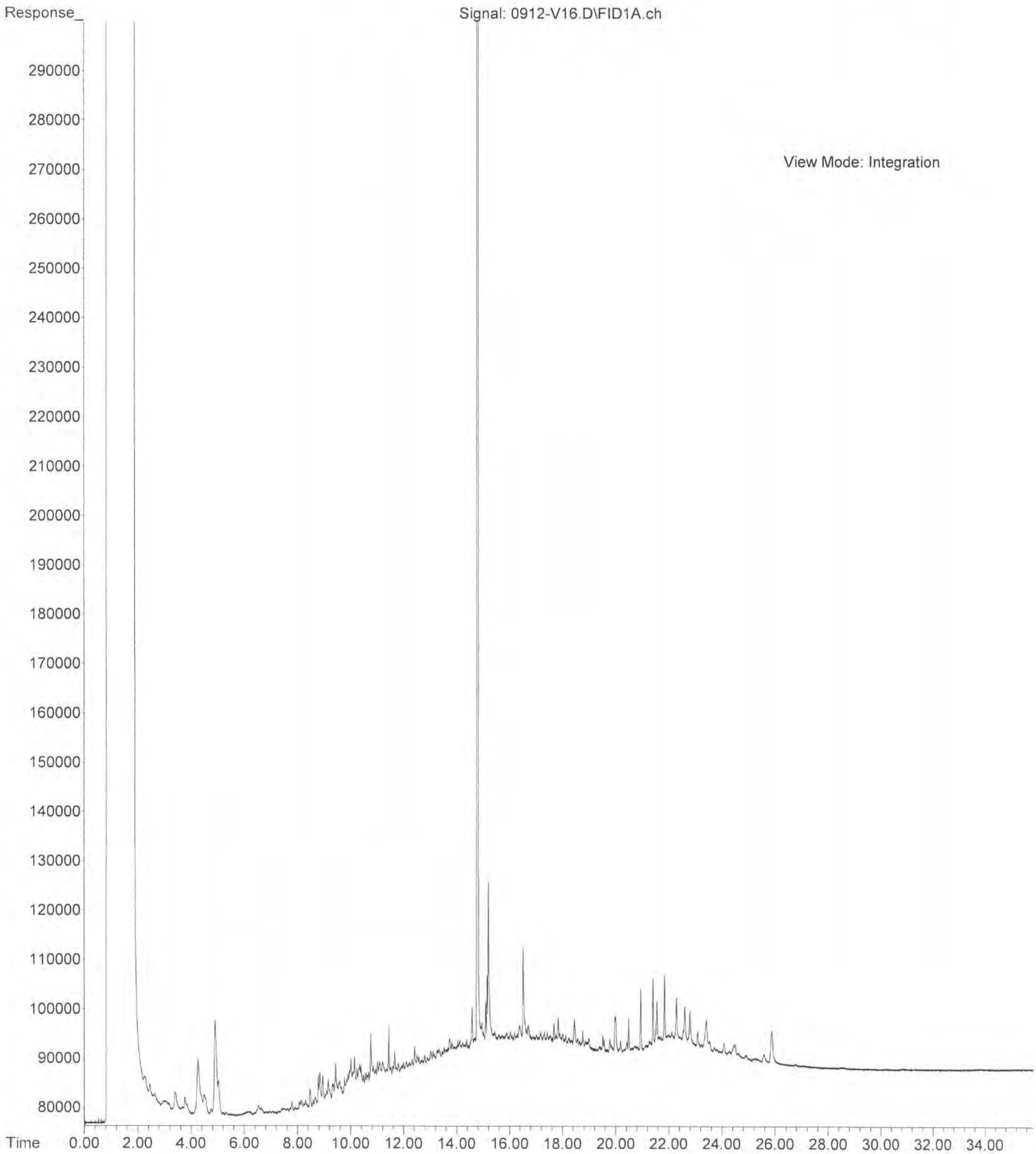
```
File        :C:\msdchem\2\DATA\V140912\0912-V13.D
Operator    :
Acquired    : 12 Sep 2014  19:08     using AcqMethod V140210F.M
Instrument  :   Vigo
Sample Name: 09-107-01
Misc Info   :
Vial Number: 13
```



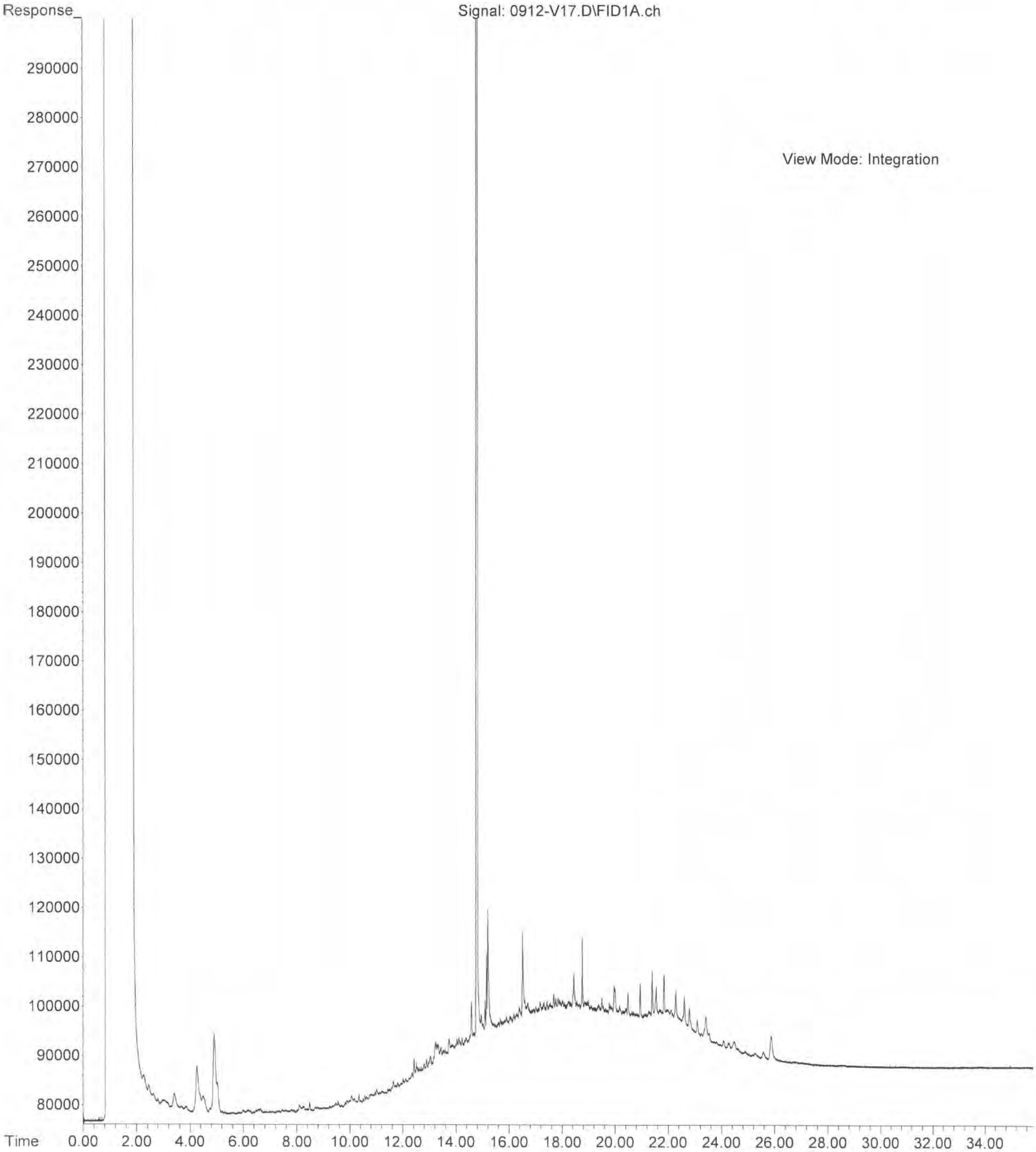
```
File        :C:\msdchem\2\DATA\V140912\0912-V15.D
Operator    :
Acquired    : 12 Sep 2014  20:30     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-02
Misc Info   :
Vial Number: 15
```



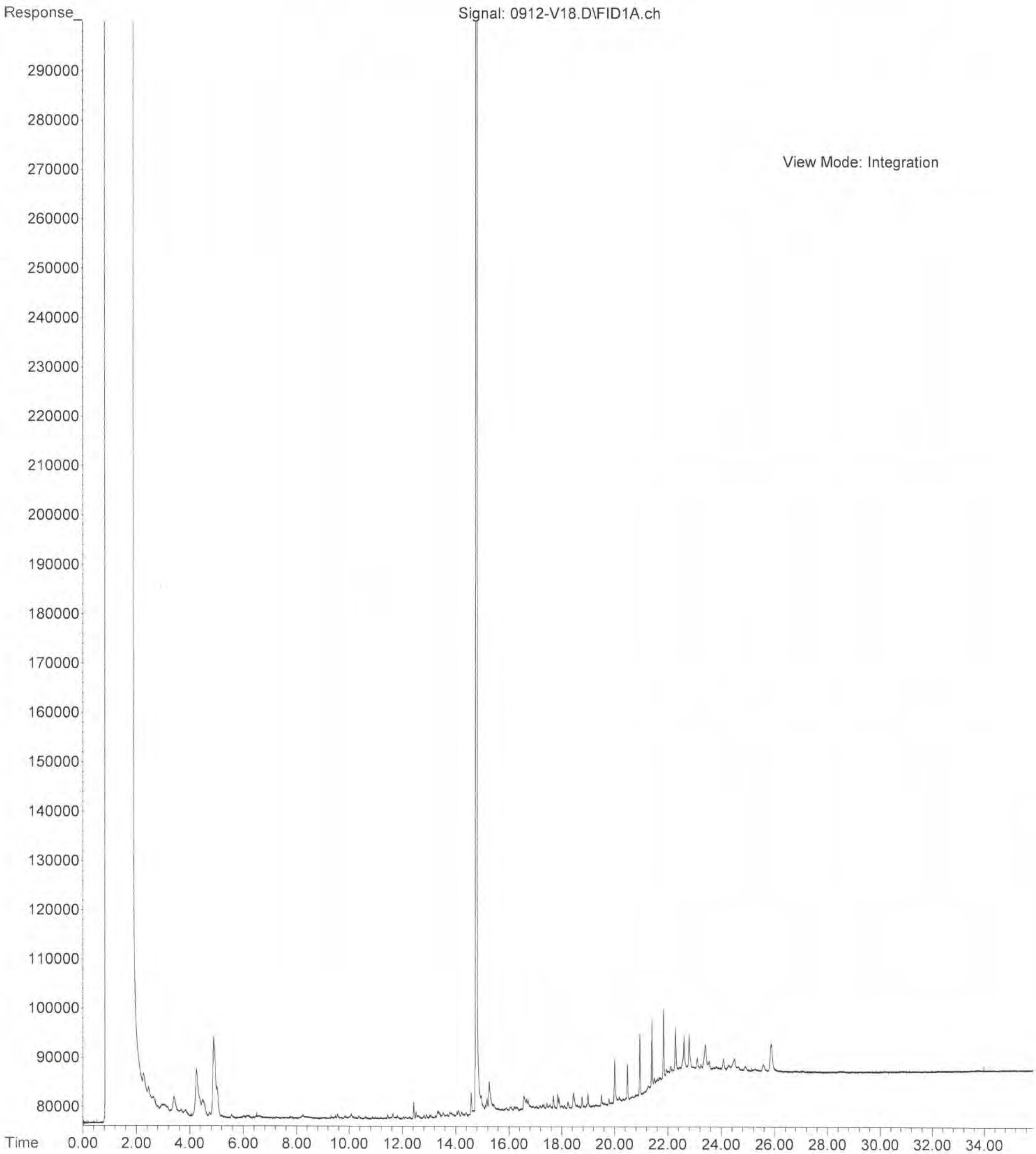
```
File       :C:\msdchem\2\DATA\V140912\0912-V16.D
Operator   :
Acquired   : 12 Sep 2014  21:11     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-03
Misc Info  :
Vial Number: 16
```



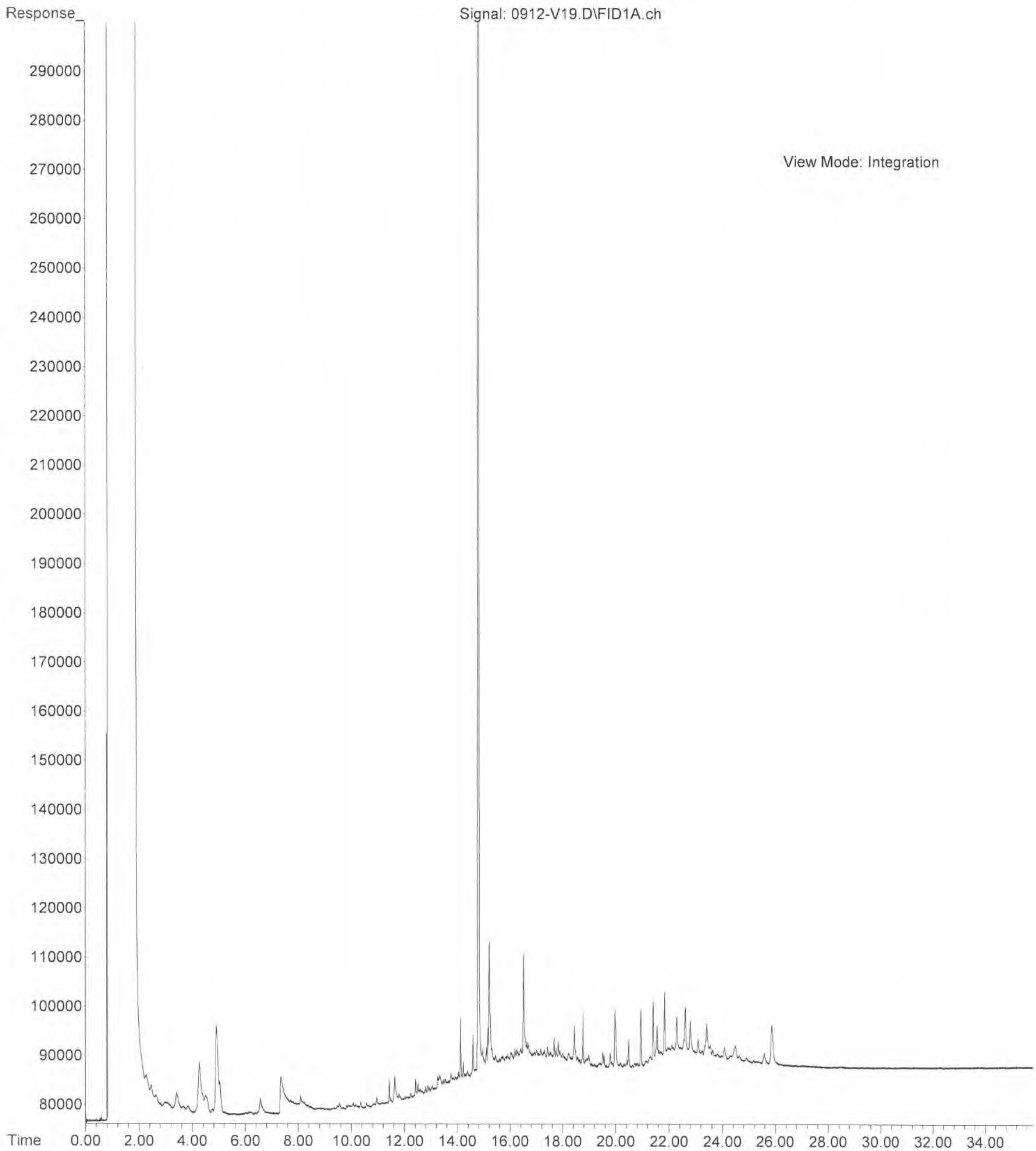
```
File        :C:\msdchem\2\DATA\V140912\0912-V17.D
Operator    :
Acquired    : 12 Sep 2014  21:52     using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-04
Misc Info  :
Vial Number: 17
```



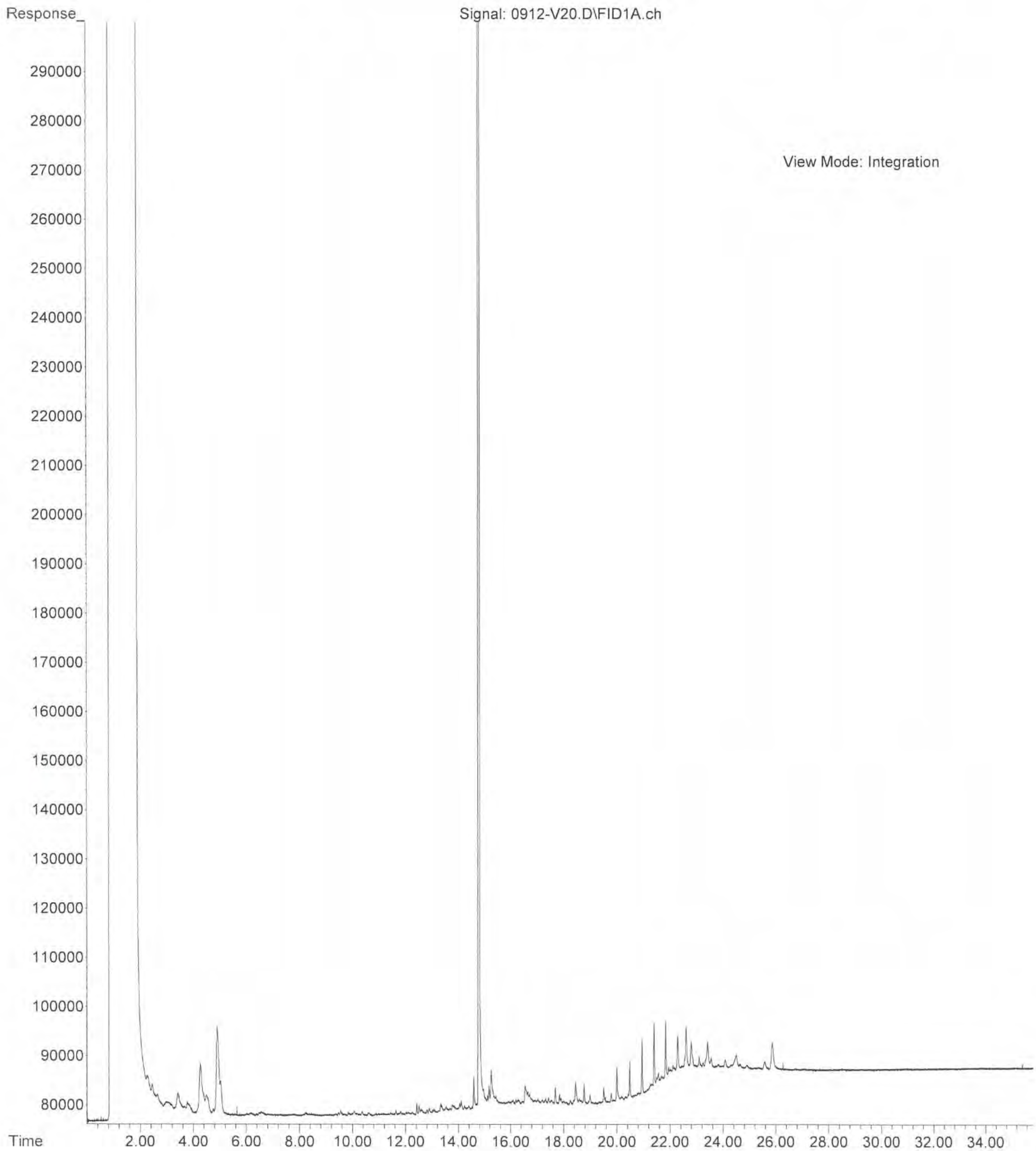
```
File          :C:\msdchem\2\DATA\V140912\0912-V18.D
Operator      :
Acquired      : 12 Sep 2014  22:34      using AcqMethod V140210F.M
Instrument :    Vigo
Sample Name: 09-107-05
Misc Info   :
Vial Number: 18
```



File   :C:\msdchem\2\DATA\V140912\0912-V19.D
Operator   :
Acquired   : 12 Sep 2014 23:15   using AcqMethod V140210F.M
Instrument :   Vigo
Sample Name: 09-107-06
Misc Info :
Vial Number: 19



```
File        :C:\msdchem\2\DATA\V140912\0912-V20.D
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 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. 1409-107B

Dear Arnie:

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 30, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107B
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 $2^{o}C$ 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 30, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107B
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:	09-107-03					
Client ID:	**BLMW11**					
Arsenic	**120**	3.3	200.8	9-24-14	9-24-14	

Date of Report: September 30, 2014
Samples Submitted: September 11, 2014
Laboratory Reference: 1409-107B
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 11, 2014
Laboratory Reference: 1409-107B
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 11, 2014
Laboratory Reference: 1409-107B
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	

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

Chain of Custody and Laboratory Anaylsis Request

DATE: ______
PAGE: ___ of ___

09-107

PROJECT NAME: Bothell Paint / Bothell Landing #: 2007098 008
SAMPLERS NAME: K Stilson PHONE: ______
SAMPLERS SIGNATURE: KAtt DATE: 9/11/14
HWA CONTACT: Arnie Sugar PHONE: ______

TURNAROUND TIME
☐ DAYS
☑ STANDARD

ANALYSIS REQUESTED

	HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPHG	Dx	BTEX	Total Metals	Diss Metals	HVOCs	Total As	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

(X) Added 9/22/14 - DB (STA)

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: K Stilson	KAtt	HWA	9/11/14	830	
Received by: T Har	T Harnl	Speed	9-11-14	831	
Relinquished by: T H	T Hanl	Speed	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

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^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.

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***				

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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***			

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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	

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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***				

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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	

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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***				

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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	

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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***				

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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	

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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
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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	

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 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	

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

09-148

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:

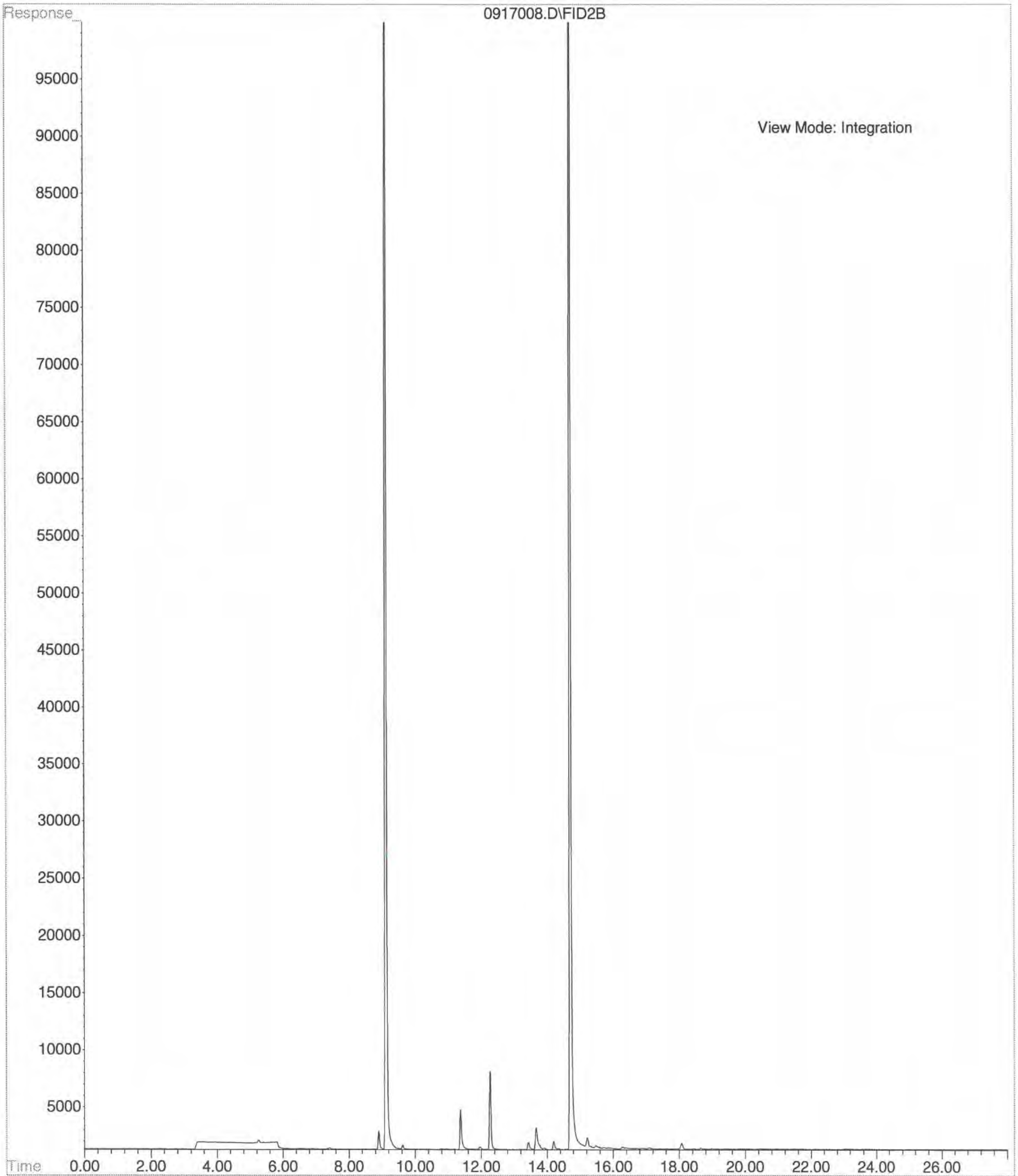
TURNAROUND TIME
☐ DAYS
☐ STANDARD

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

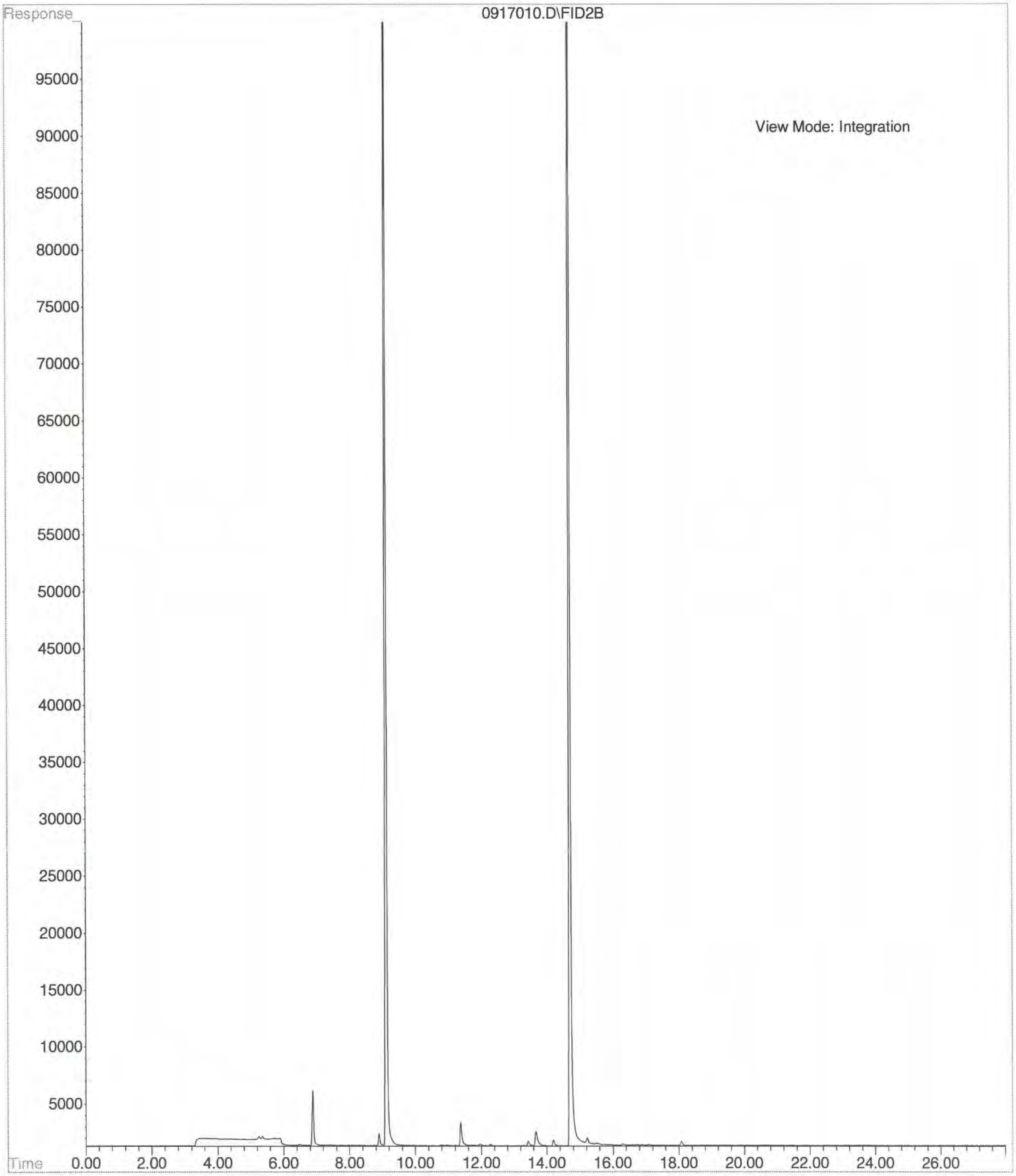
PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: K Stilson	K Stilson	HWA	9/15/14	1200	
Received by: Van	Van	Speedy	"	345	
Relinquished by: "	"	"	"	1615	
Received by: M. Vown	[illegible]	CO&E	9/15/14	1615	

DISTRIBUTION: WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler

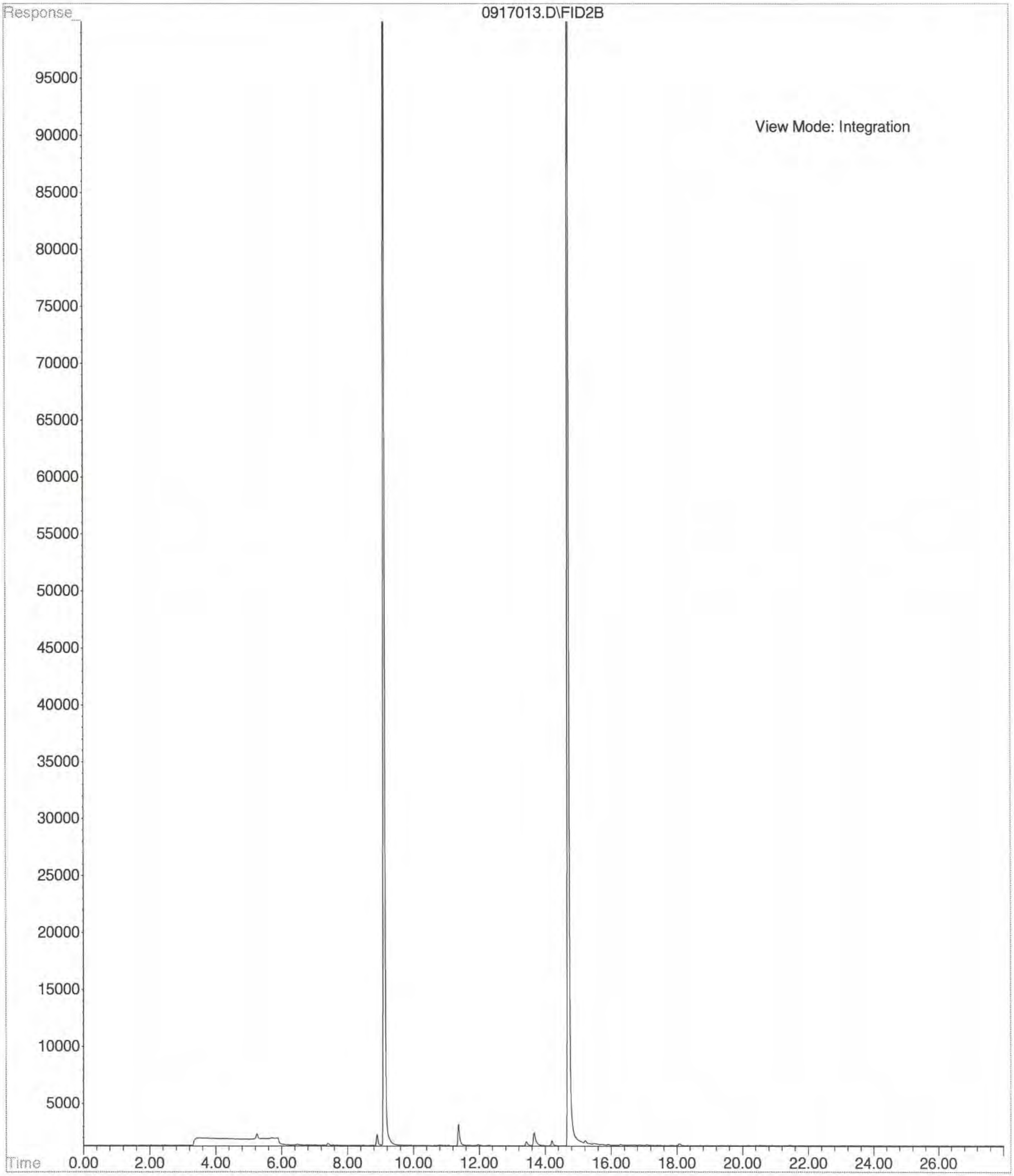
File   : X:\BTEX\HOPE\DATA\H140917\0917008.D
Operator   :
Acquired   : 17 Sep 2014 13:43   using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-148-01F
Misc Info   :
Vial Number: 8



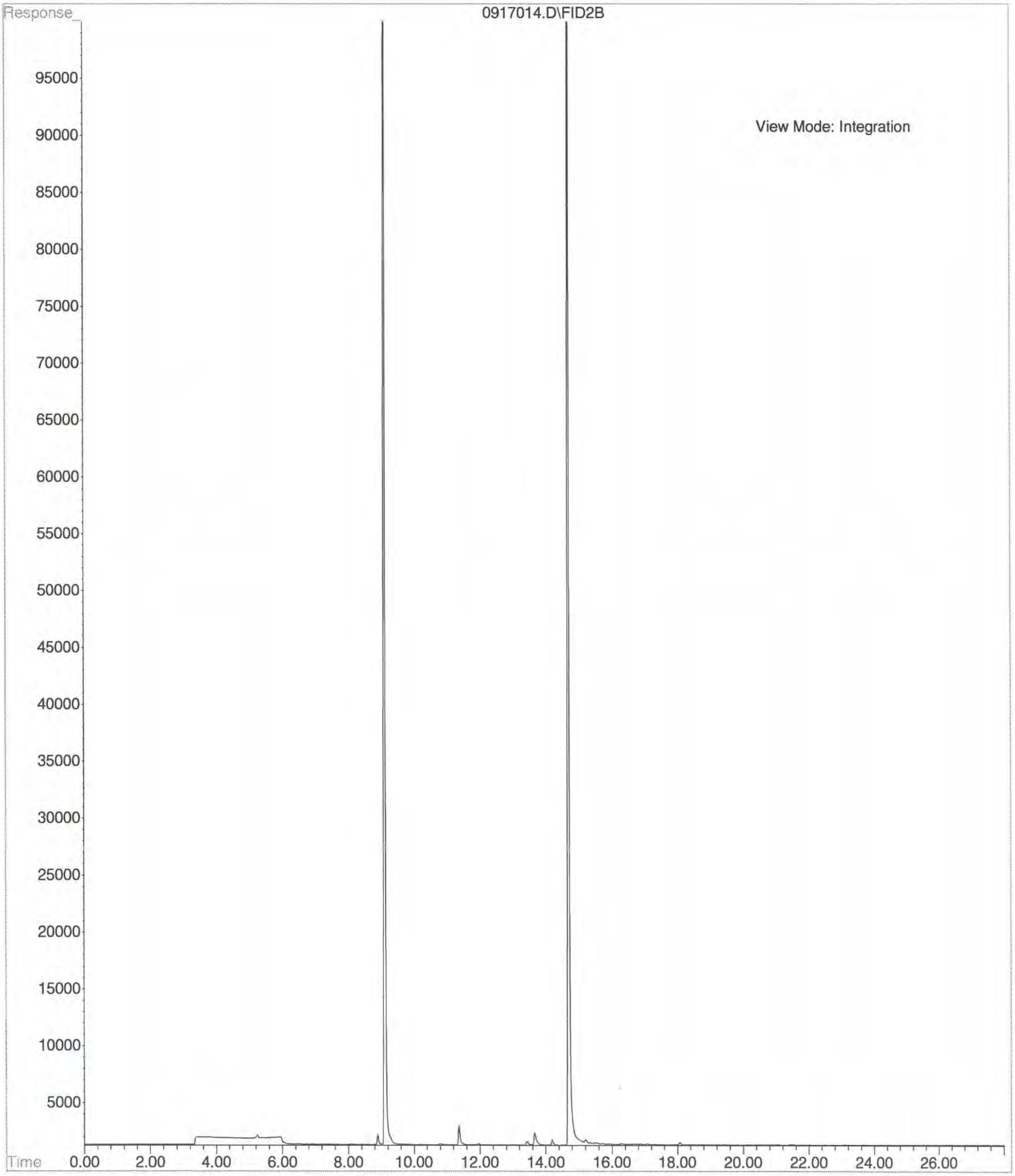
File   : X:\BTEX\HOPE\DATA\H140917\0917010.D
Operator   :
Acquired   : 17 Sep 2014 14:52   using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-148-02F
Misc Info :
Vial Number: 10



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



```
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
```



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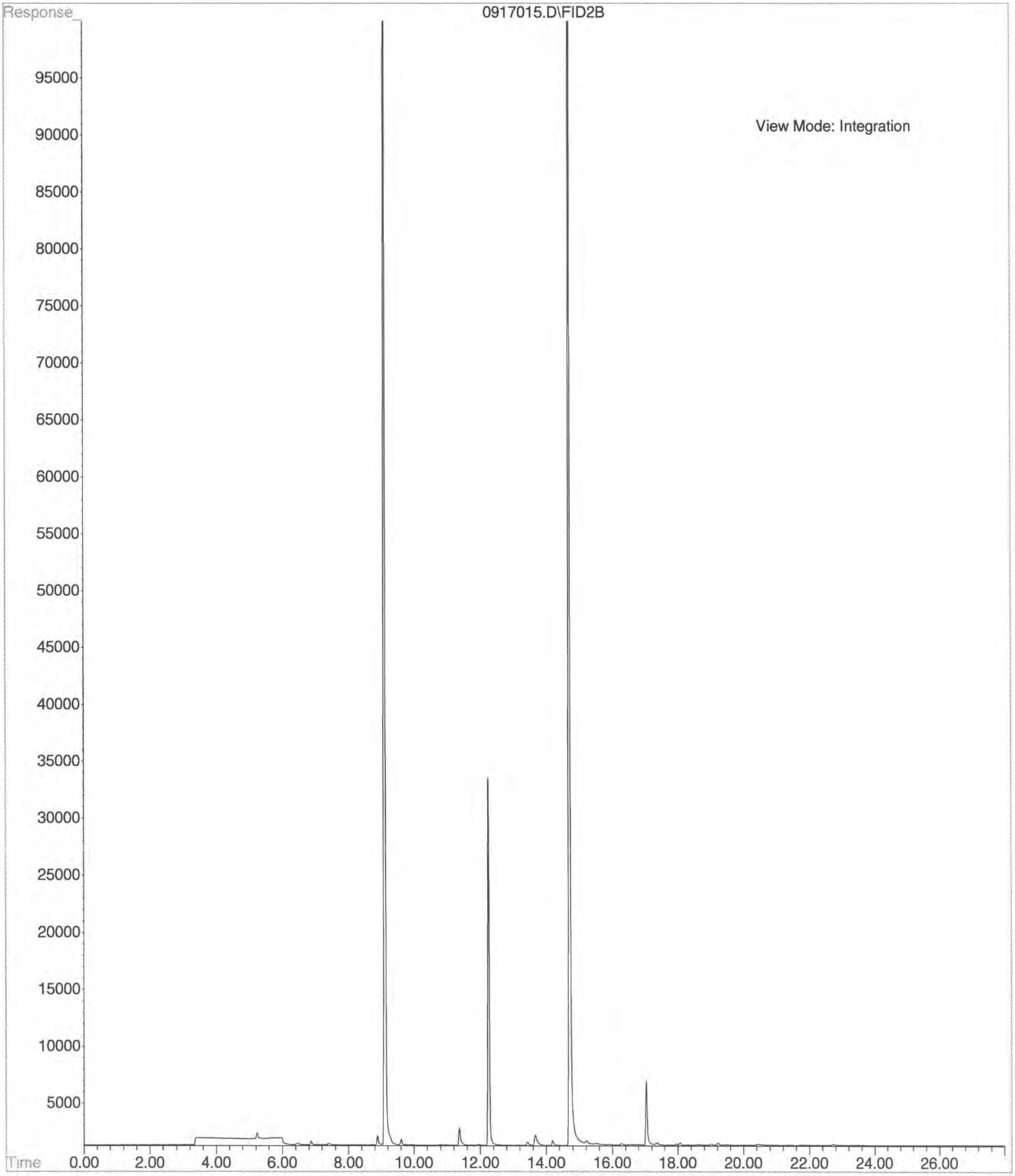
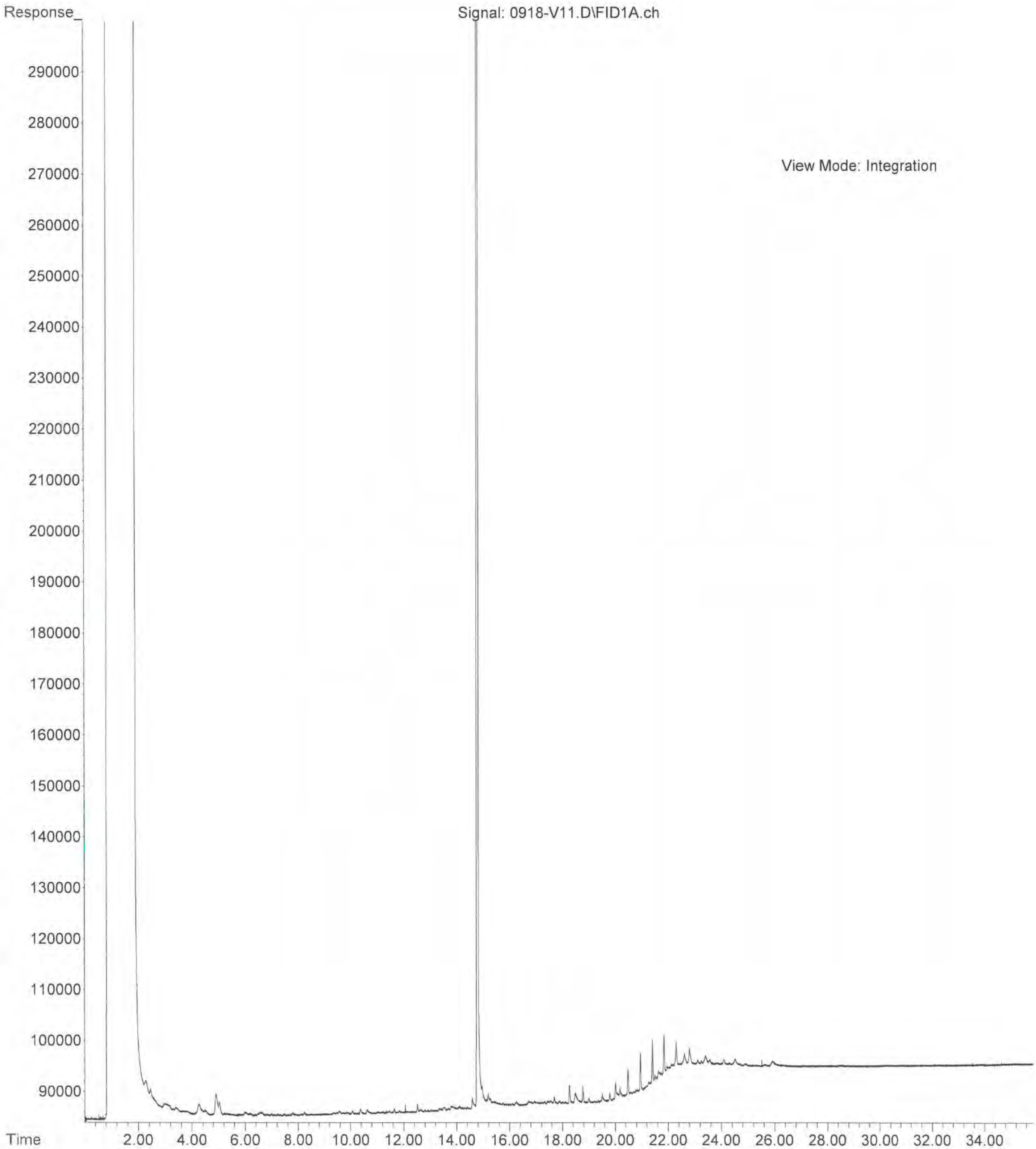
Operator   :
Acquired   : 17 Sep 2014 17:43   using AcqMethod 140822B.M
Instrument :   HOPE
Sample Name: 09-148-05f
Misc Info :
Vial Number: 15



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
```

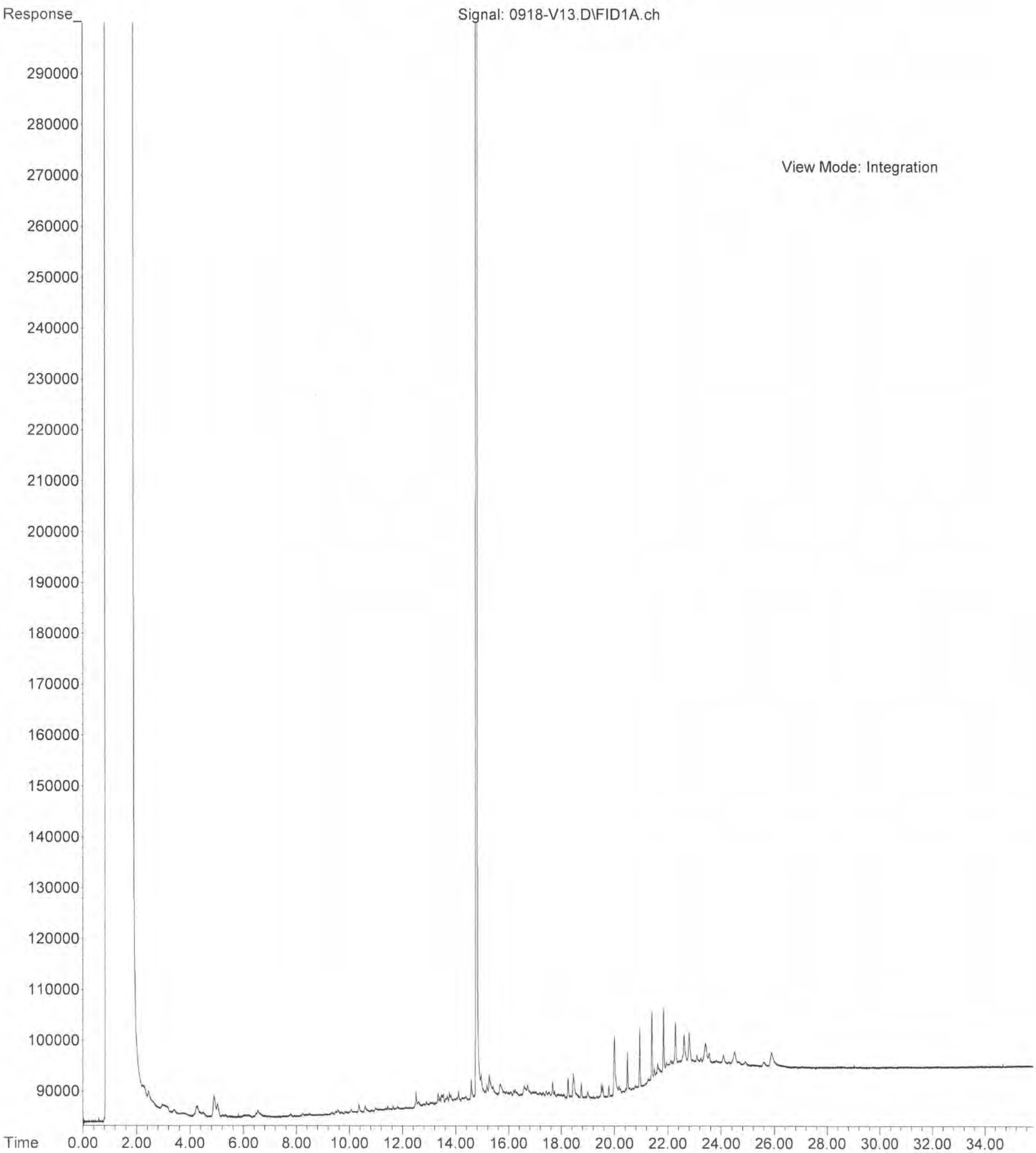

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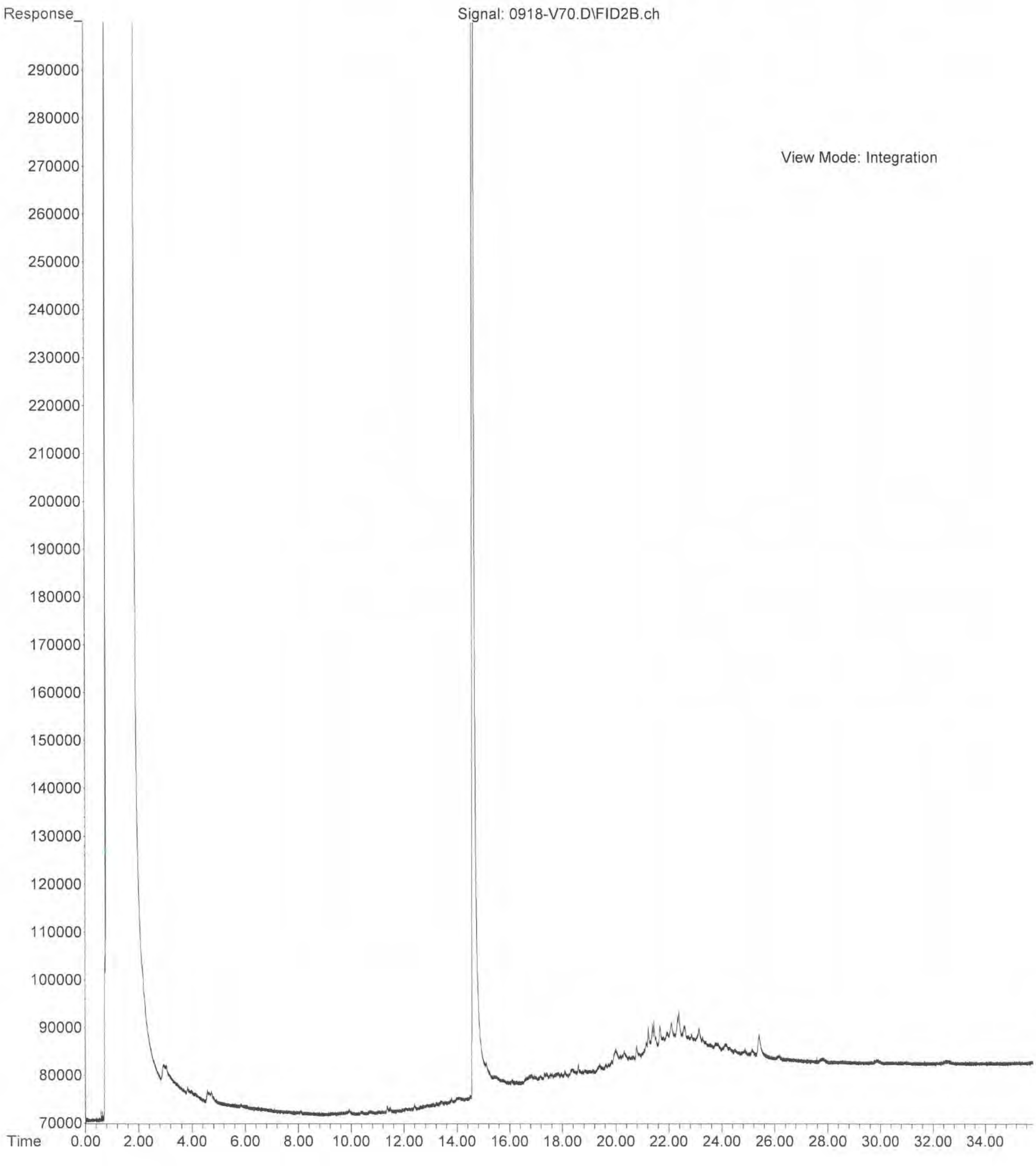
Operator    :
Acquired    : 18 Sep 2014  23:55     using AcqMethod V140210F.M
Instrument :    Vigo
Sample Name: 09-148-03
Misc Info   :
Vial Number: 70
```



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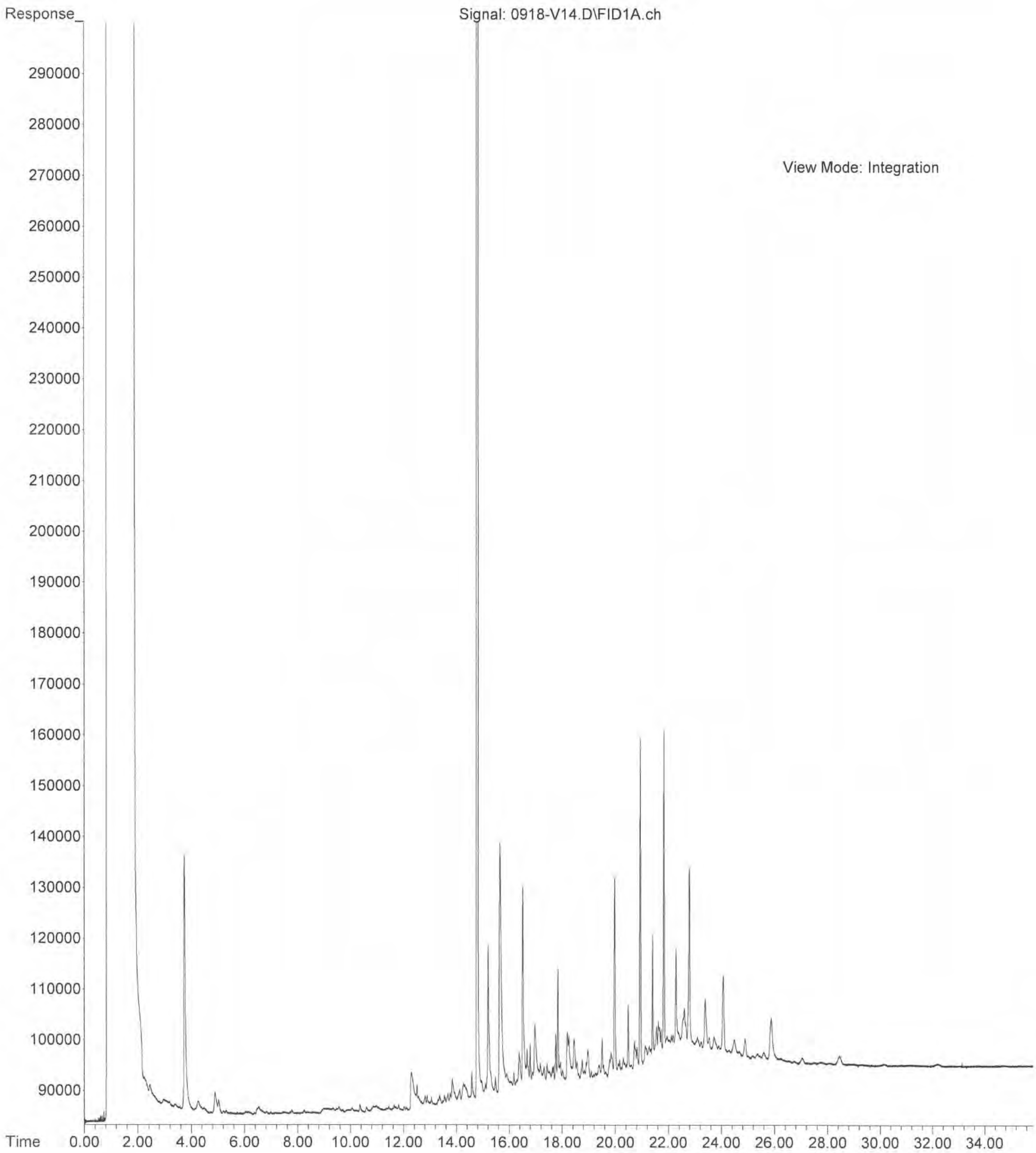
Operator :
Acquired : 18 Sep 2014 19:49 using AcqMethod V140210F.M
Instrument : Vigo
Sample Name: 09-148-04
Misc Info :
Vial Number: 14



```
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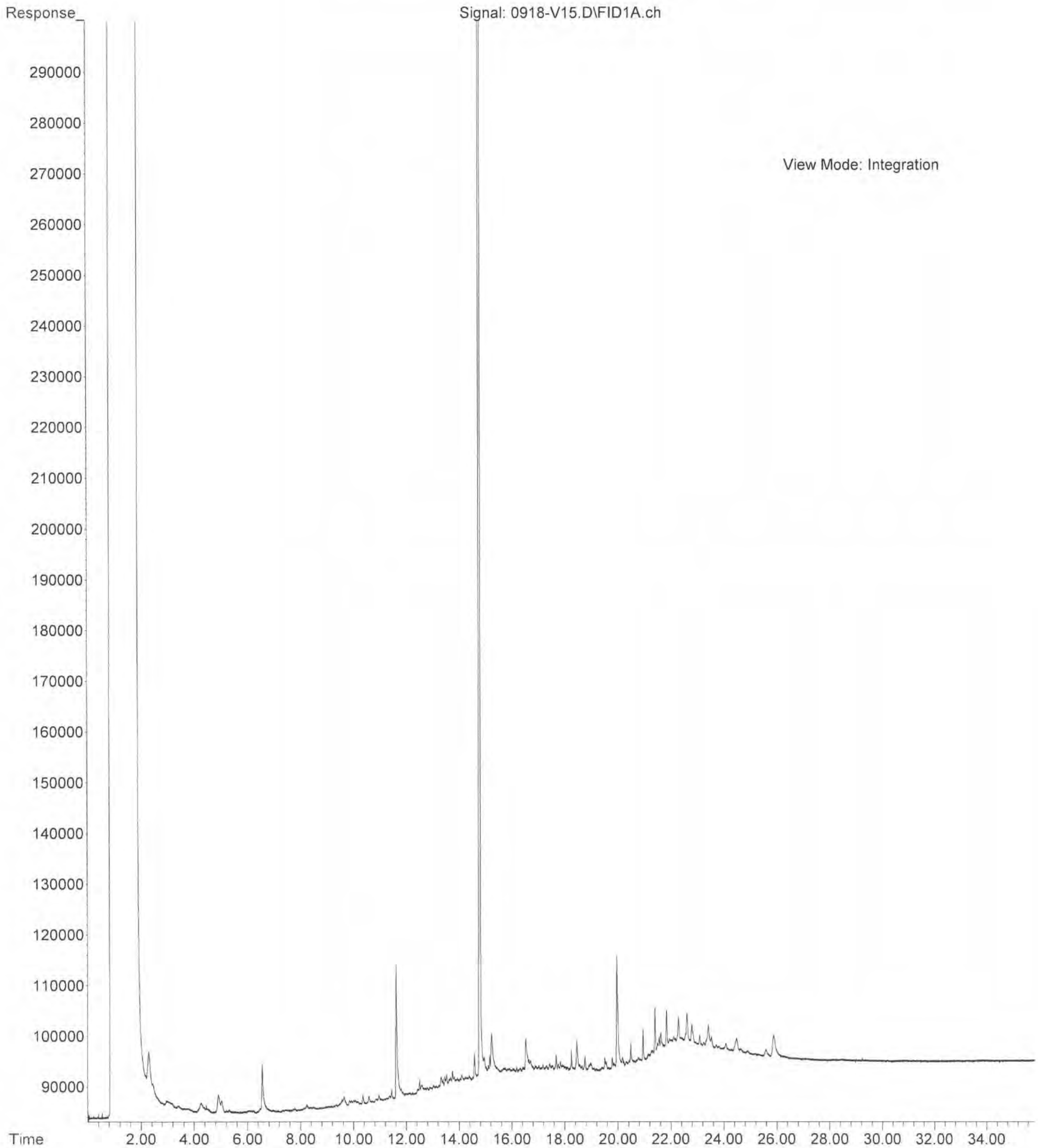
Operator    :
Acquired    : 18 Sep 2014  20:30     using AcqMethod V140210F.M
Instrument  :   Vigo
Sample Name: 09-148-05
Misc Info   :
Vial Number: 15
```



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^{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: 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	

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

09-148

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:

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	/	/	/	/	/	/		X			*Archive T
MW-1		930	W	3	9	/	/	/	/	/	/		X	X		
BC-11		1100	W	4	~~9~~ 7	/	/	/	/	/	/		X			Metals
BLMW-12		345	W	5	9	/	/	/	/	/	/		X			As, Cd
																Cr, Pd

X Added 9/26/14. DB (STA)

PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	K Stilson	K Stilson	HWA	9/15/14	1200	
Received by:	Van	Van	Spdy	"	345	
Relinquished by:	"	"	"	"	1615	
Received by:	M. Vown		COSRE	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

December 17, 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. 1412-085

Dear Kim:

Enclosed are the analytical results and associated quality control data for samples submitted on December 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: December 17, 2014
Samples Submitted: December 9, 2014
Laboratory Reference: 1412-085
Project: 2007-098-998

Case Narrative

Samples were collected on December 8, 2014 and received by the laboratory on December 9, 2014. 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: December 17, 2014
Samples Submitted: December 9, 2014
Laboratory Reference: 1412-085
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW10**					
Laboratory ID:	12-085-01					
Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Toluene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Gasoline	**ND**	100	NWTPH-Gx	12-9-14	12-9-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***85***	***71-113***				
Client ID:	**BLMW9**					
Laboratory ID:	12-085-02					
Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Toluene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Gasoline	**ND**	100	NWTPH-Gx	12-9-14	12-9-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***84***	***71-113***				
Client ID:	**MW1**					
Laboratory ID:	12-085-03					
Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Toluene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Gasoline	**ND**	100	NWTPH-Gx	12-9-14	12-9-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***87***	***71-113***				

Date of Report: December 17, 2014
Samples Submitted: December 9, 2014
Laboratory Reference: 1412-085
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW5R**					
Laboratory ID:	12-085-04					
Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Toluene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Gasoline	**ND**	100	NWTPH-Gx	12-9-14	12-9-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***89***	***71-113***				
Client ID:	**BLMW7**					
Laboratory ID:	12-085-05					
Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Toluene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Gasoline	**ND**	100	NWTPH-Gx	12-9-14	12-9-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***83***	***71-113***				
Client ID:	**DUP 12814**					
Laboratory ID:	12-085-06					
Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Toluene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Gasoline	**ND**	100	NWTPH-Gx	12-9-14	12-9-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***88***	***71-113***				

Date of Report: December 17, 2014
Samples Submitted: December 9, 2014
Laboratory Reference: 1412-085
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW6R**					
Laboratory ID:	12-085-07					
Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Toluene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Gasoline	**ND**	100	NWTPH-Gx	12-9-14	12-9-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***88***	***71-113***				
Client ID:	**BLMW11**					
Laboratory ID:	12-085-08					
Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Toluene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Gasoline	**ND**	100	NWTPH-Gx	12-9-14	12-9-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***89***	***71-113***				
Client ID:	**BLMW12**					
Laboratory ID:	12-085-09					
Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Toluene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Gasoline	**ND**	100	NWTPH-Gx	12-9-14	12-9-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***87***	***71-113***				

Date of Report: December 17, 2014
Samples Submitted: December 9, 2014
Laboratory Reference: 1412-085
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TB**					
Laboratory ID:	12-085-10					
Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Toluene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Gasoline	**ND**	100	NWTPH-Gx	12-9-14	12-9-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***85***	***71-113***				

Date of Report: December 17, 2014
Samples Submitted: December 9, 2014
Laboratory Reference: 1412-085
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:	MB1209W2					
Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Toluene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-9-14	12-9-14	
Gasoline	**ND**	100	NWTPH-Gx	12-9-14	12-9-14	
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:	12-085-02										
	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						***84***	***90***	***71-113***			
MATRIX SPIKES											
Laboratory ID:	12-085-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**52.6**	**51.5**	50.0	50.0	ND	**105**	**103**	82-120	2	14	
Toluene	**51.6**	**50.3**	50.0	50.0	ND	**103**	**101**	83-120	3	14	
Ethyl Benzene	**50.4**	**49.2**	50.0	50.0	ND	**101**	**98**	83-120	2	15	
m,p-Xylene	**50.4**	**49.2**	50.0	50.0	ND	**101**	**98**	81-123	2	15	
o-Xylene	**49.1**	**47.7**	50.0	50.0	ND	**98**	**95**	80-120	3	16	
Surrogate:											
Fluorobenzene						***91***	***96***	***71-113***			

Date of Report: December 17, 2014
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Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW10**					
Laboratory ID:	12-085-01					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-12-14	12-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-12-14	12-12-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***75***	***50-150***				
Client ID:	**BLMW9**					
Laboratory ID:	12-085-02					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	12-12-14	12-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-12-14	12-12-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***78***	***50-150***				
Client ID:	**MW1**					
Laboratory ID:	12-085-03					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-12-14	12-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-12-14	12-12-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***78***	***50-150***				
Client ID:	**BLMW5R**					
Laboratory ID:	12-085-04					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-12-14	12-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-12-14	12-12-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***83***	***50-150***				
Client ID:	**BLMW7**					
Laboratory ID:	12-085-05					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-12-14	12-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-12-14	12-12-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***82***	***50-150***				
Client ID:	**DUP 12814**					
Laboratory ID:	12-085-06					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-12-14	12-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-12-14	12-12-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***78***	***50-150***				

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NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW6R**					
Laboratory ID:	12-085-07					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-12-14	12-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-12-14	12-12-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***78***	***50-150***				
Client ID:	**BLMW11**					
Laboratory ID:	12-085-08					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-12-14	12-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-12-14	12-12-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***71***	***50-150***				
Client ID:	**BLMW12**					
Laboratory ID:	12-085-09					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-12-14	12-12-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-12-14	12-12-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***81***	***50-150***				

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NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1212W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	12-12-14	12-12-14	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	12-12-14	12-12-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***74***	***50-150***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	12-085-02										
	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						***78***	***76***	***50-150***			

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW10**					
Laboratory ID:	12-085-01					
Dichlorodifluoromethane	ND	0.30	EPA 8260C	12-11-14	12-11-14	
Chloromethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromomethane	ND	0.32	EPA 8260C	12-11-14	12-11-14	
Chloroethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Iodomethane	ND	3.6	EPA 8260C	12-11-14	12-11-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-11-14	12-11-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chloroform	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Trichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromomethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chloroethyl Vinyl Ether	ND	5.1	EPA 8260C	12-11-14	12-11-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW10**					
Laboratory ID:	12-085-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Tetrachloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromoform	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Bromobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***104***	***79-122***				
Toluene-d8	***94***	***80-120***				
4-Bromofluorobenzene	***98***	***80-120***				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW9**					
Laboratory ID:	12-085-02					
Dichlorodifluoromethane	ND	0.30	EPA 8260C	12-11-14	12-11-14	
Chloromethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromomethane	ND	0.32	EPA 8260C	12-11-14	12-11-14	
Chloroethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Iodomethane	ND	3.6	EPA 8260C	12-11-14	12-11-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-11-14	12-11-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chloroform	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Trichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromomethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chloroethyl Vinyl Ether	ND	5.1	EPA 8260C	12-11-14	12-11-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW9**					
Laboratory ID:	12-085-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Tetrachloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromoform	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Bromobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***100***	***79-122***				
Toluene-d8	***94***	***80-120***				
4-Bromofluorobenzene	***96***	***80-120***				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1**					
Laboratory ID:	12-085-03					
Dichlorodifluoromethane	ND	0.30	EPA 8260C	12-11-14	12-11-14	
Chloromethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromomethane	ND	0.32	EPA 8260C	12-11-14	12-11-14	
Chloroethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Iodomethane	ND	3.6	EPA 8260C	12-11-14	12-11-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-11-14	12-11-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chloroform	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Trichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromomethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chloroethyl Vinyl Ether	ND	5.1	EPA 8260C	12-11-14	12-11-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1**					
Laboratory ID:	12-085-03					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Tetrachloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromoform	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Bromobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***101***	***79-122***				
Toluene-d8	***94***	***80-120***				
4-Bromofluorobenzene	***97***	***80-120***				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW5R**					
Laboratory ID:	12-085-04					
Dichlorodifluoromethane	ND	0.30	EPA 8260C	12-11-14	12-11-14	
Chloromethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromomethane	ND	0.32	EPA 8260C	12-11-14	12-11-14	
Chloroethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Iodomethane	ND	3.6	EPA 8260C	12-11-14	12-11-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-11-14	12-11-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chloroform	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Trichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromomethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chloroethyl Vinyl Ether	ND	5.1	EPA 8260C	12-11-14	12-11-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW5R**					
Laboratory ID:	12-085-04					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Tetrachloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromoform	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Bromobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***102***	***79-122***				
Toluene-d8	***93***	***80-120***				
4-Bromofluorobenzene	***96***	***80-120***				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW7**					
Laboratory ID:	12-085-05					
Dichlorodifluoromethane	ND	0.30	EPA 8260C	12-11-14	12-11-14	
Chloromethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromomethane	ND	0.32	EPA 8260C	12-11-14	12-11-14	
Chloroethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Iodomethane	ND	3.6	EPA 8260C	12-11-14	12-11-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-11-14	12-11-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chloroform	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Trichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromomethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chloroethyl Vinyl Ether	ND	5.1	EPA 8260C	12-11-14	12-11-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW7**					
Laboratory ID:	12-085-05					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Tetrachloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromoform	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Bromobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***100***	***79-122***				
Toluene-d8	***98***	***80-120***				
4-Bromofluorobenzene	***100***	***80-120***				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**DUP 12814**					
Laboratory ID:	12-085-06					
Dichlorodifluoromethane	ND	0.30	EPA 8260C	12-11-14	12-11-14	
Chloromethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromomethane	ND	0.32	EPA 8260C	12-11-14	12-11-14	
Chloroethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Iodomethane	ND	3.6	EPA 8260C	12-11-14	12-11-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-11-14	12-11-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chloroform	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Trichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromomethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chloroethyl Vinyl Ether	ND	5.1	EPA 8260C	12-11-14	12-11-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**DUP 12814**					
Laboratory ID:	12-085-06					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Tetrachloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromoform	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Bromobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***98***	***79-122***				
Toluene-d8	***94***	***80-120***				
4-Bromofluorobenzene	***98***	***80-120***				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW6R**					
Laboratory ID:	12-085-07					
Dichlorodifluoromethane	ND	0.30	EPA 8260C	12-11-14	12-11-14	
Chloromethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromomethane	ND	0.32	EPA 8260C	12-11-14	12-11-14	
Chloroethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Iodomethane	ND	3.6	EPA 8260C	12-11-14	12-11-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-11-14	12-11-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chloroform	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Trichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromomethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chloroethyl Vinyl Ether	ND	5.1	EPA 8260C	12-11-14	12-11-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW6R**					
Laboratory ID:	12-085-07					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Tetrachloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromoform	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Bromobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***99***	***79-122***				
Toluene-d8	***98***	***80-120***				
4-Bromofluorobenzene	***102***	***80-120***				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW11**					
Laboratory ID:	12-085-08					
Dichlorodifluoromethane	ND	0.30	EPA 8260C	12-11-14	12-11-14	
Chloromethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromomethane	ND	0.32	EPA 8260C	12-11-14	12-11-14	
Chloroethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Iodomethane	ND	3.6	EPA 8260C	12-11-14	12-11-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-11-14	12-11-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chloroform	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Trichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromomethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chloroethyl Vinyl Ether	ND	5.1	EPA 8260C	12-11-14	12-11-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW11**					
Laboratory ID:	12-085-08					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Tetrachloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromoform	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Bromobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***107***	***79-122***				
Toluene-d8	***94***	***80-120***				
4-Bromofluorobenzene	***97***	***80-120***				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW12**					
Laboratory ID:	12-085-09					
Dichlorodifluoromethane	ND	0.30	EPA 8260C	12-11-14	12-11-14	
Chloromethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromomethane	ND	0.32	EPA 8260C	12-11-14	12-11-14	
Chloroethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Iodomethane	ND	3.6	EPA 8260C	12-11-14	12-11-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-11-14	12-11-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chloroform	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Trichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromomethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chloroethyl Vinyl Ether	ND	5.1	EPA 8260C	12-11-14	12-11-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW12**					
Laboratory ID:	12-085-09					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Tetrachloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromoform	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Bromobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***106***	***79-122***				
Toluene-d8	***92***	***80-120***				
4-Bromofluorobenzene	***95***	***80-120***				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TB**					
Laboratory ID:	12-085-10					
Dichlorodifluoromethane	ND	0.30	EPA 8260C	12-11-14	12-11-14	
Chloromethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromomethane	ND	0.32	EPA 8260C	12-11-14	12-11-14	
Chloroethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Iodomethane	ND	3.6	EPA 8260C	12-11-14	12-11-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-11-14	12-11-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chloroform	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Trichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromomethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chloroethyl Vinyl Ether	ND	5.1	EPA 8260C	12-11-14	12-11-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TB**					
Laboratory ID:	12-085-10					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Tetrachloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromoform	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Bromobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***97***	***79-122***				
Toluene-d8	***93***	***80-120***				
4-Bromofluorobenzene	***98***	***80-120***				

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HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1211W1					
Dichlorodifluoromethane	ND	0.30	EPA 8260C	12-11-14	12-11-14	
Chloromethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromomethane	ND	0.32	EPA 8260C	12-11-14	12-11-14	
Chloroethane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Iodomethane	ND	3.6	EPA 8260C	12-11-14	12-11-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-11-14	12-11-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chloroform	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Trichloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromomethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chloroethyl Vinyl Ether	ND	5.1	EPA 8260C	12-11-14	12-11-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-11-14	12-11-14	

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METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1211W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Tetrachloroethene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Bromoform	ND	1.0	EPA 8260C	12-11-14	12-11-14	
Bromobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-11-14	12-11-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-11-14	12-11-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-11-14	12-11-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***95***	***79-122***				
Toluene-d8	***93***	***80-120***				
4-Bromofluorobenzene	***95***	***80-120***				

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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:	12-085-01										
	MS	MSD	MS	MSD		MS	MSD				
1,1-Dichloroethene	**8.70**	**8.26**	10.0	10.0	ND	87	83	69-133	5	15	
Benzene	**10.8**	**10.5**	10.0	10.0	ND	108	105	75-119	3	15	
Trichloroethene	**8.76**	**8.33**	10.0	10.0	ND	88	83	75-120	5	15	
Toluene	**10.4**	**9.90**	10.0	10.0	ND	104	99	75-115	5	15	
Chlorobenzene	**10.2**	**9.72**	10.0	10.0	ND	102	97	75-120	5	15	
Surrogate:											
Dibromofluoromethane						***106***	***106***	***79-122***			
Toluene-d8						***95***	***91***	***80-120***			
4-Bromofluorobenzene						***98***	***94***	***80-120***			

Date of Report: December 17, 2014
Samples Submitted: December 9, 2014
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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	12-085-01					
Client ID:	**BLMW10**					
Arsenic	**ND**	3.0	200.8		12-16-14	
Cadmium	**ND**	4.0	200.8		12-16-14	
Chromium	**ND**	10	200.8		12-16-14	
Lead	**ND**	1.0	200.8		12-16-14	
Lab ID:	12-085-02					
Client ID:	**BLMW9**					
Arsenic	**ND**	3.0	200.8		12-16-14	
Cadmium	**ND**	4.0	200.8		12-16-14	
Chromium	**ND**	10	200.8		12-16-14	
Lead	**ND**	1.0	200.8		12-16-14	
Lab ID:	12-085-03					
Client ID:	**MW1**					
Arsenic	**ND**	3.0	200.8		12-16-14	
Cadmium	**ND**	4.0	200.8		12-16-14	
Chromium	**ND**	10	200.8		12-16-14	
Lead	**ND**	1.0	200.8		12-16-14	
Lab ID:	12-085-04					
Client ID:	**BLMW5R**					
Arsenic	**ND**	3.0	200.8		12-16-14	
Cadmium	**ND**	4.0	200.8		12-16-14	
Chromium	**ND**	10	200.8		12-16-14	
Lead	**ND**	1.0	200.8		12-16-14	

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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:	12-085-05					
Client ID:	**BLMW7**					
Arsenic	**ND**	3.0	200.8		12-16-14	
Cadmium	**ND**	4.0	200.8		12-16-14	
Chromium	**ND**	10	200.8		12-16-14	
Lead	**ND**	1.0	200.8		12-16-14	
Lab ID:	12-085-06					
Client ID:	**DUP 12814**					
Arsenic	**ND**	3.0	200.8		12-16-14	
Cadmium	**ND**	4.0	200.8		12-16-14	
Chromium	**ND**	10	200.8		12-16-14	
Lead	**ND**	1.0	200.8		12-16-14	
Lab ID:	12-085-07					
Client ID:	**BLMW6R**					
Arsenic	**ND**	3.0	200.8		12-16-14	
Cadmium	**ND**	4.0	200.8		12-16-14	
Chromium	**ND**	10	200.8		12-16-14	
Lead	**ND**	1.0	200.8		12-16-14	
Lab ID:	12-085-08					
Client ID:	**BLMW11**					
Arsenic	**30**	3.0	200.8		12-16-14	
Cadmium	**ND**	4.0	200.8		12-16-14	
Chromium	**ND**	10	200.8		12-16-14	
Lead	**ND**	1.0	200.8		12-16-14	

Date of Report: December 17, 2014
Samples Submitted: December 9, 2014
Laboratory Reference: 1412-085
Project: 2007-098-998

DISSOLVED METALS
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
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Lead	200.8	**ND**	1.0

Date of Report: December 17, 2014
Samples Submitted: December 9, 2014
Laboratory Reference: 1412-085
Project: 2007-098-998

DISSOLVED METALS
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	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	

Date of Report: December 17, 2014
Samples Submitted: December 9, 2014
Laboratory Reference: 1412-085
Project: 2007-098-998

DISSOLVED METALS
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	
Cadmium	80.0	**81.9**	102	**84.1**	105	3	
Chromium	80.0	**83.0**	104	**83.2**	104	0	
Lead	80.0	**74.9**	94	**75.8**	95	1	

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

Chain of Custody and Laboratory Anaylsis Request

DATE: 12/8/14
PAGE: 1 of 1

PROJECT NAME: Bothell Landing #: 2007-098-8 998
SAMPLERS NAME: KStilson PHONE:
SAMPLERS SIGNATURE: [signature] DATE: 12/8/14
HWA CONTACT: KStilson PHONE:

12-085

TURNAROUND TIME
☐ DAYS
☑ STANDARD

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH-G	Dx	BTEX	HVOCs	Metals *	EDD	REMARKS
BLMW10	12/8/14	945	W	1	10	\	\	\	\	X		filtered infield
BLMW9		1015		2	10	\	\	\	\	X		
~~B~~ MW1		1045		3	10	\	\	\	\	X		
BLMW5R		1130		4	10	\	\	\	\	X		
BLMW7		~~115~~ 1245		5	10	\	\	\	\	X		
DUP12814		115		6	10	\	\	\	\	X		
BLMW6R		145		7	10	\	\	\	\	X		
BLMW11		230		8	10	\	\	\	\	X		
BLMW12		345		9	10	\	\	\	\			Not field filtered
TB	12/8/14	—	W	10	3	\		\	\			

Metals As, Cd, Cr, Pb run Diss initially. Hold Total for results

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: KStilson	[signature]	HWA	12/8/14	9:48	
Received by: Pat Miller	[signature]	Speedy	12-8-14	9:48	
Relinquished by: Pat Miller	[signature]	Speedy	12-8-14	10:28	
Received by: M Voun	[signature]	OSE	12/8/14	10 28	

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. 1412-085B

Dear Kim:

Enclosed are the analytical results and associated quality control data for samples submitted on December 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 15, 2015
Samples Submitted: December 9, 2014
Laboratory Reference: 1412-085B
Project: 2007-098-998

Case Narrative

Samples were collected on December 8, 2014 and received by the laboratory on December 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.

Date of Report: January 15, 2015
Samples Submitted: December 9, 2014
Laboratory Reference: 1412-085B
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:	12-085-08					
Client ID:	**BLMW11**					
Arsenic	**32**	3.3	200.8	1-14-15	1-14-15	

Date of Report: January 15, 2015
Samples Submitted: December 9, 2014
Laboratory Reference: 1412-085B
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 9, 2014
Laboratory Reference: 1412-085B
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 9, 2014
Laboratory Reference: 1412-085B
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	

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 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: 12/8/14
PAGE: 1 of 1

12-085

PROJECT NAME: Bothell Landing #: 2007-098-8 998
SAMPLERS NAME: KStilson PHONE:
SAMPLERS SIGNATURE: KS DATE: 12/8/14
HWA CONTACT: KStilson PHONE:

TURNAROUND TIME
☐ DAYS
☑ STANDARD

ANALYSIS REQUESTED

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	TPH-G	Dx	BTEX	HVOCs	Metals *		TOTAL ARSENIC							EDD	REMARKS
BLMW10	12/8/14	945	W	1	10	/	/	/	/	X										filtered in field
BLMW9		1015		2	10	/	/	/	/	X										
B MW1		1045		3	10	/	/	/	/	X										
BLMW5R		1130		4	10	/	/	/	/	X										
BLMW7		~~115~~ 1245		5	10	/	/	/	/	X										
DUP 12814		115		6	10	/	/	/	/	X										
BLMW6R		145		7	10	/	/	/	/	X										
BLMW11		230		8	10	/	/	/	/	X		X								
BLMW12		345		9	10	/	/	/	/											Not field filtered
TB	12/8/14	—	W	10	3	/		/	/											

Metals As, Cd, Cr, Pb run Diss initially. Hold Total for results

X added 1/12/15. DB 3 day TAT

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: KStilson	KS	HWA	12/9/14	9:48	
Received by: Pat Miller	Pat Miller	Speedy	12-9-14	9:48	
Relinquished by: Pat Miller	Pat Miller	Speedy	12-9-14	10:28	
Received by: M Voun	[signature]	OSE	12/9/14	10:28	

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

December 29, 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. 1412-191

Dear Kim:

Enclosed are the analytical results and associated quality control data for samples submitted on December 17, 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 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
Project: 2007-098-998

Case Narrative

Samples were collected on December 16, 2014 and received by the laboratory on December 17, 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 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW-19**					
Laboratory ID:	12-191-01					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloromethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Iodomethane	ND	1.9	EPA 8260C	12-18-14	12-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-18-14	12-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroform	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Trichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chloroethyl Vinyl Ether	ND	3.6	EPA 8260C	12-18-14	12-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW-19**					
Laboratory ID:	12-191-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Tetrachloroethene	1.0	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromoform	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Bromobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***91***	***79-122***				
Toluene-d8	***100***	***80-120***				
4-Bromofluorobenzene	***103***	***80-120***				

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
Project: 2007-098-998

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-8**					
Laboratory ID:	12-191-02					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloromethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Iodomethane	ND	1.9	EPA 8260C	12-18-14	12-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-18-14	12-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroform	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Trichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chloroethyl Vinyl Ether	ND	3.6	EPA 8260C	12-18-14	12-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-8**					
Laboratory ID:	12-191-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Tetrachloroethene	0.69	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromoform	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Bromobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***94***	***79-122***				
Toluene-d8	***100***	***80-120***				
4-Bromofluorobenzene	***99***	***80-120***				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW-4**					
Laboratory ID:	12-191-03					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloromethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Iodomethane	ND	1.9	EPA 8260C	12-18-14	12-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-18-14	12-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroform	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Trichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chloroethyl Vinyl Ether	ND	3.6	EPA 8260C	12-18-14	12-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW-4**					
Laboratory ID:	12-191-03					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Tetrachloroethene	0.54	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromoform	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Bromobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***86***	***79-122***				
Toluene-d8	***97***	***80-120***				
4-Bromofluorobenzene	***96***	***80-120***				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW-17**					
Laboratory ID:	12-191-04					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloromethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Iodomethane	ND	1.9	EPA 8260C	12-18-14	12-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-18-14	12-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroform	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Trichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chloroethyl Vinyl Ether	ND	3.6	EPA 8260C	12-18-14	12-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW-17**					
Laboratory ID:	12-191-04					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Tetrachloroethene	0.52	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromoform	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Bromobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***93***	***79-122***				
Toluene-d8	***99***	***80-120***				
4-Bromofluorobenzene	***100***	***80-120***				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW20**					
Laboratory ID:	12-191-05					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloromethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Iodomethane	ND	1.9	EPA 8260C	12-18-14	12-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-18-14	12-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroform	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Trichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chloroethyl Vinyl Ether	ND	3.6	EPA 8260C	12-18-14	12-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW20**					
Laboratory ID:	12-191-05					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Tetrachloroethene	0.41	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromoform	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Bromobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***88***	***79-122***				
Toluene-d8	***97***	***80-120***				
4-Bromofluorobenzene	***100***	***80-120***				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW12**					
Laboratory ID:	12-191-06					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloromethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Iodomethane	ND	1.9	EPA 8260C	12-18-14	12-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-18-14	12-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroform	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Trichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chloroethyl Vinyl Ether	ND	3.6	EPA 8260C	12-18-14	12-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW12**					
Laboratory ID:	12-191-06					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Tetrachloroethene	0.44	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromoform	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Bromobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***92***	***79-122***				
Toluene-d8	***96***	***80-120***				
4-Bromofluorobenzene	***98***	***80-120***				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TB**					
Laboratory ID:	12-191-07					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloromethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Iodomethane	ND	1.9	EPA 8260C	12-18-14	12-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-18-14	12-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroform	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Trichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chloroethyl Vinyl Ether	ND	3.6	EPA 8260C	12-18-14	12-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TB**					
Laboratory ID:	12-191-07					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromoform	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Bromobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***91***	***79-122***				
Toluene-d8	***95***	***80-120***				
4-Bromofluorobenzene	***95***	***80-120***				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BC-16**					
Laboratory ID:	12-191-08					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloromethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Iodomethane	ND	1.9	EPA 8260C	12-18-14	12-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-18-14	12-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroform	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Trichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chloroethyl Vinyl Ether	ND	3.6	EPA 8260C	12-18-14	12-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BC-16**					
Laboratory ID:	12-191-08					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Tetrachloroethene	0.39	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromoform	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Bromobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***95***	***79-122***				
Toluene-d8	***95***	***80-120***				
4-Bromofluorobenzene	***95***	***80-120***				

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HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1218W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloromethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Vinyl Chloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroethane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Trichlorofluoromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Iodomethane	ND	1.9	EPA 8260C	12-18-14	12-18-14	
Methylene Chloride	ND	1.0	EPA 8260C	12-18-14	12-18-14	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chloroform	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Carbon Tetrachloride	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Trichloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromomethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromodichloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chloroethyl Vinyl Ether	ND	3.6	EPA 8260C	12-18-14	12-18-14	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	12-18-14	12-18-14	

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METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1218W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Tetrachloroethene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Dibromochloromethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromoethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Chlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Bromoform	ND	1.0	EPA 8260C	12-18-14	12-18-14	
Bromobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	12-18-14	12-18-14	
2-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
4-Chlorotoluene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	12-18-14	12-18-14	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Hexachlorobutadiene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	12-18-14	12-18-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***85***	***79-122***				
Toluene-d8	***98***	***80-120***				
4-Bromofluorobenzene	***99***	***80-120***				

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
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Project: 2007-098-998

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:	12-191-02										
	MS	MSD	MS	MSD		MS	MSD				
1,1-Dichloroethene	**9.46**	**9.71**	10.0	10.0	ND	95	97	69-133	3	15	
Benzene	**8.89**	**9.62**	10.0	10.0	ND	89	96	75-119	8	15	
Trichloroethene	**8.52**	**8.99**	10.0	10.0	ND	85	90	75-120	5	15	
Toluene	**9.77**	**10.1**	10.0	10.0	ND	98	101	75-115	3	15	
Chlorobenzene	**9.15**	**9.72**	10.0	10.0	ND	92	97	75-120	6	15	
Surrogate:											
Dibromofluoromethane						***93***	***92***	***79-122***			
Toluene-d8						***98***	***98***	***80-120***			
4-Bromofluorobenzene						***99***	***99***	***80-120***			

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW-19**					
Laboratory ID:	12-191-01					
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	**4.0**	1.0	EPA 8021B	12-17-14	12-17-14	
m,p-Xylene	**2.0**	1.0	EPA 8021B	12-17-14	12-17-14	
o-Xylene	**ND**	1.0	EPA 8021B	12-17-14	12-17-14	
Gasoline	**330**	100	NWTPH-Gx	12-17-14	12-17-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***90***	***71-113***				
Client ID:	**BLMW-8**					
Laboratory ID:	12-191-02					
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	***94***	***71-113***				
Client ID:	**HZMW-4**					
Laboratory ID:	12-191-03					
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	***101***	***71-113***				

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Samples Submitted: December 17, 2014
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Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW-17**					
Laboratory ID:	12-191-04					
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	***93***	***71-113***				
Client ID:	**HZMW20**					
Laboratory ID:	12-191-05					
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	***97***	***71-113***				
Client ID:	**HZMW12**					
Laboratory ID:	12-191-06					
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	***100***	***71-113***				

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TB**					
Laboratory ID:	12-191-07					
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	***104***	***71-113***				
Client ID:	**BC-16**					
Laboratory ID:	12-191-08					
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	***80***	***71-113***				

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
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:	MB1217W2					
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	***98***	***71-113***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	12-191-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**4.01**	**3.30**	NA	NA		NA		NA	19	30	
m,p-Xylene	**1.95**	**1.50**	NA	NA		NA		NA	26	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**325**	**301**	NA	NA		NA		NA	8	30	
Surrogate:											
Fluorobenzene						***90***	***83***	***71-113***			
MATRIX SPIKES											
Laboratory ID:	12-180-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**52.6**	**53.5**	50.0	50.0	ND	**105**	**107**	82-120	2	14	
Toluene	**52.6**	**53.4**	50.0	50.0	ND	**105**	**107**	83-120	2	14	
Ethyl Benzene	**51.9**	**52.9**	50.0	50.0	ND	**104**	**106**	83-120	2	15	
m,p-Xylene	**52.7**	**53.5**	50.0	50.0	ND	**105**	**107**	81-123	2	15	
o-Xylene	**51.3**	**52.5**	50.0	50.0	ND	**103**	**105**	80-120	2	16	
Surrogate:											
Fluorobenzene						***98***	***97***	***71-113***			

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW-19**					
Laboratory ID:	12-191-01					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-19-14	12-19-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-19-14	12-19-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***73***	***50-150***				
Client ID:	**BLMW-8**					
Laboratory ID:	12-191-02					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-19-14	12-19-14	
Lube Oil Range Organics	**0.63**	0.41	NWTPH-Dx	12-19-14	12-19-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***68***	***50-150***				
Client ID:	**HZMW-4**					
Laboratory ID:	12-191-03					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-19-14	12-19-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-19-14	12-19-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***76***	***50-150***				
Client ID:	**HZMW-17**					
Laboratory ID:	12-191-04					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-19-14	12-19-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-19-14	12-19-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***82***	***50-150***				
Client ID:	**HZMW20**					
Laboratory ID:	12-191-05					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	12-19-14	12-19-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-19-14	12-19-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***69***	***50-150***				
Client ID:	**HZMW12**					
Laboratory ID:	12-191-06					
Diesel Range Organics	**0.46**	0.26	NWTPH-Dx	12-19-14	12-19-14	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	12-19-14	12-19-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***72***	***50-150***				

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BC-16**					
Laboratory ID:	12-191-08					
Diesel Range Organics	**0.55**	0.27	NWTPH-Dx	12-19-14	12-19-14	
Lube Oil Range Organics	**0.54**	0.43	NWTPH-Dx	12-19-14	12-19-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***72***	***50-150***				

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
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:	MB1219W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	12-19-14	12-19-14	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	12-19-14	12-19-14	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***65***	***50-150***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	12-191-01										
	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						***73***	***79***	***50-150***			

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
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:	12-191-01					
Client ID:	**HZMW-19**					
Arsenic	**ND**	3.3	200.8	12-24-14	12-24-14	
Lab ID:	12-191-02					
Client ID:	**BLMW-8**					
Arsenic	**ND**	3.3	200.8	12-24-14	12-24-14	
Lab ID:	12-191-03					
Client ID:	**HZMW-4**					
Arsenic	**ND**	3.3	200.8	12-24-14	12-24-14	
Lab ID:	12-191-04					
Client ID:	**HZMW-17**					
Arsenic	**5.1**	3.3	200.8	12-24-14	12-24-14	
Lab ID:	12-191-05					
Client ID:	**HZMW20**					
Arsenic	**ND**	3.3	200.8	12-24-14	12-24-14	
Lab ID:	12-191-06					
Client ID:	**HZMW12**					
Arsenic	**14**	3.3	200.8	12-24-14	12-24-14	
Lab ID:	12-191-08					
Client ID:	**BC-16**					
Arsenic	**23**	3.3	200.8	12-24-14	12-24-14	

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	12-24-14
Date Analyzed:	12-24-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB1224WM1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 12-24-14
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	3.3	

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
Project: 2007-098-998

TOTAL ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 12-24-14
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	

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
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:	12-191-01					
Client ID:	**HZMW-19**					
Arsenic	**ND**	3.0	200.8		12-23-14	
Lab ID:	12-191-02					
Client ID:	**BLMW-8**					
Arsenic	**ND**	3.0	200.8		12-23-14	
Lab ID:	12-191-03					
Client ID:	**HZMW-4**					
Arsenic	**ND**	3.0	200.8		12-23-14	
Lab ID:	12-191-04					
Client ID:	**HZMW-17**					
Arsenic	**ND**	3.0	200.8		12-23-14	
Lab ID:	12-191-05					
Client ID:	**HZMW20**					
Arsenic	**ND**	3.0	200.8		12-23-14	
Lab ID:	12-191-06					
Client ID:	**HZMW12**					
Arsenic	**15**	3.0	200.8		12-23-14	
Lab ID:	12-191-08					
Client ID:	**BC-16**					
Arsenic	**11**	3.0	200.8		12-23-14	

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed: 12-23-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1223D1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed: 12-23-14

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	

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-191
Project: 2007-098-998

DISSOLVED ARSENIC
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed: 12-23-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-191-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**207**	104	**212**	106	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.

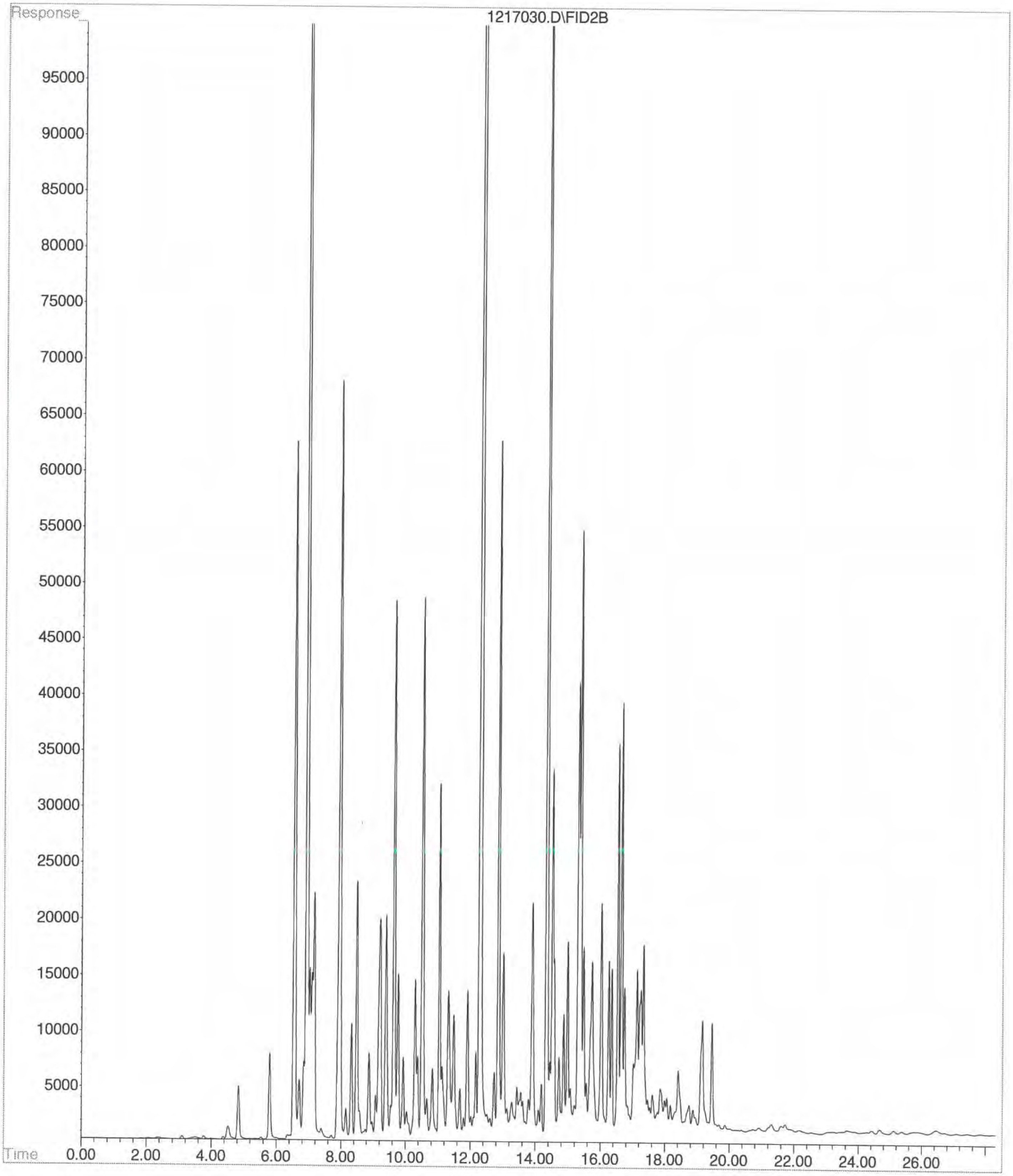
X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

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.

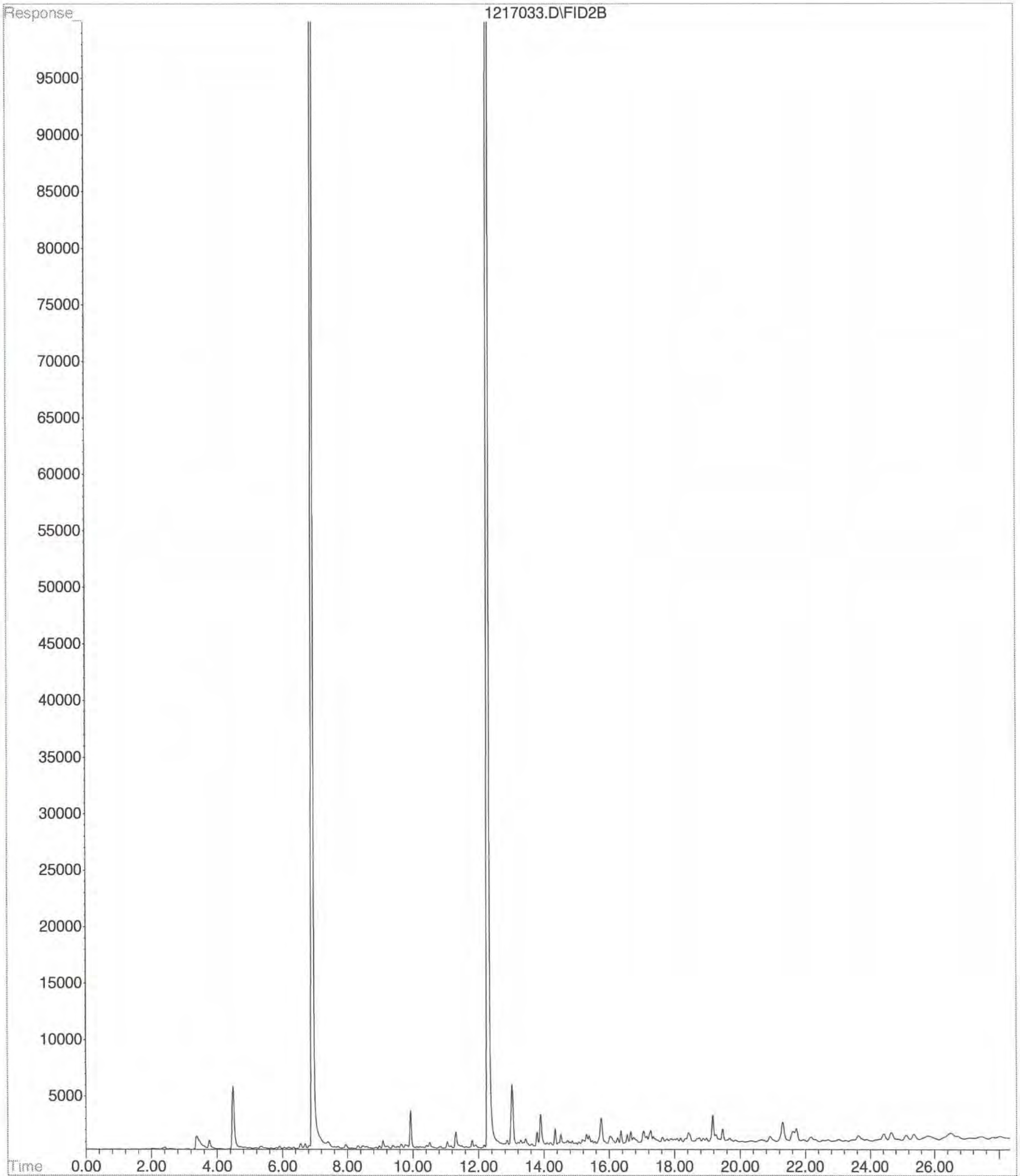
Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

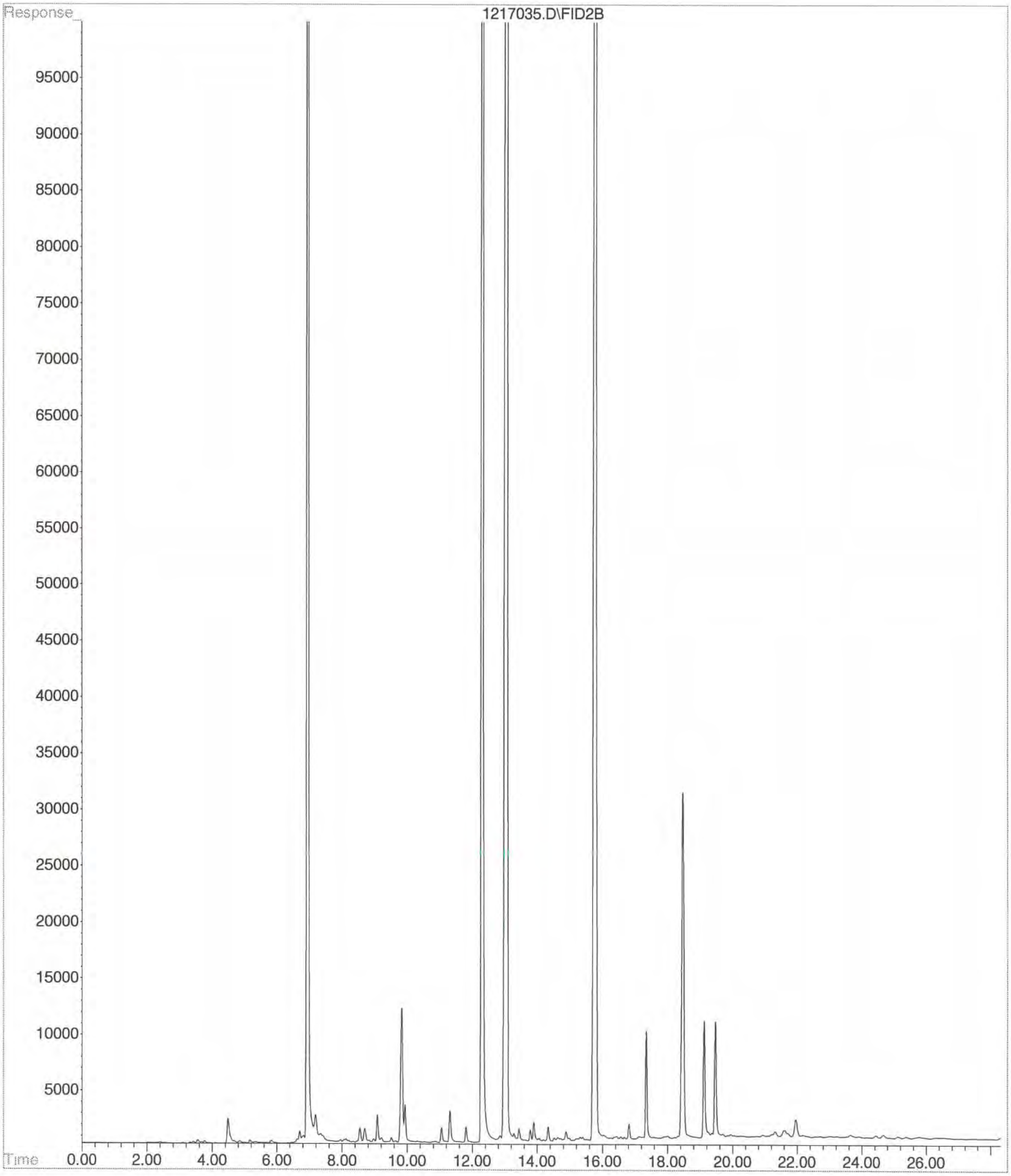
File : X:\BTEX\DARYL\DATA\D141217\1217030.D
Operator :
Acquired : 18 Dec 2014 4:28 using AcqMethod 141012DB.M
Instrument : Daryl
Sample Name: 12-191-01b
Misc Info : V2-36-23
Vial Number: 30



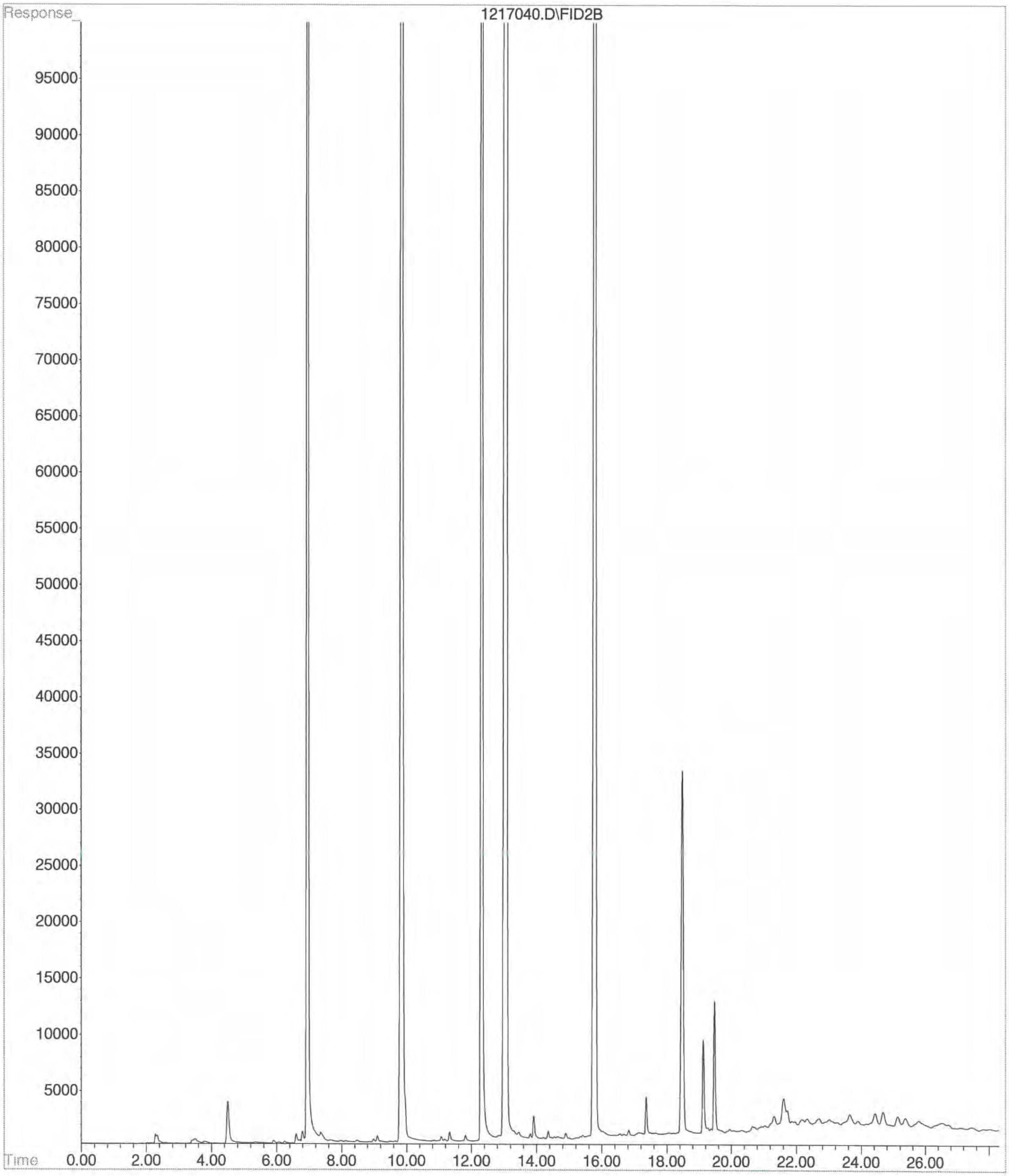
File   : X:\BTEX\DARYL\DATA\D141217\1217033.D
Operator   :
Acquired   : 18 Dec 2014   6:07   using AcqMethod 141012DB.M
Instrument :   Daryl
Sample Name: 12-191-02b
Misc Info : V2-36-23
Vial Number: 33



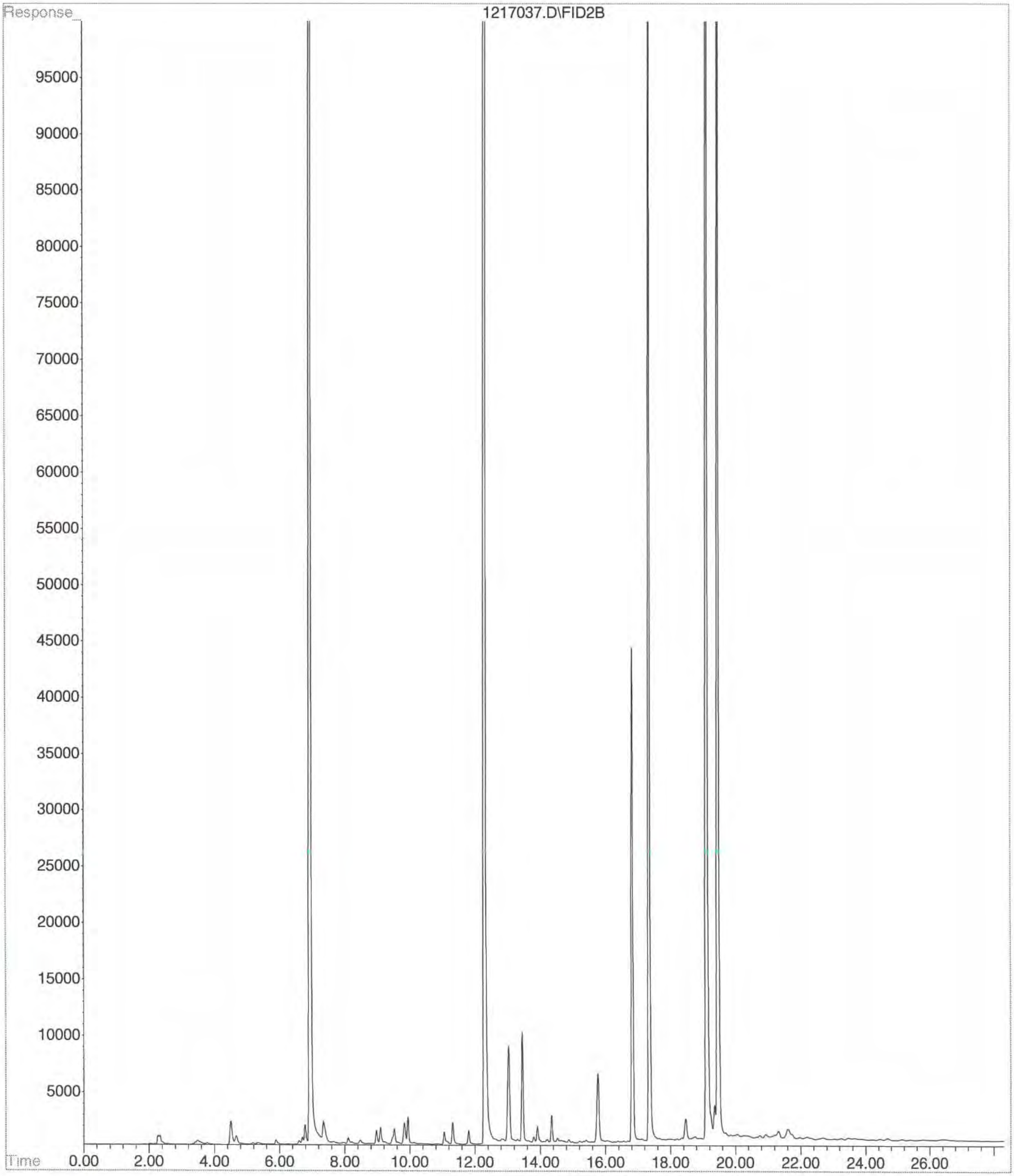
File   : X:\BTEX\DARYL\DATA\D141217\1217035.D
Operator   :
Acquired   : 18 Dec 2014   7:14   using AcqMethod 141012DB.M
Instrument :   Daryl
Sample Name: 12-191-03b
Misc Info : V2-36-23
Vial Number: 35



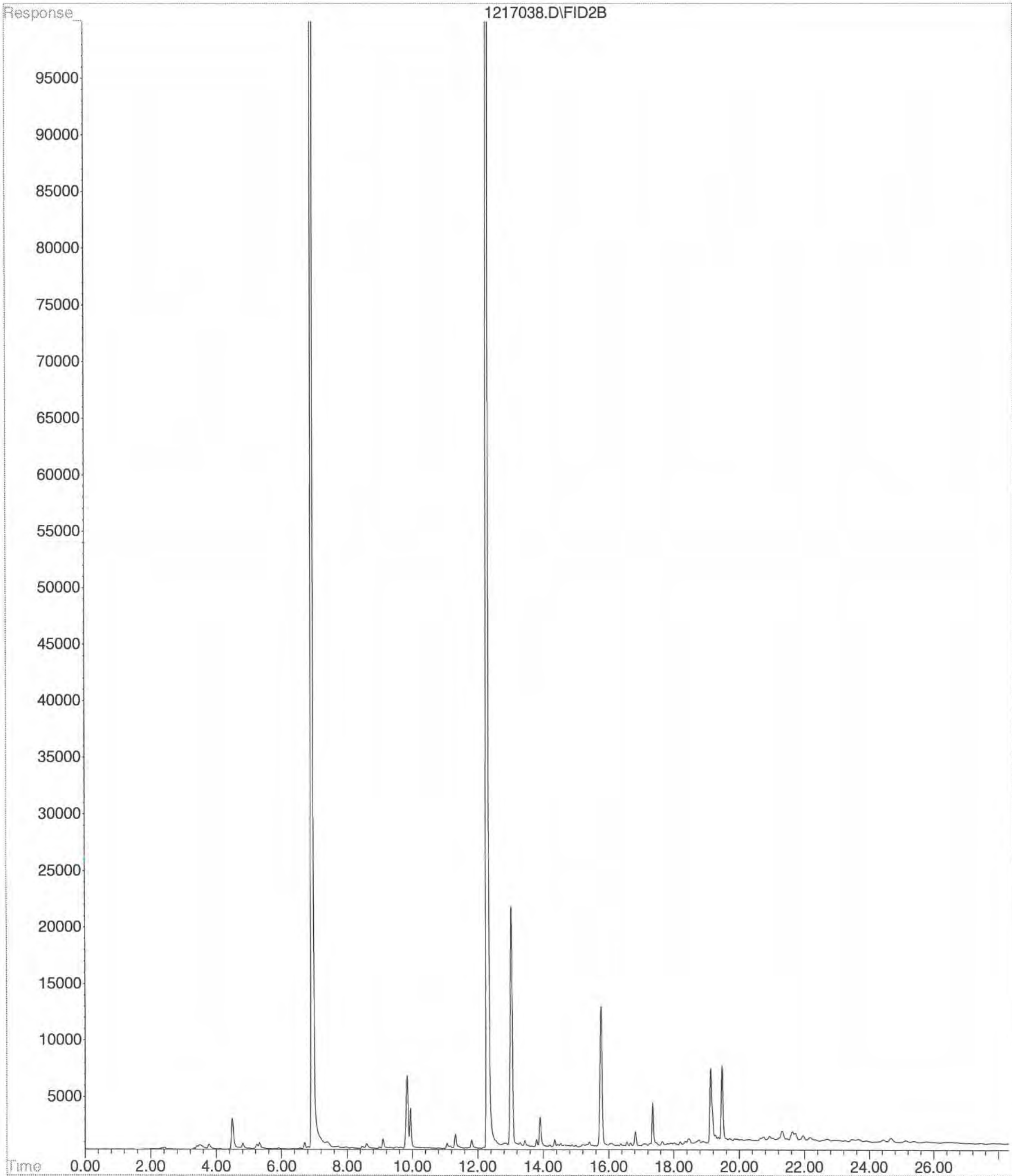
File : X:\BTEX\DARYL\DATA\D141217\1217040.D
Operator :
Acquired : 18 Dec 2014 10:04 using AcqMethod 141012DB.M
Instrument : Daryl
Sample Name: 12-191-04b RR
Misc Info : V2-36-23
Vial Number: 40



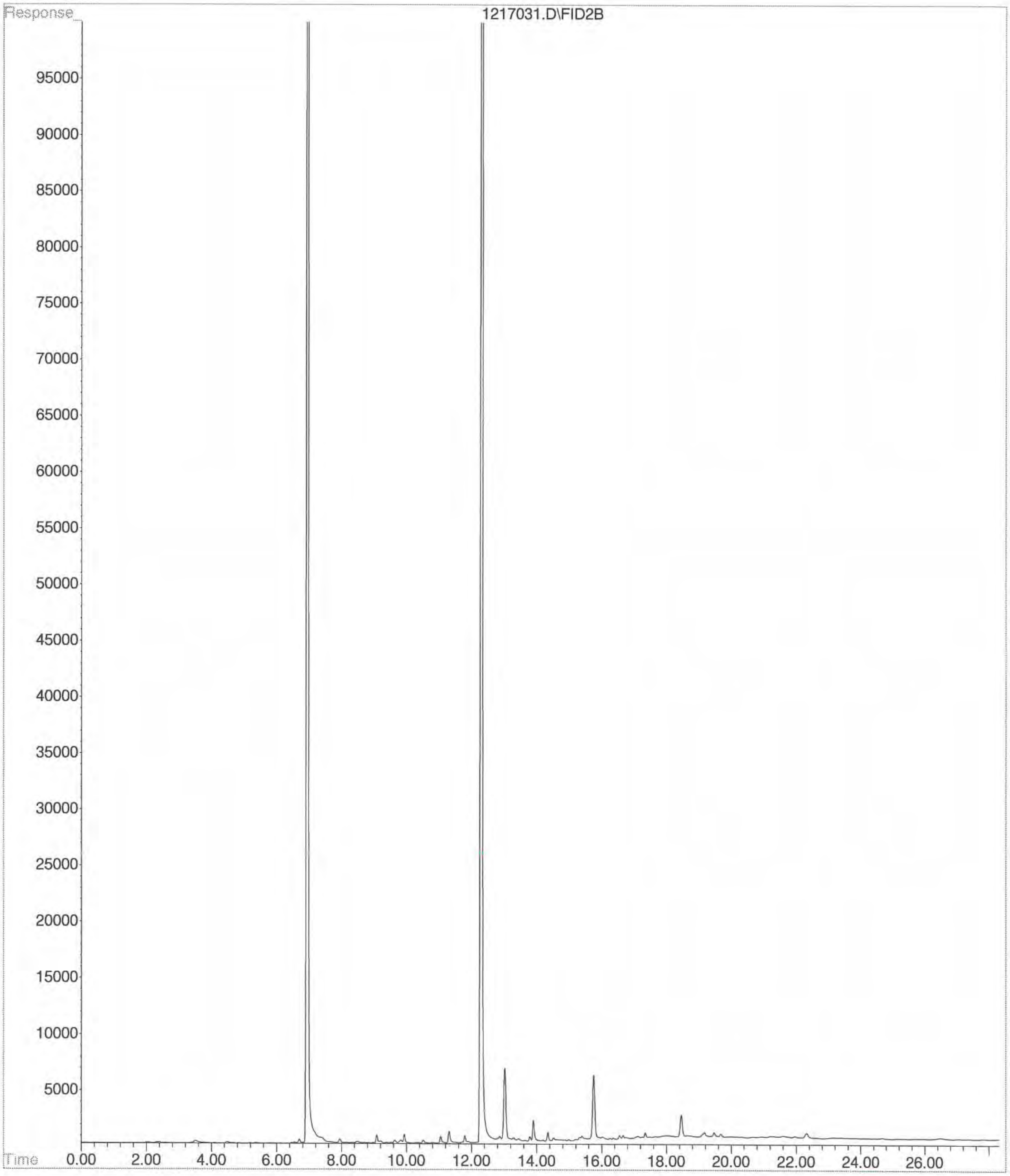
File : X:\BTEX\DARYL\DATA\D141217\1217037.D
Operator :
Acquired : 18 Dec 2014 8:21 using AcqMethod 141012DB.M
Instrument : Daryl
Sample Name: 12-191-05b
Misc Info : V2-36-23
Vial Number: 37



File   : X:\BTEX\DARYL\DATA\D141217\1217038.D
Operator   :
Acquired   : 18 Dec 2014   8:55   using AcqMethod 141012DB.M
Instrument :   Daryl
Sample Name: 12-191-06b
Misc Info : V2-36-23
Vial Number: 38



File : X:\BTEX\DARYL\DATA\D141217\1217031.D
Operator :
Acquired : 18 Dec 2014 5:01 using AcqMethod 141012DB.M
Instrument : Daryl
Sample Name: 12-191-07a
Misc Info : V2-36-23
Vial Number: 31



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File        : X:\BTEX\DARYL\DATA\D141217\1217039.D
Operator    :
Acquired    : 18 Dec 2014   9:28     using AcqMethod 141012DB.M
Instrument :   Daryl
Sample Name: 12-191-08b
Misc Info  : V2-36-23
Vial Number: 39
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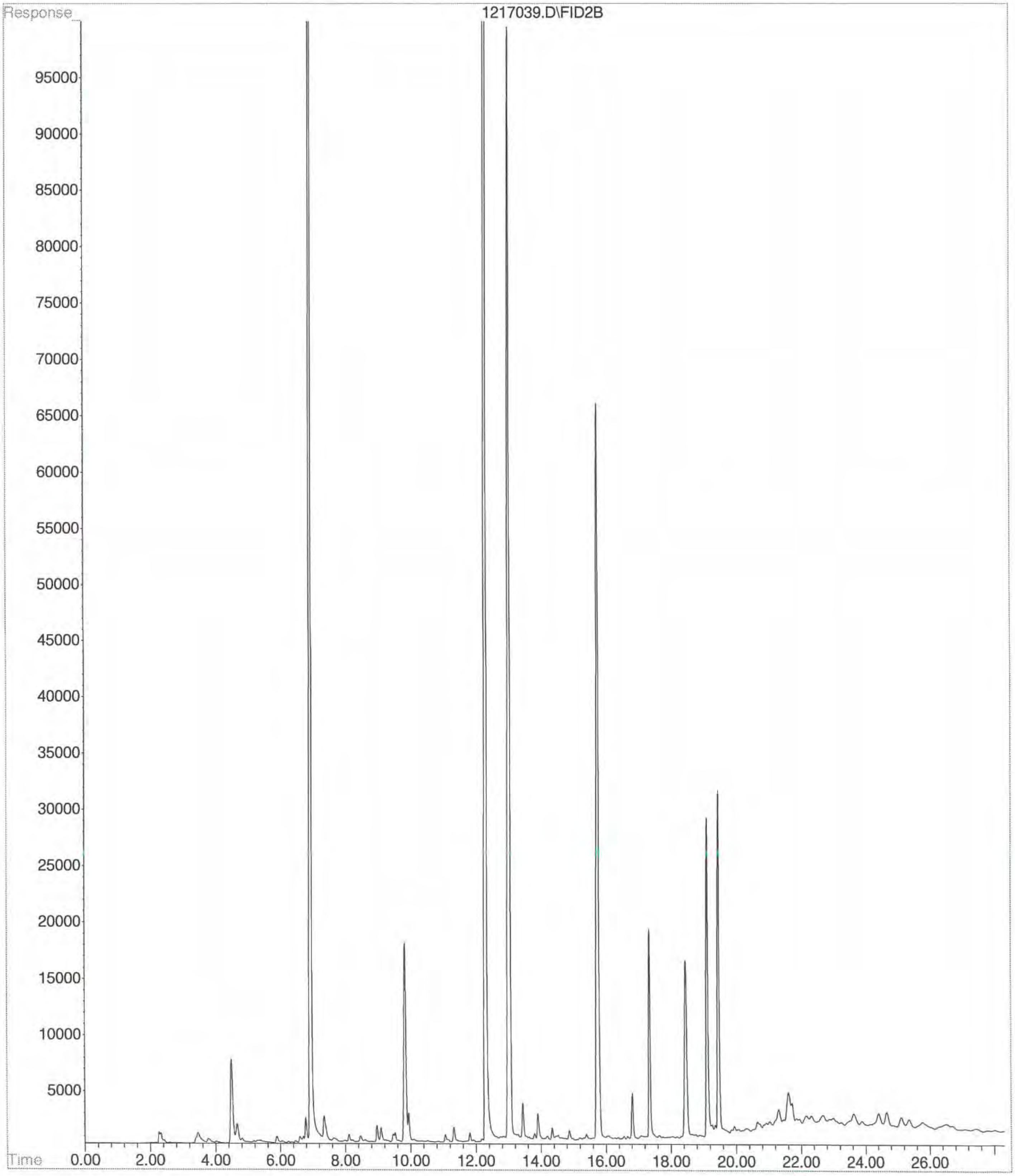

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File        :X:\DIESELS\TERI\DATA\T141219\1219-T05.D
Operator    : ZT
Acquired    : 19 Dec 2014  14:12     using AcqMethod T141208F.M
Instrument :   Teri
Sample Name: 12-191-02
Misc Info  :
Vial Number: 5
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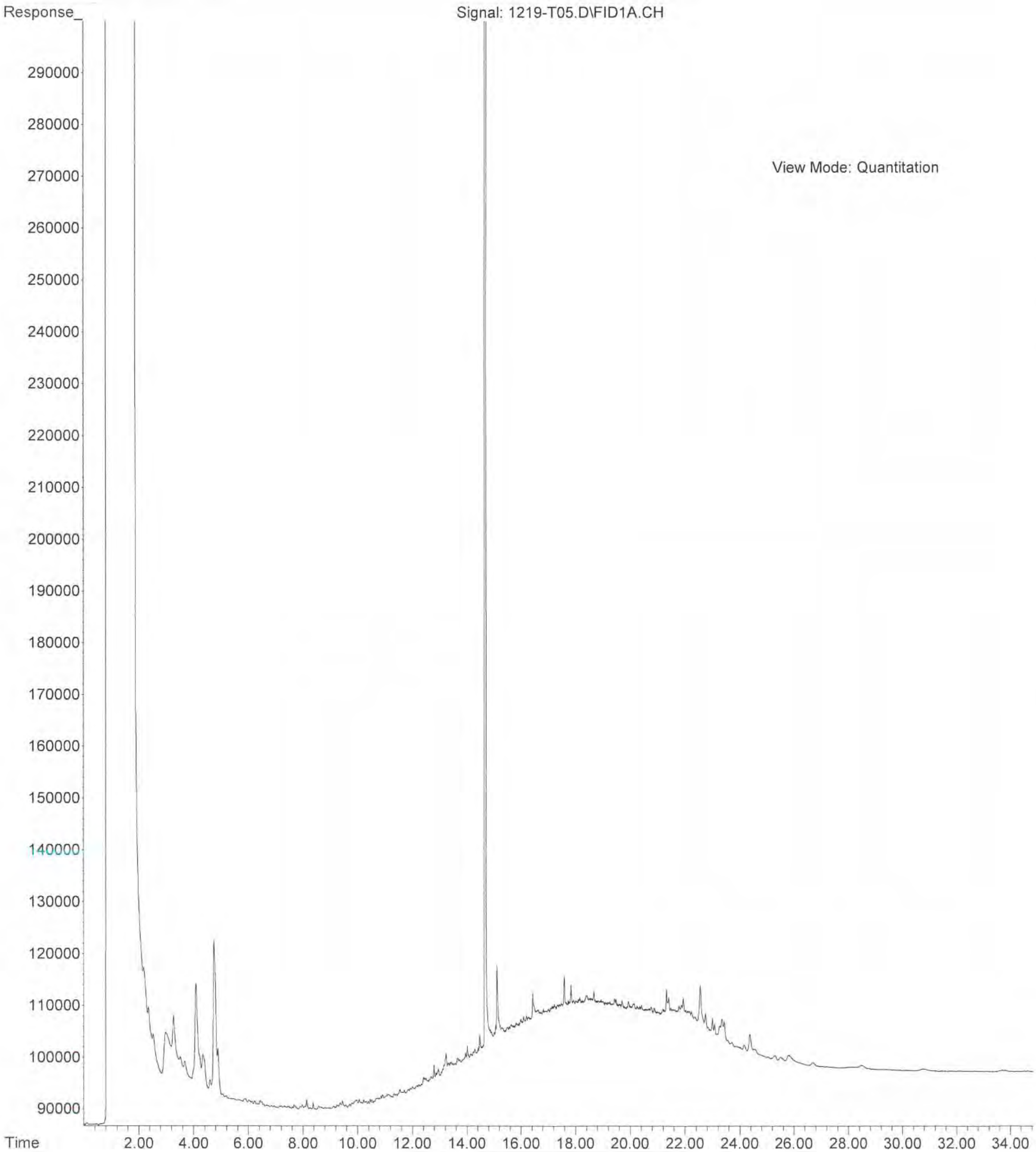

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File        :X:\DIESELS\VIGO\DATA\V141219.SEC\1219-V67.D
Operator    :
Acquired    : 19 Dec 2014  23:37     using AcqMethod V141218F.M
Instrument  :   Vigo
Sample Name: 12-191-06
Misc Info   :
Vial Number: 67
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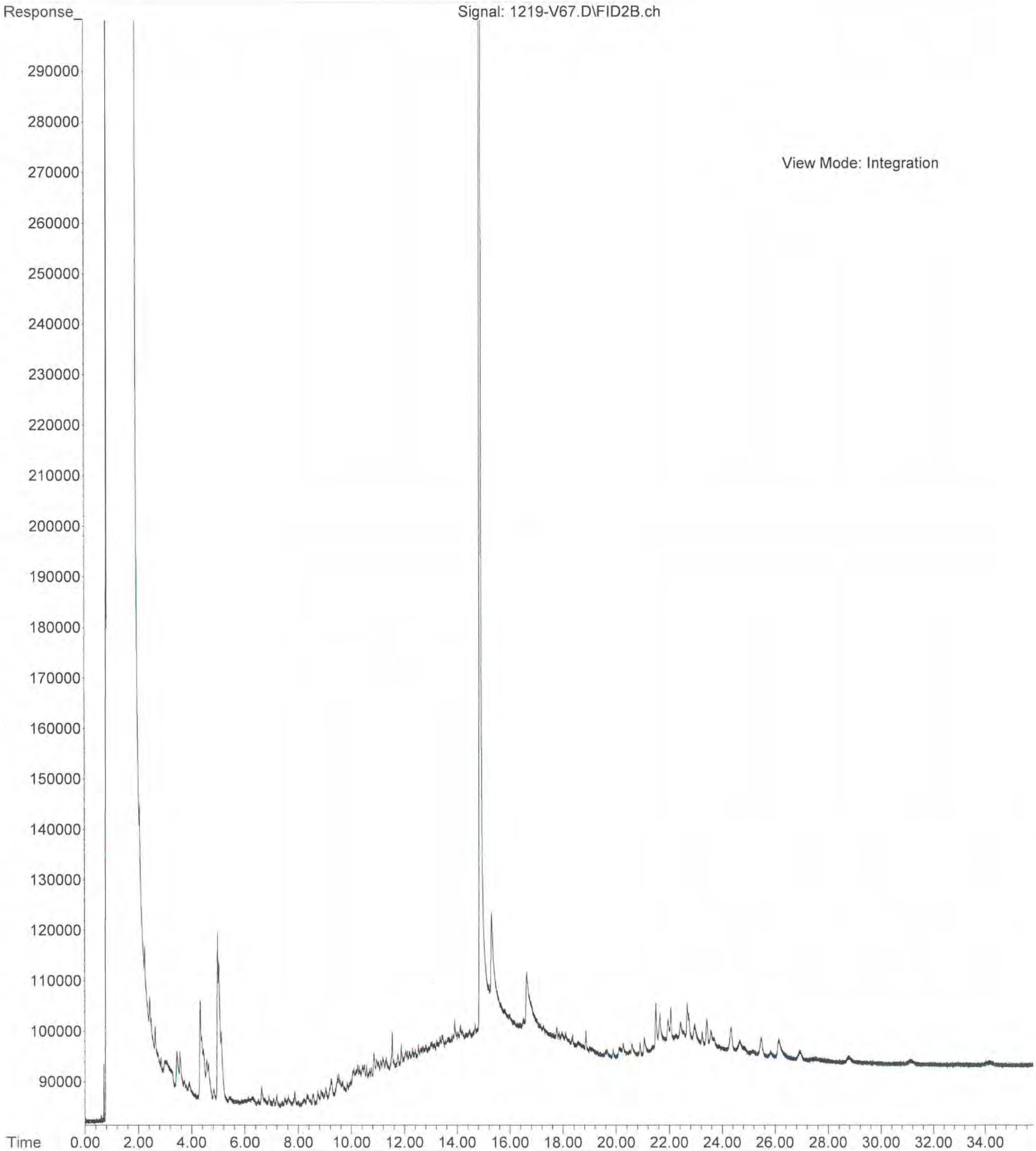

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File       :X:\DIESELS\VIGO\DATA\V141219.SEC\1219-V68.D
Operator   :
Acquired   : 20 Dec 2014  00:18     using AcqMethod V141218F.M
Instrument :   Vigo
Sample Name: 12-191-08
Misc Info  :
Vial Number: 68
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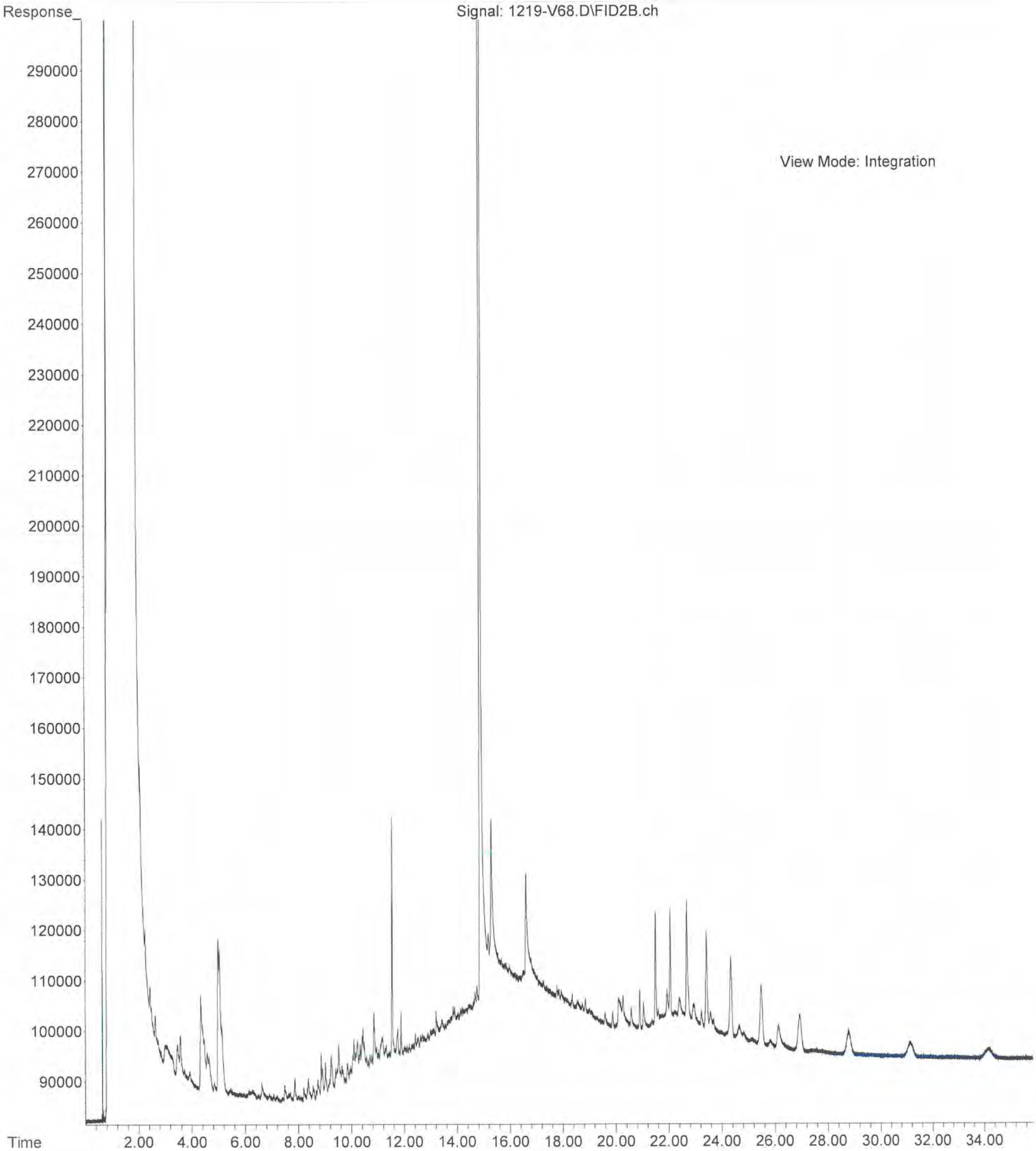

12-191

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: 12/16/14
PAGE: 1 of 1

PROJECT NAME: Bothell Hertz #: 2007-098-998
SAMPLERS NAME: KStilson PHONE:
SAMPLERS SIGNATURE: KStilson DATE: 12/16/14
HWA CONTACT: KStilson PHONE:

TURNAROUND TIME
☐ DAYS
☒ STANDARD

ANALYSIS REQUESTED

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	HVOCs	TPH-G	BTEX	Dx	Total Metal	Diss Metal	EDD	REMARKS
HZMW-19	12/16/14	830	W	1	10	/	/	/	/	/	/		
BLMW-8		930	W	2	10	/	/	/	/	/	/		
HZMW-4		1015	W	3	10	/	/	/	/	/	/		All Diss Metal
HZMW-17		1045	W	4	10	/	/	/	/	/	/		field filtered
HZMW20		1145	W	5	10	/	/	/	/	/	/		
HZMW12		200	W	6	10	/	/	/	/	/	/		
TB	12/16/14	~~230~~	W	7	3	/	/	/					Total &
BC-16			W	8	10	/	/	/	/	/	/		Dissolved
													Metals:
													Arsenic

PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	KStilson	KStilson	HWA GEO	12/16/14	9:09	
Received by:	Pat Miller	Pat Miller	Speedy	12/17/14	9:09	
Relinquished by:	Pat Miller	Pat Miller	Speedy	12-17-14	10:02	
Received by:	Blair Goodrich		Friedman	12/17/14	1002	

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

December 29, 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. 1412-192

Dear Kim:

Enclosed are the analytical results and associated quality control data for samples submitted on December 17, 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 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-192
Project: 2007-098-998

Case Narrative

Samples were collected on December 16, 2014 and received by the laboratory on December 17, 2014. 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: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-192
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:	12-192-01					
Client ID:	**BLMW12**					
Arsenic	**180**	3.0	200.8		12-22-14	
Cadmium	**ND**	4.0	200.8		12-22-14	
Chromium	**ND**	10	200.8		12-22-14	
Lead	**ND**	1.0	200.8		12-22-14	

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-192
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Analyzed: 12-22-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1222D1

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: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-192
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed: 12-22-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-180-01

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	**ND**	**ND**	NA	1.0	

Date of Report: December 29, 2014
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-192
Project: 2007-098-998

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed: 12-22-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-180-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**203**	102	**202**	101	1	
Cadmium	200	**207**	103	**206**	103	1	
Chromium	200	**201**	100	**200**	100	0	
Lead	200	**194**	97	**195**	97	0	

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

12-192

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: 12/16/14
PAGE: 1 of 1

PROJECT NAME: Bothell Landing #: 2007-098-998
SAMPLERS NAME: K Stilson PHONE:
SAMPLERS SIGNATURE: K Stilson DATE: 12/16/14
HWA CONTACT: K Stilson PHONE:

TURNAROUND TIME
☐ DAYS
☑ STANDARD

ANALYSIS REQUESTED

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	Total Metal	Diss Metal	EDD	REMARKS
BLMW 12	12/16/14	230	W	1	2	/	/		
									Field Filtered
									Metals
									Run Diss
									hold Total
									As, Cd, Cr, Pb

PRINT NAME		SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:	K Stilson	[signature]	HWA GEO	12/16/14	909	
Received by:	Pat Miller	[signature]	Speedy	12/17/14	9:09	
Relinquished by:	Pat Miller	[signature]	Speedy	12-17-14	10:02	
Received by:	[illegible] Goodfrau	[signature]	[illegible]	12/17/14	1002	

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. 1412-192B

Dear Kim:

Enclosed are the analytical results and associated quality control data for samples submitted on December 17, 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 17, 2014
Laboratory Reference: 1412-192B
Project: 2007-098-998

Case Narrative

Samples were collected on December 16, 2014 and received by the laboratory on December 17, 2014. 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: January 15, 2015
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-192B
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:	12-192-01					
Client ID:	**BLMW12**					
Arsenic	**200**	3.3	200.8	1-14-15	1-14-15	

Date of Report: January 15, 2015
Samples Submitted: December 17, 2014
Laboratory Reference: 1412-192B
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 17, 2014
Laboratory Reference: 1412-192B
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 17, 2014
Laboratory Reference: 1412-192B
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	

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

12-192

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: 12/16/14
PAGE: 1 of 1

PROJECT NAME: Bothell Landing #: 2007-098-998
SAMPLERS NAME: K Stilson PHONE:
SAMPLERS SIGNATURE: Kstilson DATE: 12/16/14
HWA CONTACT: KStilson PHONE:

ANALYSIS REQUESTED

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	Total Metal	Diss Metal	TOTAL ARSENIC	EDD	REMARKS
BLMW12	12/16/14	230	W	1	2	/	/	X		

TURNAROUND TIME
☐ DAYS
☑ STANDARD

REMARKS:
Field Filtered
Metals
Run Diss
hold Total
As, Cd, Cr, Pb
(X) Added 1/12/15. DB (3 day TAT)

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: K Stilson	[signature]	HWA GEO	12/16/14	9:09	
Received by: Pat Miller	[signature]	Speedy	12/17/14	9:09	
Relinquished by: Pat Miller	[signature]	Speedy	12-17-14	10:02	
Received by: Dean Goodfrau	[signature]	Friedman	12/17/14	1002	

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 3, 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. 1503-290

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 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
Project: 2007-098-998

Case Narrative

Samples were collected on March 25 and 26, 2015 and received by the laboratory on March 27, 2015. 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: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW12**					
Laboratory ID:	03-290-01					
Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Toluene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
o-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Gasoline	**ND**	100	NWTPH-Gx	3-31-15	3-31-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*71-113*				
Client ID:	**BLMW-11**					
Laboratory ID:	03-290-02					
Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Toluene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
o-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Gasoline	**ND**	100	NWTPH-Gx	3-31-15	3-31-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*71-113*				
Client ID:	**DUP 326**					
Laboratory ID:	03-290-03					
Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Toluene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
o-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Gasoline	**ND**	100	NWTPH-Gx	3-31-15	3-31-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*71-113*				

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW5R**					
Laboratory ID:	03-290-04					
Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Toluene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
o-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Gasoline	**ND**	100	NWTPH-Gx	3-31-15	3-31-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*71-113*				
Client ID:	**TB**					
Laboratory ID:	03-290-05					
Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Toluene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
o-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Gasoline	**ND**	100	NWTPH-Gx	3-31-15	3-31-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-113*				
Client ID:	**MW1**					
Laboratory ID:	03-290-06					
Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Toluene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
o-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Gasoline	**ND**	100	NWTPH-Gx	3-31-15	3-31-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*71-113*				

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW9**					
Laboratory ID:	03-290-07					
Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Toluene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
o-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Gasoline	**ND**	100	NWTPH-Gx	3-31-15	3-31-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*71-113*				
Client ID:	**BLMW10**					
Laboratory ID:	03-290-08					
Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Toluene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
o-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Gasoline	**ND**	100	NWTPH-Gx	3-31-15	3-31-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-113*				
Client ID:	**BLMW6R**					
Laboratory ID:	03-290-09					
Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Toluene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
o-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Gasoline	**ND**	100	NWTPH-Gx	3-31-15	3-31-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*71-113*				

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW7**					
Laboratory ID:	03-290-10					
Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Toluene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
o-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Gasoline	**ND**	100	NWTPH-Gx	3-31-15	3-31-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-113*				

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
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:	MB0331W1					
Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Toluene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
o-Xylene	**ND**	1.0	EPA 8021B	3-31-15	3-31-15	
Gasoline	**ND**	100	NWTPH-Gx	3-31-15	3-31-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*71-113*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-290-04										
	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						*91*	*91*	*71-113*			
MATRIX SPIKES											
Laboratory ID:	03-290-04										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**47.5**	**47.7**	50.0	50.0	ND	**95**	**95**	82-120	0	14	
Toluene	**47.7**	**47.8**	50.0	50.0	ND	**95**	**96**	83-120	0	14	
Ethyl Benzene	**48.2**	**48.2**	50.0	50.0	ND	**96**	**96**	83-120	0	15	
m,p-Xylene	**48.6**	**48.4**	50.0	50.0	ND	**97**	**97**	81-123	0	15	
o-Xylene	**48.3**	**48.2**	50.0	50.0	ND	**97**	**96**	80-120	0	16	
Surrogate:											
Fluorobenzene						*92*	*97*	*71-113*			

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW12**					
Laboratory ID:	03-290-01					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	3-30-15	3-30-15	
Lube Oil Range Organics	**0.43**	0.41	NWTPH-Dx	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				
Client ID:	**BLMW-11**					
Laboratory ID:	03-290-02					
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	*84*	*50-150*				
Client ID:	**DUP 326**					
Laboratory ID:	03-290-03					
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	*85*	*50-150*				
Client ID:	**BLMW5R**					
Laboratory ID:	03-290-04					
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	*82*	*50-150*				
Client ID:	**MW1**					
Laboratory ID:	03-290-06					
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:	**BLMW9**					
Laboratory ID:	03-290-07					
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	*84*	*50-150*				

Date of Report: April 3, 2015
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Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW10**					
Laboratory ID:	03-290-08					
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	*86*	*50-150*				
Client ID:	**BLMW6R**					
Laboratory ID:	03-290-09					
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:	**BLMW7**					
Laboratory ID:	03-290-10					
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	*87*	*50-150*				

Date of Report: April 3, 2015
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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:	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:	03-290-01										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range Organics	**0.433**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*86*	*86*	*50-150*			

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW12**					
Laboratory ID:	03-290-01					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloromethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Vinyl Chloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromomethane	ND	0.25	EPA 8260C	3-30-15	3-30-15	
Chloroethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Trichlorofluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Iodomethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Methylene Chloride	ND	1.0	EPA 8260C	3-30-15	3-30-15	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloroform	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Carbon Tetrachloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Trichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromomethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromodichloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chloroethyl Vinyl Ether	ND	2.6	EPA 8260C	3-30-15	3-30-15	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW12**					
Laboratory ID:	03-290-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Tetrachloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromoethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromoform	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Bromobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
4-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Hexachlorobutadiene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*107*	*79-122*				
Toluene-d8	*102*	*80-120*				
4-Bromofluorobenzene	*93*	*80-120*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-11**					
Laboratory ID:	03-290-02					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloromethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Vinyl Chloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromomethane	ND	0.25	EPA 8260C	3-30-15	3-30-15	
Chloroethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Trichlorofluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Iodomethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Methylene Chloride	ND	1.0	EPA 8260C	3-30-15	3-30-15	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloroform	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Carbon Tetrachloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Trichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromomethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromodichloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chloroethyl Vinyl Ether	ND	2.6	EPA 8260C	3-30-15	3-30-15	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW-11**					
Laboratory ID:	03-290-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Tetrachloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromoethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromoform	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Bromobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
4-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Hexachlorobutadiene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*107*	*79-122*				
Toluene-d8	*103*	*80-120*				
4-Bromofluorobenzene	*93*	*80-120*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**DUP 326**					
Laboratory ID:	03-290-03					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloromethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Vinyl Chloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromomethane	ND	0.25	EPA 8260C	3-30-15	3-30-15	
Chloroethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Trichlorofluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Iodomethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Methylene Chloride	ND	1.0	EPA 8260C	3-30-15	3-30-15	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloroform	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Carbon Tetrachloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Trichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromomethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromodichloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chloroethyl Vinyl Ether	ND	2.6	EPA 8260C	3-30-15	3-30-15	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**DUP 326**					
Laboratory ID:	03-290-03					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Tetrachloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromoethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromoform	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Bromobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
4-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Hexachlorobutadiene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*109*	*79-122*				
Toluene-d8	*104*	*80-120*				
4-Bromofluorobenzene	*96*	*80-120*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW5R**					
Laboratory ID:	03-290-04					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloromethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Vinyl Chloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromomethane	ND	0.25	EPA 8260C	3-30-15	3-30-15	
Chloroethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Trichlorofluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Iodomethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Methylene Chloride	ND	1.0	EPA 8260C	3-30-15	3-30-15	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloroform	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Carbon Tetrachloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Trichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromomethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromodichloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chloroethyl Vinyl Ether	ND	2.6	EPA 8260C	3-30-15	3-30-15	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW5R**					
Laboratory ID:	03-290-04					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Tetrachloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromoethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromoform	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Bromobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
4-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Hexachlorobutadiene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*109*	*79-122*				
Toluene-d8	*102*	*80-120*				
4-Bromofluorobenzene	*93*	*80-120*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TB**					
Laboratory ID:	03-290-05					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloromethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Vinyl Chloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromomethane	ND	0.25	EPA 8260C	3-30-15	3-30-15	
Chloroethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Trichlorofluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Iodomethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Methylene Chloride	ND	1.0	EPA 8260C	3-30-15	3-30-15	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloroform	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Carbon Tetrachloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Trichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromomethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromodichloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chloroethyl Vinyl Ether	ND	2.6	EPA 8260C	3-30-15	3-30-15	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TB**					
Laboratory ID:	03-290-05					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Tetrachloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromoethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromoform	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Bromobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
4-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Hexachlorobutadiene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*110*	*79-122*				
Toluene-d8	*102*	*80-120*				
4-Bromofluorobenzene	*93*	*80-120*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1**					
Laboratory ID:	03-290-06					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloromethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Vinyl Chloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromomethane	ND	0.25	EPA 8260C	3-30-15	3-30-15	
Chloroethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Trichlorofluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Iodomethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Methylene Chloride	ND	1.0	EPA 8260C	3-30-15	3-30-15	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloroform	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Carbon Tetrachloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Trichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromomethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromodichloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chloroethyl Vinyl Ether	ND	2.6	EPA 8260C	3-30-15	3-30-15	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1**					
Laboratory ID:	03-290-06					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Tetrachloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromoethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromoform	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Bromobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
4-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Hexachlorobutadiene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*111*	*79-122*				
Toluene-d8	*103*	*80-120*				
4-Bromofluorobenzene	*94*	*80-120*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW9**					
Laboratory ID:	03-290-07					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloromethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Vinyl Chloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromomethane	ND	0.25	EPA 8260C	3-30-15	3-30-15	
Chloroethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Trichlorofluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Iodomethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Methylene Chloride	ND	1.0	EPA 8260C	3-30-15	3-30-15	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloroform	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Carbon Tetrachloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Trichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromomethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromodichloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chloroethyl Vinyl Ether	ND	2.6	EPA 8260C	3-30-15	3-30-15	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW9**					
Laboratory ID:	03-290-07					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Tetrachloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromoethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromoform	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Bromobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
4-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Hexachlorobutadiene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*108*	*79-122*				
Toluene-d8	*103*	*80-120*				
4-Bromofluorobenzene	*93*	*80-120*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW10**					
Laboratory ID:	03-290-08					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloromethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Vinyl Chloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromomethane	ND	0.25	EPA 8260C	3-30-15	3-30-15	
Chloroethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Trichlorofluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Iodomethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Methylene Chloride	ND	1.0	EPA 8260C	3-30-15	3-30-15	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloroform	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Carbon Tetrachloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Trichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromomethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromodichloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chloroethyl Vinyl Ether	ND	2.6	EPA 8260C	3-30-15	3-30-15	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	

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Project: 2007-098-998

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW10**					
Laboratory ID:	03-290-08					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Tetrachloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromoethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromoform	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Bromobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
4-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Hexachlorobutadiene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*111*	*79-122*				
Toluene-d8	*102*	*80-120*				
4-Bromofluorobenzene	*93*	*80-120*				

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
Project: 2007-098-998

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW6R**					
Laboratory ID:	03-290-09					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloromethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Vinyl Chloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromomethane	ND	0.25	EPA 8260C	3-30-15	3-30-15	
Chloroethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Trichlorofluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Iodomethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Methylene Chloride	ND	1.0	EPA 8260C	3-30-15	3-30-15	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloroform	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Carbon Tetrachloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Trichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromomethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromodichloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chloroethyl Vinyl Ether	ND	2.6	EPA 8260C	3-30-15	3-30-15	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW6R**					
Laboratory ID:	03-290-09					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Tetrachloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromoethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromoform	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Bromobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
4-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Hexachlorobutadiene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*111*	*79-122*				
Toluene-d8	*101*	*80-120*				
4-Bromofluorobenzene	*93*	*80-120*				

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
Project: 2007-098-998

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW7**					
Laboratory ID:	03-290-10					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloromethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Vinyl Chloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromomethane	ND	0.25	EPA 8260C	3-30-15	3-30-15	
Chloroethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Trichlorofluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Iodomethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Methylene Chloride	ND	1.0	EPA 8260C	3-30-15	3-30-15	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloroform	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Carbon Tetrachloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Trichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromomethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromodichloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chloroethyl Vinyl Ether	ND	2.6	EPA 8260C	3-30-15	3-30-15	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
Project: 2007-098-998

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW7**					
Laboratory ID:	03-290-10					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Tetrachloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromoethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromoform	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Bromobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
4-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Hexachlorobutadiene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*108*	*79-122*				
Toluene-d8	*104*	*80-120*				
4-Bromofluorobenzene	*96*	*80-120*				

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0330W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloromethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Vinyl Chloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromomethane	ND	0.25	EPA 8260C	3-30-15	3-30-15	
Chloroethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Trichlorofluoromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Iodomethane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Methylene Chloride	ND	1.0	EPA 8260C	3-30-15	3-30-15	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chloroform	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Carbon Tetrachloride	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Trichloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromomethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromodichloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chloroethyl Vinyl Ether	ND	2.6	EPA 8260C	3-30-15	3-30-15	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	3-30-15	3-30-15	

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0330W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Tetrachloroethene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Dibromochloromethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromoethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Chlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Bromoform	ND	1.0	EPA 8260C	3-30-15	3-30-15	
Bromobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	3-30-15	3-30-15	
2-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
4-Chlorotoluene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	3-30-15	3-30-15	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Hexachlorobutadiene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	3-30-15	3-30-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*103*	*79-122*				
Toluene-d8	*104*	*80-120*				
4-Bromofluorobenzene	*93*	*80-120*				

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
Project: 2007-098-998

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:	03-291-02										
	MS	MSD	MS	MSD		MS	MSD				
1,1-Dichloroethene	**10.4**	**10.2**	10.0	10.0	ND	104	102	69-133	2	15	
Benzene	**10.4**	**10.3**	10.0	10.0	ND	104	103	75-119	1	15	
Trichloroethene	**10.0**	**9.65**	10.0	10.0	ND	100	97	70-120	3	15	
Toluene	**10.4**	**10.2**	10.0	10.0	ND	104	102	75-115	2	15	
Chlorobenzene	**9.40**	**9.18**	10.0	10.0	ND	94	92	75-120	2	15	
Surrogate:											
Dibromofluoromethane						*105*	*107*	*79-122*			
Toluene-d8						*101*	*104*	*80-120*			
4-Bromofluorobenzene						*90*	*95*	*80-120*			

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
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:	03-290-01					
Client ID:	**BLMW12**					
Arsenic	**63**	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	**ND**	1.0	200.8		3-30-15	
Lab ID:	03-290-02					
Client ID:	**BLMW-11**					
Arsenic	**27**	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	**ND**	1.0	200.8		3-30-15	
Lab ID:	03-290-03					
Client ID:	**DUP 326**					
Arsenic	**24**	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	**ND**	1.0	200.8		3-30-15	
Lab ID:	03-290-04					
Client ID:	**BLMW5R**					
Arsenic	**ND**	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	**ND**	1.0	200.8		3-30-15	

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
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:	03-290-06					
Client ID:	**MW1**					
Arsenic	**ND**	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	**ND**	1.0	200.8		3-30-15	
Lab ID:	03-290-07					
Client ID:	**BLMW9**					
Arsenic	**3.2**	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	**ND**	1.0	200.8		3-30-15	
Lab ID:	03-290-08					
Client ID:	**BLMW10**					
Arsenic	**ND**	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	**ND**	1.0	200.8		3-30-15	
Lab ID:	03-290-09					
Client ID:	**BLMW6R**					
Arsenic	**ND**	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	**ND**	1.0	200.8		3-30-15	

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
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:	03-290-10					
Client ID:	**BLMW7**					
Arsenic	**ND**	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	**ND**	1.0	200.8		3-30-15	

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
Project: 2007-098-998

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

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
Project: 2007-098-998

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	

Date of Report: April 3, 2015
Samples Submitted: March 27, 2015
Laboratory Reference: 1503-290
Project: 2007-098-998

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	

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.

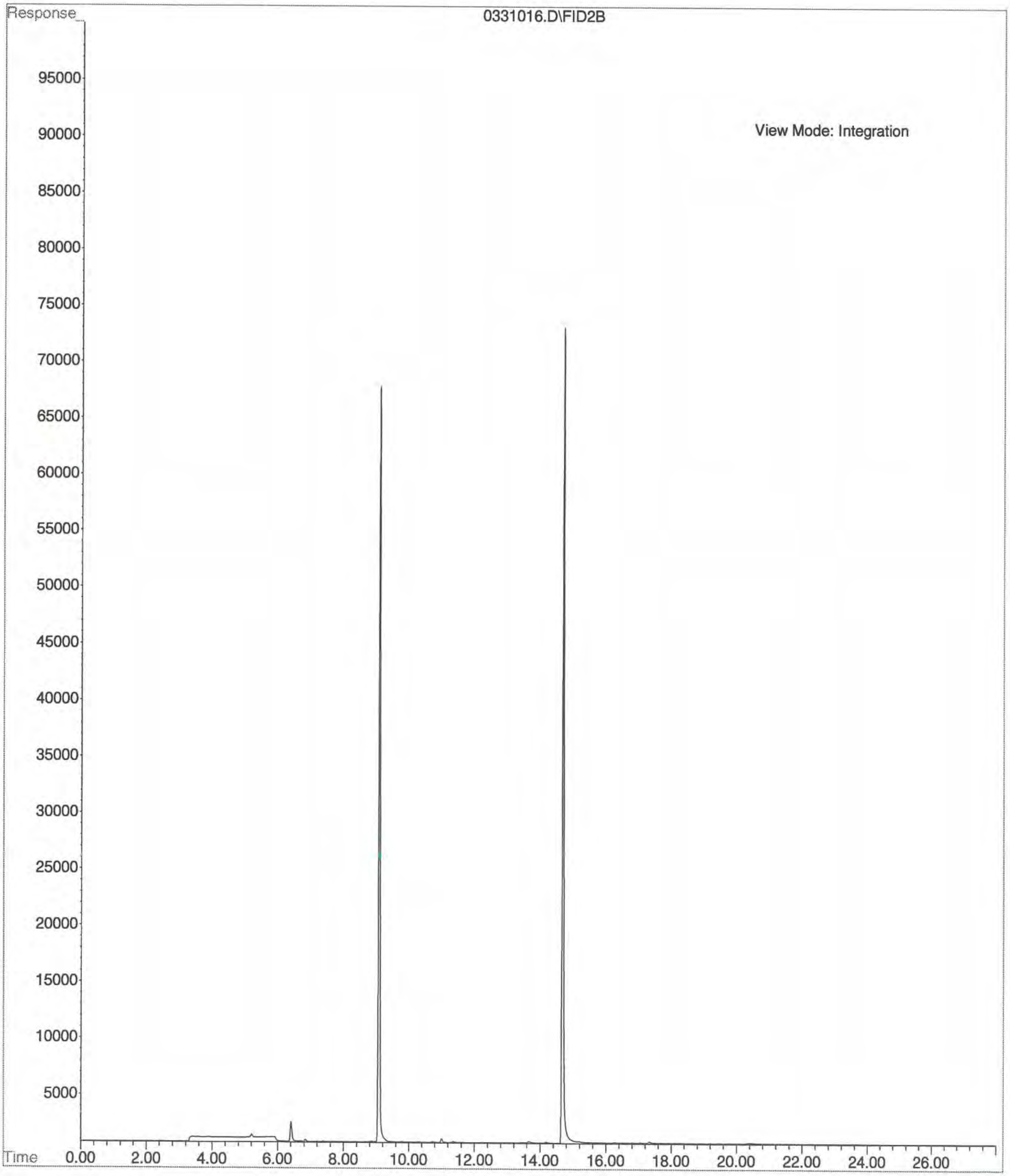
X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

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

```
File       : X:\BTEX\HOPE\DATA\H150331\0331016.D
Operator   :
Acquired   : 31 Mar 2015  22:10     using AcqMethod 150312B.M
Instrument :   HOPE
Sample Name: 03-290-01g
Misc Info  : V2-36-17
Vial Number: 16
```



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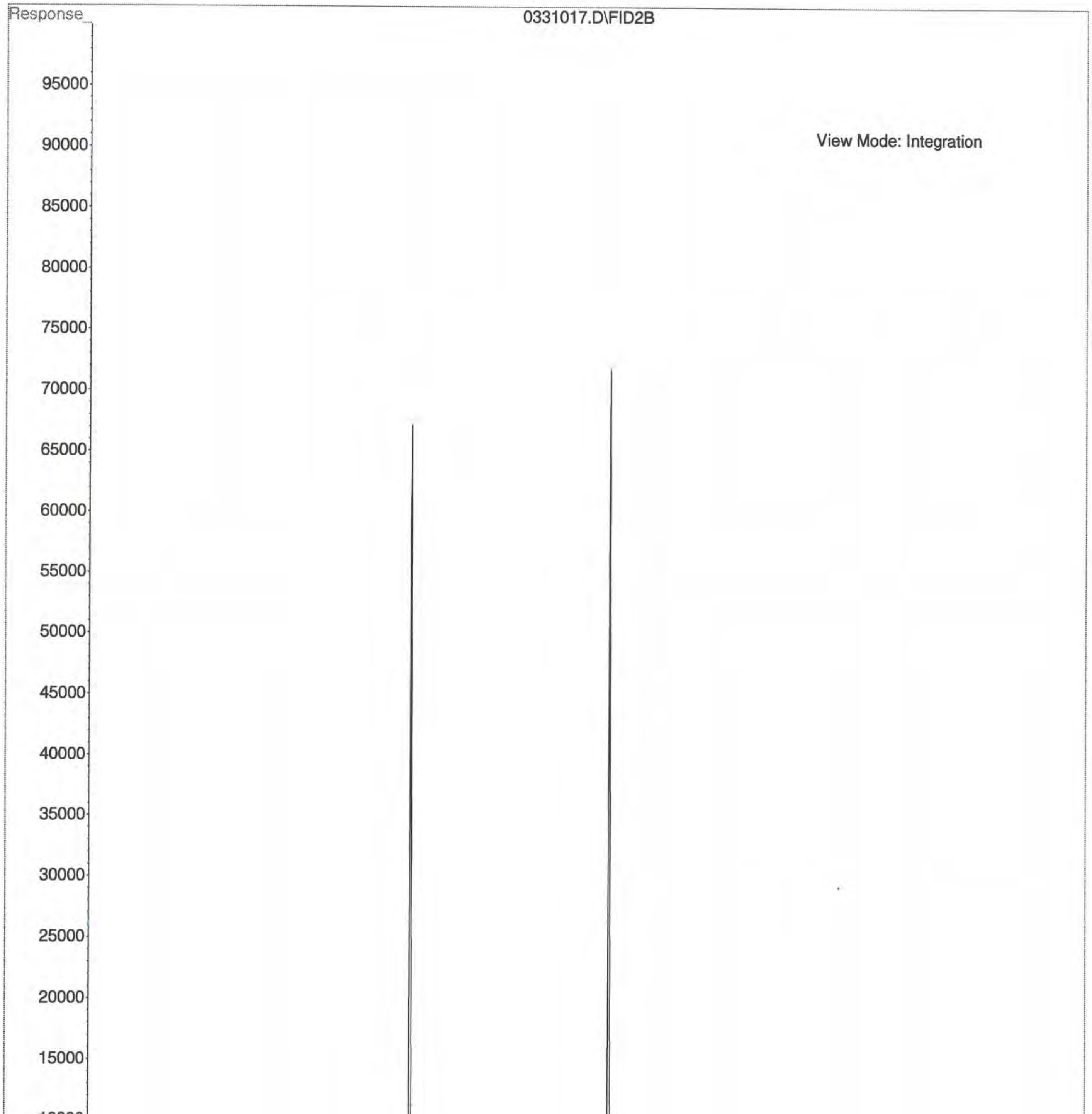
Operator   :
Acquired   : 31 Mar 2015 22:43   using AcqMethod 150312B.M
Instrument :   HOPE
Sample Name: 03-290-02g
Misc Info   : V2-36-17
Vial Number: 17



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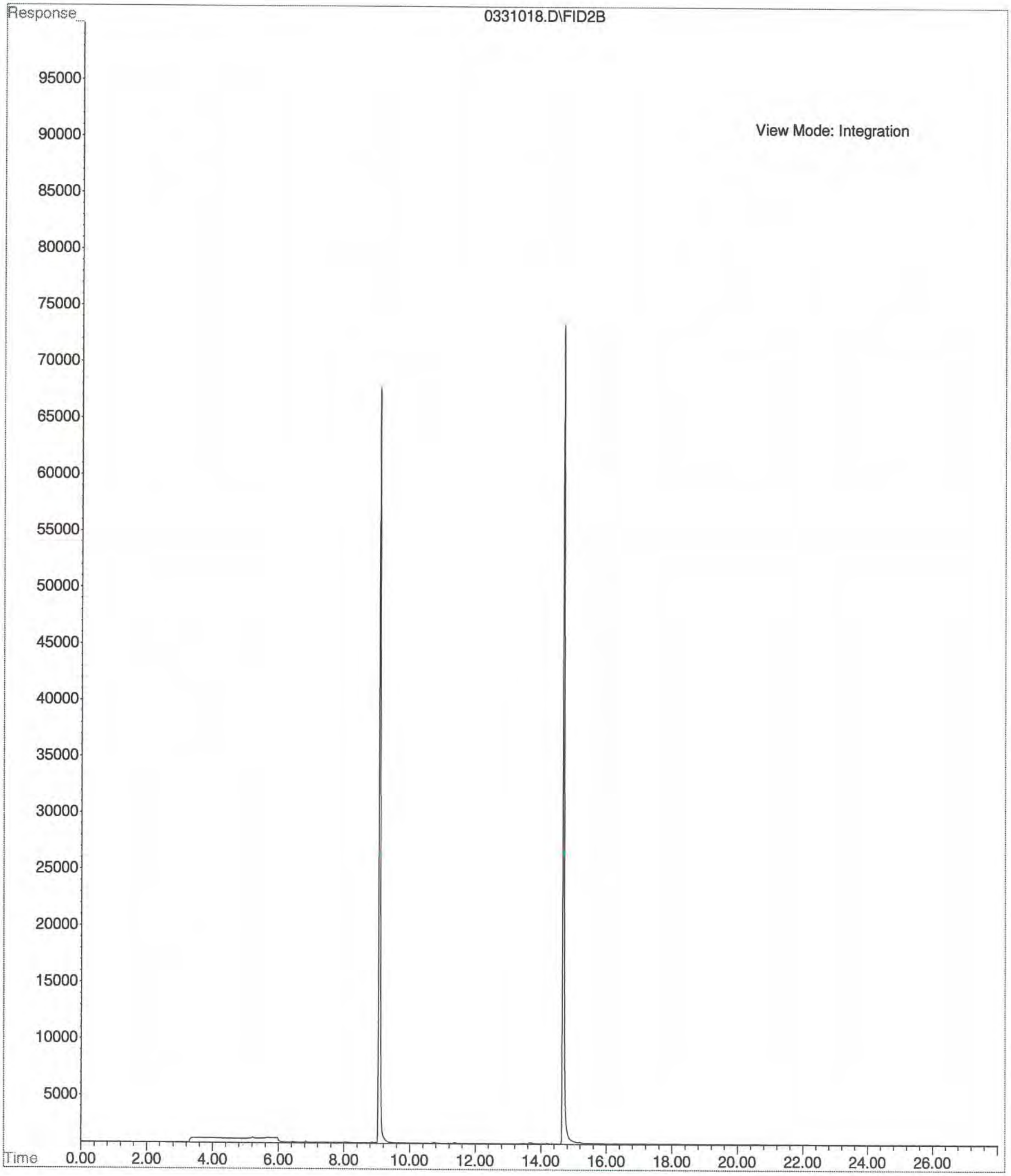
Operator :
Acquired : 31 Mar 2015 23:16 using AcqMethod 150312B.M
Instrument : HOPE
Sample Name: 03-290-03g
Misc Info : V2-36-17
Vial Number: 18



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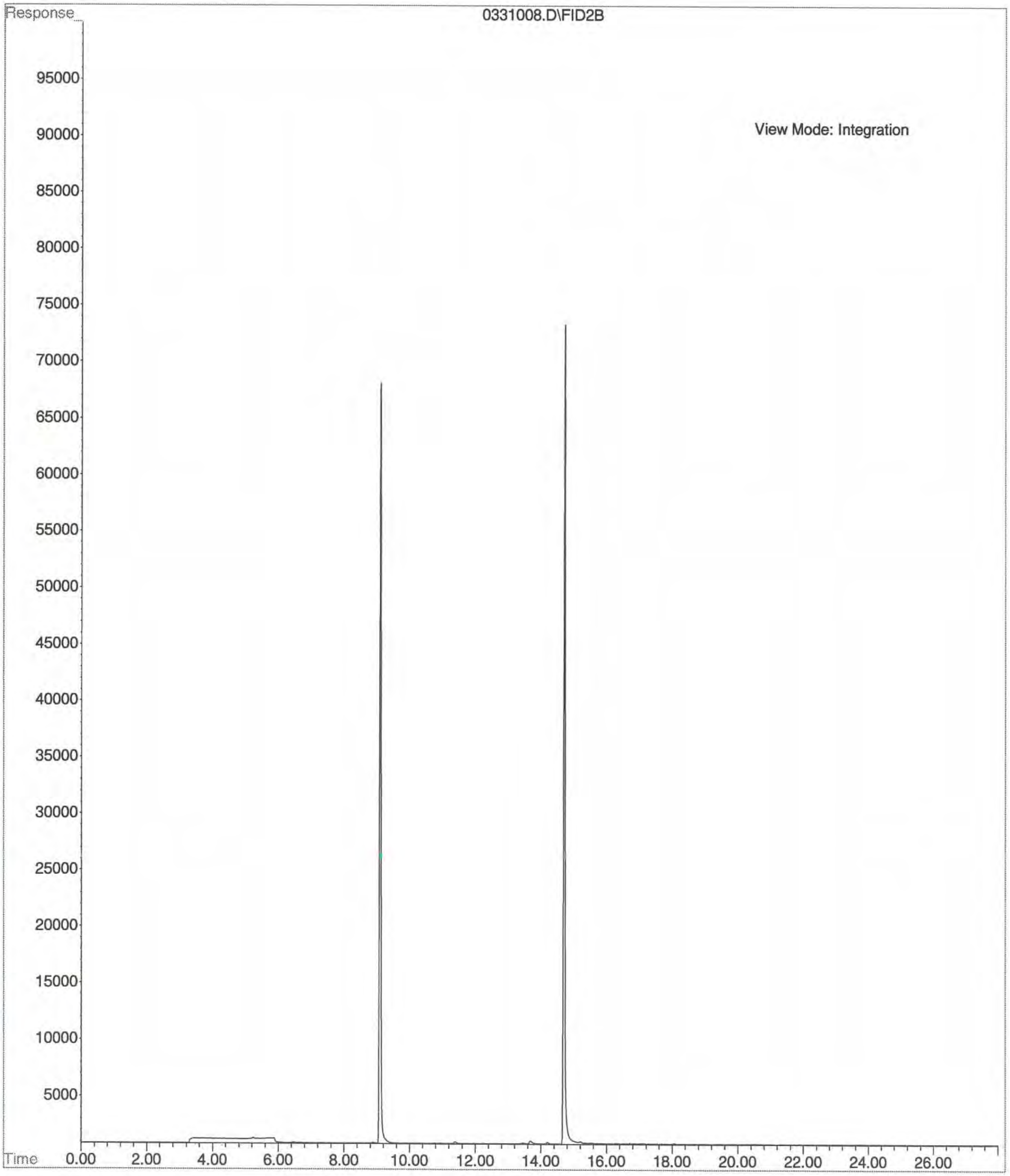
Operator   :
Acquired   : 31 Mar 2015 17:46   using AcqMethod 150312B.M
Instrument :   HOPE
Sample Name: 03-290-04g
Misc Info   : V2-36-17
Vial Number: 8



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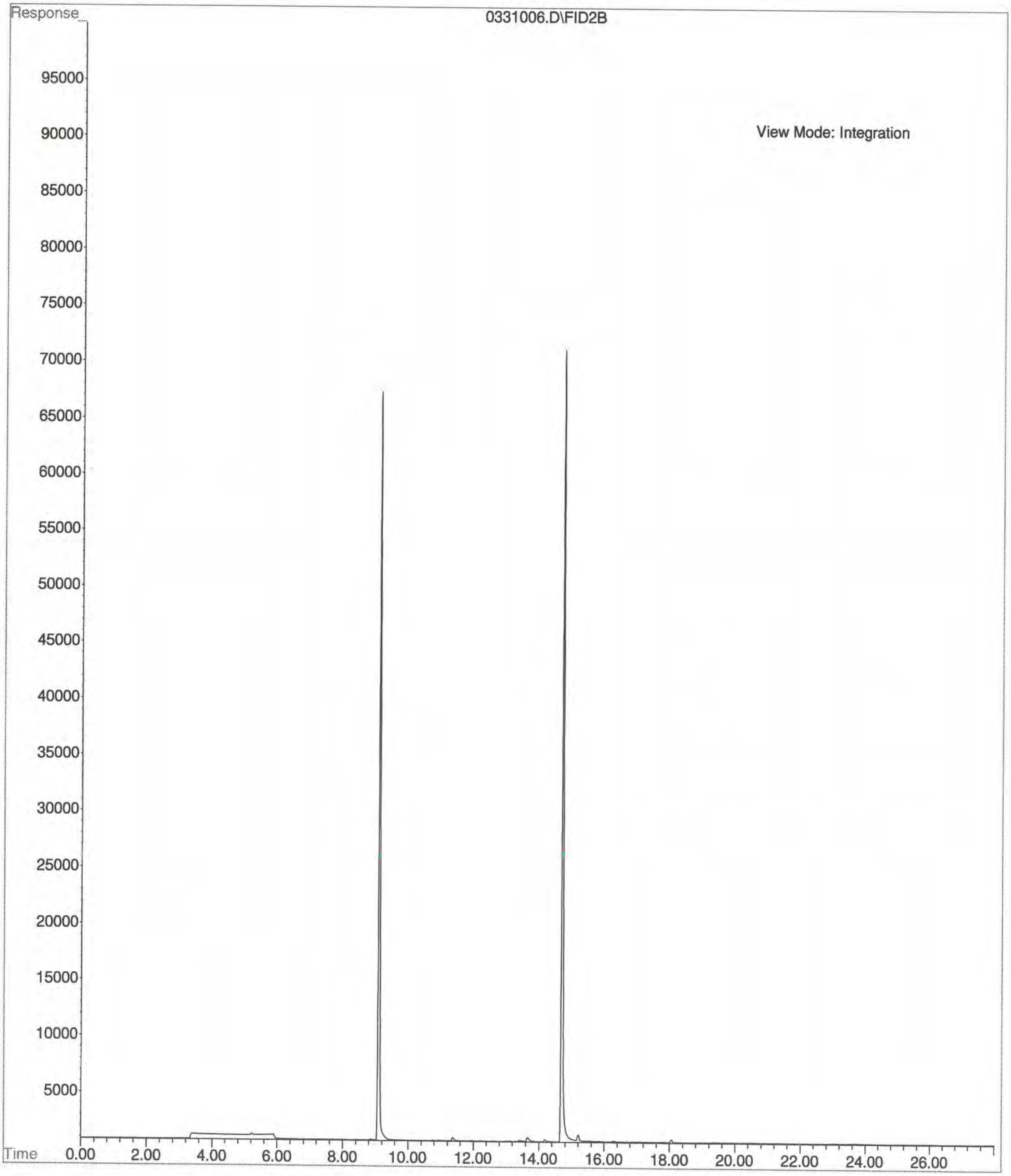
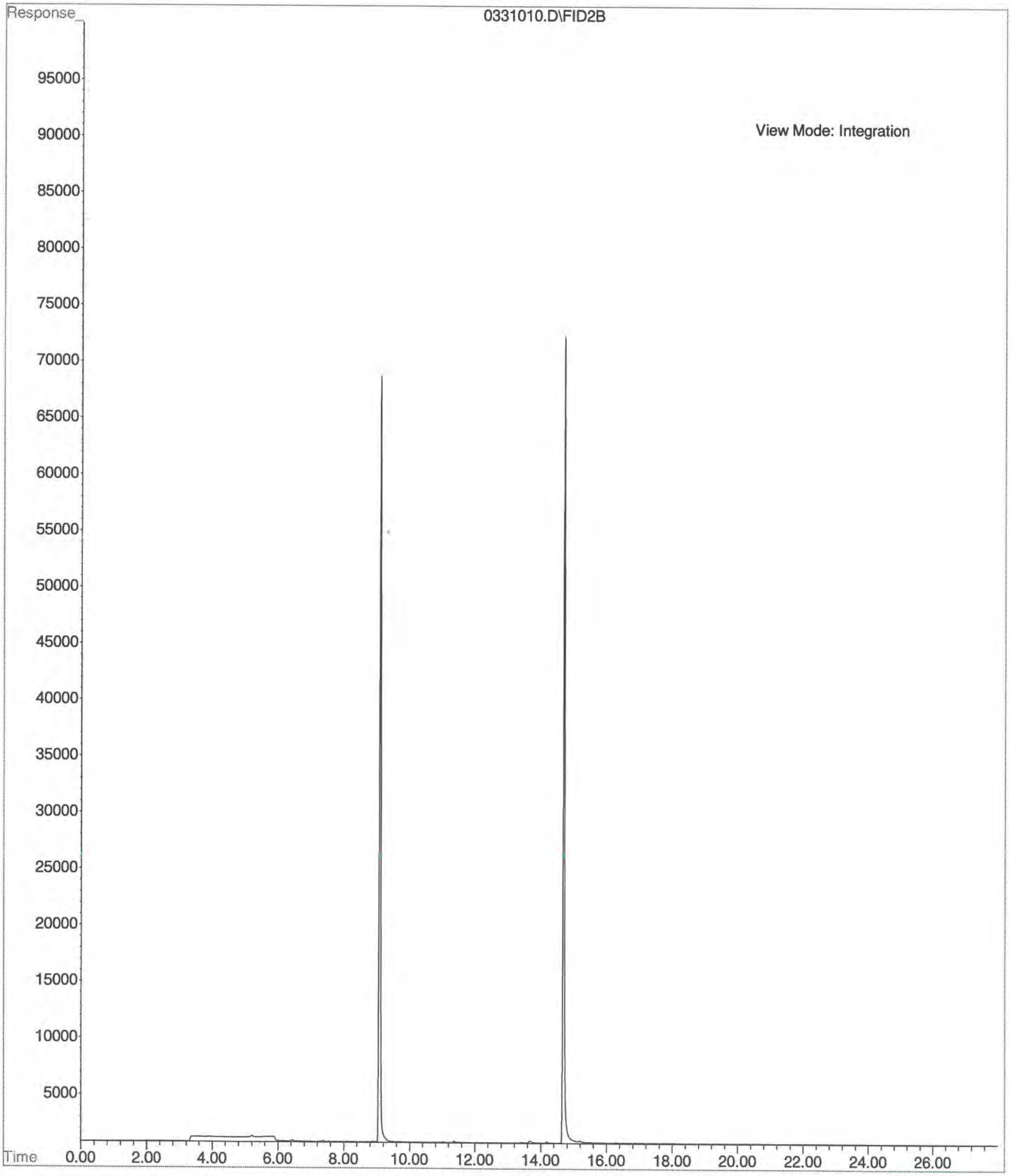
Instrument : HOPE
Sample Name: 03-290-05b
Misc Info : V2-36-17
Vial Number: 6



File   : X:\BTEX\HOPE\DATA\H150331\0331010.D
Operator   :
Acquired   : 31 Mar 2015 18:52   using AcqMethod 150312B.M
Instrument :   HOPE
Sample Name: 03-290-06g
Misc Info   : V2-36-17
Vial Number: 10



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Operator    :
Acquired    : 31 Mar 2015  20:31    using AcqMethod 150312B.M
Instrument :   HOPE
Sample Name: 03-290-07g
Misc Info  : V2-36-17
Vial Number: 13
```

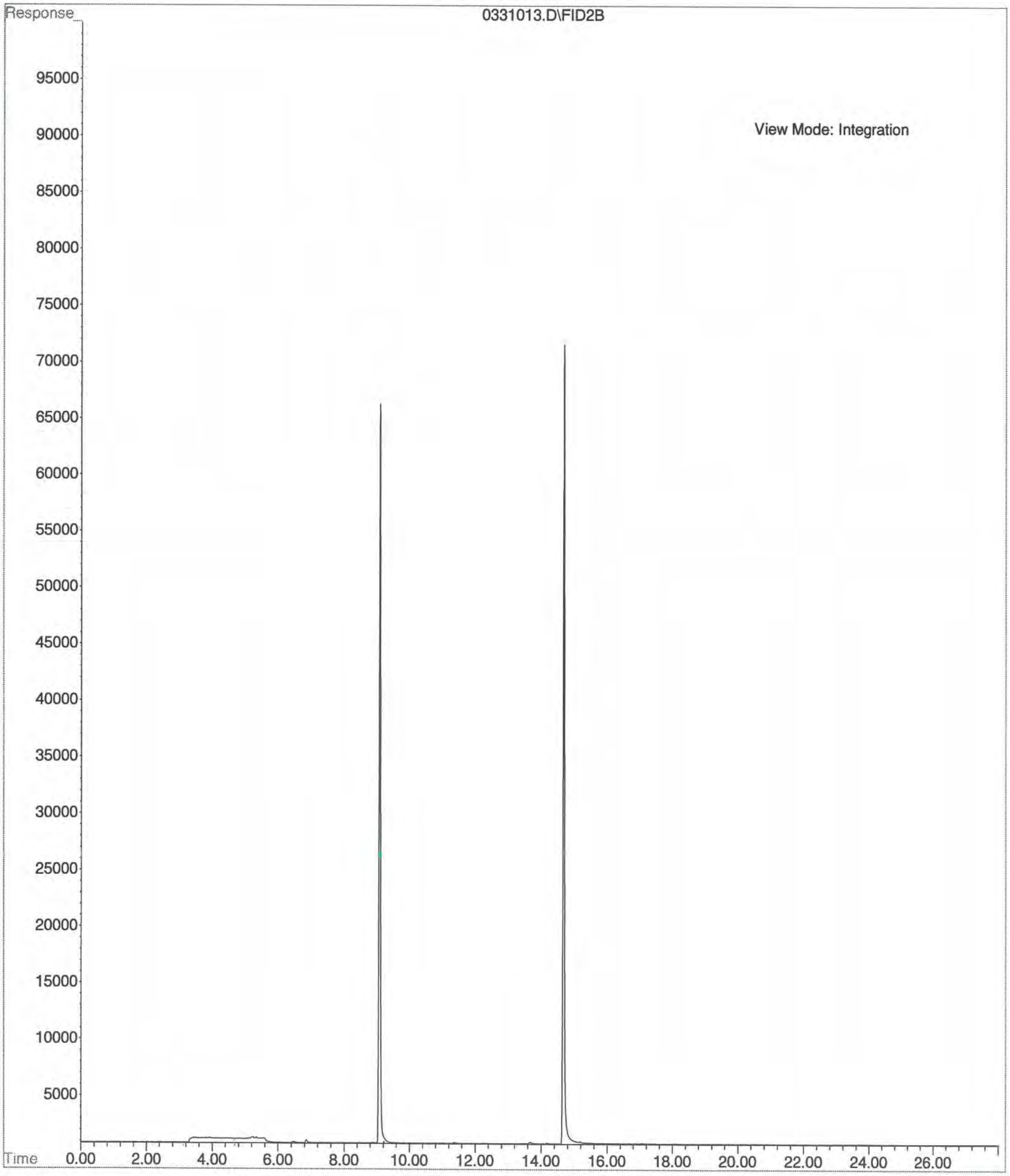

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Operator   :
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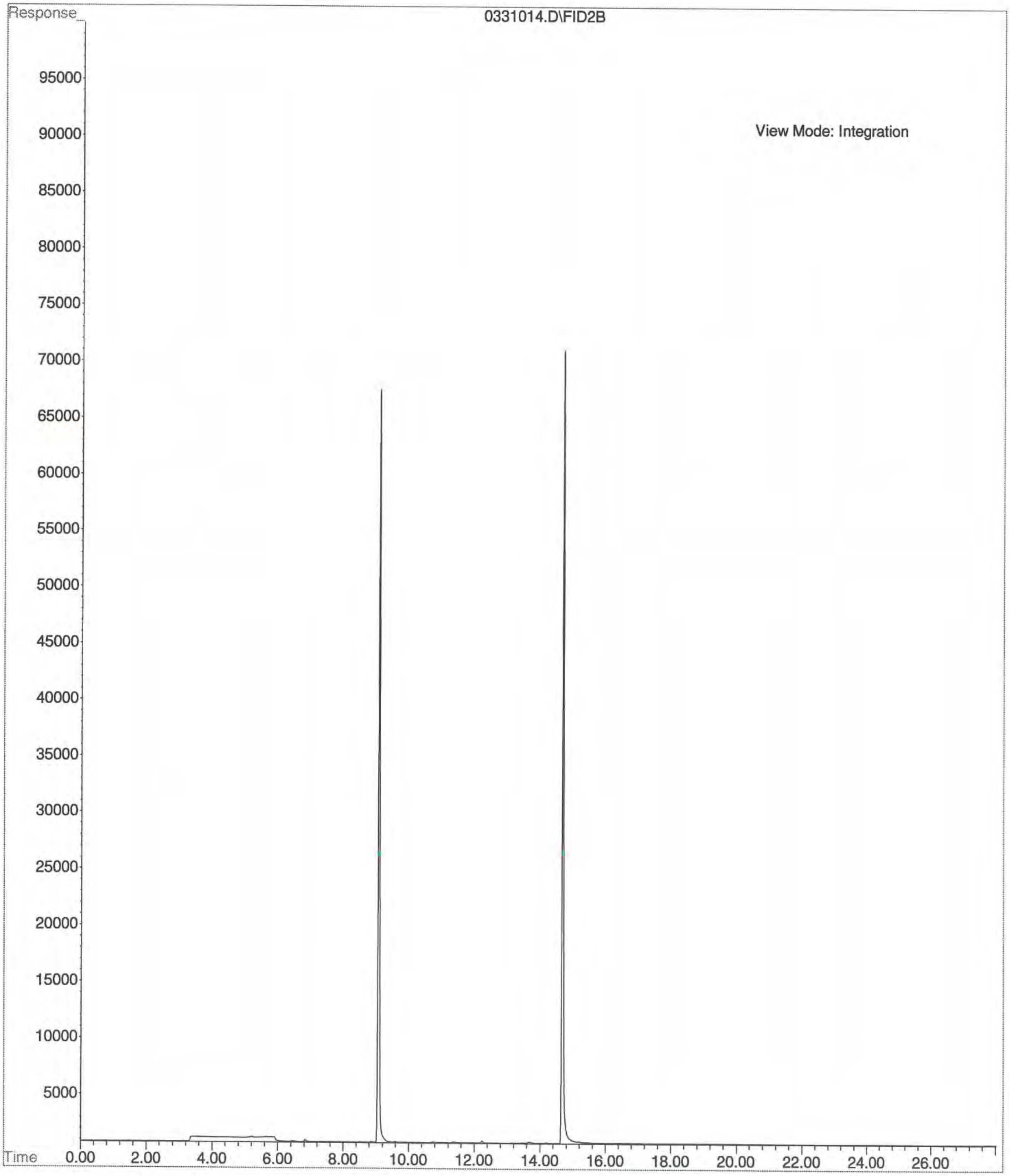
Instrument :   HOPE
Sample Name: 03-290-08g
Misc Info : V2-36-17
Vial Number: 14



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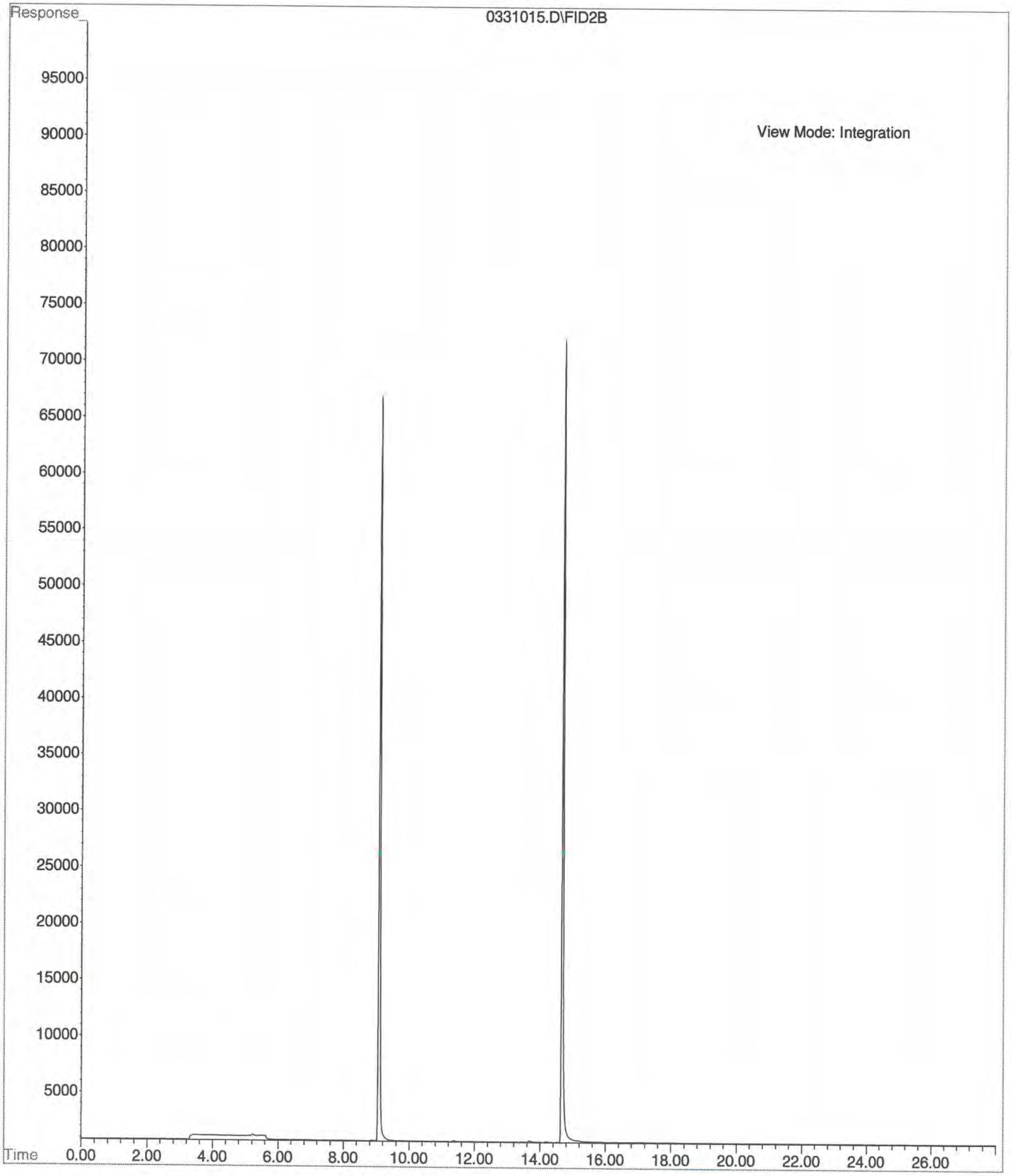
Operator   :
Acquired   : 31 Mar 2015 21:37   using AcqMethod 150312B.M
Instrument :   HOPE
Sample Name: 03-290-09g
Misc Info : V2-36-17
Vial Number: 15



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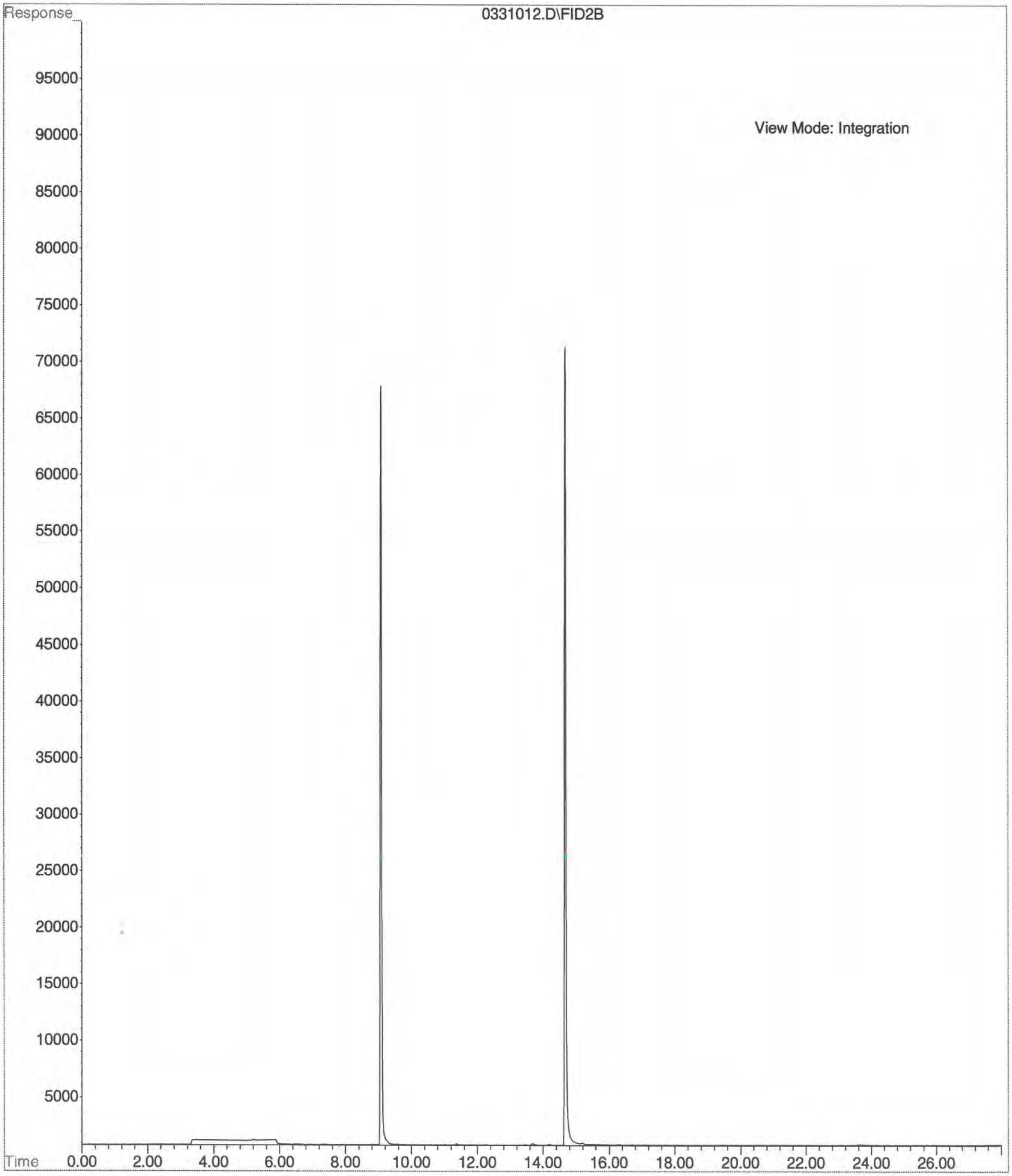
Operator   :
Acquired   : 31 Mar 2015  19:58     using AcqMethod 150312B.M
Instrument :   HOPE
Sample Name: 03-290-10g
Misc Info  : V2-36-17
Vial Number: 12
```



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Operator    : ZT
Acquired    : 30 Mar 2015  16:58     using AcqMethod T150310F.M
Instrument :   Teri
Sample Name: 03-290-01
Misc Info   :
Vial Number: 57
```
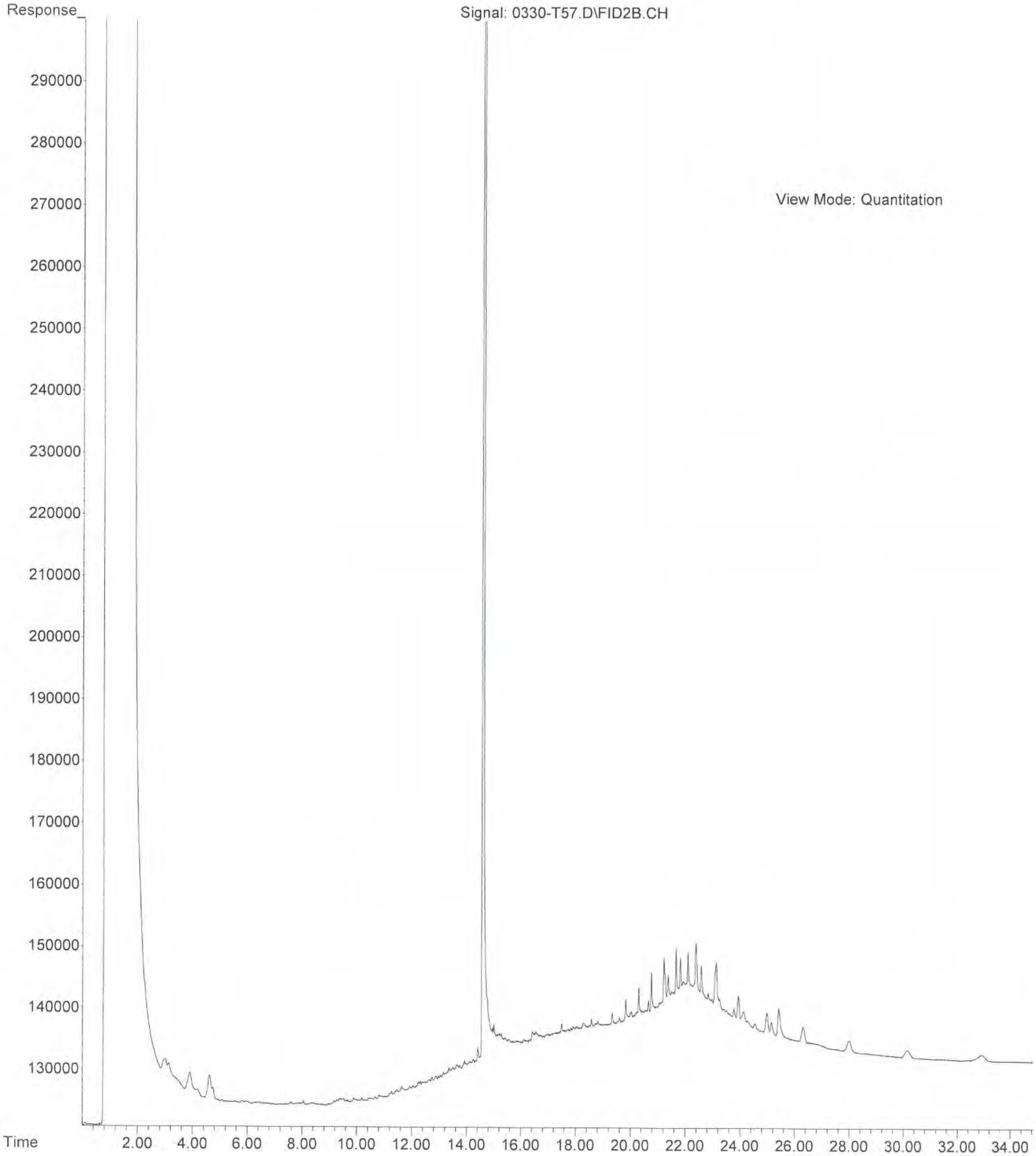
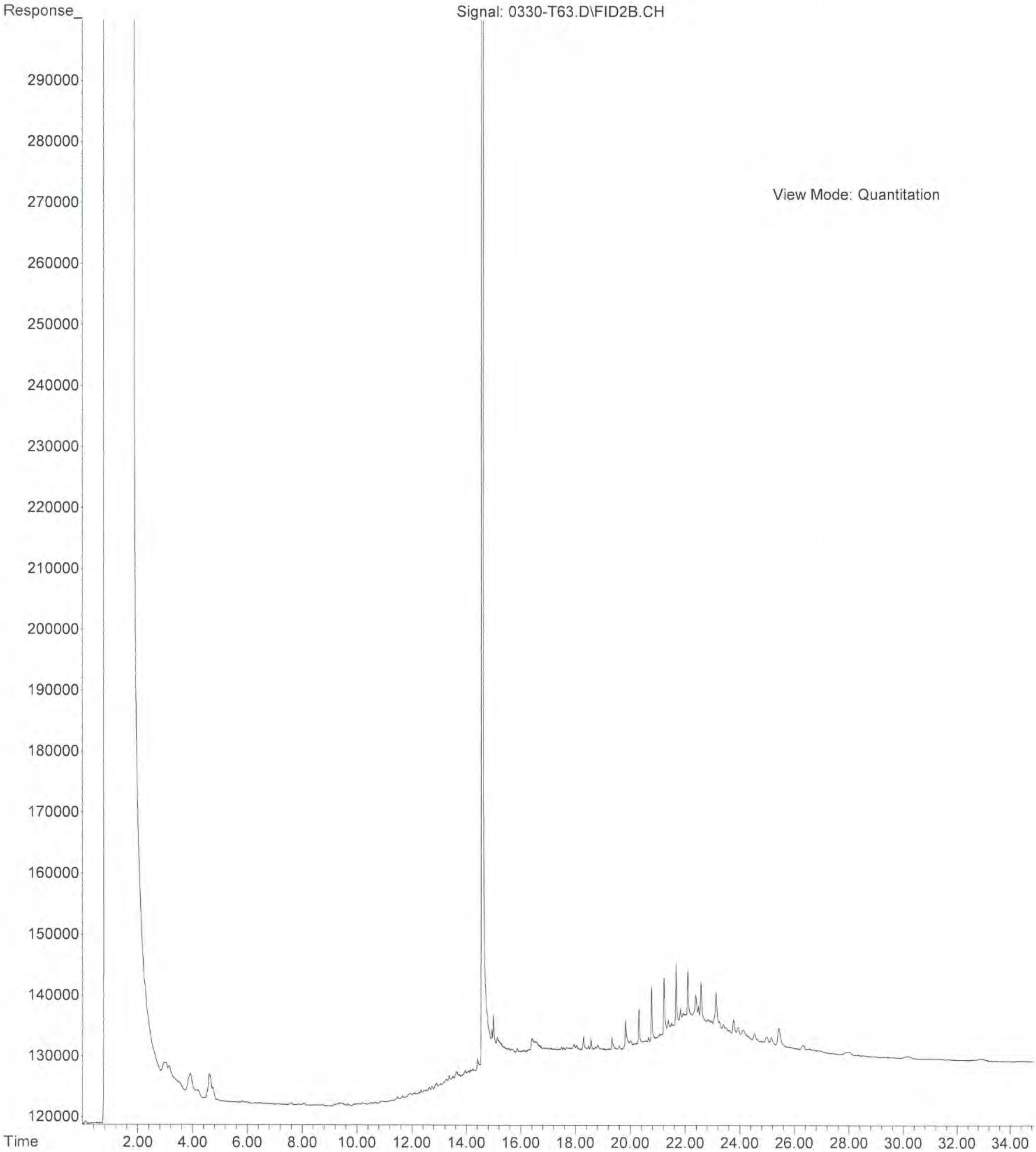



File   :X:\DIESELS\TERI\DATA\T150330.SEC\0330-T63.D
Operator   : ZT
Acquired   : 30 Mar 2015 21:16   using AcqMethod T150310F.M
Instrument :   Teri
Sample Name: 03-290-02
Misc Info :
Vial Number: 63



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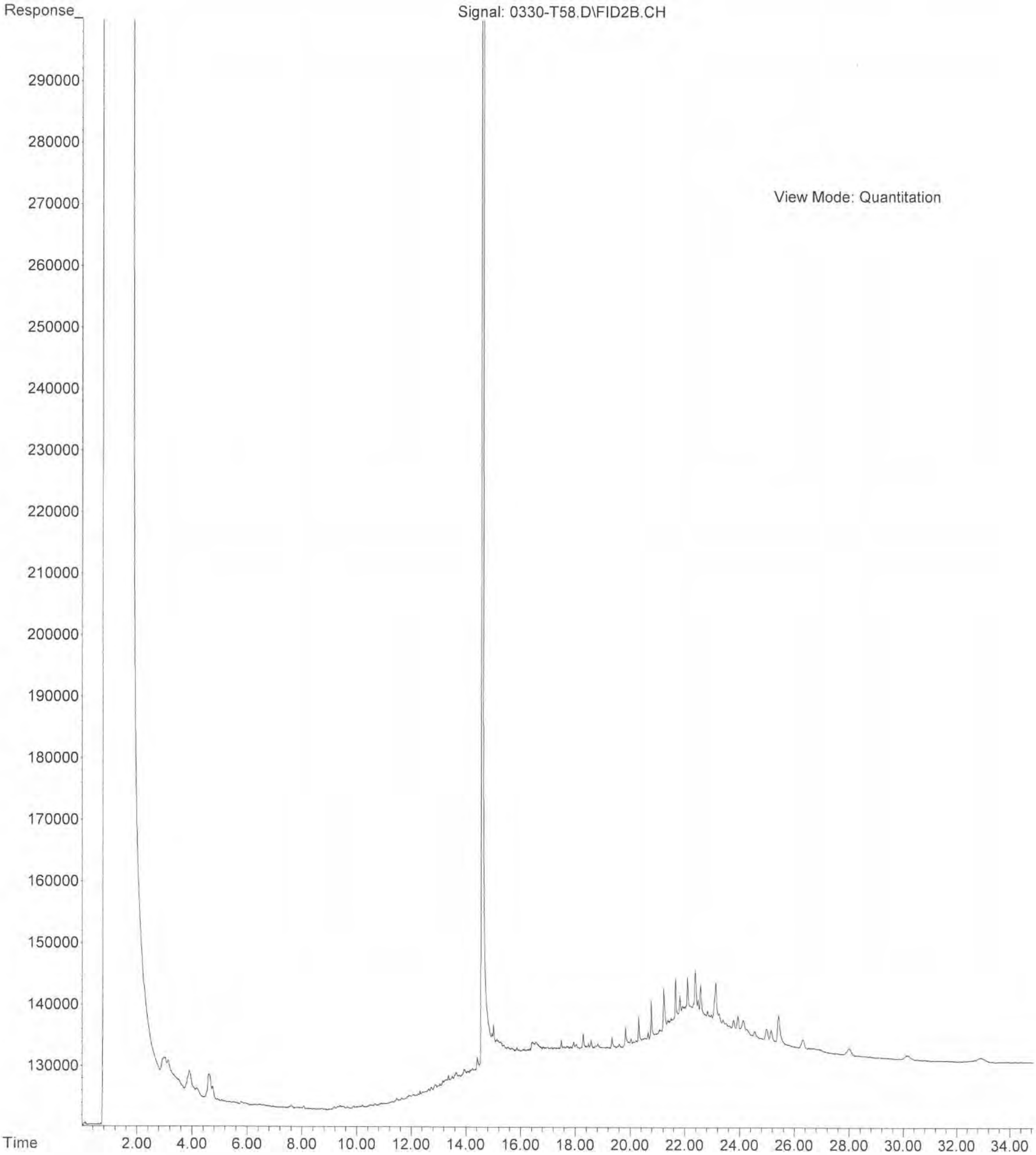
Operator   : ZT
Acquired   : 30 Mar 2015 17:41   using AcqMethod T150310F.M
Instrument :   Teri
Sample Name: 03-290-03
Misc Info   :
Vial Number: 58



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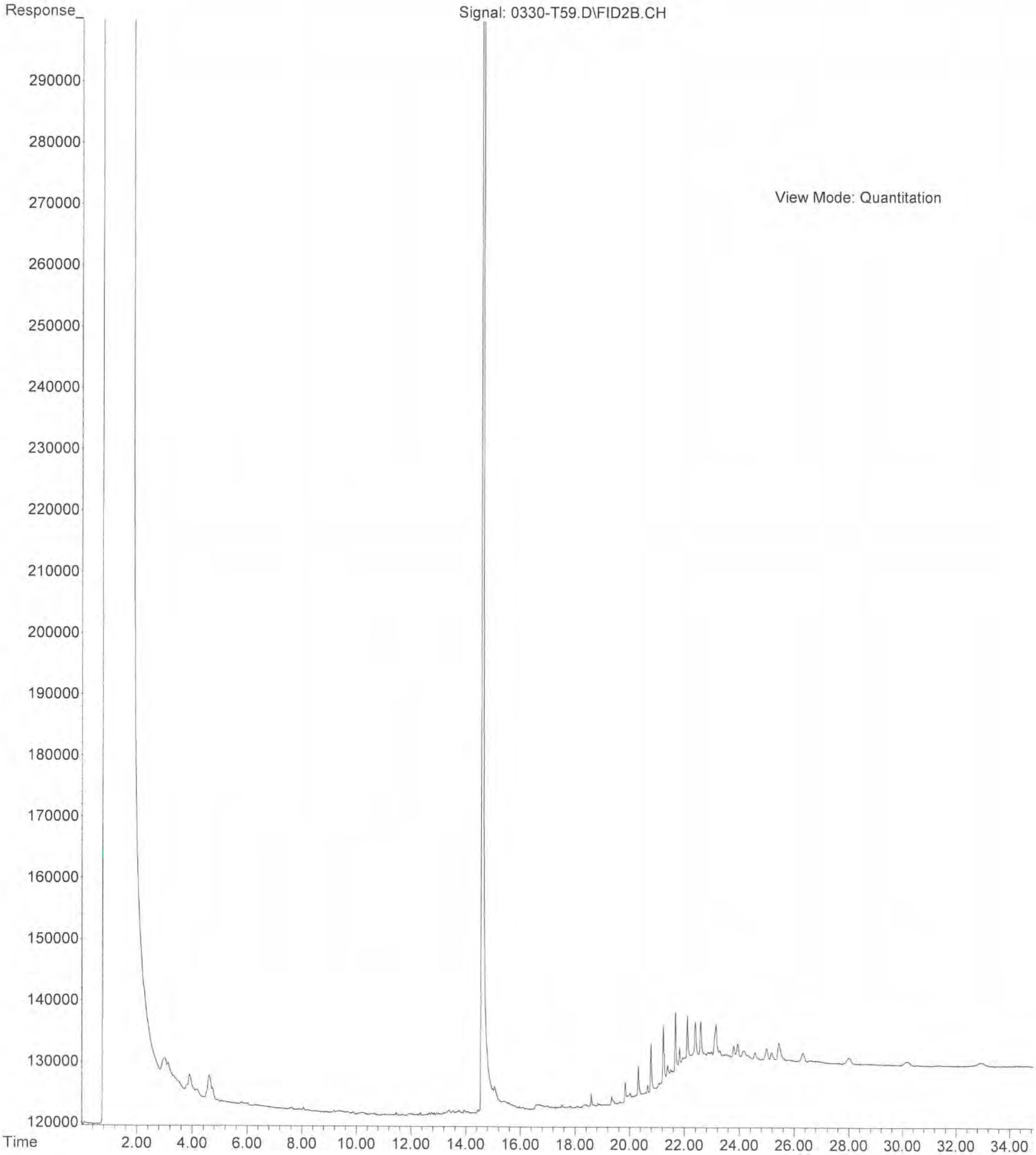
Acquired : 30 Mar 2015 18:24 using AcqMethod T150310F.M
Instrument : Teri
Sample Name: 03-290-04
Misc Info :
Vial Number: 59



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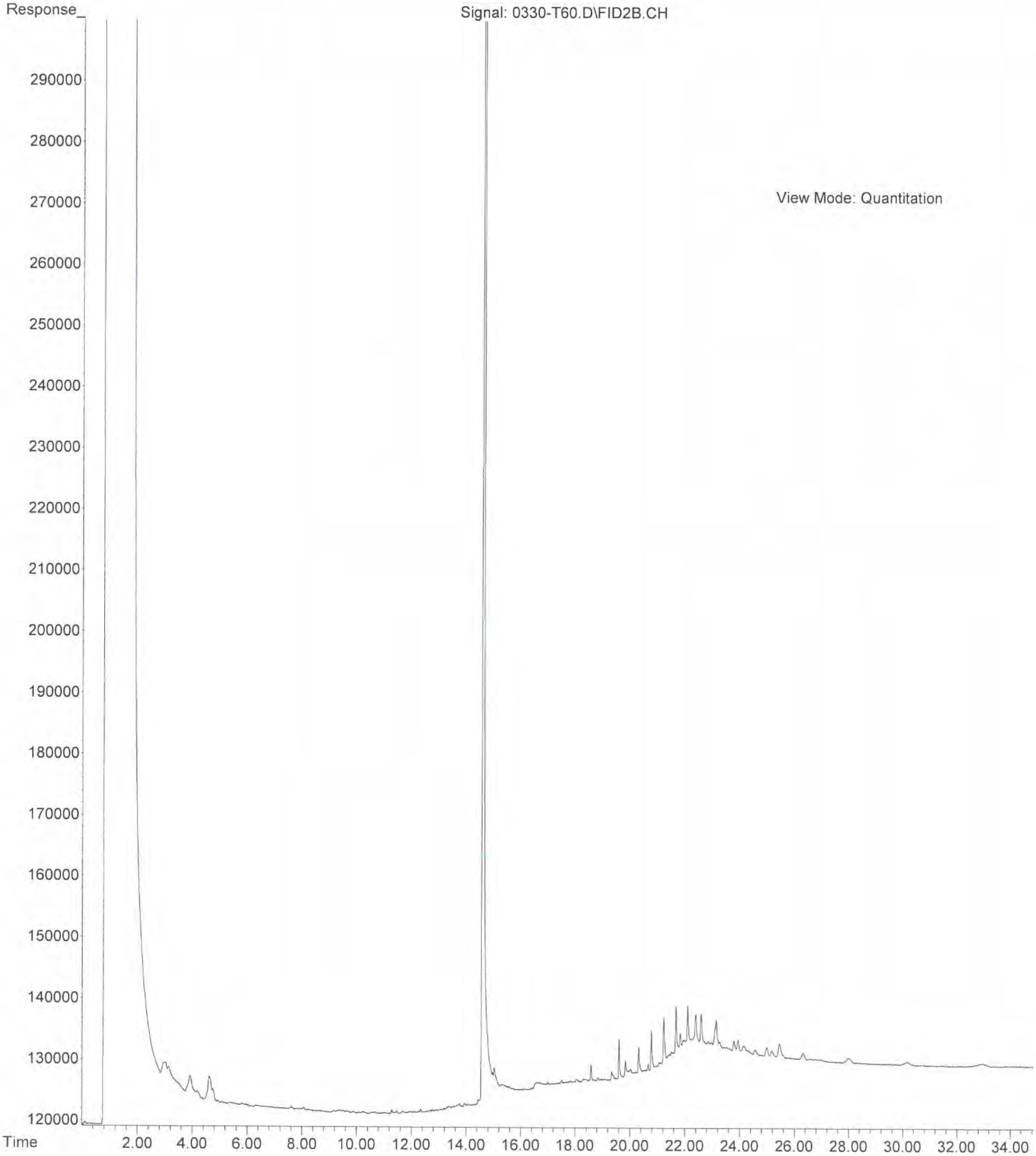
Operator      : ZT
Acquired      : 30 Mar 2015  19:07     using AcqMethod T150310F.M
Instrument :    Teri
Sample Name: 03-290-06
Misc Info  :
Vial Number: 60
```



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Operator    : ZT
Acquired    : 30 Mar 2015  19:50     using AcqMethod T150310F.M
Instrument :    Teri
Sample Name: 03-290-07
Misc Info  :
Vial Number: 61
```

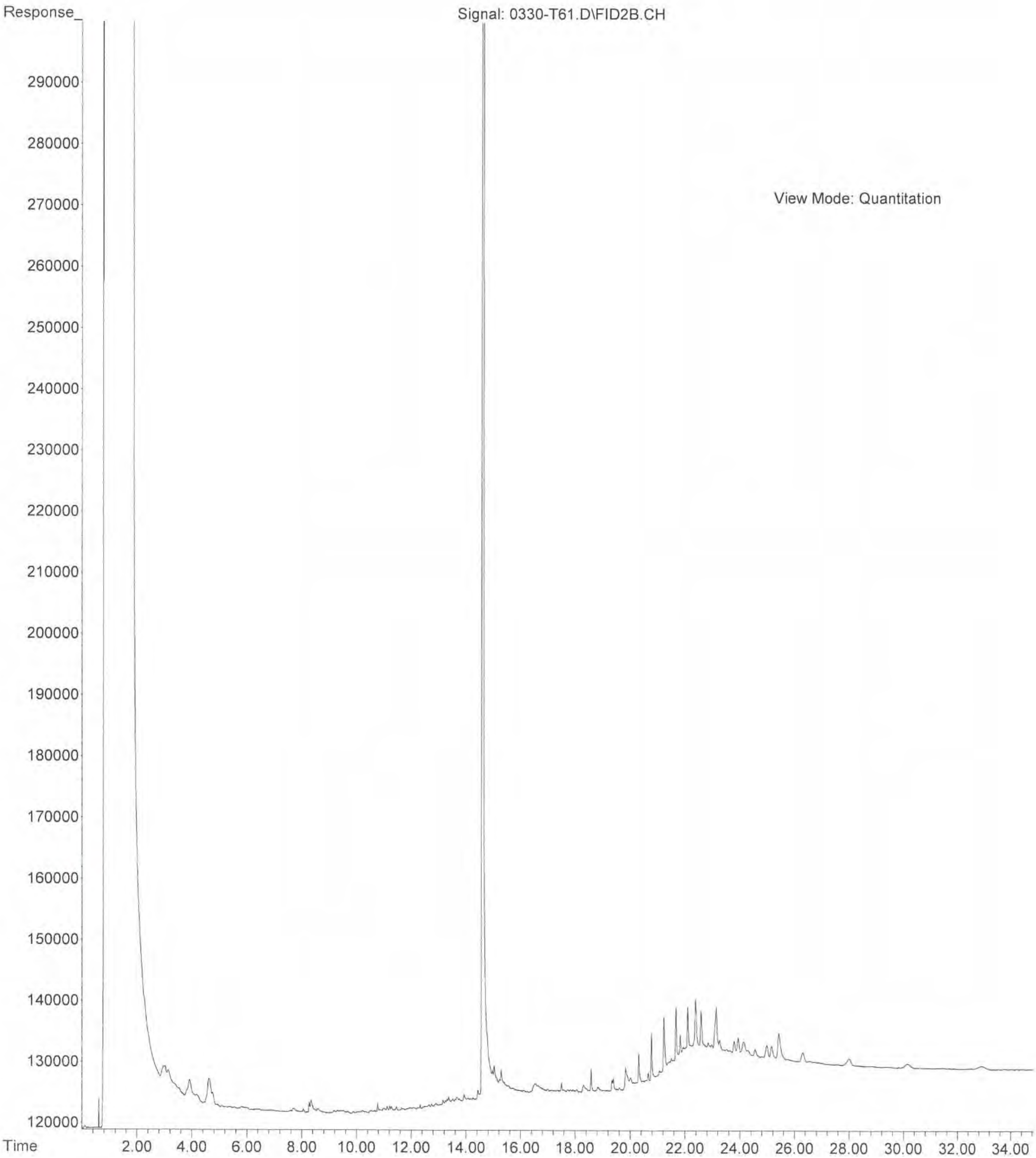

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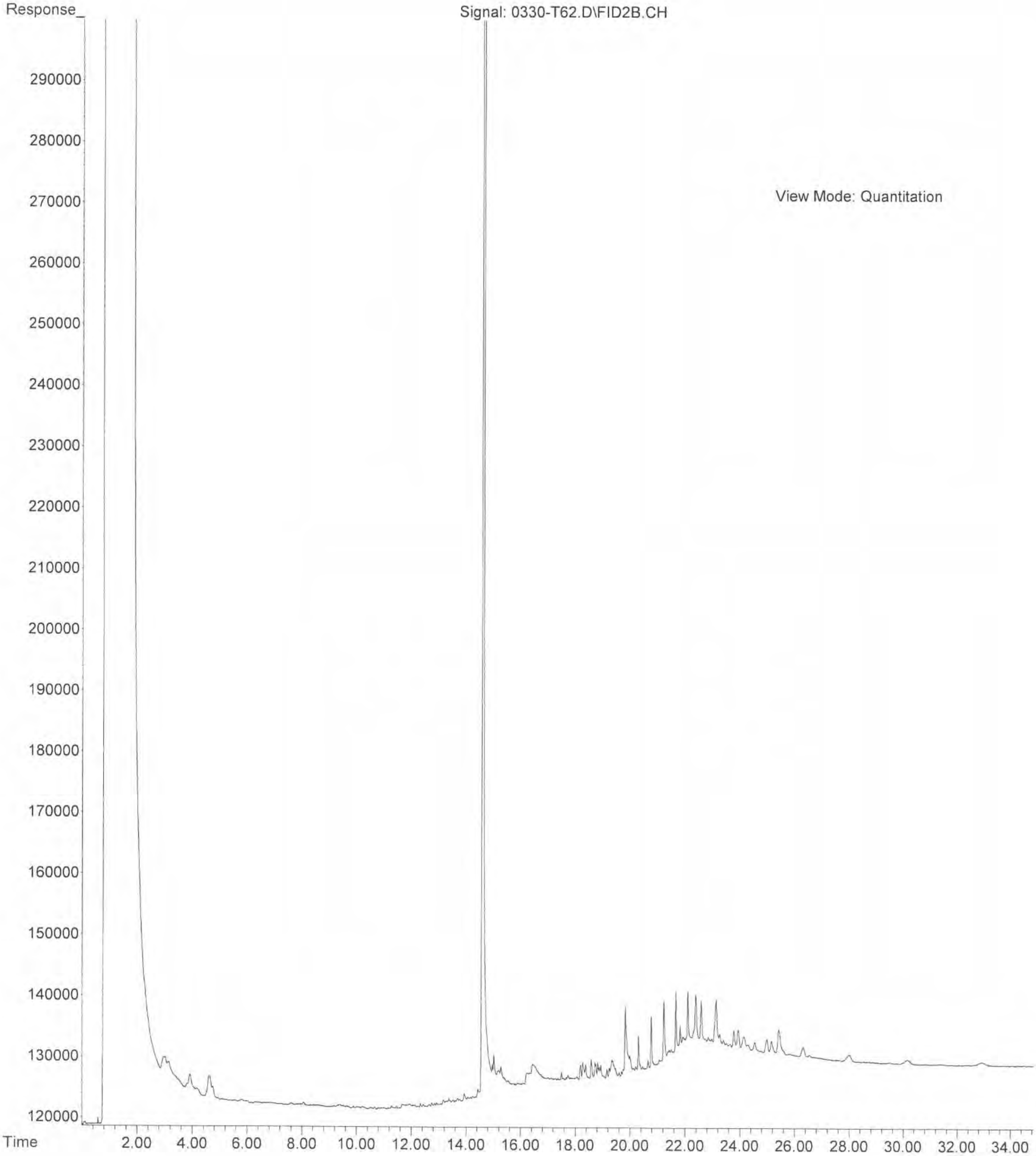
Operator    : ZT
Acquired    : 30 Mar 2015  20:33      using AcqMethod T150310F.M
Instrument :    Teri
Sample Name: 03-290-08
Misc Info  :
Vial Number: 62
```



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File        :X:\DIESELS\VIGO\DATA\V150330.SEC\0330-V56.D
Operator    :
Acquired    : 30 Mar 2015  16:17     using AcqMethod V150209F.M
Instrument  :   Vigo
Sample Name: 03-290-09
Misc Info   :
Vial Number: 56
```

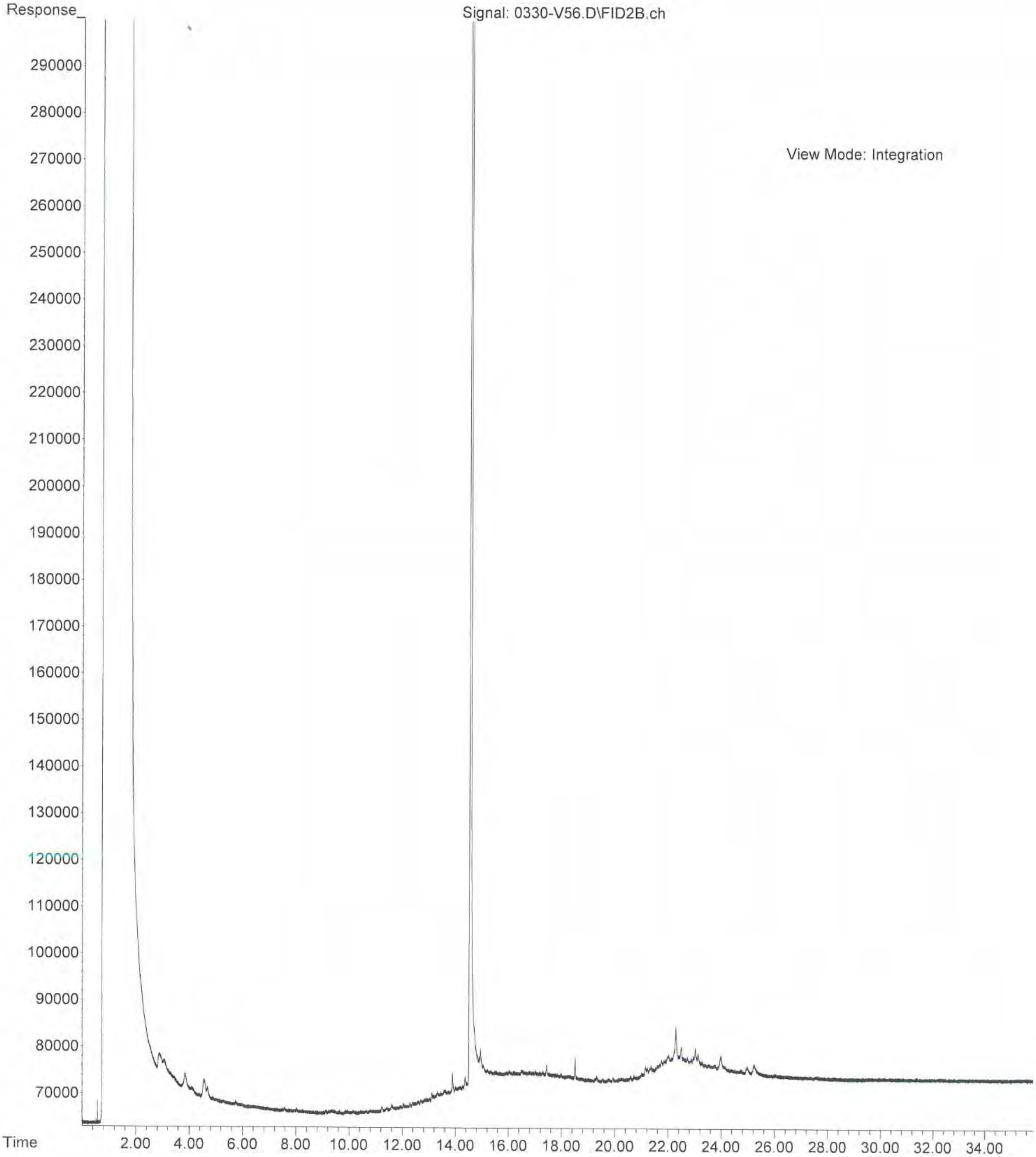

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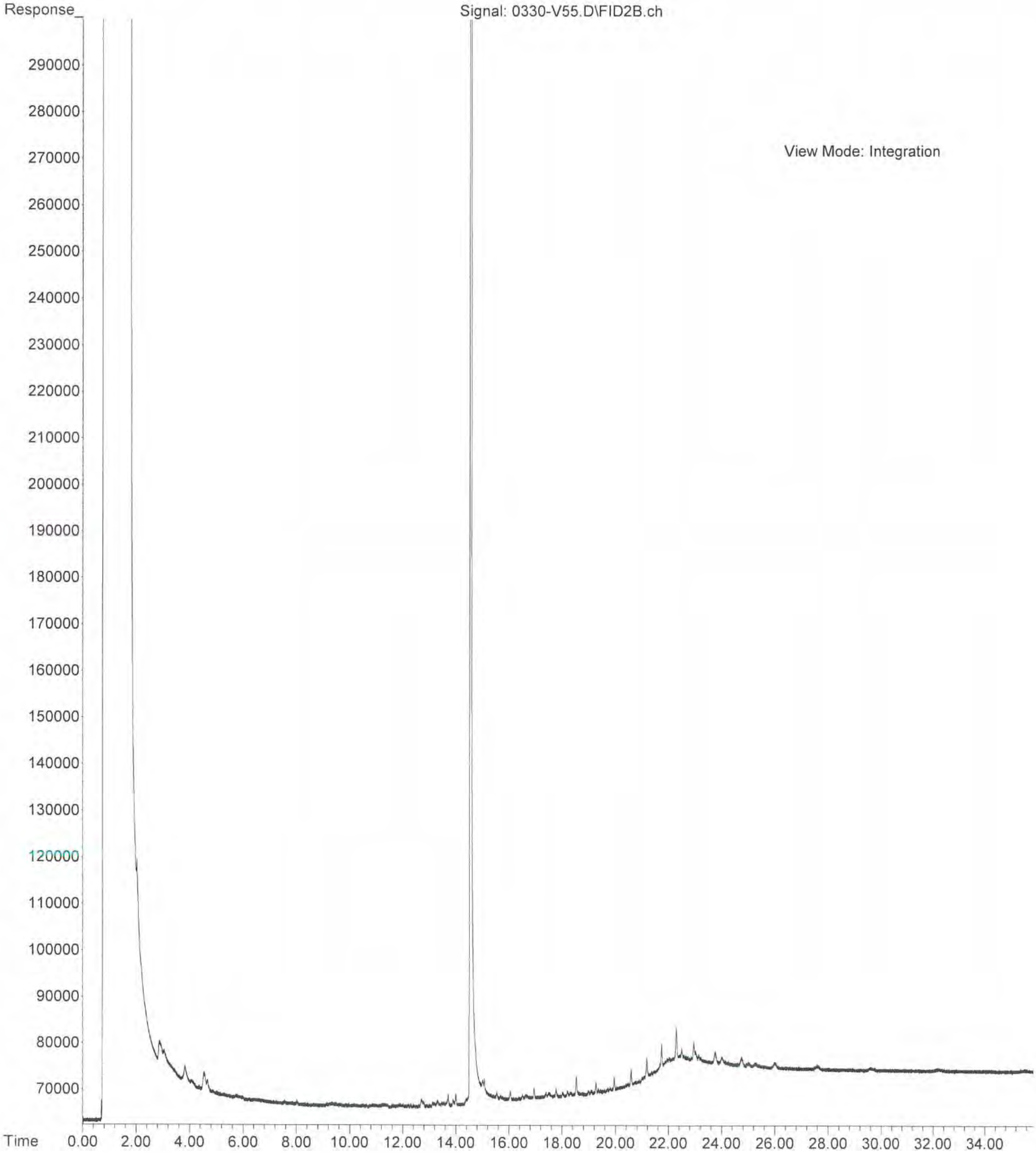
Operator   :
Acquired   : 30 Mar 2015 15:36   using AcqMethod V150209F.M
Instrument :   Vigo
Sample Name: 03-290-10
Misc Info :
Vial Number: 55



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. 1503-306

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: 1503-306
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^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.

Sulfate ASTM D516-07 Analysis

Sample HZMW4 (03-306-01) PQL was increased due to sample interference.

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: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW4**					
Laboratory ID:	03-306-01					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chloromethane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Vinyl Chloride	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromomethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chloroethane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Trichlorofluoromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1-Dichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Iodomethane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Methylene Chloride	ND	1.0	EPA 8260C	4-1-15	4-1-15	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1-Dichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
2,2-Dichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromochloromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chloroform	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Carbon Tetrachloride	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1-Dichloropropene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Trichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Dibromomethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromodichloromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	4-1-15	4-1-15	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	4-1-15	4-1-15	

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
Project: 2007-098-998

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW4**					
Laboratory ID:	03-306-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Tetrachloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,3-Dichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Dibromochloromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dibromoethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromoform	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Bromobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
2-Chlorotoluene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
4-Chlorotoluene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Hexachlorobutadiene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*109*	*79-122*				
Toluene-d8	*102*	*80-120*				
4-Bromofluorobenzene	*99*	*80-120*				

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
Project: 2007-098-998

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:	03-306-02					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chloromethane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Vinyl Chloride	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromomethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chloroethane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Trichlorofluoromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1-Dichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Iodomethane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Methylene Chloride	ND	1.0	EPA 8260C	4-1-15	4-1-15	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1-Dichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
2,2-Dichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromochloromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chloroform	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Carbon Tetrachloride	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1-Dichloropropene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Trichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Dibromomethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromodichloromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	4-1-15	4-1-15	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	4-1-15	4-1-15	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW8**					
Laboratory ID:	03-306-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Tetrachloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,3-Dichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Dibromochloromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dibromoethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromoform	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Bromobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
2-Chlorotoluene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
4-Chlorotoluene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Hexachlorobutadiene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*104*	*79-122*				
Toluene-d8	*105*	*80-120*				
4-Bromofluorobenzene	*99*	*80-120*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TB**					
Laboratory ID:	03-306-03					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chloromethane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Vinyl Chloride	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromomethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chloroethane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Trichlorofluoromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1-Dichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Iodomethane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Methylene Chloride	ND	1.0	EPA 8260C	4-1-15	4-1-15	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1-Dichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
2,2-Dichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromochloromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chloroform	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Carbon Tetrachloride	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1-Dichloropropene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Trichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Dibromomethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromodichloromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	4-1-15	4-1-15	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	4-1-15	4-1-15	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TB**					
Laboratory ID:	03-306-03					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Tetrachloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,3-Dichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Dibromochloromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dibromoethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromoform	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Bromobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
2-Chlorotoluene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
4-Chlorotoluene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Hexachlorobutadiene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*109*	*79-122*				
Toluene-d8	*105*	*80-120*				
4-Bromofluorobenzene	*102*	*80-120*				

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HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0401W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chloromethane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Vinyl Chloride	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromomethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chloroethane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Trichlorofluoromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1-Dichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Iodomethane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Methylene Chloride	ND	1.0	EPA 8260C	4-1-15	4-1-15	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1-Dichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
2,2-Dichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromochloromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chloroform	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Carbon Tetrachloride	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1-Dichloropropene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Trichloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Dibromomethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromodichloromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	4-1-15	4-1-15	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	4-1-15	4-1-15	

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METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0401W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Tetrachloroethene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,3-Dichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Dibromochloromethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dibromoethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Chlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Bromoform	ND	1.0	EPA 8260C	4-1-15	4-1-15	
Bromobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	4-1-15	4-1-15	
2-Chlorotoluene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
4-Chlorotoluene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	4-1-15	4-1-15	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Hexachlorobutadiene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	4-1-15	4-1-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*101*	*79-122*				
Toluene-d8	*101*	*80-120*				
4-Bromofluorobenzene	*101*	*80-120*				

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Project: 2007-098-998

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:	03-306-02										
	MS	MSD	MS	MSD		MS	MSD				
1,1-Dichloroethene	**10.7**	**11.0**	10.0	10.0	ND	107	110	69-133	3	15	
Benzene	**10.8**	**10.8**	10.0	10.0	ND	108	108	75-119	0	15	
Trichloroethene	**8.35**	**8.28**	10.0	10.0	ND	84	83	70-120	1	15	
Toluene	**10.6**	**10.5**	10.0	10.0	ND	106	105	75-115	1	15	
Chlorobenzene	**9.83**	**9.83**	10.0	10.0	ND	98	98	75-120	0	15	
Surrogate:											
Dibromofluoromethane						*95*	*97*	*79-122*			
Toluene-d8						*99*	*103*	*80-120*			
4-Bromofluorobenzene						*97*	*99*	*80-120*			

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
Project: 2007-098-998

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW4**					
Laboratory ID:	03-306-01					
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	*88*	*71-113*				
Client ID:	**BLMW8**					
Laboratory ID:	03-306-02					
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	*87*	*71-113*				

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
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*			

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Samples Submitted: March 31, 2015
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Project: 2007-098-998

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW4**					
Laboratory ID:	03-306-01					
Diesel Range Organics	**ND**	0.26	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	*86*	*50-150*				

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW8**					
Laboratory ID:	03-306-02					
Diesel Range Organics	**0.30**	0.25	NWTPH-Dx	3-31-15	3-31-15	
Lube Oil Range Organics	**0.56**	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: 1503-306
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: 1503-306
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:	03-306-01					
Client ID:	**HZMW4**					
Arsenic	**ND**	3.3	200.8	4-6-15	4-6-15	
Lab ID:	03-306-02					
Client ID:	**BLMW8**					
Arsenic	**ND**	3.3	200.8	4-6-15	4-6-15	

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
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: 1503-306
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: 1503-306
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: 1503-306
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:	03-306-01					
Client ID:	**HZMW4**					
Arsenic	**ND**	3.0	200.8		4-6-15	
Manganese	**ND**	10	200.8		4-6-15	
Lab ID:	03-306-02					
Client ID:	**BLMW8**					
Arsenic	**ND**	3.0	200.8		4-6-15	
Manganese	**1200**	40	200.8		4-7-15	

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
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 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
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: 03-030-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	
Manganese	**161**	**159**	1	10	

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
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: 03-030-01

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 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
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:	**HZMW4**					
Laboratory ID:	03-306-01					
Nitrate	**3.1**	0.10	EPA 353.2	3-31-15	3-31-15	

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW8**					
Laboratory ID:	03-306-02					
Nitrate	**0.14**	0.050	EPA 353.2	3-31-15	3-31-15	

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
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:	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	

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
Project: 2007-098-998

SULFATE
ASTM D516-07

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW4**					
Laboratory ID:	03-306-01					
Sulfate	**ND**	50	ASTM D516-07	4-6-15	4-6-15	
Client ID:	**BLMW8**					
Laboratory ID:	03-306-02					
Sulfate	**ND**	5.0	ASTM D516-07	4-6-15	4-6-15	

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
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 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
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:	**HZMW4**					
Laboratory ID:	03-306-01					
Total Alkalinity	**140**	2.0	SM 2320B	4-7-15	4-7-15	

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BLMW8**					
Laboratory ID:	03-306-02					
Total Alkalinity	**170**	2.0	SM 2320B	4-7-15	4-7-15	

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
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	

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
Project: 2007-098-998

DISSOLVED METHANE
RSK 175

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**HZMW4**					
Laboratory ID:	03-306-01					
Methane	**ND**	0.50	RSK 175	4-8-15	4-8-15	
Client ID:	**BLMW8**					
Laboratory ID:	03-306-02					
Methane	**1100**	250	RSK 175	4-8-15	4-8-15	

Date of Report: April 8, 2015
Samples Submitted: March 31, 2015
Laboratory Reference: 1503-306
Project: 2007-098-998

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	

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

Chain of Custody and Laboratory Anaylsis Request

03-306

DATE: 3/31/15
PAGE: 1 of 1

PROJECT NAME: Bothell Hertz #: 2007-098-998
SAMPLERS NAME: KS PHONE:
SAMPLERS SIGNATURE: KS DATE: 3/30/15
HWA CONTACT: KS+AS PHONE:

TURNAROUND TIME
☐ DAYS
☑ STANDARD

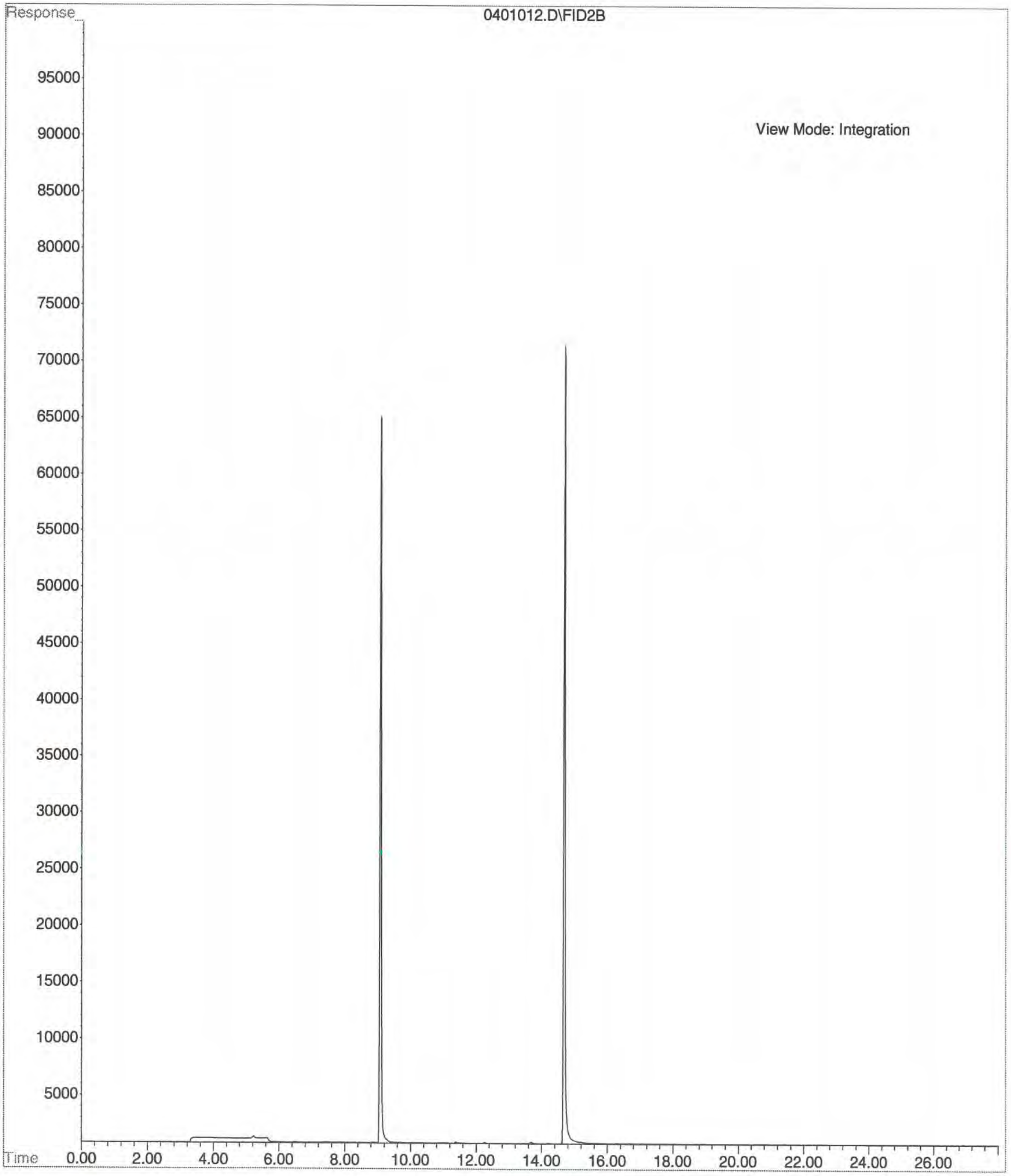
ANALYSIS REQUESTED

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	HVOCs	TPH-G	Dx	BTEX	Total Arsenic	Diss. Arsenic	Diss Manganese	Nitrate	Sulfate	Alkalinity	Methane				EDD	REMARKS
HZMW4	3/30/15	1215	W	1	13	/	/	/	/	/	/	/	/	/	/	/					
BLMW8	↓	100	W	2	13	/	/	/	/	/	/	/	/	/	/	/					
TB	3/30/15	—	W	3	3	/															Field Filtered

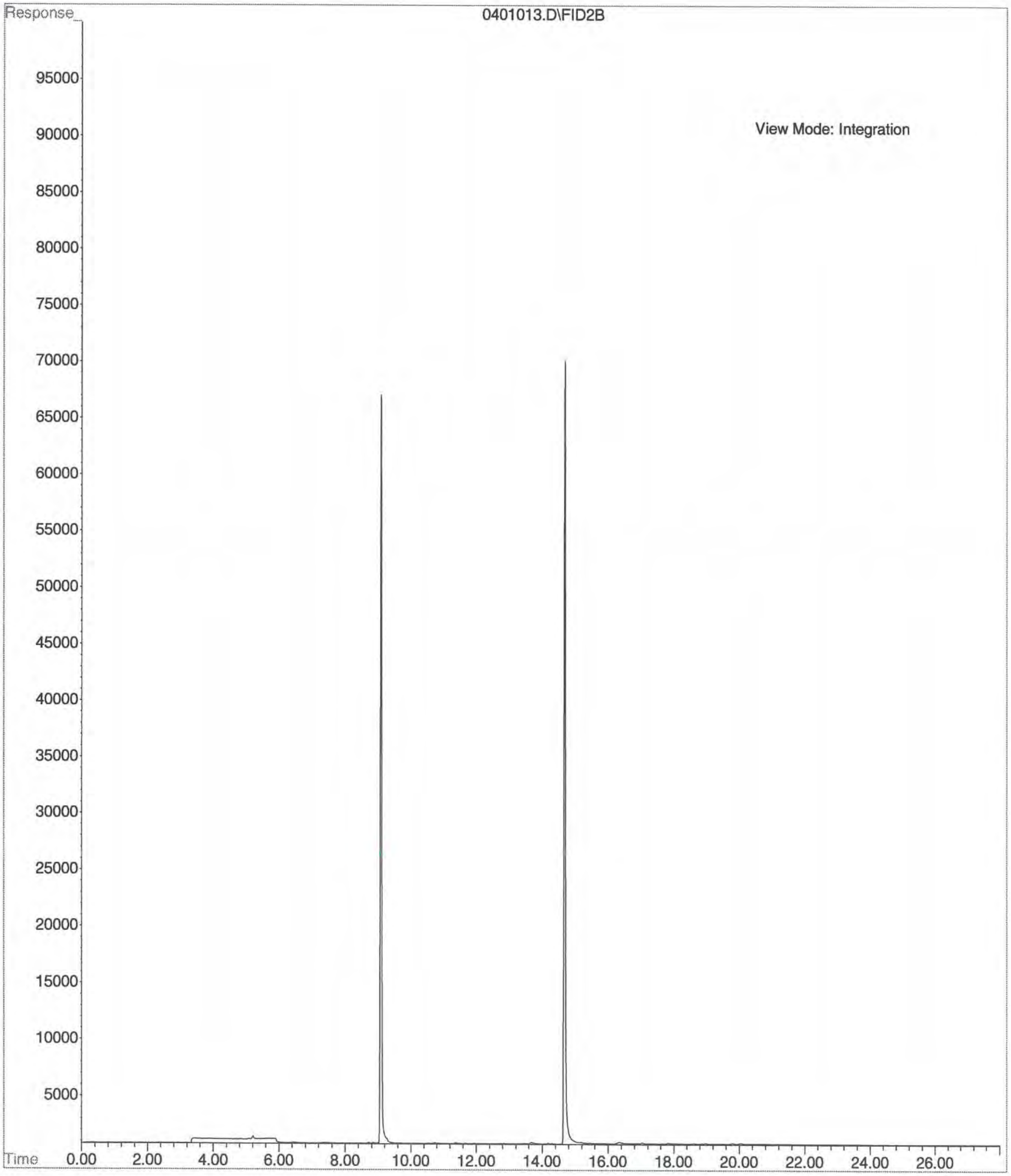
PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: KA	[signature]	HWA Geo	3/31/15	915	
Received by: Pat Miller	[signature]	Speedy	"	10:07	
Relinquished by: Pat Miller	[signature]	"	"	10:47	
Received by: MVOUN	[signature]	OOBE	3/31/15	1047	

DISTRIBUTION: WHITE - Return to HWA GeoSciences; YELLOW - Retain by Lab; PINK - Retain by Sampler

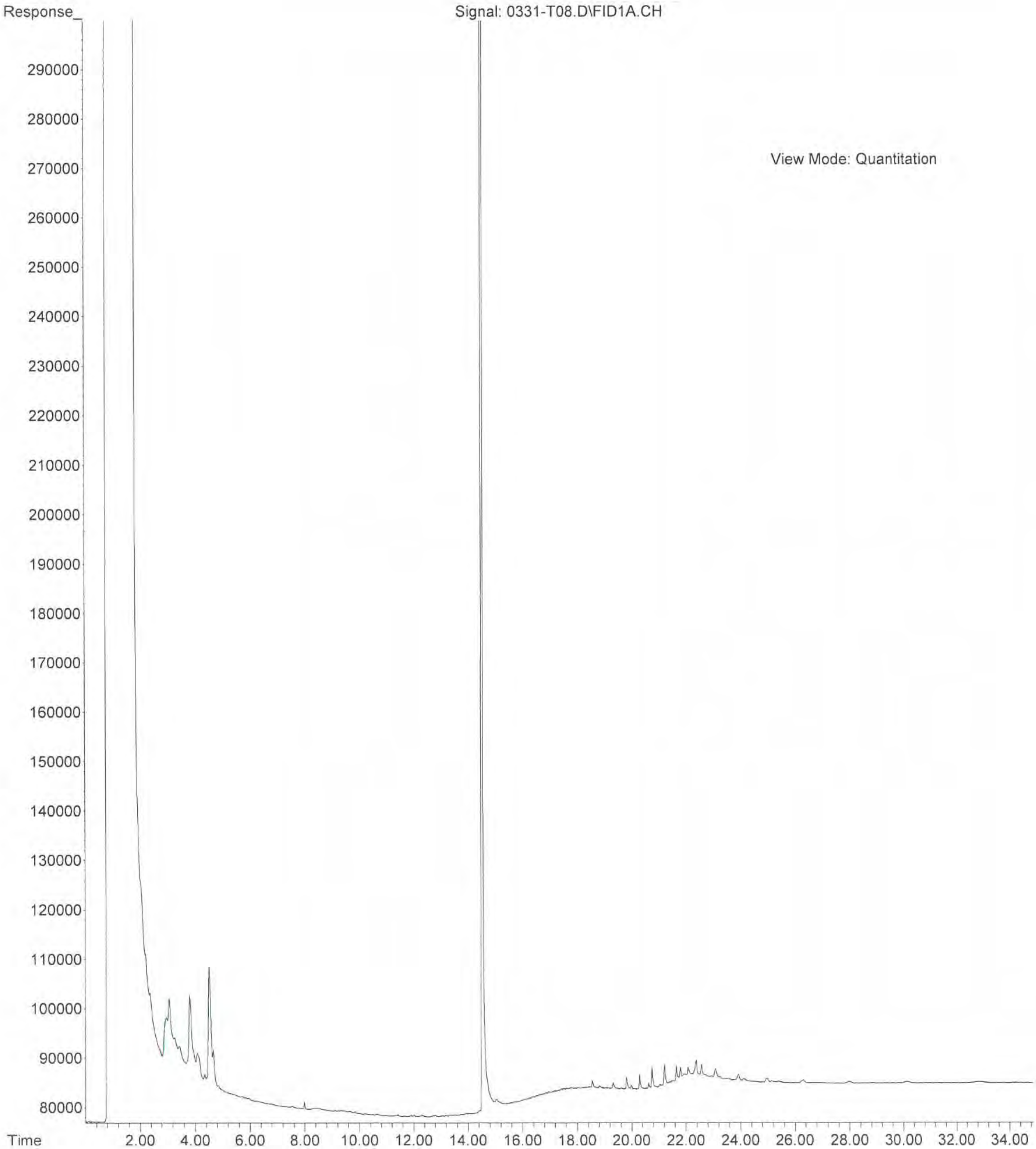
File : X:\BTEX\HOPE\DATA\H150401\0401012.D
Operator :
Acquired : 1 Apr 2015 22:56 using AcqMethod 150312B.M
Instrument : HOPE
Sample Name: 03-306-01b
Misc Info : V2-36-17
Vial Number: 12



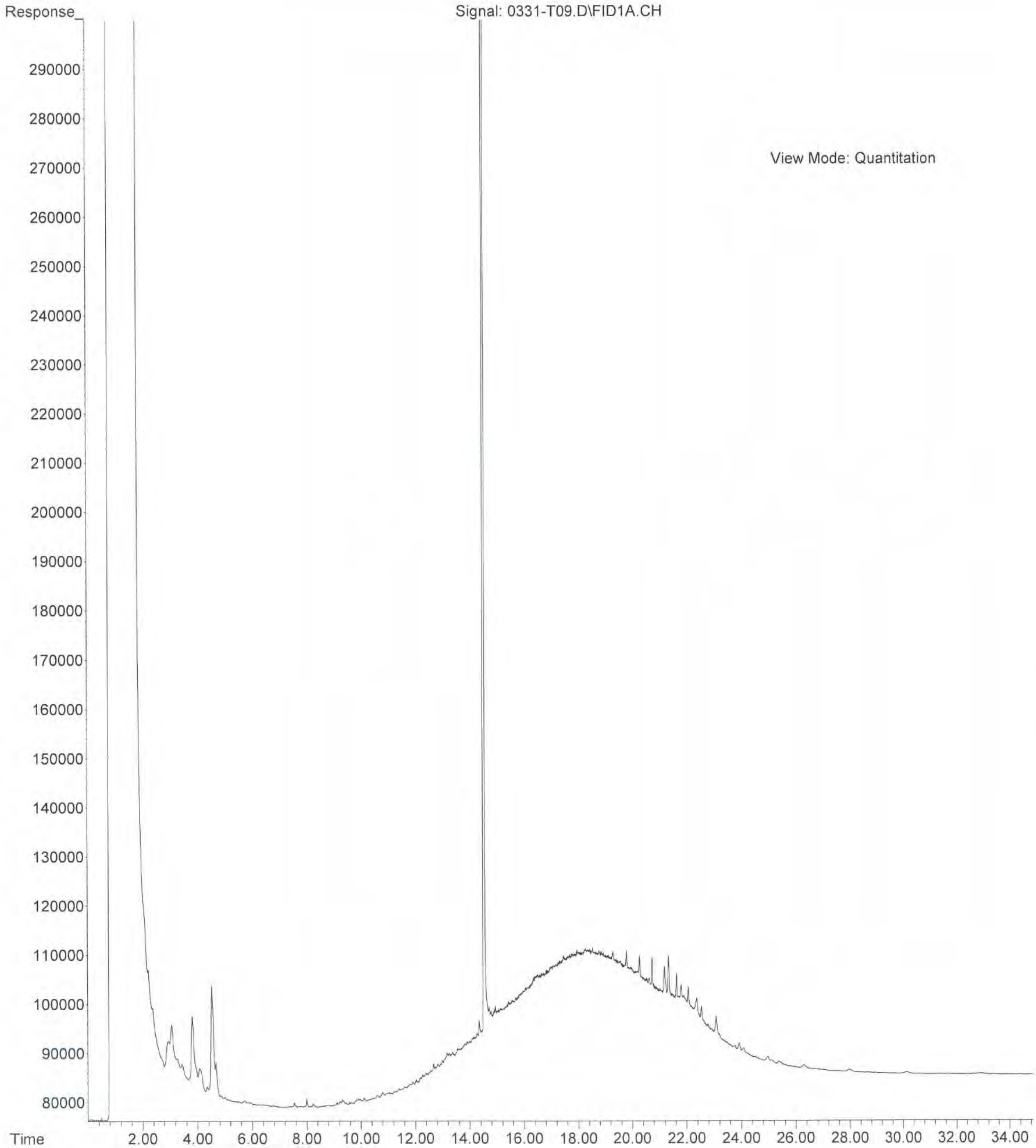
File   : X:\BTEX\HOPE\DATA\H150401\0401013.D
Operator   :
Acquired   : 1 Apr 2015 23:29   using AcqMethod 150312B.M
Instrument :   HOPE
Sample Name: 03-306-02b
Misc Info   : V2-36-17
Vial Number: 13



File   :X:\DIESELS\TERI\DATA\T150331\0331-T08.D
Operator   : ZT
Acquired   : 31 Mar 2015 17:16   using AcqMethod T150310F.M
Instrument :   Teri
Sample Name: 03-306-01
Misc Info :
Vial Number: 8



File   :X:\DIESELS\TERI\DATA\T150331\0331-T09.D
Operator   : ZT
Acquired   : 31 Mar 2015 17:59   using AcqMethod T150310F.M
Instrument :   Teri
Sample Name: 03-306-02
Misc Info :
Vial Number: 9



APPENDIX H

ECOLOGY LETTER, DECEMBER 16, 2011 – FINAL BOTHELL LANDING RI/FS WORK PLAN SUBMITTAL AND NOTICE TO PROCEED WITH PHASE 1 RI/FS WORK, HWA RI/FS FINAL WORK PLAN, SEPTEMBER 19, 2011, WORK PLAN ADDENDUM

(ON CD)

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

December 16, 2011

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

RE: Final Bothell Landing RI/FS Work Plan Submittal And Notice To Proceed With Phase 1 RI/FS Work

Dear Ms. Mbuthia:

Following the receipt of a Final Bothell Landing RI/FS Work Plan last September 30, 2011, and results from our meeting of December 12, 2011, on the Bothell Landing site, the Department of Ecology (Ecology) is issuing this approval of the RI/FS Work Plan document and notice to proceed with Phase 1 of the work plan.

As agreed, implementation of subsequent phases of RI/FS work will require a technical proposal memorandum for that phase of work. The enclosed meeting minutes from our meeting documents our mutual understanding of our respective protocols, deliverables, resolutions, and expectations for the phased RI/FS and Interim Action work for this site.

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
Site Manager
Toxic Cleanup Program

tn

Enclosure (1)

cc: Robert Warren, Section Manager, Ecology
Ching-Pi Wang, Unit Supervisor, Ecology
Sunny Becker, Environmental Engineer, Ecology
Steven Morikawa, City of Bothell

Downtown Bothell Contamination Remediation

MEETING MINUTES

December 12, 2011

Coordination Meeting with Ecology (Bothell PW Dawson)

Attendees:

Ching Pi Wang (Ecology - Supervisor)
Jerome Cruz (Ecology Site Manager)
Sunny Becker (Ecology Site Manager)
Nduta Mbuthia (City's Project contact)
Steven Morikawa (City - Supervisor)
Arnie Sugar (City's consultant, HWA)

Meeting Purpose:

To discuss the Remedial Investigation (RI) work plans submitted to Ecology for Bothell Landing and Bothell Former Hertz

Discussion:

- The attached table summarizes the items discussed in red text

Next steps:

Set up a follow-up meeting in January 2012 to discuss:

- the Hertz work plan comments
- the Paint and Riverside sites

Checklist of Issues in RI/FS Work Plan for Bothell Landing Site (November 30, 2011)

Topic or Issue	Ecology Comment	Bothell Response	Ecology Response	Resolution or Understanding
Level of detail provided in RI/FS planning and specifying nature and scope of work for subsequent Phases of RI/FS work;	Need for more detailed work plans for scope of work under Agreed Order and for conceptual site model. More details are being requested in order to sign off on the extent or scope of work presented so far, future remedial grant payments, agreement on sample location, depth, analytical suite, and data objectives in support of the RI/FS report and DCAP.	City has requested phased approach due to construction schedule, access issues. Drafts for hazardous waste handling and disposal (as part of bid specification Haz Mat sections) were submitted to Ecology. They contain the interim soil action work as well as some sampling plans.	Each of the subsequent phases will require submission of a document with more detailed set of plans and information on how that phase will be implemented. For example: • Study objectives • Investigative Approach • Data Acquisition Objectives • Maps and descriptive tables of planned monitoring wells • Geoprobe or boring locations, sampling depths, soil boring logs, pit or trench sample location and depths, related field notes and photo documentation • Related information like media to be sampled and analytical suites/methods The minimum for the above would be submission of a Sampling and Analysis Plan. Please coordinate with Ecology for review schedule to avoid delays to construction plans. At present, Ecology estimates at least 45 days review time. Ecology will review and approve these plans before Bothell implements the phase.	Approval of Phase 1 only. Subsequent Phases will require more detailed Work Plan submissions (minimum 45 day review) and understanding to proceed only with Ecology approval. Technical planning to be done collaboratively and transparently. 12/12/2011 • SAPs are boiler plate and will not be re-submitted for each phase • Subsequent phases 2 – 6: Technical proposal memo will provide description of situation and objectives. This could include Maps, Tables, Sampling objectives • Consult face-to-face with Ecology when timing opportunities arise – amendments can be made to agreed to phases of work scope • Cite or incorporate any work plans or reports that have relevance to the RIFS work plans • City explained that for risk management, the construction documents show information that may appear different from the IAWP documents. Ecology not expected to review City's construction documents • Incorporate Construction documents that are relevant to the RIFS work – as an appendix • In agreement on Phase 1 – soil excavation to contract limits. Any new discoveries to be dealt with in the future. • Phase 1 completion report (different from IA cleanup report) to be issued with any recommendations. IACR will be cited in the Phase 1 report • Ecology to approve the Final RIWP in concept with the understanding that all the subsequent phases of work will be pre-approved by Ecology • Each phase will have closure – work plan through reporting (tech memo) • RIFS report will incorporate all Phases 1 – 6 • Ecology will issue an approval letter for the Final RIFS work plan within the next 2 weeks
Some significant details for RI work are in construction documents but never mentioned in RI/FS work plan, such as potholing to	Ecology has asked why RI/FS work (sampling maps and related material) were never incorporated or at least referenced in the RI/FS work plan, especially if they constitute RI/FS work. This should be collaboratively planned and worked on to establish expectations for the work and also for remedial action grant payments.	Bothell has stated that this was never brought up before. Responding to this issue cited in Ecology's June 28, 2011 letter, Bothell wrote: "will address in the Final RI/FS work plan; this is a new comment not provided during the first and second round of comment	If such remediation plans are part of a separate construction document[1], they must be incorporated in the work plan document for that phase **or referenced clearly and thoroughly.** Any later adjustments to such plans will require Ecology approval before implementation. Environmental samples such as those planned for utility line trenching, or during potholing prior to the interim soil remedial action at the	Maps and samples in question were incorporated in Former Hertz RI/FS Work Plan. Ecology, under the Agreed Order, has authority to evaluate the scope of work being presented in the work plan and if at that time finds an anomalous situation, can seek clarification and revision. RI/FS related activities should

[1] Section 02210 "Excavation and Disposal of Contaminated Soil" and map drawings CT1 and CT2 (Sheets 1 and 2) "Contaminated Soils Plan" in the Crossroads Ph III contract plans and specifications (PS&E) for the Phase 1 interim cleanup and limited remedial investigation work.

Topic or Issue	Ecology Comment	Bothell Response	Ecology Response	Resolution or Understanding
precharacterize excavation, and pothole sampling along utility lines in case more contamination is discovered, and for soil end use or disposal.	Documented in Ecology's letter of June 28, 2011. The plan for potholing that will be used to pre-characterize the soil contamination before resumption of contaminated soil excavation at the northern portion of the site was not incorporated or referenced as part of this RI/FS work plan. Instead, this plan for potholing, along with related sampling and analysis of soil samples during utility trenching, was specified in a separate construction document (see footnote 1). This activity is investigative in nature and would typically be mentioned in a work plan for a cleanup site. Ecology expects such separate plans to be made as part of the work plan or at least referenced as appropriate.	reviews" (July 5, 2011 letter) HWA has communicated that they are for end use/disposal purposes, for geotechnical measurements, and if contamination is discovered during utility line work.	northern property boundary, are ostensibly for geotechnical measurement or soil end use or disposal. However, in previous discussions, it was indicated by HWA Geosciences that the utility line trenching may uncover unknown areas of contamination at the site and therefore they will be taken for contaminant analysis as well. It is unclear if this indicates that there are other areas of contamination that are suspected to exist, but are not part of the remedial investigation and characterization. Based on Phase III Contaminated Soils Plan (CT2), the estimated soil remediation (excavation limits) area is a northeast lobate zone in the ROW. Suspected soil contamination (chiefly petroleum hydrocarbon and related) may easily extend further toward Speedy Auto and the Grease Monkey property. However, there is little contingency on paper for RI work toward these adjacent sites and the plan appears to fall short of these areas.	not be made as a separate construction document with no mention at all in the RI/FS work plans being drafted. Bothell should also actively seek site manager approval of such plans and provide better details on what will be done (such as sampling details, analytical suites, purpose, expected outcomes). Ecology may still require subsurface investigation in mediate nearby sites (Speedy Auto and Grease Monkey) to confirm noninteraction if that is the case inferred from the interim remedial action/limited RI work. 12/12/2011 • No action expected. Expectations discussed above
Independent investigations	Ecology has requested early submission of all reports or investigations done by Bothell before the Agreed Order, including ROW studies or environmental diligence or discipline reports, environmental studies carried out with EPA or County grant funding. During technical discussions, these are being used to limit the scope of investigation when under question. In some instances, Ecology does not agree with the representativeness, duration, investigative scope or depth of such investigations. Ecology feels it is premature to cite these as evidence that no further investigation is needed for that area or topic under discussion.	Sensitive to the issue.	Any independent or relevant environmental investigations and studies related to the site must be promptly communicated to Ecology even if in its planning stage, such as EPA or King County Brownfields assistance relating to the Bothell sites and adjacent areas. Also, the results must be submitted promptly to Ecology for review and concurrence. This is necessary if there is an expectation to use the information in the RI/FS and DCAP or to propose a change or reduction in the scope of work for this site.	Mutual clarification of positions. Ecology will accept previous studies to support the RI/FS if warranted, but it will not accept arguments that no further investigations are needed if it feels the evidence is inadequate or still shows noncompliance. 12/12/2011 • Legal or proprietary situations – City cannot send these documents to Ecology until ready for release • City explained that certain independent projects are happening close to the site. City will inform Ecology as a courtesy during monthly meetings
Inventory of Contaminants of Concern , Continuity of investigation to demonstrate final compliance	Previous (pre-Agreed Order) Phase 1 or 2 reports or Environmental Site Assessments (ESAs) have identified contaminants, cleanup exceedances, and contaminated areas and media at the site such as the TPH plume in the area of the former rotunda. Based on this information, Ecology expects that the initially identified contamination and contaminated areas will be adequately covered in subsequent investigations.	Ecology had raised this issue in past communications. HWA Geosciences responded that well locations may be constrained by the roadway and that there will always be opportunity to investigate areas as needed based on future results.	Following the interim remedial action, the same areas of contamination should be sampled as part of the RI/FS and as confirmation for the interim remediation. For example, as part of Phase 2/3 in the work plan, installation of wells in the north end of the Bothell Landing parcel (in the vicinity of the 522/527 intersection) should not skirt the area of known ground water contamination. In other words, subsequent samples should not be situated in areas where no contamination was previously identified. Instead, it should be in the same area where it was identified in past investigations.	While Ecology understands these constraints and the possibility of limited impacts, the nature of such follow-up RI work remains vaguely defined. Ecology will not be able to "sign off" on contamination in these areas unless this is addressed as advised. Ecology can work with Bothell on achieving this if they can initiate active conversation and planning on this. Ecology does not want to see planned development to occur at areas where residual contamination still occurs especially if it is highly likely that concerns can be addressed before more development (roads, buildings, and public areas) occurs. 12/12/2011 • No action expected. Expectations discussed above
Apparent extension of petroleum contamination in soil northward from	Ecology has communicated that, based on documented contamination and close proximity, the UST and associated contaminated soil and ground water at the Speedy Auto Glass site (FS # 58179799) may connect with the northern	HWA has responded that it can only excavate soils or sample test pits within construction project limits (current the 522/527 intersection) and	However, Ecology notes that the Bothell may already own a portion of the contaminated zone near Speedy Auto as part of their Right of Way, and that the excavations may not provide sufficient data to indicate that the Speedy Auto Glass site is not part of the Bothell site.	• Evaluate results of Phase II excavation • Evaluate literature and compiled data on other sources in areas in question • Identify data gaps in soil (and ground water) and other

Topic or Issue	Ecology Comment	Bothell Response	Ecology Response	Resolution or Understanding
Bothell Landing in ROW and documented contamination (confirmed and suspected) in ROW and at adjoining properties such as the Speedy Auto site and Grease Monkey.	extension of soil contamination at the Bothell Landing site. Therefore, Ecology has advised Bothell to include this area in the investigation, possibly during the interim cleanup work or in the next phase when that part of SR 527 is reconstructed.	it might recommend this for future investigations only if it is determined that impacts from the property are commingled with contamination on any City of Bothell sites under Agreed Order. The limited RI investigation will rely on chasing soil contamination and using sidewall and pit bottom sampling to complete soil remediation.	Due to preferential pathways associated with utility lines beneath SR527 and the SR 522/527 intersection, and the fact that apparent discontinuities in contaminated soil and ground water may still exist in areas such as former gasoline stations and facility releases, Ecology will likely expect a more thorough investigative treatment of the extent of contamination in this area. Although HWA has responded that further investigation of the Speedy Auto Glass site might be a later phase of the RI/FS, Ecology still advises that it might be considered for part of this next phase of excavation and investigation. At the same time, please be reassured that Ecology will work with the City of Bothell in establishing the limits to their cleanup liability based on quality technical data, site information, and objective regulatory evaluation. From the ECOSS and past Phase I reports, the presence of two former gasoline stations, the Speedy Auto abandoned UST and Petroleum Contaminated Soils (PCS), and ROW borings cannot preclude Ecology from immediately concluding that confirmation samples from the interim (Phase II?) soil remediation will be sufficient to demonstrate compliance. Ecology agrees that an open excavation may reveal much, but due to former facility use common to gasoline stations, the contamination that Bothell is liable for may be discontinuous or even missed.	media following interim action and limited RI work in the area • Design supplementary soil investigation in ROW area to establish remaining soil contamination issues in the area Provide hard data to Ecology so it can determine who is liable for remaining contamination. 12/12/2011 • No action expected. Expectations discussed above • Ecology understands that City is stopping at the property limits (construction contract limits) _ Ecology will give City closure up to these limits

REMEDIAL INVESTIGATION FEASIBILITY STUDY

FINAL WORK PLAN

BOTHELL LANDING SITE
BOTHELL, WASHINGTON

Project No. 2007-098-929

Prepared for
City of Bothell

September 19, 2011

HWA GEOSCIENCES INC.

- Geotechnical Engineering
- Hydrogeology
- Geoenvironmental Services
- Inspection & Testing

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REMEDIAL INVESTIGATION FEASIBILITY STUDY
FINAL WORK PLAN
BOTHELL LANDING SITE
BOTHELL, WASHINGTON

1.0 INTRODUCTION

This remedial investigation / feasibility study (RI/FS) work plan describes the collection of data and information necessary to further define the extent of contamination and to characterize the Bothell Landing Site (Site) in Bothell, Washington (the City). The City owns the approximately 2.8-acre Bothell Landing property located at 18120, 18126, and 18132 Bothell Way, and 10001 Woodinville Drive, Bothell, Washington, however final determination of the Site boundaries (i.e., the area where hazardous substances have come to be located) will be established during the RI process. Ecology's Facility Site ID is # 73975762; it is noted as a Brownfields Site in Ecology's Integrated Site Information System (ISIS) database.

HWA prepared this RI/FS work plan as part of the actions specified in Agreed Order number DE 6294, as amended on June 9, 2010, between the City of Bothell and the Washington State Department of Ecology (Ecology). Copies of the Agreed Order and the June 9, 2010 amendment are presented in Appendix A.

Figure 1 is a vicinity map and Figures 2 and 3 show the Bothell Landing Site and other properties in the Bothell Crossroads area relevant to this work plan. Figure 4 shows the approximate extent of the RI study area.

1.1 BACKGROUND

The general direction of ground water flow in the vicinity of the Bothell Landing Site is from north to south. Hydraulically upgradient of the Bothell Landing Site are several properties having possible or recognized environmental conditions (Figure 3) because of historic use of petroleum products or dry cleaning solvents.

Within the Bothell Landing Site, there are dissolved metals and petroleum hydrocarbon concentrations in ground water that exceed MTCA Method A cleanup levels (Table 720-1 in WAC 173-340-900). An interim action soil cleanup performed in September 2010 through the Bothell Crossroads project area removed 3,556.5 tons (approximately 2,222 cubic yards) of petroleum-impacted soil that was a source of the petroleum hydrocarbons occurring in Bothell Landing Site ground water. An interim action cleanup report (HWA, 2011) documents the 2010 interim action soil cleanup within the Bothell Landing parcel. The 2010 interim action cleanup was confined within the parcel boundaries, due to lack of access to areas beneath the heavily-used SR 522 state highway. The cleanup is therefore being conducted over a period spanning two construction seasons because contaminated soil known to be present under the active SR 522 roadway was left in place in the northern extent of the Bothell Landing parcel. Contaminated soil remaining under the SR 522 roadway will be addressed after the roadway realignment during Crossroads Phase III construction, which is scheduled to commence in the summer of 2012, and be completed in 2013. Following the soil cleanup under the existing roadway, the City will conduct one year of quarterly monitoring to confirm successful cleanup of petroleum-impacted ground water, in accordance with the interim action scope of work described in the amended Agreed Order. Section 5 of this RI work plan addresses the quarterly monitoring to be conducted at the Bothell Landing Site.

In addition to petroleum-impacted ground water at the Bothell Landing Site, previous investigations (e.g., HWA, 2007; CDM, 2009; and Parametrix, 2009) identified an upgradient chlorinated volatile organic carbon (VOC) plume apparently originating from the Ultra Custom Care Cleaners property located at 18300 – 18304 Bothell Way NE (along State Route 527, also known as the Bothell-Everett Highway) (Figures 2 and 3) that has migrated onto and commingled with contaminants in the Bothell Landing Site ground water. The Ultra Custom Care Cleaners property is listed as facility number 379891 on the Department of Ecology's Confirmed and Suspected Contaminated Sites List (CSCSL) for chlorinated solvent contamination in soil and ground water.

Another known chlorinated solvent site that is up-gradient of the Bothell Landing property is the Bothell Service Center / Simon & Son Fine Dry Cleaning site, 18107 Bothell Way Northeast. This site is listed as a state cleanup site, Voluntary Cleanup Program, facility identification number 33215922. The site has a documented release of chlorinated solvents to ground water, and contamination has migrated off-site; however, it is unknown at this time whether the Bothell Service Center plume has migrated onto Bothell Landing and commingled.

A third former cleaners/laundry business, the Bothell Cleaners, was located at 10029 Main Street, although no release has been reported for this site, or is apparent based on sampling results (CDM, 2011). The former Bothell Cleaners is located a block northeast of the Bothell Landing property.

One of the goals of the RI will be to determine the source of chlorinated solvents detected at the Bothell Landing property, and delineate the extents (vertical and horizontal) of the plume(s) impacting the property. The chlorinated VOCs detected in Bothell Landing Site ground water have not yet been completely addressed to date, pending a RI for these contaminants that includes identification of the source area (or areas) and delineation of the entire plume. Figure 4 illustrates the available data on the nature and extent of chlorinated VOC occurrences in ground water in the vicinity of the Bothell Landing Site. The data are insufficient to adequately characterize the extent of the chlorinated VOC plume(s) for RI purposes. The approximate extent of the RI study area addressed in this work plan is shown on Figure 4.

Petroleum hydrocarbons also occur in ground water upgradient of the Bothell Landing property line in addition to chlorinated VOCs. For example, ground water samples collected at CDM's 2009 push-probe locations B-3 and B-18 (Figure 5) had benzene concentrations exceeding the MTCA Method A cleanup level of 5.0 micrograms per liter (µg/L). The extent of the petroleum hydrocarbon plume upgradient of the northern property line, and the relationship of these detections to the Site, is currently not well characterized with respect to area or temporal variation.

Because it may not be possible to a complete the RI in one phase due to property access and ownership issues, a phased approach to completing the work will be utilized, with the goal of populating the final RI with data collected during the four RI phases outlined in Section 5.0. Phased RI work will be conducted whenever access to unexplored properties of interest becomes available.

1.2 OBJECTIVE

The objective of this RI/FS work plan is to meet the requirements of the Agreed Order as amended on June 9, 2010 in accordance with the Model Toxics Control Act (MTCA) Cleanup Regulation (Washington Administrative Code (WAC) 173-340). The RI work plan is designed to collect additional data on chlorinated VOC and petroleum hydrocarbon impacts in selected areas that are currently accessible, and ultimately characterize site conditions in order to complete a FS and select a cleanup action as described in WAC 173-340-360 through 173-340-390.

1.3 WORK PLAN ORGANIZATION

This Work Plan is prepared using the U.S. Environmental Protection Agency's (EPA's) *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (OSWER Directive 9355.3-01) (EPA, 1988) as a reference for work plan organization and content. The scope of work described in the work plan is designed to gather information required for a RI study as described in WAC 173-340-350. The organization of this Work Plan is:

- Section 1: Introduction – background, objective, work plan organization, and regulatory framework

- Section 2: Site Background and Physical Setting – description and history of operations and environmental setting

- Section 3: Initial Evaluation – summary of previous investigations, known and expected contaminants, and the conceptual site model
- Section 4: Work Plan Rationale – data quality objective needs and general approach
- Section 5: Remedial Investigation Tasks – project planning, sample collection and analysis, data validation and evaluation, and assessment of risks
- Section 6: Project Management – schedule and project management staff

1.4 REGULATORY FRAMEWORK

The RI will be conducted under the provisions of the Agreed Order with Ecology as amended on June 9, 2010. In Washington State, the administrative process and standards for investigating and cleaning up facilities impacted by hazardous substances are regulated under the Model Toxics Control Act (MTCA) regulations at WAC 173- 340 (Ecology, 2007). Under MTCA, a site cleanup is typically preceded by a complete remedial investigation (RI) and a feasibility study (FS). The RI/FS focuses on collecting, developing, and evaluating enough information to select a cleanup action under WAC 173-340-360 through 390.

2.0 SITE BACKGROUNDS AND PHYSICAL SETTING

2.1 SITE BACKGROUNDS

In the following sections, properties within the RI study area, as depicted in Figure 3, are described from north to south beginning with the apparent source area for the chlorinated VOC plume at the Ultra Custom Care Cleaners site.

2.1.1 Ultra Custom Care Cleaners Site

The Ultra Custom Care Cleaners property is listed as facility number 379891 on the Department of Ecology's Confirmed and Suspected Contaminated Sites List (CSCSL) for chlorinated solvent contamination in soil and ground water. This 0.25-acre property is comprised of a west-facing single story commercial building and associated parking lot at 181300 – 18304 Bothell Way NE/SR 527, with Ultra Custom Care Cleaners occupying the northernmost portion of the building and Frank's Hair Design hair salon and the Laundry Basket Laundromat the central and southern portions. Historically, three dry cleaners operated on this parcel. Raincheck Cleaners and Laundry (1950s through 1967) occupied a building formerly located at the southwest corner of the parcel (current parking lot). Following demolition of the Raincheck Cleaners and Laundry building in 1967, a new building was constructed that was occupied first by NuLife Cleaners and later by Ultra Custom Care Cleaners.

Several investigations have been performed at this site. Figure 6 depicts the approximate locations of the soil and ground water explorations to date at this site. Sampling results indicated that soil and ground water at the property contained chlorinated VOCs, primarily the dry cleaning solvent tetrachloroethene (a.k.a., perchloroethene or PCE), and also associated degradation compounds trichloroethene (TCE), and (cis)-1,2-dichloroethene ((cis)-1,2-DCE).

EHS International completed a Phase I Environmental Site Assessment (ESA) of the site in June 2001 (EHS International, 2001a); CDM completed a Phase I ESA in 2008 (CDM, 2008). At the time of the 2008 Phase I ESA, Ultra Custom Care Cleaners was (and presumably still is) using PCE as a dry cleaning solvent. A Phase II ESA performed in August 2001 by EHS International (2001b) identified chlorinated VOCs, including PCE, in soil and ground water in the immediate vicinity of Ultra Custom Care Cleaners' facility, but not at concentrations exceeding MTCA Method A cleanup levels. EHS International also identified PCE-contaminated water in two stormwater catch basins next to Ultra Custom Care Cleaners' facility (SS-1 and SS-2 on Figure 6). A subsequent site investigation (Farallon, 2002) found PCE concentrations exceeding MTCA Method A cleanup levels (as high as 800 μg/L) in ground water at the southern edge of the property, close to the former location of the Raincheck Cleaners and Laundry. In addition, a ground water sample from upgradient monitoring well MW-2 contained gasoline-range petroleum hydrocarbons at a concentration exceeding the MTCA Method A cleanup level, which was attributed by Farallon Consulting (2002) to a cleaning compound similar to Pine-Sol.

Additional subsurface investigation performed by Environmental Partners Inc. in 2004 identified PCE and its associated degradation compounds in soil and ground water in the vicinity of the former Raincheck Cleaners and Laundry building. Environmental Partners reported PCE concentrations in ground water ranging from 5 to 6,400 μg/L and PCE concentrations in soils ranging from 0.012 to 0.020 milligrams per kilogram (mg/Kg). The highest PCE concentration was identified between 8 and 12 feet below grade in borehole B-1 located at the southern edge of the property (Figure 7). The Environmental Partners Inc. (2004) investigation included three direct-push (i.e., Geoprobe®) soil borings located on the western edge of the adjacent City Municipal Shop and Garage property (B-10, B-11, and B-12 on Figure 7). The Environmental Partners report stated that no chlorinated VOCs were detected in three soil samples collected just above the water table at these locations. Ground water samples collected from the three direct-push borings contained PCE in concentrations exceeding the MTCA Method A cleanup level of 5 μg/L.

The EHS International (2001a, b), Farallon Consulting (2002), and Environmental Partners (2004) site investigations all concluded that the source of the PCE and related degradation products in soil and ground water in the vicinity of the Ultra Custom Care Cleaners property was the former Raincheck Cleaners and Laundry facility. The estimated ground water flow direction at the Ultra Custom Care property is southerly at a gradient of 0.026 feet/foot (Farallon, 2002). Based on this information, PCE and other chlorinated VOCs in ground water originating from this property appear to be migrating into Bothell Way NE/SR 527, NE 183rd Street, and other properties to the south (see Figures 4 and 7).

2.1.2 Bothell Service Center

Bothell Service Center/Simon & Sons Dry Cleaning (18107 Bothell Way NE) is a listed Confirmed or Suspected Contaminated Sites List (CSCSL) site to the northwest of the Bothell Landing property. The site has a documented release of chlorinated solvents to ground water, and contamination has migrated off-site.

The Bothell Service Center site included a dry cleaning facility (Simon & Son Fine Dry Cleaning) from 1989 to 1999. Previous site use included farming until the late 1940s and an auto dealership in the 1960s. In 1988 it was developed commercially as a small retail strip, with the former dry cleaner located at the west end of the building. A release of chlorinated solvents to ground water was detected by ERM in 1999 and 2000 (ERM, 2001). Three soil borings were initially completed through the floor of the building near dry cleaning equipment. Subsequently, additional borings for soil and ground water sampling were completed in the building after removal of the dry cleaning equipment. Three monitoring wells and several soil borings were completed outside of the building in 2001. ERM's measurement of ground water elevations in several on site monitoring wells indicates a ground water gradient to the east. The chlorinated solvents tetrachloroethylene (PCE), trichloroethylene (TCE), and dichloroethylene (DCE) were detected in site soil and ground water, including the easternmost monitoring well (MW-5), less than 20 feet from the property boundary with the adjoining property (Schuck's). PCE ground water concentrations ranging from 1,300 to 2,650 µg/L were detected in MW-5 from 7/13/01 to 2/12/02. PCE concentrations as high as 30,000 µg/L were detected in other wells.

Remediation via in situ chemical oxidation by potassium permanganate was attempted in 2001(ERM, 2002). PCE concentrations initially decreased in monitoring wells adjacent to and downgradient of injection points. However, ground water concentrations increased in three monitoring wells. ERM attributed the increase to seasonal variations in ground water levels mobilizing PCE from source areas, such as contaminated soils or dense non-aqueous phase liquids (DNAPL) and recommended further injection events and ground water monitoring. Anecdotal reports by City staff describe permanganate discharging to the Sammamish River with a resultant fish kill during this event.

A soil vapor extraction (SVE) system has been in operation at the site since September 2004 (Farallon, 2008a). Periodic operations and maintenance monitoring at the SVE system indicated that vapor concentrations decreased significantly between system startup and 2007. Recent vapor monitoring at the system did not detect solvent vapors. Farallon also completed a hydrogen peroxide injection event in May 2005. The injection resulted in the temporary increase in PCE concentrations in groundwater at the site; however, subsequent ground water monitoring in 2006 and 2007 indicated that PCE concentrations had decreased to pre-injection levels. Chemical oxidation cells (sodium persulfate) were installed in site monitoring wells in 2006 and 2007 for additional remedial activity. This method was found to have limited effectiveness due to the high ground water velocity, as well as limited access to the release source area.

Farallon also implemented an additional interim remedial action at the site including slug tests and additional monitoring wells. Enhanced bioremediation though a combination of nutrient and bacterial injection was initiated in February 2008. Farallon reported groundwater flow direction to the southeast at the site. As of August, 2008, PCE and TCE concentrations remained in the thousand to low tens of thousands of µg/L throughout the site.

In 2010 a limited remedial investigation was conducted on Al's Auto Bothell Wexler (a.k.a., Schuck's), an adjacent the property to the east, which is listed in Ecology's LUST database as site # 5294, facility identification number 63618231. Sixteen direct push borings, sampling and analysis of soil and ground water samples confirmed the presence of PCE, TCE, DCE, and vinyl chloride (VC) in ground water at the western portion of the property, originating from the adjacent Bothell Service Center property, as well as localized petroleum hydrocarbon impacts to soil and ground water in the vicinity of the former on-site USTs and cleanup area, in the southwestern portion of the property (Floyd | Snider, 2010).

2.1.3 City Properties

The City properties comprise approximately 1.68 acres bounded to the north, east, and south by NE 185th Street, 101st Avenue NE, and NE 183rd Street (Figure 6). Private commercial properties bound the site to the west, notably the Ultra Custom Care Cleaners site. On the City properties there are four structures including: two single family residences converted to office space (built in 1920 and 1956), the City Hall building (11,682 square feet constructed in 1939), and the Municipal Shop and Garage building (3,160 square feet constructed in 1954) (Parametrix, 2010). The remaining parcels without structures are primarily utilized for parking and are covered with asphalt pavement.

A records review investigation was initiated in 2007 by the City to identify parcels located within the downtown Bothell revitalization area that contained potential environmental conditions (ECOSS, 2008; Parametrix, 2010). The records review identified a potential environmental condition on the City's Municipal Shop and Garage site (Figure 6). State records show that unleaded gasoline underground storage tanks (USTs) were removed from the site; the site is not on Ecology's Confirmed and Suspected Contaminated Sites List (CSCSL) or Leaking Underground Storage Tank (LUST) list. A UST closure report for the site (SEACOR, 1990) describes the closure in 1990 of two former gasoline USTs and a gasoline dispenser located just north of the shop building. According to the report, all contaminated soils were successfully removed along with the USTs. In the spring of 2010, Parametrix performed an environmental site assessment of the ten City parcels to the east and northeast of the Ultra Custom Care Cleaners site. Parametrix advanced five soil borings on the City properties (see Figure 6) from which they collected ground water samples at all five boreholes; however, only two of the ground water samples, SB-02 and SB-05, were analyzed for chlorinated VOCs. One of these contained PCE in ground water below the MTCA cleanup level. From the analytical data Parametrix concluded that no significant soil contamination is present at the City's properties (i.e., no petroleum hydrocarbons or VOCs detected in soils above MTCA Method cleanup levels); similarly, the ground water samples did not contain contaminants at concentrations above MTCA Method A cleanup levels.

2.1.4 City Right-of-Ways

City right-of-ways are publicly owned streets, alleyways, and sidewalks within the RI study area. Several explorations have been advanced to date in these right-of-ways to collect soil and ground water samples. Figures 5 and 7 show these locations. CDM (2009) and HWA (2008) reported chlorinated VOCs in ground water apparently migrating south toward the Bothell Landing property along utility corridors in the Bothell Way NE/SR 527 right-of-way (see Figure 7). CDM

(2009) also reported chlorinated VOCs and petroleum hydrocarbons in ground water beneath the SR 522 right-of-way at push-probe explorations (from west to east) B6, B1, B2, B3, B14, B15, and B16 (Figure 5). Potential petroleum hydrocarbon contamination sources (i.e., the former Associated, Union Oil, and Mobil gas station sites shown on Figure 3) located north of the Bothell Landing property at the intersection of SR 527 and Main Street are largely uninvestigated (CDM, 2009).

2.1.5 Bothell Landing

The City owns the approximately 2.8-acre Bothell Landing parcel located at 18120, 18126, and 18132 Bothell Way, and 10001 Woodinville Drive, Bothell, Washington (King County Tax Parcel Nos. 9457200015 and 9457200020). Ecology's Facility Site ID is # 73975762; it is noted as a Brownfields Site in Ecology's Integrated Site Information System (ISIS) database.

Details of historic property use and the several site assessments performed to date at Bothell Landing can be found in Kleinfelder (1999), Riley Group (2007), ECOSS (2008), HWA (2007), Parametrix (2009), and HWA (2011). The following is a summary of those assessments.

Two service stations were previously located at the northeast and northwest corners of the Bothell Landing parcel between the 1930's and 1970's at the approximate locations shown on Figure 8. The stations were demolished during site reconstruction in the 1970's and the underground storage tanks (USTs) associated with the stations were reported to have been removed (Riley Group, 2007). However, in 1998 the City purchased the north central portion of the site at 10001 Woodinville Way as part of a roadway widening and the Rotunda Park project. In the course of site excavation, five USTs and associated petroleum-affected soils were discovered. The USTs were assumed to have been associated with one of the former service stations. Petroleum hydrocarbon concentrations remaining in the excavation sidewalls exceeded MTCA cleanup levels.

HWA performed a Phase II environmental site assessment in 2007 that identified soils in the northern portion Bothell Landing property (vicinity of the known UST releases) containing petroleum-related compounds (petroleum hydrocarbons, aromatic hydrocarbons, and semi-volatile organic compounds) exceeding Ecology MTCA Method A soil cleanup levels (Table 740-1 in WAC 173-340-900). Ground water at the Bothell Landing Site apparently was affected by multiple sources. Petroleum hydrocarbon impacts to ground water from historic UST releases at the property appeared to be limited. Chlorinated VOCs were detected in ground water samples at the northwest and northeast portions of the property. The Phase II report concluded that these detections appeared to be either from an unknown historic on-site source, or from suspected upgradient sources to the north-northeast and/or north-northwest of the subject property.

Parametrix's 2009 remedial investigation concluded that petroleum contamination in soil and ground water at the former gas station area was relatively well defined within the Bothell Landing Site boundaries; however, soil contamination extended into the SR 522 right-of-way where it was less defined. The extent of the petroleum-contaminated ground water plume south of SR522 was limited to the vicinity of Rotunda Park. The backfill around the Horse Creek culvert (Figure 8) did not appear to be a preferential pathway for contaminated ground water. Surface water in the open channel portion of Horse Creek immediately east of the Bothell Landing Site did not appear to be significantly affecting nearby surface soils or ground water. Chlorinated VOCs including PCE, TCE, and breakdown products, were present in ground water throughout the central and northern portions of the Bothell Landing Site with concentrations generally below MTCA Method A cleanup levels, based on multiple investigations over several years (PSI, 1998; Kleinfelder, 1999; HWA, 2007; Parametrix, 2010). Parametrix concluded that concentration distributions indicated that the chlorinated VOCs were migrating onto the Bothell Landing Site from an upgradient source.

An interim action soil cleanup performed in September 2010 through the Bothell Crossroads project area removed 3,556.5 tons (approximately 2,222 cubic yards) of petroleum-impacted soil that was a source of the petroleum hydrocarbons occurring in Bothell Landing property ground water. HWA's interim action cleanup report (HWA, 2011) documents the 2010 interim action soil cleanup within the Bothell Landing parcel. The 2010 interim action cleanup was confined within the parcel boundaries, due to lack of access to areas beneath the heavily-used SR 522 state highway. The interim action soil cleanup is therefore being conducted over a period spanning multiple construction seasons because contaminated soil known to be present under the active SR 522 roadway was left in place in the northern extent of the Bothell Landing parcel.

Contaminated soil remaining under the SR 522 roadway will be addressed after the roadway realignment during Crossroads Phase III construction, which is scheduled to commence in the summer of 2012, and be completed in 2013. Contamination not under City property or public right-of-way, if discovered, will not be addressed in this phase. Following the soil cleanup under the existing roadway, the City will conduct one year of quarterly monitoring to confirm successful cleanup of petroleum-impacted ground water, in accordance with the scope of work described in the amended Agreed Order and Interim Action work plans. Section 5 of this RI work plan addresses the quarterly monitoring to be conducted at the Bothell Landing Site. Other components of the RI, to address other COCs and impacts, will also be addressed and are discussed in Sections 3 and 4 of this work plan.

2.2 Physical Setting

The RI study area is within the Horse Creek valley; Horse Creek is a southerly flowing tributary to the Sammamish River. The general topography of the RI study area slopes down from north to south towards the westerly flowing Sammamish River (Figure 1). Elevations in the RI study area range between about 30 to 60 feet above mean sea level.

The RI study area is located within the Puget Sound Lowland, a north-south trending structural and topographic depression bordered on the west by the Olympic Mountains and on the east by the Cascade Mountains. The area is characterized by gently rolling glacial drift plains covered with small ridges, hills, and depressions formed by the continental ice sheet that covered the area during the Pleistocene Epoch and retreated approximately 12,500 years ago. Most of northwestern King County is mantled by glacial deposits (including gravel, sand, silt, clay, boulders), which are commonly over 150 feet thick (Liesch and others, 1963).

The subsurface geology in the RI study area is very complex and subject to interpretation. Information obtained from borehole logs in the RI study area indicate that soils consist mainly of loose to medium dense silty sand/sandy silt and fine- to medium-sand with varying percentages of gravel; individual soil horizons do not appear to be laterally continuous over more than a few hundred feet. HWA (2008) interpreted the near-surface strata underlying the RI study area as being Vashon age recessional outwash deposits. The recessional outwash sediments were deposited by meltwater flowing from the receding Vashon glacier, and were not overridden by the glacier. Overlying the recessional outwash deposits in most exploration locations is fill consisting predominantly of silty sand.

The ground water table in the RI study area occurs approximately 5 to 18 feet below ground surface (bgs), with shallower ground water occurring in the western extents. The general direction of ground water flow in the RI study area is south-to-southeasterly toward the Sammamish River, following the trend of the Horse Creek valley. Horse Creek is the historic drainage in the area, but now flows through downtown Bothell in a concrete culvert that daylights immediately east of the Bothell Landing property in an open channel that discharges into the Sammamish River (Figures 4, 8). The City's storm drain system in the area connects to the Horse Creek culvert. The original creek location west of SR 527 (Figure 4), potentially creates a hydraulic divide to the west of the RI study area.

2.2.1 Ultra Custom Care Cleaners Site

The Ultra Custom Care Cleaners site is generally flat. The site consists of a 0.25 acre rectangular lot and a single building. There is no significant elevation change over this property, (CDM, 2008). The elevation of the site is approximately 40 feet above mean sea level.

Environmental Partners Inc. (2004) described subsurface conditions at the Ultra Custom Care Cleaners site as consisting of intermittent intervals of sand, silt and/or gravel mixtures to their maximum depth of exploration of 44 feet below grade. Environmental Partners Inc. observed a sandy silt with gravel horizon beginning at 36 to 40 feet bgs in eight direct-push explorations advanced in the southwest area of this property; one direct-push exploration, B-1 (Figure 7), penetrated four feet of the sandy silt with gravel horizon before the exploration was terminated so its total thickness is unknown. Environmental Partners Inc. stated that the sandy silt with gravel horizon serves to limit the potential downward migration of denser-than-water PCE and its degradation products. However, this statement cannot be confirmed because none of the Environmental Partners or Parametrix explorations on the City's adjacent property were advanced deep enough to determine if the sandy silt horizon is laterally continuous to the east. From water level measurements taken at the three on-site monitoring wells, ground water beneath this site appears to flow approximately to the south-southwest.

2.2.2 City Properties

The City properties are generally flat with an elevation of approximately 50 to 60 feet above mean sea level sloping gently to the south and southeast. The City properties are approximately 10 feet higher in elevation than the adjacent Ultra Custom Care Cleaners site immediately to the west. This grade difference is supported by the Ultra Custom Care Cleaners building and a retaining wall north of the building in the parking lot area.

Five Parametrix soil borings advanced across the City properties encountered interbedded silt, silty sand, and sand with gravel to the depths explored (11 to 20 feet bgs). Ground water was encountered in four of the borings between 17 and 18 feet bgs. The fifth boring was not extended to the ground water table.

2.2.3 City Right of Ways

The City right-of-ways are at an elevation between approximately 30 to 60 feet above mean sea level. The land surface along SR 522 is generally flat. On 101st Avenue Northeast, south of Main Street, the topography slopes more steeply down towards the south. The land surface along SR 527 slopes gently down to the south.

Per CDM (2009), the area of SR 522 in the RI study area appears to be underlain by approximately 4 to 8 feet of silty sand and gravel material characterized as fill overlying alluvial soil consisting of interbedded silt and sand. Alluvial soils extended to the maximum explored depth of 19 feet bgs. An approximately 2-foot thick layer of marsh deposits consisting of silt and black organic material overlying alluvial sediments occurred at approximately 4 to 6 feet bgs in push-probe explorations B2, B3, B15, and B18 (Figure 5) . There was no recovery at B14, located between B3 and B15. The marsh deposit appears to extend along SR 522 from the SR 527 intersection east, ending just before 101st Avenue NE. Extending farther north on SR 527, subsurface deposits appear to be the recessional outwash materials identified in published documents.

2.2.4 Bothell Landing

The Bothell Landing parcel is predominantly flat. The west property boundary adjoins the Former Bothell Hertz Facility that previously was occupied by a commercial rental business with documented and suspected hazardous material releases to soil and ground water (HWA, 2008). The east property boundary consists of vegetated/landscaped ground sloping down to a public footpath and the open channel of Horse Creek. Horse Creek is an urban stream discharging to the Sammamish River just beyond the southern boundary of the property. The creek is conveyed through storm drain pipes upgradient of Bothell Landing. A 54-inch diameter concrete culvert conveys Horse Creek through the northern and eastern portion of Bothell Landing, daylighting just beyond the east property boundary (Figure 8). The Sammamish River is between 175 and 250 feet south of Bothell Landing and separated from the property by NE 180th Street and the Park at Bothell Landing, a City park (Parametrix, 2009).

Site-specific stratigraphy typically consists of approximately 5 to 8 feet of silty sand fill over alluvial soil consisting of interbedded silt and peat. Much of the fill material is likely dredged spoils placed on the property from realignment of the Sammamish River in the 1960s (HWA, 2008). Interbedded alluvial sand and silt was encountered between 8 and 20 feet below ground surface (bgs). Peat or silt beds with high organic content up to 2 feet thick are present within the alluvial soil, generally at depths greater than 10 feet bgs. These compressible, organic-rich beds appear to underlie much of the Bothell Landing parcel but may not represent a contiguous layer (Parametrix, 2009).

3.0 INITIAL EVALUATION

3.1 Summary of Previous Chlorinated VOC Investigations

Ground water in the RI study area has been affected by chlorinated VOCs. The dry-cleaning solvent PCE, as well as its breakdown products, TCE, (cis)-1,2-DCE, and vinyl chloride have been detected in multiple ground water samples throughout the area. In the progression of natural biodegradation by reductive dechlorination, PCE (four chlorine atoms), degrades to TCE (three chlorine atoms), to DCE (two chlorine atoms), then to vinyl chloride (one chlorine atom). Upon complete dechlorination (under ideal conditions), vinyl chloride can degrade to ethene. The apparent source of these chlorinated VOCs is the Ultra Custom Care Cleaners facility located at the northeast corner of Bothell Way NE and NE 183rd Street until 1967. Another potential source is the Bothell Service Center / Simon & Son Fine Dry Cleaning site. Another former cleaners business (Bothell Cleaners) is located northeast of the Bothell Landing property, although based on four reconnaissance ground water samples collected adjacent south and downgradient of the former Bothell Cleaners property, former business operations on the property do not appear to be a source of HVOCs (CDM, 2011). Tables 1 and 2 summarize historic detections of chlorinated VOCs in soil and ground water in the RI area.

3.1.1 Ultra Custom Care Cleaners Site

Chlorinated VOCs detected at the Ultra Custom Care Cleaners site primarily include PCE in several ground water samples at concentrations up to 6,400 μg/L in a sample collected between 8 and 12 feet bgs in direct-push exploration B-1 (Figure 7); ground water samples collected at greater depths had PCE concentrations at or less than the MTCA Method A cleanup level of 5 μg/L. Concentrations of TCE and (cis)-1,2-DCE between 18 and 210 μg/L were found in ground water samples collected at monitoring well MW-1 and direct-push explorations B-1 and B-4 at intervals between 4 and 14 feet bgs. Vinyl chloride was not detected in any ground water samples collected to date at the Ultra Custom Care Cleaners site. In addition, PCE was detected in the water in storm drain catch basins SS-1 and SS-2 (Figures 6 and 7) at concentrations of 500 and 25 μg/L respectively.

3.1.2 City Properties

The Environmental Partners Inc. (2004) site investigation included three direct-push soil borings located on the western edge of the City properties (B-10, B-11, and B-12 on Figure 7). The Environmental Partners report states that no chlorinated VOCs were detected in three soil samples collected just above the water table at these locations; however, the Environmental Partners Inc. report does not contain the laboratory reports for these three soil samples so this cannot be verified. Ground water samples collected from these three direct-push borings contained PCE at concentrations between 8 and 23 μg/L. In late spring 2010, Parametrix advanced five soil borings on the City properties using a truck-mounted hollow-stem auger drill rig. Parametrix collected ground water samples at all five boreholes; however, only two of the ground water samples, SB-02 and SB-05 (Figure 7), were analyzed for chlorinated VOCs. The ground water sample from SB-05, located immediately east of the Ultra Custom Care building, contained PCE at a concentration below the MTCA Method A cleanup level; the other boring (SB-02) in the center of the City property did not contain any chlorinated VOCs above laboratory reporting limits.

3.1.3 City Right-of-Ways

CDM (2009) performed a Phase II Environmental Site Assessment of the City's Crossroads Redevelopment Project area. To evaluate chlorinated VOC distribution in the area, CDM used a direct-push rig to collect soil and ground water samples along Bothell Way NE/SR 527 adjacent to and south of the Ultra Custom Care Cleaners site (locations B2, B3, B8, B10, B11, B12, and B18 on Figure 7). CDM concluded that PCE contaminated ground water that apparently originates at the Ultra Custom Care Cleaners site is migrating south along utility corridors in Bothell Way NE/SR 527, in addition to normal ground water flow through the aquifer.

A ground water sample collected in September 2008 at HWA geotechnical exploration/monitoring well BB-3 at the southeast corner of the intersection of NE 183rd Street and Bothell Way NE/SR 527 (Figure 7) contained chlorinated VOCs at concentrations below MTCA Method A cleanup levels. However, a HWA ground water sample collected in September 2008 at monitoring well BB-2 at the northeast corner of SR 527 and Main Street (Figure 7) had a PCE in concentration above the MTCA Method A cleanup level.

Ground water samples collected at CDM direct-push explorations B1, B2, B3, B6, and B14 along the SR 522 right-of-way (see Figure 5 for locations) had one or more chlorinated VOC occurring at concentrations above the MTCA Method A cleanup level.

3.1.4 Bothell Landing

Contaminants of potential concern (COPCs) in the Bothell Landing soils, per the RI/FS report (Parametrix, 2009) and Interim Action Cleanup Report, HWA (2011) include:

- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX (benzene, toluene, ethylbenzene, and xylenes)
- Lead, barium
- Polycyclic Aromatic Hydrocarbons (PAHs) (including naphthalenes)

These COPCs are all related to historic petroleum releases to soil. Following the 2010 Bothell Landing soil cleanup, soil samples containing these COPCs above MTCA cleanup levels occurred only in the northeast corner of the property at depths ranging from 6 to 12 feet below ground surface (bgs). CDM borehole data (location B3 on Figures 7 and 8) indicated that gasoline- and heavy oil-impacted soil extends from the Bothell Landing parcel to the northeast beneath SR 522 (CDM, 2009). Impacts north of SR522 are not known. Remaining soils under the existing roadway will be addressed under a subsequent construction phase, i.e., after roadway realignment during Crossroads Phase III which is scheduled to commence in the summer of 2012, and be completed in 2013.

HWA (2011) concluded that ground water COPCs at the Bothell Landing Site include:

- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX
- Chlorinated VOCs
- Metals (arsenic, cadmium, chromium, and lead)

Petroleum-contaminated ground water south of SR522 occurred only in the vicinity of Rotunda Park at the north end of the Bothell Landing parcel. The backfill around the Horse Creek culvert does not appear to be a preferential pathway for contaminated ground water, based on borings advanced and sampled within the backfill. Horse Creek surface water does not appear to be significantly affecting nearby surface soils or ground water. Chlorinated VOCs migrating onto Bothell Landing from an upgradient source or sources are present in ground water throughout the northern portions of Bothell Landing (Figure 4) at concentrations exceeding MTCA Method A cleanup levels, particularly in the vicinity of Rotunda Park (Parametrix, 2009).

Regarding arsenic, cadmium, chromium, and lead as ground water COPCs at the Bothell Landing Site, data reported by HWA (2007) showed total arsenic, cadmium, chromium, and lead concentrations exceeding MTCA Method A cleanup levels in ground water samples collected at direct-push explorations BH-11 and BH-15 in July 2007 (Table 2D). Dissolved arsenic and lead concentrations in the ground water sample collected at direct-push exploration BH-15 also exceeded their respective MTCA Method A cleanup levels. The source of lead in the RI study area ground water may be related to historic released of leaded gasoline. Elevated arsenic concentrations in alluvial aquifers of Snohomish and King Counties have been well documented as a regional issue (HWA, 2007), and may not be associated with a specific source in the RI area. Additional sampling during the RI will help establish if arsenic is a natural or area-wide background condition, and at what concentrations. The elevated concentrations of total cadmium and chromium in the July 2007 ground water samples collected at direct-push explorations BH-11 and BH-15 apparently resulted from suspended sediments in the unfiltered samples and not from a specific source or sources in Site soil.

3.1.5 Bothell Service Center

High concentrations of PCE (up to 38,000 μg/L), TCE, and DCE have been detected in ground water at this site. PCE ground water concentrations at the property boundary range up to 21,000 μg/L. PCE ground water concentrations up to 140,000 μg/L, were detected near the source area at depths of 45 to 50 feet, and were interpreted to indicate the presence of DNAPL. PCE, TCE, DCE , and VC have also been detected at concentrations of up to 2,100 µg/L at the western end of Al's Auto Bothell Wexler Property (a.k.a., Schuck's) property, originating from the adjacent Bothell Service Center site.

3.2 Known and Expected Contaminants

Based on background information and analytical data from the previous studies presented in Section 3.1, COPCs either known or expected to be found in soils in the RI study area are:

- Chlorinated VOCs (primarily PCE, TCE, (cis)-1,2-DCE, and vinyl chloride)
- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX (benzene, toluene, ethylbenzene, and xylenes)
- Lead, barium
- Polycyclic Aromatic Hydrocarbons (PAHs) (including naphthalenes)

COPCs either known or expected to be found in ground water in the RI area are:

- Chlorinated VOCs
- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX
- Metals (arsenic, cadmium, chromium, and lead)

3.3 Conceptual Site Model

The conceptual site model for the chlorinated VOC and hydrocarbon plume 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.

These data were used to identify the additional data needs described in this Work Plan. The model first identifies the primary contaminant sources and then describes the release mechanism from the sources into environmental media. Then, the migration of potential contaminants through media and the subsequent release mechanisms are summarized. This results in the identification of potentially contaminated media to which receptors are most likely to be exposed (exposure media). Once the exposure media are identified, the specific human and ecological receptors are incorporated into the model, completing the exposure pathway.

Figure 9 shows the conceptual site model for the chlorinated VOC and petroleum hydrocarbon plumes upgradient of Bothell Landing. Each component of the conceptual site model is described below.

The conceptual site model brings together multiple environmental and anthropogenic variables to formulate an understanding of the potential pathways of contaminant movement that may exist at the site. The model also brings together the physical descriptions of the environment, the extent of the potential contamination, the fate and transport processes, and the potential routes by which human and ecological receptors are exposed to contaminants. In general, the site model consists of sequential steps that trace potential contaminants from the primary sources to the final receptors (human and ecological).

3.3.1 Primary Contaminant Sources

The primary contaminant source of ground water in the RI study area is the dry cleaning solvent release most likely from the Ultra Custom Care Cleaners site. The primary contaminant associated with this release is PCE, with associated breakdown products TCE, (cis)-1,2-DCE, and vinyl chloride. Ethylene dichloride (EDC) (a.k.a, 1,2-dichloroethane (DCA)) has also been detected sporadically in ground water at low concentrations. DCA is not a breakdown product of PCE, but may be a breakdown product of 1,1,1-trichloroethane (TCA) or may be associated with gasoline additives. Other contaminants known or suspected to exist in the RI study area include petroleum hydrocarbons released at former gas station locations. The source of lead in RI study area soils is likely related to historic releases of leaded gasoline.

3.3.2 Primary Release Mechanisms

The primary potential release mechanisms for contaminants in the RI study area include leaks from USTs and related equipment (e.g., pipes and dispensers), or discharges (accidental or intentional) to floor drains, storm drains, or ground.

3.3.3 Transport Mechanisms

Transport mechanisms in the RI study area for chlorinated VOCs and petroleum hydrocarbons include the following:

- Contaminant leaching from soils above and below the water table
- Leaching from separate phase liquids, e.g., a dense non-aqueous phase liquid (DNAPL) mass of PCE within soil pore spaces
- Volatilization from the vadose zone and water table
- Ground water discharges to surface water

The degree of contaminant leaching is controlled by chemical properties of the contaminants, ground water geochemical properties (e.g., oxidation/reduction potential), 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 (e.g., porosity and organic carbon content), and soil gas characteristics. Ground water discharges to surface water are controlled by the physical and geochemical characteristics of both the ground water and surface water flow systems.

3.3.4 Secondary Sources

Chlorinated VOC and petroleum hydrocarbon impacted ground water from upgradient sites (e.g., Ultra Custom Care Cleaners, former Hertz, or possibly the Bothell Service Center) as well as former gas station locations represents secondary contaminant sources at the Bothell Landing Site. However, since the plumes have not been delineated, at this time, it has not been determined, whether commingling has occurred. This ground water flows from north to south onto the Bothell Landing parcel. Ground water migration is controlled by the aquifer's hydraulic conductivity (i.e., permeability), the hydraulic gradient, and the aquifer porosity. Chlorinated VOC and petroleum hydrocarbon migration is affected by the concentrations present in ground water, and other conditions in the aquifer that impact the fate and transport of contaminants, such as percentage of naturally occurring organic carbon, contaminant-degrading bacteria in the soil, and oxidation conditions. The contaminants can potentially partition from ground water onto soil and organic particles as ground water flows across the RI study area, although soil analytical data from the City properties and other downgradient sites do not indicate this is occurring to an appreciable degree. Contaminants may also partition from ground water into vadose zone soil gas. Investigation findings to date suggest that most chlorinated VOCs and petroleum hydrocarbons in ground water flowing onto the City right-of-ways and other downgradient properties remain in the dissolved phase as contaminated ground water flows across the RI study area.

3.3.5 Potential Pathway and Exposure Routes

Complete exposure pathways have the following components: 1) a chemical source, 2) a transport pathway, 3) an exposure point where contact can occur, and 4) an intake mechanism. 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 (Parametrix, 2009):

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 (e.g., voles) 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.

The following section describes specific exposure pathways of primary concern.

3.3.6 Exposure Pathways of Concern

Potentially complete exposure pathways in the RI area by which chemicals may reach potential receptors include the following:

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

4.0 WORK PLAN RATIONALE

The following section describes the general approach to the RI. A discussion of data quality objectives, a discussion of identified data gaps, and approaches to collect the data necessary to fill those gaps are presented in this section. Each subsequent section provides an overview of data gaps by media type, and the approach to collecting the necessary information in the remedial investigation. Specific sampling locations, analytes, and methods are documented in the Sampling and Analysis Plan (SAP) presented in Appendix B.

4.1 DATA QUALITY OBJECTIVES

Data quality objectives (DQOs) are qualitative and quantitative statements that specify the characteristics of the data necessary to support decisions and the required quality of the data collected (EPA, 2006). Through the development of DQOs, the objectives and methods to be used in the field investigations are defined.

The objective of this RI work plan is to meet the requirements of the Agreed Order (as amended in June 2010) in accordance with the MTCA regulations for RI studies. The RI is designed to characterize site conditions in order to complete a FS and select a cleanup action as described in WAC 173-340-360 through 173-340-390. To meet the RI objective, site data will be collected that are of known, acceptable, and documented quality. To ensure that Site data meet these criteria the following Quality Assurance objectives are established for the RI work:

- Implement procedures described in this work plan and the SAP for field sampling, sample custody, equipment operation and calibration, laboratory analysis, and data reporting that will facilitate consistency and thoroughness of generated data.
- Achieve the acceptable level of confidence and quality required so that data generated are scientifically valid and of known and documented quality. This will be performed by establishing criteria for precision, accuracy, representativeness, completeness, and comparability, and by testing data against these criteria.

Specific DQOs to evaluate data quality and usability are provided in the sections below.

4.1.1 Detection Limits

Analytical methods have quantitative limitations at a given statistical level of confidence that are often expressed as the method detection limit (MDL). Individual instruments often can detect but not accurately quantify compounds at concentrations lower than the MDL, referred to as the instrument detection limit (IDL). Although results reported near the MDL or IDL provide insight to site conditions, quality assurance dictates that analytical methods achieve a consistently reliable level of detection known as the practical quantitation limit (PQL). The PQL is the lowest concentration level that can be reliably achieved within the specified limits of precision and accuracy, and is typically several times the MDL.

4.1.2 Precision

Precision is the measure of mutual agreement among replicate or duplicate measurements of an analyte from the same sample and applies to field duplicate or split samples, laboratory replicate analyses, and duplicate spiked environmental samples (matrix spike duplicates). The closer the measured values are to each other, the more precise the measurement process. Precision error may affect data usefulness. Good precision is indicative of relative consistency and comparability between different samples. Precision will be expressed as the relative percent difference (RPD) for spike sample comparisons of various matrices and field duplicate comparisons for water samples. This value is the difference between two measurements divided by the average, calculated by:

$$RPD = ((D1-D2) / (D1+D2)/2)*100$$

Where:
D1 = Concentration of analyte in sample, and
D2 = Concentration of analyte in duplicate sample.

The calculation applies to split samples, replicate analyses, duplicate spiked samples (matrix or blank spike duplicates), and laboratory control duplicates. The RPD will be calculated for samples and compared to the applicable criteria. Precision can also be expressed as the percent difference (%D) between replicate analyses. Acceptable precision values (QC limits) vary according to the analyte, analytical method, and specific laboratory conditions (e.g., calibration results, etc).

4.1.3 Accuracy

Accuracy is a measure of bias in the analytic process. The closer the measurement value is to the true value, the greater the accuracy. This measure is defined as the difference between the reported value versus the actual value and is often measured with the addition of a known compound to a sample. The amount of known compound reported in the sample, or percent recovery, assists in determining the performance of the analytical system in correctly quantifying the compounds of interest. Since most environmental data collected represent one point spatially and temporally rather than an average of values, accuracy plays a greater role than precision in assessing the results. In general, if the percent recovery is low, non-detect results may indicate that compounds of interest are not present when in fact these compounds are present. Detected compounds may be biased low or reported at a value less than actual environmental conditions. The reverse is true when recoveries are high. Non-detect values are considered accurate while detected results may be higher than the true value. Accuracy will be expressed as the percent recovery of a surrogate compound (also know as "system monitoring compound"), a blank or matrix spike result, or from a standard reference material. The recovery percent is the measured amount divided by the known amount, or:

(D1-D2) / D3 x 100

Where

D1 = amount of compound detected in spiked sample
D2 = amount of compound in sample (i.e., detected before spiking)
D3 = amount of spike compound added

Accuracy criteria for surrogate spikes, matrix spikes, and laboratory control spikes are found in the SAP.

4.1.4 Representativeness, Completeness and Comparability

Representativeness expresses the degree to which data accurately and precisely represent the actual site conditions. The determination of the representativeness of the data will be performed by completing the following:

- Comparing actual sampling procedures to those delineated within the SAP and this work plan.
- Comparing analytical results of field duplicates to determine the variations in the analytical results.
- Invalidating non-representative data or identifying data to be classified as questionable or qualitative. Only representative data will be used in subsequent data reduction, validation, and reporting activities.

Completeness establishes whether a sufficient amount of valid measurements were obtained to meet project objectives. The number of samples and results expected establishes the comparative basis for completeness. Completeness goals are 90 percent useable data for samples/analyses planned. If the completeness goal is not achieved an evaluation will be made to determine if the data are adequate to meet study objectives.

Comparability expresses the confidence with which one set of data can be compared to another. Although numeric goals do not exist for comparability, a statement on comparability will be prepared to determine overall usefulness of data sets, following the determination of both precision and accuracy.

4.1.5 Holding Times

Holding times are defined as the time between sample collection and extraction, sample collection and analysis, or sample extraction and analysis. Some analytical methods specify a holding time for analysis only. For many methods, holding times may be extended by sample preservation techniques in the field. If a sample exceeds a holding time, then the results may be biased low. For example, if the extraction holding time for volatile analysis of soil sample is exceeded, then the possibility exists that some of the organic constituents have volatilized from the sample or degraded. Results for that analysis will be qualified as estimated to indicate that the reported results may be lower than actual site conditions. Holding times are presented in the SAP.

4.1.6 Blanks

According to the *National Functional Guidelines for Organic Data Review* (EPA, 1999), "The purpose of laboratory (or field) blank analysis is to determine the existence and magnitude of contamination resulting from laboratory (or field) activities. The criteria for evaluation of blanks apply to any blank associated with the samples (e.g., method blanks, instrument blanks, trip blanks, and equipment blanks)." Trip blanks are placed with samples during shipment; method blanks are created during sample preparation and follow samples throughout the analysis process. Analytical results for blanks will be interpreted in general accordance with *National Functional Guidelines for Organic Data Review* and professional judgment.

4.2 DATA GAP ANALYSIS

Previous site characterization data exist for the Bothell Landing Site, the Ultra Custom Care Cleaners site, the Bothell Service Center site ,the City properties to the east, as well as explorations in the City right-of-ways and other nearby sites. The scopes of previous site characterizations were not designed to create a data set for a RI/FS study of the chlorinated VOC and petroleum hydrocarbon plume. This section describes data gaps in the existing data set and the rationale for collecting data necessary to fill those gaps. Previous data will be combined with data collected as part of the RI study, as well as during Bothell Crossroads Phase III interim action soil cleanup scheduled for 2013 at and north of the Bothell Landing Site (e.g., confirmation sampling) after which further data gaps will be identified and further RI work conducted. This phased approach is required due to exploration access issues, including 1) areas under the existing SR 522 roadway which will be accessible for exploration and cleanup only after the new roadway is completed and the old roadway is abandoned, and 2) areas on private property which are not currently accessible for exploration but might be in the future.

4.2.1 Sources of Existing Data

Most existing site data are described in the following reports:

- CDM. 2008. *Phase I Environmental Site Assessment, Former Raincheck Cleaners and Laundry Site, 18304 Bothell Way NE, Bothell, Washington.* Prepared for King County Solid Waste Division. January 2, 2008.

- CDM, 2009, *Draft Phase II Environmental Site Assessment, City of Bothell Crossroads Redevelopment Project, Bothell, Washington*, May 2009

- CDM, 2011, Supplemental *Phase II Environmental Site Assessment, Former Raincheck Cleaner – Offsite Area, 18304 Bothell Way NE, Bothell, Washington*, August 17, 2011.

- Environmental Partners Inc., 2004, *Chlorinated VOC Nature and Extent Investigation Letter Report, Case Property 18300-18304 Bothell Way NE, Bothell, WA.* EPI Project No. 46101.0, November 30, 2004.

- EHS International, 2001a, *Phase I Environmental Site Assessment*, June 12, 2001 report to Bothell Police Department.

- EHS International, 2001b, *Phase II Environmental Site Assessment and Limited hazardous Materials Survey*, August 15, 2001 report to Bothell Police Department.

- ERM, 2001, Letter to Norman L. Olsen. Interim Site Characterization Summary Report, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington, October 17, 2001.A

- ERM, 2002, Letter to Norman L. Olsen. Interim Site Remediation Summary Report, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington, March 25, 2002.

- Farallon Consulting, 2002, *Subsurface Investigation Report, Ultra Custom Care Cleaners Property 18300 – 18304 Bothell Way Northeast, Bothell, Washington, Farallon PN: 733-001,* April 19, 2002.

- Farallon Consulting, 2008a, Cleanup Action Progress Report, June 2006 Through June 2007, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington, Farallon PN: 801-001, March 12, 2008.

- Farallon, 2008b, Interim Action Status Report, November 2007 through August 2008, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington. November 4, 2008.

- Floyd | Snider, 2010, *Schuck's Auto Supply, Bothell, Washington, Phase II Environmental Site Assessment*, September 10, 2010.

- HWA GeoSciences, 2007, *Phase II Environmental Site Assessment Beta Bothell Landing Property, Bothell, Washington*. Prepared for City of Bothell, November 1, 2007.

- HWA GeoSciences, 2008, *Draft Geotechnical Report, SR 527 – Bothell Multi-Way Boulevard Project, Bothell, Washington.* HWA Project No. 2007-098-22 Task 600, December 5, 2008

- HWA GeoSciences, 2009, *Phase II Environmental Site Assessment Grease Monkey Property, 18131 Bothell Way NE Bothell, Washington,* June 4, 2009.

- HWA GeoSciences, 2011, *Documentation of Interim Action at Bothell Landing Site, Bothell Washington*. Prepared for City of Bothell, February 2, 2011.

- Parametrix, 2009, *Draft Bothell Landing Remedial Investigation/Feasibility Study, Revision No. 0*. Prepared for City of Bothell, November 2009.

- Parametrix, 2010, *Draft City Hall Site Environmental Site Assessment*. Prepared for City of Bothell. May 2010.

- PSI. 1998, *Underground Storage Tank Removal and Site Assessment Report, Intersection of SR 522, SR 527, and Main Street, Bothell, Washington,* Prepared for City of Bothell Department of Public Works. May 20, 1998.

- SEACOR. 1990, *Underground Storage Tank Closure, Bothell City Hall, 18305 101st Ave NE, Bothell, Washington.* Letter report to Mr. Warren Gray, Director of Public Works, August 24, 1990.

4.2.2 Existing Exploration and Sampling Locations

Exploration and sampling locations, as described in the above-listed references, are shown on Figures 5, 6, 7, and 8.

4.2.3 Known or Suspected Impacts to Soil and Ground Water

Based on previous investigation findings, known or suspected impacts include:

Soil:

- Chlorinated VOCs in soil at the Ultra Custom Care Cleaners site, Bothell Way NE/SR 527 roadway, and SR 522 roadway, near and downgradient of the original Raincheck Cleaners and Laundry release area (on the Ultra Custom Care Cleaners property).
- Petroleum hydrocarbons and benzene in soil in the SR 522 right-of-way northeast of the site at CDM push-probe location B3.
- Petroleum hydrocarbons remaining in soil in the northern extent of the Bothell Landing parcel left in place during the summer 2010 interim action soil cleanup work to protect the structural integrity of the active SR 522 and related utilities.

Ground Water:

- Unidentified gasoline-range petroleum hydrocarbons in ground water attributed by Farallon Consulting (2002) to cleaning products (Pine-Sol) in monitoring well MW-2 at the Ultra Custom Care Cleaners site.
- Chlorinated VOCs (primarily PCE, TCE, (cis)-1,2-DCE, and vinyl chloride) at the Ultra Custom Care Cleaners site and south along utility corridors in the Bothell Way NE/SR 527 and SR 522 roadways extending onto the Bothell Landing Site, and possible impacts from the Bothell Service Center site.
- Gasoline-, diesel-, and oil-range petroleum hydrocarbons apparently originating from gas stations formerly located north of the Bothell Landing parcel at the intersection of Bothell Way NE/SR 527 and Main Street (see Figure 3).

4.2.4 Data Gaps

Numerous previous environmental and geotechnical investigations and explorations, including soil borings, monitoring wells, large cleanup excavations with confirmational sampling data, aquifer testing, time series ground water measurements, soil physical property testing, and approximately 100 soil and 105 ground water analytical samples, have provided a robust data set, which have helped define:

- Site geology, including soil types and physical properties
- Site hydrogeology, including aquifer properties, ground water gradients, seasonal variations

The following remaining data gaps are identified for the eventual completion of the RI:

1. **Ultra Custom Care Cleaners site**
    a. Ground water plume extent – The extent of the chlorinated VOC plume has not been completely delineated. The first phase of the RI work will help delineate the extents of the plume to the south, and southeast of the Ultra Custom Care Cleaners site, both horizontally and vertically. Future RI activities at accessible properties will be aimed at delineating the remainder of the plume.
    b. Soil source area – prior to development of a cleanup plan for the Ultra Custom Care Cleaners site, the nature and extent (vertical and horizontal) of impacts to soil on the property that might be acting as a source for the ground water plume must be delineated, in addition to characterizing the geology and hydrogeology of the property with respect to confining layers and vertical distribution of contaminants.

2. **Bothell Service Center site**
    a. Ground water plume extent – The extent of the chlorinated VOC plume from this site will also be delineated, with respect to (i.e., if it is determined to be a part of) the Bothell Landing Site and the Ultra Custom Care Cleaners plume.

3. **Other sites, North of SR522**
    a. Other potential sources of TPH impacts, e.g., from former gas stations north of SR522, will be characterized if initial RI data indicate a need, and as they relate to (i.e., are a part of) the Bothell Landing Site.

4. **Bothell Landing Site**
    a. Soil impacts – Contaminated soil remaining under the SR 522 roadway will be addressed after roadway realignment (Crossroads Phase III construction) scheduled to be completed in 2013. Confirmation soil sampling during and after cleanup will help define the extent of soil impacts, and if any impacts remain outside of the SR522 roadway footprint.
    b. Ground water – The extent of petroleum hydrocarbon impacted ground water has not been completely delineated. Future phases of the RI work will help delineate the extents of the petroleum hydrocarbon plume both horizontally and vertically. For example, areas under the existing SR 522 roadway will be accessible for exploration after construction of the new roadway and abandonment of the existing SR 522 roadway. Impacts to ground water from selected metals will also be assessed, along with a statistical evaluation of natural or area-wide background ground water conditions for arsenic.

5. **Collect treatability information**, i.e., chemical and aquifer properties needed to select and design ground water remediation methods.

The field sampling plan presented in the next section describes the type and location of data that will be collected to close these data gaps.

5.0 REMEDIAL INVESTIGATION AND FEASIIBILITY STUDY TASKS

The scope of work for the remedial investigation/feasibility study investigation is described in the Agreed Order. The scope of work includes the following tasks:

1. Develop a RI/FS project plan
2. Conduct a remedial investigation (RI) study
3. Conduct a feasibility study
4. Complete an RI/FS report

Tasks 1 and 2 above will be completed using the approach described in this section. The RI activities specific to this work plan will be performed in phases as follows:

Phase 1 RI activities include

- The remaining petroleum hydrocarbon soil cleanup at Bothell Landing and under SR 522, including test pit sampling immediately prior to and during the soil cleanup, for purposes of cleanup characterization and confirmation (i.e., to define the limits of soil contamination and quality of soils left in place).
- Confirmation sampling of soil during and following cleanup.

Phase 2 RI activities include

- Monitoring well installation and sampling for an area-wide ground water study, at accessible locations following Phase 1 activities at potential locations shown on Figure 10 that are accessible. These wells may be installed in several phases, depending on access, construction, and development schedules. Locations shown on Figure 10 are general, and may be modified based on access issues and results of prior RI activities, after consultation with Ecology.
- Hydrogeologic measurements of ground water elevations and aquifer characteristics to determine flow directions and velocities.

Phase 3 RI activities include

- One year of quarterly ground water monitoring at the Bothell Landing property and the off-property monitoring well network in place at that time, following completion of the interim action soil cleanup of areas north of the Bothell Landing parcel. Quarterly monitoring at the Bothell Landing property should begin in 2014.

Phase 4 RI activities include

- Investigations and modeling necessary to evaluate subsurface vapor intrusion of chlorinated VOCs and petroleum hydrocarbons into buildings.

Phase 5 RI activities include

- Chlorinated VOC source delineation at the Ultra Custom Care Cleaners property, and other properties, if found to be part of the Bothell Landing Site.

Phase 6 RI activities include

- Investigations necessary to evaluate potential source control options and to close any outstanding data gaps.
- Preparation of a complete RI report.

5.1 Project Planning

The project plan for the RI study consists of this work plan, the SAP (Sampling and Analysis Plan, including the Quality Assurance Project Plan) included in Appendix B, the Health and Safety Plan (HASP) in Appendix C, and a Public Participation Plan. The Public Participation Plan is issued as a separate document, and is included in the Agreed Order. These documents will be revised as needed through the iterative process of regulatory interaction and public participation.

5.2 Field Sampling Plan and RI activities

The field sampling plan and associated RI activities described below are designed to meet investigation objectives described in the Agreed Order and this work plan. The sampling strategy and rationale are described in this section. Detailed sampling methodology is described in the SAP.

5.2.1 RI Phase 1 Soil Sampling

Phase 1 RI activities will include confirmation sampling of soil following soil cleanup of petroleum-affected soil at Bothell Landing and SR 522, after roadway realignment scheduled to begin in 2012, and be completed in 2013. Specific sample collection and chemical analytical methodologies are presented in the SAP.

5.2.2 RI Phase 2 Monitoring Well Installation

Phase 2 RI activities will include additional explorations for an area-wide groundwater study, to further define the ground water plume (and close data gaps). This phase is anticipated to include direct push borings, small diameter monitoring wells, hollow stem auger, and 2-inch diameter ground water monitoring wells, at selected accessible locations in the RI study area. Reconnaissance ground water samples will be collected at various depths during drilling to evaluate the vertical extents of the chlorinated VOC and petroleum hydrocarbon plume. Monitoring wells will be completed in select boreholes.

Three existing Ultra Custom Care monitoring wells (MW-1, MW-2, and MW-3), and monitoring well BB-3 located across NE 183rd Street immediately south of the Ultra Custom Care Cleaners will be sampled, depending on site access. Other existing and new monitoring wells (see Figure 10) will be sampled and analyzed for COPCs. The location and measuring point elevation of each monitoring well will be surveyed with respect to a common datum so that the direction of ground water flow can be accurately assessed.

During borehole drilling, soil samples will be collected in selected intervals above and below the water table. These samples will be tested for several physical and chemical parameters necessary to evaluate subsurface vapor intrusion into buildings and the transport and fate of contaminants in ground water. These parameters include:

- Weight Fraction Organic Carbon
- Dry Bulk Density
- Total Porosity
- Air-Filled Porosity
- Volumetric Moisture Content
- Cation Exchange Capacity

5.2.3 RI Phase 3 Ground Water Sampling of Wells in the Monitoring Well Network

Phase 3 RI activities will begin by replacing selected Bothell Landing property monitoring wells that were decommissioned during the 2010 soil cleanup, and possibly installing new wells based on the results of the 2013 soil cleanup and confirmation sampling. Following that, one year of quarterly ground water monitoring will be performed at the Bothell Landing property and the off-property monitoring well network in place at that time, following completion of the soil cleanup of areas under the vacated roadway following the roadway realignment. Quarterly monitoring at the Bothell Landing property should begin upon completion of the interim action and installation of any new or replacement monitoring wells. Quarterly ground water sampling at the Bothell Landing Site is a specific requirement of the Agreed Order.

Depending on the results of the RI Phase 1 and 2 RI activities, other selected monitoring wells may also be sampled quarterly during RI Phase 3 work.

5.2.4 RI Phase 4 Vapor Intrusion Studies and Modeling

Potential indoor air concentrations of chlorinated VOCs and petroleum hydrocarbons will be evaluated using the *Johnson and Ettinger Model for Subsurface Vapor Intrusion Into Buildings* (Environmental Quality Management, 2000) and current Ecology guidance (currently in draft form: Ecology, 2009). Analytical data plus the soil physical and chemical parameters tested for during RI Phase 2 and 3 activities will be used as input to the Johnson and Ettinger Model.

5.2.5 RI Phase 5 Chlorinated VOC Source Delineation

RI Phase 5 activities are contingent upon access to the Ultra Custom Care Cleaners parcel. If access is available, soil borings will be advanced to define the vertical and horizontal extent of chlorinated VOC contaminated soil. TPH impacts in will also be investigated and delineated.

5.2.6 RI Phase 6 RI Source Control Evaluation and RI Reporting

RI Phase 6 activities will entail investigations necessary to evaluate potential source control options and to close any outstanding data gaps. Bench or pilot scale testing may be conducted for remedial options developed during preparation of the draft Feasibility Study, likely concurrent with this phase. RI Phase 6 will conclude with the preparation of a complete RI report.

5.3 Feasibility Study

A FS will be conducted as stipulated in the Agreed Order. The study will be conducted in accordance with WAC 173-340-350 (8). This regulation describes the elements that must be included in the FS. The study will identify remedial alternatives to achieve cleanup levels as set forth in MTCA regulations.

5.4 Remedial Investigation and Feasibility Study Report

A RI/FS report will be prepared after field data have been collected and the FS is complete. The report will transmit information described in the Agreed Order consistent with MTCA for RI/FS reports.

The completion of the report will allow the selection of a cleanup alternative, production of a draft cleanup action plan (dCAP), and implementation of the cleanup alternative to reduce or remove site hazardous substances posing unacceptable risks to human health and the environment.

5.5 Data Validation and Evaluation

Data management and documentation will include checking all QA parameters, including holding times, method blanks, surrogate recoveries, spike recoveries, field and laboratory duplicates, completeness, detection limits, laboratory control samples, and Chain-of-Custody forms. After the data have been checked, they will be entered into the project database with any assigned data qualifiers.

The project electronic database will be in a format compatible with the Ecology Environmental Information Management (EIM) system, and all analytical data will be entered into the EIM system.

Results of the sampling and laboratory testing will be summarized in a spreadsheet, plotted on a site map, and the data compared to established site cleanup levels. A report will describe any significant field sampling issues, laboratory QA/QC testing, water level monitoring data and water quality testing results.

6.0 PROJECT MANAGEMENT

6.1 SCHEDULE

The proposed RI/FS schedule is presented in Table 5. Initial RI activities are scheduled for 2012. Additional investigations will be conducted after construction of the SR 522 realignment, scheduled to be completed in 2013.

6.2 PROJECT MANAGEMENT STAFF

Project management staff for the RI are presented in the SAP. Progress reports will be submitted to Ecology every three months as required by the Agreed Order.

7.0 REFERENCES

CDM. 2008. *Phase I Environmental Site Assessment, Former Raincheck Cleaners and Laundry Site, 18304 Bothell Way NE, Bothell, Washington.* Prepared for King County Solid Waste Division. January 2, 2008.

CDM, 2009, *Draft Phase II Environmental Site Assessment, City of Bothell Crossroads Redevelopment Project, Bothell, Washington*, May 2009

CDM, 2011, Supplemental *Phase II Environmental Site Assessment, Former Raincheck Cleaner – Offsite Area, 18304 Bothell Way NE, Bothell, Washington*, August 17, 2011.

Ecology, Washington State Department of, 2009, *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action* Publication no. 09-09-047, Review DRAFT, October 2009.

ECOSS (Environmental Coalition of South Seattle), 2008, *City of Bothell Revenue Development Area, Report on Tax Parcel History Through 1972*. Prepared for The King County Brownfields Program, King County Solid Waste Division, and King County Department of Natural Resources and Parks, January 2008.

Environmental Partners Inc., 2004, *Chlorinated VOC Nature and Extent Investigation Letter Report, Case Property 18300-18304 Bothell Way NE, Bothell, WA.* EPI Project No. 46101.0, November 30, 2004.

Environmental Quality Management Inc., 2000, *User's Guide for the Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings (Revised).* Prepared for U.S. EPA Office of Emergency and Remedial Response, December 2000.

EPA, 1988, *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*, EPA/540/G-89/004 (OSWER Directive 9355.3-01).

EPA, 1999, *Contract Laboratory Program National Functional Guidelines for Organic Data Review*, EPA 540/R-99/008.

EPA, 2006, *Guidance on Systematic Planning Using the Data Quality Objectives Process*, EPA QA/G4.

EHS International, 2001a, *Phase I Environmental Site Assessment*, June 12, 2001 report to Bothell Police Department.

EHS International, 2001b, *Phase II Environmental Site Assessment and Limited hazardous Materials Survey*, August 15, 2001 report to Bothell Police Department.

ERM, 2001, Letter to Norman L. Olsen. *Interim Site Characterization Summary Report, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington*, October 17, 2001.

ERM, 2002, Letter to Norman L. Olsen. *Interim Site Remediation Summary Report, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington*, March 25, 2002.

Farallon Consulting, 2002, *Subsurface Investigation Report, Ultra Custom Care Cleaners Property 18300 – 18304 Bothell Way Northeast, Bothell, Washington, Farallon PN: 733-001,* April 19, 2002.

Farallon Consulting, 2008a, *Cleanup Action Progress Report, June 2006 Through June 2007, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington*, Farallon PN: 801-001, March 12, 2008.

Farallon, 2008b, *Interim Action Status Report, November 2007 through August 2008, Bothell Service Center, 18107 Bothell Way Northeast, Bothell, Washington*. November 4, 2008.

Floyd | Snider, 2010, Schuck's Auto Supply, Bothell, Washington, Phase II Environmental Site Assessment, September 10, 2010.

HWA GeoSciences, 2007, *Phase II Environmental Site Assessment Beta Bothell Landing Property, Bothell, Washington*. Prepared for City of Bothell, November 1, 2007.

HWA GeoSciences, 2008, *Draft Geotechnical Report, SR 527 – Bothell Multi-Way Boulevard Project, Bothell, Washington.* HWA Project No. 2007-098-22 Task 600, December 5, 2008

HWA GeoSciences, 2009, Phase II Environmental Site Assessment Grease Monkey Property, 18131 Bothell Way NE Bothell, Washington, June 4, 2009.

HWA GeoSciences, 2010, *Arsenic In Ground Water Bothell Downtown Redevelopment Projects Area Bothell, Washington*. November 1, 2010 memorandum to City of Bothell Public Works.

HWA GeoSciences, 2011, *Documentation of Interim Action at Bothell Landing Site, Bothell Washington*. Report prepared for City of Bothell, February 2, 2011.

Kleinfelder, 1999, *Phase II Soil and Ground water Exploration, Bothell Landing Shopping Plaza, Bothell, Washington*. Prepared for Buck & Gordon, LLP, Seattle, WA, September 8, 1999.

Liesch, B.A., C.E. Price, and K. Walters. 1963. *Geology and Ground-Water Resources of Northwestern King County, Washington.* US Geological Survey.

Parametrix, 2009, *Bothell Landing Remedial Investigation/Feasibility Study, Revision No. 0*. Prepared for City of Bothell, November 2009.

Parametrix, 2010, *Draft City Hall Site Environmental Site Assessment*. Prepared for City of Bothell. May 2010.

PSI. 1998. *Underground Storage Tank Removal and Site Assessment Report, Intersection of SR 522, SR 527, and Main Street, Bothell, Washington*. Prepared for City of Bothell Department of Public Works. May 20, 1998.

Riley Group, *Draft Phase I Environmental Site Assessment, Bothell Landing Property #1*, May 29, 2007.

SEACOR. 1990, *Underground Storage Tank Closure, Bothell City Hall, 18305 101st Ave NE, Bothell, Washington.* Letter report to Mr. Warren Gray, Director of Public Works, August 24, 1990.

TABLE 1A
HISTORIC SOIL ANALYTICAL DATA
ULTRA CUSTOM CARE CLEANERS SITE
Source: Farallon Consulting, 2002
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		MW1-2.5-4	MW2-5.5-7	MW3-4.5-6	SB-1-4	SB-1-8	SB-2-4	SB-2-8	SB-3-4	SB-3-8	SB-4-4	SB-4-8	SB5-0.33-3	SB6-2-3	SB7-05-1.5	SS-2	MTCA A/B
Sample interval, ft bgs		2.5-4	5.5-7	4.5-6	4-5	8-9	4-5	8-9	4-5	8-9	4-5	8-9	0.33-3	2-3	0.5-1.5	Catch Basin Sediment	
Petroleum Hydrocarbons	Gasoline Range		1,800														100/30*
	Diesel Range																2000
	Oil Range																2000
VOCs	Tetrachloroethene	**0.0022**	**0.015**	**0.005**	**0.0013**	<0.0012	**0.0012**	<0.0011	**0.0018**	<0.0011	**0.0019**	<0.0023	**0.0061**	**0.0013**	**0.0097**	**0.0019**	0.03
	Trichloroethene	<0.0011	**0.0019**	<0.0013	<0.0011	<0.0012	<0.0011	<0.0011	<0.0013	<0.0011	<0.0011	<0.0012	<0.0011	<0.0011	<0.0011	**0.012**	7
	(cis) 1,2-Dichloroethene	<0.0011	<0.0011	<0.0013	<0.0011	<0.0012	<0.0011	<0.0011	<0.0013	<0.0011	<0.0011	<0.0012	<0.0011	<0.0011	<0.0011	**0.0026**	6
	Methylene Chloride	<0.0057	**0.029****	<0.0063	<0.0054	**0.0062****	<0.0054	<0.0057	<0.0063	<0.0055	<0.0054	**0.0079****	<0.0056	<0.0053	<0.0054	<0.0060	9
	1,2-Dichlorobenzene	<0.0011	**0.0012**	<0.0013	<0.0011	<0.0012	<0.0011	<0.0011	<0.0013	<0.0011	<0.0011	<0.0012	<0.0011	<0.0011	<0.0011	<0.0012	8000 (B)

TABLE 1B
HISTORIC SOIL ANALYTICAL DATA
ULTRA CUSTOM CARE CLEANERS SITE
Source: Environmental Partners Inc., 2004
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-13	B-14	B-15	B-16	MTCA A/B
Sample interval, ft bgs		8	8	8	8	8	8	8	8	8	9.5	9.5	9.5	9.5	
Petroleum Hydrocarbons	Gasoline Range														100/30*
	Diesel Range														2000
	Oil Range														2000
VOCs	Tetrachloroethene	**0.020**	<0.010	<0.010	<0.010	<0.010	**0.012**	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.03
	Trichloroethene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	7
	(cis) 1,2-Dichloroethene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	6
	Methylene Chloride	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	9
	1,2-Dichlorobenzene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	8000 (B)

TABLE 1C
HISTORIC SOIL ANALYTICAL DATA
CITY PROPERTIES
Source: Parametrix, 2010
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		SB01	SB02	SB03	SB04	SB05	MTCA A/B
Sample interval, ft bgs		14	16	15	10	17	
Petroleum Hydrocarbons	Gasoline Range	<5.5	<5.9	<7.3	<5.4		100/30*
	Diesel Range	<27	<29		<27		2000
	Oil Range	<5.5	<5.9	<7.3	<5.4		2000
VOCs	Tetrachloroethene				<0.034	<0.0011	0.03
	Trichloroethene				<0.034	<0.0011	7
	(cis) 1,2-Dichloroethene				<0.034	<0.0011	6
	Vinyl Chloride				<0.034	<0.0011	670 (B)
	Methylene Chloride				<0.17	<0.0057	9
PAHs	Fluoranthene				0.0078		
	Pyrene				0.0075		
	Chrysene				0.0099		
	Benzo[b]fluoranthene				0.01		
	Benzo[g,h,i]perylene				0.0078		
Metals	Arsenic				<11		20
	Barium						5600 (B)
	Cadmium				<0.54		2
	Chromium				26		19/2000***
	Lead				140		250
	Mercury				<0.27		2
	Silver						400

TABLE 1D
HISTORIC SOIL ANALYTICAL DATA
CITY RIGHT-OF-WAYS
Source: CDM, 2009
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		B1	B2	B3	B4	B5	B6	B7	B8	B10	B11	B12	B13	B15	B16	B17	B18	MTCA A/B
Sample interval, ft bgs		**6**	7	9	6				7	6	6	5	6	10	13	44	7	
Petroleum Hydrocarbons	Gasoline Range		<30	**720**			<25	<24					<24					100/30*
	Diesel Range		<75	<46			<62	<61					<61					2000
	Oil Range		<150	**2400**			<120	<120					<120					2000
VOCs	Benzene			**6**														0.03
	Toluene			**1.1**														7
	Ethylbenzene			**12**														6
	Xylenes			**11.51**														9
	Tetrachloroethene	**0.0054**	<0.0016	<0.19	<0.0012	<0.0011	<0.0011	**0.0012**	**0.0017**	**0.016**	**0.0030**	**0.0011**	<0.0011	**0.027**	**0.0041**	<0.0011	<0.0013	0.03
	Trichloroethene	<0.00099	<0.0016	<0.19	<0.0012	**0.0086**	<0.0011	<0.0010	<0.0010	<0.00097	<0.0011	<0.0090	<0.0011	<0.0017	<0.0010	<0.0011	<0.0013	7
	(cis) 1,2-Dichloroethene	<0.00099	<0.0016	<0.19	<0.0012	**0.034**	**0.0027**	<0.0010	<0.0010	<0.00097	<0.0011	**0.0013**	<0.0011	<0.0017	<0.0010	<0.0011	<0.0013	6
	Vinyl Chloride	<0.00099	<0.0016	<0.19	<0.0012	<0.0011	<0.0011	<0.0010	<0.0010	<0.00097	<0.0011	<0.00090	<0.0011	<0.0017	<0.0010	<0.0011	<0.0013	670 (B)
	Methylene Chloride	<0.0049	<0.0079	<0.94	<0.0060	<0.0057	<0.0055	<0.0052	<0.0050	<0.0048	<0.0054	<0.0045	<0.0055	<0.0085	<0.0051	<0.0057	<0.0065	9

TABLE 1E
HISTORIC SOIL ANALYTICAL DATA
CITY RIGHT-OF-WAYS
Source: HWA GeoSciences, 2008
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		BB-2	BB-3	MTCA A/B
Sample interval, ft bgs		7.5	10	
Petroleum Hydrocarbons	Gasoline Range	<7.1	<6.6	100/30*
	Diesel Range	<31	<31	2000
	Lube Oil Range	<65	<61	2000
VOCs	Tetrachloroethene	<0.0011	**0.0055**	0.05
	Trichloroethene	<0.0011	<0.0011	0.03
	(cis) 1,2-Dichloroethene	<0.0011	<0.0011	800
	Acetone**	**0.029**	<0.0053	8000
	2-Butanone (MEK)	<0.0056	<0.0053	48000

TABLE 1F
BOTHELL SERVICE CENTER SOIL ANALYTICAL DATA
(all results in milligrams per kilogram (mg/kg))

Boring		MW-11	MW-12	MW-13			MTCA A/B
Approximate Depth (ft bgs)		21	32.5	17.5	32.5	55	
VOCs***	Tetrachloroethylene	**0.074**	**0.0053**	<0.00091	<0.00083	<0.00085	0.05

TABLE 1G
AL'S AUTO BOTHELL WEXLER PROPERTY SOIL ANALYTICAL DATA
Source: Floyd \| Snider, 2010
(all results in milligrams per kilogram (mg/kg))

Boring		GP-02 (8/5/2010)	GP-05 (8/9/2010)	GP-06 (8/9/2010)	GP-07 8/9/2010	GP-08 (8/9/2010)	GP-09 (8/6/2010)	GP-10 8/6/2010	GP-11 (8/6/2010)	GP-12 (8/6/2010)	GP-13 (8/6/2010)	GP-15 (8/6/2010)	MTCA A/B
Sample depth (ft bgs)		10'	7'-8'	8'	6'-7'	7'	9'	8'	8'	6'	10'	10'	
Petroleum Hydrocarbons	Gasoline Range	<4.5	21	<5	<6.6	<5.7	<5.7	<5.5	<4.5	**5,900**	<5.1	<5.1	100/30*
	Diesel Range	-	<340	-	-	-	<34	-	-	<680	-	<32	2,000
	Lube Oil Range	-	1,800	-	-	-	<68	-	-	<60	-	<65	2,000
Volatile Organic Compounds**	1,2-Dichlorobenzene	<0.00068	**0.17**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	7,200
	1,3-Dichlorobenzene	<0.00068	**0.041**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	NE
	1,4-Dichlorobenzene	<0.00068	**0.23**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	42
	1,2,3-Trichlorobenzene	<0.00068	**0.0039**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	NE
	1,2,4-Trichlorobenzene	<0.00068	**0.01**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	800
	1,2,4-Trimethylbenzene	<0.00068	**0.0044**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**75**	<0.00076	<0.00075	4,000
	1,3,5-Trimethylbenzene	<0.00068	**0.06**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**23**	<0.00076	<0.00075	4,000
	(cis) 1,2-Dichloroethene	<0.00068	<0.00083	**0.0023**	<0.00079	**0.00087**	<0.00083	<0.00081	**0.039**	<1.5	<0.00076	**0.024**	800
	(trans) 1,2-Dichloroethene	<0.00068	<0.00083	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	**0.0011**	1,600
	sec-Butylbenzene	<0.00068	**0.0018**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**1.6**	<0.00076	<0.00075	NE
	tert-Butylbenzene	<0.00068	**0.0013**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	NE
	Ethylbenzene	<0.00068	**0.0015**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**9**	<0.00076	<0.00075	6
	Isopropylbenzene	<0.00068	**0.001**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**2.7**	<0.00076	**0.0016**	8,000
	Naphthalene	<0.00068	<0.00083	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**6.7**	<0.00076	<0.00075	5
	n-Propylbenzene	<0.00068	<0.00083	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**11**	<0.00076	<0.00075	NE
	p-Isopropyltoluene	<0.00068	**0.0031**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	NE
	Tetrachloroethene	<0.00068	**0.0045**	**0.012**	<0.00079	**0.0051**	**0.85**	**0.12**	**0.0066**	<1.5	<0.00076	0.00084	0.05
	Trichloroethene	<0.00068	<0.00083	**0.0015**	<0.00079	**0.0021**	**0.0015**	<0.00081	**0.0035**	<1.5	<0.00076	**0.006**	0.03
	m,p-Xylene	<0.0014	**0.0017**	0.0017	<0.0016	0.0017	0.0017	<0.0016	<0.0013	**42**	<0.0015	<0.0015	9
	o-Xylene	<0.00068	**0.008**	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	**9.8**	<0.00076	<0.00075	9
	Vinyl Chloride	<0.00068	<0.00083	<0.00085	<0.00079	<0.00084	<0.00083	<0.00081	<0.00066	<1.5	<0.00076	<0.00075	0.67

TABLE 1H
HISTORIC SOIL ANALYTICAL DATA
BOTHELL LANDING PROPERTY
Source: HWA GeoSciences, 2007
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		BH-2-6	BH-3-6	BH-3-10	BH-4-6	BH-5-6	BH-5-10	BH-6-6	BH-13-6	BH-14-2	BH-14-6	BH-15-2	BH-15-6	BH-18-10	BH-19-6	BH-20-6	BH-21-6	MTCA A/B
Sample interval, ft bgs		6-8	6-8	10-12	6-8	6-8	10-12	6-8	6-8	2-4	6-8	2-4	6-8	10-12	6-8	6-8	6-8	
Petroleum Hydrocarbons	Gasoline	<3	**1200**	<3	**650**	**140**	<3	<3		<3		<3		<6.3	<6.3	**9.1**	<4.9	100/30*
	Diesel	<25	**9300**	<25	**670**	<25		<25	<25	<25	<25	<25	<25		<30	<29	**1500**	2000
	Oil Range	<50	<1000	**120**	<50	<50		<50	**65**	<50	<50	<50	<50		**270**	<57	**2500**	2000
VOCs	Benzene	<0.03	**0.39**	<0.03	<0.03	**0.05**	<0.03	<0.03		<0.03		<0.03		<0.02	<0.02	<0.02	<0.049	0.03
	Toluene	<0.05	**1.2**	<0.05	<0.05	**0.11**	<0.05	<0.05		<0.05		<0.05		<0.063	<0.063	<0.059	<0.25	7
	Ethylbenzene	<0.05	**1.3**	<0.05	**1**	**0.4**	<0.05	<0.05		<0.05		<0.05		<0.063	<0.063	<0.059	<0.25	6
	Total Xylenes	<0.2	**2.7**	<0.2	<0.2	**1.5**	<0.2	<0.2		<0.2		<0.2		<0.063	<0.063	<0.059	**0.3**	9
	Tetrachloroethene		<0.1		<0.1	<0.1								<0.0013		<0.00061	<0.027	0.03
	Trichloroethene		<0.1		<0.1	<0.1								<0.0013		<0.00061	<0.027	7
	(cis)-1,2-Dichloroethene		<0.1		<0.1	<0.1								<0.0013		<0.00061	<0.027	6
	(trans)-1,2-Dichloroethene		<0.1		<0.1	<0.1								<0.0013		<0.00061	<0.027	
	Vinyl Chloride		<0.1		<0.1	<0.1								<0.0013		<0.00061	<0.027	
PAHs	1-Methylnapthalene		**92**															5
	2-Methylnapthalene		**150**															5
	Napthalene		**0.97**															
	Total Naphthalenes		**243**															5
	Benzo(a)anthracene		<0.040															
	Benzo(a)pyrene		<0.040															0.14
	Benzo(b)fluoranthene		<0.040															
	Benzo(k)fluoranthene		<0.040															
	Chrysene		<0.070															0.14
	Dibenz(a,h)anthracene		<0.040															
	Indeno(1,2,3-cd)pyrene		<0.040															
	Total cPAHs Using Tox. Equiv.		<0.070															0.10
Metals	Arsenic		<5.0						**5.4**	<5.0	<5.0	<5.0	<5.0					20
	Barium		**44**						**98**		**140**		**62**					5600 (B)
	Cadmium		<1.0						<1.0	<1.0	<1.0	<1.0	<1.0					2
	Chromium		**31**						**22**	**40**	**30**	**32**	**37**					19/2000**
	Lead		<5.0						**110**	<5.0	**59**	**16**	<5.0					250
	Selenium		<5.0						<5.0				<5.0					2
	Silver		<5.0						<5.0				<5.0					400
	Mercury		**0.02**						**0.06**	**0.02**	**0.08**	<0.02	**0.08**					2

TABLE 1I
HISTORIC SOIL ANALYTICAL DATA
BOTHELL LANDING PROPERTY
Source: Parametrix, 2009
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		BLBH-23-3	BLBH-23-15	BLMW-6-2.5	BLMW-6-7.5	BLSS-1 0-0.5	BLSS-2 0-0.5	HZMW-12-5	HZMW-13-2.5	HZMW-13-5	MTCA A/B
Sample interval, ft bgs		3	15	2.5	7.5	0-0.5	0-0.5	5	2.5	5	
Petroleum Hydrocarbons	Gasoline Range	<1.5	<1.6	<1.8	<2.2	<2.8	<2.8	<1.9	**8.8**	<1.6	100/30*
	Diesel Range	<130	<29	<30	<31	<170	<170	**130**	<45	<28	2000
	Oil Range	**1,700**	**140**	**120**	<62	**680**	**1,000**	**220**	**370**	**120**	2000
VOCs	Benzene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
	Toluene	<0.029	<0.032	<0.037	<0.044	<0.055	<0.057	<0.039	<0.03	<0.032	7
	Ethylbenzene	<0.029	<0.032	<0.037	<0.044	<0.055	<0.057	<0.039	<0.03	<0.032	6
	Xylenes	<0.029	<0.032	<0.037	<0.044	<0.055	<0.057	**0.109**	**0.122**	<0.032	9
	Tetrachloroethene			<0.00053	<0.0006	<0.0013	<0.001	<0.00052	<0.00046	<0.00062	0.03
	Trichloroethene			<0.00053	<0.0006	<0.0013	<0.001	<0.00052	<0.00046	<0.00062	7
	(cis)-1,2-Dichloroethene			<0.00053	<0.0006	<0.0013	<0.001	<0.00052	<0.00046	<0.00062	6
	Vinyl Chloride			<0.00053	<0.0006	<0.0013	<0.001	<0.00052	<0.00046	<0.00062	670 (B)
	Methylene Chloride			<0.0026	<0.003	<0.0067	<0.0052	<0.0026	<0.0023	<0.0031	9
PAHs	1-Methylnaphthalene	<0.0069	<0.0077	<0.0079	<0.0082			<0.0082	<0.0075	<0.0076	
	2-Methylnaphthalene	<0.0069	<0.0077	<0.0079	<0.0082			<0.0082	<0.0075	<0.0076	
	Naphthalene	<0.0069	<0.0077	<0.0079	<0.0082			<0.0082	<0.0075	<0.0076	
	Total Naphthalenes	<0.0069	<0.0077	<0.0079	<0.0082			<0.0082	<0.0075	<0.0076	5
Metals	Arsenic			<6	<6.2			<6.2	<5.6	<5.7	20
	Cadmium			<0.6	<0.62			<0.62	<0.56	<0.57	2
	Chromium			**31**	**45**			**60**	**35**	**41**	19/2000***
	Lead			<6	<6.2			**24**	**9.3**	<5.7	250
	Mercury			**0.026**	<0.025			**0.027**	<0.022	**0.027**	2

TABLE 1I (Continued)
HISTORIC SOIL ANALYTICAL DATA
BOTHELL LANDING PROPERTY
Source: Parametrix, 2009
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		B1-6	B2-7	B3-9	B7-9	BC-6-2.5	BC-7-7.5	BC-8-7.5	BH-2-6	BH-3-6	BH-3-10	BH-4-6	BH-5-6	MTCA A/B
Sample interval, ft bgs		6	7	9	9	2.5	7.5	7.5	6	6	10	6	6	
Petroleum Hydrocarbons	Gasoline			720		<6.7	<6.3	<8.5	<3	1,200	<3	650	140	100/30*
	Diesel			<46		<31	<29	<36	<25	9,300	<25	670	<25	2000
	Oil Range			2,400		<63	<57	<71	<50	<1000	<120	<50	<50	2000
VOCs	Benzene			0.00001		<0.00002	<0.0011	<0.00002	<0.03	0.39	<0.03	<0.3	0.05	0.03
	Toluene			0.00000		<0.000067	<0.0054	<0.000085	<0.05	1.3	<0.05	1	0.4	7
	Ethylbenzene			0.00001		<0.000067	<0.0011	<0.000085	<0.05	1.2	<0.05	<0.5	0.11	6
	Total Xylenes			0.00001		<0.000134	<0.0033	<0.00017	<0.2	2.7	<0.2	<2.0	1.5	9
	Tetrachloroethene	0.005	<0.002	<0.190	<0.001		<0.001			<0.10		<0.10	<0.10	0.03
	Trichloroethene	<0.001	<0.002	<0.190	<0.001		<0.001			<0.10		<0.10	<0.10	7
	(cis)-1,2-Dichloroethene	<0.001	<0.002	<0.190	<0.001		<0.001			<0.10		<0.10	<0.10	6
	(trans)-1,2-Dichloroethene	<0.001	<0.002	<0.190	<0.001		<0.001			<0.10		<0.10	<0.10	
	Vinyl Chloride	<0.001	<0.002	<0.190	<0.001		<0.005			<0.10		<0.10	<0.10	
PAHs	1-Methylnaphthalene									92				5
	2-Methylnaphthalene									150				5
	Naphthalene									0.97				
	Total Naphthalenes									243				5
	Benzo(a)anthracene									<0.04				
	Benzo(a)pyrene									<0.04				0.14
	Benzo(b)fluoranthene									<0.04				
	Benzo(k)fluoranthene									<0.04				
	Chrysene									0.07				0.14
	Dibenz(a,h)anthracene									<0.04				
	Indeno(1,2,3-cd)pyrene									<0.04				
	Total cPAHs Using Tox. Equiv.									0.031				0.10
Metals	Arsenic									<5				20
	Barium									44				5600 (B)
	Cadmium									<1				2
	Chromium									31				19/2000***
	Lead									<5				250
	Selenium									<5				2
	Silver									<5				400
	Mercury									0.02				2

TABLE 1I (Continued)
HISTORIC SOIL ANALYTICAL DATA
BOTHELL LANDING PROPERTY
Source: Parametrix, 2009
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		BH-5-10	BH-6-6	BH-13-6	BH-14-2	BH-14-6	BH-15-2	BH-15-6	BH-18-10	BH-19-6	BH-20-6	BH-21-6	MTCA A/B
Sample interval, ft bgs		10	6	6	2	6	2	6	10	6	6	6	
Petroleum Hydrocarbons	Gasoline	<3	<3		<3		<3		<6.3	<6.3	**9.1**	<4.9	100/30*
	Diesel		<25	<25	<25	<25	<25	<25		<30	29	**1,500**	2000
	Oil Range		<50	**65**	<50	<50	<50	<50		**270**	57	**2,500**	2000
VOCs	Benzene	<0.03	<0.03		<0.03		<0.03		<0.02	<0.02	<0.02	<0.049	0.03
	Toluene	<0.05	<0.05		<0.05		<0.05		<0.063	<0.063	<0.059	<0.25	7
	Ethylbenzene	<0.05	<0.05		<0.05		<0.05		<0.063	<0.063	<0.059	<0.25	6
	Total Xylenes	<0.2	<0.2		<0.2		<0.2		<0.063	<0.063	<0.059	**0.3**	9
	Tetrachloroethene								<0.001		<0.001	<0.027	0.03
	Trichloroethene								<0.001		<0.001	<0.027	7
	(cis)-1,2-Dichloroethene								<0.001		<0.001	<0.027	6
	(trans)-1,2-Dichloroethene								<0.001		<0.001	<0.027	
	Vinyl Chloride								<0.001		<0.001	<0.027	
PAHs	1-Methylnaphthalene												5
	2-Methylnaphthalene												5
	Naphthalene												
	Total Naphthalenes												5
	Benzo(a)anthracene												
	Benzo(a)pyrene												0.14
	Benzo(b)fluoranthene												
	Benzo(k)fluoranthene												
	Chrysene												0.14
	Dibenz(a,h)anthracene												
	Indeno(1,2,3-cd)pyrene												
	Total cPAHs Using Tox. Equiv.												0.10
Metals	Arsenic			**5.4**	<5	<5	<5	<5					20
	Barium			**98**		**140**		**62**					5600 (B)
	Cadmium			<1	<1	<1	<1	<1					2
	Chromium			**22**	**40**	**30**	**32**	**37**					19/2000***
	Lead			**110**	<5	**59**	**16**	<5					250
	Selenium			<5		<5		<5					2
	Silver			<5		<5		<5					400
	Mercury			**0.06**	**0.02**	**0.08**	<0.02	**0.08**					2

TABLE 1J
HISTORIC SOIL ANALYTICAL DATA
FORMER RAINCHECK CLEANERS SOLVENT PLUME DELINEATION
Source: CDM, 2011
(all results in milligrams per kilogram (mg/Kg) except as noted)

Boring		RC-B20-6	RC-B29-6	MTCA A/B
Sample interval, ft bgs		6	6	
NWTPH-HCID	Gasoline Range Organics	ND	ND	
	Diesel Fuel #2	D	D	
	Lube Oil	D	D	
Petroleum Hydrocarbons	Gasoline			100/30*
	Diesel	780	200	2000
	Oil Range	530	1900	2000
VOCs	Acetone		0.11	72,000
	Methylene Chloride		0.12**	0.02
	Benzene		0.0016	0.03
	Total Xylenes		0.1222	9
	Isopropylbenzene		0.019	8000
	n-Propylbenzene		0.028	8000
	1,2,4-Trimethylbenzene		0.14	
	sec-Butylbenzene		0.014	
	p-Isopropyltoluene		0.0063	
	n-Butylbenzene		0.0077	
	Naphthalene		0.022	5
Metals	Lead		30	250

Table 1 Notes:

MTCA A / B – Ecology MTCA Method A / B soil cleanup levels, Chapter 173-340 WAC, shown for reference only. These cleanup levels may not apply at this site, and are provided as a screening level indication of the environmental quality of the site only.
< - not detected at listed reporting limit
Bold – Analyte Detected
Bold / highlighted – Analyte exceeds cleanup level
Blank – not analyzed
* - The Method A Soil cleanup levels for gasoline mixtures without benzene and the total of ethylbenzene, toluene, and xylenes are less than 1% of the gasoline mixture are 100 mg/kg/all other mixtures are 30 mg/kg
** - Common laboratory solvent that may have been introduced during sample preparation and affecting the analytical result
*** - The Method A soil cleanup levels for Chromium are 19 mg/kg for Cr VI and 2000 mg/kg for Cr III. Analyses are for total chromium.
All diesel range hydrocarbon sample extracts were treated with an acid/silica gel cleanup procedure.

TABLE 2A
HISTORIC GROUND WATER ANALYTICAL DATA
ULTRA CUSTOM CARE CLEANERS SITE
SOURCE: Farallon Consulting, 2002
(all results in micrograms per liter (µg/L) except as noted)

Boring		MW-1	MW1-26-29	MW-2	MW-3	SB-1	SB-2	SB-3	SB-4	SS-1	SS-2	MTCA A/B
Date Sampled		3/6/02	2/19/02	3/6/02	3/6/02	2/19/02	7/19/01	7/19/01	7/19/01	7/19/01	7/19/01	
Screened Interval (ft bgs)		5-15	26-29	2.5-12.5	3-13	4-5	4-5	4-5	4-5	Catch Basin Water	Catch Basin Water	
Approximate Depth to Water (ft bgs)		8.07		5.59	4.94							
Petroleum Hydrocarbons	Gasoline Range			<100								800/1000*
	Diesel Range											500
	Oil Range											500
VOCs	Tetrachloroethene	**880**	**29**	**0.41**	**4.7**	<0.20	<0.20	**0.37**	**6.1**	**500**	**25**	5
	Trichloroethene	**18**	**0.21**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	**300**	**7.6**	5
	(cis) 1,2- Dichloroethene	**36**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	**390**	**3.4**	16
	(trans) 1,2- Dichloroethene	**0.38**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<20	<0.20	160
	Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	**26**	<0.20	0.2
	Methylene Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**120****	<1.0	5
	Dichlorodifluoromethane	<0.20	<0.20	<0.20	<0.20	**0.22**	<0.20	<0.20	**0.2**	<20	<0.20	1600
	Chloroform	**2**	**2.30**	<0.20	**0.44**	**0.70**	**0.24**	<0.20	**0.39**	<20	<0.20	80

TABLE 2B
HISTORIC GROUND WATER ANALYTICAL DATA
ULTRA CUSTOM CARE CLEANERS SITE
Source: Environmental Partners Inc., 2004
(all results in micrograms per liter (µg/L) except as noted)

Boring		B-1	B-1	B-1	B-2	B-2	B-2	B-3	B-3	B-3	B-4	B-4	B-4	MTCA A/B
Date Sampled		7/22/04	7/22/04	7/22/04	7/26/04	7/26/04	7/26/04	7/26/04	7/26/04	7/26/04	7/23/04	7/23/04	7/23/04	
Screened Interval (ft bgs)		8-12	26-30	40-44	8-12	22-26	36-40	8-12	22-26	36-40	8-12	22-26	36-40	
Approximate Depth to Water (ft bgs)		9	9	9	9	9	9	9	9	9	9	9	9	
Petroleum Hydrocarbons	Gasoline Range													800/1000*
	Diesel Range													500
	Oil Range													500
VOCs	Tetrachloroethene	**6400**	**5**	**5**	**14**	<2	<2	**410**	<2	<2	**1900**	<2	<2	5
	Trichloroethene	**110**	<2	<2	<2	<2	<2	<2	<2	<2	**210**	<2	<2	5
	(cis) 1,2- Dichloroethene	**31**	<2	<2	<2	<2	<2	<2	<2	<2	**160**	<2	<2	16
	Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.2
	1,1,1-Trichloroethane	<2	<2	<2	**8**	<2	<2	<2	<2	<2	<2	<2	<2	200
	Chloroform	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	80

Boring		B-5	B-5	B-5	B-6	B-6	B-6	B-7	B-7	B-7	B-8	B-8	B-8	MTCA A/B
Date Sampled		7/26/04	7/26/04	7/26/04	7/22/04	7/22/04	7/22/04	7/23/04	7/23/04	7/23/04	7/23/04	7/23/04	7/23/04	
Screened Interval (ft bgs)		8-12	22-30	36-40	8-12	22-26	36-40	8-12	22-26	36-40	8-12	22-26	32-36	
Approximate Depth to Water (ft bgs)		9	9	9	9	9	9	9	9	9	9	9	9	
Petroleum Hydrocarbons	Gasoline Range													800/1000*
	Diesel Range													500
	Oil Range													500
VOCs	Tetrachloroethene	**4**	<2	**4**	**9**	<2	<2	**4**	<2	<2	**5**	<2	<2	5
	Trichloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	5
	(cis) 1,2- Dichloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	16
	Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.2
	1,1,1-Trichloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	200
	Chloroform	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	80

TABLE 2B (Continued)
HISTORIC GROUND WATER ANALYTICAL DATA
ULTRA CUSTOM CARE CLEANERS SITE
Source: Environmental Partners Inc., 2004
(all results in micrograms per liter (µg/L) except as noted)

Boring		B-9	B-9	B-9	B-10	B-11	B-12	B-13	B-14	B-16	MW-1	MTCA A/B
Date Sampled		7/23/04	7/23/04	7/23/04	10/25/04	10/25/04	10/25/04	10/25/04	7/23/04	10/26/04	7/22/04	
Screened Interval (ft bgs)		8-12	22-30	36-40	20-24	20-24	20-24	10-14	10-14	10-14	5-15	
Approximate Depth to Water (ft bgs)		9	9	9	19.5	20		11	11	11	9.56	
Petroleum Hydrocarbons	Gasoline Range											800/1000*
	Diesel Range											500
	Oil Range											500
VOCs	Tetrachloroethene	**3**	<2	<2	**23**	**18**	**8**	**18**	**16**	**30**	**4**	5
	Trichloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	5
	(cis) 1,2- Dichloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	16
	Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.2
	1,1,1-Trichloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	200
	Chloroform	<2	<2	<2	<2	**3**	<2	<2	<2	<2	<2	80

TABLE 2C
HISTORIC GROUND WATER ANALYTICAL DATA
CITY PROPERTIES
Source: Parametrix, 2010
(all results in micrograms per liter (µg/L) except as noted)

Boring		SB01	SB02	SB03	SB05	MTCA A/B
Date Sampled		4/1/10	3/31/10	3/31/10	4/1/10	
Screened Interval (ft bgs)		17-20	17-20	18-20	18-20	
Approximate Depth to Water (ft bgs)		17	17	18	18	
Petroleum Hydrocarbons	Gasoline Range	<100	<100	<100		800/1000*
	Diesel Range	<160	<310	<290		500
	Oil Range	<250	<490	<460		500
VOCs	Benzene	<1.0	<1.0	<1.0		5.0
	Toluene	<1.0	<1.0	<1.0		1000
	Ethylbenzene	<1.0	<1.0	<1.0		700
	Xylenes	<1.0	<1.0	<1.0		1000
	Tetrachloroethene		<0.20	<0.20	**3.7**	5
	Trichloroethene		<0.20	<0.20	<0.20	5
	(cis) 1,2- Dichloroethene		<0.20	<0.20	<0.20	16
	Vinyl Chloride		<0.20	<0.20	<0.20	0.2
	Chloroform		<0.20	<0.20	<0.20	80
	Chlorobenzene		<0.20	<0.20	<0.20	160
Metals	Mercury			<0.50		2
	Arsenic			<3.0		5
	Chromium			<10.00		50
	Lead			<1.00		15
	Cadmium			<4.00		5

TABLE 2D
HISTORIC GROUND WATER ANALYTICAL DATA
CITY RIGHT-OF-WAYS
Source: CDM, 2009
(all results in micrograms per liter (µg/L) except as noted)

Boring		B1	B2	B3	B4	B5	B6	B7	B8	B10	B11	B12	B13	B14	B15	B16	B17	B18	MTCA A/B
Date Sampled		4/6/09	4/2/09	4/3/09	4/2/09	4/2/09	4/1/09	4/1/09	4/6/09	4/7/09	4/7/09	4/7/09	4/2/09	4/3/09	4/3/09	4/3/09	4/2/09	4/6/09	
Screened Interval (ft bgs)		8-14	8-12	11-14	7-13	8-13	8-18	10-14	7-14	7-14	7-14	8-14	6-12	9-16	11-16	12-19	15-19	8-14	
Approximate Depth to Water (ft bgs)		8	8	11	7	8	8	10	7	7	7	8	6	9	11	12	15	8	
Petroleum Hydrocarbons	Gasoline Range	<110	**380**	**270**			<110	<110	<100			<100	<100					<400	800/1000*
	Diesel Range	<270	<260	<300			<270	<260	<270			<270	<250					<260	500
	Oil Range	<430	<420	<0.49			<440	<420	<410			<410	<400					<420	500
VOCs	Benzene		<1.0	**5.7**														**13**	5.0
	Toluene		<1.0	<1.0														<4.0	1000
	Ethylbenzene		<1.0	**3.5**														<4.0	700
	Xylenes		**1.5**	**4.1**														<4.0	1000
	Tetrachloroethene	**20**	**25**	**20**	<0.20	<0.20	**3.4**	<0.20	**0.37**	**54**	**49**	**57**	**1.2**	**5.9**	**3.9**			**57**	5
	Trichloroethene	**1.4**	**11**	<0.20	<0.20	<0.20	**6.4**	<0.20	<0.20	<0.40	<0.20	<0.40	<0.20	**0.54**	**1.8**			**9.9**	5
	(cis) 1,2- Dichloroethene	**1.6**	**5.0**	<0.20	<0.20	<0.20	**76**	<0.20	<0.20	<0.40	<0.20	<0.40	<0.20	**0.33**	**1.4**			**6.0**	16
	(trans) 1,2- Dichloroethene	<0.20	<0.20	<0.20	<0.20	<0.20	**0.66**	<0.20	<0.20	<0.40	<0.20	<0.40	<0.20	<0.20	<0.20			<0.40	160
	1,2-Dichloroethane	<0.20	<0.20	<0.20	<0.20	<0.20	**6.5**	<0.20	<0.20	<0.40	<0.20	<0.40	<0.20	<0.20	<0.20			<0.40	0.48
	Vinyl Chloride	<0.20	<0.20	<0.20	<0.20	<0.20	**0.89**	<0.20	<0.20	<0.40	<0.20	<0.40	<0.20	<0.20	<0.20			**2.7**	0.2
	Chloroform	<0.20	<0.20	<0.20	<0.20	<0.20	<0.40	<0.20	**0.22**	**1.6**	**1.5**	<0.40	<0.20	**0.72**	<0.20			<0.40	80
	Chlorobenzene	<0.20	**0.22**	<0.20	<0.20	<0.20	<0.40	<0.20	<0.20	<0.40	<0.20	<0.40	<0.20	<0.20	<0.20			**0.55**	160

TABLE 2E
HISTORIC GROUND WATER ANALYTICAL DATA
CITY RIGHT-OF-WAYS
Source: HWA GeoSciences, 2008
(all results in micrograms per liter (µg/L) except as noted)

Boring		BB-2	BB-3	MTCA A/B
Date Sampled		**9/5/08**	**9/5/08**	
Screened Interval (ft bgs)		9-19	10-20	
Approximate Depth to Water (ft bgs)		4.58	14.99	
Petroleum Hydrocarbons	Gasoline Range	**150**		800/1000*
	Diesel Range	<250		500
	Oil Range	<400		500
VOCs	Benzene	<0.40	<0.20	5.0
	Toluene	<2.0	<1.0	1000
	Ethylbenzene	<0.40	<0.20	700
	Xylenes	<0.80	<0.40	1000
	Tetrachloroethene	**94**	**0.51**	5
	Trichloroethene	<0.40	<0.20	5
	(cis) 1,2- Dichloroethene	<0.40	<0.20	16
	Vinyl Chloride	<0.40	<0.20	0.2
	Chloroform	<0.20	<0.20	80
	Chlorobenzene			160

TABLE 2F
BOTHELL SERVICE CENTER GROUND WATER ANALYTICAL DATA
(all results in micrograms per liter (µg/l) except as noted)

Boring		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	MW-17	MW-18	MTCA A/B
Most Recent Reported Sampling Date		8/2008	8/2008	8/2008	8/2008	8/2008	8/2008	8/2008	8/2008	8/2008	4/2005	8/2008	8/2008	11/2007	11/2007	11/2007	11/2007	11/2007	5//2008	
Screen interval (ft bgs)		5-20	5-20	5-20	10-25	10-25	10-25	10-25	45-50	45-50	5-25	25-33	25-33	40-55	22-32	22-32	40-55	40-50	22-30	
Approximate Depth to Water (ft bgs)		7.56	8	7	7.3	7.7	8.08	7.79	8.74	9.76	7.27	8.16	7.63	8.68	8.09	8.62	9.24	9.1	8.1	
Field Parameters	pH	6.32	6.38	5.9	6.22	6.02	6.09	6.52	6.33	7.19	5.32	6.26	6.34	7.07	6.96	6.81	7.85	7.65		
	Conductivity (µS/cm)	189	266	172	248	203	256	240	118	166	274	142	227	152	146	157	124	188		
	Temperature (C)	19.33	14.91	18.21	16.81	14.71	19.27	14	16.22	15.71	16.9	16.54	14.69	14.69	12.7	12.26	12.46	12.31		
	Dissolved Oxygen (mg/l)	1.87	2.26	2.88	2.91	3.29	2.34	2.74	2.07	1.17	0.62	1.46	2.12	1.35	3.96	4.02	4.02	0.49		
VOCs**	Tetrachloroethylene	**23000**	**500**	<20	**11000**	**21000**	**25000**	**4300**	**93**	**6000**	**3**	**27**	**1600**	<1	<0.2	<0.2	**10**	**6.5**	<0.25	5
	Trichloroethylene	<200	**200**	<20	**790**	**660**	**1200**	**43**	**4.8**	**3400**	<0.2	**0.53**	<10	<0.2	<0.2	<0.2	<0.2	<0.2	<0.25	5
	cis-1,2-Dichloroethylene	<200	**2300**	<20	**270**	**630**	**1200**	**43**	**4.4**	<50	<0.2	<0.2	<10	<0.2	<0.2	<0.2	<0.2	<0.2	<0.25	16
	Chloroform	<200	<20	<20	<50	<100	<200	<20	<1	<50	<0.2	<0.2	<10	<0.2	<0.2	**1.4**	**17**	**0.22**	<0.25	80

TABLE 2G
AL'S AUTO BOTHELL WEXLER PROPERTY GROUND WATER ANALYTICAL DATA
(all results in micrograms per liter (µg/l) except as noted)

Boring		RS-1	RP-1	RP-2	MTCA A/B
Approximate Depth to Water (ft bgs)		5.99	6.41	5.9	
Field Parameters	pH	7.2	6.7	7.5	
	Conductivity (µS/cm)	310	290	190	
VOCs**	Tetrachloroethylene	31	1500	<2	5
	Trichloroethylene	19	600	<2	5
	cis-1,2-Dichloroethylene	160	2100	<2	16
	trans-1,2-Dichloroethylene	3	11	<2	160

TABLE 2G (continued)
AL'S AUTO BOTHELL WEXLER PROPERTY GROUND WATER ANALYTICAL DATA
(all results in micrograms per liter (µg/l) except as noted)

Boring		GP-01 (8/5/2010)			GP-02 (8/5/2010)			GP-03 8/5/2010			GP-04 8/6/2010	GP-05 8/9/2010	GP-12 8/6/2010	GP-13 8/6/2010	GP-14 8/9/2010	GP-16 8/6/2010	MTCA A/B
Sample depth (ft bgs)		10'-15'	25'-30'	40'-42'	10'-15'	25'-30'	40'-45'	5'-9'	25'-30'	40'-43'	10'-15'	10'-15'	10'-15'	10'-15'	10'-14'	7'-12'	
Petroleum Hydrocarbons	Gasoline Range	<100 J	-	-	<100	-	-	<100	-	-	<100	<100	940	<100 J	<100	160	1000/800*
	Diesel Range	-	-	-	<260	-	-	-	-	-	-	-	<330	-	-	<260	500
	Lube Oil Range	-	-	-	<410	-	-	-	-	-	-	-	<420	-	-	<420	500
Volatile Organic Compounds**	1,2,4-Trimethylbenzene	<10	<1	<0.2	<0.4	<1	<0.2	<0.2	<2	<0.2	<0.2	<0.2	19	<10	<20	<1	400
	1,3,5-Trimethylbenzene	<10	<1	<0.2	<0.4	<1	<0.2	<0.2	<2	<0.2	<0.2	<0.2	5	<10	<20	<1	400
	(cis) 1,2-Dichloroethene	<10	<1	<0.2	50	6.7	0.92	20	9.8	0.29	<0.2	<0.2	6.8	230	160	140	16
	(trans) 1,2-Dichloroethene	<10	<1	<0.2	<0.4	<1	<0.2	0.25	<2	<0.2	<0.2	<0.2	<0.2	<10	<20	2.6	160
	Chloroform	<10	<1	<0.2	<0.4	<1	<0.2	<0.2	<2	<0.2	<0.2	<0.2	0.82	15	<20	<1	80
	Ethylbenzene	<10	<1	<0.2	<0.4	<1	<0.2	<0.2	<2	<0.2	<0.2	<0.2	14	<10	<20	<1	700
	Isopropylbenzene	<10	<1	<0.2	<0.4	<1	<0.2	<0.2	<2	<0.2	<0.2	<0.2	0.94	<10	<20	<1	800
	Naphthalene	<50	<5	<1	<2	<5	<1	<1	<10	<1	<1	<1	5.8	<50	<100	<5	160
	n-Propylbenzene	<10	<1	<0.2	<0.4	<1	<0.2	<0.2	<2	<0.2	<0.2	<0.2	2	<10	<20	<1	NE
	Tetrachloroethene	1,900	31	2.2	17	91	7	0.38	290	15	22	<0.2	0.43	850	2,100	8.5	5
	Trichloroethene	<103	<1	<0.2	26	4.1	0.56	2.4	6.4	0.44	<0.2	<0.2	0.27	19	26	22	5
	Vinyl Chloride	<103	<13	<0.2	<0.43	<13	<0.2	<0.2	<23	<0.2	<0.2	<0.2	<0.2	<103	<203	1.5	0.2
	m,p-Xylene	<20	<2	<0.4	<0.8	<2	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	50	<20	<40	<2	10,004
	o-Xylene	<10	<1	<0.2	<0.4	<1	<0.2	<0.2	<2	<0.2	<0.2	<0.2	18	<10	<20	<1	10,004

TABLE 2H
HISTORIC GROUND WATER ANALYTICAL DATA
BOTHELL LANDING PROPERTY
Source: HWA GeoSciences, 2007
(all results in micrograms per liter (µg/L) except as noted)

Boring		BH-2-W	BH-6-W	BH-8-W	BH-9-W	BH-11-W	BH-12-W	BH-15-W	BH-17-W	BH-18-W	BH-19-W	BH-20-W	BH-21-W	BH-22-W	BL-MW-1	BL-MW-2	BL-MW-3	BL-MW-4	MTCA A/B
Date Sampled		7/9/07	7/10/07	7/10/07	7/10/07	7/9/07	7/9/07	7/9/07	8/9/07	8/9/07	8/9/07	8/9/07	8/9/07	8/9/07	7/18/07	7/18/07	7/18/07	7/18/07	
Screened Interval (ft bgs)																			
Approximate Depth to Water (ft bgs)		6.5	7	8	7.5	4	8	8	7	7	10	6	7	8	6.88	9.58	5.54	6.92	
Petroleum Hydrocarbons	Gasoline Range	<50	<50	<50	<50	<50	**86**	<50	<100	<400	<100	<100	<100	<100	<50	<50	<50	<50	800/1000
	Diesel Range	<130	<130	<130	<130	**150**	<130	<130			<270	<280	<260	<270	<130	<130	<130	<130	500
	Oil Range	<250	<250	<250	<250	<250	<250	<250			<440	<450	<410	<440	<250	<250	<250	<250	500
VOCs	Benzene	<2	<1	<1	<1	<2	<2	<1	<1	<4	<1	<1	<1	<1	<2	<2	**17**	<2	5
	Toluene	<1	<1	<1	<1	<1	<1	<1	<1	<4	**1.1**	<1	**1.4**	**1.6**	<1	<1	<2	<1	1000
	Ethylbenzene	<1	<1	<1	<1	<1	<1	<1	<1	**12**	<1	<1	<1	<1	<1	<1	<2	<1	700
	Xylenes	<3	<3	<3	<3	<3	<3	<3	**1.3**	<4	**1.9**	<1	**1.8**	**2.6**	<3	<3	<2	<3	1000
	Tetrachloroethene	<2	<2	<2	<2	<2	<2		<0.2	<0.2	<0.2	**74**	**7.4**	<0.2	<2	**17**	<2	<2	5
	Trichloroethene	<2	<2	<2	<2	<2	<2		<0.2	<0.2	<0.2	**3.2**	**5.8**	**0.84**	<2	<2	<2	<2	5
	(cis) 1,2-Dichloroethene	<2	<2	<2	<2	<2	<2		<0.2	<0.2	<0.2	**0.83**	**1.8**	**3.2**	<2	<2	**2**	<2	16 (B)
	1,2-Dichloropropane	<2	<2	<2	<2	<2	<2		<0.2	**0.31**	<0.2	<0.4	<0.2	<0.2	<2	<2	<2	<2	
	1,2-Dichloroethane	<2	<2	<2	<2	<2	**4**		**0.51**	**16**	<0.2	<0.4	<0.2	<0.2	<2	<2	<2	<2	5
	Vinyl Chloride	<0.2	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2
Total Metals	Arsenic					**49**		**68**											5
	Barium					**1200**		**1000**											560 (B)
	Cadmium					**6**		**12**											5
	Chromium					**260**		**200**											50
	Lead					**95**		**25**											15
	Mercury					**0.41**		**0.16**											2
Dissolved Metals	Arsenic					**4**		**56**											5
	Barium					**240**		**380**											560 (B)
	Cadmium					**<5**		**<5**											5
	Chromium					**<7**		**<7**											50
	Lead					**<3**		**<3**											15
	Mercury					**<0.2**		**<0.2**											2

TABLE 2I
HISTORIC GROUND WATER ANALYTICAL DATA
BOTHELL LANDING PROPERTY
Source: Parametrix, 2009
(all results in micrograms per liter (µg/L) except as noted)

Boring		BI-3	D-BI-3	BB-2-17	BB-3-16	BLMW-1-10	BLMW-3-10	BLMW-4-10	BLMW-4-10-2	BLMW-5-8	BLMW-6-5	BLMW-7-8	BLMW-8-12	BLMW-8-25	BLBH-23-19	BLBH-24-12	HZMW-12-10	HZMW-13-10	MTCA A/B
Date Sampled		9/24/09	9/24/09	9/18/09	9/17/09	9/16/09	9/17/09	9/16/09	9/16/09	9/16/09	9/16/09	9/16/09	9/16/09	9/4/09	9/4/09	9/4/09	9/17/09	9/17/09	
Screened Interval (ft bgs)		5-12	5-12	7-19	9-20	4-15	4-15	4-15	4-15	3-11.5	3-16.5	3-11.5	3-21.5	3-21.5	17-20	10-15	8-20	3-16.5	
Approximate Depth to Water (ft bgs)																			
Petroleum Hydrocarbons	Gasoline Range					<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	**210**	800/1000*
	Diesel Range					<0.28	<0.28	<0.29	<0.28	<0.27	<0.25	<0.25	<0.32	<0.3	<0.32	<0.32	<0.27	<0.27	500
	Oil Range					<0.44	<0.44	<0.46	<0.45	<0.44	<0.4	<0.4	<0.5	<0.47	<0.51	<0.51	<0.43	<0.44	500
VOCs	Benzene					<1	**15**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	5.0
	Toluene					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1000
	Ethylbenzene					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	700
	Xylenes					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1000
	Tetrachloroethene	**6.8**	**6.9**	**79**	**0.52**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**0.96**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	5
	Trichloroethene	**1.2**	**1.2**	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	5
	(cis) 1,2- Dichloroethene	**5.3**	**5.1**	<0.4	<0.2	<0.2	**1.8**	**0.60**	**0.57**	<0.2	**0.69**	<0.2	<0.2	**0.61**	<0.2	<0.2	<0.2	**0.24**	16
	(trans) 1,2- Dichloroethene	**0.2**	**0.2**	**0.4**	**0.2**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**0.2**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	160
	1,2-Dichloroethane	<0.2	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**0.69**	**0.82**	<0.2	<0.2	<0.2	<0.2	0.48
	Vinyl Chloride	**1.3**	**1.4**	<0.4	<0.2	<0.2	**0.38**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2
	Chloroform	<0.2	<0.2	<0.4	**0.82**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**0.37**	<0.2	<0.2	<0.2	<0.2	80
	Chlorobenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	160
Total Metals	Arsenic					<3.3	<3.9	<3.3	<3.3	<3.3		<3.3	<3.3	<3.3	<3.3				5
	Cadmium																		5
	Chromium																		50
	Lead																		15
	Mercury																		2
Dissolved Metals	Arsenic					<3.0	<3.0	<3.0	<3.0	<3.0		<3.0	<3.0						5
	All Analytes					ND	ND	ND	ND	ND		ND	ND						

TABLE 2I (Continued)
HISTORIC GROUND WATER ANALYTICAL DATA
BOTHELL LANDING PROPERTY
Source: Parametrix, 2009
(all results in micrograms per liter (µg/L) except as noted)

Boring		BB-2-14	BB-3-18	BI-3-10	BLMW-1-12	BLMW-3-12	BLMW-4-12	BLMW-4-12Dup	BLMW-5-8	BLMW-6-10	BLMW-7-8	BLMW-8-12	HZMW12-15	HZMW13-10	MTCA A/B
Date Sampled		12/18/09	12/18/09	12/18/09	12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	12/16/09	12/16/09	
Screened Interval (ft bgs)		7-19	9-20	5-12	4-15	4-15	4-15	4-15	3-11.5	3-16.5	3-11.5	3-21.5	8-20	3-16.5	
Approximate Depth to Water (ft bgs)															
Petroleum Hydrocarbons	Gasoline Range				<100	<100	<100	<100	<100	<100	<100	<100	<100	**200**	800/1000*
	Diesel Range				<260	<260	<250	<260	<270	<260	<250	<250	<250	<250	500
	Oil Range				<410	<410	<400	<410	<430	<410	<400	<410	<400	<400	500
VOCs	Benzene				<1	**3.6**	<1	<1	<1	<1	<1	<1	<1	<1	5.0
	Toluene				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1000
	Ethylbenzene				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	700
	Xylenes				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1000
	Tetrachloroethene	100	**0.2**	**3.1**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**0.71**	<0.2	<0.2	<0.2	5
	Trichloroethene	<1	<0.2	**0.53**	<0.2	**0.24**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	5
	(cis) 1,2- Dichloroethene	<1	<0.2	**2.3**	<0.2	**2**	**0.46**	**0.46**	<0.2	**0.48**	<0.2	<0.2	<0.2	<0.2	16
	(trans) 1,2- Dichloroethene	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	160
	1,2-Dichloroethane	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**0.23**	<0.2	<0.2	0.48
	Vinyl Chloride	<1	<0.2	0.68	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2
	Chloroform	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	80
	Chlorobenzene	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	160
Total Metals	Arsenic				<3.3	<3.6	<3.4	<3.5	<3.3		<3.3	<4.2			5
	Cadmium														5
	Chromium														50
	Lead														15
	Mercury														2
Dissolved Metals	Arsenic				<3	<3	<3.5	<3.9	<3		<3	<3			5

TABLE 2J
HISTORIC GROUND WATER ANALYTICAL DATA
FORMER RAINCHECK CLEANERS SOLVENT PLUME DELINEATION
Source: CDM, 2011
(all results in micrograms per liter (µg/L) except as noted)

Sample	RC-B19-06/27	RC-B20-06/27	RC-B21-06/27	RC-B22-06/27	RC-B23-06/27	RC-B24-06/27	RC-B25-06/27	RC-B26-06/27	RC-B27-06/28	RC-B28-06/28*	RC-B0-06/28	RC-B29-06/28**	RC-B00-06/28	RC-BB2-06/27	RC-BB3-06/28	MTCA A/B
Date sampled	6/27/2011	6/27/2011	6/27/2011	6/27/2011	6/27/2011	6/27/2011	6/27/2011	6/27/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/28/2011	6/27/2011	6/28/2011	
Vinyl Chloride	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	**2.7**	**2.3**	<0.40	<0.20	0.2
cis-1,2-Dichloroethene	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	**0.32**	**0.3**	<0.40	<0.20	16
Chloroform	**2.4**	<0.20	**2.6**	<0.20	<0.20	<0.20	<0.20	<0.20	**0.82**	**1**	**1.1**	<0.20	<0.20	<0.40	**0.21**	80
1,2-Dichloroethane	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.58	0.56	<0.40	<0.20	5
Tetrachloroethene	**1.4**	<0.20	<0.20	<0.20	<0.20	<0.20	**0.4**	<0.20	<0.20	2.1	2.7	<0.20	<0.20	**76**	<0.20	5

Table 2 Notes:

MTCA A / B – Ecology MTCA Method A / B ground water cleanup levels, Chapter 173-340 WAC, shown for reference only. These cleanup levels may not apply at this site, and are provided as a screening level indication of the environmental quality of the site only.
< - not detected at listed reporting limit
Bold – Analyte Detected
Bold / highlighted – Analyte exceeds cleanup level
Blank – not analyzed
* - The Method A ground water cleanup level for gasoline is 800 µg/L if benzene is detected above the laboratory's reporting limit and is 1,000 µg/L if benzene is not detected
** - Common laboratory solvent that may have been introduced during sample preparation and affecting the analytical result

Table 3
General Sample Analytes and Rationale (Soil and Ground Water)
See Figures 10 for Sampling Locations

Location	Depth (feet)	Analytes	Analytical Method	Rationale
Select Deep exploration points	Up to 50 feet	VOCs Diesel/Oil Range TPH Gasoline Range TPH PAHs	EPA 8260 NWTPH-Dx NWTPH-Gx EPA 8270D SIM	To delineate the horizontal and vertical extent of chlorinated VOCs and petroleum hydrocarbons downgradient of apparent source areas and to determine if there are strata present that limit the vertical migration of chlorinated VOCs
Select Shallow exploration points	10-25 feet			To delineate the horizontal extent of chlorinated VOCs and petroleum hydrocarbons up- and downgradient of apparent source areas
Select exploration points	Up to 50 feet	Total & Dissolved Arsenic, Cadmium, Chromium, & Lead	EPA 6010/7471A	To delineate potential metals contamination in soil and ground water throughout the RI area
Select shallow exploration points	Above water table	Weight Fraction Organic Carbon Dry Bulk Density Total Porosity Air-Filled Porosity Volumetric Moisture Content	ASTM D2974 ASTM D2937 Army COE EM1110-2-1906, Append. II Army COE EM1110-2-1906, Append. II ASTM D2216	To determine typical values of soil parameters used in Johnson and Ettinger subsurface vapor intrusion model (Environmental Quality Management, 2000) to be used to evaluate indoor air concentrations of VOCs in RI area
Select shallow exploration points	Below water table	Weight Fraction Organic Carbon Dry Bulk Density Total Porosity Grain Size Distribution Cation Exchange Capacity	ASTM D2974 ASTM D2937 Army COE EM1110-2-1906, Append. II ASTM D422 & ASTM D4464 EPA 9081	To determine typical values of soil parameters used in ground water transport model to be used to evaluate COPC concentrations at receptor points down gradient of source areas

Number of samples and/or analytes will be based on results of field screening activities during the field investigation.

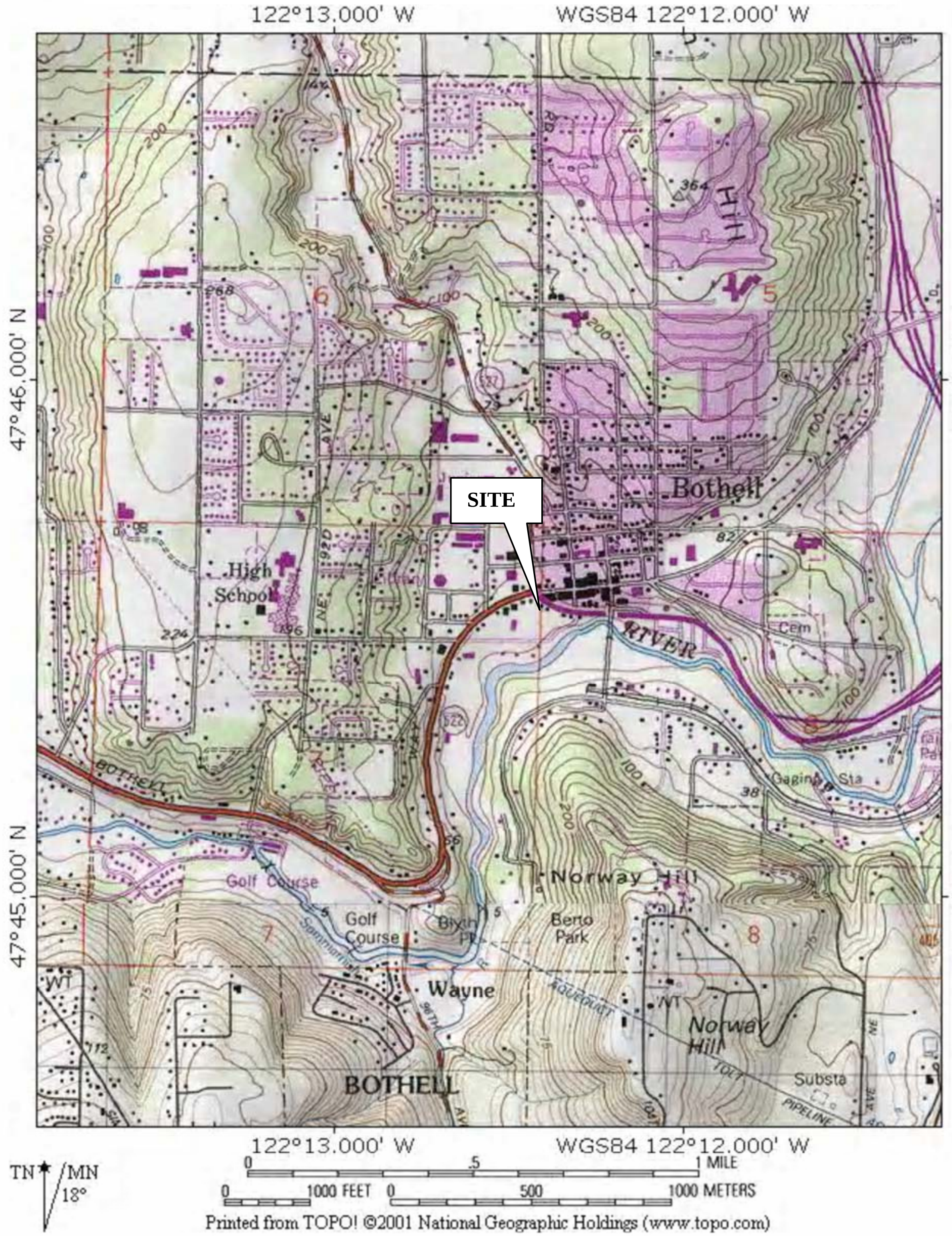
Table 4
Sample Analytes and Rationale (Area Wide Ground Water Monitoring Network)
See Figure 10 for Sampling Locations

Well	Screened Depth (feet)*	Rationale	Analytical
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 (soil and water) Sample soils	HVOCs TPH** (incl soils)
D	10-20	Define edges / relationship of both plumes. Also check for TPH, detected at Schucks and Grease Monkey, at low concentrations	HVOCs TPH
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)
F	10-20		
G	10-20		
H	10-20 30-50	Delineate edge of BSC plume Confirm TPH cleanup in soil and ground water at Hertz	HVOCs TPH As
I	10-20	Delineate edge of BSC plume Confirm soil cleanup in this area, sample soils 12-15' below clean backfill	HVOCs TPH (incl soils, 12-15') As
J	10-20	Delineate edge of plume(s) Confirm TPH cleanup in ground water at Bothell Landing	HVOCs TPH Metals (As, Cd, Cr, Pb)
K	10-20		
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

* Approximate, 10-25' indicates first encountered, non-perched ground water, 30-50' indicates deeper, confined aquifer, as encountered in each location
** TPH = TPH-Gx/BTEX, TPH-Dx

Table 5
Proposed RI Schedule

Phase	Activity	Anticipated Completion	Reporting
1	Bothell Landing property / SR 522 petroleum-impacted soil cleanup and confirmation soil sampling	Begin Summer 2012, complete after roadway realignment is completed and the previously-used roadway is vacated (2013)	Soil cleanup report, early 2014
2	Monitoring well installation and sampling at accessible locations identified following Phase 1 tasks (potential locations shown on Figure 10)	After 2013, contingent on site access	Letter report/Technical Memorandum, following well installations
3	Monitoring well installation and Quarterly ground water monitoring at Bothell Landing property and well network in place at this time	Following completion of interim action, 2014	Quarterly monitoring reports, 2014 through 2015
4	Vapor intrusion studies / modeling	Following Phase 3	Included in draft RI/FS
5	Chlorinated VOC source delineation at Ultra Custom Care Cleaners site	Contingent on site access	Included in draft RI/FS
6	Investigations necessary to evaluate potential source control options and to close any outstanding data gaps followed by a complete a RI report	Contingent on prior tasks	Included in draft RI/FS



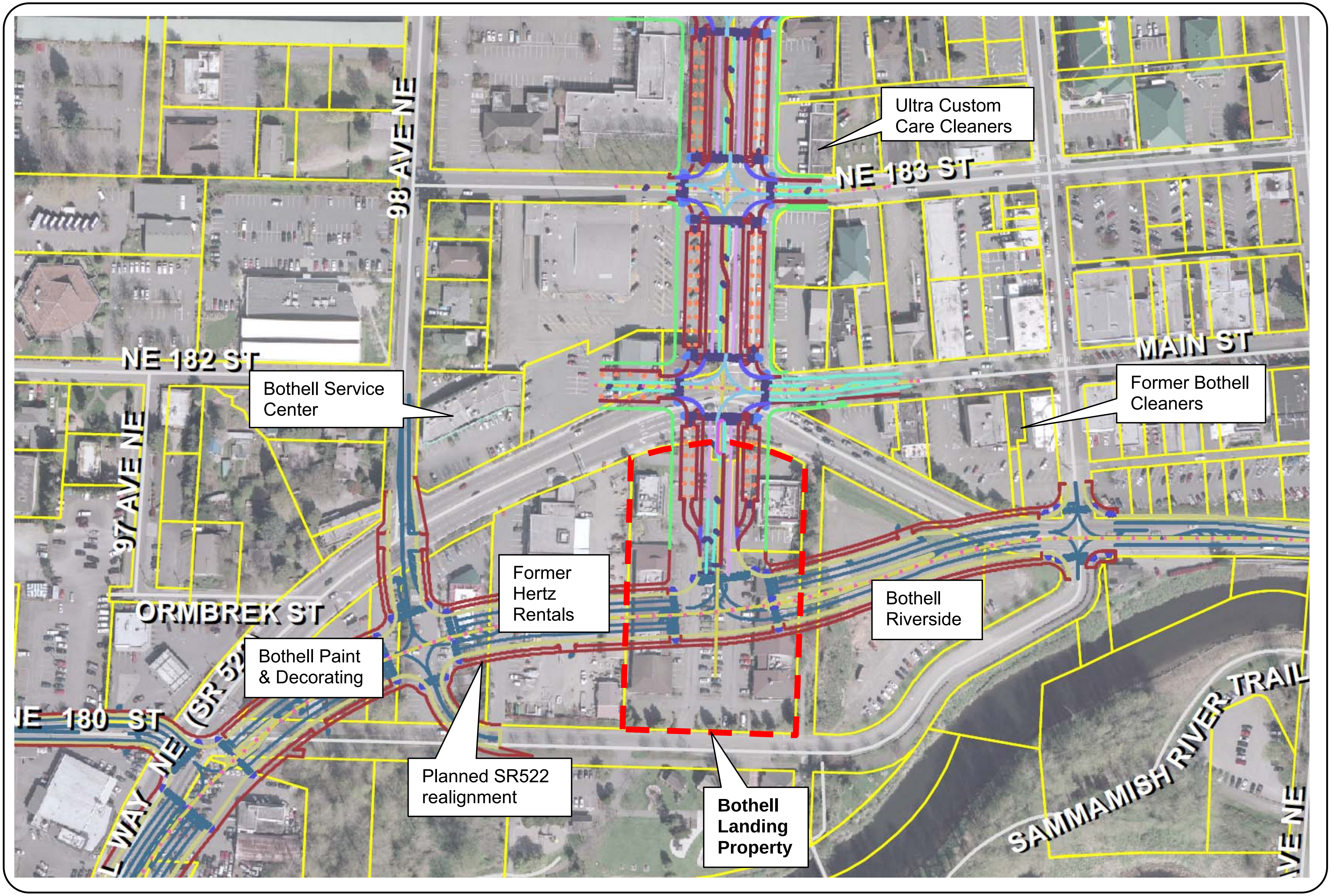
HWA GEOSCIENCES INC.

SITE VICINITY

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION WORK PLAN
BOTHELL, WASHINGTON

FIGURE NO.
1

PROJECT NO.
2007-098-929



HWA GEOSCIENCES INC.

SITE LOCATION & ADJACENT PROPERTIES

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION WORK PLAN
BOTHELL, WASHINGTON

FIGURE NO.
2

PROJECT NO.
2007-098-929

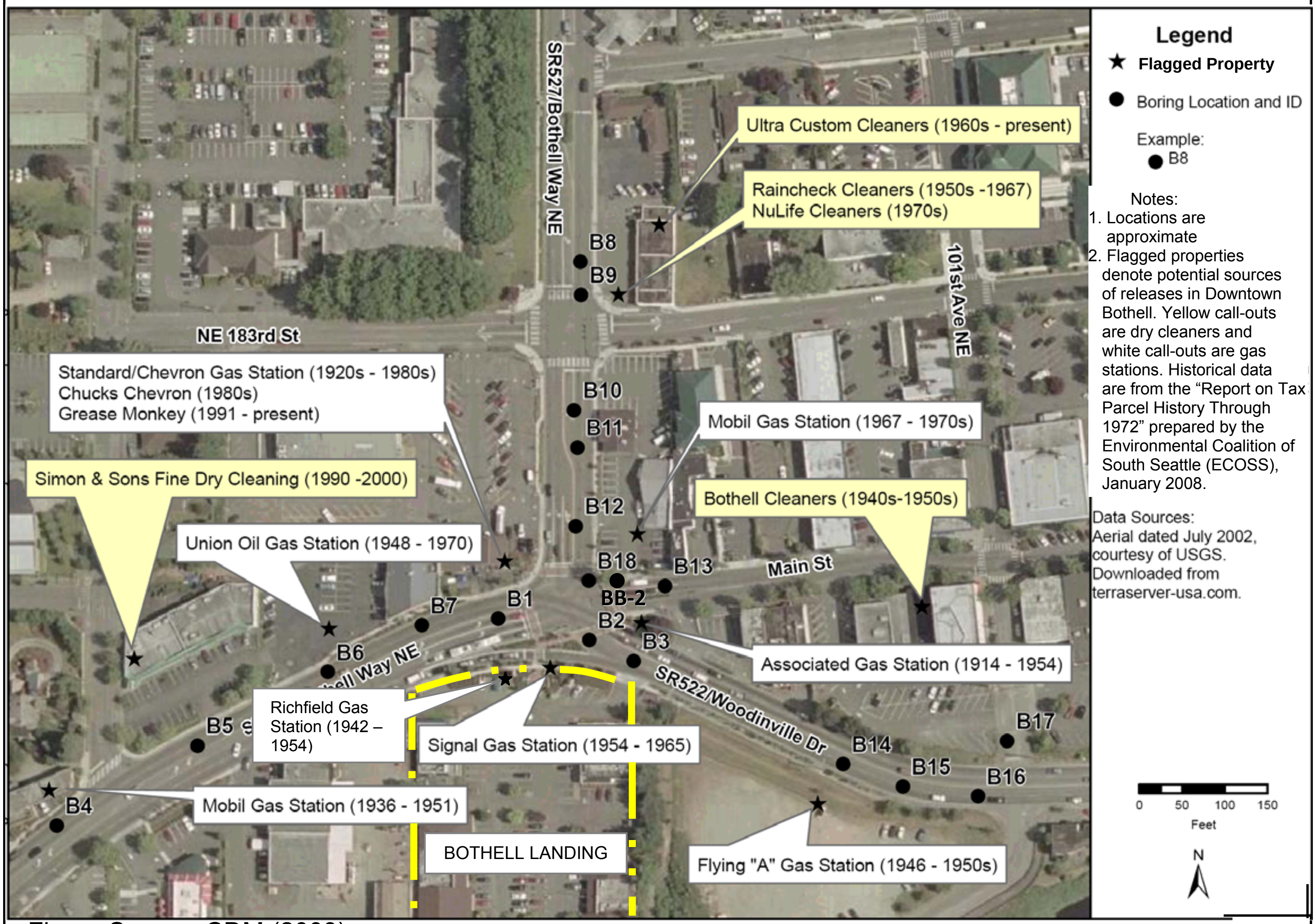


Figure Source: CDM (2009)

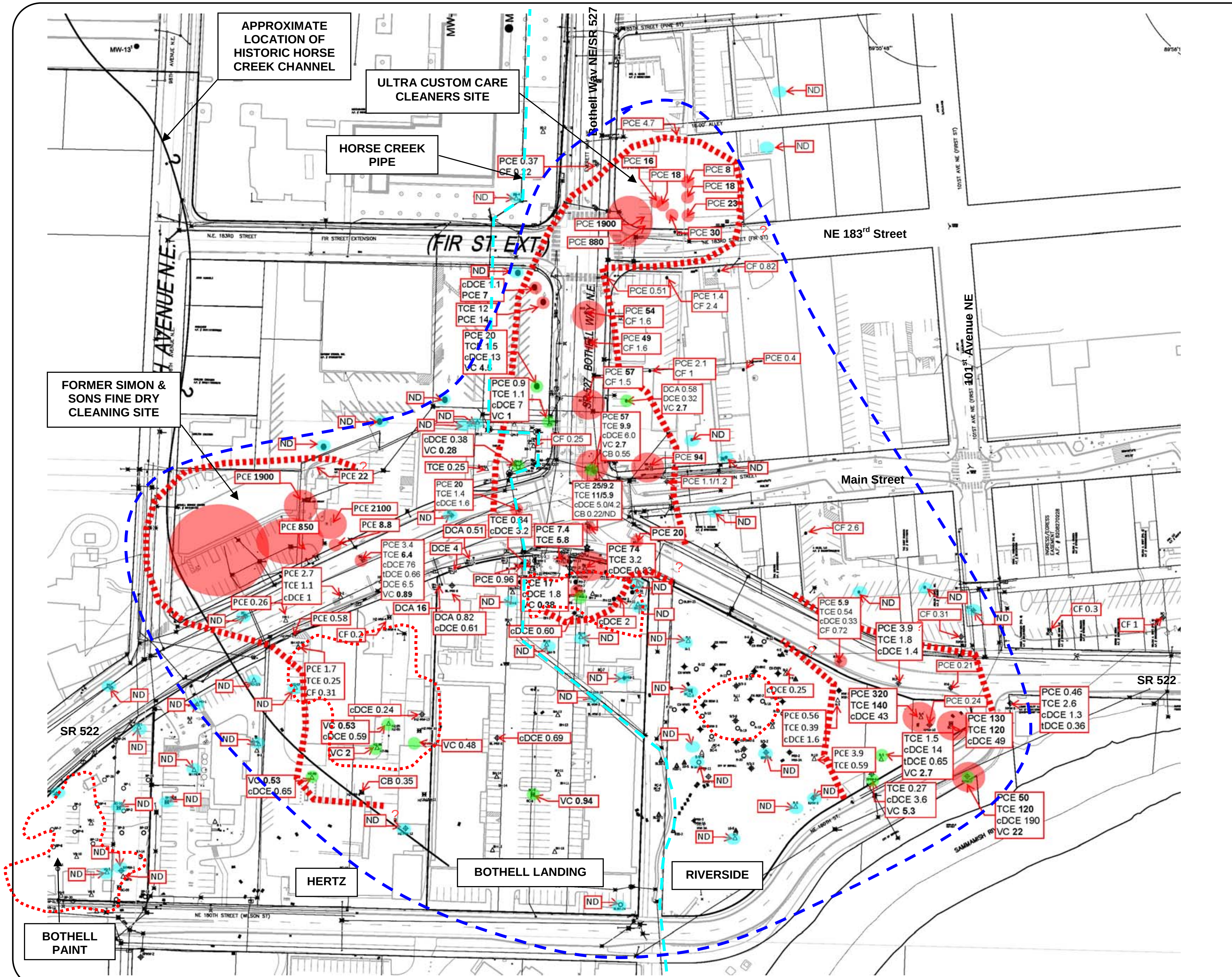
HWA GEOSCIENCES INC.

HISTORIC LOCATIONS OF DRY CLEANERS AND GAS STATIONS IN DOWNTOWN BOTHELL

FIGURE NO. 3

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION WORK PLAN
BOTHELL, WASHINGTON

PROJECT NO. 2007-098-929



LEGEND

- PCE > 50 ug/L
- Any Chlorinated VOC > MTCA A
- DCA Present
- VC Present
- All Chlorinated VOCs ND
- Approximate Extent of Chlorinated VOC Plume in Ground Water
- Approximate Extent of RI Study Area
- 2010 TPH Cleanup areas

ABBREVIATIONS

PCE	Tetrachloroethene
TCE	Trichloroethene
DCE	Dichloroethene
cDCE	(cis) 1,2-Dichloroethene
tDCE	(trans) 1,2-Dichloroethene
DCA	Dichloroethane
VC	Vinyl Chloride
CF	Chloroform
CB	Chlorobenzene
VOC	Volatile Organic Compound
ND	Not Detected At Laboratory's Reporting Limit
ug/L	Micrograms per Liter

NOTES

- Sample and chlorinated VOC plume boundary locations are approximate.
- Concentration values in **bold** exceed MTCA Method A ground water cleanup level.

MTCA METHOD A GROUND WATER CLEANUP LEVELS (ug/L)

PCE	5.0
TCE	5.0
DCE	Not Established
cDCE	Not Established
tDCE	Not Established
DCA	Not Established
VC	0.2
CF	Not Established
CB	Not Established

N

HWA GEOSCIENCES INC.

SUMMARY OF KNOWN CHLORINATED VOC OCCURRENCES IN GROUND WATER

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION WORK PLAN
BOTHELL, WASHINGTON

FIGURE NO.
4

PROJECT NO.
2007-098-929

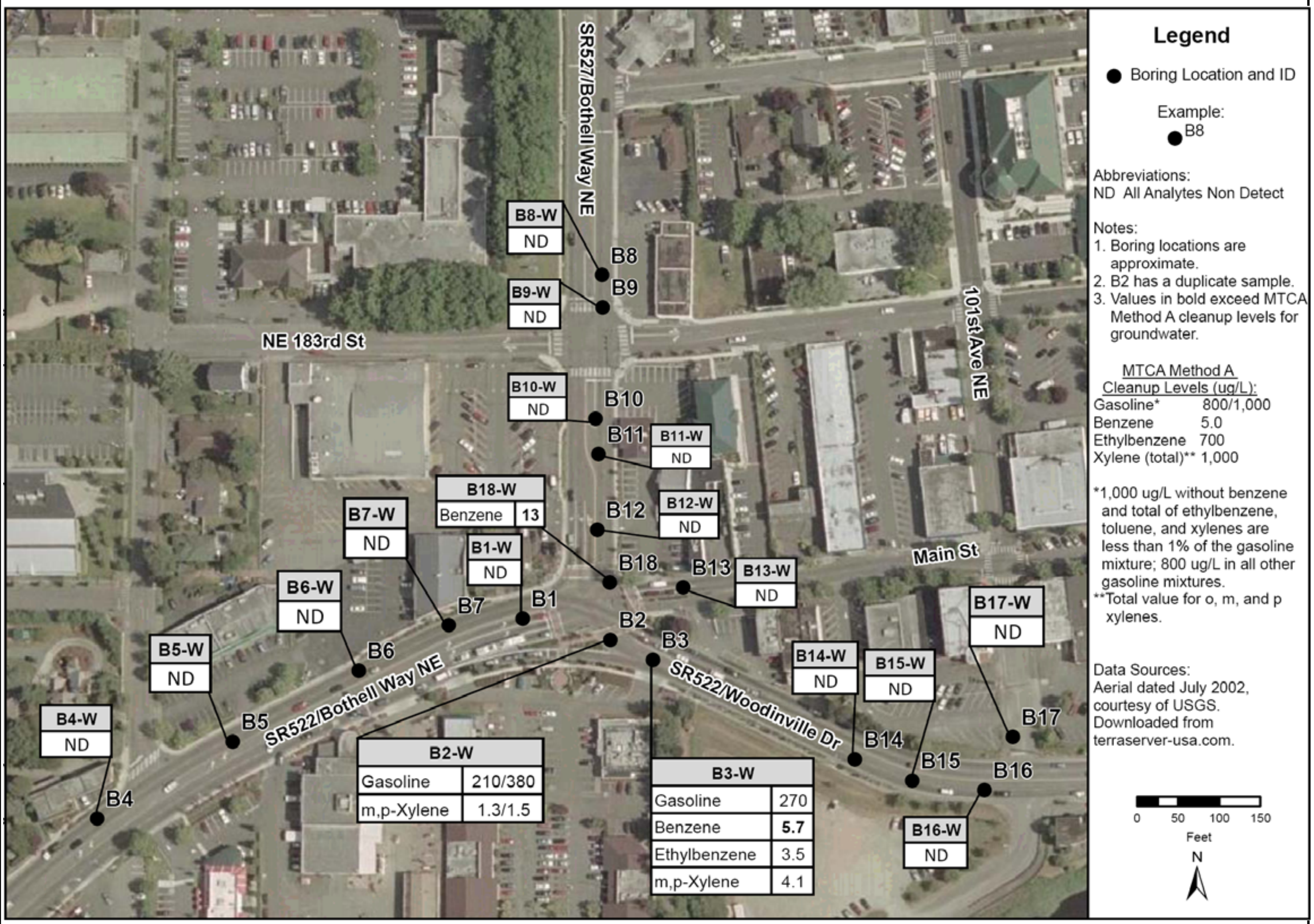


Figure Source: CDM (2009)

HWA GEOSCIENCES INC.

	PETROLEUM HYDROCARBONS IN GROUND WATER SAMPLES COLLECTED IN CITY RIGHT-OF-WAYS	FIGURE NO. 5
	BOTHELL LANDING SITE REMEDIAL INVESTIGATION WORK PLAN BOTHELL, WASHINGTON	PROJECT NO. 2007-098-929

HWA GEOSCIENCES INC.

PREVIOUS INVESTIGATION LOCATIONS
ULTRA CUSTOM CARE CLEANERS AND CITY PROPERTIES

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION WORK PLAN
BOTHELL, WASHINGTON

FIGURE NO.
6

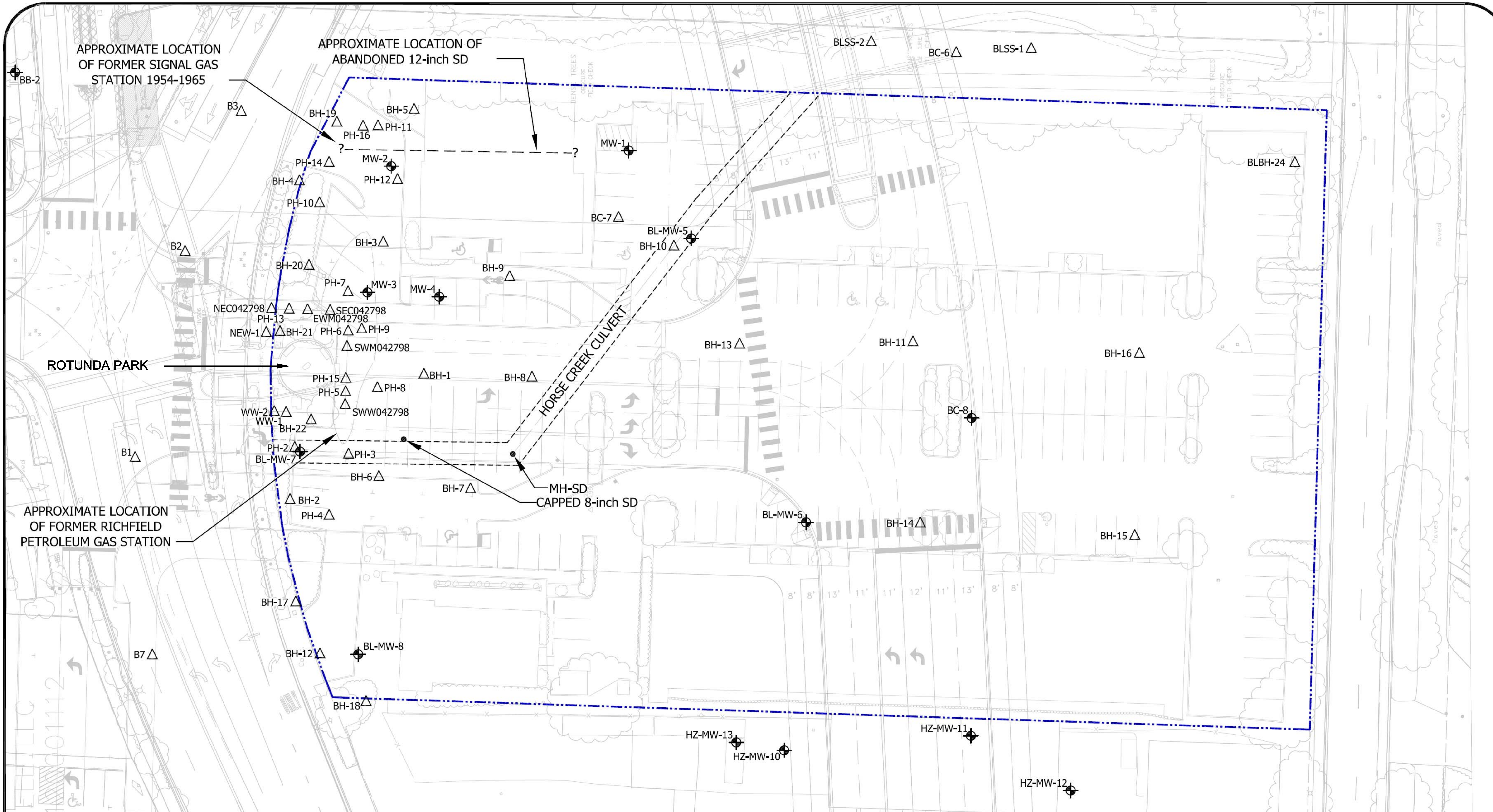
PROJECT NO.
2007-098-929

⊕ **Approximate Location of Monitoring Well, Borehole, or Direct-Push Exploration (Note: Not All Exploration Locations are Depicted)**

PCE 25 Tetrachloroethene Concentration in Ground Water (Micrograms/Liter)

HWA GEOSCIENCES INC.

HISTORIC PCE CONCENTRATIONS IN GROUND WATER SAMPLES		FIGURE NO. 7
BOTHELL LANDING SITE REMEDIAL INVESTIGATION WORK PLAN BOTHELL. WASHINGTON		PROJECT NO. 2007-098-929



EXPLANATION OF SYMBOL

APPROXIMATE PROPERTY BOUNDARY

BH-1 SOIL BORING LOCATIONS

BL-MW-1 MONITORING WELL LOCATIONS

BASE MAP PROVIDED BY PARAMETRIX

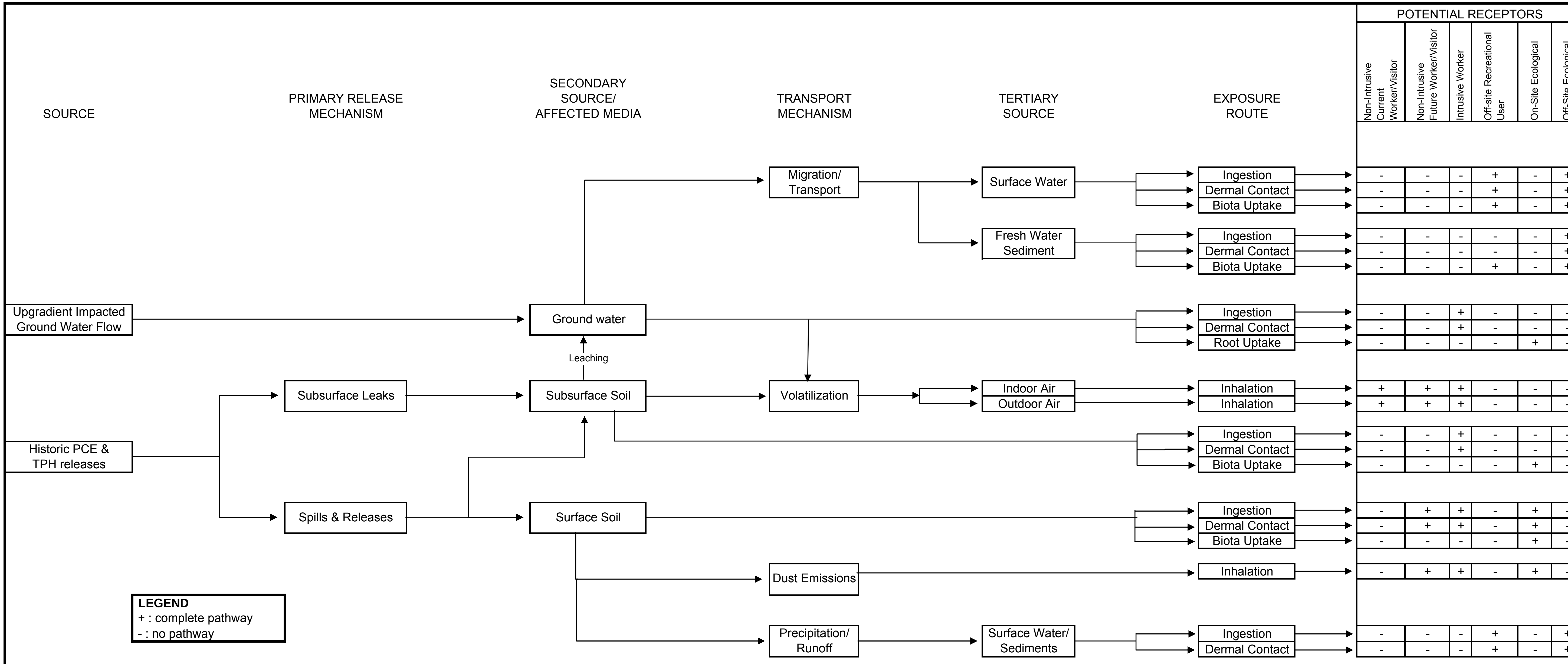
HWA GEOSCIENCES INC.

BOTHELL LANDING SITE PLAN PRIOR TO 2010 CLEANUP

BOTHELL LANDING SITE REMEDIAL INVESTIGATION WORK PLAN BOTHELL, WASHINGTON

DRAWN BY EFK	FIGURE NO. 8
CHECK BY NN	PROJECT NO. 2007-098-929
DATE 01.18.11	

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T920.DWG <PRE CLEAN UP FIG 3> Plotted: 1/25/2011 3:24 PM



Exposure Route	Non-Intrusive Current Worker/Visitor	Non-Intrusive Future Worker/Visitor	Intrusive Worker	Off-site Recreational User	On-Site Ecological	Off-Site Ecological
Ingestion	-	-	-	+	-	+
Dermal Contact	-	-	-	+	-	+
Biota Uptake	-	-	-	+	-	+
Ingestion	-	-	-	-	-	+
Dermal Contact	-	-	-	-	-	+
Biota Uptake	-	-	-	+	-	+
Ingestion	-	-	+	-	-	-
Dermal Contact	-	-	+	-	-	-
Root Uptake	-	-	-	-	+	-
Inhalation	+	+	+	-	-	-
Inhalation	+	+	+	-	-	-
Ingestion	-	-	+	-	-	-
Dermal Contact	-	-	+	-	-	-
Biota Uptake	-	-	-	-	+	-
Ingestion	-	+	+	-	+	-
Dermal Contact	-	+	+	-	+	-
Biota Uptake	-	-	-	-	+	-
Inhalation	-	+	+	-	+	-
Ingestion	-	-	-	+	-	+
Dermal Contact	-	-	-	+	-	+

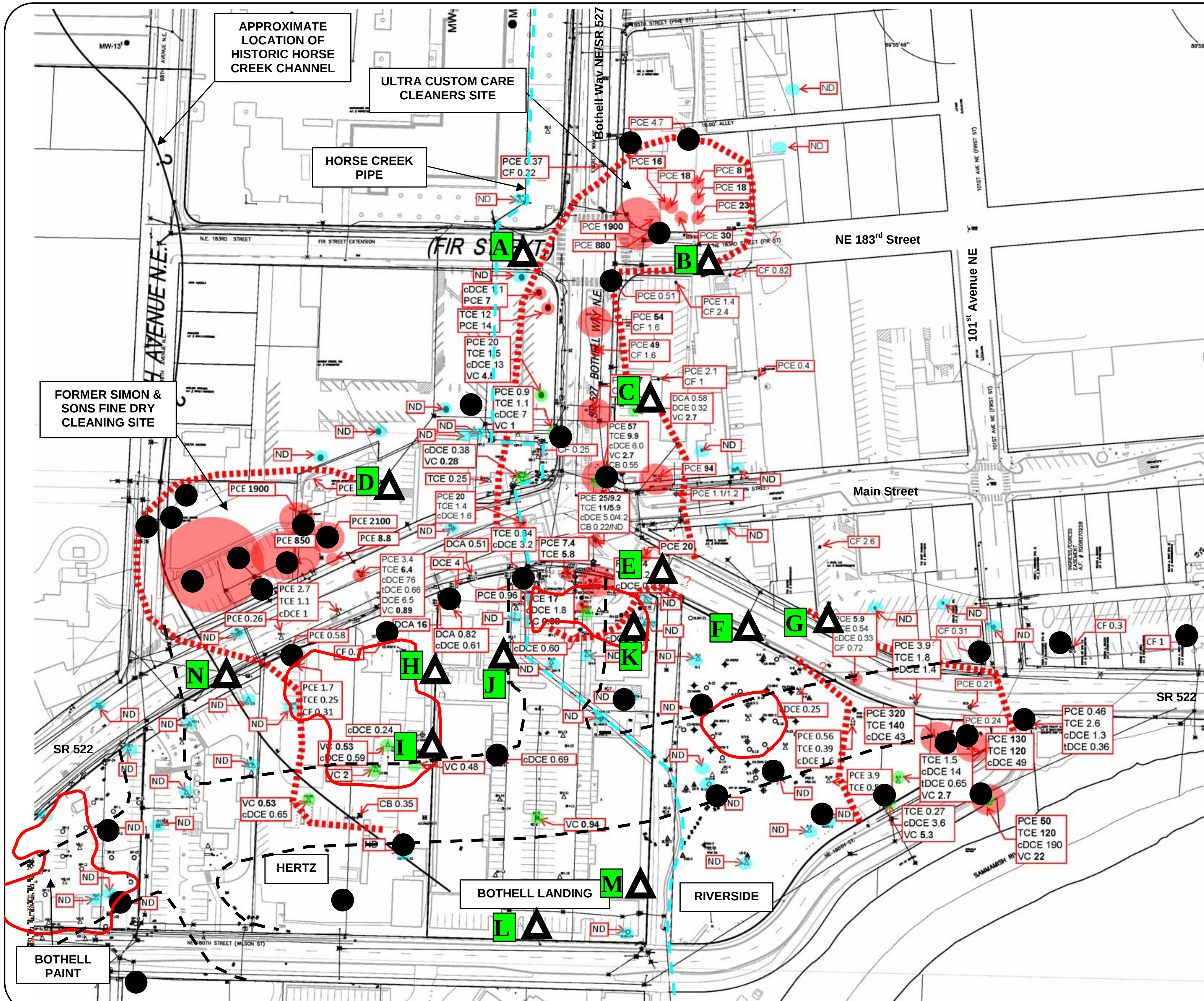
HWA GEOSCIENCES INC.

CONCEPTUAL SITE MODEL

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION WORK PLAN
BOTHELL, WASHINGTON

FIGURE NO. 9

PROJECT NO. 2007-098-929



LEGEND

- PCE > 50 ug/L
- Any Chlorinated VOC > MTCA A
- Exisitng monitoring well
- Future monitoring well (typical)
- All Chlorinated VOCs ND
- Approximate Extent of HVOCPlume
- 2010 TPH Cleanup areas

ABBREVIATIONS

PCE	Tetrachloroethene
TCE	Trichloroethene
DCE	Dichloroethene
cDCE	(cis) 1,2-Dichloroethene
tDCE	(trans) 1,2-Dichloroethene
DCA	Dichloroethane
VC	Vinyl Chloride
CF	Chloroform
CB	Chlorobenzene
VOC	Volatile Organic Compound
ND	Not Detected At Laboratory's Reporting Limit
ug/L	Micrograms per Liter

NOTES

- Sample and chlorinated VOC plume boundary locations are approximate.
- Concentration values in **bold** exceed MTCA Method A ground water cleanup level.

MTCA METHOD A GROUND WATER CLEANUP LEVELS (ug/L)

PCE	5.0
TCE	5.0
DCE	Not Established
cDCE	Not Established
tDCE	Not Established
DCA	Not Established
VC	0.2
CF	Method B = 80
CB	Not Established

N

HWA GEOSCIENCES INC.

PRELIMINARY MONITORING WELL NETWORK

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION WORK PLAN
BOTHELL, WASHINGTON

FIGURE NO. 10

PROJECT NO. 2007-098-929

APPENDIX A

Agreed Order

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

In the Matter of Remedial Action by: **City of Bothell**	Bothell Landing AMENDMENT NO. 1 TO AGREED ORDER No. DE 6294

TO: Robert S. Stowe
City Manager
City of Bothell
18305 101st Avenue NE
Bothell, WA 98011

I.

AMENDMENT

Agreed Order (Order) No. DE 6294 dated February 3, 2009, is hereby amended to incorporate the information and requirements contained in this Amendment. This amendment is issued pursuant to RCW 70.105D.050(1) and WAC 173-340-530(8)(b) and does not replace or change any of the existing requirements of the Order which shall remain in effect.

II.

FINDINGS OF FACT

Section V. Findings of Fact, Subsection G is amended to include the following report:

Bothell Landing Draft Remedial Investigation/Feasibility Study, Revision No.1, by Parametrix, dated December 8, 2009. Subject to Ecology review and approval.

III.

ECOLOGY DETERMINATIONS

E. 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, remedial investigation/feasibility study or design of a cleanup action. Previous environmental and remedial investigations have identified an upgradient solvent plume that has migrated onto and commingled with contaminants on the site. Within the site, there are local dissolved metals and confirmed petroleum hydrocarbon impacts to groundwater that exceed MTCA Method A cleanup levels. The City of Bothell is planning the SR 522 Bothell Crossroads project that will realign SR 522 to the south of the current alignment, creating a new T- intersection with SR 527. The project, whose beginning construction phase is planned for summer 2010, will pass thorough the Bothell Landing site. Soils contaminated with chiefly oil range petroleum hydrocarbons are at the north eastern portion of the parcel where two former gasoline service stations were located. The contaminants of concern in soil on the site are: motor oil, diesel, gasoline, benzene, methylnaphthalene, arsenic, barium, and lead. The contaminants of concern in groundwater are: benzene, tetrachloroethene, trichloroethene, vinyl chloride, arsenic, barium, cadmium, chromium, lead, and 1,2-dichloroethane. Portions of the site will be affected by the SR 522 realignment and redevelopment,making post-construction remediation more difficult to implement if not done before the construction season. Therefore, it is beneficial to accomplish as much permanent soil source cleanup as possible within this construction schedule, while at the same time recognizing that work on the RI/FS and DCAP may extend past this construction schedule due to data gaps. Such circumstances warrant an interim action consistent with WAC 173-340-430.

III.

WORK TO BE PERFORMED

VII. WORK TO BE PERFORMED in the Order is amended to include:

C. Work Plans shall consist of a detailed description of site conditions, work to be performed, personnel requirements, and schedules for implementation and deliverables for the following:

TASK VI. Interim Actions

F. The City of Bothell shall submit to Ecology a Work Plan and Schedule for the Interim Action(s) and shall follow the submittal requirements for an interim remedial action as per WAC 173-340-430(7). Implementation of the interim action is contingent on formal Ecology approval of work plans for the interim action.

IV.

EXHIBIT B: SCOPE OF WORK

The existing Exhibit B Scope of Work to Agreed Order No. DE 6294 is amended to include:

Task VI: Interim Actions

A. Interim Action Work Plans

The PLPs will submit a draft and final Interim Action Work Plan for Ecology's review and approval. The draft Interim Action Work Plan will also include the design and implementation of interim actions to facilitate protection of human health and the environment. The scope of the interim action may include excavation and off site disposal, confirmational sampling, backfill with clean material, and groundwater monitoring in major areas of contamination at the site as identified in preliminary remedial investigative work. The Interim Action Work Plans shall include, as appropriate, submittal requirements in accordance with WAC 173-340-430(7).

The interim action shall be designed in a manner that will not foreclose reasonable alternatives for the final cleanup action in accordance with WAC 173-340-430(3)(b).

B. Implement Approved Interim Action

Implement approved interim action(s) after Ecology review and approval and public review and comment necessary under WAC 173-340-600(16) and the State Environmental Policy Act.

C. Interim Action Report

An Interim Action Report shall be prepared as a separate deliverable that includes the information listed in WAC 173-340-430(7). A draft and final Interim Action Report shall be submitted for Ecology review and approval.

V.

EXHIBIT C: SCHEDULE OF DELIVERABLES

The existing Exhibit C Schedule of Deliverables to Agreed Order No. DE 6294 is amended to include:

6. Interim Actions.	Draft Interim Action Work Plan submitted to Ecology in February 2010 for Ecology review and approval. Final Interim Action Work Plan submitted two weeks after Ecology approval of Draft Interim Action Work Plan. Public comment period for Interim Action and SEPA to be combined with Agreed Order Amendment comment period. Implementation of interim actions from approximately August 2010 to December 2011.
7. Draft Interim Action Report for Ecology review and approval.	60 days after completion of interim action.
8. Final Interim Action Report.	30 days after receipt of Ecology approval of Draft Interim Action Report.
9. One year of quarterly groundwater monitoring.	Following completion of the Interim Action. Quarterly monitoring reports to be submitted for Ecology review and approval.
10. PLP to submit Draft Final RI/FS Report from Ecology review and approval.	Within 60 days of completion of one year of groundwater monitoring.
11. PLP to submit Final RI/FS Report.	30 days after receipt of Ecology approval of Draft Final RI/FS Report.
12. PLP to submit draft Cleanup Action Plan for Ecology review and approval.	30 days after completion of final RI/FS Report.

Effective date of this Amendment: ______________________________

CITY OF BOTHELL, WA

____
Robert S. Stowe
City Manager
City of Bothell
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Bothell, WA 98011
(425) 486-3256

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

____
Robert W. Warren, P.Hg., MBA
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APPENDIX B

Sampling and Analysis Plan

APPENDIX A
RI/FS SAMPLING & ANALYSIS PLAN
BOTHELL LANDING SITE
BOTHELL, WASHINGTON

Project No. 2007-098-929

Prepared for
City of Bothell

September 19, 2011

HWA GEOSCIENCES INC.

- *Geotechnical Engineering*
- *Hydrogeology*
- *Geoenvironmental Services*
- *Inspection & Testing*

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1.0 INTRODUCTION

This Sampling and Analysis Plan (SAP) provides the scope and rationale for field sampling efforts associated with a Remedial Investigation (RI) to be conducted for the City of Bothell (City) at the Bothell Landing Site in Bothell, Washington. The RI is planned as part of an Agreed Order number DE 6294, as amended in April 2010, between the City of Bothell and the Washington State Department of Ecology (Ecology)

This SAP was prepared in accordance with the Agreed Order and Chapter 173-340-820 WAC in the Washington State Model Toxics Control Act (MTCA) Cleanup Regulation. This SAP outlines our field investigation and laboratory analytical methods.

1.1 PURPOSE AND OBJECTIVES

The objective of the RI is to meet the requirements of the Agreed Order in accordance with the Model Toxics Control Act (MTCA) Cleanup Regulation (Washington Administrative Code [WAC] 173-340). The RI Work Plan is designed to collect additional data on chlorinated volatile organic carbon (VOC), petroleum hydrocarbon, and metals impacts. As discussed in the RI Work Plan, contaminants of potential concern (COPCs) either known or expected to be found in soils in the RI area are:

- Chlorinated VOCs (primarily PCE, TCE, (cis)-1,2-DCE, and vinyl chloride)
- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX (benzene, toluene, ethylbenzene, and xylenes)
- Lead, barium
- Polycyclic Aromatic Hydrocarbons (PAHs) (including naphthalenes)

COPCs either known or expected to be found in ground water in the RI area are:

- Chlorinated VOCs
- Total petroleum hydrocarbons (gasoline-, diesel- and motor oil-range)
- BTEX
- Metals (arsenic, cadmium, chromium, and lead)

1.2 PROJECT ORGANIZATION

Personnel involved with this project and roles are listed below:

- Jerome Cruz, Washington State Department of Ecology project manager (425) 649-7094
- Steven Morikawa, P.E., Capital Program Manager, City of Bothell (425) 486-2768, ext. 4443
- Nduta Mbuthia, City of Bothell project manager (425) 486-2768

- Arnie Sugar, HWA Project Manager (425) 774-0106
- David Baumeister, OnSite Environmental, Inc. Laboratory Project Manager (425) 883-3881
- Drilling Contractor – to be determined

1.3 PROJECT SCHEDULE

A proposed project schedule is provided in Table 4 of the Work Plan, assuming no delays due to site access issues.

1.4 SITE LOCATION

The City owns the approximately 2.8-acre Bothell Landing property located at 18120, 18126, and 18132 Bothell Way, and 10001 Woodinville Drive, Bothell, Washington, which will be referred to as the Site in this SAP, however final determination of the RI area boundaries (i.e., the area where hazardous substances have come to be located) will be established during the RI process. Ecology's Facility Site ID is # 73975762.

2.0 FIELD AND LABORATORY INVESTIGATION TASKS

There are four major field and laboratory investigation tasks in the RI Work Plan. These are:

1. Investigation and characterization of soil impacted by chlorinated VOCs and petroleum hydrocarbons.
2. Investigation and characterization of ground water impacted by chlorinated VOCs and petroleum hydrocarbons.
3. Investigation and characterization of ground water flow system properties.
4. Collection and testing of soil physical properties to determine parameters to be used to model the transport and fate of contaminants in ground water, in the vadose zone, and in the indoor air of buildings in the RI area.

Field and laboratory investigation methodologies to accomplish these major tasks are presented in the following subsections.

2.1 SOIL & RECONNAISSANCE GROUND WATER SAMPLING

Investigation tasks will consist of drilling exploration boreholes using a hollow stem auger or direct-push (e.g., Geoprobe®) rig , and sampling soil and ground water. Because a primary contaminant of concern is tetrachloroethene (PCE), which is denser than water, a focus of the drilling program is to delineate the vertical extent of the chlorinated VOC plume at the Site that apparently originates in the southwest corner of the Ultra Custom Care Cleaners property (RI Work Plan Figure 7). Thus reconnaissance ground water samples will be collected at discrete borehole intervals at the time of drilling using temporary “environmental investigation wells” (defined at WAC 173-160-410(1)) using the procedures described below in Sections 2.1.5 and 2.1.6. For this RI, a reconnaissance ground water sample is a screening-level sample not collected from a permanent monitoring well designed and constructed to obtain a representative ground water sample per Ecology regulations in WAC 173-160. The utility of a reconnaissance ground water sample is to evaluate whether COPCs are present in the sample, and if so, the general magnitude of the COPC concentrations.

2.1.1 Underground Utilities/Site Access

Underground utilities will be identified by calling the Utilities Underground Location Center before drilling. A subcontracted private locating service may also be employed attempt to locate and mark underground utilities at proposed borehole locations.

2.1.2 Hollow Stem Auger and Direct-Push Drilling

As access permits, hollow stem auger or direct-push boreholes will be advanced at the potential locations shown on Figure 11 of the RI Work Plan. Whether hollow stem auger or direct-push drilling techniques will be utilized at a potential location will depend on the nature and objective of the exploration location (e.g., preliminary plume definition, long term monitoring point, etc.) Borings will be advanced to depths of up to 50 feet below ground, depending on location and stratigraphy. All borings and wells will be drilled and installed according to Ecology Minimum Standards for Construction and Maintenance of Wells (Chapter 173-160 WAC).

Soil samples will be collected from each hollow stem auger (HSA) boring using standard penetration test (SPT) equipment consisting of a 2-inch outside-diameter split-spoon sampler driven by a 140-pound hammer with a 30-inch drop, or California-modified SPT equipment (3-inch outside-diameter sampler with 300-pound hammer). Soil samples will be collected at 2.5- to 5-foot intervals to depths up to 50 feet in each boring. All drilling tools will be decontaminated between borings.

Direct-push drilling rigs use hydraulic cylinders and a hydraulic hammer mounted on a pickup truck or tractor to advance a hollow core sampler to gather soil and ground water samples. Steel pipe (1.25 to 2 inch diameter) is driven into the ground, then withdrawn. Soil cores within a glycol modified polyethylene terephthalate (PETG) inner sleeve are then retrieved from the sampler and removed for logging and sampling. The speed and depth of penetration is largely dependent on the soil type, the size of the sampler, and the weight and power of the rig. Continuous soil samples will be collected to depths up to 50 feet in each direct-push boring. All drilling tools will be decontaminated between borings.

Direct push technology is a reliable and well accepted method for sampling soil and ground water, particularly for petroleum and chlorinated solvents. Numerous studies by regulatory agencies including USEPA, US NAVY, and the Interstate Technology & Regulatory Council, confirm the validity and usefulness of direct push methods (USEPA, 2005b; USEPA, 1998; Naval Facilities Engineering Command, 2001; Interstate Technology & Regulatory Council, 2006). Direct push is commonly used for collecting rapid, first level site characterization samples, and to determine where to place permanent monitoring wells.

2.1.3 Soil Sample Logging and Collection

At each sampling interval, field staff will log the soil samples and obtain and record pertinent information including soil sample depths, stratigraphy, ground water occurrence, and any visual or olfactory observations regarding the presence of contamination. Samples will be logged for lithology according to the Unified Soil Classification System (USCS), and field screened for organic vapors by headspace analysis using a photoionization detector (PID). Samples with elevated PID head space readings or discernible visual/olfactory contamination may be selected for laboratory chemical analysis, described in Sections 2.2 and 2.4 below. Soil samples collected above and below the water table at several boreholes will be tested for the physical properties described in Section 2.3.

2.1.4 Field Screening

Soil samples will be screened for organic vapors by photoionization detector (PID) headspace analysis. Although the PID is not capable of quantifying or identifying specific organic compounds, this instrument is capable of measuring relative concentrations of a variety of organic vapors. Field personnel collecting samples will place approximately two to sixteen ounces of soil in a resealable (e.g., Ziploc®) plastic bag with ample air headspace. After a minimum of five minutes at ambient temperature, the geologist/engineer will agitate the sample for ten seconds, insert the PID probe through a small opening in the plastic bag, and record the highest reading within ten seconds. Samples with the highest level of organic vapors and/or most discernible visual/olfactory contamination at each borehole location may be shipped to the laboratory for chemical analysis. In the absence of field screening indications, the sample immediately above the ground water table will be submitted for analysis.

2.1.5 Monitoring Well Installation in HSA Boreholes

After drilling and sampling each soil boring to its maximum depth, a temporary well will be installed to the bottom of the hollow stem auger borehole, 2 to 3 feet of filter pack installed, and then the augers will be pulled back to expose a short length of well screen and filter pack. The purpose of the temporary wells is to allow collection of a reconnaissance ground water sample at the bottom of the borehole using a pump. After collecting the reconnaissance ground water sample from the temporary well, the riser pipe and well screen will be pulled out of the auger, and the bottom of the hole will be grouted with hydrated granular bentonite to a depth determined during drilling based upon the field screening results and the encountered stratigraphy. A monitoring well will be installed in the remaining open borehole. Each monitoring well will be constructed of 2-inch diameter, Schedule 40 PVC with a 10-foot length of screen having 0.010-inch slots. A 10-20 silica sand filter pack will be placed from the bottom of the well screen to approximately 2 feet above the top of the screened interval. The drillers will place a bentonite seal from the top of the filter pack to just below grade, complete the well to grade with a flush-mounted steel wellhead monument set in concrete.

The drillers will develop each monitoring well by surging and then pumping sediment containing water into 55-gallon steel drums equipped with locking rings. The drums will be stored prior to transport and disposal at a temporary fenced storage location on City-owned property.

2.1.6 Monitoring Well Installation in Direct-Push Boreholes

An advantage of direct-push drilling technology is the capability to easily collect reconnaissance ground water samples at discrete intervals in undisturbed native aquifer materials using a point-in-time ground water sampler. Point-in-time ground water samplers are also known as “temporary samplers” or “grab samplers.” Direct-push methods will be used to advance point-in-time samplers below the static water level to collect reconnaissance ground water samples. Reconnaissance ground water samples will be collected by installing either a temporary retractable stainless-steel sampling screen or a temporary ¾-inch diameter PVC well screen (0.010-inch slot) in the borehole. Ground water will be collected using a peristaltic pump and polyethylene tubing lowered into the screen. New polyethylene tubing will be used for each ground water sample. Alternately, the point-in-time sampler may be retracted to the surface to obtain the reconnaissance ground water sample (USEPA, 2005). Sampling methods will be selected based on geologic conditions and ground water depths.

Permanent monitoring wells will be installed in direct-push boreholes by advancing an outer drive casing equipped with an expendable drive tip to the target depth. The well casing and screen are then assembled, lowered inside the drive casing, and anchored to the drive tip. The drive casing seals off the formations through which it has been advanced, protecting the well casing and screen from clogging and from passing through potentially contaminated intervals. A number of methods for installing filter packs adjacent to the well screen are available. Typical inside diameters of direct-push monitoring wells range from 0.5-inch to 2 inches (USEPA, 2005).

Alternatively, “sleeved” or “pre-packed” well screens may be installed depending on conditions encountered and the direct-push rig utilized. Pre-packed screens are generally composed of a rigid Type I PVC (low temperature) screen surrounded by a pre-sized filter pack. The filter pack is held in place by a stainless-steel wire mesh (for organic contaminants) that is anchored to the top and bottom of the screen (USEPA, 2005).

After setting a direct-push well screen, the driller will place an annular seal above the filter pack and then will place a bentonite seal to just below grade. Lastly, the direct-push monitoring wells will be completed to grade with a flush-mounted steel wellhead monument set in concrete. The drillers will develop each direct-push monitoring well by surging and then pumping sediment containing water into 55-gallon steel drums equipped with locking rings. The drums will be stored prior to transport and disposal at a temporary fenced storage location on City-owned property.

2.1.7 Drill Cuttings Disposal

Drill cuttings will be removed as each boring is advanced. A member of the drilling crew will shovel cuttings into Department of Transportation-approved, 55-gallon steel drums equipped with locking rings. The drums will be stored prior to transport and disposal at a temporary fenced storage location on City-owned property.

2.1.8 Equipment Decontamination

To prevent potential cross-contamination of samples during drilling, appropriate decontamination procedures will be employed. Between sampling intervals in each borehole all sampling devices will be washed in a strong anionic detergent solution (e.g., Alconox® or Liqui-nox®), rinsed with tap water, and then rinsed again with deionized water.

2.1.9 Well Surveying

The location and measuring point elevation of each new monitoring well and existing Ultra Custom Care Cleaners monitoring wells MW-1, MW-2, and MW-3 will be surveyed with respect to a City datum. Existing monitoring wells BB-2 and BB-3 in the City right-of-ways (RI Work Plan Figure 7) will also be surveyed with respect to a City datum.

2.2 Soil Chemical Analysis

This major investigation task consists of the collection and preservation of soil samples for chemical analysis. Field staff will determine the depth and number of samples for specific analytical testing based on visual, olfactory, and field screening results during borehole drilling.

The sample bottle and preservation requirements for soil samples are as follows:

Bottle Type	No. of Containers	Sample Volume	Sample Preservation	Analytical Method	Holding Time
Tared 40 mL VOA vials No stir bar	2	5 gms of sample per vial per EPA Method 5035A	Cool to 4^{o} C*	NWTPH-Gx/BTEX	14 days
4 oz. wide-mouth glass jar	1	Full jar	Cool to 4^{o} C	NWTPH-Dx PAHs by EPA Method 8270D SIM	14 days
Tared 40 mL VOA vial with stir bars	2	5 gms of sample per vial per EPA Method 5035A	Cool to 4^{o} C	Chlorinated VOCs by EPA 8260B	48 hours
4 oz. wide-mouth glass jar	1	Full jar	Cool to 4^{o} C	Metals by EPA Method 6010/7471A	6 months

* - If sample containers cannot be delivered to lab within 48 hours, the lab will provide methanol-preserved vials

After collection, the sample bottles will be labeled, placed in a cooler with ice, and submitted to a Washington Department of Ecology-accredited analytical laboratory for one or more analyses using the following test methods:

- Diesel and Oil-Range Hydrocarbons – Washington State Method NWTPH-Dx
- Gasoline-Range Hydrocarbons – Washington State Method NWTPH-Gx
- BTEX (benzene, toluene, ethylbenzene, and xylenes) – EPA Method 8021B
- Halogenated Volatile Organic Compounds (HVOCs) – EPA Method 8260B
- Polycyclic Aromatic Hydrocarbons (PAHs) – EPA Method 8270D SIM
- Arsenic, cadmium, chromium, and lead –EPA Method 6010/7471A

Samples will be submitted for standard turnaround time analysis (5-10 days). Follow-up analyses, based on initial analytical results may result in a total turnaround time of up to 4 weeks.

2.2.1 Soil Sampling Guidelines

<u>VOA vials are pre-weighed (tared) at the lab</u>

- Note the tare weight of each VOA vial on the chain-of-custody form
- Do not add any labels, tape, etc.

- Keep the same cap with each VOA vial
- Minimize methanol loss if used as a preservative for NWTPH-Gx/BTEX analyses. Check cap tightness, minimize open times, etc. Visually check for methanol loss - check all VOA vials prior to sampling for consistency, reference marks when full
- Discard any suspect VOAs, note weights (w/o soil) on COC, methanol levels, etc. in field notebook

Collecting 5-gram core sample per USEPA Method 5035A

- HSA split spoon samples – core immediately after opening split spoon; if using liners, core from middle liner or inside end of outer liners (top one is usually slough), avoid coring gravel or naturally occurring organic matter such as wood or roots
- Cohesive granular soils – use 5035A core device and extrude core into VOA vial
- Cemented (e.g. till) soils – break up soil in a clean stainless still bowl using a stainless steel spoon, core the soil in the bowl, extrude core into VOA vial, and cap the vial as soon as possible
- Non cohesive (won't stay in core) soils – place estimated 5 grams of soil in VOA vial and cap as soon as possible
- Wipe VOA vial threads with clean tissue or dry wipe
- Cap VOA vial
- Label the VOA vial using a ball point pen (e.g., write in the rain) only, do not use marker pens because these emit volatile organic vapors

Note in field notebook:

- Soil type, moisture
- Any bias e.g., gravels, naturally occurring organic matter such as wood or roots
- Weather (temp, humidity, wind)
- Coring method used
- Preservation and storage method used

Note on Chain-of-Custody form:

- Empty vial weight

Health and safety issues

- Methanol is toxic and flammable
- Avoid skin contact (use gloves) and inhalation hazards (ensure adequate ventilation)
- Check shipping restrictions

<u>Cross contamination issues</u>

- Methanol has a high affinity for VOCs (hence its use as a preservative and extraction solvent) and will adsorb VOCs from other sources such as exhaust gases, spray paint, sharpie, markers, etc. that should be avoided

2.3 SOIL PHYSICAL TESTING

Several tests of soil physical properties will be performed to determine representative input parameters for the contaminant transport and fate models to be used to evaluate chlorinated VOC (e.g., PCE) and petroleum-related VOC (e.g., benzene) concentrations in ground water, in vadose soil gas, and in the indoor air of buildings in the RI area. These parameters and the rationale for determining their representative values are discussed in the following sections.

2.3.1 Fraction Organic Carbon

Soil fraction organic carbon (FOC) is the fraction of the soil matrix in uncontaminated areas comprised of natural organic carbon. FOC affects the mobility of organic compounds and metals in the environment. An increase in FOC results in higher adsorption of dissolved constituents to soil and a thus decreases their mobility.

Soil FOC generally decreases with depth below ground surface (bgs). Thus soil sampling at three separate depth intervals will be performed at several borehole locations to characterize the vertical and lateral distribution of FOC across the RI area:

- Surface soils (extending from ground surface to 2 feet bgs)
- Subsurface soils (extending from 2 feet bgs to above the water table's capillary fringe)
- Aquifer sediments below the water table

Soil FOC will be determined for uncontaminated soils. Samples collected from vadose zone soils (i.e., between the capillary fringe above the water table to ground surface) will characterize the FOC content of the major sediment types present. Samples collected from aquifer soils will be representative of the transmissive (sand and gravel) strata that are the primary routes for contaminant transport.

2.3.2 Dry Bulk Density and Moisture Content

Dry bulk density is the weight of oven dried soil solids per unit of total volume of soil mass. Soil dry bulk density is used to calculate total soil porosity which is the ratio (usually expressed as a percentage) of the volume of voids of a given soil mass to the total volume of the soil mass (US Army COE, 1986). Porosity directly affects the transport velocity of dissolved or colloidal COPCs in porous media. The measurement of soil moisture content is required to adjust field bulk density to dry bulk density. Soil density and moisture content will be measured in the major sediment types in surface and subsurface soils at several locations across the RI area.

2.3.3 pH

Soil pH affects the partitioning behavior and mobility of metals and ionizing organic compounds such as phenolic compounds. Although soil pH does not directly affect partitioning behavior of non-ionizing organic compounds (e.g., chlorinated VOCs and petroleum hydrocarbons), measurement of soil pH may be useful to assess site conditions that affecting biodegradation of COPCs in the RI area. Soil pH will be measured in the major sediment types in surface and subsurface soils at several locations across the RI area.

2.3.4 Grain Size

Grain size analysis is performed to quantify the distribution of soil particle sizes, estimate average soil moisture conditions, estimate hydraulic conductivity, and predict water percolation rates through the vadose zone (USEPA, 1996). The Standard Test Method for Particle-Size Analysis of Soils (ASTM D422-63, 2007) employs sieving and hydrometer procedures to quantify gravel, sand, silt, and clay fractions. Soil grain size will be measured in the major sediment types in surface and subsurface soils at several locations across the RI area.

2.3.5 Cation Exchange Capacity

Cation exchange capacity (CEC) is the capacity of a soil for ion exchange of positively charged cations between the soil and the soil solution. CEC affects the mobility of ionic compounds (typically metal ions) in the environment. An increase in CEC results in higher adsorption of dissolved cations to soil, and thus decreases the mobility of the cations. This is because soil particles and organic matter have negative charges on their surfaces to which cations can adsorb. Once adsorbed, the cations are not easily lost when the soil is leached by water. CEC is highly dependent upon soil texture and organic matter content. In general, the more clay and organic matter in the soil, the higher the CEC. The CEC of most soils increases with an increase in soil pH (WSU, 2011). Soil CEC will be measured in the major sediment types in surface and subsurface soils at the Site.

2.3.6 Soil and Ground Water Temperature

The temperature of soil and ground water affects the volatilization and mobility of VOCs. Therefore, soil and ground water temperature is a site-specific input parameter for soil gas models such as the Johnson and Ettinger model for subsurface vapor intrusion into buildings (Environmental Quality Management, 2000). Accurate measurement of soil temperatures from SPT or direct push samples is problematic, therefore shallow ground water temperature will be measured during ground water sampling and used to estimate soil temperatures.

2.3.7 Sample Requirements for Soil Physical Analyses

Parameter	Container	Sample Volume	Sample Preservation	Analytical Method	Holding Time
Fraction Organic Carbon	4 oz. wide-mouth glass jar	100 grams minimum	3 to 30^{o} C	ASTM D2974	28 days
Dry Bulk Density	Undisturbed core in sealed thin-walled, moisture-proof container	100 grams minimum	Per ASTM D4220-95 Group C 3 to 30^{o} C	ASTM D2937	28 days
Moisture Content	Undisturbed core in sealed thin-walled, moisture-proof container	100 grams minimum	Per ASTM D4220-95 Group C 3 to 30^{o} C	ASTM D2216	28 days
pH	4 oz. Wide-Mouth Glass Jar	10 grams minimum	3 to 30^{o} C	ASTM D4972 - 01(2007)	NA
Grain Size	1 quart Ziploc bag	115 grams minimum	NA	ASTM D422-63	NA
Cation Exchange Capacity	4 oz. wide-mouth glass jar	100 grams minimum	3 to 30^{o} C	EPA 8091	28 days
Temperature	Field test	NA	NA	Thermometer	NA

2.4 Ground Water Sampling

Except for the temporary monitoring wells installed at the time of drilling (see Sections 2.1.5 and 2.1.6 above), new monitoring wells will be allowed to stabilize for a minimum of 48 hours following development prior to sampling. To minimize potential cross-contamination between boreholes, wells up- and cross-gradient of the Ultra Custom Care Cleaners site will be sampled first because ground water in these wells should be less contaminated. Ground water will be sampled using low-flow purging methods. Sampling personnel will measure ground water levels to the nearest 0.01-foot using a decontaminated electronic well probe prior to collection of samples. The volume pumped will be determined in the field based on stabilization of field parameters: specific conductance, dissolved oxygen, and pH, if flow is sufficient to continuously measure field parameters in a flow-through cell. Sampling points will be purged by very slowly lowering semi-rigid polyethylene tubing to a depth corresponding to roughly the midpoint of the well screen, securing the tubing to prevent vertical movement, connecting it to a peristaltic pump, and then pumping at a rate not to exceed 0.5 liters/minute (0.13 gallons/minute). At a minimum, two pump and tubing volumes will be purged (1/2” I.D. tubing = 0.010 gallon/lineal foot, 0.17” I.D. tubing = 0.001 gallon/lineal foot = 5 ml/lineal foot). Samples will be collected once the parameter values have stabilized over the course of three sets of measurements as follows:

Specific Conductance	± 10 μS/cm
Dissolved Oxygen	± 2 mg/L
pH	± 0.1 unit

The bottle requirements for ground water samples are:

Bottle Type	No. of Bottles	Analytes	Preservative	Holding Time
1 liter amber glass	1	NWTPH-Dx	4° C	7 days
40 ml VOA with septum	2	NWTPH-Gx/BTEX	HCl to pH<2	14 days
40 ml VOA with septum	2	VOCs	HCl to pH<2	14 days
250 ml polyethylene	1	As, Cd, Cr, Pb	HNO_3 to pH<2	6 months

When filling the sample bottles, the following procedures and precautions will be adhered to:

1. To minimize potential loss of volatile compounds, first fill the VOA vials, then the 1 liter amber bottle, and lastly the polyethylene bottle.
2. Sample bottles will be filled directly from the pump discharge tubing with minimal air contact.
3. Bottle caps will be removed carefully so that the inside of the cap is not touched. Caps must never be put on the ground. Caps for volatile organic analyses (VOA) vials will contain a Teflon-lined septum. The Teflon side of the septum must be facing the sample to prevent contamination of the sample through the septum.
4. The sampling team will wear appropriate non-powdered latex or nitrile gloves (PVC or vinyl gloves can leave trace levels of phthalate or vinyl chloride). Gloves will be changed between wells or more often.

5. Tubing or hoses from the sampling systems must not touch or be placed in the sample bottles.
6. VOA vials must be filled so that they are headspace-free. These sample vials therefore need to be slightly overfilled (water tension will maintain a convex water surface in the bottle). The VOA vial caps will be replaced gently, to eliminate air bubbles in the sample. The vials must then be checked by inverting them and tapping them sharply with a finger. If air bubbles appear, open the vial, add more water, and repeat the process until all air bubbles are gone. Do not empty the vial and refill it, as VOA vials already contain preservatives.
7. Sample bottles, caps, or septums that fall on the ground before filling will be discarded.
8. Metals sampling will be conducted using the "clean technique." Bottles will be bagged in plastic and the cap placed in the bag during sampling.
9. After collection, the samples will be labeled, chilled in a cooler, and shipped to the laboratory for analyses on a standard laboratory turnaround time (5-10 days).

Samples collected for dissolved constituent analyses will be filtered through a 0.45-micron filter. The filters will attach directly to the discharge tube of the sampling pump. The filter will be changed between sample points, or more frequently if clogging occurs. Where in-line filtration is not possible, prefiltration bottles may be used to collect the samples. Prefiltration bottles must be obtained from the laboratory with the sample coolers and identified with the bottle request. Prefiltration bottles, used for vacuum or pressure filtering, will not be used for more than one well. The use of prefiltration bottles must be noted on the chain-of-custody form in the comments section. Samples that have been field-filtered or that require laboratory filtering must be noted on the chain-of-custody forms in the comments section. The laboratory will note which samples require filtering on the individual bottle labels.

If a monitoring well is pumped dry prior to reaching the desired purge volume, it will be allowed to recover prior to sampling, using the minimum time between purging and sampling that would allow collection of sufficient sample volume. Samples will be pumped directly into the appropriate containers, as provided by the laboratory. A Field Data Sampling Sheet (provided in Attachment A) will be filled out for each sample. New tubing will be used at each location.

2.4.1 Water Analyses

Water samples will be submitted to the analytical laboratory for one or more of the following analyses:

- Volatile Organic Compounds (VOCs) – EPA Method 8260

- Diesel and Oil-Range Hydrocarbons – Washington State Method NWTPH-Dx
- Gasoline-Range Hydrocarbons – Washington State Method NWTPH-Gx
- BTEX – EPA Method 8021
- Total and Dissolved Arsenic, Cadmium, Chromium, and Lead – EPA Method 6010/7470A

2.5 GROUND WATER FLOW SYSTEM PROPERTIES

This investigation task includes installing ground water monitoring wells, collecting and physical property testing of soil samples, time series ground water level measurements, aquifer testing, and hydrogeologic analysis of the data acquired.

2.5.1 Time Series Ground Water Level Measurements

Water level measurements will be collected quarterly during the RI. Water levels will be measured using a graduated electric water level meter equipped with a stainless steel probe. Water levels will be measured to the nearest 0.01 foot. To alleviate potential errors, previous water level data should be used for comparison during field activities. Water levels will be measured by slowly lowering the decontaminated probe into the monitoring well until the indicator (light, sound, and/or meter) shows water contact. At this time, the precise measurement will be determined by repeatedly raising and lowering the tape or cable to converge on the exact measurement. The tape and probe will be decontaminated between wells using distilled water. If non-aqueous phase liquid (NAPL) is suspected, NAPL thickness will be measured using a NAPL interface probe, low resistance clear bailer, or other means specific to the type of NAPL and well conditions.

2.5.2 Aquifer Testing

Slug tests will be conducted at selected wells. Slug tests are a single-well test used to determine approximate hydraulic conductivity values for formation materials immediately surrounding a well, and include rate-of-fall (falling head) and rate-of-rise (rising head) tests. Falling head tests entail placing a solid "slug", made of PVC, "instantaneously" below the water table and measuring the well response over time. After the well recovers to static conditions, "instantaneously" removing the slug from the water provides the rising head test. Water levels will be measured with transducers and back-up manual measurements. Tests where the water level crosses a change in effective well diameter (e.g., across the bentonite seal) are not valid and will not be used. Analysis of results will be described in the RI report. Slug tests will be conducted using the following steps:

1. Insert the transducer probe in the well approximately 0.5 feet off the bottom of the well. Secure the probe cable and turn on the data logger. Calibrate the data logger reading to an equivalent static-water level depth equal to that measured manually. Program the frequency of measurements and the density of the fluid into the data logger.

2. Start the logging program and take a final depth-to-water measurement just prior to starting the test. Note the measurement and clock time in the field notes. Start the test by smoothly removing or inserting the slug to avoid excessive water level oscillations and disturbing the transducer. A new section of cord will be used to lower the slug at each well. Make note of the start time in the field notes.
3. Measure water levels with a water level meter periodically and record time and value of measurement on the field notes. Monitor transducer readings to see if the initial water level or data logger reading is being approached and to correlate with manual measurements. Stop the test when at least 90 percent of the initial water displacement has recovered if several hours have elapsed since starting the test.
4. Decontaminate slug between wells by washing with a detergent solution followed by a tap water and distilled water rinse.

2.6 Quality Assurance/Quality Control

Samples will be collected and analyzed with sufficient quality assurance/quality control (QA/QC) to ensure representative and reliable results. The overall QA objective for the RI is to ensure that all laboratory and field data on which decisions are based are technically sound, statistically valid, and properly documented. There are two parts to the QA/QC program for this project: field and laboratory.

Field QA/QC includes proper documentation of field activities and sampling/handling procedures. Field QA/QC samples will consist of the following:

2.6.1 Soil Sampling QA/QC

- One equipment blank (a.k.a., rinsate blank) will be collected at a minimum frequency of 5 percent of soil samples collected – not needed if using disposable sample liners. Contaminant-free water is poured over sampling equipment and then collected for analysis. The presence of measurable concentrations of contaminants in an equipment blank indicates the potential for cross contamination between sampling locations when sample collection equipment is used to collect samples at more than one location. Because equipment blanks are a measure of cross contamination, they may be helpful in assessing the accuracy and representativeness of field measurements. The detection of measurable concentrations of contaminants in an equipment blank is indicative of the potential for the reported concentrations to be higher than the actual concentrations in the samples (false positives).

- One matrix spike/matrix spike duplicate (MS/MSD) will be collected at a minimum frequency of 5 percent of soil samples collected. MS/MSD samples will be selected by the field personnel, and three times the normal sample volume will be collected to accommodate the extra sample required for the lab to perform the MS/MSD analysis. It is critical that the sample submitted to the laboratory for MS evaluation is representative of the potentially contaminated matrix. The sample selected for MS/MSD evaluation should not contain significant concentrations of the contaminants as compared with the matrix spike concentrations as this may prevent accurate measurements of the spiked compound's recovery.

- One trip blank will be included in each cooler having samples for analysis of WTPH-Gx/BTEX and/or VOCs. For solid samples, trip blanks consist of a vial containing methanol. Trip blanks accompany the empty sample containers from the laboratory to the field and return with the collected samples from the field to the laboratory.

2.6.2 Ground Water Sampling QA/QC

- One field duplicate will be collected at a minimum frequency of 5 percent of water samples collected. Field duplicates are used to confirm analytical results from a given sample point. Duplicate samples are collected in the field using a matching set of laboratory-supplied bottles and sampling protocols from the selected well. Each duplicate should be sampled by alternating between the regular and the duplicate sample bottles, proceeding in the designated sampling order (VOCs first). The location where the duplicate is collected must be identified on the field sampling data sheet. All duplicates shall be blind-labeled (i.e., the well designation is not listed on the sample bottle or chain-of-custody form). Once a duplicate is collected, it is handled and shipped in the same manner as the rest of the samples. Duplicate results will be reported in the laboratory results as separate samples, using the designation DUP-(#).

- One trip blank will be included in each cooler having samples for analysis of WTPH-Gx/BTEX and/or VOCs. Trip blanks are used to detect contamination that may be introduced in bottle preparation, in transit to or from the sampling site, or in the field. Trip blanks are samples of volatile-organic-free, laboratory-quality water (Type II reagent grade) that are prepared at the laboratory. They remain with the sample bottles while in transit to the site, during sampling, and during the return trip to the laboratory. Trip blank sample bottles are not opened at any time during this process. Trip blanks are to be reported in the laboratory results as separate samples, using the designation TB-(#). Each sample cooler that includes bottles for VOC analysis must include a trip blank, whether it was requested or not.

- One equipment blank (a.k.a., rinsate blank) will be collected at a minimum frequency of 5 percent of water samples collected – not needed if using disposable peristaltic tubing. Equipment blanks are used to detect residue from decontaminated equipment. Equipment blanks are to be reported in the laboratory results as separate samples, using the designation EB-(#).

2.6.3 Laboratory QA/QC

Laboratory QA/QC analyses provide information about accuracy, precision, and detection limits. Method-specific QA/QC samples may include the following, depending on the analysis:

- Method blanks
- Duplicates
- Instrument calibration verification standards
- Laboratory control samples
- Surrogate spiked samples
- Performance evaluation QC check samples

2.6.4 Data Evaluation

Data evaluation will include checking holding times, method blank results, surrogate recovery results, field and laboratory duplicate results, completeness, detection limits, laboratory control sample results, and chain-of-custody forms.

2.7 FIELD DOCUMENTATION AND CHAIN-OF-CUSTODY

The following sections describe the recording system for documenting all site field activities, and the sample chain-of-custody program.

2.7.1 Field Log Book

An accurate chronological recording of all field activities is vital to the documentation of any environmental investigation. To accomplish this, field team members will maintain field log books providing a daily record of significant events, observations, deviations from the sampling plan and measurements collected during the field activities.

2.7.2 Sample Identification

Following sample collection, field personnel will affix labels to each sample container. Samplers will use waterproof ink (not marking pens containing volatile organics), plastic bags, or clear tape to ensure labels remain legible even when wet. Samplers will record the following information on the labels:

- Project name and number
- Sample identification number

- Date and time of collection
- Required test methods
- Name of sample collector

2.7.3 Chain-Of-Custody Record

The purpose of the chain-of-custody record is to allow the tracking of possession and handling of individual samples from the time of field collection through laboratory analysis. Once a sample is collected, it becomes part of the chain-of-custody process. A sample is "in custody" when (1) it is in someone's possession, (2) it is within visual proximity of that person, (3) it is in that person's possession, but locked up and sealed (e.g., during transport), or (4) it is in a designated secure sample storage area. Sampling staff will complete a chain-of-custody record (Attachment A) which will accompany each batch of samples. The record will contain the following information:

- Project name and number
- Names of sampling team members
- Requested testing program
- Required turnaround time
- Sample number
- Date and time collected
- Sample type
- Number of containers
- Tare weight of VOA vials
- Special Instructions
- Signatures of persons involved in the chain of possession

When sample custody is transferred to another individual, the samples must be relinquished by the present custodian and received by the new custodian. This will be recorded at the bottom of the chain-of-custody report where the persons involved will sign, date and note the time of transfer.

Sampling team members will keep sample coolers in locked vehicles while not in active use or visual range. If couriers are used to transport samples, chain-of-custody seals will be affixed to coolers.

2.7.4 Photographic Records

The field team leader will determine situations requiring photographic documentation. The field logbook will include the following information for each site photograph:

- Date, time, location photograph was taken
- Description of photograph taken

- Sequential number of the photograph
- Direction of photographic view

2.8 Preliminary ARARs and Detection Limits

The sampling, testing, and analytical methods specified in this SAP have been selected to provide accurate and precise data at reporting limits low enough to allow evaluation of the data with respect to applicable state and federal laws, legally applicable requirements, and requirements that are relevant and appropriate. These requirements are collectively referred to as ARARs which is an acronym for Applicable or Relevant and Appropriate Requirements.

According to MTCA (WAC-340-710), legally applicable requirements are cleanup standards, standards of control, and other environmental protection requirements, criteria, or limitations adopted under state or federal law that specifically address a hazardous substance, cleanup action, location or other circumstances at the site.

Relevant and appropriate requirements are those cleanup standards, standards of control, and other environmental requirements, criteria, or limitations established under state or federal law that, while not legally applicable to the hazardous substance, cleanup 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.

Potential ARARs for the Bothell Landing 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 (Parametrix, 2009).

Table 1 summarizes potential ARARs identified for the Bothell Landing RI with respect to laboratory detection, reporting, and practical quantitation limits. These ARARs were chosen based on a knowledge of Site contaminants, potential exposure pathways, and potentially applicable state and federal laws and rules. Other ARARs will be addressed in the RI/FS report.

3.0 QUALITY ASSURANCE PROJECT PLAN

The purpose of this Quality Assurance Project Plan (QAPP) is to ensure that all necessary steps are taken to acquire data of the type and quality needed. Quality is the degree to which a set of inherent characteristics fulfills project requirements. Quality assurance (QA) is the process 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, and 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.

To accomplish these purposes this QAPP for the Bothell Landing RI contains the following elements:

- Field QA/QC
- Chain-of-custody procedures
- Decontamination procedures
- Laboratory analysis and QA/QC methods
- Sample custody procedures including holding times, containers, and preservation

3.1 Field QA/QC Methods

Field QA/QC methods will include the collection of equipment blanks, MS/MSD samples, and trip blanks for soil samples. For ground water samples these methods include the collection of field duplicates, equipment blanks, and trip blanks. A detailed description of these QA/QC methods is provided in Sections 2.5.1 and 2.5.2.

Field QC will include proper documentation of field activities in a field log book and daily field reports that provide a daily record of significant events, observations, deviations from the sampling plan, and measurements collected during the field activities. Field personnel will follow 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 will photographically document significant events and observations during RI activities.

3.2 Chain-of-custody Procedures

Chain-of-custody procedures allow the tracking of possession and handling of individual samples from the time of field collection through laboratory analysis. Detailed chain-of-custody handling procedures are described in Section 2.6.3.

3.3 Decontamination Procedures

In order to mitigate the potential for cross-contamination, all sample-contacting, and downhole equipment used in the collection and sampling processes will be decontaminated before sample collection.

The following steps will constitute the decontamination procedure:

1. Wash items in a solution of strong anionic detergent (e.g., Alconox® or Liqui-nox®) and tap water
2. Rinse with tap water
3. Rinse with deionized water

4. Air dry in a clean environment

Decontaminated equipment will be stored and transported in clean containers or wrapping.

3.4 Laboratory QA/QC Methods

3.4.1 Chemical Analyses QA/QC

OnSite Environmental Inc. of Redmond, Washington will perform all sample analyses. OnSite Environmental is accredited by the Washington Department of Ecology (Accreditation #C591-10) for all analyses to be performed for the RI.

Specific laboratory QC will consist of the following:

- **Sample Batching.** A batch consists of up to twenty samples in addition to any quality control samples that were required. The samples will be 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 will be generated.
- **Method Blanks.** Method blanks will be used to ensure that the extraction and analysis procedures do not contribute contamination to the analysis. Method blanks will be 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 is outside of quality control criteria, then that particular analyte will be evaluated and actions taken to bring the analysis into control.
- **Duplicate Samples.** Duplicate lab samples will used to ensure that sample results can be reproduced in a precise manner.
- **Surrogates.** Surrogate compounds are compounds similar to the analytes of interest that are 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) provide 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 are a second laboratory spiked blank laboratory QC sample. The difference in the laboratory's recovery of the spiked blank and spiked blank duplicate is a measure of analytical precision, and is reported as relative percent difference (RPD):

  $$\text{Percent Recovery (\%R)} = 100*(X_s/C_t)$$

  Where X_s is the observed concentration of the analyte, and C_t is the true concentration of the analyte. The acceptable range for accuracy is 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 is responsible for verifying that the surrogate, spike blank and MS/MSD percent recoveries meet the quality control limits.

- **Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples.** Matrix spike samples are laboratory QC samples prepared by adding a known amount of the target analyte(s) to an actual sample, and used to ensure the analytes of interest can be accurately recovered from the sample matrix. The matrix spike duplicate is also used to ensure the analytes could be repeatedly recovered in an accurate and precise manner.

3.4.2 Physical Testing QA/QC

The physical testing of soil parameters described in Section 2.3 will be performed by HWA GeoSciences' materials testing laboratory. The policy of HWA is to maintain the quality level of its engineering testing laboratory in general compliance with industry standard QA/QC methods and practices, including those prescribed by:

- International Code Council (ICC)
- International Building Code (IBC)
- American Society for Testing and Materials (ASTM)
- American Concrete Institute (ACI)
- American Association of State Highway and Transportation Officials (AASHTO)
- Washington State Department of Transportation (WSDOT)

QA/QC methods vary by test, and are typically specified in the test method (e.g., ASTM). In addition, HWA's materials testing laboratory is accredited by and continually complies with requirements of the American Association for Laboratory

Accreditation (A2LA) and the American Association of State Highway and Transportation Officials (AASHTO), which include QA/QC audits, proficiency testing, calibrations, training, etc. HWA's materials testing laboratory meets the criteria defined in the following standards:

- ISO 17025 – General Requirements for the Competence of Testing Laboratories
- ASTM D 1077 – Practice for Laboratories Testing Concrete & Concrete Aggregates
- ASTM D 3666 – Minimum Requirements for Agencies Testing Paving Materials
- ASTM D 3740 – Minimum Requirements for Agencies Testing Soil and Rock
- ASTM E 329 – Specifications for Agencies Testing Materials Used in Construction

3.5 SAMPLE CUSTODY PROCEDURES

Sample custody procedures for soil and water samples are described in Section 2.6.3 above.

4.0 HEALTH AND SAFETY

Personnel conducting this field program are required to follow the health and safety protocol presented in the site specific Health and Safety Plan (HASP). Subcontractors and other authorized visitors to the site are responsible for their own health and safety. The Health and Safety Plan will be made available to subcontractors and other site visitors who request it. Health and Safety precautions will be communicated to subcontractors by project personnel in site safety briefings at the beginning of each field day. To acknowledge review and comprehension of this plan, all field personnel must sign the appropriate section included in the back of the document. The Health and Safety Plan is included as a separate document in Appendix C of the Bothell Landing RI Work Plan.

5.0 REFERENCES

Environmental Quality Management Inc., 2000, *User's Guide for the Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings (Revised).* Prepared for U.S. EPA Office of Emergency and Remedial Response, December 2000.

Flory, D., 2000, *What is "Good" Data*, Quality Assurance Associates (www.qaallc.com/gooddata.html)

Interstate Technology & Regulatory Council Sampling, Characterization and Monitoring Team, 2006, The Use of Direct Push Well Technology for Long-term Environmental Monitoring in Groundwater Investigations, March 2006

Naval Facilities Engineering Command (NAVFAC), Kram, Mark, Lorenzana, Dale, and Lory, Ernest, 2001, Performance Comparison: Direct-Push Wells Versus Drilled Wells, NFESC Technical Report TR-2120-ENVIRONMENTAL, January 2001

PMI, 2008, *A Guide to the Project Management Body of Knowledge – Fourth Edition* (ANSI/PMI 99-001-2008), Project Management Institute (www.pmi.org).

Parametrix, 2009, *Bothell Landing Remedial Investigation/Feasibility Study, Revision No. 0*. Prepared for City of Bothell, November 2009.

U.S. Army Corps of Engineers, 1986, *Engineering and Design Laboratory Soils Testing*. EM 1110-2-1906 Change 2.

U.S. Environmental Protection Agency (EPA), 1996, *Soil Screening Guidance: User's Guide (Second Edition)*. EPA/540/R-96/018, July 1996.

U.S. Environmental Protection Agency (EPA), 1998, Innovative Technology Verification Report, Soil Sampling Technology, Geoprobe Systems, Inc. Large-Bore Soil Sampler, Office of Research and Development, EPA/600-R-98/092, August 1998

U.S. Environmental Protection Agency (EPA), 2005, *Ground water Sampling and Monitoring with Direct Push Technologies*. EPA 540/R-04/005, August 2005.

U.S. Environmental Protection Agency (EPA), 2005b, Groundwater Sampling and Monitoring with Direct Push Technologies Office of Solid Waste and Emergency Response, Solid Waste and Emergency Response (5204G) OSWER No. 9200.1-51 EPA 540/R-04/005 August 2005.

Washington State University, 2011, Cation-Exchange Capacity (http://soils.tfrec.wsu.edu/webnutritiongood/soilprops/04CEC.htm).

Table 1
Potential ARARs & Laboratory Reporting Limits

Compound	Ground Water ARAR - Federal Primary Maximum Contaminant Level (MCL) (mg/L)	Ground Water ARAR - State Primary Maximum Contaminant Level (MCL) (mg/L)	Soil, Method A, Unrestricted Land Use, Table Value (mg/kg)	Soil, Method B, Carcinogen, Standard Formula Value, Direct Contact (ingestion only), Unrestricted land use (mg/kg)	Soil, Method B, Non-carcinogen, Standard Formula Value, Direct Contact (ingestion only), Unrestricted land use (mg/kg)	Method Detection Limit (soil - mg/kg)	Laboratory Reporting Limit (soil - mg/kg)	Method Detection Limit (water - mg/L)	Laboratory Reporting Limit (water - mg/L)
1,2-DCA	5.0E-03	5.0E-03	NV	1.1E+01	1.6E+03	3.95E-04	1.0E-3	1.16E—4	2.0E-04
Arsenic	1.0E-02	1.0E-02	2.0E+01	6.7E-01	2.4E+01	1.22E+00	1.0E+01	6.11E-02	5.0E-3
Benzene	5.0E-03	5.0E-03	3.0E-02	1.8E+01	3.2E+02	2.20E-03	2.00E-02	6.28E-05	1.00E-03
Naphthalenes	NV	NV	5.0E+00	NV	1.6E+03	3.56E-04	6.7E-03	2.51E-5	1.0E-04
Tetrachloroethylene	5.0E-03	5.0E-03	5.0E-02	1.9E+00	8.0E+02	3.30E-04	1.00E-03	1.50E-04	2.00E-04
TPH, Diesel Range Organics	NV	NV	2.0E+03	NV	NV	5.74E+00	2.50E+01	5.09E-02	2.50E-01
TPH, Heavy Oils	NV	NV	2.0E+03	NV	NV	1.13E+01	5.00E+01	9.87E-02	4.00E-01
TPH: Gasoline Range Organics, Benzene Present	NV	NV	3.0E+01	NV	NV	9.15E-01	5.00E+00	1.55E-02	1.00E-01
TPH: Gasoline Range Organics, No Benzene	NV	NV	1.0E+02	NV	NV	9.15E-01	5.00E+00	1.55E-02	1.00E-01
Vinyl Chloride	2.0E-03	2.0E-03	NV	6.7E-01	2.4E+02	5.88E-04	1.00E-03	1.83E-04	2.00E-04
Trichloroethylene	5.0E-03	5.0E-03	3.0E-02	1.1E+01	2.4E+01	3.55E-04	1.00E-03	1.44E-04	2.00E-04

Note: MDL and RL values for TPH Gasoline are for PID instrument detector, NV – No established value

1,2-DCA = 1,2-Dichloroethane

ATTACHMENT 1

CHAIN-OF-CUSTODY FORM AND FIELD SAMPLING DATA SHEET

HWA GEOSCIENCES INC.
19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425)774-0106
4500 Kruse Way, Suite 300, Lake Oswego, OR 97035 (503)675-2424

Chain of Custody and Laboratory Analysis Request

DATE: ______
PAGE: ____ of ____

PROJECT NAME: ______ #: ______
SITE CODE: ______
SAMPLERS NAME: ______ PHONE: ______
SAMPLERS SIGNATURE: ______
HWA CONTACT: ______ PHONE: ______

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	ANALYSIS REQUESTED															REMARKS

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by:					
Received by:					
Relinquished by:					
Received by:					

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

HWA GEOSCIENCES INC.
19730 64th Avenue West, Suite 200 Lynnwood, WA 98036
Tel: 425-774-0106 / Fax: 425-774-2714 / E-Mail: hwa@hongwest.com

FIELD SAMPLING DATA SHEET

Project Name: ______________________
Project Number: ______________________
Project Location: ______________________
Client/Contact: ______________________

Well Number: ______________________
Sample Number: ______________________
Weather: ______________________
Date: ______________________

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)

(2" case = 0.163 gal/ft)
(4" case = 0.653 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature		

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered (Y/N)	Preservative	Iced (Y/N)

COMMENTS/NOTES:
(Include equipment used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

Total # of Bottles: ______ Sampler: ______________ Signature: ______________________

APPENDIX C

Health and Safety Plan

REMEDIAL INVESTIGATION
HEALTH AND SAFETY PLAN
BOTHELL LANDING SITE
BOTHELL, WASHINGTON

Project No. 2007-098-929

Prepared for
City of Bothell

February 28, 2011

HWA GEOSCIENCES INC.

- *Geotechnical Engineering*
- *Hydrogeology*
- *Geoenvironmental Services*
- *Inspection & Testing*

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SITE HEALTH AND SAFETY PLAN

SUMMARY INFORMATION

SITE LOCATION	Bothell Landing Site Along and around SR527 from NE 185th St. to SR 522 Site Telephone - None
NEAREST HOSPITAL	Care Plus Medical Ctr: 17511 68th Ave NE Kenmore, WA 98028 425-486-8300 The route from the facility to the hospital is depicted on Figure 1.
EMERGENCY RESPONDERS	Police Department .... 911 Fire Department... 911 Ambulance 911
EMERGENCY CONTACTS	HWA Bothell Office ....(425) 774-0106 HWA H&S Officer, Norm Nielsen (425) 774-0106 cellular. (206) 450 0552 HWA PM Arnie Sugar ....(425) 774-0106 cellular................... (206) 794 3130 National Response Center ....(800) 424-8802

In the event of an emergency, call for help as soon as possible.
Give the following information:

- WHERE the emergency is - use cross street or landmarks
- PHONE NUMBER - you are calling from
- WHAT HAPPENED - type of injury
- HOW MANY - persons need help
- WHAT - is being done for the victim(s)
- YOU HANG UP LAST - let the person you called hang up first

SITE HEALTH AND SAFETY PLAN SUMMARY

LOCATION: Along and around SR527 from NE 185th St. to SR 522, Bothell, WA and adjacent properties

PROPOSED DATES OF ACTIVITIES: 2011 - 2013

TYPE OF FACILITY: Active roadways, construction sites, commercial properties, dry cleaning facility, etc.

LAND USE OF AREA SURROUNDING FACILITY: Commercial

POTENTIAL SITE CONTAMINANTS: Petroleum, volatile organic compounds (VOCs), metals

POTENTIAL SITE HAZARDS:

1. Chemical - Exposure to site contaminants listed above
2. Physical – site traffic, drilling machinery, noise, overhead and underground utilities, heat/cold stress, slips, trips and falls, fire, explosion

ROUTES OF ENTRY: Airborne vapors and dust; skin contact with soil, free product, or groundwater; and incidental ingestion of soil.

PROTECTIVE MEASURES: Engineering controls, safety glasses, safety boots, hard hat, gloves, protective clothing, and respirators.

MONITORING EQUIPMENT: Photoionization detector

SITE ACTIVITIES: Subsurface investigation to assess the presence and/or extent of affected soils and ground water resulting from historic releases at the site.

1.0 INTRODUCTION

1.1 Purpose and Regulatory Compliance

This site-specific Health and Safety Plan (H&S Plan) addresses procedures to minimize the risk of chemical exposures and physical accidents to on-site workers, as described above. The H&S Plan covers each of the 11 required plan elements as specified in WAC 296-843-12005. To help the reader find this required information, Table 1 shows the major sections where each of these elements are discussed. Additional supporting information is presented throughout this plan, and the reader is advised to thoroughly review the entire plan. When used together with the HWA GeoSciences Inc. (HWA) Corporate H&S Plan, this site-specific plan meets applicable regulatory requirements.

Table 1 - Location of Required Health and Safety Plan Elements

Required Health and Safety Plan Elements *		Location in this Health and Safety Plan (Section number shown)
Required Elements		
(i)	Safety and hazard analysis	2.0 Hazard Evaluation and Control Measures (see also 2.7 Hazard Analysis by Task)
(ii)	Organization chart	1.3 Chain of Command
(iii)	Comprehensive work plan	1.4 Work Activities (and Site-Specific Sampling and Analysis Plan, by reference)
(iv)	Site control plan	Introduction. Health and Safety Plan Summary 1.5 Site Location and Description 5.0 Exclusion Areas 9.0 Site Security and Control
(v)	Personal protective equipment	3.0 Protective Equipment 4.0 Safety Equipment List
Additional Elements		
	Monitoring program	2.3 Air Monitoring and Action Levels
	Site Control Measures	9.0 Site Security and Control
	Decontamination	7.0 Decontamination
	Spill containment	10.0 Spill Containment
	Standard operating procedures for sampling, managing and handling drums and containers	Not Applicable, or Site-Specific Sampling and Analysis Plan, by reference
	Confined space entry	2.6 Confined Spaces
	Training, briefing and information	13.0 Training Requirements
	Medical surveillance	12.0 Medical Surveillance
	Emergency response plan	11.0 Emergency Response Plan
	Lighting	Corp H&S Plan Sec. 8.7
	Excavations	Corp H&S Plan Sec. 8.7

*Required H&S Plan elements are numbered according to their listing in WAC 296-843-12005

1.2 Distribution and Approval

This H&S Plan will be made available to all HWA personnel involved in field work on this project. It will also be made available to subcontractors and other non-employees who may need to work on the site. Subcontractors and non-employees will follow the provisions in this plan as minimum recommendations. Specific work activities of a subcontractor may require different or more stringent safety measures than contained in this plan. For non-HWA employees, it must be made clear that this plan represents minimum safety procedures and that they are responsible for their own health and safety and regulatory compliance while present on site.

The plan has been approved by the HWA Health and Safety (H&S) Manager. By signing the documentation form provided with this plan, project workers also certify their approval and agreement to comply with the plan.

1.3 Chain of Command

The chain of command for Health and Safety in HWA projects involves the following individuals: the Corporate H&S Manager, Project Manager, Project H&S Manager, and the Field H&S Manager. In some cases, based on the complexity of the project and level of staffing, the project and field related H&S positions may be combined. If the specified Field H&S Manager is unable to be present on-site during work activities, the Project H&S Officer will serve as the on-site safety officer or, alternatively, another Field H&S Manager will be named.

Project Manager: Arnie Sugar. The Project Manager is charged with overall responsibility for the successful outcome of the project. The Project Manager, in consultation with Corporate H&S Manager, makes decisions regarding the implementation of the Site H&S Plan. The Project Manager may delegate this authority and responsibility to the Project and /or Field H&S Managers

Corporate H&S Officer: Norm Nielsen. The HWA Corporate H&S Officer has overall responsibility for preparation and modification of this H&S Plan. In the event that health and safety issues arise during site operations, he will attempt to resolve them in discussion with the appropriate members of the project team.

Project H&S Officer: Vance Atkins. The Project H&S Manager has overall responsibility for health and safety on this project. This individual ensures that everyone working on this project understands this H&S Plan. He will maintain liaison with the HWA Project Manager so that all relevant safety and health issues are communicated effectively to project workers.

Field H&S Manager: Pete Pearson. The Field H&S Manager is responsible for implementing this H&S Plan in the field. This individual also observes subcontractors to verify that they are following these procedures, at a minimum. The Field H&S Manager will also assure that proper protective equipment is available and used in the correct manner, decontamination activities are carried out properly, and that employees have knowledge of the local emergency medical system should it be necessary.

1.4 Work Activities

Planned site work includes direct push drilling and sampling, hollow-stem auger soil boring, soil sampling, and ground water sampling

1.5 Site Location and Description

Sites potentially under investigation may include areas along and around SR527 from SR522 to NE 185th street and adjoining properties and rights of way, in, Bothell, Washington. This work is being performed under an Agreed Order between the City of Bothell and the Washington Department of Ecology.

2.0 HAZARD EVALUATION AND CONTROL MEASURES

2.1 Toxicity of Chemicals of Concern

Based on previous site information and knowledge of the types of activities conducted at this location, petroleum hydrocarbons, volatile organic compounds, halogenated volatile organic compounds, and metals may be present in the soils or ground water at several of the sampling locations.

Pertinent toxicological properties of these chemicals are discussed below. This information generally covers potential toxic effects which may occur from relatively significant acute and/or chronic exposures, and is not meant to indicate that such effects will occur from the planned site activities. In general, chemicals which may be encountered at this site are not expected to be present at concentrations which could produce significant exposures. The types of planned work activities should also limit potential exposures at this site. Furthermore, appropriate protective and monitoring equipment will be used as discussed below to further minimize any exposures which might occur.

As a point of reference, standards for occupational exposures to these chemicals are included where available. Site exposures are generally expected to be of short duration and well below the level of any of these exposure limits. These standards are presented using the terminology defined by the Washington State General Occupational Health Standards (WAC 296-62, Part H) as follows:

PEL - Permissible exposure limit.

TLV – Threshold Limit Value for any 8-hour work shift or 40-hour work week

TWA - Time-weighted average exposure limit for any 8-hour work shift or 40-hour work week.

STEL - Short term exposure limit expressed as a 15-minute time-weighted average and not to be exceeded at any time during a work day.

C - Ceiling exposure limit not to be exceeded at any time during a work day.

IDLH - The concentration at which a compound is considered immediately dangerous to life and health.

Total Petroleum Hydrocarbons. Total petroleum hydrocarbons (TPH) refers to a broad range of chemicals including those compounds reported under EPA method 418.1. TPH can include different hydrocarbon mixtures, such as gasoline, kerosene, diesel, fuel oil, motor oil, hydraulic oil, and asphalt. These materials may be toxic by ingestion, inhalation, and skin absorption. Typical symptoms include dizziness, central nervous system depression, and coma. TPH can have a defatting effect on the skin, and long-term exposure can result in liver and kidney damage. No PEL has been established for TPH. For comparison, the PEL-TWA for gasoline is 300 ppm, with 500 ppm as a 15-minute STEL.

Gasoline. Gasoline is a mixture of more than 100 alkane and aromatic hydrocarbon constituents with trace levels of additives. A typical gasoline is primarily 4 to 12-carbon hydrocarbons, with significant levels of aromatics including benzene, ethyl benzene, toluene, and xylene. Prolonged exposure to gasoline causes irritation of the skin, eyes, and mucous membranes, and can produce defatting and dermatitis. Inhalation of gasoline vapor can cause central nervous system depression, confusion, unconsciousness, coma, and death. Liver and kidney damage can also occur. The current PEL-TWA for gasoline is 300 ppm, with a 15-minute STEL of 500 ppm. The toxicity of gasoline can also be significantly affected by the amount of benzene, which typically ranges up to 3.5 percent in motor fuel. Benzene is recognized as a human carcinogen, and the current PEL-TWA is 1 ppm with an STEL of 5 ppm and a REL (recommended exposure limit) of 0.3 ppm.

Other potentially significant toxic materials present in association with gasoline may include the organic lead compounds tetraethyl (TEL) and tetramethyl lead (TML). These chemicals are colorless liquids which have been used principally as anti-knock compounds in gasoline. When used as such, they are generally mixed with soluble dyes for identification purposes. In the environment, TEL is reported to decompose under sunlight to form crystals of mono-, ki-, and triethyl lead compounds, which have a characteristic garlic-like odor.

TEL and TML can be toxic via inhalation, ingestion, percutaneous absorption, and skin and eye contact. Major target organs include the kidneys and the nervous, gastrointestinal, and cardiovascular systems. TEL is irritating to the eyes, and its decomposition products may be inhaled as dust, leading to irritation of upper respiratory tract and convulsive sneezing. The dust may also cause itching, burning, and redness of eyes and mucous membranes.

TEL and TML are also readily absorbed into the nervous system and are considerably more neurotoxic than inorganic lead. Minor intoxication by TEL or TML can result in nervous excitation, insomnia, and gastrointestinal symptoms. The most notable symptom of TEL poisoning and repeated exposure is encephalopathy (disease of the brain), characterized by symptoms of anxiety, delirium with hallucinations, delusions, convulsions, and acute psychosis. In contrast to inorganic lead intoxication, peripheral nerve damage is not observed. The current PEL-TWA for both TEL and TML is 0.075 mg/m^3 as lead.

Benzene. Benzene exposure can occur by inhalation, percutaneous absorption, ingestion, and skin and eye contact. Like other aliphatic and aromatic hydrocarbons, acute overexposure to benzene can cause central nervous system depression. Headache, dizziness, nausea, convulsion, coma, and death can result from elevated exposures. In some cases, acute exposure has resulted in death due to ventricular fibrillation. The odor threshold for benzene is variable, therefore there are no reliable warning properties. The principal chronic hazard associated with benzene exposures is its ability to cause changes in blood cells, including anemia and cell abnormalities. Benzene has been demonstrated to cause leukemia in epidemiological studies, and it is recognized as a human carcinogen by NIOSH and other agencies. The US EPA currently classifies benzene as a Group A, or confirmed, human carcinogen. The current PEL-TWA for benzene is 1 ppm with an STEL of 5 ppm (OSHA) and 0.1 ppm with an STEL of 1 ppm (NIOSH). Many petroleum companies maintain at least a recommended exposure limit of 0.3 ppm. Supplied air respiratory protection is required for potential benzene exposure.

Ethylbenzene. Ethylbenzene exposure can occur by inhalation, ingestion, and skin and eye contact. Like other aliphatic or aromatic hydrocarbons, acute overexposure to ethylbenzene can cause central nervous system depression. Headache, dizziness, nausea, convulsions, coma, and death can result from elevated exposures. Ethylbenzene can also cause skin drying and defatting, and eye and mucous membrane irritation can result from overexposure. The current PEL-TWA for ethylbenzene is 100 ppm with an STEL of 125 ppm.

Toluene. Toluene exposure can occur by inhalation, percutaneous absorption, ingestion, and skin and eye contact. Toluene can cause eye, respiratory, and skin irritation. Drying and defatting on the skin can occur with prolonged skin contact. The chief symptom of acute exposure to toluene vapor is depression of the central nervous system function. Symptoms include headache, dizziness, drowsiness, lack of coordination, and coma. The current PEL-TWA for toluene is 100 ppm with an STEL of 150 ppm.

Xylene. The major route of xylene toxicity is via inhalation of vapor, with percutaneous absorption and ingestion of liquid playing lesser roles. Xylene can cause irritation of the eyes, nose, and throat. Repeated skin contact may cause drying and defatting, and dermatitis. Acute exposure to vapors via inhalation may cause central nervous system depression, and liver and kidney damage. The current PEL-TWA for xylene is 100 ppm with an STEL of 150 ppm.

Polynuclear Aromatic Hydrocarbons. Polynuclear Aromatic Hydrocarbon (PAH) exposure can occur via inhalation of vapors, ingestion, and skin or eye contact. Skin contact can result in reddening or corrosion. Ingestion can cause nausea, vomiting, blood pressure fall, abdominal pain, convulsions, and coma. Damage to the central nervous system can also occur. The US Department of Health and Human Services (1989) has classified 15 PAH compounds as having sufficient evidence for carcinogenicity, while the US EPA (1990) has classified at least 5 of the identified PAHs as human carcinogens. There are no currently assigned PEL-TWAs for PAHs, but the closely related material coal tar is listed as coal tar pitch volatiles with a PEL-TWA of 0.2 mg/m^3**.**

Vinyl Chloride. Vinyl chloride is a colorless gas with a sweet odor. Vapors are heavier than air, and are flammable. If inhaled, it can cause irritation to the eyes, nose and throat. Inhalation can cause dizziness, difficult breathing, and in sufficient concentrations, asphyxiation by displacement of oxygen. Vinyl chloride is considered a NIOSH occupational carcinogen, and has a PEL-TWA of the lowest reliably detectable concentration. OSHA's PEL is 1 ppm, with a 15 minute ceiling of 5 ppm. Supplied air respiratory protection is required for potential vinyl chloride exposure.

Tetrachloroethene. Tetrachloroethene, also known as perchloroethylene, or PCE, is a commonly used solvent in dry cleaning and degreaser, and is a common environmental contaminant. PCE is a colorless liquid with a somewhat sweet odor. PCE vapor can be irritating to the eyes, nose and throat. Inhalation can cause nausea, sleepiness, dizziness, confusion, and loss of consciousness. PCE is a is a potential human carcinogen, with a PEL-TWA of 100 ppm (OSHA) and a STEL of 200 ppm.

Trichloroethylene. Trichloroethylene, also known as trichloroethene, or TCE, is a commonly used solvent and degreaser, and is one of the most common environmental contaminants. TCE vapor can be irritating to the eyes, nose and throat. Inhalation can cause nausea, difficult breathing, and loss of consciousness. TCE is a potential human carcinogen, with a PEL-TWA of 25 ppm (NIOSH), 50 ppm (OSHA) and a STEL of 200 ppm.

1,2-Dichloroethane. 1,2-Dichloroethane, also known as ethylene dichloride, EDC, or 1,2-DCA is used in the manufacturing of vinyl chloride, PCE, and TCE. It is also used as a solvent and as a gasoline additive. 1,2-DCA is a colorless liquid with a somewhat sweet odor. 1,2-DCA vapor can be irritating to the eyes, nose and throat. Inhalation can cause bronchitis, central nervous system depression, dizziness, vomiting, partial paralysis, and liver and kidney damage. 1,2-DCA is a is a potential human carcinogen, with a PEL-TWA of 1 ppm (4 mg/m^3) (NIOSH), 50 ppm (OSHA) and a STEL of 2 ppm (8 mg/m^3) (NIOSH).

Arsenic. Arsenic is toxic by inhalation and ingestion of dusts and fumes or by inhalation of arsine gas. Trivalent arsenic compounds are the most toxic to humans, with significant corrosive effects on the skin, eyes, and mucous membranes. Dermatitis also frequently occurs, and skin sensitization and contact dermatitis may result from arsenic trioxide or pentoxide. Trivalent arsenic interacts with a number of sulfhydryl proteins and enzymes, altering their normal biological function. Ingestion of arsenic can result in fever, anorexia, cardiac abnormalities, and neurological damage. Liver injury can accompany chronic exposure. Skin and inhalation exposure to arsenic has been associated with cancer in humans, particularly among workers in the arsenic-pesticide industry or copper smelters. Arsine is a highly toxic gaseous form of arsenic, causing nausea, vomiting, and hemolysis. The current PEL-TWA for organic and inorganic forms of arsenic is 0.2 mg/m^3. The PEL-TWA for inorganic arsenic under WAC 296-62-07346 is 10 μg/m^3. Arsenic is also regulated as a carcinogen under WAC 296-62-07347.

Cadmium. Cadmium is toxic via inhalation or ingestion of fumes or dust. Fumes are contacted normally during exposure to heated metals (plating operations, welding , etc.). Acute effects resulting from such exposure include respiratory distress irritation which may culminate in chronic emphysema. Chronic exposures to fumes or dust may result in emphysema and kidney damage. These effects may be worsened by smoking. Cadmium is considered to be a probable human carcinogen. The current PEL-TWA for cadmium is 0.05 mg/m^3 as cadmium dust as salts.

Chromium. Chromium metal and insoluble chromium salts can affect the body if inhaled or swallowed. Ferrochrome alloys have been associated with lung disease in humans. Certain forms of chromium (VI) compounds have been found to cause increased respiratory cancer among workers. Unless it can be demonstrated that no chromium (VI) compounds are present, it should be treated as a carcinogen. The PEL-TWA for chromium (III) compounds is 0.5 mg/m^3, and for chromic acids and chromates (chromium VI) the PEL is 0.1 mg/m^3.

Inorganic Lead. Inorganic lead and its compounds (excluding lead arsenate) can cause a disease known as lead poisoning. This disease is hard to diagnose, but may include symptoms of decreased physical fitness, fatigue, sleep disturbances, headaches, aching bones and muscles, digestive symptoms, abdominal pains, and decreased appetite. These symptoms are reversible and complete recovery is possible. Severe exposure could lead to anemia, pallor, a "lead-line" on the gums, and decreased hand-grip strength. Nerve damage may occur, with symptoms such as "wrist-drop". These symptoms may be irreversible. The PEL-TWA for lead is 0.05 mg/m^3.

2.2 Potential Exposure Routes

Inhalation. Exposure via this route could occur if volatile chemicals become airborne during site activities, especially upon exposure to open air, warm temperatures, and sunlight. Air monitoring and control measures specified in this plan will minimize the possibility for inhalation of site contaminants.

Skin Contact. Exposure via this route could occur if contaminated soil, water or product contacts the skin or clothing. Dusts generated during soil movement may also settle on exposed skin and clothing of site workers. Protective clothing and decontamination activities specified in this plan will minimize the potential for skin contact with the contaminants.

Ingestion. Exposure via this route could occur if individuals eat, drink, use tobacco products, or perform other hand-to-mouth contact in the contaminated (exclusion) zones. Decontamination procedures established in this plan will minimize the inadvertent ingestion of contaminants.

2.3 Air Monitoring and Action Levels

Air monitoring will be conducted to determine possible hazardous conditions and to confirm the adequacy of personal protection equipment. The results of the air monitoring will be used as the basis for specifying engineering controls, personnel protective equipment (PPE) and determining the need to upgrade protective measures. If possible, engineering controls should be implemented to meet air monitoring action levels before upgrading protective measures. Engineering controls include applying water for dust control, forced air ventilation (brush fans), and moving work activities upwind of contaminant sources.

All air monitoring equipment will be calibrated prior to use as specified by the instrument manuals and results will be documented in the instrument log. All equipment will be maintained as specified by the manufacturer or more frequently as required by use conditions, and repair records will be maintained with the instrument log.

PID Monitoring. Air monitoring will be conducted with a photoionization detector (PID) to measure organic vapor concentrations during site work activities. PID readings will be taken at the beginning of each day, at each new test pit or boring location, and whenever field personnel report or detect petroleum or other odors. If PID measurements are 5 ppm above ambient background levels in the worker's breathing zones for five consecutive minutes, then site workers exposed to these levels will use air purifying respirators with organic vapor cartridges. At this point, air monitoring downwind from the work site will also be initiated. If the downwind monitoring indicates potential for off-site exposure, work will cease pending re-evaluation of the task. If PID measurements exceed 100 ppm in the breathing zone, site work will cease pending re-evaluation of the situation by the H&S Manager.

Detector Tube Monitoring. Although volatile organic compounds are not anticipated at the site, specific detector tube monitoring for petroleum hydrocarbons will be performed if PID readings exceed the 5 ppm action level described above using a Sensidyne air pump and benzene detector tube model number 121L (or equivalent). This tube is capable of detecting benzene at levels below the PEL of 1 ppm and is also reported to be relatively specific and free from interference by other petroleum hydrocarbons. If benzene measurements exceed 1 ppm in the breathing zone, site work will cease pending re-evaluation of the situation by the H&S Manager.

Table 2 summarizes site action levels and response measures.

TABLE 2 - ACTION LEVELS (use engineering controls first)

PID* (BZ)	PID* (SB)	LEL (BZ)	OXYGEN (BZ)	ACTION
< 5 ppm		<10%	19.5 - 23.5%	Level D
5-50 ppm		<10%		Upgrade to level C or modified level D** Begin downwind air monitoring
>50 ppm	>5 ppm	>10%	<19.5% >23.5%	Cease Operations ***

* Concentrations above ambient background concentrations
** See Section 3.2 for conditions for respiratory protection
*** If <u>any</u> of the listed conditions are met
BZ - Breathing zone
SB - Site boundary

2.4 Fire and Explosion Hazard

Potentially explosive conditions may be encountered where petroleum hydrocarbons or other flammable gases or vapors have accumulated. Care will be exercised at all times during field activities where flammables are known or suspected to be present.

If flammable chemical products are encountered as a separate phase or as vapors, constant attention to readings obtained from the CGM will be necessary to avoid exceeding the lower explosive limit. Observe basic precautions such as no smoking or creation of sparks or open flames.

2.5 Heat and Cold Stress

Heat Stress. Use of impermeable clothing reduces the cooling ability of the body due to evaporation reduction. This may lead to heat stress. If such conditions occur during site activities, employees will maintain appropriate work-rest cycles and drink water or electrolyte-rich fluids (Gatorade or equivalent) to minimize heat stress effects. Water will be available either in capped bottles or dispensed into clean disposable cups. Refilling of open containers will not be permitted. Also, when ambient temperatures exceed 70^{o} F, employees will conduct monitoring of pulse rates. Personnel will plan for the weather and arrange to take breaks in the shade as much as possible.

Each employee will check his or her own pulse rate at the beginning of each break period. Take the pulse at the wrist for 6 seconds, and multiply by 10. If the pulse rate exceeds 110 beats per minute, then reduce the length of the next work period by one-third.

Example: After a one-hour work period at 80 degrees, a worker has a pulse rate of 120 beats per minute. The worker must therefore shorten the next work period by one-third, resulting in a work period of 40 minutes until the next break.

Hypothermia. Hypothermia can result from abnormal cooling of the core body temperature. It is caused by exposure to a cold environment, and wind-chill as well as wetness or water immersion can play a significant role. The following sections discuss signs and symptoms as well as treatment for hypothermia.

Signs of Hypothermia. Typical warning signs of hypothermia include fatigue, weakness, lack of coordination, apathy, and drowsiness. A confused state is a key symptom of hypothermia. Shivering and pallor are usually absent, and the face may appear puffy and pink. Body temperatures below 90^{o} F require immediate treatment to restore temperatures to normal.

Treatment of Hypothermia. Current medical practice recommends slow rewarming as treatment for hypothermia, followed by professional medical care. This can be accomplished by moving the person into a sheltered area and wrapping with blankets in a warm room. In emergency situations where body temperature falls below 90^{o} F and heated shelter is not available, use a sleeping bag, blankets and/or body heat from another individual to help restore normal body temperature.

2.6 Other Physical Hazards

Trips/Falls. As with all field work sites, caution will be exercised to prevent slips on wet surfaces, stepping on sharp objects, etc. Work will not be performed on elevated platforms without fall protection.

Confined Spaces. Confined space entry is not anticipated for this project. Personnel will not enter any confined space without specific approval of the Project Manager and H&S Manager. In addition, no entry into a confined space will be attempted until the atmosphere of the confined space is properly tested and documented by the Field H&S Manager or designated representative and a self contained breathing apparatus is available on-site. A confined space entry permit must also be issued and followed. All specified precautions must be carefully followed, including upgrading of personal protective equipment as directed by the Field H&S Manager or designated representative.

Noise. Appropriate hearing protection (ear muffs or ear plugs) will be used if high noise levels are generated. High noise is determined by having difficulty hearing or conversing in a normal tone of voice.

2.7 Hazard Analysis and Applicable Safety Procedures by Task

Drilling. Drilling activities will be conducted with appropriate splash protection as discussed under personnel protective equipment requirements. Noise protection must also be available and used whenever drilling activities are in progress. In addition, exclusion zones will be established for worker protection as discussed below.

Atmosphere Testing/Conditioning for Soil Borings. The following procedures are designed to address the atmosphere testing/conditioning procedures necessary for soil borings which may involve release of flammable and/or toxic gases .

1. If gas or vapor venting occurs from a soil boring or other source, immediately position upwind from the source. If necessary, use respiratory protection as discussed below.

   If the odor of natural gas is detected or if it is suspected that a pipeline has been hit, immediately stop work, evacuate the area, and contact the proper authorities.

2. Always keep the following points in mind when soil venting or other release of gas or vapor occurs:

   - Never work in an area which is above 10% of the combustible gas LEL or above the hydrogen sulfide warning limit, as discussed below.

   - Never continue to work in an area, even if LEL and hydrogen sulfide tests are acceptable, if you begin to notice strange odors or symptoms of overexposure (such as dizziness, nausea, tearing of the eyes, etc.). If this occurs, always stop work and evacuate the area pending further evaluation.

3. If natural gas or other pipeline material is not involved and the venting continues, stop work and perform appropriate testing using a combustible gas/hydrogen sulfide gas monitor (e.g., MSA 361 or equivalent). Proceed as follows:

   - If testing indicates no hazard, resume work and continue periodic testing.

- If testing indicates combustible gases present below 10% of the LEL, verify the absence of hydrogen sulfide and resume work with continued monitoring. If vapors are detected in the work area, use fans or other means to disperse as appropriate. Consult with the H&S Manager to determine whether other types of testing may be required to verify that exposure levels are within acceptable limits. Use respiratory protection as necessary, based on testing results and other site-specific information.

- If testing indicates combustible gases present above 10% of the LEL, assume that an explosion hazard exists. Do not resume work until testing shows the hazard had been removed. In some cases, this may be accomplished by allowing the gas to dissipate by natural or fan-forced ventilation. It also may be necessary or useful to inert a well or boring by introducing nitrogen or carbon dioxide through a non-conductive line. Water or drilling mud may be used to replace air in some bore holes and thereby eliminate the explosion risk. Verify the absence of hydrogen sulfide and resume work only when testing shows the explosion hazard has been removed. Continue to test on a regular basis to ensure that the atmosphere remains inert.

- If testing indicates presence of hydrogen sulfide, apply the same ventilation or inerting procedures as described above. Do not work in areas where the hydrogen sulfide concentration is above the applicable exposure level (the Washington State PEL-TWA for hydrogen sulfide is 10 ppm, with STEL of 15 ppm) without appropriate respiratory protection (supplied air). Resume work only when testing shows that the exposure level is within acceptable limits. Continue to monitor on a regular basis to ensure that the atmosphere remains safe.

4. Prior to any welding, cutting, or other hot work at the borehole, test the borehole atmosphere with a CGM. If the work area atmosphere exceeds 10 % LEL, do not proceed with the work until engineering controls can be implemented and the hot work area atmosphere reduced to below 10 % LEL. Test the work area continuously during hot work to ensure safe conditions for the duration of the work. Full-face shield welding masks will be worn during any welding or cutting at the borehole.

3.0 PROTECTIVE EQUIPMENT

In this plan, Level D is presented as a protection level, incorporating respiratory or skin contact protection only where required by site conditions or as specified under the previous discussion. Situations requiring Level A or B protection are not anticipated for this project. Should they occur, work will stop and the H&S Plan will be amended as required prior to resuming work

3.1 Level D Activities

Workers performing general site activities where skin contact with free product or contaminated materials is not likely and inhalation risks are not expected will wear regular work clothes, regular or polyethylene coated Tyvek coveralls if needed, eye protection and hard hat (as required) nitrile or neoprene coated work gloves (as required), and safety boots.

Workers performing site activities where skin contact with free product or contaminated materials is possible will wear chemical-resistant gloves (nitrile, neoprene, or other appropriate outer gloves, surgical inner gloves) and saranex or polyethylene coated Tyvek or other chemically-resistant suit. Make sure the protective clothing and gloves are suitable for the types of chemicals which may be encountered on site. Use face shields or goggles as necessary to avoid splashes in the eyes or face.

3.2 Level C Activities

Upgrading to Level C will occur if inhalation and skin contact hazards exist. Level C will consist of Level D equipment plus air purifying respirators (APRs) with organic vapor cartridges, surgical inner gloves, Nitrile outer gloves, rubber work boots or rubberized overboots, and saranex or polyethylene-coated Tyvek or other chemically-resistant suit. If inhalation hazards exist without skin contact hazards, a modified level D protection level can be used, consisting of level D protection plus APRs.

The following conditions must be met prior to any respirator use:

- Employee must be certified fit to use a respirator by the occupational physician, at least annually.
- Employee must be trained in proper respirator use, maintenance, selection, and limitations.
- Employee must have a current fit test for the respirator being used.
- Respirator must be in proper working order and inspected before use.
- In the event a positive pressure, supplied air breathing apparatus or positive pressure respirator becomes necessary, individual instructions detailing the need, use and limitations of these systems will be provided by the H&S officer.

An air purifying respirator (APR) should be used only if:

- Contaminants are known and measurable with proper monitoring equipment. APRs will not offer protection from hydrogen sulfide (H_2S), hydrogen cyanide (HCN), carbon monoxide (CO), other toxic gases, and oxygen deficient atmospheres.
- Contaminant has adequate warning properties.

- Concentrations are < IDLH (immediately dangerous to life and health).
- Ambient atmosphere contains 19.5 - 23.5 percent oxygen.
- Concentrations are < maximum use limit of the cartridge.
- Appropriate and fresh cartridges are used.
- Air monitoring is continued during APR use.
- Concentrations are < PF x PEL or TLV (see below).

	PF
1/4 or 1/2 mask APR	10*
1/4 or 1/2 mask PD SCBA	10
1/4 or 1/2 mask supplied air	10
full face APR	100*
full face PD SCBA	100
PP SCBA / supplied air	100

PF - Protection factor
PEL - Permissible exposure limit
TLV - Threshold limit value
SCBA - Self contained breathing apparatus
PD - Pressure demand
PP - Positive pressure
* or maximum use limit of cartridge, whichever is less

- If any of the following danger signals are sensed while using the respirator, immediate evacuation to fresh air is compulsory (the cartridge or filter may be spent and abnormal conditions may create vapor concentrations which are beyond the limit of the respirator):

  a. Smell or taste of chemicals.
  b. Irritation of the eyes, nose and/or throat.
  c. Difficulty in breathing.
  d. Temperature elevation of inspired air.
  e. Loss of equilibrium, nausea, and/or dizziness.

- Positive and negative pressure tests should be performed each time a respirator is used, and intermittently during use.
- Before and after entering an area of known exposure, cartridges should be discarded and replaced. If there is no known exposure, the maximum life of a cartridge is 15 working days, as long as preventative maintenance techniques are observed.

4.0 SAFETY EQUIPMENT LIST

The following Safety Equipment must be available on site:

- First Aid Kit
- Mobile Telephone
- Half or full face APR - Organic Vapor/HEPA Cartridge (MSA GMA or equivalent) or Combination Cartridge (MSA GMC-H or equivalent)

- Hard Hat
- Tyvek Coveralls/Polyethylene coated Tyvek Coveralls
- PVC (or similar) Rain suit
- Safety Boots (Steel-toe and shank)
- Nitrile Outer Gloves/Latex Inner Gloves
- Hearing protection

5.0 EXCLUSION AREAS

If migration of chemicals from the work area is a possibility, or as otherwise required by regulations or client specifications, site control will be maintained by establishing clearly identified work zones. These will include the exclusion zone, contaminant reduction zone, and support zone, as discussed below.

5.1 Exclusion Zone

Exclusion zones will be established as needed around each hazardous waste activity location. Only persons with appropriate training and authorization from the Field H&S Manager will enter this perimeter while work is being is being conducted there. Traffic cones, barrier tapes, and warning signs will be used as necessary to establish the zone boundary. Plastic stanchions or temporary fencing will be placed as required to prevent unauthorized access to within 10 feet from the sides of open excavations.

5.2 Contamination Reduction Zone

A contamination reduction zone will be established as needed just outside each temporary exclusion zone to decontaminate equipment and personnel as discussed below. This zone will be clearly delineated from the exclusion zone and support zone using the means noted above. Care will be taken to prevent the spread of contamination from this area.

5.3 Support Zone

A support zone will be established as needed outside the contamination reduction area to stage clean equipment, don protective clothing, take rest breaks, etc. This zone will be clearly delineated from the contaminant reduction zone using the means noted above.

6.0 MINIMIZATION OF CONTAMINATION

In order to make the work zone procedure function effectively, the amount of equipment and personnel allowed in contaminated areas must be minimized. In addition, the amounts of soil, water, or other media collected should not exceed what is needed for typical laboratory analysis. Do not kneel on contaminated ground, stir up unnecessary dust, or perform any practice that increases the probability of hand-to-mouth transfer of contaminated materials. Use plastic drop cloths and equipment covers where appropriate. Eating, drinking, chewing gum, smoking or using smokeless tobacco are forbidden in the exclusion and contamination reduction zones.

7.0 DECONTAMINATION

Decontamination is necessary to limit the migration of contaminants from the work zone(s) onto the site or from the site into the surrounding environment. Equipment and personnel decontamination are discussed in the following sections, and the following types of equipment may be used to perform these activities:

- Boot and Glove Wash Bucket
- Scrub Brushes - Long Handled
- Spray Rinse Applicator
- Plastic Garbage Bags
- 5-Gallon Container with Alconox Decontamination solution or household detergent and water.

7.1 Equipment Decontamination

Proper decontamination (decon) procedures will be employed to ensure that contaminated materials do not contact individuals and are not spread from the site. These procedures will also ensure that contaminated materials generated during site operations and during decontamination are managed appropriately.

All non-disposable equipment will be decontaminated in the contamination reduction zone. Prior to demobilization, all contaminated portions of heavy equipment should be thoroughly cleaned. Heavy equipment may require steam cleaning. Soil and water sampling instruments should be cleaned with detergent solutions in buckets.

7.2 Personnel Decontamination

If contamination of personnel or PPE is observed or suspected, personnel working in exclusion zones will perform a mini-decontamination in the contamination reduction zone prior to changing respirator cartridges (if worn), taking rest breaks, drinking liquids, etc. They will decontaminate fully before eating lunch or leaving the site. The following describes the procedures for mini-decon and full decon activities.

Mini-decon procedure:

1. In the contamination reduction zone, wash and rinse outer gloves and boots in buckets.
2. Inspect protective outer suit, if worn, for severe contamination, rips or tears.
3. If suit is highly contaminated or damaged, full decontamination as outlined below will be performed.

4. Remove outer gloves. Inspect and discard if ripped or damaged.
5. Remove respirator (if worn) and clean using premoistened towelettes. Deposit used cartridges in plastic bag.
6. Replace cartridges and outer gloves, and return to work.

Full decontamination procedure:

1. In the contamination reduction zone, wash and rinse outer gloves and boots in buckets.
2. Remove outer gloves and protective suit and deposit in labeled container for disposable clothing.
3. Remove respirator, and place used respirator cartridges (if end of day) in container for disposable clothing.
4. If end of day, thoroughly clean and dry respirator then store properly in a sealed container.
5. Remove inner gloves and discard into labeled container for disposable clothing.
6. Remove work boots without touching exposed surfaces, and put on street shoes. Put boots in individual plastic bag for later reuse.
7. Immediately wash hands and face using clean water and soap.
8. Shower as soon after work shift as possible.

8.0 DISPOSAL OF CONTAMINATED MATERIALS

All disposable sampling equipment and materials will be placed inside two plastic bags or other appropriate containers and placed in storage as directed by the client.

9.0 SITE SECURITY AND CONTROL

Site security and control will be the responsibility of the Project Manager, The "buddy-system" will be used when working in designated hazardous areas. Any security or control problems will be reported to appropriate authorities.

10.0 SPILL CONTAINMENT

Sources of bulk chemicals subject to spillage are not expected to be encountered in this project. Accordingly, a spill containment plan should not be needed for this project. The only chemicals likely to be on site are vehicle fuels kept in the vehicles. In the event of a spill, if it is safe to do so, personnel will put absorbent materials onto the spilled material and keep it from entering drains or water bodies. If the spill is large and a potential safety or environmental hazard personnel will call 911 as soon as possible. Only properly trained personnel will respond to an emergency or to a spill larger or more serious than what can easily be wiped up.

11.0 EMERGENCY RESPONSE PLAN

The HWA Emergency Response Plan outlines the steps necessary for appropriate response to emergency situations. The following paragraphs summarize the key Emergency Response Plan procedures for HWA projects.

11.1 Plan Content and Review

The principal hazards addressed by the Emergency Response Plan include the following: fire or explosion, medical emergencies, uncontrolled contaminant release, and situations such as the presence of chemicals above exposure guidelines or inadequate protective equipment for the hazards present. However, in order to help anticipate potential emergency situations, field personnel shall always exercise caution and look for signs of potentially hazardous situations, including the following as examples:

- visible or odorous chemical contaminants;
- drums or other containers;
- general physical hazards (traffic, moving equipment, sharp or hot surfaces, slippery or uneven surfaces, etc.);
- possible sources of radiation;
- live electrical wires or equipment;
- underground pipelines or cables; and
- poisonous plants or dangerous animals

These and other problems should be anticipated and steps taken to avert problems before they occur.

The Emergency Response Plan shall be reviewed and rehearsed, as necessary, during the on-site health and safety briefing. This ensures that all personnel will know what their duties shall be if an actual emergency occurs.

11.2 Plan Implementation

The Field H&S Manager shall act as the lead individual in the event of an emergency situation and evaluate the situation. He/she will determine the need to implement the emergency procedures, in concert with other resource personnel including client representatives, the Project Manager, and the Corporate H&S Manager. Other on-site field personnel will assist the Manager as required during the emergency.

In the event that the Emergency Response Plan is implemented, the Field H&S Manager or designee is responsible for alerting all personnel at the affected area by use of a signal device (such as a hand-held air horn) or visual or shouted instructions, as appropriate.

Emergency evacuation routes and safe assembly areas shall be identified and discussed in the on-site health and safety briefing, as appropriate. The buddy-system will be employed during evacuation to ensure safe escape, and the Field H&S Manager shall be responsible for roll-call to account for all personnel.

11.3 Emergency Response Contacts

Site personnel must know whom to notify in the event of Emergency Response Plan implementation. The following information will be readily available at the site in a location known to all workers:

- Emergency Telephone Numbers -- see list at the beginning of this plan;
- Route to Nearest Hospital -- see list at the beginning of this plan and route map at the end of this plan;
- Site Descriptions -- see the description at the beginning of this plan; and
- If significant environmental release of contaminants occurs, the federal, state, and local agencies noted in this plan must be immediately notified. If the release to the environment includes navigable waters also notify:

    - National Response Center (800) 424-8802
    - EPA (908) 321-6660

In the event of an emergency situation requiring implementation of the Emergency Response Plan (fire or explosion, serious injury, tank leak or other material spill, presence of chemicals above exposure guidelines, inadequate personnel protection equipment for hazards present, etc.), cease all work immediately. Offer whatever assistance is required, but do not enter work areas without proper protection equipment. Workers not needed for immediate assistance will decontaminate per normal procedures (if possible) and leave work area, pending approval by the Field Safety Manager for re-start of work. The following general emergency response safety procedures should be followed.

11.4 Fires

HWA personnel will attempt to control only very small fires if the person is comfortable doing so and only after 911 has been called. If an explosion appears likely, evacuate the area immediately. If a fire occurs which cannot be controlled, then immediate intervention by the local fire department or other appropriate agency is imperative. Use these steps:

- Evacuate the area to a previously agreed upon, upwind location
- Contact fire agency identified in the site specific plan; and
- Inform Project Manager or Field H&S Manager of the situation.

11.5 Medical Emergencies

Contact the agency listed in the site-specific plan if the medical emergency occurs. If a worker leaves the site to seek medical attention, another worker should accompany the patient. When in doubt about the severity of an accident or exposure, always seek medical attention as a conservative approach. Notify the Project Manager of the outcome or the medical evaluation as soon as possible. For minor cuts and bruises, an on-site first aid kit will be available.

- If a worker is seriously injured or becomes ill or unconscious, immediately request assistance from the emergency contact sources noted in the site-specific plan. Do not attempt to assist an unconscious worker in a confined space without applying confined space entry procedures. Do not attempt to assist an unconscious worker in an untested or known dangerous atmosphere area without using proper respiratory protection.

- In the event that a seriously injured person is also heavily contaminated, use clean plastic sheeting to prevent contamination of the inside of the emergency vehicle. Less severely injured individuals may also have their protective clothing carefully removed or cut off before transport to the hospital.

11.6 Uncontrolled Contaminant Release

In the event of a tank rupture or other material spill, attempt to stop and contain the flow of material using absorbents, booms, dirt, or other appropriate material, if it is safe to do so. Prevent migration of liquids into streams or other bodies of water by building trenches, dikes, etc. Drum the material for proper disposal or contact a spill removal firm for material cleanup and disposal, as required. Observe all fire and explosion precautions while dealing with spills.

11.7 Potential Chemical Exposure/Inadequate PPE

In some emergency situations, workers may encounter a localized work area where exposure to previously unidentified chemicals could occur. A similar hazard includes the situation where chemicals are present above permissible exposure levels and or/above the levels suitable for the personnel protective equipment at hand on-site. If these situations occur, immediately stop work and evacuate the work area. Do not reenter the area until appropriate help is available and/or appropriate personnel protective equipment is obtained. Do not attempt to rescue a downed worker from such areas without employing confined space entry procedures. Professional emergency response assistance (fire department, HAZMAT team, etc.) may be necessary to deal with this type of situation.

11.8 Other Emergencies

Depending on the type of project, other emergency scenarios may be important at a specific work site. These scenarios will be considered as part of the site-specific plan and will be discussed during the on-site safety briefing, as required.

11.9 Plan Documentation and Review

The Field H&S Manager will notify the Project H&S Manager as soon as possible after the emergency situation has been stabilized. The Project Manager or H&S Manager will notify the appropriate client contacts, and regulatory agencies, if applicable. If an individual is injured, the Field H&S Manager or designate will file a detailed Accident Report with the Corporate H&S Manager within 24 hours.

The Project Manager and the Field, Project, and Corporate H&S Managers will critique the emergency response action following the event. The results of the critique will be used in follow-up training exercises to improve the Emergency Response Plan.

12.0 MEDICAL SURVEILLANCE

A medical surveillance program has been instituted for HWA employees having exposure to hazardous substances. Exams are given before assignment, annually thereafter, and upon termination. Content of exams is determined by the Occupational Medicine physician in compliance with applicable regulations and is detailed in the General H&S Plan.

Each team member will have undergone a physical examination as noted above in order to verify that he/she is physically able to use protective equipment, work in hot environments, and not be predisposed to occupationally-induced disease. Additional exams may be needed to evaluate specific exposures or unexplainable illness.

13.0 TRAINING REQUIREMENTS

HWA employees who perform site work must understand potential health and safety hazards. All employees potentially exposed to hazardous substances, health hazards, or safety hazards will have completed 40 hours of off-site initial hazardous materials health and safety training or will possess equivalent training by past experience. They will also have a minimum of three days of actual field experience under the direct supervision of a trained supervisor. All employees will have in their possession evidence of completing this training. Employees will also complete annual refresher, supervisor, and other training as required by applicable regulations.

Prior to the start of each work day, the Field H&S Manager will review applicable health and safety issues with all employees and subcontractors working on the site, as appropriate. These briefings will also review the work to be accomplished, with an opportunity for questions to be asked.

14.0 REPORTING, REPORTS, AND DOCUMENTATION

HWA staff will sign the Acknowledgment of Understanding (Attachment 1), which will be kept on site during work activities and recorded in the project files. The Daily Safety Meeting Checklist (Attachment 2) will also be completed daily by the HWA Field Representative. In the event that accidents or injuries occur during site work, the Health and Safety Manager and the client shall be immediately notified.

Attachment 1

Employee Acknowledgment Form

HWA GeoSciences Inc.
EMPLOYEE ACKNOWLEDGMENT FORM

To be Executed by HWA GeoSciences Inc. Employees Following Their Review of:

Remedial Investigation
Health and safety plan
Bothell landing site
Bothell, WA

Health and Safety Plan

I hereby certify that I have read and understand the health and safety guidelines contained in the above referenced plan.

Employee Name: ____
Employee Signature: ____________________________ Date: ____________________

In case of emergency, please contact:

1. Name: _____________________Relationship: _________ Telephone No.: __________

2. Name: _____________________Relationship: _________ Telephone No.: __________

Received By: ____

Site Safety Manager: ____

Signature: __________________________________ Date: __________________________

Attachment 2

Daily Safety Meeting Checklist

Daily Safety Meeting Checklist

__________________________________ _____________
Site Safety Manager Date

Attendee Signatures:

Print Name____________________ Print Name____________________
Signature______________________ Signature______________________

Print Name____________________ Print Name____________________
Signature______________________ Signature______________________

Print Name____________________ Print Name____________________
Signature______________________ Signature______________________

Print Name____________________ Print Name____________________
Signature______________________ Signature______________________

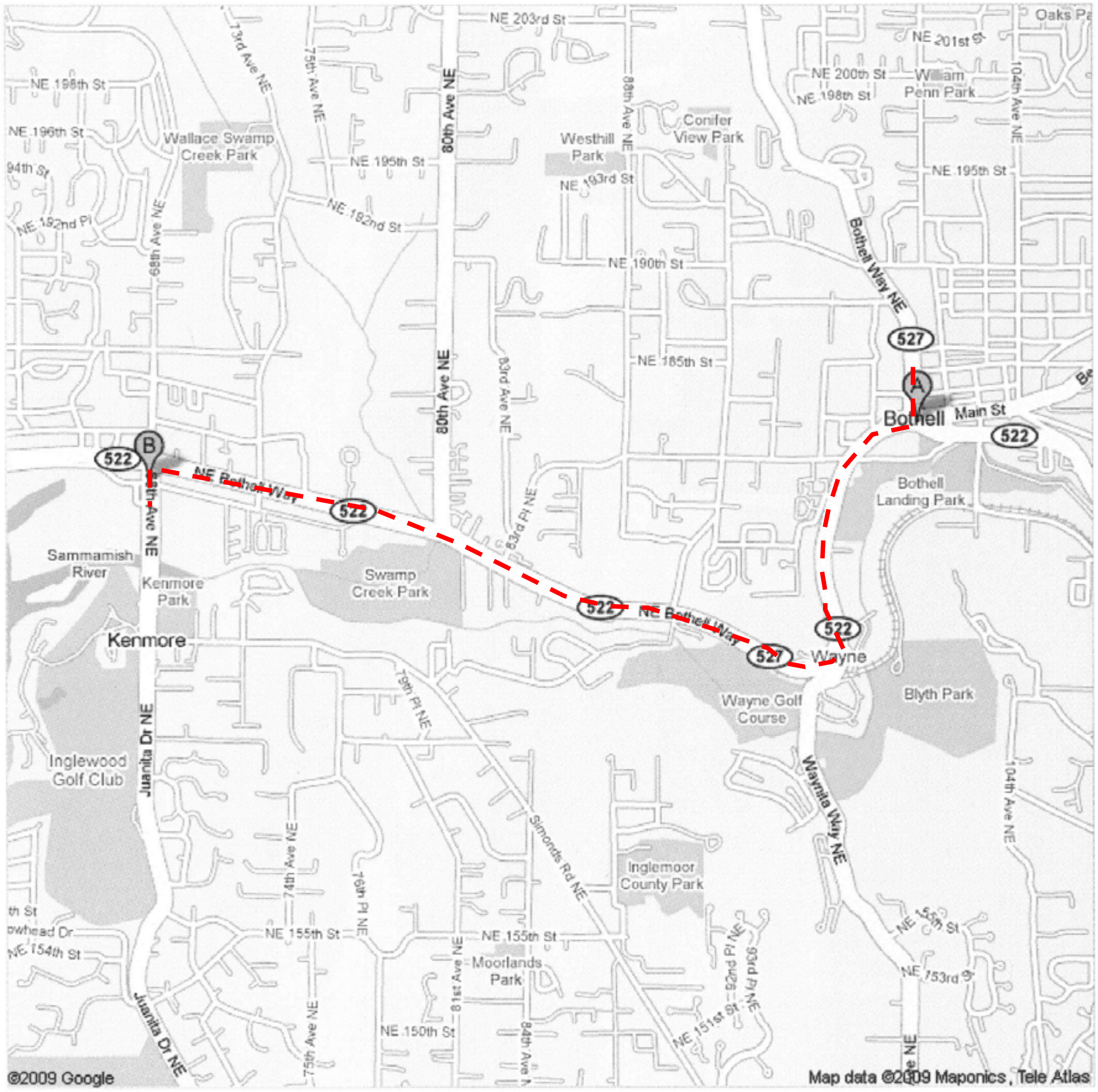
Meeting Topics

Topic	Site Safety manager Initials
Days planned work activities	
Site hazards	
Route to hospital	
Safety equipment and equipment operation	
Review assigned duties	
Confirm review of HSP	
Review site action levels	

Google Maps

Directions to 17511 68th Ave NE, Kenmore, WA 98028

2.8 mi – about **6 mins**



Ⓐ 10001 Woodinville Dr, Bothell, WA 98011

(522)	1. Head **southeast** on **WA-522/Woodinville Dr** toward **NE 180th St**	go 492 ft total 492 ft
↱	2. Turn **right** at **NE 180th St** About 1 min	go 0.3 mi total 0.4 mi
(522)	3. Turn **left** at **NE Bothell Way/WA-522/WA-527** Continue to follow NE Bothell Way/WA-522 About 5 mins	go 2.4 mi total 2.8 mi
↰	4. Turn **left** at **68th Ave NE** Destination will be on the right	go 308 ft total 2.8 mi

Ⓑ 17511 68th Ave NE, Kenmore, WA 98028

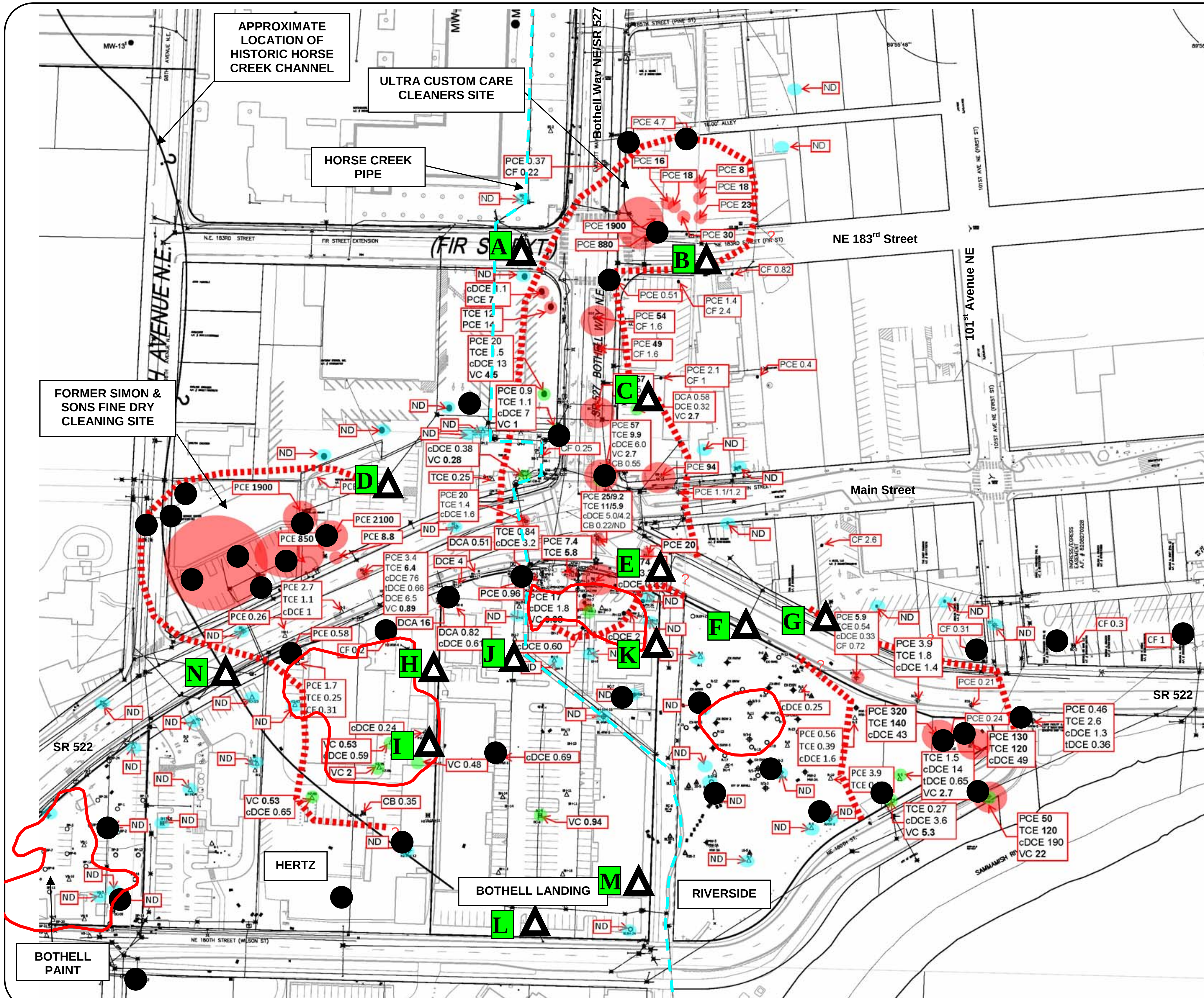
REMEDIAL INVESTIGATION FEASIBILITY STUDY
BOTHELL LANDING SITE
BOTHELL, WASHINGTON

WORK PLAN ADDENDUM

Table 1
Sample Analytes and Rationale (Area Wide Ground Water Monitoring Network)
See Figure 9 for Sampling Locations

Well	Screened Depth (feet)*	Rationale	Analytical
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 (soil and water) Sample soils	HVOCs TPH**
D	10-20	Define edges / relationship of both plumes. Also check for TPH, detected at Schucks and Grease Monkey, at low concentrations	HVOCs TPH
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)
F	10-20		
G	10-20		
H	10-20 30-50	Delineate edge of BSC plume Confirm TPH cleanup in soil and ground water at Hertz	HVOCs TPH As
I	10-20	Delineate edge of BSC plume Confirm soil cleanup in this area, sample soils 12-15' below clean backfill	HVOCs TPH As
J	10-20	Delineate edge of plume(s) Confirm TPH cleanup in ground water at Bothell Landing	HVOCs TPH Metals (As, Cd, Cr, Pb)
K	10-20		
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

* Approximate, 10-25' indicates first encountered, non-perched ground water, 30-50' indicates deeper, confined aquifer, as encountered in each location
**TPH = TPH-Gx/BTEX, TPH-Dx



LEGEND

PCE > 50 ug/L

Any Chlorinated VOC > MTCA A

Exisitng monitoring well

Future monitoring well (typical)

All Chlorinated VOCs ND

Approximate Extent of HVOCPlume

2010 TPH Cleanup areas

ABBREVIATIONS

PCE	Tetrachloroethene
TCE	Trichloroethene
DCE	Dichloroethene
cDCE	(cis) 1,2-Dichloroethene
tDCE	(trans) 1,2-Dichloroethene
DCA	Dichloroethane
VC	Vinyl Chloride
CF	Chloroform
CB	Chlorobenzene
VOC	Volatile Organic Compound
ND	Not Detected At Laboratory's Reporting Limit
ug/L	Micrograms per Liter

NOTES

- Sample and chlorinated VOC plume boundary locations are approximate.
- Concentration values in **bold** exceed MTCA Method A ground water cleanup level.

MTCA METHOD A GROUND WATER CLEANUP LEVELS (ug/L)

PCE	5.0
TCE	5.0
DCE	Not Established
cDCE	Not Established
tDCE	Not Established
DCA	Not Established
VC	0.2
CF	Method B = 80
CB	Not Established

N

HWA GEOSCIENCES INC.

PRELIMINARY MONITORING WELL NETWORK

BOTHELL LANDING SITE
REMEDIAL INVESTIGATION WORK PLAN
BOTHELL, WASHINGTON

FIGURE NO.
9

PROJECT NO.
2007-098-929

APPENDIX I

HWA GEOSCIENCES, 2015B, AREA WIDE GROUND WATER MONITORING, FOURTH ROUND RESULTS, BOTHELL AGREED ORDER SITES, BOTHELL, WA. LETTER DATED APRIL 16 2015.

HWA GEOSCIENCES, 2015A AREA WIDE GROUND WATER MONITORING, THIRD ROUND RESULTS, BOTHELL AGREED ORDER SITES, BOTHELL, WA. LETTER DATED JANUARY 16, 2015;

HWA GEOSCIENCES, 2014E, AREA WIDE GROUND WATER MONITORING, SECOND ROUND RESULTS, BOTHELL AGREED ORDER SITES, BOTHELL, WA. LETTER DATED OCTOBER 17, 2014;

HWA GEOSCIENCES, 2014B ADDENDUM 2 TO AUGUST 20, 2014 LETTER RE: AREA WIDE GROUND WATER MONITORING NETWORK, BOTHELL AGREED ORDER SITES, BOTHELL, WA, DATED AUGUST 27, 2014

HWA GEOSCIENCES, 2014C ADDENDUM TO AUGUST 20, 2014 LETTER RE: AREA WIDE GROUND WATER MONITORING NETWORK, BOTHELL AGREED ORDER SITES, BOTHELL, WA, DATED AUGUST 25, 2014;

HWA GEOSCIENCES, 2014C, AREA WIDE GROUND WATER MONITORING NETWORK, BOTHELL AGREED ORDER SITES, BOTHELL, WA. LETTER DATED AUGUST 22, 2014;

HWA GEOSCIENCES INC.

Geotechnical Engineering · Hydrogeology · Geoenvironmental Services · Inspection and Testing

April 16, 2015
HWA Project No. 2007 098- 998

Jerome B. Cruz, Ph.D.
Washington Department of Ecology
Toxics Cleanup Program, Northwest Regional Office
3190 - 160th SE Bellevue, WA 98008

Subject: **AREA WIDE GROUND WATER MONITORING**
FOURTH ROUND RESULTS, MARCH 2015
Bothell Agreed Order Sites
Bothell, WA

Dear Dr. Cruz:

This letter summarizes the area wide quarterly ground water monitoring event #4, which occurred in March and April 2015. All wells in the area wide network were sampled. Tables 1 through 5 summarize the results of this and prior sampling rounds. Table 6 summarizes recently surveyed well elevation data. Figure 1 shows the well locations. Results of the one year (four quarters) of groundwater monitoring will be discussed in the forthcoming Remedial Investigation/Feasibility Study reports for the four sites (Paint, Hertz, Landing and Riverside). Event #4 results were generally consistent with past rounds. Results of tracer parameters (e.g., sodium, ORP) for the Ultra site show injected fluids have reached target areas.

Please feel free to contact me if you have any questions or need additional information.

Sincerely,
HWA GEOSCIENCES INC.

Arnie Sugar, LG, LHG
President

Cc: Ching-Pi Wang, Dept. of Ecology
Sunny Becker, Dept. of Ecology
Nduta Mbuthia, City of Bothell
Steven Morikawa , City of Bothell

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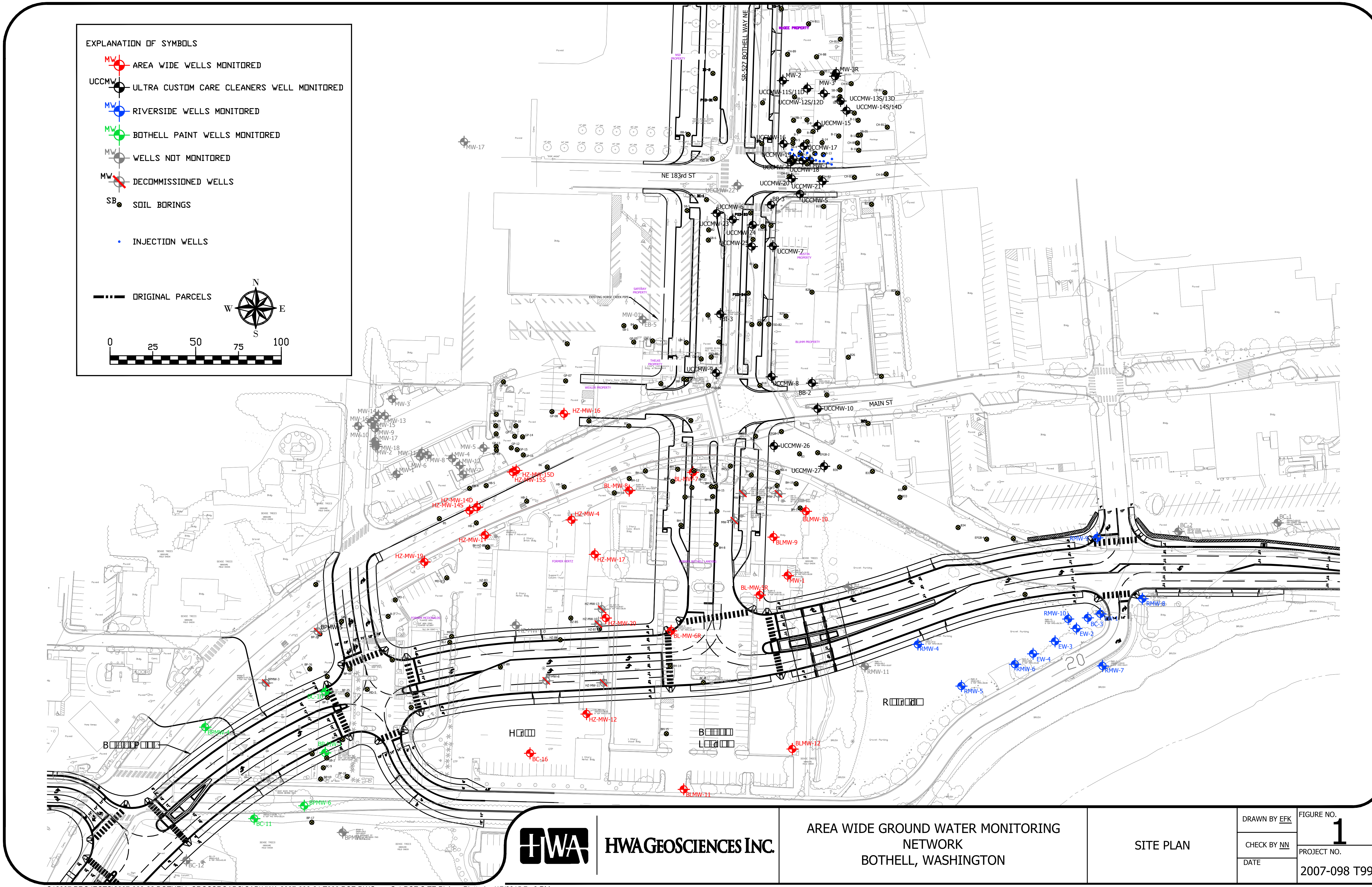


HWA GEOSCIENCES INC.

AREA WIDE GROUND WATER MONITORING NETWORK
BOTHELL, WASHINGTON

SITE PLAN

DRAWN BY EFK
CHECK BY NN
DATE

FIGURE NO. 1

PROJECT NO. 2007-098 T998

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T998 PCE.DWG

Table 1
Bothell Hertz 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)	(cis) 1,2-Dichloroethene (µg/L)	Trichloroethene (µg/L)	Tetrachloroethene (µg/L)	Vinyl Chloride (µg/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)	Nitrate (mg/L)	Sulfate (mg/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)	Methane (ug/L)	Total Alkalinity (mg CaCO3/L)	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)								**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**NA**	**NA**	**5**	**5**	**5**	**5**	**50**	**50**	**15**	**15**				**NA**		
HZMW-1	5-15	5/30/2014	7.02	6.62	478	14.3	3.23	<0.20	**0.22**	**21**	<0.20	<100	<270	<430	<1.0	<1.0	<1.0	<1.0			**6.3**	<3.0												
		9/12/2014	7.90	6.51	279	18.4	2.35	<0.20	**0.33**	**33**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0				<1.0												
		12/15/2014	6.69	6.3	223	13.4	2.02	<0.20	<0.20	**15**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			**23**	<3.0												
		3/19/2015	6.78	6.54	295	12.7	8.29	<0.20	<0.20	**11**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0												
HZMW-4	8-18	6/9/2014	6.79	6.35	407	13.9	2.73	<0.20	<0.20	<0.20	<0.20	<100	<270	<430	<1.0	<1.0	<1.0	<1.0			**17**	<3.0												
		9/12/2014	7.47	6.42	361	18.4	2.12	<0.20	<0.20	**2.6**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0				<3.0												
		12/16/2014	5.53	6.56	316	13.1	2.17	<0.20	<0.20	**0.54**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0												
		3/30/2015	6.20	5.47	323	13.8	2.67	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0							<10	**3.1**	<50	<0.50	**140**	
HZMW-12	10-20	6/10/2014	9.48	6.32	2.18	13.2	0.12	<0.20	<0.20	<0.20	<0.20	<100	**430**	**550**	<1.0	<1.0	<1.0	<1.0			**14**	**13**												
		9/12/2014	9.43	6.37	1382	18.3	0.28	<0.20	<0.20	**2.6**	<0.20	<100	**380**	<410	<1.0	<1.0	<1.0	<1.0			**12**	**12**												
		12/16/2014	7.86	6.51	692	14	0.63	<0.20	<0.20	**0.44**	<0.20	<100	**460**	<410	<1.0	<1.0	<1.0	<1.0			**14**	**15**												
		3/26/2015	8.10	5.85	1134	14.77	0.00	<0.20	<0.20	<0.20	<0.20	<100	**460**	<410	<1.0	<1.0	<1.0	<1.0			**12**	**11**							**6100**	<0.05	<10	**8800**	**1100**	
HZMW-14S	5-15	5/29/2014	6.51	6.46	799	15.5	0.16	**11**	**23**	**1000**	<10	<100	<300	<480	<1.0	<1.0	<1.0	<1.0			**3.3**	<3.0												
		9/11/2014	7.68	6.51	441	20.9	0.54	**78**	**96**	**4900**	<20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0				<3.0												
		12/15/2014	6.08	6.34	396	14.9	0.48	**13**	**16**	**790**	<4.0	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0	<4.4	<4.0	<11	<10	<1.1	<1.0						
		3/20/2015	6.28	6.4	482	13.70	13.86	**3.8**	**6.5**	**200**	<1.0	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			<3.3		<4.4	<4.0	<11	<10	<1.1	<1.0						
HZMW-14D	30-40	5/29/2014	6.62	6.47	622	14.7	0.23	**16**	**3.7**	**100**	<1.0	<100	<290	<460	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0												
		9/11/2014	6.81	6.45	352	18.8	0.28	**17**	**3.2**	**100**	<1.0	<100	<260	<410	<1.0	<1.0	<1.0	<1.0				<3.0												
		12/15/2014	6.68	6.41	332	15.6	0.87	**15**	**2.8**	**100**	<1.0	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0	<4.4	<4.0	<11	<10	<1.1	<1.0						
		3/20/2015	6.64	6.69	423	14.8	NA	**9.8**	**2.4**	**62**	<0.40	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			<3.3		<4.4	<4.0	**13**	<10	**1.3**	<1.0						
HZMW-15S	5-15	5/29/2014	5.75	6.35	785	15.0	1.45	**3.6**	**7.1**	**150**	<1.0	<100	<280	<450	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0												
		9/13/2014	7.34	6.87	575	19.7	0.25	**12**	**19**	**400**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0				<1.0												
		12/15/2014	5.80	6.44	549	12.1	0.95	**12**	**14**	**300**	<2.0	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0	<4.4	<4.0	<11	<10	<1.1	<1.0						
		3/20/2015	5.55	6.32	579	12.2	NA	**3.5**	**6.2**	**140**	<1.0	<100	<270	<430	<1.0	<1.0	<1.0	<1.0			<3.3		<4.4	<4.0	<11	<10	<1.1	<1.0						
HZMW-15D	20-30	5/29/2014	6.08	6.28	1000	14.2	0.12	**180**	**290**	**3700**	<20	<100	<280	<460	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0												
		9/13/2014	6.74	6.33	308	19.1	0.30	**4.5**	**6.9**	**93**	<0.40	<100	<250	<410	<1.0	<1.0	<1.0	<1.0				<3.0												
		12/15/2014	6.11	6.34	290	13.0	1.87	**4.3**	**9.2**	**130**	<1.0	<100	<250	<410	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0	<4.4	<4.0	<11	<10	<1.1	<1.0						
		3/20/2015	6.05	6.27	491	13.6	NA	**280**	**400**	**6700**	<30	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			<3.3		<4.4	<4.0	<11	<10	<1.1	<1.0						
HZMW-16	15-25	5/28/2014	6.35	6.52	451	15.5	0.16	**0.30**	<0.20	**0.32**	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0																
		9/12/2014	6.78	7.08	207	17.9	1.23	<0.20	<0.20	**4.2**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0				<3.0												
		12/15/2014	6.09	7.01	235	15.0	0.57	<0.20	<0.20	**0.4**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0												
		3/19/2015	6.10	6.59	326	15.1	NA	**0.24**	<0.20	**0.35**	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	**1.8**	**13**	<3.3	<3.0							**60**			<0.50	**66**	
HZMW-17	10-20	6/9/2014	7.93	6.61	594	13.8	0.15	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0												
		9/12/2014	8.30	6.94	345	16.4	0.89	<0.20	<0.20	**2.0**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0				<3.0												
		12/16/2014	7.79	6.71	309	13.7	1.55	<0.20	<0.20	**0.5**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			**5.1**	<3.0												
		3/19/2015	7.60	6.96	434	12.7	NA	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			**8.7**	<3.0												
HZMW-18	7.5-17.5	6/10/2014	8.51	6.38	1901	14.0	0.14	<0.20	<0.20	<0.20	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0												
HZMW-19	5-15	5/30/2014	5.58	6.38	1210	13.8	0.10	**0.40**	**0.94**	**0.97**	<0.20	**1200**	<100	<410	**2.1**	<1.0	**11**	**1.6**			<3.3	<3.0												
		6/9/2014	6.02	6.26	1213	14.3	0.13	**1.1**	**0.67**	**0.28**	<0.20	**720**	<640	<410	<4.0	<4.0	<4.0	<4.5			<3.3	<3.0												
		9/12/2014	6.21	6.37	675	19.7	0.50	**0.67**	**0.76**	**3.3**	<0.20	**510**	**680**	**430**	<1.0	<1.0	**5.8**	<1.0				<3.0												
		12/16/2014	5.09	6.75	301	13.5	0.42	<0.20	<0.20	**1.0**	<0.20	**330**	<260	<410	<1.0	<1.0	**4.0**	**2.0**			<3.3	<3.0												
		3/19/2015	5.30	6.33	376	13.0	NA	<0.20	<0.20	<0.20	<0.20	**110**	<260	<410	<1.0	<1.0	**2.2**	<1.0	<0.050	<5.0	<3.3	<3.0							**85**			**100**	**120**	
HZMW-20	5-15	6/9/2014	7.48	6.79	1914	15.3	0.28	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0												
		9/13/2014	8.11	7.09	1018	20.7	0.72	<0.20	<0.20	**1.3**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0				<3.0												
		12/16/2014	6.36	6.72	851	12.6	0.44	<0.20	<0.20	**0.41**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0												
		3/19/2015	6.86	6.91	1139	12.5	NA	<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0	<1.0			<3.3	<3.0												
BLMW-8	5-15	6/10/2014																																Well cannot be found
		9/10/2014	8.89	6.4	486	18.8	0.20	<0.20	<0.20	<0.20	<0.20	<100	**280**	**540**	<1.0	<1.0	<1.0	<1.0			<1.0	<3.0												
		12/16/2014	7.86	6.54	508	13.8	0.99	<0.20	<0.20	**0.69**	<0.20	<100	<260	**630**	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0												
		3/30/2015	8.00	5.49	410	13.6	0.00	<0.20	<0.20	<0.20	<0.20	<100	**300**	**560**	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0							**1200**	**0.14**	<5.0	**1100**	**170**	
BC-16	11-21	6/10/2014	8.70	6.43	4.27	12.9	0.05	<0.20	<0.20	<0.20	<0.20	<100	<470	<510	<1.0	<1.0	<1.0	<1.0			**60**	**18**												
		9/13/2014	8.79	6.3	1659	18.8	0.11	<0.20	<0.20	**1.4**	<0.20	<100	**470**	<420	<1.0	<1.0	<1.0	<1.0			**64**	**31**												
		12/16/2014	3.74	6.56	364	13.1	0.74	<0.20	<0.20	**0.39**	<0.20	<100	**550**	**540**	<1.0	<1.0	<1.0	<1.0			**23**	**11**												
		3/26/2015	4.10	6.38	1886	12.77	0.00	<0.020	<0.020	<0.020	<0.020	<100	**600**	<420	<1.0	<1.0	<1.0	<1.0			**17**	**13**							**7000**	**0.57**	<5.0	**4500**	**540**	
QC Samples																																		
Dup 1		5/29/2014						**3.8**	**8.3**	**140**	<2.0	<100	<280	<440	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0												Duplicate of HZMW-15S 5/29/14
Dup 2		12/15/2014						<0.20	<0.20	**0.40**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0												Duplicate of HZMW-16 12/15/14
Trip Blank		5/30/2014						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0	<1.0																
Trip Blank		6/10/2014						<0.20	<0.20	<0.20	<0.20																							
Trip Blank		12/16/2014						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0	<1.0																
Trip Blank		3/30/2015						<0.20	<0.20	<0.20	<0.20																							
DUP121514		12/15/2014						<0.20	<0.20	**0.4**	<0.20	<100	<280	<410	<1.0	<1.0	<1.0	<1.0			<3.3	<3.0												
DUP 32015		3/20/2015						**3.9**	**6.5**	**210**	<1.0	<100	<260	<410	<1.0	<1.0	<1.0	<1.0			<3.3		<4.4	<4.0	<11	<10	<1.1	<1.0						Duplicate of HZMW-14S 3/20/2015

< – 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
Blank – Not analyzed
1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

Table 2
Bothell Landing 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)	(cis) 1,2-Dichloroethene (µg/L)	Trichloroethene (µg/L)	Tetrachloroethene (µg/L)	Vinyl Chloride (µg/L)	WTPH-Gx (µg/L)	WTPH-Dx Diesel (µg/L)	WTPH-Dx Oil (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (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)	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)								**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**5**	**5**	**5**	**5**	**50**	**50**	**15**	**15**	
MW-1	5-15	6/11/2014	8.68	6.57	1410	19.6	0.06	<0.20	<0.20	<0.20	<0.20	<100	<280	<450	<1.0	<1.0	<1.0	<1.0	**10**	**6.6**	<4.4	<4.0	**19**	<10	**20**	<1.0	
		9/11/2014	8.03	6.60	739	19.2	0.78	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0	**17**	**30**		<4.4	**22**	**86**	**36**	**74**	
		12/8/2014	6.58	6.65	714	13.4	0.66	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		3/25/2015	6.46	6.06	500	11.47	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-5R	5-15	9/10/2014	10.48	6.88	465	18.5	2.20	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		12/8/2014	10.11	4.5	6.82	15.0	0.36	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		3/25/2015	9.73	6.8	409	12.4	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-6R	5-15	9/10/2014	8.91	6.41	574	18.9	0.46	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		**4.7**		<4.0		<10		<1.0	
		12/8/2014	8.17	6.65	745	15.0	0.35	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		3/25/2015	8	6.5	477	12.1	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-7	5-10	6/11/2014																									Well cannot be accessed
		9/10/2014	8.70	5.90	273	18.4	0.63	<0.20	**0.22**	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		12/8/2014	8.30	6.77	562	13.1	2.91	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		3/25/2015	8.00	6.42	397	12.12	3.84	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-9	5-15	6/16/2014	7.07	6.49	555	14.5	0.17	<0.20	<0.20	<0.20	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		9/11/2014	7.64	6.48	599	19.7	0.40	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0	**6.3**	**6.1**		<4.0		<10		<1.0	
		12/8/2014	6.7	6.77	815	13.4	0.69	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		3/25/2015	6.63	6.49	565	12.01	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		3.2		<4.0		<10		<1.0	
BLMW-10	5-10	6/13/2014	6.78	6.09	747	13.6	1.01	<0.20	<0.20	**4.0**	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		9/10/2014	6.63	6.66	414	18.1	0.45	<0.20	<0.20	**3.0**	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0		<3.0		<4.0		<10		<1.0	
		12/8/2014	5.71	6.86	695	13.6	0.53	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		3/25/2015	5.68	6.22	400	12.6	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-11	5-15	6/11/2014	9.08	6.38	2800	14.1	0.07	<0.20	<0.20	<0.20	<0.20	<100	<280	<470	<1.0	<1.0	<1.0	<1.0	**150**	**150**	<4.4	<4.0	<11	<10	<1.1	<1.0	
		9/10/2014	9.54	6.40	1565	17.0	0.23	<0.20	<0.20	<0.20	<0.20	<100	**320**	**430**	<1.0	<1.0	<1.0	<1.0	**120**	**110**		<4.0		<10		<1.0	
		12/8/2014	7.63	6.56	1156	15.0	0.50	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**32**	**30**		<4.0		<10		<1.0	
		3/26/2015	6.4	6.20	634	13.2	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		**27**		<4.0		<10		<1.0	
BLMW-12	5-15	6/12/2014	9.10	6.58	2380	13.4	0.20	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**130**	**120**	<4.4	<4.0	<11	<10	**1.3**	<1.0	
		9/11/2014	9.36	6.52	1010	18.5	0.28	<0.20	<0.20	**14**	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0	**88**	**77**		<4.0		<10		<1.0	
		12/8/2014	7.85	6.32	1102	14.7	0.66	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**200**	**180**		<4.0		<10		<1.0	Dissolved metals sampled 12/16/14
		3/26/2015	7.65	5.96	827	12.8	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	**430**	<1.0	<1.0	<1.0	<1.0		**63**		<4.0		<<10		<1.0	
UCCMW-10	5-15	6/13/2014	6.15	5.70	736	17.0	0.60	<0.20	<0.20	**0.90**	<0.20	<100	<300	<480	<1.0	<1.0	<1.0	<1.0									
		9/18/2014	6.02	5.75	414	21.6	0.37	<0.20	<0.20	**0.29**	<0.20	<100	**1600**	**3100**	<1.0	<1.0	<1.0	<1.0									
		12/11/2014	5.2	5.65	469	14.0	0.49	<0.20	<0.20	**1.3**	<0.20																
		1/28/2015										<100	<250	<410	<1.0	<1.0	<1.0	<1.0									
		4/2/2015	5.56	6.34	352	12.5	0.00	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**3.8**	<3	<4.4	<4	**19**	<10	**1.5**	<1	
UCCMW-26	5-15	3/23/2015	5.43	5.72	574	12.3	4.73	**21**	**10**	**81**	**0.74**																
UCCMW-27	5-15	3/23/2015	5.30	7.38	923	12.4	0.23	<0.20	<0.20	**3.8**	<0.20																
QC Samples																											
Dup 6/13/14		6/16/2014						<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		**3.2**		<4.0		<10		<1.0	Duplicate of BLMW-9 6/16/14
Dup 12/8/14		12/8/2014						<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	Dupicate of BLMW-7 12/8/14
DUP326		3/26/2015						<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		24.0		<4.0		<10		<1.0	
Trip Blank		6/12/2014						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0										
Trip Blank		12/8/2014						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0	<1.0									
Trip Blank		3/25/2015						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0	<1.0									

< – 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
Blank – Not analyzed
1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

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**	**5**	**5**	**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**													
		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**	
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													
		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	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**	
BPMW-2	32-42	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**						
		3/36/2015	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**					
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														

< – 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
Blank – Not analyzed
1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

Table 4
Ultra Custom Care Cleaners Site
Ground Water Analytical Data

Sample Location	Screened Depth, (ft bgs)	Sample Date	Depth to Water (ft bgs)	pH (units)	Conductivity (mS)	Temperature (°C)	Diss. Oxygen (mg/L)	Fe^{+2} (mg/L)	Redox Potential (millivolt)	(cis) 1,2-Dichloroethene (µg/L)	Trichloroethene (µg/L)	Tetrachloroethene (µg/L)	Vinyl Chloride (µg/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)	Nitrate (mg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Toal Sodium (ug/L)	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)										**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**		
BB-2	9-19	6/10/2014	5.53	6.63	459	14.9	2.70	0.0	+269	<0.40	<0.40	79	<0.40								3.2	9.4	<1.0	<0.70	<1.20	<1.10		2 weeks after first injection
		9/17/2014	5.86	6.9	306	18.6	1.85			<0.40	<0.40	68	<0.40															6 weeks after second injection
		12/12/2014	5.01	6.99	263	15.5	2.40			<0.40	<0.40	82	<0.40															
		4/2/2015	5.31	6.39	192	15.44	56.2			<0.40	<0.40	65	<0.40								3.5	8.6	<1.0	<0.50	<0.50	<0.50	13000	6 weeks after in situ bio injections
BB-3	10-20	3/13/2014	7.94	6.11	710	12.4	9.80			<0.20	<0.20	0.3	<0.20								3.5	20	<1.0	<0.50	<0.50	<0.50		Baseline
		5/14/2014	8.42	6.48	567	13.7	9.01	0.0	+360	<0.2	<0.2	0.21	<0.20								2.6	18	<1.0	<0.50	<0.50	<0.50		Baseline
		6/4/2014	7.76	6.33	569	17.5	4.38			<0.20	<0.20	<0.20	<0.20															2 weeks after first injection
		8/19/2014	10.18	6.03	318	17.6	6.71			<0.20	<0.20	0.75	<0.20															2 weeks after second injection
		9/19/2014	11.39	6.74	335	18.5	3.17			<0.20	<0.20	0.42	<0.20															6 weeks after second injection
		12/12/2014	5.01	6.99	263	15.5	2.40			<0.20	<0.20	1.5	<0.20															
		4/2/2015	6.19	6.93	320	13.93	6.93			<0.20	<0.20	<0.20	<0.20															6 weeks after in situ bio injections
BI-3	5-10	6/10/2014	4.27	6.39	493	15.4	1.55	0.0	+238	1.7	0.43	4.5	0.26								1.3	10	1.8	128	<1.2	<1.1		2 weeks after first injection
		9/17/2014	4.17	6.32	394	19.8	0.25			2.9	0.52	2.1	1.6															6 weeks after second injection
		12/17/2014	3.83	6.77	295	12.00	0.32			2.4	0.35	2.5	1.5															
		3/30/2015	4.30	6.17	204	14.03	0.00		-29.6																			6 weeks after in situ bio injections
HWA-INJ-2	8-23	2/2/2015	9.49	7.2	561	19.9	4.32			0.53	0.29	9.3	<0.20								7.1	55	5.7	1.0	<0.50	<0.50	22000	
		3/30/2015								3.1	0.27	1.5	1.1															
		3/24/2015	9.25	5.66	332	14.75	8.15		+105.8	7	3.7	91	<0.40															5 weeks after in situ bio injections
HWA-INJ-4	8-23	2/2/2015	10.64	6.26	642	14.3	5.52			0.54	0.28	2.1	<0.20								6.2	49	4.4	0.73	<0.50	<0.50	27000	
HWA-INJ-6	8-23	2/2/2015	10.46	6.53	557	15.1	6.50			<0.20	0.33	18	<0.20								7.0	91	2.9	0.65	<0.50	<0.50	21000	
MW-1	5-15	3/13/2014	7.75	6.27	568	12.5	7.9			120	30	130	<1.0								4.4	27	<1.0	<0.50	<0.50	<0.50		Baseline
		5/12/2014	8.56	6.09	517	15.0	3.17	0.0	+323	13	4.9	21	<0.20								6.0	13	<1.0	<0.50	<0.50	<0.50		Baseline
		6/5/2014	8.77	5.94	604	15.0	4.05			5.4	2.9	15	<0.20															2 weeks after first injection
		8/19/2014	9.05	5.56	6.04	20.1	25.68			0.4	0.32	9.5	<0.20															2 weeks after second injection
		9/17/2014	9.37	5.91	504	18.5	9.14			<0.20	<0.20	4.3	<0.20															6 weeks after second injection
		12/17/2014	10.14	4.85	3295	13.5	2.24			27	14	80	<0.40															
		3/24/2015	9.88	5.65	1511	13.51	0.00		-135.1	8.1	1.1	2.5	0.21								<0.050	30	840	110	65	52	210000	5 weeks after in situ bio injections
MW-2	3-13	5/11/2014	6.28	6.22	663	14.0	3.45	0.0	+208	<0.20	<0.20	<0.20	<0.20								8.0	36	4.9	20	<0.50	<0.50		Baseline
		6/2/2014	6.32	5.91	685	15.6	3.31			<0.20	<0.20	0.26	<0.20															2 weeks after first injection
		8/13/2014	6.66	5.99	200	17.9	NA			<0.20	<0.20	<0.20	<0.20															2 weeks after second injection
		9/15/2014	7.02	6.34	392	20.9	2.50			<0.20	<0.20	0.22	<0.20															6 weeks after second injection
MW-3R	6-16	5/10/2014	6.36	6.23	1045	13.7	7.50	0.0	+238	<0.20	<0.20	1.7	<0.20								9.2	110	2.3	<0.50	<0.50	<0.50		Baseline
		6/3/2014	6.53	6.13	1090	15.3	4.70			<0.20	<0.20	1.6	<0.20															2 weeks after first injection
		8/19/2014	6.97	6.2	492	18.9	6.49			<0.20	<0.20	1.3	<0.20															2 weeks after second injection
		9/15/2014	7.32	6.25	426	19.0	2.40			<0.20	<0.20	1.0	<0.20															6 weeks after second injection
UCCMW-4	35-40	3/13/2014	9.45	6.70	675	14.3	4.61			<0.20	<0.20	0.88	<0.20								<0.05	8.1	<1.0	<0.50	<0.50	<0.50		Baseline
		5/12/2014	8.30	6.83	523	15.7	0.16	0.0	+247	<0.20	<0.20	0.20	<0.20								<0.05	<5	<1	1.9	<0.5	<0.5		Baseline
		6/5/2014	8.18	6.71	589	16.0	0.20			<0.20	<0.20	0.23	<0.20															2 weeks after first injection
		8/19/2014	8.2	6.93	340	22.2	0.37			<0.20	<0.20	4.9	<0.20															2 weeks after second injection
		9/18/2014	8.41	6.95	361	18.9	0.60			<0.20	<0.20	0.26	<0.20															6 weeks after second injection
		12/17/2014	9.24	6.51	288	14.5	1.32			<0.20	0.44	17	<0.20															
		4/2/2015	9.21	7.19	248	15.0	1.24		+126.7	<0.20	<0.20	6.4	<0.20															6 weeks after in situ bio injections
UCCMW-5	10-20	5/14/2014	9.79	5.98	357	13.8	9.60	0.0	+376	0.44	0.34	14	<0.20								0.77	9.4	1.7	<0.50	<0.50	<0.50		Baseline
		6/5/2014	9.94	5.98	382	14.8	5.35			0.22	0.31	14	<0.20															2 weeks after first injection
		8/19/2014	10.33	5.8	465	19.1	14.10			<0.20	0.24	15	<0.20															2 weeks after second injection
		9/16/2014	10.59	6.20	855	21.0	6.56			<0.20	0.27	13	<0.20															6 weeks after second injection
		12/17/2014	11.20	6.13	286	13.5	2.28			<0.20	<0.20	14	<0.20															
		4/2/2015	11.04	6.95	150	12.6	15.75		+52	<0.20	<0.20	8.5	<0.20															6 weeks after in situ bio injections
UCCMW-6	5-15	3/13/2014	5.30	5.75	809	10.9	0.80			<0.20	<0.20	3.8	<0.20								0.39	17	1.5	3.8	<0.50	<0.50		Baseline
		5/13/2014	5.50	5.96	608	13.7	0.11	0.0	+363	<0.20	<0.20	3.5	<0.20								1.4	16	<1.0	0.99	<0.50	<0.50		Baseline
		6/6/2014	5.75	6.02	645	13.8	5.38			<0.20	<0.20	4.0	<0.20															2 weeks after first injection
		8/19/2014	5.83	5.91	426	16.5	8.11			<0.20	<0.20	4.8	<0.20															2 weeks after second injection
		9/16/2014	5.96	6.33	412	16.7	2.16			<0.20	<0.20	3.6	<0.20															6 weeks after second injection
		12/17/2014	6.14	6.27	395	12.4	0.89			<0.20	<0.20	4.0	<0.20															
		3/30/2015	6.00	5.75	282	15.1	0.00		+63.6	<0.20	<0.20	4.6	<0.20															6 weeks after in situ bio injections
UCCMW-7	8-18	5/15/2014	5.95	6.23	393	14.1	7.84	0.0	+352	<0.20	<0.20	27	<0.20								2.2	28	<1.0	<0.50	<0.50	<0.50		Baseline
		6/3/2014	6.02	6.13	513	14.3	3.98			<0.20	<0.20	26	<0.20															2 weeks after first injection
		8/19/2014	6.31	6.13	300	16.3	8.93			<0.20	<0.20	28	<0.20															2 weeks after second injection
		9/19/2014	6.38	7.05	329	17.2	4.34			<0.20	<0.20	21	<0.20															6 weeks after second injection
		12/17/2014	6.60	6.09	302	14.6	2.41			<0.20	<0.20	22	<0.20															
		4/2/2015	6.34	6.25	238	14.8	NA		-22.5	<0.20	<0.20	25	<0.20								3.5	22	4	<0.50	<0.50	<0.50	10000	6 weeks after in situ bio injections
UCCMW-8	5-15	5/29/2014	6.07	6.52	490	13.9	1.87	0.0	+283	<1.0	<1.0	110	<1.0	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	2.3	18	<1.0	<0.50	<0.50	<0.50		Baseline
		9/13/2014	6.29	6.5	289	19.1	1.00			<0.40	0.57	76	<0.40															6 weeks after second injection
		12/12/2014	5.51	6.97	257	14.6	1.30			<0.40	0.44	83	<0.40															
		3/23/2015	5.80	6.12	180	12.7	0.00		-90.1	<0.20	0.38	49	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	0.24	6.2	2.7	48	<0.50	<0.50	5400	5 weeks after in situ bio injections
UCCMW-9		5/28/2014	6.75	6.51	1164	16.2	0.52	0.0	+276	<1.0	<1.0	1.0	<1.0	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	1.0	19	2.0	16.0	<1.0	<1.0		Baseline
		9/13/2014	6.71	6.75	611	22.8	0.46			0.21	0.23	2.5	<0.20															6 weeks after second injection

Table 4
Ultra Custom Care Cleaners Site
Ground Water Analytical Data

Sample Location	Screened Depth, (ft bgs)	Sample Date	Depth to Water (ft bgs)	pH (units)	Conductivity (mS)	Temperature (°C)	Diss. Oxygen (mg/L)	Fe^{+2} (mg/L)	Redox Potential (millivolt)	(cis) 1,2-Dichloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Tetrachloro-ethene (µg/L)	Vinyl Chloride (µg/L)	WTPH-Gx (µg/L)	WTPH-Dx Diesel (µg/L)	WTPH-Dx Oil (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Toal Sodium (ug/L)	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)										**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**		
UCCMW-9		12/17/2014	6.09	6.30	523	10.8	0.72			<0.20	**0.22**	**5.7**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0								
		3/30/2015	6.58	6.00	366	12.8	0.12		-45.5	<0.20	<0.20	**0.9**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0								6 weeks after second injection
UCCMW-10	5-15	6/13/2014	6.15	5.70	736	17.0	0.60	0.0	+261	<0.20	<0.20	**0.90**	<0.20	<100	<300	<480	<1.0	<1.0	<1.0	<1.0	**2.0**	**24**	**9.2**	**48.6**	<1.2	<1.1		Baseline
		9/18/2014	6.02	5.75	414	21.6	0.37			<0.20	<0.20	**0.29**	<0.20	<100	**1600**	**3100**	<1.0	<1.0	<1.0	<1.0								6 weeks after second injection
		12/11/2014	5.2	5.65	469	14.0	0.49			<0.20	<0.20	**1.3**	<0.20															
		1/28/2015												<100	<250	<410	<1.0	<1.0	<1.0	<1.0								
		4/2/2015	5.56	6.34	352	12.5	0.00		-94.8	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0								6 weeks after in situ bio injections
UCCMW-11S	8-18	5/11/2014	6.16	6.33	878	13.6	5.27	0.0	-2	<0.20	<0.20	**0.28**	<0.20								**3.8**	**90**	**2.0**	**3.5**	**0.69**	<0.50		Baseline
		6/2/2014	6.26	6.07	926	15.0	3.27			<0.20	<0.20	**0.22**	<0.20															2 weeks after first injection
		8/13/2014	6.65	6.45	392	17.5	6.55			<0.20	<0.20	<0.20	<0.20															2 weeks after second injection
		9/15/2014	6.98	7.55	302	20.2	2.00			<0.20	<0.20	**0.30**	<0.20															6 weeks after second injection
		10/8/2014	7.41	6.34	438	17.8	3.33			<0.20	<0.20	<0.20	<0.20															
		10/17/2014	7.51	6.27	468	17.0	2.77			<0.20	<0.20	<0.20	<0.20															
		11/3/2014	6.83	6.08	529	16.1	2.00			<0.20	<0.20	<0.20	<0.20															
		11/14/2014	7.51	6.25	497	15.5	3.41			<0.20	<0.20	<0.20	<0.20															
		11/21/2014	7.95	5.45	431	14.4	3.79			<0.20	<0.20	<0.20	<0.20															
		12/18/2014	9.36	6.01	426	16.7	4.07			<0.20	<0.20	**1.3**	<0.20															
		1/9/2015	9.46	7.08	356	12.1	5.90			<0.20	<0.20	<0.20	<0.20															
		2/12/2015	8.31	6.70	280	13.6	731			<0.20	<0.20	<0.20	<0.20															
		3/16/2015	8.43	6.40	306	14.5	NA			<0.20	<0.20	<0.20	<0.20															5 weeks after in situ bio injections
UCCMW-11D	18-23	5/15/2014	5.68	6.50	389	14.2	5.59	0.0	-8	<0.20	<0.20	<0.20	<0.20								**1.9**	**13**	<1.0	**3.2**	**0.93**	<0.50		Baseline
		6/2/2014	6.23	6.52	481	15.0	1.42			<0.20	<0.20	<0.20	<0.20															2 weeks after first injection
		8/13/2014	6.68	6.88	360	17.1	3.29			<0.20	<0.20	<0.20	<0.20															2 weeks after second injection
		9/15/2014	7.11	7.08	299	17.8	2.13			<0.20	<0.20	<0.20	<0.20															6 weeks after second injection
		10/8/2014	7.69	7.05	476	17.2	2.55			<0.20	<0.20	<0.20	<0.20															
		10/17/2014	7.69	7.35	481	17.1	2.80			<0.20	<0.20	<0.20	<0.20															
		11/3/2014	7.26	7.07	480	17.3	2.80			<0.20	<0.20	<0.20	<0.20															
		11/14/2014	7.65	6.25	258	15.1	3.22			<0.20	<0.20	<0.20	<0.20															
		11/21/2014	8.08	5.99	245	14.2	3.82			<0.20	<0.20	<0.20	<0.20															
		12/18/2014	9.40	6.20	398	17.1	2.75			<0.20	<0.20	**1.2**	<0.20															
		1/9/2015	9.49	6.59	299	14.2	2.63			<0.20	<0.20	<0.20	<0.20															
		2/12/2015	8.38	7.89	349	14.3	7.93			<0.20	<0.20	<0.20	<0.20															
		3/16/2015	8.49	6.68	396	14.9	NA			<0.20	<0.20	<0.20	<0.20															5 weeks after in situ bio injections
UCCMW-12S	8-18	5/10/2014	6.88	6.33	685	13.6	4.47	0.0	-176	<0.20	<0.20	<0.20	<0.20								**4.1**	**38**	<1.0	**0.89**	<0.50	<0.50		Baseline
		6/3/2014	6.99	6.17	2.08	15.1	4.94			<0.20	<0.20	**0.31**	<0.20															2 weeks after first injection
		8/14/2014	7.57	6.27	521	18.9	10			<0.20	<0.20	**0.22**	<0.20															2 weeks after second injection
		9/15/2014	7.95	6.13	341	20.0	3.56			<0.20	<0.20	**0.25**	<0.20															6 weeks after second injection
		10/8/2014	8.23	6.55	319	17.7	3.48			<0.20	<0.20	<0.20	<0.20															
		10/17/2014	8.51	6.41	345	17.1	2.80			<0.20	<0.20	**0.22**	<0.20															
		11/3/2014	7.83	6.09	325	16.1	2.06			<0.20	<0.20	**0.22**	<0.20															
		11/14/2014	8.51	6.14	280	15.1	3.67			<0.20	<0.20	**0.31**	<0.20															
		11/21/2014	8.99	5.86	299	13.8	3.40			<0.20	<0.20	<0.20	<0.20															
		12/18/2014	10.44	6.99	331	16.8	2.54			<0.20	<0.20	**0.74**	<0.20															
		1/9/2015	10.50	6.61	437	12.5	4.84			<0.20	<0.20	<0.20	<0.20															
		2/12/2015	9.33	5.71	312	12.9	7.67			<0.20	<0.20	**0.34**	<0.20															
		3/16/2015	9.42	6.42	391	13.2	NA			<0.20	<0.20	**0.22**	<0.20															5 weeks after in situ bio injections
UCCMW-12D	25-30	5/14/2014	6.93	7.40	637	15.7	0.53	0.0	-584	<0.20	<0.20	<0.20	<0.20								**0.44**	**14**	<1.0	**71**	**12**	**6.3**		Baseline
		6/3/2014	7.11	7.12	742	14.4	0.03			<0.20	<0.20	<0.20	<0.20															2 weeks after first injection
		8/14/2014	7.64	6.93	421	15.6	1.46			<0.20	<0.20	**0.41**	<0.20															2 weeks after second injection
		9/15/2014	8.04	6.89	4.9	18.2	0.72			<0.20	<0.20	**0.31**	<0.20															6 weeks after second injection
		10/8/2014	8.49	7.26	412	16.5	0.74			<0.20	<0.20	<0.20	<0.20															
		10/17/2014	8.55	6.81	410	16.9	0.72			<0.20	<0.20	<0.20	<0.20															
		11/3/2014	8.06	6.14	429	15.7	0.32			<0.20	<0.20	<0.20	<0.20															
		11/14/2014	8.53	6.72	326	14.8	1.16			<0.20	<0.20	<0.20	<0.20															
		11/21/2014	9.09	6.10	323	13.9	5.78			<0.20	<0.20	<0.20	<0.20															
		12/18/2014	10.54	6.55	417	16.1	1.01			<0.20	<0.20	**0.82**	<0.20															
		1/9/2015	10.65	6.43	386	14.5	2.35			<0.20	<0.20	<0.20	<0.20															
		2/12/2015	9.34	6.80	385	13.4	3.07			<0.20	<0.20	<0.20	<0.20															
		3/16/2015	9.48	7.24	458	13.9	NA			<0.20	<0.20	<0.20	<0.20															5 weeks after in situ bio injections
		5/14/2014	6.20	6.11	629	13.5	4.77	**1.1**	+174	<0.20	<0.20	**1**	<0.20								**4.6**	**59**	<1.0	<0.50	<0.50	<0.50		Well possibly influenced by nearby injection
		6/4/2014	7.21	6.04	862	14.4	10.09			<0.20	<0.20	**1.6**	<0.20															2 weeks after first injection
		8/19/2014	7.64	6.15	356	19.6	11.44			<0.20	<0.20	**0.9**	<0.20															2 weeks after second injection
		9/16/2014	8.89	6.20	353	19.3	4.18			<0.20	<0.20	**1.6**	<0.20															6 weeks after second injection
		10/8/2014	9.43	6.14	426	18.8	7.34			<0.20	<0.20	**1.3**	<0.20															
		10/17/2014	8.58	6.05	361	17.5	7.27			<0.20	<0.20	**0.81**	<0.20															
UCCMW-13S	9-19	11/3/2014	8.83	6.17	405	16.2	2.98			<0.20	<0.20	**1.2**	<0.20															

Table 4
Ultra Custom Care Cleaners Site
Ground Water Analytical Data

Sample Location	Screened Depth, (ft bgs)	Sample Date	Depth to Water (ft bgs)	pH (units)	Conductivity (mS)	Temperature (°C)	Diss. Oxygen (mg/L)	Fe^{+2} (mg/L)	Redox Potential (millivolt)	(cis) 1,2-Dichloroethene (µg/L)	Trichloroethene (µg/L)	Tetrachloroethene (µg/L)	Vinyl Chloride (µg/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)	Nitrate (mg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Toal Sodium (ug/L)	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)										16 (B)	5	5	0.2	800/1000[1]	500	500	5	1000	700	1000	NA	NA	NA	NA	NA	NA		
		11/14/2014	8.55	6.09	432	14.5	6.67			<0.20	<0.20	**1.2**	<0.20															
		11/21/2014	8.91	5.74	516	14.2	7.58			<0.20	<0.20	**1.1**	<0.20															
		12/18/2014	10.35	6.11	414	15.7	7.31			<0.20	<0.20	**1.5**	<0.20															
		1/9/2015	10.30	6.66	539	12.4	2.15			<0.20	<0.20	**1.0**	<0.20															
		2/12/2015	9.18	6.82	422	13.2	5.86			<0.20	<0.20	**0.70**	<0.20															
		3/24/2015	9.45	6.14	198	12.8	6.98		+103.7	<0.20	<0.20	**0.68**	<0.20															5 weeks after in situ bio injections
UCCMW-13D	19-24	8/19/2014	7.72	6.12	319	18.5	4.42			<0.20	<0.20	<0.20	<0.20															2 weeks after second injection
		9/16/2014	8.11	6.19	338	18.1	3.20			<0.20	<0.20	**0.78**	<0.20															6 weeks after second injection
		10/8/2014	8.70	6.18	345	17.6	3.62			<0.20	<0.20	**0.57**	<0.20															
		10/17/2014	8.69	6.07	353	16.8	3.24			<0.20	<0.20	**0.48**	<0.20															
		11/3/2014	8.14	6.10	345	16.0	2.25			<0.20	<0.20	**0.34**	<0.20															
		11/14/2014	8.68	6.40	315	1.2	3.68			<0.20	<0.20	**1.8**	<0.20															
		11/21/2014	9.14	5.83	315	14.1	4.61			<0.20	<0.20	**1.4**	<0.20															
		12/18/2014	10.46	6.27	332	16.2	3.98			<0.20	<0.20	**0.73**	<0.20															
		1/9/2015	10.50	6.52	474	12.0	2.24			<0.20	<0.20	**1.0**	<0.20															
		2/12/2015	9.40	5.40	297	15.6	4.52			<0.20	<0.20	**0.25**	<0.20															
		3/24/2015	9.58	6.23	196	12.4	5.20		+85.5	<0.20	<0.20	**0.32**	<0.20															5 weeks after in situ bio injections
UCCMW-14S	10-20	5/11/2014	8.69	6.25	984	13.0	5.30	0.0	-168	<0.20	<0.20	**6.0**	<0.20								**3.9**	**110**	**2.8**	**5.8**	**1.3**	**0.67**		Baseline
		6/4/2014	8.75	6.31	1023	13.6	8.42			<0.20	<0.20	**6.5**	<0.20															2 weeks after first injection
		8/19/2014	9.49	6.26	693	20.8	27.23			<0.20	<0.20	**6.1**	<0.20															2 weeks after second injection
		9/16/2014	9.89	6.18	576	19.1	5.82			<0.20	<0.20	**6.2**	<0.20															6 weeks after second injection
		10/8/2014	10.39	6.20	562	18.8	3.99			<0.20	<0.20	**6.5**	<0.20															
		10/17/2014	10.39	6.58	533	18.1	4.62			<0.20	<0.20	**4.9**	<0.20															
		11/3/2014	9.81	7.43	403	17.0	2.03			<0.20	<0.20	**6.1**	<0.20															
		11/14/2014	10.31	6.50	290	15.4	4.31			<0.20	<0.20	**5.2**	<0.20															
		11/21/2014	10.74	7.00	299	15.2	5.42			<0.20	<0.20	**4.8**	<0.20															
		12/18/2014	11.80	6.38	413	17.9	3.83			<0.20	<0.20	**3.8**	<0.20															
		1/9/2015	11.87	6.45	423	13.0	5.05			<0.20	<0.20	**2.0**	<0.20															
		2/12/2015	10.93	8.66	474	13.3	8.26			<0.20	<0.20	**2.2**	<0.20															
		3/16/2015	11.13	6.14	271	12.9	6.58		+54.4	<0.20	<0.20	**1.7**	<0.20															5 weeks after in situ bio injections
UCCMW-14D	21-26	5/13/2014	8.58	6.55	598	14.9	3.38	0.0	+160	<0.20	<0.20	<0.20	<0.20								**3.4**	**29**	<1.0	**1.8**	<0.50	<0.50		Baseline
		6/4/2014	8.60	6.26	576	14.0	4.21			<0.20	<0.20	<0.20	<0.20															2 weeks after first injection
		8/19/2014	9.15	6.12	317	18.7	4.07			<0.20	<0.20	<0.20	<0.20															2 weeks after second injection
		9/16/2014	9.51	6.21	324	18.7	3.00			<0.20	<0.20	**0.61**	<0.20															6 weeks after second injection
		10/8/2014	10.08	6.21	309	18.0	3.79			<0.20	<0.20	<0.20	<0.20															
		10/17/2014	10.04	6.24	305	16.8	3.13			<0.20	<0.20	<0.20	<0.20															
		11/3/2014	9.41	6.01	310	16.6	1.50			<0.20	<0.20	<0.20	<0.20															
		11/14/2014	9.96	6.55	2.45	15.5	2.80			<0.20	<0.20	<0.20	<0.20															
		11/21/2014	10.35	5.95	253	14.8	4.11			<0.20	<0.20	<0.20	<0.20															
		12/18/2014	11.49	6.22	317	17.3	2.53			<0.20	<0.20	**0.58**	<0.20															
		1/9/2015	11.58	6.49	386	13.0	4.91			<0.20	<0.20	<0.20	<0.20															
		2/12/2015	10.57	8.89	262	13.5	5.94			<0.20	<0.20	<0.20	<0.20															
		3/16/2015	11.13	6.14	271	12.9	6.58		+54.4	<0.20	<0.20	<0.20	<0.20															5 weeks after in situ bio injections
UCCMW-15	9-19	5/11/2014	8.15	6.30	475	13.4	6.28	0.0	+21	<0.20	<0.20	**4.8**	<0.20								**3.6**	**42**	**1.4**	**0.93**	<0.50	<0.50		Baseline
		6/5/2014	8.22	6.12	601	14.4	5.45			<0.20	<0.20	**0.61**	<0.20															2 weeks after first injection
		8/14/2014	8.36	6.22	478	18.3	24.99			<0.20	<0.20	**4.2**	<0.20															2 weeks after second injection
		9/15/2014	8.73	6.08	520	21.1	6.91			<0.20	<0.20	**2.8**	<0.20															6 weeks after second injection
UCCMW-16	9-19	5/14/2014	4.28	6.42	544	15.1	1.98	0.0	+1	<0.20	<0.20	<0.20	<0.20								**1.7**	**16**	<1.0	**2.5**	**0.63**	<0.50		Baseline
		6/5/2014	6.73	6.27	761	15.5	5.25			<0.20	<0.20	<0.20	<0.20															2 weeks after first injection
		8/15/2014	7.13	6.43	261	18.0	6.31			<0.20	<0.20	<0.20	<0.20															2 weeks after second injection
		9/18/2014	7.24	6.26	282	18.7	3.68			<0.20	<0.20	**0.20**	<0.20															6 weeks after second injection
		12/17/2014	8.30	7.15	237	14.0	1.87			<0.20	<0.20	**1.0**	<0.20															
		3/24/2015	7.83	5.79	205	13.8	26.76		+143.5	<0.20	<0.20	<0.20	<0.20															5 weeks after in situ bio injections
UCCMW-17	10-20	5/11/2014	8.16	6.20	351	14.6	2.03	0.0	-100	<0.20	<0.20	<0.20	<0.20								**3.1**	**11**	<1.0	**1.5**	<0.50	<0.50		Baseline
		6/5/2014	8.19	6.05	621	14.7	4.85			<0.20	<0.20	**0.36**	<0.20															2 weeks after first injection
		8/15/2014	8.45	6.10	563	17.0	28.84			<0.20	<0.20	**0.21**	<0.20															2 weeks after second injection
		9/17/2014	8.78	6.40	645	19.1	8.64			<0.20	<0.20	**21**	<0.20															6 weeks after second injection
		12/17/2014	9.80	6.93	376	14.8	3.25			**9.3**	**3.2**	**24**	<0.20															
		3/24/2015	9.47	5.80	271	15.1	50.0		+197.5	<0.20	<0.20	**0.95**	<0.20															5 weeks after in situ bio injections
UCCMW-18	10-20	8/19/2014	8.68	5.82	480	20.8	NA			<0.20	<0.20	**5.8**	<0.20															2 weeks after second injection
		9/17/2014	8.99	5.93	759	19.2	6.63			<0.20	<0.20	**1.7**	<0.20															6 weeks after second injection
		12/17/2014	9.83	6.01	372	14.1	1.02			**170**	**55**	**1500**	<10															
		3/24/2015	9.54	5.56	1252	14.8	0.00		-144.7	**15**	**9.0**	**850**	<0.20								<0.050	<5.0	**670**	**19**	**8.5**	**10**	**170000**	
		5/12/2014	8.12	6.31	440	15.2	1.46	0.0	-166	**32**	**10**	**62**	<0.40								**3.6**	**17**	<1.0	**15**	**3.3**	**1.7**		Baseline

Table 4
Ultra Custom Care Cleaners Site
Ground Water Analytical Data

Sample Location	Screened Depth, (ft bgs)	Sample Date	Depth to Water (ft bgs)	pH (units)	Conductivity (mS)	Temperature (°C)	Diss. Oxygen (mg/L)	Fe^{+2} (mg/L)	Redox Potential (millivolt)	(cis) 1,2-Dichloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Tetrachloro-ethene (µg/L)	Vinyl Chloride (µg/L)	WTPH-Gx (µg/L)	WTPH-Dx Diesel (µg/L)	WTPH-Dx Oil (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Toal Sodium (ug/L)	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)										16 (B)	5	5	0.2	800/1000[1]	500	500	5	1000	700	1000	NA	NA	NA	NA	NA	NA		
UCCMW-19	10-20	6/5/2014	8.13	5.98	1011	16.3	5.32			<0.20	41	260	<0.20															Post injection
		8/19/2014	8.34	6.07	1072	21.6	29.85			60	33	1100	<5.0															2 weeks after second injection
		9/16/2014	8.60	6.14	1004	20.9	7.95			11	9	400	<0.20															6 weeks after second injection
		12/19/2014	9.27	6.08	334	14.0	2.07			24	12	290	<2.0															
		4/2/2015	9.07	5.75	459	14.5	0.00		-65.9	5.5	6	120	<0.40								0.76	5.6	490	<0.50	<0.50	0.70	22000	6 weeks after in situ bio injections
UCCMW-20	8-18	5/15/2014	7.61	6.28	221	14.2	28.89	0.0	+328	6.8	5.9	43	<0.20								2.1	11	1.0	<0.50	<0.50	<0.50		Baseline
		6/3/2014	7.88	6.07	380	15.3	8.04			6.1	6.7	48	<0.20															2 weeks after first injection
		8/14/2014	7.99	5.44	548	19.3	9.28			6.6	4.2	48	<0.20															2 weeks after second injection
		9/16/2014	8.31	5.56	388	20.2	9.34			9.5	7.4	64	<0.40															6 weeks after second injection
		12/11/2014	8.61	5.53	334	13.1	7.10			32	16	160	<0.10															
		4/2/2015	8.74	6.11	176	12.7	12.90		+91.8	9.2	7.5	71	<0.40								4.8	28	1.9	<0.50	<0.50	<0.50	11000	6 weeks after in situ bio injections
UCCMW-21	12-22	5/15/2014	10.38	6.81	614	14.6	15.00	0.0	-318	<0.20	<0.20	13	<0.20								1.3	49	3.0	5.4	1.4	1.0		Baseline
		6/3/2014	11.67	6.09	611	13.9	8.77			<0.20	0.34	16	<0.20															2 weeks after first injection
		8/14/2014	11.81	6.22	378	15.9	8.2			<0.20	0.49	19	<0.20															2 weeks after second injection
		9/16/2014	12.18	6.34	578	17.4	6.65			0.26	1.2	29	<0.20															6 weeks after second injection
		12/11/2014	12.66	6.03	356	14.4	6.98			<0.20	1.0	28	<0.20															
		4/2/2015	12.73	6.23	237	15.02	24.5		+98	<0.20	0.82	28	<0.20								3.6	31	6.1	<0.50	<0.50	<0.50	9700	6 weeks after in situ bio injections
UCCMW-22	8-18	6/3/2014	6.29	6.11	472	14.4	2.69			<0.20	<0.20	0.81	<0.20															2 weeks after first injection
		8/15/2014	6.24	6.40	264	17.2	3.86			<0.20	<0.20	0.67	<0.20															2 weeks after second injection
		9/18/2014	6.33	6.37	280	17.8	2.49			<0.20	<0.20	0.89	<0.20															6 weeks after second injection
UCCMW-23	8-18	5/13/2014	5.43	6.31	628	14.1	0.15	0.0	-288	<0.20	<0.20	2.2	<0.20								0.38	10	1.9	34	3.9	2.0		Baseline
		6/6/2014	5.57	6.17	536	13.9	6.48			<0.20	<0.20	2.1	<0.20															2 weeks after first injection
		8/19/2014	5.56	6.13	281	16.9	5.9			<0.20	<0.20	2.5	<0.20															2 weeks after second injection
		9/16/2014	5.74	6.29	291	17.5	3.89			<0.20	<0.20	2.5	<0.20															6 weeks after second injection
		12/17/2014	5.90	6.16	282	13.8	1.59			<0.20	<0.20	4.6	<0.20															
		3/30/2015	5.90	5.27	251	14.4	2.75		+116.4	<0.20	<0.20	2.9	<0.20															5 weeks after in situ bio injections
UCCMW-24	8-18	5/15/2014	4.70	6.31	486	15.0	7.50	0.0	+7	<0.20	<0.20	2.2	<0.20								2.6	18	1.7	3.9	1.2	0.71		Baseline
		6/3/2014	3.20	6.18	556	14.9	8.75			<0.20	<0.20	2.2	<0.20															2 weeks after first injection
		8/14/2014	5.61	6.10	425	17.5	7.45			<0.20	<0.20	2.5	<0.20															2 weeks after second injection
		9/18/2014	5.74	5.85	449	19.0	8.53			<0.20	<0.20	2.4	<0.20															6 weeks after second injection
		12/11/2014	5.58	6.55	294	15.0	6.70			<0.20	<0.20	2.4	<0.20															
		4/2/2015	6.05	6.50	259	14.0	12.48		+75.6	<0.20	<0.20	2.3	<0.20															6 weeks after in situ bio injections
UCCMW-25	8-18	5/15/2014	4.12	6.08	424	15.3	6.40	0.0	+255	<0.20	<0.20	6.9	<0.20								3.9	24	<1.0	<0.50	<0.50	<0.50		Baseline
		6/3/2014	5.15	6.10	636	14.7	6.29			<0.20	<0.20	9.3	<0.20															2 weeks after first injection
		8/14/2014	5.21	6.29	554	16.6	5.13			<0.20	<0.20	9.3	<0.20															2 weeks after second injection
		9/18/2014	5.49	5.87	383	18.4	8.73			<0.20	<0.20	8.3	<0.20															6 weeks after second injection
		12/11/2014	5.30	6.68	331	15.7	4.43			<0.20	<0.20	7.5	<0.20															
		4/2/2015	5.56	6.12	321	14.3	36.58		+113	<0.20	<0.20	9.4	<0.20								2.4	67	12	<0.50	<0.50	<0.50	15000	6 weeks after in situ bio injections
UCCMW-26		3/23/2015	5.43	5.72	574	12.3	4.73		-201.1	21	10	81	0.74								0.14	<5.0	200	2100	0.86	0.82	30000	5 weeks after in situ bio injections
UCCMW-27		3/23/2015	5.30	7.38	923	12.4	0.23		-251.7	<0.20	<0.20	3.8	<0.20															5 weeks after in situ bio injections
HZMW-16	15-25	5/28/2014	6.35	6.52	451	15.5	0.16	0.0	+241	0.30	<0.20	0.32	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	1.6	16	<1.0	0.66	<0.50	<0.50		Baseline
		9/18/2014	6.78	7.08	207	17.9	1.23			<0.20	<0.20	4.2	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0								6 weeks after second injection
QC Samples																												
Dup 1		5/11/2014								<0.20	<0.20	<0.20	<0.20								3.1	10	<1.0	1.7	0.53	<0.50		Duplicate of UCCMW-17 5/11/14
Dup 2		5/14/2014								<0.20	<0.20	<0.20	<0.20								0.47	15	<1.0	77	12	6.5		Duplicate of UCCMW-12D 5/14/14
Dup 01		6/3/2014								<0.20	<0.20	1.7	<0.20															Duplicate of MW-3R 6/3/14
Dup 6-5-14		6/6/2014								<0.20	<0.20	2.1	<0.20															Duplicate of UCCMW-23 6/6/14
Trip Blank		5/14/2014								<0.20	<0.20	<0.20	<0.20															
Trip Blank		5/15/2014								<0.20	<0.20	<0.20	<0.20															
Trip Blank		6/5/2014								<0.20	<0.20	<0.20	<0.20															
Trip Blank		6/6/2014								<0.20	<0.20	<0.20	<0.20															
Trip Blank		9/15/2014								<0.20	<0.20	<0.20	<0.20															
Trip Blank		9/17/2014								<0.20	<0.20	<0.20	<0.20															
Dup1		9/15/2014								<0.20	<0.20	3.1	<0.20															Duplicate of UCCMW-15 9/15/2014
Dup2		9/19/2014								<0.20	<0.20	4.4	<0.20															Duplicate of UCCMW-4 9/19/2014
Dup 1014		10/8/2014								<0.20	<0.20	<0.20	<0.20															Duplicate of UCCMW-12D 10/8/2014
Trip Blank		10/8/2014								<0.20	<0.20	<0.20	<0.20															
DUP 101714		10/17/2014								<0.20	<0.20	0.41	<0.20															
TB		11/3/2014								<0.20	<0.20	<0.20	<0.20															
DUP		11/3/2014								<0.20	<0.20	1.2	<0.20															Duplicate of UCCMW-13S 11/3/2014
TB		11/14/2014								<0.20	<0.20	<0.20	<0.20															
DUP		11/14/2014								<0.20	<0.20	<0.20	<0.20															Duplicate of UCCMW-14D 11/14/2014
DUP 112114		11/21/2014								<0.20	<0.20	1.1	<0.20															Duplicate of UCCMW-13S on 11/21/2014
TB		12/18/2014								<0.20	<0.20	<0.20	<0.20															
DUP1014		12/18/2014								<0.20	<0.20	<0.20	<0.20															
Dup 21215		2/12/2015								<0.20	<0.20	0.70	<0.20															Duplicate of UCCMW 13D on 2/12/2015
TB		3/30/2015								<0.20	<0.20	<0.20	<0.20															

Table 4
Ultra Custom Care Cleaners Site
Ground Water Analytical Data

Sample Location	Screened Depth, (ft bgs)	Sample Date	Depth to Water (ft bgs)	pH (units)	Conductivity (mS)	Temperature (°C)	Diss. Oxygen (mg/L)	Fe^{+2} (mg/L)	Redox Potential (millivolt)	(cis) 1,2-Dichloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Tetrachloro-ethene (µg/L)	Vinyl Chloride (µg/L)	WTPH-Gx (µg/L)	WTPH-Dx Diesel (µg/L)	WTPH-Dx Oil (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Toal Sodium (ug/L)	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)										**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**		
DUP		3/24/2015								<0.20	<0.20	0.85	<0.20															Duplicate of UCCMW 16 on 3/24/2015

< – 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
Blank – Not analyzed
NA – Not applicable
1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

Table 5
Bothell Riverside Site
Ground Water Analytical Results

			FIELD PARAMETERS						HVOCs								NOTES
	Screened Interval (ft bgs)	Date Sampled	Depth to Water (ft below MP)	pH (units)	Conductivity (µS)	Temperture (°C)	Dissolved Oxygen (mg/L)	Settable Solids (mg/L)	Tetrachloro-ethene (µg/L)	Trichloro-ethene (µg/L)	1,1-Dichloro-ethene (µg/L)	(cis) 1,2-Dichloro-ethene (µg/L)	(trans) 1,2-Dichloro-ethene (µg/L)	Vinyl chloride (µg/L)	Chloroform (ug/L)	
MTCA Method A (Table 720-1, WAC 173-340-900) or Method B Cleanup Level									**5**	**5**	**400 (B)**	**16 (B)**	**160 (B)**	**0.2**		
KCIWD Limits								**7.00**	**240**	**500**	**1700**	**Total <2000**		**12**		
RMW-4	**15-25**	6/24/14														Wellhead buried under new landscaping
		12/19/14	12.2	6.59	1183	14.6	1.70		0.79	0.33	<0.20	<0.20	<0.20	<0.2		
RMW-5	**12-22**	5/24/13	11.51	6.70	932	13.9	1.00		1.7	<0.2		<0.2		<0.2		
		6/24/14	14.51	6.48	740	14.5	0.15		1.4	0.40	<0.20	<0.20	<0.20	<0.20		
		12/19/14	13.61	6.28	1226	13.3	0.55		1.3	0.32	<0.20	0.22	<0.20	<0.20		
RMW-6	**15-25**	9/14/09							<0.2	0.27		3.6		5.3		
		5/24/13	10.42	6.68	467	14.3	1.40		<0.2	<0.2		2.7		3.4		
		6/24/14	14.79	6.47	407	14.2	0.13		0.34	0.60	<0.20	0.42	<0.20	<0.20		
		12/19/14	13.31	6.09	294	14.3	0.82		0.47	<0.20	<0.20	<0.20	<0.20	<0.20		
RMW-7	**15-25**	9/14/09							50	120		190		22		
		5/24/13	16.31	6.80	447	16.2	0.30		9	33		65		9.3		
		4/4/14	16.65	6.50	1969	12.9	0.55		0.75	3.8		35	0.54	8.3		
		6/25/14	16.55	6.48	865	15.2	0.03		5.2	24	<0.20	80	1.1	9.9		
		9/22/14	17.54	6.96	386	18.2	5.25		<1.0	3.2	<1.0	170	1.6	47		
		12/19/14	17.49	6.06	683	15.4	0.73		2.9	8.9	<1.0	150	1.4	34		
		3/18/15	16.66	6.35	1127	14.9	1.87		<0.40	1.5	<0.40	57	0.64	20	<0.40	
RMW-8	**20-30**	9/15/09							0.46	2.6		1.3		<0.2		
		5/24/13	18.81	6.42	494	16.4	0.10		0.5	0.85		0.44		<0.2		
		6/25/14	19.62	6.27	650	15.7	0.20		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		
		12/19/14	20.63	6.18	431	14.5	0.84		0.7	<0.20	<0.20	<0.20	<0.20	<0.20		
RMW-9	**20-30**	9/15/09							<0.20	<0.20		<0.20		<0.20		
		5/24/13	13.65	6.38	247	15.7	4.00		<0.20	<0.20		<0.20		<0.20		
		6/24/14									<0.20		<0.20			Well abandoned during SR 522 construction
RMW-9R		12/19/14	15.31	6.16	182	15.7	2.92		0.79	<0.20	<0.20	<0.20	<0.20	<0.20		
RMW-10	**32-42**	5/24/13	11.85	6.52	247	13.3	6.60		<0.20	<0.20		<0.20		<0.20		
		6/24/14	15.00	6.19	361	15.4	1.08		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		
		12/19/14	14.80	6.08	284	15.0	2.03		0.69	<0.20	<0.20	<0.20	<0.20	<0.20		
BC-3	**15-25**	9/5/08							110	120		46		<1		
		5/24/13	12.95	6.55	342	15.1	4.00		25	11		4		<0.20		
		6/24/14	14.41	6.06	426	14.8	2.40		11	4.0	<0.20	0.75	<0.20	<0.20		
		12/19/14	15.61	6.07	298	14.8	1.82		7.7	2.1	<0.20	0.44	<0.20	<0.20		
EW-1	**12.5-32.5**	4/4/14	27.90						17	3		1.2		<0.20		
		6/25/14	14.78	6.61	0.10	18.3	5.68		27	8.1	<0.20	6.5	<0.20	<0.20		
		9/22/14														Pump not working
		12/19/14		6.42	107	17.3	4.99		21	2.6	<0.20	0.82	<0.20	<0.20		
		3/18/15		7.01	167	15.9	3.65		2.8	0.27	<0.20	<0.20	<0.20	<0.20	<0.20	
EW-2	**15-35**	4/4/14	23.70						13	2.8		1.5		<0.20		
		6/25/14	17.10	6.58	143	16.5	2.21		28	3.8	<0.20	1.5	<0.20	<0.20		
		9/22/14							66	16	<0.40	12	<0.40	<0.40		
		12/19/14		7.01	204	15.8	2.31		44	12	<0.40	12	<0.40	<0.40		
		3/18/15		6.87	251	15.0	2.16		22	6.5	<0.20	4.3	<0.20	<0.20	<0.20	
EW-3	**14-34**	4/4/14	23.80						49	14		7.2		0.61		
		6/25/14	19.00	6.58	182	16.4	6.34		41	14	<0.40	12	<0.40	<0.40		
		9/22/14							190	59	<1.0	33	<1.0	1.10		
		12/19/14		6.82	275	15.9	6.02		21	6.4	<0.20	6	<0.20	<0.20		
		3/18/15		6.78	322	15.4	5.47		140	46	<1.0	29	<1.0	<1.0	<1.0	
EW-4	**11-31**	4/4/14	12.50													Pump not working
		6/25/14	17.30	6.46	0.22	16.0	1.73		1.7	1.8	<0.20	1.1	<0.20	0.38		
		9/22/14							45	10	<0.20	7.4	<0.20	0.87		
		12/19/14		6.68	105	16.6	1.99		1.2	1.6	<0.20	1.1	<0.20	0.27		
		3/18/15							15	4.8	<0.20	3.2	<0.20	<0.20	0.21	
DISCH	**NA**	4/4/14	NA	6.48	443	15.3			25	6.3		3		<0.20		
		6/25/14	NA	6.40	200	16.4	1.43	0.0	30	8.4	<0.20	5.9	<0.20	0.38		
		9/22/14	NA					0.2	79	18	<0.40	13	<0.40	<0.40		
		12/18/14	NA						11	2.7	<0.20	2.5	<0.20	<0.20		
		3/18/15	NA	6.54	230	15.1	1.89	0.1	25	7.4	<0.20	4.7	<0.20	<0.20	<0.20	
QC Samples																
DUP 6/25/14		6/25/14							28	8.4	<0.20	6.4	<0.20	0.37		Duplicate of DISCH 6/25/14
DUP 12/19/14		12/19/14							0.92	<0.20	<0.20	<0.20	<0.20	<0.20		
Trip Blank		6/25/14							<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		
DUP 9/22/14		9/22/14							66	16	<0.40	<0.40	<0.40	<0.40		Duplicate of EX2 9/22/2014
TB		3/18/15							<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
DUP		3/18/15							<0.40	1.0	<0.40	54	0.65	19	<0.40	Duplicate of RMW-7 3/18/2015

Bold indicates analyte detected at a concentration greater than the laboratory reporing limit
Yellow highlight indicates analyte exceeds MTCA cleanup level
KCIWD = King County Industrial Waste Discharge limit
Blank – Not analyzed
NA – Not applicable

Table 6
Bothell Montoring Wells
Elevations

Well	Monument Rim elevation (NAVD88)	Monument Rim to TOC (Inches)
Ultra		
BB-2	39.294	2.00
BB-3	42.796	3.00
BI-3	39.550	5.00
MW-1	47.277	3.25
MW-2	47.462	3.84
MW-3R	48.292	5.4
UCCMW-4	46.318	2.50
UCCMW-5	47.906	3.25
UCCMW-6	42.073	2.00
UCCMW-7	41.690	2.75
UCCMW-8	39.252	3.25
UCCMW-9	39.806	4.00
UCCMW-10	39.859	6.00
UCCMW-11S	47.278	3.75
UCCMW-11D	47.244	2.00
UCCMW-12S	47.994	2.75
UCCMW-12D	47.926	2.50
UCCMW-13S	47.909	3.50
UCCMW-13D	47.904	3.75
UCCMW-14S	48.991	3.00
UCCMW-14D	48.785	5.50
UCCMW-15	47.818	6.60
UCCMW-16	45.379	3.75
UCCMW-17	46.988	3.75
UCCMW-18	46.895	4.00
UCCMW-19	46.399	3.75
UCCMW-20	45.934	5.00
UCCMW-21	50.002	4.00
UCCMW-22	43.470	4.20
UCCMW-23	42.013	4.75
UCCMW-24	42.143	2.00
UCCMW-25	41.523	3.25
UCCMW-26	38.561	8.00
UCCMW-27	38.191	5.00
Landing		
MW-1	37.159	7.25
BLMW-5R	37.479	4.50
BLMW-6R	37.702	4.75
BLMW-7	38.977	4.00
BLMW-8	40.329	3.25
BLMW-9	37.419	4.50
BLMW-10	37.835	3.50
BLMW-11	31.021	2.75
BLMW-12	32.857	4.75
Hertz		
HZMW-1	42.040	5.00
HZMW-4	40.674	5.00
HZMW-12	36.588	6.50

HZMW-14S	42.796	4.25
HZMW-14D	42.833	4.00
HZMW-15S	42.091	4.00
HZMW-15D	42.031	2.75
HZMW-16	41.771	5.00
HZMW-17	38.918	4.00
HZMW-18	38.490	4.50
HZMW-19	42.581	5.00
HZMW-20	37.546	4.00
BC-16	34.384	6.00
Paint		
BC-5	38.005	
BC-10	40.981	5.00
BC-11	40.428	2.00
BC-12	42.603	3.50
BPMW-1	40.588	2.50
BPMW-2	27.270 top 2" pvc - no rim	
BPMW-4	43.328	4.00
BPMW-6	30.135	5.50
Riverside		
BC-3	37.705	6.00
RMW-4	39.081	4.25
RMW-5	36.256	6.00
RMW-6	35.191	3.75
RMW-7	36.080	7.50
RMW-7	36.080	7.50
RMW-8	41.310	6.50
RMW-9R	44.425	6.25
RMW-10	37.318	5.00
RMW-11	38.216	3.75
EW-1	37.598	
EW-2	36.836	
EW-3	36.573	
EW-4	35.947	
Block O		
CMW-1	58.204	3.50
PrclO-MW1	58.5	3.00
PrclO-MW1R	58.482	3.38
PrclO-MW2	59.571	4.88
MW-03	62.585	1.88
PrclO-MW3	57.5	3.00
MW-04	59.6	3.00
PrclOMW-4	61.465	2.25
MW-12	59.770	2.13
MW-13	57.190	2.88
PrclO-MW13	57.553	3.63
MW-14	59.651	3.50
PrclO-MW14	59.472	5.88
MW-15	63.676	3.25
PrclO-MW15	59.563	8.50
MW-16	60.355	2.75

well decommissioned, elevation estimated

estimated

January 16, 2015
HWA Project No. 2007 098- 998

Jerome B. Cruz, Ph.D.
Washington Department of Ecology
Toxics Cleanup Program, Northwest Regional Office
3190 - 160th SE Bellevue, WA 98008

Subject: **AREA WIDE GROUND WATER MONITORING**
THIRD ROUND RESULTS, DECEMBER 2014
Bothell Agreed Order Sites
Bothell, WA

Dear Dr. Cruz:

This letter summarizes the area wide quarterly ground water monitoring event #3, which occurred in December, 2014. All wells in the area wide network were sampled. Tables 1 through 5 summarize the results of this and prior sampling rounds. Figures 1 through 4 show the well locations and salient results. Well elevation survey data was not available at the time of preparing this letter report, but will be submitted as soon as it becomes available. Key issues include:

- NWTPH-G results for wells HZMW-14S, HZMW-14D, HZMW-15S, and HZMW-15D were initially reported by the laboratory as subject to chromatographic interference from HVOCs in the samples. Some HVOCs, notably PCE, elute in the same range as petroleum-derived VOCs, and may be subtracted from the TPH results (Bob Carroll, 2006, Ecology Manchester Laboratory, personal communication). After review, the laboratory subtracted the HVOC concentrations from the TPH-G quantifications, which resulted in no TPH-G detected above reporting limits for these samples.

  Results from the same wells from September 2104 were similarly corrected; therefore the second round monitoring summary dated October 17, 2014 contains erroneous TPH results for these wells. Both sampling rounds have been corrected in the tables submitted.

- Metals results from Bothell Landing well MW-1 during the September 2014 and previous sampling events showed elevated concentrations. In November 2014, HWA redeveloped MW-1 and removed some sediment that had entered the well during roadway construction. No metals were detected for the December 2014 sampling event, suggesting that prior elevated concentrations were due to the recent construction activities and sediment being introduced into the well. The fourth round sample results should confirm this.

- Bothell Landing well BLMW-12 saw an abnormal spike in PCE during the

September 2014 sampling event. Well BLMW-12 has shown no detected PCE before and after the September 2014 sampling, and with no PCE detected in the surrounding wells, this spike is considered an anomaly due to either error in the field or lab.

Please feel free to contact me if you have any questions or need additional information.

Sincerely,
HWA GEOSCIENCES INC.

Arnie Sugar, LG, LHG
President

Cc: Ching-Pi Wang, Dept. of Ecology
Sunny Becker, Dept. of Ecology
Nduta Mbuthia, City of Bothell
Steven Morikawa , City of Bothell

Table 1
Bothell Hertz 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 (^oC)	Dissolved Oxygen (mg/L)	(cis) 1,2-Dichloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Tetrachloro-ethene (µg/L)	Vinyl Chloride (µg/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)	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)								**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**5**	**5**	**5**	**5**	**50**	**50**	**15**	**15**	
HZMW-1	5-15	5/30/2014	7.02	6.62	478	14.3	3.23	<0.20	**0.22**	**21**	<0.20	<100	<270	<430	<1.0	<1.0	<1.0	<1.0	**6.3**	<3.0							
		9/12/2014	7.90	6.51	279	18.4	2.35	<0.20	**0.33**	**33**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<1.0							
		12/15/2014	6.69	6.3	223	13.4	2.02	<0.20	<0.20	**15**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**23**	<3.0							
HZMW-4	8-18	6/9/2014	6.79	6.35	407	13.9	2.73	<0.20	<0.20	<0.20	<0.20	<100	<270	<430	<1.0	<1.0	<1.0	<1.0	**17**	<3.0							
		9/12/2014	7.47	6.42	361	18.4	2.12	<0.20	<0.20	**2.6**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0							
		12/16/2014	5.53	6.56	316	13.1	2.17	<0.20	<0.20	**0.54**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0							
HZMW-12	10-20	6/10/2014	9.48	6.32	2.18	13.2	0.12	<0.20	<0.20	<0.20	<0.20	<100	**430**	**550**	<1.0	<1.0	<1.0	<1.0	**14**	**13**							
		9/12/2014	9.43	6.37	1382	18.3	0.28	<0.20	<0.20	**2.6**	<0.20	<100	**380**	<410	<1.0	<1.0	<1.0	<1.0	**12**	**12**							
		12/16/2014	7.86	6.51	692	14	0.63	<0.20	<0.20	**0.44**	<0.20	<100	**460**	<410	<1.0	<1.0	<1.0	<1.0	**14**	**15**							
HZMW-14S	5-15	5/29/2014	6.51	6.46	799	15.5	0.16	**11**	**23**	**1000**	<10	<100	<300	<480	<1.0	<1.0	<1.0	<1.0	**3.3**	<3.0							
		9/11/2014	7.68	6.51	441	20.9	0.54	**78**	**96**	**4900**	<20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0							
		12/15/2014	6.08	6.34	396	14.9	0.48	**13**	**16**	**790**	<4.0	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	<4.4	<4.0	<11	<10	<1.1	<1.0	
HZMW-14D	30-40	5/29/2014	6.62	6.47	622	14.7	0.23	**16**	**3.7**	**100**	<1.0	<100	<290	<460	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0							
		9/11/2014	6.81	6.45	352	18.8	0.28	**17**	**3.2**	**100**	<1.0	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0							
		12/15/2014	6.68	6.41	332	15.6	0.87	**15**	**2.8**	**100**	<1.0	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	<4.4	<4.0	<11	<10	<1.1	<1.0	
HZMW-15S	5-15	5/29/2014	5.75	6.35	785	15.0	1.45	**3.6**	**7.1**	**150**	<1.0	<100	<280	<450	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0							
		9/13/2014	7.34	6.87	575	19.7	0.25	**12**	**19**	**400**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<1.0							
		12/15/2014	5.80	6.44	549	12.1	0.95	**12**	**14**	**300**	<2.0	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	<4.4	<4.0	<11	<10	<1.1	<1.0	
HZMW-15D	20-30	5/29/2014	6.08	6.28	1000	14.2	0.12	**180**	**290**	**3700**	<20	<100	<280	<460	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0							
		9/13/2014	6.74	6.33	308	19.1	0.30	**4.5**	**6.9**	**93**	<0.40	<100	<250	<410	<1.0	<1.0	<1.0	<1.0		<3.0							
		12/15/2014	6.11	6.34	290	13.0	1.87	**4.3**	**9.2**	**130**	<1.0	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	<4.4	<4.0	<11	<10	<1.1	<1.0	
HZMW-16	15-25	5/28/2014	6.35	6.52	451	15.5	0.16	**0.30**	<0.20	**0.32**	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0									
		9/12/2014	6.78	7.08	207	17.9	1.23	<0.20	<0.20	**4.2**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0							
		12/15/2014	6.09	7.01	235	15.0	0.57	<0.20	<0.20	**0.4**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0							
HZMW-17	10-20	6/9/2014	7.93	6.61	594	13.8	0.15	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0							
		9/12/2014	8.30	6.94	345	16.4	0.89	<0.20	<0.20	**2.0**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0							
		12/16/2014	7.79	6.71	309	13.7	1.55	<0.20	<0.20	**0.5**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**5.1**	<3.0							
HZMW-18	7.5-17.5	6/10/2014	8.51	6.38	1901	14.0	0.14	<0.20	<0.20	<0.20	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0							
HZMW-19	5-15	5/30/2014	5.58	6.38	1210	13.8	0.10	**0.40**	**0.94**	**0.97**	<0.20	**1200**	<100	<410	**2.1**	<1.0	**11**	**1.6**	<3.3	<3.0							
		6/9/2014	6.02	6.26	1213	14.3	0.13	**1.1**	**0.67**	**0.28**	<0.20	**720**	<640	<410	<4.0	<4.0	<4.0	<4.5	<3.3	<3.0							
		9/12/2014	6.21	6.37	675	19.7	0.50	**0.67**	**0.76**	**3.3**	<0.20	**510**	**680**	**430**	<1.0	<1.0	**5.8**	<1.0		<3.0							
		12/16/2014	5.09	6.75	301	13.5	0.42	<0.20	<0.20	**1.0**	<0.20	**330**	<260	<410	<1.0	<1.0	**4.0**	**2.0**	<3.3	<3.0							
HZMW-20	5-15	6/9/2014	7.48	6.79	1914	15.3	0.28	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0							
		9/13/2014	8.11	7.09	1018	20.7	0.72	<0.20	<0.20	**1.3**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0							
		12/16/2014	6.36	6.72	851	12.6	0.44	<0.20	<0.20	**0.41**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0							
BLMW-8	5-15	6/10/2014																									Well cannot be found
		9/10/2014	8.89	6.4	486	18.8	0.20	<0.20	<0.20	<0.20	<0.20	<100	**280**	**540**	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0							
		12/16/2014	7.86	6.54	508	13.8	0.99	<0.20	<0.20	**0.69**	<0.20	<100	<260	**630**	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0							
BC-16	11-21	6/10/2014	8.70	6.43	4.27	12.9	0.05	<0.20	<0.20	<0.20	<0.20	<100	<470	<510	<1.0	<1.0	<1.0	<1.0	**60**	**18**							
		9/13/2014	8.79	6.3	1659	18.8	0.11	<0.20	<0.20	**1.4**	<0.20	<100	**470**	<420	<1.0	<1.0	<1.0	<1.0	**64**	**31**							
		12/16/2014	3.74	6.56	364	13.1	0.74	<0.20	<0.20	**0.39**	<0.20	<100	**550**	**540**	<1.0	<1.0	<1.0	<1.0	**23**	**11**							
QC Samples																											
Dup 1		5/29/2014						**3.8**	**8.3**	**140**	<2.0	<100	<280	<440	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0							Duplicate of HZMW-15S 5/29/14
Dup 2		12/15/2014						<0.20	<0.20	**0.40**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0							Duplicate of HZMW-16 12/15/14
Trip Blank		5/30/2014						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0	<1.0									
Trip Blank		6/10/2014						<0.20	<0.20	<0.20	<0.20																
Trip Blank		12/16/2014						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0	<1.0									
DUP121514		12/15/2014						<0.20	<0.20	0.40	<0.20	<100	<280	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0							

< – 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

Blank – Not analyzed

1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

Table 2
Bothell Landing 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)**	**(cis) 1,2-Dichloroethene (µg/L)**	**Trichloroethene (µg/L)**	**Tetrachloroethene (µg/L)**	**Vinyl Chloride (µg/L)**	**WTPH-Gx (µg/L)**	**WTPH-Dx Diesel (µg/L)**	**WTPH-Dx Oil (µg/L)**	**Benzene (µg/L)**	**Toluene (µg/L)**	**Ethyl benzene (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)**	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)								**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**5**	**5**	**5**	**5**	**50**	**50**	**15**	**15**	
MW-1	5-15	6/11/2014	8.68	6.57	1410	19.6	0.06	<0.20	<0.20	<0.20	<0.20	<100	<280	<450	<1.0	<1.0	<1.0	<1.0	**10**	**6.6**	<4.4	<4.0	**19**	<10	**20**	<1.0	
		9/11/2014	8.03	6.60	739	19.2	0.78	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0	**17**	**30**		<4.4	**22**	**86**	**36**	**74**	
		12/8/2014	6.58	6.65	714	13.4	0.66	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-5R	5-15	9/10/2014	10.48	6.88	465	18.5	2.20	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		12/8/2014	10.11	4.5	6.82	15.0	0.36	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-6R	5-15	9/10/2014	8.91	6.41	574	18.9	0.46	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		**4.7**		<4.0		<10		<1.0	
		12/8/2014	8.17	6.65	745	15.0	0.35	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-7	5-10	6/11/2014																									Well cannot be accessed
		9/10/2014	8.70	5.90	273	18.4	0.63	<0.20	**0.22**	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		12/8/2014	8.30	6.77	562	13.1	2.91	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-8	5-15	9/10/2014	8.89	6.40	486	18.8	0.20	<0.20	<0.20	<0.20	<0.20	<100	**280**	**540**	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		12/16/2014	7.86	6.54	508	13.8	0.99	<0.20	<0.20	**0.69**	<0.20	<100	<260	**630**	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0							
BLMW-9	5-15	6/16/2014	7.07	6.49	555	14.5	0.17	<0.20	<0.20	<0.20	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		9/11/2014	7.64	6.48	599	19.7	0.40	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0	**6.3**	**6.1**		<4.0		<10		<1.0	
		12/8/2014	6.7	6.77	815	13.4	0.69	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-10	5-10	6/13/2014	6.78	6.09	747	13.6	1.01	<0.20	<0.20	**4.0**	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		9/10/2014	6.63	6.66	414	18.1	0.45	<0.20	<0.20	**3.0**	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0		<3.0		<4.0		<10		<1.0	
		12/8/2014	5.71	6.86	695	13.6	0.53	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-11	5-15	6/11/2014	9.08	6.38	2800	14.1	0.07	<0.20	<0.20	<0.20	<0.20	<100	<280	<470	<1.0	<1.0	<1.0	<1.0	**150**	**150**	<4.4	<4.0	<11	<10	<1.1	<1.0	
		9/10/2014	9.54	6.40	1565	17.0	0.23	<0.20	<0.20	<0.20	<0.20	<100	**320**	**430**	<1.0	<1.0	<1.0	<1.0	**120**	**110**		<4.0		<10		<1.0	
		12/8/2014	7.63	6.56	1156	15.0	0.50	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**32**	**30**		<4.0		<10		<1.0	
BLMW-12	5-15	6/12/2014	9.10	6.58	2380	13.4	0.20	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**130**	**120**	<4.4	<4.0	<11	<10	**1.3**	<1.0	
		9/11/2014	9.36	6.52	1010	18.5	0.28	<0.20	<0.20	**14**	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0	**88**	**77**		<4.0		<10		<1.0	
		12/8/2014	7.85	6.32	1102	14.7	0.66	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**200**	**180**		<4.0		<10		<1.0	Dissolved metals sampled 12/16/14
QC Samples																											
Dup 6/13/14		6/16/2014						<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		**3.2**		<4.0		<10		<1.0	Duplicate of BLMW-9 6/16/14
Dup 12/8/14		12/8/2014						<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	Dupicate of BLMW-7 12/8/14
Trip Blank		6/12/2014						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0										
Trip Blank		12/8/2014						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0	<1.0									

< – 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
Blank – Not analyzed
1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

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)**	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)								**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**5**	**5**	**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**								
		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							
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								
		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**	**5.10**							
		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**							
BPMW-1	10-20	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**	**12.0**							
BPMW-2	32-42	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							
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**							
		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**							
		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**	
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									

< – 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
Blank – Not analyzed
1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

Table 4
Groundwater Analytical Data
Bothell Ultra, Bothell WA

Sample Location	Screened Depth, (ft bgs)	Sample Date	Depth to Water (ft bgs)	pH (units)	Conductivity (mS)	Temperature (°C)	Diss. Oxygen (mg/L)	Fe^{+2} (mg/L)	Redox Potential (millivolt)	(cis) 1,2-Dichloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Tetrachloro-ethene (µg/L)	Vinyl Chloride (µg/L)	WTPH-Gx (µg/L)	WTPH-Dx Diesel (µg/L)	WTPH-Dx Oil (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)										**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	
BB-2	9-19	6/10/2014	5.53	6.63	459	14.9	2.70	0.0	+269	<0.40	<0.40	**79**	<0.40								**3.2**	**9.4**	<1.0	<0.70	<1.20	<1.10	2 weeks after first injection
		9/17/2014	5.86	6.9	306	18.6	1.85			<0.40	<0.40	**68**	<0.40														6 weeks after second injection
		12/12/2014	5.01	6.99	263	15.5	2.40			<0.40	<0.40	**82**	<0.40														
BB-3	10-20	3/13/2014	7.94	6.11	710	12.4	9.80			<0.20	<0.20	**0.3**	<0.20								**3.5**	**20**	<1.0	<0.50	<0.50	<0.50	Baseline
		5/14/2014	8.42	6.48	567	13.7	9.01	0.0	+360	<0.2	<0.2	**0.21**	<0.20								**2.6**	**18**	<1.0	<0.50	<0.50	<0.50	Baseline
		6/4/2014	7.76	6.33	569	17.5	4.38			<0.20	<0.20	<0.20	<0.20														2 weeks after first injection
		8/19/2014	10.18	6.03	318	17.6	6.71			<0.20	<0.20	**0.75**	<0.20														2 weeks after second injection
		9/19/2014	11.39	6.74	335	18.5	3.17			<0.20	<0.20	**0.42**	<0.20														6 weeks after second injection
		12/12/2014	5.01	6.99	263	15.5	2.40			<0.20	<0.20	**1.5**	<0.20														
BI-3	5-10	6/10/2014	4.27	6.39	493	15.4	1.55	0.0	+238	**1.7**	**0.43**	**4.5**	**0.26**								**1.3**	**10**	**1.8**	**128**	<1.2	<1.1	2 weeks after first injection
		9/17/2014	4.17	6.32	394	19.8	0.25			**2.9**	**0.52**	**2.1**	**1.6**														6 weeks after second injection
		12/17/2014	3.83	6.77	295	12	0.32			**2.4**	**0.35**	**2.5**	**1.5**														
MW-1	5-15	3/13/2014	7.75	6.27	568	12.5	7.9			**120**	**30**	**130**	<1.0								**4.4**	**27**	<1.0	<0.50	<0.50	<0.50	Baseline
		5/12/2014	8.56	6.09	517	15.0	3.17	0.0	+323	**13**	**4.9**	**21**	<0.20								**6.0**	**13**	<1.0	<0.50	<0.50	<0.50	Baseline
		6/5/2014	8.77	5.94	604	15.0	4.05			**5.4**	**2.9**	**15**	<0.20														2 weeks after first injection
		8/19/2014	9.05	5.56	6.04	20.1	25.68			**0.4**	**0.32**	**9.5**	<0.20														2 weeks after second injection
		9/17/2014	9.37	5.91	504	18.5	9.14			<0.20	<0.20	**4.3**	<0.20														6 weeks after second injection
		12/17/2014	10.14	4.85	3295	13.5	2.24			**27**	**14**	**80**	<0.40														
MW-2	3-13	5/11/2014	6.28	6.22	663	14.0	3.45	0.0	+208	<0.20	<0.20	<0.20	<0.20								**8.0**	**36**	**4.9**	**20**	<0.50	<0.50	Baseline
		6/2/2014	6.32	5.91	685	15.6	3.31			<0.20	<0.20	**0.26**	<0.20														2 weeks after first injection
		8/13/2014	6.66	5.99	200	17.9	NA			<0.20	<0.20	<0.20	<0.20														2 weeks after second injection
		9/15/2014	7.02	6.34	392	20.9	2.50			<0.20	<0.20	**0.22**	<0.20														6 weeks after second injection
MW-3R	6-16	5/10/2014	6.36	6.23	1045	13.7	7.50	0.0	+238	<0.20	<0.20	**1.7**	<0.20								**9.2**	**110**	**2.3**	<0.50	<0.50	<0.50	Baseline
		6/3/2014	6.53	6.13	1090	15.3	4.70			<0.20	<0.20	**1.6**	<0.20														2 weeks after first injection
		8/19/2014	6.97	6.2	492	18.9	6.49			<0.20	<0.20	**1.3**	<0.20														2 weeks after second injection
		9/15/2014	7.32	6.25	426	19.0	2.40			<0.20	<0.20	**1.0**	<0.20														6 weeks after second injection
UCCMW-4	35-40	3/13/2014	9.45	6.70	675	14.3	4.61			<0.20	<0.20	**0.88**	<0.20								<0.05	**8.1**	<1.0	<0.50	<0.50	<0.50	Baseline
		5/12/2014	8.30	6.83	523	15.7	0.16	0.0	+247	<0.20	<0.20	**0.20**	<0.20								<0.05	<5	<1	**1.9**	<0.5	<0.5	Baseline
		6/5/2014	8.18	6.71	589	16.0	0.20			<0.20	<0.20	**0.23**	<0.20														2 weeks after first injection
		8/19/2014	8.2	6.93	340	22.2	0.37			<0.20	<0.20	**4.9**	<0.20														2 weeks after second injection
		9/18/2014	8.41	6.95	361	18.9	0.60			<0.20	<0.20	**0.26**	<0.20														6 weeks after second injection
		12/17/2014	9.24	6.51	288	14.5	1.32			<0.20	**0.44**	**17**	<0.20														
UCCMW-5	10-20	5/14/2014	9.79	5.98	357	13.8	9.60	0.0	+376	**0.44**	**0.34**	**14**	<0.20								**0.77**	**9.4**	**1.7**	<0.50	<0.50	<0.50	Baseline
		6/5/2014	9.94	5.98	382	14.8	5.35			**0.22**	**0.31**	**14**	<0.20														2 weeks after first injection
		8/19/2014	10.33	5.8	465	19.1	14.10			<0.20	**0.24**	**15**	<0.20														2 weeks after second injection
		9/16/2014	10.59	6.20	855	21.0	6.56			<0.20	**0.27**	**13**	<0.20														6 weeks after second injection
		12/17/2014	11.20	6.13	286	13.5	2.28			<0.20	<0.20	**14**	<0.20														
UCCMW-6	5-15	3/13/2014	5.30	5.75	809	10.9	0.80			<0.20	<0.20	**3.8**	<0.20								**0.39**	**17**	**1.5**	**3.8**	<0.50	<0.50	Baseline
		5/13/2014	5.50	5.96	608	13.7	0.11	0.0	+363	<0.20	<0.20	**3.5**	<0.20								**1.4**	**16**	<1.0	**0.99**	<0.50	<0.50	Baseline
		6/6/2014	5.75	6.02	645	13.8	5.38			<0.20	<0.20	**4.0**	<0.20														2 weeks after first injection
		8/19/2014	5.83	5.91	426	16.5	8.11			<0.20	<0.20	**4.8**	<0.20														2 weeks after second injection
		9/16/2014	5.96	6.33	412	16.7	2.16			<0.20	<0.20	**3.6**	<0.20														6 weeks after second injection
		12/17/2014	6.14	6.27	395	12.4	0.89			<0.20	<0.20	**4.0**	<0.20														
UCCMW-7	8-18	5/15/2014	5.95	6.23	393	14.1	7.84	0.0	+352	<0.20	<0.20	**27**	<0.20								**2.2**	**28**	<1.0	<0.50	<0.50	<0.50	Baseline
		6/3/2014	6.02	6.13	513	14.3	3.98			<0.20	<0.20	**26**	<0.20														2 weeks after first injection
		8/19/2014	6.31	6.13	300	16.3	8.93			<0.20	<0.20	**28**	<0.20														2 weeks after second injection
		9/19/2014	6.38	7.05	329	17.2	4.34			<0.20	<0.20	**21**	<0.20														6 weeks after second injection
		12/17/2014	6.60	6.09	302	14.6	2.41			<0.20	<0.20	**22**	<0.20														
UCCMW-8	5-15	5/29/2014	6.07	6.52	490	13.9	1.87	0.0	+283	<1.0	<1.0	**110**	<1.0	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	**2.3**	**18**	<1.0	<0.50	<0.50	<0.50	Baseline
		9/13/2014	6.29	6.5	289	19.1	1.00			<0.40	**0.57**	**76**	<0.40														6 weeks after second injection
		12/12/2014	5.51	6.97	257	14.6	1.30			<0.40	**0.44**	**83**	<0.40														
UCCMW-9	5-15	5/28/2014	6.75	6.51	1164	16.2	0.52	0.0	+276	<1.0	<1.0	**1.0**	<1.0	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	**1.0**	**19**	**2.0**	**16.0**	<1.0	<1.0	Baseline
		9/13/2014	6.71	6.75	611	22.8	0.46			**0.21**	**0.23**	**2.5**	<0.20														6 weeks after second injection
		12/17/2014	6.09	6.30	523	10.8	0.72			<0.20	**0.22**	**5.7**	<0.20	<100	<0.26	<0.41	<1.0	<1.0	<1.0	<1.0							
UCCMW-10	5-15	6/13/2014	6.15	5.70	736	17.0	0.60	0.0	+261	<0.20	<0.20	**0.90**	<0.20	<100	<0.30	<0.48	<1.0	<1.0	<1.0	<1.0	**2.0**	**24**	**9.2**	**48.6**	<1.2	<1.1	Baseline
		9/18/2014	6.02	5.75	414	21.6	0.37			<0.20	<0.20	**0.29**	<0.20	<100	**1600**	**3100**	<1.0	<1.0	<1.0	<1.0							6 weeks after second injection
		12/11/2014	5.20	5.65	469	14.0	0.49			<0.20	<0.20	**1.3**	<0.20														

Table 4
Groundwater Analytical Data
Bothell Ultra, Bothell WA

Sample Location	Screened Depth, (ft bgs)	Sample Date	Depth to Water (ft bgs)	pH (units)	Conductivity (mS)	Temperature (°C)	Diss. Oxygen (mg/L)	Fe^{+2} (mg/L)	Redox Potential (millivolt)	(cis) 1,2-Dichloroethene (µg/L)	Trichloroethene (µg/L)	Tetrachloroethene (µg/L)	Vinyl Chloride (µg/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)	Nitrate (mg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)										**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	
UCCMW-11S		5/11/2014	6.16	6.33	878	13.6	5.27	0.0	-2	<0.20	<0.20	**0.28**	<0.20								**3.8**	**90**	**2.0**	**3.5**	**0.69**	<0.50	Baseline
		6/2/2014	6.26	6.07	926	15.0	3.27			<0.20	<0.20	**0.22**	<0.20														2 weeks after first injection
		8/13/2014	6.65	6.45	392	17.5	6.55			<0.20	<0.20	<0.20	<0.20														2 weeks after second injection
		9/15/2014	6.98	7.55	302	20.2	2.00			<0.20	<0.20	**0.30**	<0.20														6 weeks after second injection
		10/8/2014	7.41	6.34	438	17.8	3.33			<0.20	<0.20	<0.20	<0.20														
	8-18	10/17/2014	7.51	6.27	468	17.0	2.77			<0.20	<0.20	<0.20	<0.20														
		11/3/2014	6.83	6.08	529	16.1	2.00			<0.20	<0.20	<0.20	<0.20														
		11/14/2014	7.51	6.25	497	15.5	3.41			<0.20	<0.20	<0.20	<0.20														
		11/21/2014	7.95	5.45	431	14.4	3.79			<0.20	<0.20	<0.20	<0.20														
		12/18/2014	9.36	6.01	426	16.7	4.07			<0.20	<0.20	**1.3**	<0.20														
		1/9/2015	9.46	7.08	356	12.1	5.90			<0.20	<0.20	<0.20	<0.20														
UCCMW-11D		5/15/2014	5.68	6.50	389	14.2	5.59	0.0	-8	<0.20	<0.20	<0.20	<0.20								**1.9**	**13**	<1.0	**3.2**	**0.93**	<0.50	Baseline
		6/2/2014	6.23	6.52	481	15.0	1.42			<0.20	<0.20	<0.20	<0.20														2 weeks after first injection
		8/13/2014	6.68	6.88	360	17.1	3.29			<0.20	<0.20	<0.20	<0.20														2 weeks after second injection
		9/15/2014	7.11	7.08	299	17.8	2.13			<0.20	<0.20	<0.20	<0.20														6 weeks after second injection
		10/8/2014	7.69	7.05	476	17.2	2.55			<0.20	<0.20	<0.20	<0.20														
	18-23	10/17/2014	7.69	7.35	481	17.1	2.80			<0.20	<0.20	<0.20	<0.20														
		11/3/2014	7.26	7.07	480	17.3	2.80			<0.20	<0.20	<0.20	<0.20														
		11/14/2014	7.65	6.25	258	15.1	3.22			<0.20	<0.20	<0.20	<0.20														
		11/21/2014	8.08	5.99	245	14.2	3.82			<0.20	<0.20	<0.20	<0.20														
		12/18/2014	9.40	6.20	398	17.1	2.75			<0.20	<0.20	**1.2**	<0.20														
		1/9/2015	9.49	6.59	299	14.2	2.63			<0.20	<0.20	<0.20	<0.20														
UCCMW-12S		5/10/2014	6.88	6.33	685	13.6	4.47	0.0	-176	<0.20	<0.20	<0.20	<0.20								**4.1**	**38**	<1.0	**0.89**	<0.50	<0.50	Baseline
		6/3/2014	6.99	6.17	2.08	15.1	4.94			<0.20	<0.20	**0.31**	<0.20														2 weeks after first injection
		8/14/2014	7.57	6.27	521	18.9	10			<0.20	<0.20	**0.22**	<0.20														2 weeks after second injection
		9/15/2014	7.95	6.13	341	20.0	3.56			<0.20	<0.20	**0.25**	<0.20														6 weeks after second injection
		10/8/2014	8.23	6.55	319	17.7	3.48			<0.20	<0.20	<0.20	<0.20														
	8-18	10/17/2014	8.51	6.41	345	17.1	2.80			<0.20	<0.20	**0.22**	<0.20														
		11/3/2014	7.83	6.09	325	16.1	2.06			<0.20	<0.20	**0.22**	<0.20														
		11/14/2014	8.51	6.14	280	15.1	3.67			<0.20	<0.20	**0.31**	<0.20														
		11/21/2014	8.99	5.86	299	13.8	3.40			<0.20	<0.20	<0.20	<0.20														
		12/18/2014	10.44	6.99	331	16.8	2.54			<0.20	<0.20	**0.74**	<0.20														
		1/9/2015	10.50	6.61	437	12.5	4.84			<0.20	<0.20	<0.20	<0.20														
UCCMW-12D		5/14/2014	6.93	7.40	637	15.7	0.53	0.0	-584	<0.20	<0.20	<0.20	<0.20								**0.44**	**14**	<1.0	**71**	**12**	**6.3**	Baseline
		6/3/2014	7.11	7.12	742	14.4	0.03			<0.20	<0.20	<0.20	<0.20														2 weeks after first injection
		8/14/2014	7.64	6.93	421	15.6	1.46			<0.20	<0.20	**0.41**	<0.20														2 weeks after second injection
		9/15/2014	8.04	6.89	4.9	18.2	0.72			<0.20	<0.20	**0.31**	<0.20														6 weeks after second injection
		10/8/2014	8.49	7.26	412	16.5	0.74			<0.20	<0.20	<0.20	<0.20														
	25-30	10/17/2014	8.55	6.81	410	16.9	0.72			<0.20	<0.20	<0.20	<0.20														
		11/3/2014	8.06	6.14	429	15.7	0.32			<0.20	<0.20	<0.20	<0.20														
		11/14/2014	8.53	6.72	326	14.8	1.16			<0.20	<0.20	<0.20	<0.20														
		11/21/2014	9.09	6.10	323	13.9	5.78			<0.20	<0.20	<0.20	<0.20														
		12/18/2014	10.54	6.55	417	16.1	1.01			<0.20	<0.20	**0.82**	<0.20														
		1/9/2015	10.65	6.43	386	14.5	2.35			<0.20	<0.20	<0.20	<0.20														
UCCMW-13S		5/14/2014	6.20	6.11	629	13.5	4.77	**1.1**	+174	<0.20	<0.20	**1**	<0.20								**4.6**	**59**	<1.0	<0.50	<0.50	<0.50	Well possibly influenced by nearby injection
		6/4/2014	7.21	6.04	862	14.4	10.09			<0.20	<0.20	**1.6**	<0.20														2 weeks after first injection
		8/19/2014	7.64	6.15	356	19.6	11.44			<0.20	<0.20	**0.9**	<0.20														2 weeks after second injection
		9/16/2014	8.89	6.20	353	19.3	4.18			<0.20	<0.20	**1.6**	<0.20														6 weeks after second injection
		10/8/2014	9.43	6.14	426	18.8	7.34			<0.20	<0.20	**1.3**	<0.20														
	9-19	10/17/2014	8.58	6.05	361	17.5	7.27			<0.20	<0.20	**0.81**	<0.20														
		11/3/2014	8.83	6.17	405	16.2	2.98			<0.20	<0.20	**1.2**	<0.20														
		11/14/2014	8.55	6.09	432	14.5	6.67			<0.20	<0.20	**1.2**	<0.20														
		11/21/2014	8.91	5.74	516	14.2	7.58			<0.20	<0.20	**1.1**	<0.20														
		12/18/2014	10.35	6.11	414	15.7	7.31			<0.20	<0.20	**1.5**	<0.20														
		1/9/2015	10.30	6.66	539	12.4	2.15			<0.20	<0.20	**1.0**	<0.20														
UCCMW-13D		8/19/2014	7.72	6.12	319	18.5	4.42			<0.20	<0.20	<0.20	<0.20														2 weeks after second injection
		9/16/2014	8.11	6.19	338	18.1	3.20			<0.20	<0.20	**0.78**	<0.20														6 weeks after second injection
		10/8/2014	8.70	6.18	345	17.6	3.62			<0.20	<0.20	**0.57**	<0.20														
		10/17/2014	8.69	6.07	353	16.8	3.24			<0.20	<0.20	**0.48**	<0.20														
	19-24	11/3/2014	8.14	6.10	345	16.0	2.25			<0.20	<0.20	**0.34**	<0.20														
		11/14/2014	8.68	6.40	315	1.2	3.68			<0.20	<0.20	**1.8**	<0.20														
		11/21/2014	9.14	5.83	315	14.1	4.61			<0.20	<0.20	**1.4**	<0.20														
		12/18/2014	10.46	6.27	332	16.2	3.98			<0.20	<0.20	**0.73**	<0.20														
		1/9/2015	10.50	6.52	474	12.0	2.24			<0.20	<0.20	**1.0**	<0.20														

Table 4
Groundwater Analytical Data
Bothell Ultra, Bothell WA

Sample Location	Screened Depth, (ft bgs)	Sample Date	Depth to Water (ft bgs)	pH (units)	Conductivity (mS)	Temperature (°C)	Diss. Oxygen (mg/L)	Fe^{+2} (mg/L)	Redox Potential (millivolt)	(cis) 1,2-Dichloroethene (µg/L)	Trichloroethene (µg/L)	Tetrachloroethene (µg/L)	Vinyl Chloride (µg/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)	Nitrate (mg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)										**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	
UCCMW-14S	10-20	5/11/2014	8.69	6.25	984	13.0	5.30	0.0	-168	<0.20	<0.20	**6.0**	<0.20								**3.9**	**110**	**2.8**	**5.8**	**1.3**	**0.67**	Baseline
		6/4/2014	8.75	6.31	1023	13.6	8.42			<0.20	<0.20	**6.5**	<0.20														2 weeks after first injection
		8/19/2014	9.49	6.26	693	20.8	27.23			<0.20	<0.20	**6.1**	<0.20														2 weeks after second injection
		9/16/2014	9.89	6.18	576	19.1	5.82			<0.20	<0.20	**6.2**	<0.20														6 weeks after second injection
		10/8/2014	10.39	6.20	562	18.8	3.99			<0.20	<0.20	**6.5**	<0.20														
		10/17/2014	10.39	6.58	533	18.1	4.62			<0.20	<0.20	**4.9**	<0.20														
		11/3/2014	9.81	7.43	403	17.0	2.03			<0.20	<0.20	**6.1**	<0.20														
		11/14/2014	10.31	6.50	290	15.4	4.31			<0.20	<0.20	**5.2**	<0.20														
		11/21/2014	10.74	7.00	299	15.2	5.42			<0.20	<0.20	**4.8**	<0.20														
		12/18/2014	11.80	6.38	413	17.9	3.83			<0.20	<0.20	**3.8**	<0.20														
		1/9/2015	11.87	6.45	423	13.0	5.05			<0.20	<0.20	**2.0**	<0.20														
UCCMW-14D	21-26	5/13/2014	8.58	6.55	598	14.9	3.38	0.0	+160	<0.20	<0.20	<0.20	<0.20								**3.4**	**29**	<1.0	**1.8**	<0.50	<0.50	Baseline
		6/4/2014	8.60	6.26	576	14.0	4.21			<0.20	<0.20	<0.20	<0.20														2 weeks after first injection
		8/19/2014	9.15	6.12	317	18.7	4.07			<0.20	<0.20	<0.20	<0.20														2 weeks after second injection
		9/16/2014	9.51	6.21	324	18.7	3.00			<0.20	<0.20	**0.61**	<0.20														6 weeks after second injection
		10/8/2014	10.08	6.21	309	18.0	3.79			<0.20	<0.20	<0.20	<0.20														
		10/17/2014	10.04	6.24	305	16.8	3.13			<0.20	<0.20	<0.20	<0.20														
		11/3/2014	9.41	6.01	310	16.6	1.50			<0.20	<0.20	<0.20	<0.20														
		11/14/2014	9.96	6.55	2.45	15.5	2.80			<0.20	<0.20	<0.20	<0.20														
		11/21/2014	10.35	5.95	253	14.8	4.11			<0.20	<0.20	<0.20	<0.20														
		12/18/2014	11.49	6.22	317	17.3	2.53			<0.20	<0.20	**0.58**	<0.20														
		1/9/2015	11.58	6.49	386	13.0	4.91			<0.20	<0.20	<0.20	<0.20														
UCCMW-15	9-19	5/11/2014	8.15	6.30	475	13.4	6.28	0.0	+21	<0.20	<0.20	**4.8**	<0.20								**3.6**	**42**	**1.4**	**0.93**	<0.50	<0.50	Baseline
		6/5/2014	8.22	6.12	601	14.4	5.45			<0.20	<0.20	**0.61**	<0.20														2 weeks after first injection
		8/14/2014	8.36	6.22	478	18.3	24.99			<0.20	<0.20	**4.2**	<0.20														2 weeks after second injection
		9/15/2014	8.73	6.08	520	21.1	6.91			<0.20	<0.20	**2.8**	<0.20														6 weeks after second injection
UCCMW-16	9-19	5/14/2014	4.28	6.42	544	15.1	1.98	0.0	+1	<0.20	<0.20	<0.20	<0.20								**1.7**	**16**	<1.0	**2.5**	**0.63**	<0.50	Baseline
		6/5/2014	6.73	6.27	761	15.5	5.25			<0.20	<0.20	<0.20	<0.20														2 weeks after first injection
		8/15/2014	7.13	6.43	261	18.0	6.31			<0.20	<0.20	<0.20	<0.20														2 weeks after second injection
		9/18/2014	7.24	6.26	282	18.7	3.68			<0.20	<0.20	**0.20**	<0.20														6 weeks after second injection
		12/17/2014	8.30	7.15	237	14.0	1.87			<0.20	<0.20	**1.0**	<0.20														
UCCMW-17	10-20	5/11/2014	8.16	6.20	351	14.6	2.03	0.0	-100	<0.20	<0.20	<0.20	<0.20								**3.1**	**11**	<1.0	**1.5**	<0.50	<0.50	Baseline
		6/5/2014	8.19	6.05	621	14.7	4.85			<0.20	<0.20	**0.36**	<0.20														2 weeks after first injection
		8/15/2014	8.45	6.10	563	17.0	28.84			<0.20	<0.20	**0.21**	<0.20														2 weeks after second injection
		9/17/2014	8.78	6.40	645	19.1	8.64			<0.20	<0.20	**21**	<0.20														6 weeks after second injection
		12/17/2014	9.80	6.93	376	14.8	3.25			**9.3**	**3.2**	**24**	<0.20														
UCCMW-18	10-20	8/19/2014	8.68	5.82	480	20.8	NA			<0.20	<0.20	**5.8**	<0.20														2 weeks after second injection
		9/17/2014	8.99	5.93	759	19.2	6.63			<0.20	<0.20	**1.7**	<0.20														6 weeks after second injection
		12/17/2014	9.83	6.01	372	14.1	1.02			**170**	**55**	**1500**	<10														
UCCMW-19	10-20	5/12/2014	8.12	6.31	440	15.2	1.46	0.0	-166	**32**	**10**	**62**	<0.40								**3.6**	**17**	<1.0	**15**	**3.3**	**1.7**	Baseline
		6/5/2014	8.13	5.98	1011	16.3	5.32			<0.20	**41**	**260**	<0.20														Post injection
		8/19/2014	8.34	6.07	1072	21.6	29.85			**60**	**33**	**1100**	<5.0														2 weeks after second injection
		9/16/2014	8.60	6.14	1004	20.9	7.95			**11**	**9**	**400**	<0.20														6 weeks after second injection
		12/19/2014	9.27	6.08	334	14.0	2.07			**24**	**12**	**290**	<2.0														
UCCMW-20	8-18	5/15/2014	7.61	6.28	221	14.2	28.89	0.0	+328	**6.8**	**5.9**	**43**	<0.20								**2.1**	**11**	**1.0**	<0.50	<0.50	<0.50	Baseline
		6/3/2014	7.88	6.07	380	15.3	8.04			**6.1**	**6.7**	**48**	<0.20														2 weeks after first injection
		8/14/2014	7.99	5.44	548	19.3	9.28			**6.6**	**4.2**	**48**	<0.20														2 weeks after second injection
		9/16/2014	8.31	5.56	388	20.2	9.34			**9.5**	**7.4**	**64**	<0.40														6 weeks after second injection
		12/11/2014	8.61	5.53	334	13.1	7.10			**32**	**16**	**160**	<0.10														
UCCMW-21	12-22	5/15/2014	10.38	6.81	614	14.6	15.00	0.0	-318	<0.20	<0.20	**13**	<0.20								**1.3**	**49**	**3.0**	**5.4**	**1.4**	**1.0**	Baseline
		6/3/2014	11.67	6.09	611	13.9	8.77			<0.20	**0.34**	**16**	<0.20														2 weeks after first injection
		8/14/2014	11.81	6.22	378	15.9	8.2			<0.20	**0.49**	**19**	<0.20														2 weeks after second injection
		9/16/2014	12.18	6.34	578	17.4	6.65			**0.26**	**1.2**	**29**	<0.20														6 weeks after second injection
		12/11/2014	12.66	6.03	356	14.4	6.98			<0.20	**1.0**	**28**	<0.20														
UCCMW-22	8-18	6/3/2014	6.29	6.11	472	14.4	2.69			<0.20	<0.20	**0.81**	<0.20														2 weeks after first injection
		8/15/2014	6.24	6.40	264	17.2	3.86			<0.20	<0.20	**0.67**	<0.20														2 weeks after second injection
		9/18/2014	6.33	6.37	280	17.8	2.49			<0.20	<0.20	**0.89**	<0.20														6 weeks after second injection

Table 4
Groundwater Analytical Data
Bothell Ultra, Bothell WA

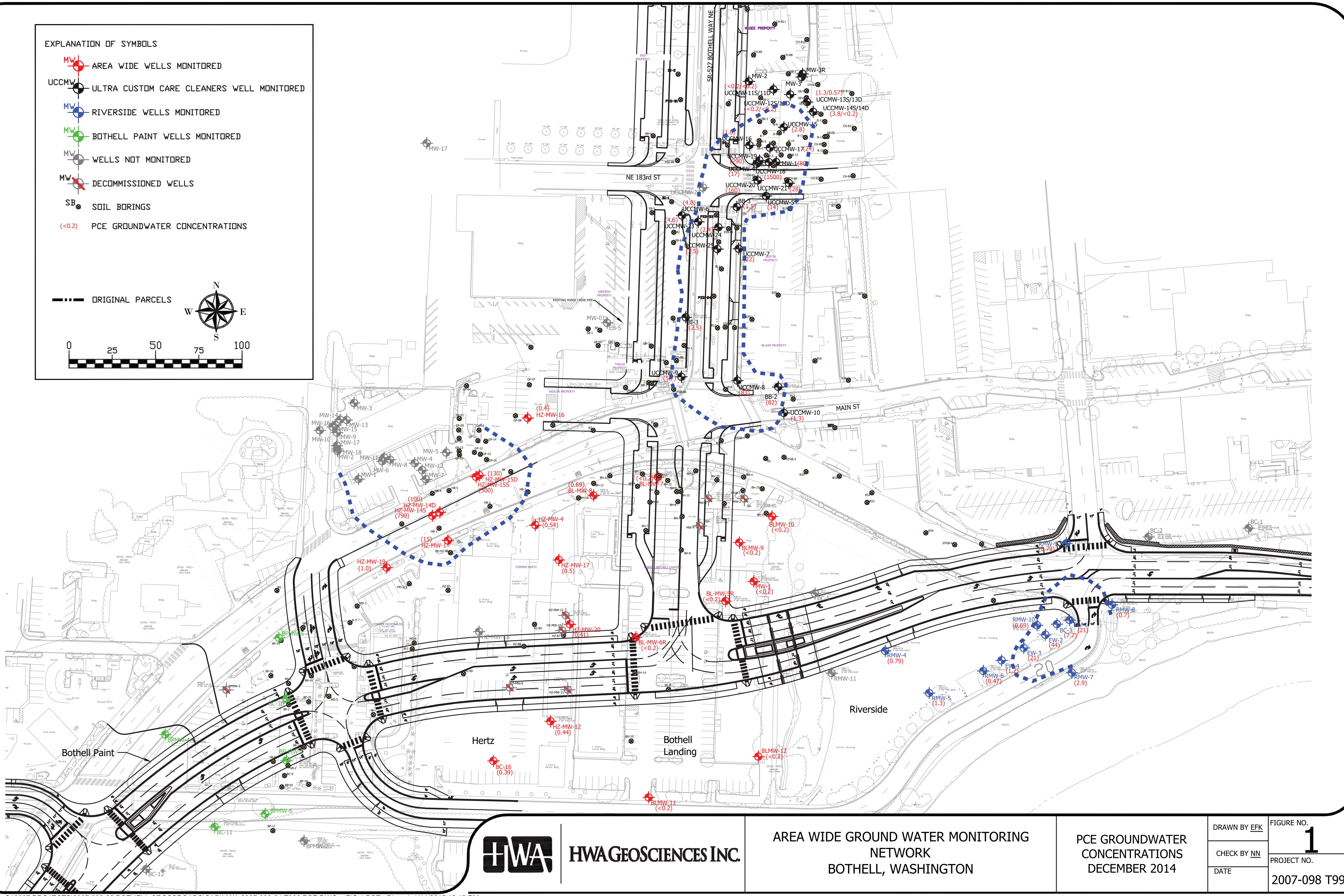
Sample Location	Screened Depth, (ft bgs)	Sample Date	Depth to Water (ft bgs)	pH (units)	Conductivity (mS)	Temperature (°C)	Diss. Oxygen (mg/L)	Fe^{+2} (mg/L)	Redox Potential (millivolt)	(cis) 1,2-Dichloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Tetrachloro-ethene (µg/L)	Vinyl Chloride (µg/L)	WTPH-Gx (µg/L)	WTPH-Dx Diesel (µg/L)	WTPH-Dx Oil (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)										**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	
UCCMW-23		5/13/2014	5.43	6.31	628	14.1	0.15	0.0	-288	<0.20	<0.20	**2.2**	<0.20								**0.38**	**10**	**1.9**	**34**	**3.9**	**2.0**	Baseline
		6/6/2014	5.57	6.17	536	13.9	6.48			<0.20	<0.20	**2.1**	<0.20														2 weeks after first injection
	8-18	8/19/2014	5.56	6.13	281	16.9	5.9			<0.20	<0.20	**2.5**	<0.20														2 weeks after second injection
		9/16/2014	5.74	6.29	291	17.5	3.89			<0.20	<0.20	**2.5**	<0.20														6 weeks after second injection
		12/17/2014	5.90	6.16	282	13.8	1.59			<0.20	<0.20	**4.6**	<0.20														
UCCMW-24		5/15/2014	4.70	6.31	486	15.0	7.50	0.0	+7	<0.20	<0.20	**2.2**	<0.20								**2.6**	**18**	**1.7**	**3.9**	**1.2**	**0.71**	Baseline
		6/3/2014	3.20	6.18	556	14.9	8.75			<0.20	<0.20	**2.2**	<0.20														2 weeks after first injection
	8-18	8/14/2014	5.61	6.10	425	17.5	7.45			<0.20	<0.20	**2.5**	<0.20														2 weeks after second injection
		9/18/2014	5.74	5.85	449	19.0	8.53			<0.20	<0.20	**2.4**	<0.20														6 weeks after second injection
		12/11/2014	5.58	6.55	294	15.0	6.70			<0.20	<0.20	**2.4**	<0.20														
UCCMW-25		5/15/2014	4.12	6.08	424	15.3	6.40	0.0	+255	<0.20	<0.20	**6.9**	<0.20								**3.9**	**24**	<1.0	<0.50	<0.50	<0.50	Baseline
		6/3/2014	5.15	6.10	636	14.7	6.29			<0.20	<0.20	**9.3**	<0.20														2 weeks after first injection
	8-18	8/14/2014	5.21	6.29	554	16.6	5.13			<0.20	<0.20	**9.3**	<0.20														2 weeks after second injection
		9/18/2014	5.49	5.87	383	18.4	8.73			<0.20	<0.20	**8.3**	<0.20														6 weeks after second injection
		12/11/2014	5.30	6.68	331	15.7	4.43			<0.20	<0.20	**7.5**	<0.20														
HZMW-16	15-25	5/28/2014	6.35	6.52	451	15.5	0.16	0.0	+241	**0.30**	<0.20	**0.32**	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	**1.6**	**16**	<1.0	**0.66**	<0.50	<0.50	Baseline
		9/18/2014	6.78	7.08	207	17.9	1.23			<0.20	<0.20	**4.2**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0							6 weeks after second injection
QC Samples																											
Dup 1		5/11/2014								<0.20	<0.20	<0.20	<0.20								**3.1**	**10**	<1.0	**1.7**	**0.53**	<0.50	Duplicate of UCCMW-17 5/11/14
Dup 2		5/14/2014								<0.20	<0.20	<0.20	<0.20								**0.47**	**15**	<1.0	**77**	**12**	**6.5**	Duplicate of UCCMW-12D 5/14/14
Dup 01		6/3/2014								<0.20	<0.20	**1.7**	<0.20														Duplicate of MW-3R 6/3/14
Dup 6-5-14		6/6/2014								<0.20	<0.20	**2.1**	<0.20														Duplicate of UCCMW-23 6/6/14
Trip Blank		5/14/2014								<0.20	<0.20	<0.20	<0.20														
Trip Blank		5/15/2014								<0.20	<0.20	<0.20	<0.20														
Trip Blank		6/5/2014								<0.20	<0.20	<0.20	<0.20														
Trip Blank		6/6/2014								<0.20	<0.20	<0.20	<0.20														
Trip Blank		9/15/2014								<0.20	<0.20	<0.20	<0.20														
Trip Blank		9/17/2014								<0.20	<0.20	<0.20	<0.20														
Dup1		9/15/2014								<0.20	<0.20	**3.1**	<0.20														Duplicate of UCCMW-15 9/15/2014
Dup2		9/19/2014								<0.20	<0.20	**4.4**	<0.20														Duplicate of UCCMW-4 9/19/2014
Dup 1014		10/8/2014								<0.20	<0.20	<0.20	<0.20														Duplicate of UCCMW-12D 10/8/2014
Trip Blank		10/8/2014								<0.20	<0.20	<0.20	<0.20														
DUP 101714		10/17/2014								<0.20	<0.20	**0.41**	<0.20														
TB		11/3/2014								<0.20	<0.20	<0.20	<0.20														
DUP		11/3/2014								<0.20	<0.20	**1.2**	<0.20														Duplicate of UCCMW-13S 11/3/2014
TB		11/14/2014								<0.20	<0.20	<0.20	<0.20														
DUP		11/14/2014								<0.20	<0.20	<0.20	<0.20														Duplicate of UCCMW-14D 11/14/2014
DUP 112114		11/21/2014								<0.20	<0.20	1.1	<0.20														Duplicate of UCCMW-13S on 11/21/2014
TB		12/18/2014								<0.20	<0.20	<0.20	<0.20														
DUP1014		12/18/2014								<0.20	<0.20	<0.20	<0.20														

< – 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
Blank – Not analyzed
NA – Not applicable
1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

Table 5
Bothell Riverside Site
Ground Water Analytical Results

			FIELD PARAMETERS						HVOCs						NOTES
	Screened Interval (ft bgs)	Date Sampled	Depth to Water (ft below MP)	pH (units)	Conductivity (µS)	Temperture (°C)	Dissolved Oxygen (mg/L)	Settable Solids (mg/L)	Tetrachloro-ethene (µg/L)	Trichloro-ethene (µg/L)	1,1-Dichloro-ethene (µg/L)	(cis) 1,2-Dichloro-ethene (µg/L)	(trans) 1,2-Dichloro-ethene (µg/L)	Vinyl chloride (µg/L)	
MTCA Method A (Table 720-1, WAC 173-340-900) or Method B Cleanup Level									**5**	**5**	**400 (B)**	**16 (B)**	**160 (B)**	**0.2**	
KCIWD Limits								**7.00**	**240**	**500**	**1700**	**Total <2000**		**12**	
RMW-4	**15-25**	6/24/14													Wellhead buried under new landscaping
		12/19/14	12.2	6.59	1183	14.6	1.70		**0.79**	**0.33**	<0.20	<0.20	<0.20	<0.2	
RMW-5	**12-22**	5/24/13	11.51	6.70	932	13.9	1.00		**1.7**	<0.2		<0.2		<0.2	
		6/24/14	14.51	6.48	740	14.5	0.15		**1.4**	**0.40**	<0.20	<0.20	<0.20	<0.20	
		12/19/14	13.61	6.28	1226	13.3	0.55		**1.3**	**0.32**	<0.20	**0.22**	<0.20	<0.20	
RMW-6	**15-25**	9/14/09							<0.2	**0.27**		**3.6**		**5.3**	
		5/24/13	10.42	6.68	467	14.3	1.40		<0.2	<0.2		**2.7**		**3.4**	
		6/24/14	14.79	6.47	407	14.2	0.13		**0.34**	**0.60**	<0.20	**0.42**	<0.20	<0.20	
		12/19/14	13.31	6.09	294	14.3	0.82		**0.47**	<0.20	<0.20	<0.20	<0.20	<0.20	
RMW-7	**15-25**	9/14/09							**50**	**120**		**190**		**22**	
		5/24/13	16.31	6.80	447	16.2	0.30		**9**	**33**		**65**		**9.3**	
		4/4/14	16.65	6.50	1969	12.9	0.55		**0.75**	**3.8**		**35**	**0.54**	**8.3**	
		6/25/14	16.55	6.48	865	15.2	0.03		**5.2**	**24**	<0.20	**80**	**1.1**	**9.9**	
		9/22/14	17.54	6.96	386	18.2	5.25		<1.0	**3.2**	<1.0	**170**	**1.6**	**47**	
		12/19/14	17.49	6.06	683	15.4	0.73		**2.9**	**8.9**	<1.0	**150**	**1.4**	**34**	
RMW-8	**20-30**	9/15/09							**0.46**	**2.6**		**1.3**		<0.2	
		5/24/13	18.81	6.42	494	16.4	0.10		**0.5**	**0.85**		**0.44**		<0.2	
		6/25/14	19.62	6.27	650	15.7	0.20		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
		12/19/14	20.63	6.18	431	14.5	0.84		**0.7**	<0.20	<0.20	<0.20	<0.20	<0.20	
RMW-9	**20-30**	9/15/09							<0.20	<0.20		<0.20		<0.20	
		5/24/13	13.65	6.38	247	15.7	4.00		<0.20	<0.20		<0.20		<0.20	
		6/24/14									<0.20		<0.20		Well abandoned during SR 522 construction
RMW-9R		12/19/14	15.31	6.16	182	15.7	2.92		**0.79**	<0.20	<0.20	<0.20	<0.20	<0.20	
RMW-10	**32-42**	5/24/13	11.85	6.52	247	13.3	6.60		<0.20	<0.20		<0.20		<0.20	
		6/24/14	15.00	6.19	361	15.4	1.08		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
		12/19/14	14.80	6.08	284	15.0	2.03		**0.69**	<0.20	<0.20	<0.20	<0.20	<0.20	
BC-3	**15-25**	9/5/08							**110**	**120**		**46**		<1	
		5/24/13	12.95	6.55	342	15.1	4.00		**25**	**11**		**4**		<0.20	
		6/24/14	14.41	6.06	426	14.8	2.40		**11**	**4.0**	<0.20	**0.75**	<0.20	<0.20	
		12/19/14	15.61	6.07	298	14.8	1.82		**7.7**	**2.1**	<0.20	**0.44**	<0.20	<0.20	
EW-1	**12.5-32.5**	4/4/14	27.90						**17**	**3**		**1.2**		<0.20	
		6/25/14	14.78	6.61	0.10	18.3	5.68		**27**	**8.1**	<0.20	**6.5**	<0.20	<0.20	
		9/22/14													Pump not working
		12/19/14		6.42	107	17.3	4.99		**21**	**2.6**	<0.20	**0.82**	<0.20	<0.20	
EW-2	**15-35**	4/4/14	23.70						**13**	**2.8**		**1.5**		<0.20	
		6/25/14	17.10	6.58	143	16.5	2.21		**28**	**3.8**	<0.20	**1.5**	<0.20	<0.20	
		9/22/14							**66**	**16**	<0.40	**12**	<0.40	<0.40	
		12/19/14		7.01	204	15.8	2.31		**44**	**12**	<0.40	**12**	<0.40	<0.40	
EW-3	**14-34**	4/4/14	23.80						**49**	**14**		**7.2**		**0.61**	
		6/25/14	19.00	6.58	182	16.4	6.34		**41**	**14**	<0.40	**12**	<0.40	<0.40	
		9/22/14							**190**	**59**	<1.0	**33**	<1.0	**1.10**	
		12/19/14		6.82	275	15.9	6.02		**21**	**6.4**	<0.20	**6**	<0.20	<0.20	
EW-4	**11-31**	4/4/14	12.50												Pump not working
		6/25/14	17.30	6.46	0.22	16.0	1.73		**1.7**	**1.8**	<0.20	**1.1**	<0.20	**0.38**	
		9/22/14							**45**	**10**	<0.20	**7.4**	<0.20	**0.87**	
		12/19/14		6.68	105	16.6	1.99		**1.2**	**1.6**	<0.20	**1.1**	<0.20	**0.27**	
DISCH	**NA**	4/4/14	NA	6.48	443	15.3			**25**	**6.3**		**3**		<0.20	
		6/25/14	NA	6.40	200	16.4	1.43	0.0	**30**	**8.4**	<0.20	**5.9**	<0.20	**0.38**	
		9/22/14						0.2	**79**	**18**	<0.40	**13**	<0.40	<0.40	
		12/18/14							**11**	**2.7**	<0.20	**2.5**	<0.20	<0.20	
QC Samples															
DUP 6/25/14		6/25/14							**28**	**8.4**	<0.20	**6.4**	<0.20	**0.37**	Duplicate of DISCH 6/25/14
DUP 12/19/14		12/19/14							**0.92**	<0.20	<0.20	<0.20	<0.20	<0.20	
Trip Blank		6/25/14							<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
DUP 9/22/14		9/22/14							**66**	**16**	<0.40	<0.40	<0.40	<0.40	Duplicate of EX2 9/22/2014

Bold indicates analyte detected at a concentration greater than the laboratory reporing limit
Yellow highlight indicates analyte exceeds MTCA cleanup leve
KCIWD = King County Industrial Waste Discharge limit
Blank – Not analyzed
NA – Not applicable



HWA GEOSCIENCES INC.

AREA WIDE GROUND WATER MONITORING NETWORK
BOTHELL, WASHINGTON

PCE GROUNDWATER CONCENTRATIONS
DECEMBER 2014

DRAWN BY EFK

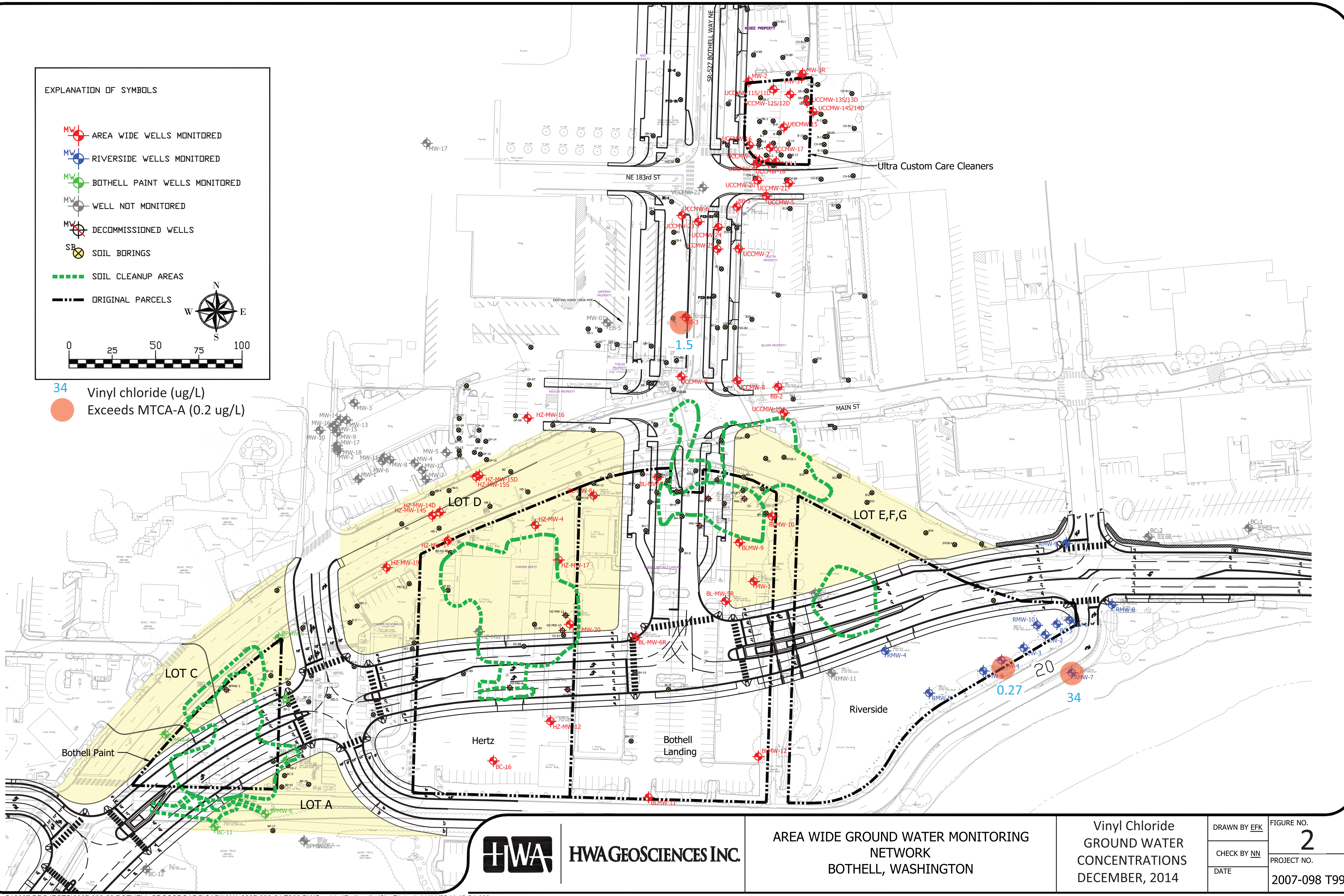
CHECK BY NN

DATE

FIGURE NO.
1

PROJECT NO.
2007-098 T998

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T998 PCE.DWG <FIG 1 PCE> Plotted: 1/14/2015 12:12 PM



HWA GEOSCIENCES INC.

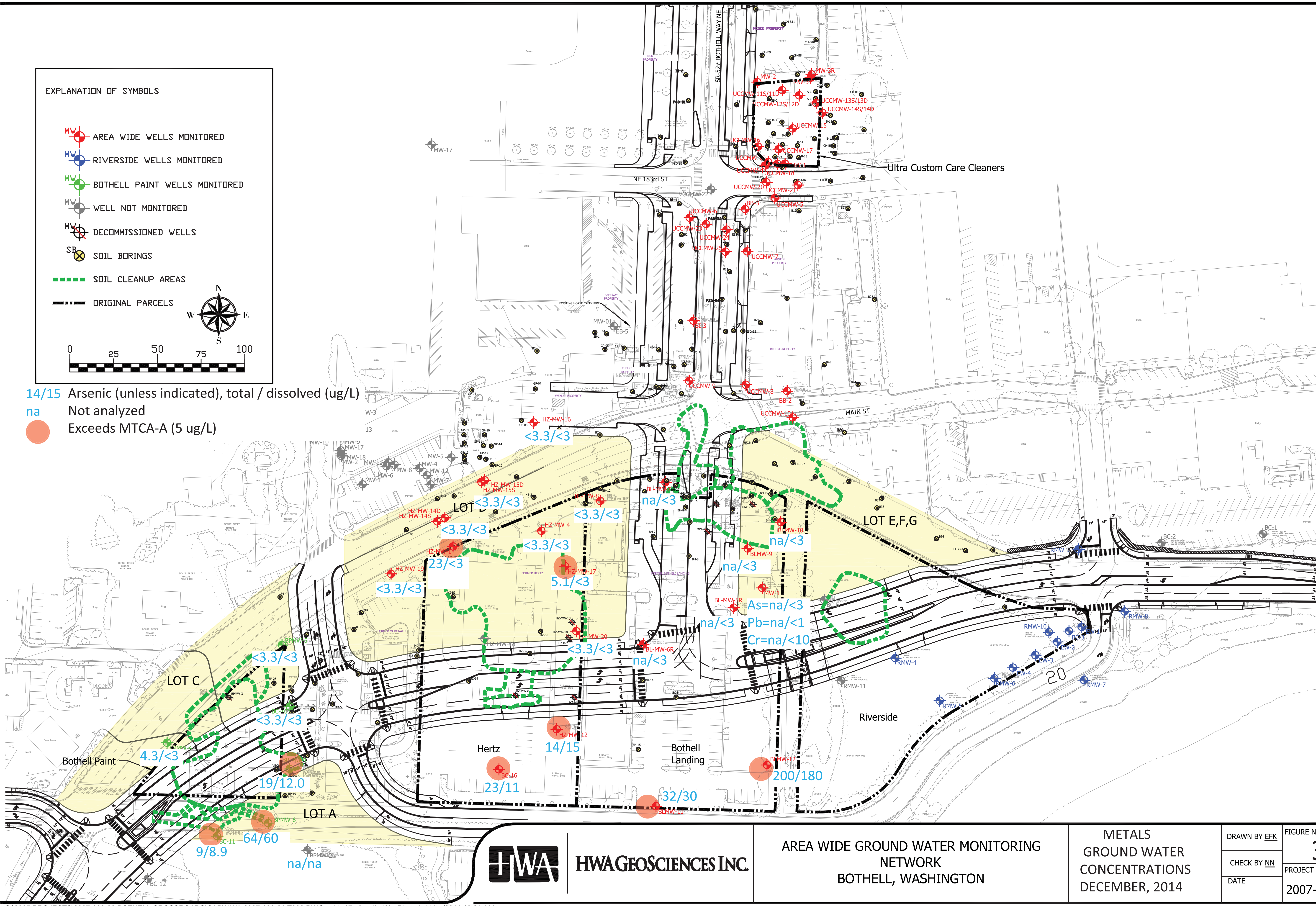
AREA WIDE GROUND WATER MONITORING NETWORK
BOTHELL, WASHINGTON

Vinyl Chloride
GROUND WATER CONCENTRATIONS
DECEMBER, 2014

DRAWN BY EFK
CHECK BY NN
DATE

FIGURE NO. 2
PROJECT NO. 2007-098 T998

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T998.DWG <11x17 all wells (2)> Plotted: 11/11/2014 10:21 AM



HWA GEOSCIENCES INC.

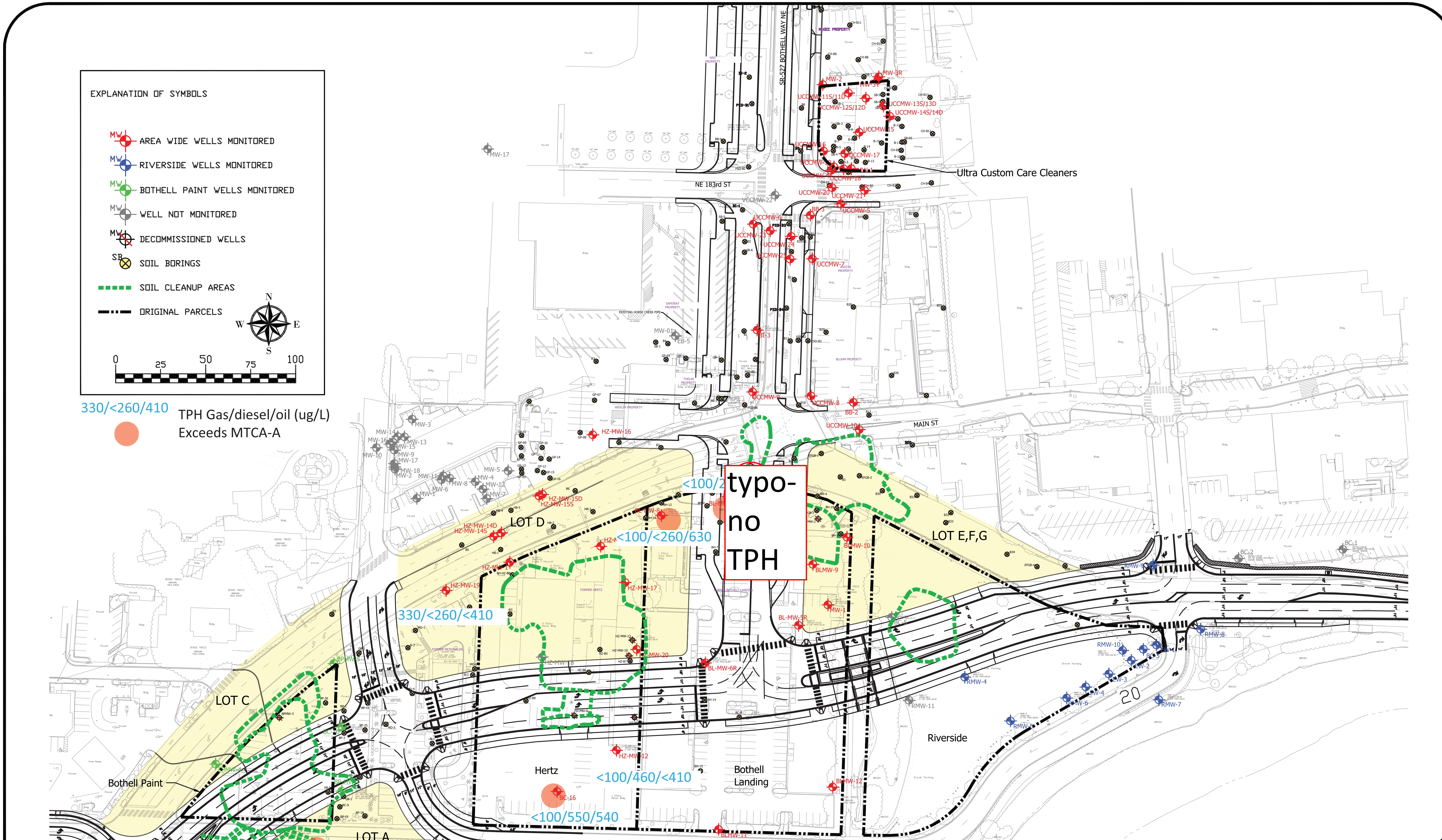
AREA WIDE GROUND WATER MONITORING NETWORK
BOTHELL, WASHINGTON

METALS GROUND WATER CONCENTRATIONS
DECEMBER, 2014

DRAWN BY EFK
CHECK BY NN
DATE

FIGURE NO. 3
PROJECT NO. 2007-098 T998

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T998.DWG <11x17 all wells (2)> Plotted: 11/11/2014 10:21 AM



HWA GEOSCIENCES INC.	AREA WIDE GROUND WATER MONITORING NETWORK BOTHELL, WASHINGTON	TPH GROUND WATER CONCENTRATIONS DECEMBER, 2014	DRAWN BY EFK CHECK BY NN DATE	FIGURE NO. 4 PROJECT NO. 2007-098 T998

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T998.DWG <11x17 all wells (2)> Plotted: 11/11/2014 10:21 AM

October 17, 2014
HWA Project No. 2007 098- 998

Jerome B. Cruz, Ph.D.
Washington Department of Ecology
Toxics Cleanup Program, Northwest Regional Office
3190 - 160th SE Bellevue, WA 98008

Subject: **AREA WIDE GROUND WATER MONITORING**
SECOND ROUND RESULTS, SEPTEMBER 2014
Bothell Agreed Order Sites
Bothell, WA

Dear Dr. Cruz:

This letter summarizes the area wide quarterly ground water monitoring event #2, which occurred in September 2014. All wells in the area wide network were sampled. Tables 1 through 6 summarize the results of this and prior sampling rounds. Figures 1 through 5 show the well locations and salient results.

Please feel free to contact me if you have any questions or need additional information.

Sincerely,
HWA GEOSCIENCES INC.

Arnie Sugar, LG, LHG
President

Cc: Ching-Pi Wang, Dept of Ecology
Nduta Mbuthia, City of Bothell
Steven Morikawa , City of Bothell

Table 1
Bothell Hertz 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)**	**(cis) 1,2-Dichloro-ethene (µg/L)**	**Trichloro-ethene (µg/L)**	**Tetrachloro-ethene (µg/L)**	**Vinyl Chloride (µg/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)**	
HZMW-1	5-15	5/30/2014	7.02	6.62	478	14.3	3.23	<0.20	**0.22**	**21**	<0.20	<100	<270	<430	<1.0	<1.0	<1.0	<1.0	**6.3**	<3.0	
		9/12/2014	7.90	6.51	279	18.4	2.35	<0.20	**0.33**	**33**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<1.0	
HZMW-4	8-18	6/9/2014	6.79	6.35	407	13.9	2.73	<0.20	<0.20	<0.20	<0.20	<100	<270	<430	<1.0	<1.0	<1.0	<1.0	**17**	<3.0	
		9/12/2014	7.47	6.42	361	18.4	2.12	<0.20	<0.20	**2.6**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0	
HZMW-12	10-20	6/10/2014	9.48	6.32	2.18	13.2	0.12	<0.20	<0.20	<0.20	<0.20	<100	**430**	**550**	<1.0	<1.0	<1.0	<1.0	**14**	**13**	
		9/12/2014	9.43	6.37	1382	18.3	0.28	<0.20	<0.20	**2.6**	<0.20	<100	**380**	<410	<1.0	<1.0	<1.0	<1.0	**12**	**12**	
HZMW-14S	5-15	5/29/2014	6.51	6.46	799	15.5	0.16	**11**	**23.0**	**1000**	<10	<100	<300	<480	<1.0	<1.0	<1.0	<1.0	**3.3**	<3.0	
		9/11/2014	7.68	6.51	441	20.9	0.54	**78**	**96**	**4900**	<20	**1600**	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0	
HZMW-14D	30-40	5/29/2014	6.62	6.47	622	14.7	0.23	**16**	**3.7**	**100**	<1.0	<100	<290	<460	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	
		9/11/2014	6.81	6.45	352	18.8	0.28	**17**	**3.2**	**100**	<1.0	**200**	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0	
HZMW-15S	5-15	5/29/2014	5.75	6.35	785	15.0	1.45	**3.6**	**7.1**	**150**	<1.0	<100	<280	<450	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	
		9/13/2014	7.34	6.87	575	19.7	0.25	**12**	**19**	**400**	<0.20	520	<260	<410	<1.0	<1.0	<1.0	<1.0		<1.0	
HZMW-15D	20-30	5/29/2014	6.08	6.28	1000	14.2	0.12	**180**	**290**	**3700**	<20	<100	<280	<460	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	
		9/13/2014	6.74	6.33	308	19.1	0.30	**4.5**	**6.9**	**93**	<0.40	**130**	<250	<410	<1.0	<1.0	<1.0	<1.0		<3.0	
HZMW-16	15-25	9/12/2014	6.78	7.08	207	17.9	1.23	<0.20	<0.20	**4.2**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0	
HZMW-17	10-20	6/9/2014	7.93	6.61	594	13.8	0.15	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	
		9/12/2014	8.30	6.94	345	16.4	0.89	<0.20	<0.20	**2.0**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0	
HZMW-18	7.5-17.5	6/10/2014	8.51	6.38	1901	14.0	0.14	<0.20	<0.20	<0.20	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	
HZMW-19	5-15	5/30/2014	5.58	6.38	1210	13.8	0.10	**0.40**	**0.94**	**0.97**	<0.20	**1200**	<100	<410	**2.1**	<1.0	**11**	**1.6**	<3.3	<3.0	
		6/9/2014	6.02	6.26	1213	14.3	0.13	**1.1**	**0.67**	**0.28**	<0.20	**720**	<640	<410	<4.0	<4.0	<4.0	<4.5	<3.3	<3.0	
		9/12/2014	6.21	6.37	675	19.7	0.50	**0.67**	**0.76**	**3.3**	<0.20	**510**	**680**	**430**	<1.0	<1.0	**5.8**	<1.0		<3.0	
HZMW-20	5-15	6/9/2014	7.48	6.79	1914	15.3	0.28	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	
		9/13/2014	8.11	7.09	1018	20.7	0.72	<0.20	<0.20	**1.3**	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0	
BLMW-8	5-15	6/10/2014																			Well cannot be found
		9/10/2014	8.89	6.4	486	18.8	0.20	<0.20	<0.20	<0.20	<0.20	<100	**280**	**540**	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	
BC-16	11-21	6/10/2014	8.70	6.43	4.27	12.9	0.05	<0.20	<0.20	<0.20	<0.20	<100	<470	<510	<1.0	<1.0	<1.0	<1.0	**60**	**18**	
		9/13/2014	8.79	6.3	1659	18.8	0.11	<0.20	<0.20	**1.4**	<0.20	<100	**470**	<420	<1.0	<1.0	<1.0	<1.0	**64**	**31**	
QC Samples																					
Dup 1		5/29/2014						**3.8**	**8.3**	**140**	<2.0	<100	<280	<440	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	Duplicate of HZMW-15S 5/29/14
Trip Blank		5/30/2014						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0	<1.0			
Trip Blank		6/10/2014						<0.20	<0.20	<0.20	<0.20										
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)								**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**5**	**5**	

< – 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
Blank – Not analyzed
1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

Table 2
Bothell Landing 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)**	**(cis) 1,2-Dichloro-ethene (µg/L)**	**Trichloro-ethene (µg/L)**	**Tetrachloro-ethene (µg/L)**	**Vinyl Chloride (µg/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)**	
MW-1	5-15	6/11/2014	8.68	6.57	1410	19.6	0.06	<0.20	<0.20	<0.20	<0.20	<100	<280	<450	<1.0	<1.0	<1.0	<1.0	**10**	**6.6**	<4.4	<4.0	**19**	<10	**20**	<1.0	
		9/11/2014	8.03	6.60	739	19.2	0.78	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0	**17**	**30**		<4.4	**22**	**86**	**36**	**74**	
BLMW-5R	5-15	9/10/2014	10.48	6.88	465	18.5	2.20	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-6R	5-15	9/10/2014	8.91	6.41	574	18.9	0.46	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		**4.7**		<4.0		<10		<1.0	
BLMW-7	5-10	6/11/2014																									Well cannot be accessed
		9/10/2014	8.70	5.90	273	18.4	0.63	<0.20	**0.22**	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-8	5-15	9/10/2014	8.89	6.40	486	18.8	0.20	<0.20	<0.20	<0.20	<0.20	<100	**280**	**540**	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
BLMW-9	5-15	6/16/2014	7.07	6.49	555	14.5	0.17	<0.20	<0.20	<0.20	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		9/11/2014	7.64	6.48	599	19.7	0.40	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0	**6.3**	**6.1**		<4.0		<10		<1.0	
BLMW-10	5-10	6/13/2014	6.78	6.09	747	13.6	1.01	<0.20	<0.20	**4.0**	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0		<3.0		<4.0		<10		<1.0	
		9/10/2014	6.63	6.66	414	18.1	0.45	<0.20	<0.20	**3.0**	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0		<3.0		<4.0		<10		<1.0	
BLMW-11	5-15	6/11/2014	9.08	6.38	2800	14.1	0.07	<0.20	<0.20	<0.20	<0.20	<100	<280	<470	<1.0	<1.0	<1.0	<1.0	**150**	**150**	<4.4	<4.0	<11	<10	<1.1	<1.0	
		9/10/2014	9.54	6.40	1565	17.0	0.23	<0.20	<0.20	<0.20	<0.20	<100	**320**	**430**	<1.0	<1.0	<1.0	<1.0	**120**	**110**		<4.0		<10		<1.0	
BLMW-12	5-15	6/12/2014	9.10	6.58	2380	13.4	0.20	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	**130**	**120**	<4.4	<4.0	<11	<10	**1.3**	<1.0	
		9/11/2014	9.36	6.52	1010	18.5	0.28	<0.20	<0.20	**14**	<0.20	<100	<260	<410	<1.0	<5.0	<1.0	<5.0	**88**	**77**		<4.0		<10		<1.0	
QC Samples																											
Dup 6/13/14		6/16/2014						<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0		**3.2**		<4.0		<10		<1.0	Duplicate of BLMW-9 6/16/14
Trip Blank		6/12/2014						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0										
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)								**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**5**	**5**	**5**	**5**	**50**	**50**	**15**	**15**	

< – 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
Blank – Not analyzed
1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

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 (^{o}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)**	
BC-10	10-20	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	
BC-11	10-20	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**	**5.10**	
		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**	
BPMW-1	10-20	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**	
BPMW-2	32-42	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	
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	
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**	
		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**	
QC Samples																	
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			
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)								**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**5**	**5**	

< – 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
Blank – Not analyzed
1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

Table 4
Bothell Ultra Custom Care Cleaners 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 (^oC)	Diss. Oxygen (mg/L)	Fe^{+2} (mg/L)	Redox Potential (millivolt)	(cis) 1,2-Dichloroethene (µg/L)	Trichloroethene (µg/L)	Tetrachloroethene (µg/L)	Vinyl Chloride (µg/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)	Nitrate (mg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	
BB-2	9-19	6/10/2014	5.53	6.63	459	14.9	2.70	0.0	+269	<0.40	<0.40	79	<0.40								3.2	9.4	<1.0	<0.70	<1.20	<1.10	2 weeks after first injection
		9/17/2014	5.86	6.9	306	18.6	1.85			<0.40	<0.40	68	<0.40														6 weeks after second injection
BB-3	10-20	3/13/2014	7.94	6.11	710	12.4	9.80			<0.20	<0.20	0.3	<0.20								3.5	20	<1.0	<0.50	<0.50	<0.50	Baseline
		5/14/2014	8.42	6.48	567	13.7	9.01	0.0	+360	<0.2	<0.2	0.21	<0.20								2.6	18	<1.0	<0.50	<0.50	<0.50	Baseline
		6/4/2014	7.76	6.33	569	17.5	4.38			<0.20	<0.20	<0.20	<0.20														2 weeks after first injection
		8/19/2014	10.18	6.03	318	17.6	6.71			<0.20	<0.20	0.75	<0.20														2 weeks after second injection
		9/19/2014	11.39	6.74	335	18.5	3.17			<0.20	<0.20	0.42	<0.20														6 weeks after second injection
BI-3	5-10	6/10/2014	4.27	6.39	493	15.4	1.55	0.0	+238	1.7	0.43	4.5	0.26								1.3	10	1.8	128	<1.2	<1.1	2 weeks after first injection
		9/17/2014	4.17	6.32	394	19.8	0.25			2.9	0.52	2.1	1.6														6 weeks after second injection
MW-1	5-15	3/13/2014	7.75	6.27	568	12.5	7.9			120	30	130	<1.0								4.4	27	<1.0	<0.50	<0.50	<0.50	Baseline
		5/12/2014	8.56	6.09	517	15.0	3.17	0.0	+323	13	4.9	21	<0.20								6.0	13	<1.0	<0.50	<0.50	<0.50	Baseline
		6/5/2014	8.77	5.94	604	15.0	4.05			5.4	2.9	15	<0.20														2 weeks after first injection
		8/19/2014	9.05	5.56	6.04	20.1	25.68			0.4	0.32	9.5	<0.20														2 weeks after second injection
		9/17/2014	9.37	5.91	504	18.5	9.14			<0.20	<0.20	4.3	<0.20														6 weeks after second injection
MW-2	3-13	5/11/2014	6.28	6.22	663	14.0	3.45	0.0	+208	<0.20	<0.20	<0.20	<0.20								8.0	36	4.9	20	<0.50	<0.50	Baseline
		6/2/2014	6.32	5.91	685	15.6	3.31			<0.20	<0.20	0.26	<0.20														2 weeks after first injection
		8/13/2014	6.66	5.99	200	17.9	NA			<0.20	<0.20	<0.20	<0.20														2 weeks after second injection
		9/15/2014	7.02	6.34	392	20.9	2.50			<0.20	<0.20	0.22	<0.20														6 weeks after second injection
MW-3R	6-16	5/10/2014	6.36	6.23	1045	13.7	7.50	0.0	+238	<0.20	<0.20	1.7	<0.20								9.2	110	2.3	<0.50	<0.50	<0.50	Baseline
		6/3/2014	6.53	6.13	1090	15.3	4.70			<0.20	<0.20	1.6	<0.20														2 weeks after first injection
		8/19/2014	6.97	6.2	492	18.9	6.49			<0.20	<0.20	1.3	<0.20														2 weeks after second injection
		9/15/2014	7.32	6.25	426	19.0	2.40			<0.20	<0.20	1.0	<0.20														6 weeks after second injection
UCCMW-4	35-40	3/13/2014	9.45	6.70	675	14.3	4.61			<0.20	<0.20	0.88	<0.20								<0.05	8.1	<1.0	<0.50	<0.50	<0.50	Baseline
		5/12/2014	8.30	6.83	523	15.7	0.16	0.0	+247	<0.20	<0.20	0.20	<0.20								<0.05	<5	<1	1.9	<0.5	<0.5	Baseline
		6/5/2014	8.18	6.71	589	16.0	0.20			<0.20	<0.20	0.23	<0.20														2 weeks after first injection
		8/19/2014	8.2	6.93	340	22.2	0.37			<0.20	<0.20	4.9	<0.20														2 weeks after second injection
		9/18/2014	8.41	6.95	361	18.9	0.60			<0.20	<0.20	0.26	<0.20														6 weeks after second injection
UCCMW-5	10-20	5/14/2014	9.79	5.98	357	13.8	9.60	0.0	+376	0.44	0.34	14	<0.20								0.77	9.4	1.7	<0.50	<0.50	<0.50	Baseline
		6/5/2014	9.94	5.98	382	14.8	5.35			0.22	0.31	14	<0.20														2 weeks after first injection
		8/19/2014	10.33	5.8	465	19.1	14.10			<0.20	0.24	15	<0.20														2 weeks after second injection
		9/16/2014	10.59	6.20	855	21.0	6.56			<0.20	0.27	13	<0.20														6 weeks after second injection
UCCMW-6	5-15	3/13/2014	5.30	5.75	809	10.9	0.80			<0.20	<0.20	3.8	<0.20								0.39	17	1.5	3.8	<0.50	<0.50	Baseline
		5/13/2014	5.50	5.96	608	13.7	0.11	0.0	+363	<0.20	<0.20	3.5	<0.20								1.4	16	<1.0	0.99	<0.50	<0.50	Baseline
		6/6/2014	5.75	6.02	645	13.8	5.38			<0.20	<0.20	4.0	<0.20														2 weeks after first injection
		8/19/2014	5.83	5.91	426	16.5	8.11			<0.20	<0.20	4.8	<0.20														2 weeks after second injection
		9/16/2014	5.96	6.33	412	16.7	2.16			<0.20	<0.20	3.6	<0.20														6 weeks after second injection
UCCMW-7	8-18	5/15/2014	5.95	6.23	393	14.1	7.84	0.0	+352	<0.20	<0.20	27	<0.20								2.2	28	<1.0	<0.50	<0.50	<0.50	Baseline
		6/3/2014	6.02	6.13	513	14.3	3.98			<0.20	<0.20	26	<0.20														2 weeks after first injection
		8/19/2014	6.31	6.13	300	16.3	8.93			<0.20	<0.20	28	<0.20														2 weeks after second injection
		9/19/2014	6.38	7.05	329	17.2	4.34			<0.20	<0.20	21	<0.20														6 weeks after second injection
UCCMW-8	5-15	5/29/2014	6.07	6.52	490	13.9	1.87	0.0	+283	<1.0	<1.0	110	<1.0	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	2.3	18	<1.0	<0.50	<0.50	<0.50	Baseline
		9/13/2014	6.29	6.5	289	19.1	1.00			<0.40	0.57	76	<0.40														6 weeks after second injection
UCCMW-9	5-15	5/28/2014	6.75	6.51	1164	16.2	0.52	0.0	+276	<1.0	<1.0	1.0	<1.0	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	1.0	19	2.0	16.0	<1.0	<1.0	Baseline
		9/13/2014	6.71	6.75	611	22.8	0.46			0.21	0.23	2.5	<0.20														6 weeks after second injection
UCCMW-10	5-15	6/13/2014	6.15	5.70	736	17.0	0.60	0.0	+261	<0.20	<0.20	0.90	<0.20	<100	<0.30	<0.48	<1.0	<1.0	<1.0	<1.0	2.0	24	9.2	48.6	<1.2	<1.1	Baseline
		9/18/2014	6.02	5.75	414	21.6	0.37			<0.20	<0.20	0.29	<0.20	<100	1600	3100	<1.0	<1.0	<1.0	<1.0							6 weeks after second injection
UCCMW-11S	8-18	5/11/2014	6.16	6.33	878	13.6	5.27	0.0	-2	<0.20	<0.20	0.28	<0.20								3.8	90	2.0	3.5	0.69	<0.50	Baseline
		6/2/2014	6.26	6.07	926	15.0	3.27			<0.20	<0.20	0.22	<0.20														2 weeks after first injection
		8/13/2014	6.65	6.45	392	17.5	6.55			<0.20	<0.20	<0.20	<0.20														2 weeks after second injection
		9/15/2014	6.98	7.55	302	20.2	2.00			<0.20	<0.20	0.30	<0.20														6 weeks after second injection
UCCMW-11D	18-23	5/15/2014	5.68	6.50	389	14.2	5.59	0.0	-8	<0.20	<0.20	<0.20	<0.20								1.9	13	<1.0	3.2	0.93	<0.50	Baseline
		6/2/2014	6.23	6.52	481	15.0	1.42			<0.20	<0.20	<0.20	<0.20														2 weeks after first injection
		8/13/2014	6.68	6.88	360	17.1	3.29			<0.20	<0.20	<0.20	<0.20														2 weeks after second injection
		9/15/2014	7.11	7.08	299	17.8	2.13			<0.20	<0.20	<0.20	<0.20														6 weeks after second injection
UCCMW-12S	8-18	5/10/2014	6.88	6.33	685	13.6	4.47	0.0	-176	<0.20	<0.20	<0.20	<0.20								4.1	38	<1.0	0.89	<0.50	<0.50	Baseline
		6/3/2014	6.99	6.17	2.08	15.1	4.94			<0.20	<0.20	0.31	<0.20														2 weeks after first injection
		8/14/2014	7.57	6.27	521	18.9	10			<0.20	<0.20	0.22	<0.20														2 weeks after second injection
		9/15/2014	7.95	6.13	341	20.0	3.56			<0.20	<0.20	0.25	<0.20														6 weeks after second injection
UCCMW-12D	25-30	5/14/2014	6.93	7.40	637	15.7	0.53	0.0	-584	<0.20	<0.20	<0.20	<0.20								0.44	14	<1.0	71	12	6.3	Baseline
		6/3/2014	7.11	7.12	742	14.4	0.03			<0.20	<0.20	<0.20	<0.20														2 weeks after first injection
		8/14/2014	7.64	6.93	421	15.6	1.46			<0.20	<0.20	0.41	<0.20														2 weeks after second injection
		9/15/2014	8.04	6.89	4.9	18.2	0.72			<0.20	<0.20	0.31	<0.20														6 weeks after second injection

Table 4
Bothell Ultra Custom Care Cleaners 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 (^oC)	Diss. Oxygen (mg/L)	Fe^{+2} (mg/L)	Redox Potential (millivolt)	(cis) 1,2-Dichloroethene (µg/L)	Trichloroethene (µg/L)	Tetrachloroethene (µg/L)	Vinyl Chloride (µg/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)	Nitrate (mg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	
UCCMW-13S	9-19	5/14/2014	6.20	6.11	629	13.5	4.77	1.1	+174	<0.20	<0.20	1	<0.20								4.6	59	<1.0	<0.50	<0.50	<0.50	Well possibly influenced by nearby injection
		6/4/2014	7.21	6.04	862	14.4	10.09			<0.20	<0.20	1.6	<0.20														2 weeks after first injection
		8/19/2014	7.64	6.15	356	19.6	11.44			<0.20	<0.20	0.9	<0.20														2 weeks after second injection
		9/16/2014	8.89	6.20	353	19.3	4.18			<0.20	<0.20	1.6	<0.20														6 weeks after second injection
UCCMW-13D	19-24	8/19/2014	7.72	6.12	319	18.5	4.42			<0.20	<0.20	<0.20	<0.20														2 weeks after second injection
		9/16/2014	8.11	6.19	338	18.1	3.20			<0.20	<0.20	0.78	<0.20														6 weeks after second injection
UCCMW-14S	10-20	5/11/2014	8.69	6.25	984	13.0	5.30	0.0	-168	<0.20	<0.20	6.0	<0.20								3.9	110	2.8	5.8	1.3	0.67	Baseline
		6/4/2014	8.75	6.31	1023	13.6	8.42			<0.20	<0.20	6.5	<0.20														2 weeks after first injection
		8/19/2014	9.49	6.26	693	20.8	27.23			<0.20	<0.20	6.1	<0.20														2 weeks after second injection
		9/16/2014	9.89	6.18	576	19.1	5.82			<0.20	<0.20	6.2	<0.20														6 weeks after second injection
UCCMW-14D	21-26	5/13/2014	8.58	6.55	598	14.9	3.38	0.0	+160	<0.20	<0.20	<0.20	<0.20								3.4	29	<1.0	1.8	<0.50	<0.50	Baseline
		6/4/2014	8.60	6.26	576	14.0	4.21			<0.20	<0.20	<0.20	<0.20														2 weeks after first injection
		8/19/2014	9.15	6.12	317	18.7	4.07			<0.20	<0.20	<0.20	<0.20														2 weeks after second injection
		9/16/2014	9.51	6.21	324	18.7	3.00			<0.20	<0.20	0.61	<0.20														6 weeks after second injection
UCCMW-15	9-19	5/11/2014	8.15	6.30	475	13.4	6.28	0.0	+21	<0.20	<0.20	4.8	<0.20								3.6	42	1.4	0.93	<0.50	<0.50	Baseline
		6/5/2014	8.22	6.12	601	14.4	5.45			<0.20	<0.20	0.61	<0.20														2 weeks after first injection
		8/14/2014	8.36	6.22	478	18.3	24.99			<0.20	<0.20	4.2	<0.20														2 weeks after second injection
		9/15/2014	8.73	6.08	520	21.1	6.91			<0.20	<0.20	2.8	<0.20														6 weeks after second injection
UCCMW-16	9-19	5/14/2014	4.28	6.42	544	15.1	1.98	0.0	+1	<0.20	<0.20	<0.20	<0.20								1.7	16	<1.0	2.5	0.63	<0.50	Baseline
		6/5/2014	6.73	6.27	761	15.5	5.25			<0.20	<0.20	<0.20	<0.20														2 weeks after first injection
		8/15/2014	7.13	6.43	261	18.0	6.31			<0.20	<0.20	<0.20	<0.20														2 weeks after second injection
		9/18/2014	7.24	6.26	282	18.7	3.68			<0.20	<0.20	0.20	<0.20														6 weeks after second injection
UCCMW-17	10-20	5/11/2014	8.16	6.20	351	14.6	2.03	0.0	-100	<0.20	<0.20	<0.20	<0.20								3.1	11	<1.0	1.5	<0.50	<0.50	Baseline
		6/5/2014	8.19	6.05	621	14.7	4.85			<0.20	<0.20	0.36	<0.20														2 weeks after first injection
		8/15/2014	8.45	6.10	563	17.0	28.84			<0.20	<0.20	0.21	<0.20														2 weeks after second injection
		9/17/2014	8.78	6.40	645	19.1	8.64			<0.20	<0.20	21	<0.20														6 weeks after second injection
UCCMW-18	10-20	8/19/2014	8.68	5.82	480	20.8	NA			<0.20	<0.20	5.8	<0.20														2 weeks after second injection
		9/17/2014	8.99	5.93	759	19.2	6.63			<0.20	<0.20	1.7	<0.20														6 weeks after second injection
UCCMW-19	10-20	5/12/2014	8.12	6.31	440	15.2	1.46	0.0	-166	32	10	62	<0.40								3.6	17	<1.0	15	3.3	1.7	Baseline
		6/5/2014	8.13	5.98	1011	16.3	5.32			<0.20	41	260	<0.20														Post injection
		8/19/2014	8.34	6.07	1072	21.6	29.85			60	33	1100	<5.0														2 weeks after second injection
		9/16/2014	8.60	6.14	1004	20.9	7.95			11	9	400	<0.20														6 weeks after second injection
UCCMW-20	8-18	5/15/2014	7.61	6.28	221	14.2	28.89	0.0	+328	6.8	5.9	43	<0.20								2.1	11	1.0	<0.50	<0.50	<0.50	Baseline
		6/3/2014	7.88	6.07	380	15.3	8.04			6.1	6.7	48	<0.20														2 weeks after first injection
		8/14/2014	7.99	5.44	548	19.3	9.28			6.6	4.2	48	<0.20														2 weeks after second injection
		9/16/2014	8.31	5.56	388	20.2	9.34			9.5	7.4	64	<0.40														6 weeks after second injection
UCCMW-21	12-22	5/15/2014	10.38	6.81	614	14.6	15.00	0.0	-318	<0.20	<0.20	13	<0.20								1.3	49	3.0	5.4	1.4	1.0	Baseline
		6/3/2014	11.67	6.09	611	13.9	8.77			<0.20	0.34	16	<0.20														2 weeks after first injection
		8/14/2014	11.81	6.22	378	15.9	8.2			<0.20	0.49	19	<0.20														2 weeks after second injection
		9/16/2014	12.18	6.34	578	17.4	6.65			0.26	1.2	29	<0.20														6 weeks after second injection
UCCMW-22	8-18	6/3/2014	6.29	6.11	472	14.4	2.69			<0.20	<0.20	0.81	<0.20														2 weeks after first injection
		8/15/2014	6.24	6.40	264	17.2	3.86			<0.20	<0.20	0.67	<0.20														2 weeks after second injection
		9/18/2014	6.33	6.37	280	17.8	2.49			<0.20	<0.20	0.89	<0.20														6 weeks after second injection
UCCMW-23	8-18	5/13/2014	5.43	6.31	628	14.1	0.15	0.0	-288	<0.20	<0.20	2.2	<0.20								0.38	10	1.9	34	3.9	2.0	Baseline
		6/6/2014	5.57	6.17	536	13.9	6.48			<0.20	<0.20	2.1	<0.20														2 weeks after first injection
		8/19/2014	5.56	6.13	281	16.9	5.9			<0.20	<0.20	2.5	<0.20														2 weeks after second injection
		9/16/2014	5.74	6.29	291	17.5	3.89			<0.20	<0.20	2.5	<0.20														6 weeks after second injection
UCCMW-24	8-18	5/15/2014	4.70	6.31	486	15.0	7.50	0.0	+7	<0.20	<0.20	2.2	<0.20								2.6	18	1.7	3.9	1.2	0.71	Baseline
		6/3/2014	3.20	6.18	556	14.9	8.75			<0.20	<0.20	2.2	<0.20														2 weeks after first injection
		8/14/2014	5.61	6.10	425	17.5	7.45			<0.20	<0.20	2.5	<0.20														2 weeks after second injection
		9/18/2014	5.74	5.85	449	19.0	8.53			<0.20	<0.20	2.4	<0.20														6 weeks after second injection
UCCMW-25	8-18	5/15/2014	4.12	6.08	424	15.3	6.40	0.0	+255	<0.20	<0.20	6.9	<0.20								3.9	24	<1.0	<0.50	<0.50	<0.50	Baseline
		6/3/2014	5.15	6.10	636	14.7	6.29			<0.20	<0.20	9.3	<0.20														2 weeks after first injection
		8/14/2014	5.21	6.29	554	16.6	5.13			<0.20	<0.20	9.3	<0.20														2 weeks after second injection
		9/18/2014	5.49	5.87	383	18.4	8.73			<0.20	<0.20	8.3	<0.20														6 weeks after second injection
HZMW-16	15-25	5/28/2014	6.35	6.52	451	15.5	0.16	0.0	+241	0.30	<0.20	0.32	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	1.6	16	<1.0	0.66	<0.50	<0.50	Baseline
		9/18/2014	6.78	7.08	207	17.9	1.23			<0.20	<0.20	4.2	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0							6 weeks after second injection
QC Samples																											
Dup 1		5/11/2014								<0.20	<0.20	<0.20	<0.20								3.1	10	<1.0	1.7	0.53	<0.50	Duplicate of UCCMW-17 5/11/14
Dup 2		5/14/2014								<0.20	<0.20	<0.20	<0.20								0.47	15	<1.0	77	12	6.5	Duplicate of UCCMW-12D 5/14/14
Dup 01		6/3/2014								<0.20	<0.20	1.7	<0.20														Duplicate of MW-3R 6/3/14
Dup 6-5-14		6/6/2014								<0.20	<0.20	2.1	<0.20														Duplicate of UCCMW-23 6/6/14

Table 4
Bothell Ultra Custom Care Cleaners Site
Ground Water Analytical Results

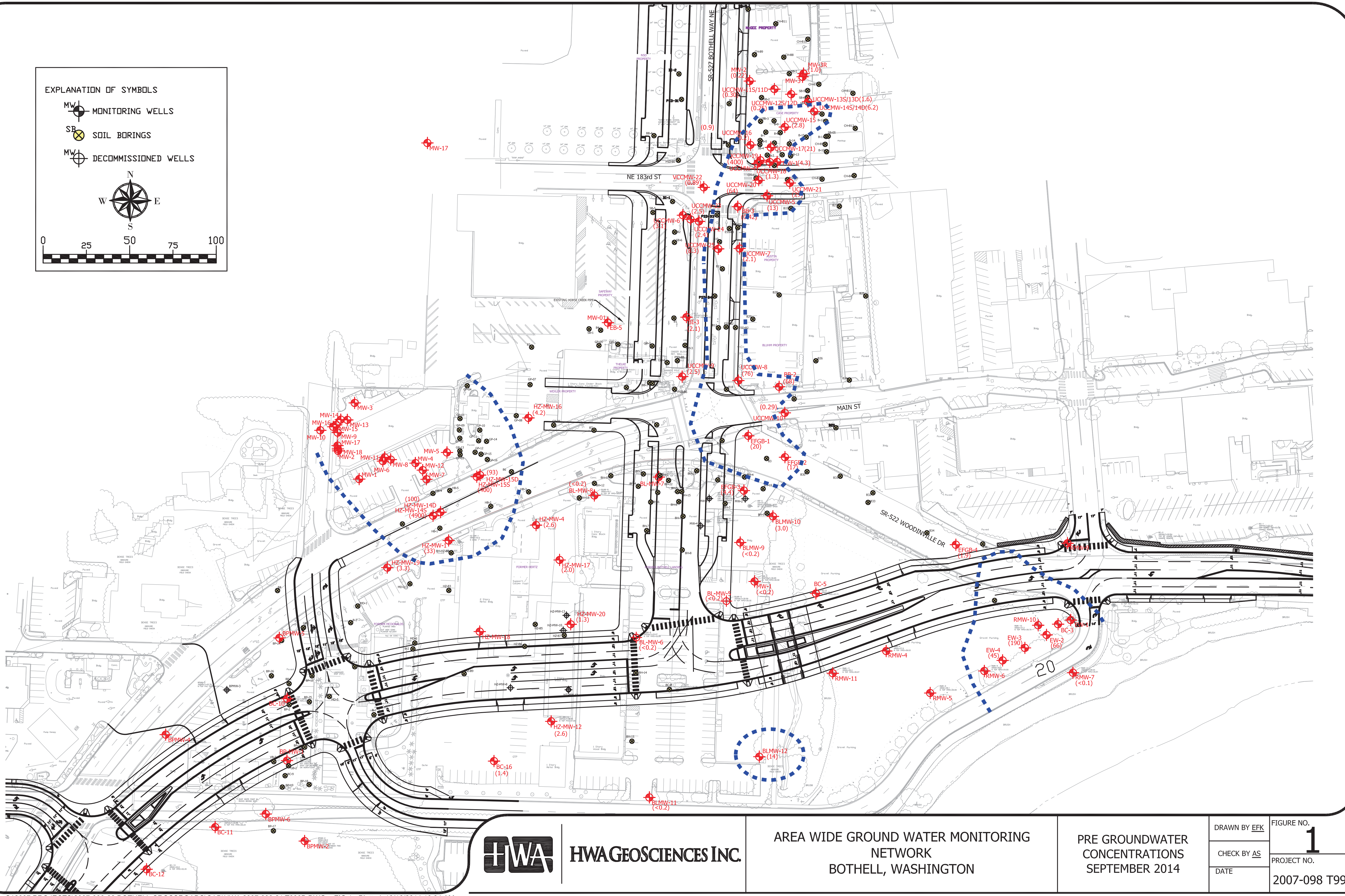
			FIELD PARAMETERS							LABORATORY RESULTS																	NOTES
Sample Location	Screened Depth, (ft bgs)	Sample Date	Depth to Water (ft bgs)	pH (units)	Conductivity (mS)	Temperature (°C)	Diss. Oxygen (mg/L)	Fe^{+2} (mg/L)	Redox Potential (millivolt)	(cis) 1,2-Dichloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Tetrachloro-ethene (µg/L)	Vinyl Chloride (µg/L)	WTPH-Gx (µg/L)	WTPH-Dx Diesel (µg/L)	WTPH-Dx Oil (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	
Trip Blank		5/14/2014								<0.20	<0.20	<0.20	<0.20														
Trip Blank		5/15/2014								<0.20	<0.20	<0.20	<0.20														
Trip Blank		6/5/2014								<0.20	<0.20	<0.20	<0.20														
Trip Blank		6/6/2014								<0.20	<0.20	<0.20	<0.20														
Trip Blank		9/15/2014								<0.20	<0.20	<0.20	<0.20														
Trip Blank		9/17/2014								<0.20	<0.20	<0.20	<0.20														
Dup1		9/15/2014								<0.20	<0.20	**3.1**	<0.20														Duplicate of UCCMW-15 9/15/2014
Dup2		9/19/2014								<0.20	<0.20	**4.4**	<0.20														Duplicate of UCCMW-4 9/19/2014
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)										**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	

< – 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
Blank – Not analyzed
NA – Not applicable
1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

Table 5
Bothell Riverside Site
Ground Water Analytical Results

			FIELD PARAMETERS						HVOCs						NOTES
	Screened Interval (ft bgs)	Date Sampled	Depth to Water (ft below MP)	pH (units)	Conductivity (µS)	Temperture (^oC)	Dissolved Oxygen (mg/L)	Settable Solids (mg/L)	Tetrachloro-ethene (µg/L)	Trichloro-ethene (µg/L)	1,1-Dichloro-ethene (µg/L)	(cis) 1,2-Dichloro-ethene (µg/L)	(trans) 1,2-Dichloro-ethene (µg/L)	Vinyl chloride (µg/L)	
RMW-4	**15-25**	6/24/14													Wellhead buried under new landscaping
RMW-5	**12-22**	5/24/13	11.51	6.70	932	13.9	1.00		**1.7**	<0.2		<0.2		<0.2	
		6/24/14	14.51	6.48	740	14.5	0.15		**1.4**	**0.40**	<0.20	<0.20	<0.20	<0.20	
RMW-6	**15-25**	9/14/09							<0.2	**0.27**		**3.6**		**5.3**	
		5/24/13	10.42	6.68	467	14.3	1.40		<0.2	<0.2		**2.7**		**3.4**	
		6/24/14	14.79	6.47	407	14.2	0.13		**0.34**	**0.60**	<0.20	**0.42**	<0.20	<0.20	
RMW-7	**15-25**	9/14/09							**50**	**120**		**190**		**22**	
		5/24/13	16.31	6.80	447	16.2	0.30		**9**	**33**		**65**		**9.3**	
		4/4/14	16.65	6.50	1969	12.9	0.55		**0.75**	**3.8**		**35**	**0.54**	**8.3**	
		6/25/14	16.55	6.48	865	15.2	0.03		**5.2**	**24**	<0.20	**80**	**1.1**	**9.9**	
		9/22/14	17.54	6.96	386	18.2	5.25		<1.0	**3.2**	<1.0	**170**	**1.6**	**47**	
RMW-8	**20-30**	9/15/09							**0.46**	**2.6**		**1.3**		<0.2	
		5/24/13	18.81	6.42	494	16.4	0.10		**0.5**	**0.85**		**0.44**		<0.2	
		6/25/14	19.62	6.27	650	15.7	0.20		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
RMW-9	**20-30**	9/15/09							<0.2	<0.2		<0.2		<0.2	
		5/24/13	13.65	6.38	247	15.7	4.00		<0.2	<0.2		<0.2		<0.2	
		6/24/14									<0.20		<0.20		Well abandoned during SR 522 construction
RMW-10	**32-42**	5/24/13	11.85	6.52	247	13.3	6.60		<0.2	<0.2		<0.2		<0.2	
		6/24/14	15.00	6.19	361	15.4	1.08		<0.2	<0.2	<0.20	<0.2	<0.20	<0.2	
BC-3	**15-25**	9/5/08							**110**	**120**		**46**		<1	
		5/24/13	12.95	6.55	342	15.1	4.00		**25**	**11**		**4**		<0.2	
		6/24/14	14.41	6.06	426	14.8	2.40		**11**	**4.0**	<0.20	**0.75**	<0.20	<0.20	
EX-1	**12.5-32.5**	4/4/14	27.90						**17**	**3**		**1.2**		<0.2	
		6/25/14	14.78	6.61	0.10	18.3	5.68		**27**	**8.1**	<0.20	**6.5**	<0.20	<0.20	
		9/22/14													Pump not working
EX-2	**15-35**	4/4/14	23.70						**13**	**2.8**		**1.5**		<0.2	
		6/25/14	17.10	6.58	143	16.5	2.21		**28**	**3.8**	<0.20	**1.5**	<0.20	<0.20	
		9/22/14							**66**	**16**	<0.40	**12**	<0.40	<0.40	
EX-3	**14-34**	4/4/14	23.80						**49**	**14**		**7.2**		**0.61**	
		6/25/14	19.00	6.58	182	16.4	6.34		**41**	**14**	<0.40	**12**	<0.40	<0.40	
		9/22/14							**190**	**59**	<1.0	**33**	<1.0	**1.1**	
EX-4	**11-31**	4/4/14	12.50												Pump not working
		6/25/14	17.30	6.46	0.22	16.0	1.73		**1.7**	**1.8**	<0.20	**1.1**	<0.20	**0.38**	
		9/22/14							**45**	**10**	<0.20	**7.4**	<0.20	**0.87**	
DISCH	**NA**	4/4/14	NA	6.48	443	15.3			**25**	**6.3**		**3**		<0.2	
		6/25/14	NA	6.40	200	16.4	1.43	0.0	**30**	**8.4**	<0.20	**5.9**	<0.20	**0.38**	
		9/22/14						0.2	**79**	**18**	<0.40	**13**	<0.40	<0.40	
DUP 6/25/14		6/25/14							**28**	**8.4**	<0.20	**6.4**	<0.20	**0.37**	Duplicate of DISCH 6/25/14
Trip Blank		6/25/14							<0.2	<0.2	<0.20	<0.2	<0.20	<0.2	
DUP 9/22/14		9/22/14							**66**	**16**	<0.40	<0.40	<0.40	<0.40	Duplicate of EX2 9/22/2014
MTCA Method A (Table 720-1, WAC 173-340-900) or Method B Cleanup Level									**5**	**5**	**400 (B)**	**16 (B)**	**160 (B)**	**0.2**	
KCIWD Limits								**7.00**	**240**	**500**	**1700**	**Total <2000**		**12**	

Bold indicates analyte detected at a concentration greater than the laboratory reporing limit
Yellow highlight indicates analyte exceeds MTCA cleanup level
KCIWD = King County Industrial Waste Discharge limit
Blank – Not analyzed
NA – Not applicable



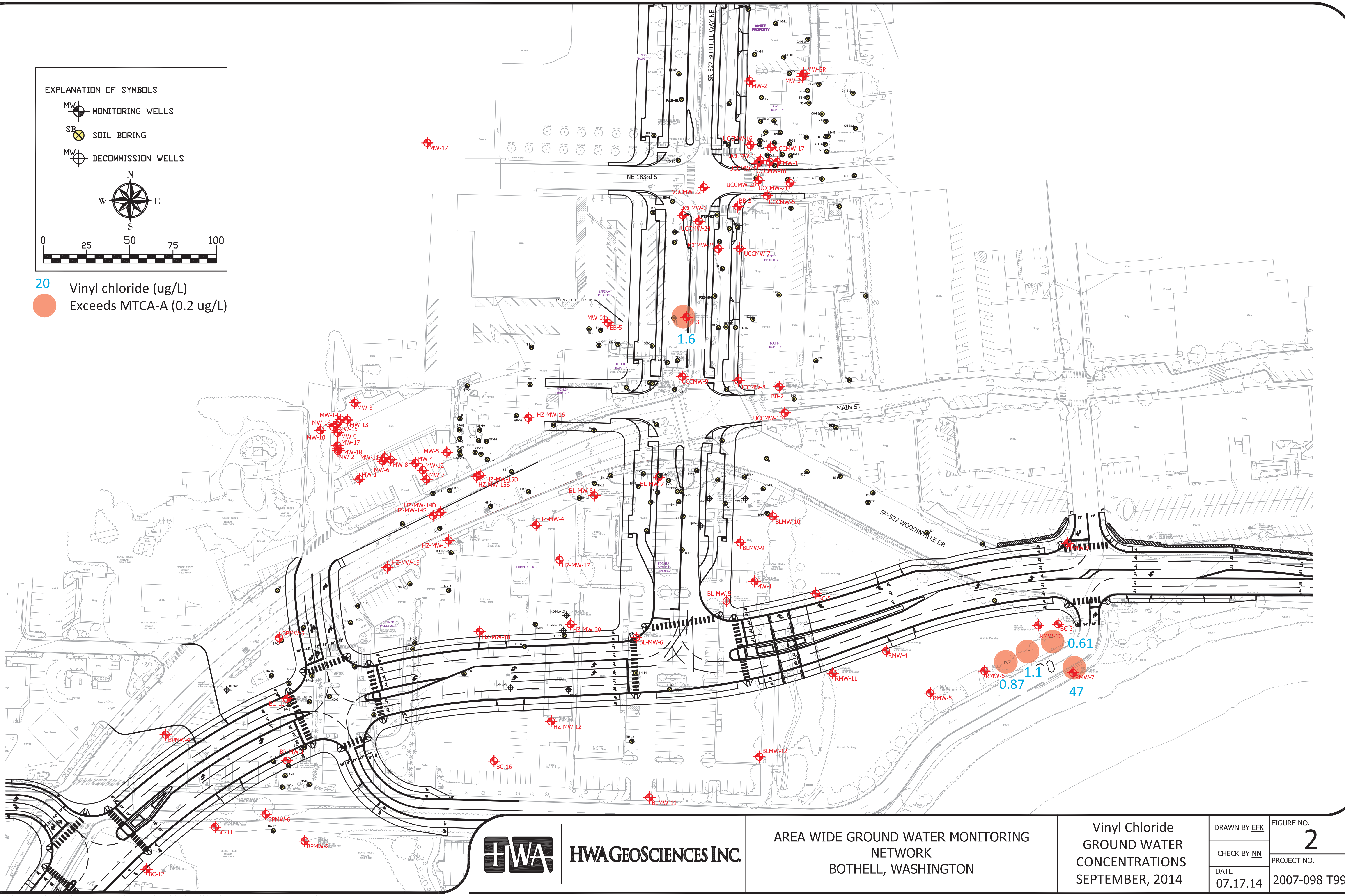
HWA GEOSCIENCES INC.

AREA WIDE GROUND WATER MONITORING NETWORK
BOTHELL, WASHINGTON

PRE GROUNDWATER CONCENTRATIONS
SEPTEMBER 2014

DRAWN BY EFK	FIGURE NO. 1
CHECK BY AS	PROJECT NO. 2007-098 T998
DATE	

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T998B.DWG <FIG 1> Plotted: 10/16/2014 10:34 AM



HWA GEOSCIENCES INC.

AREA WIDE GROUND WATER MONITORING NETWORK
BOTHELL, WASHINGTON

Vinyl Chloride
GROUND WATER CONCENTRATIONS
SEPTEMBER, 2014

DRAWN BY EFK
CHECK BY NN
DATE 07.17.14
FIGURE NO. 2
PROJECT NO. 2007-098 T998

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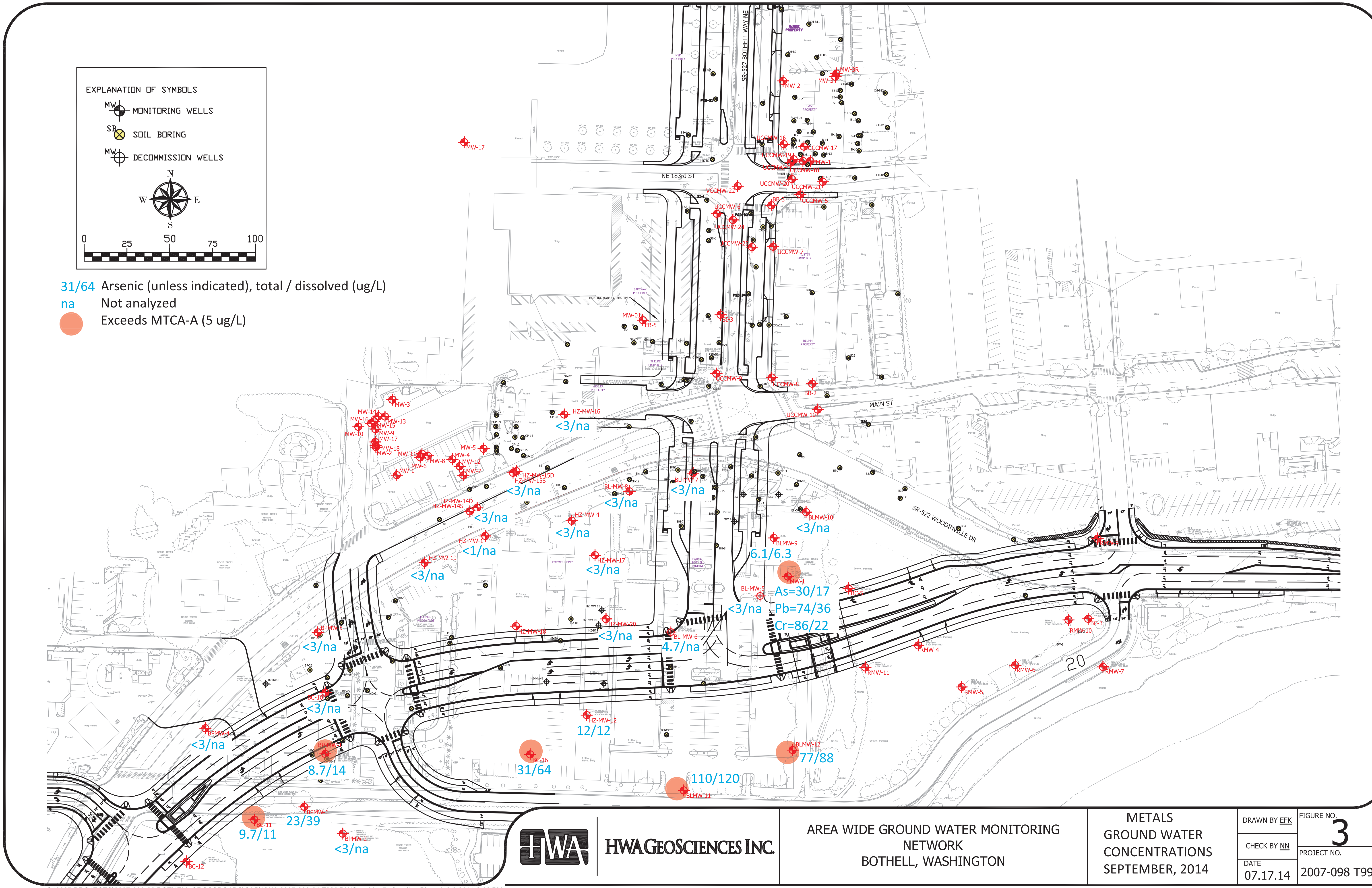

HWA GEOSCIENCES INC.

AREA WIDE GROUND WATER MONITORING NETWORK
BOTHELL, WASHINGTON

METALS GROUND WATER CONCENTRATIONS
SEPTEMBER, 2014

DRAWN BY EFK

CHECK BY NN

DATE 07.17.14

FIGURE NO. 3

PROJECT NO. 2007-098 T998

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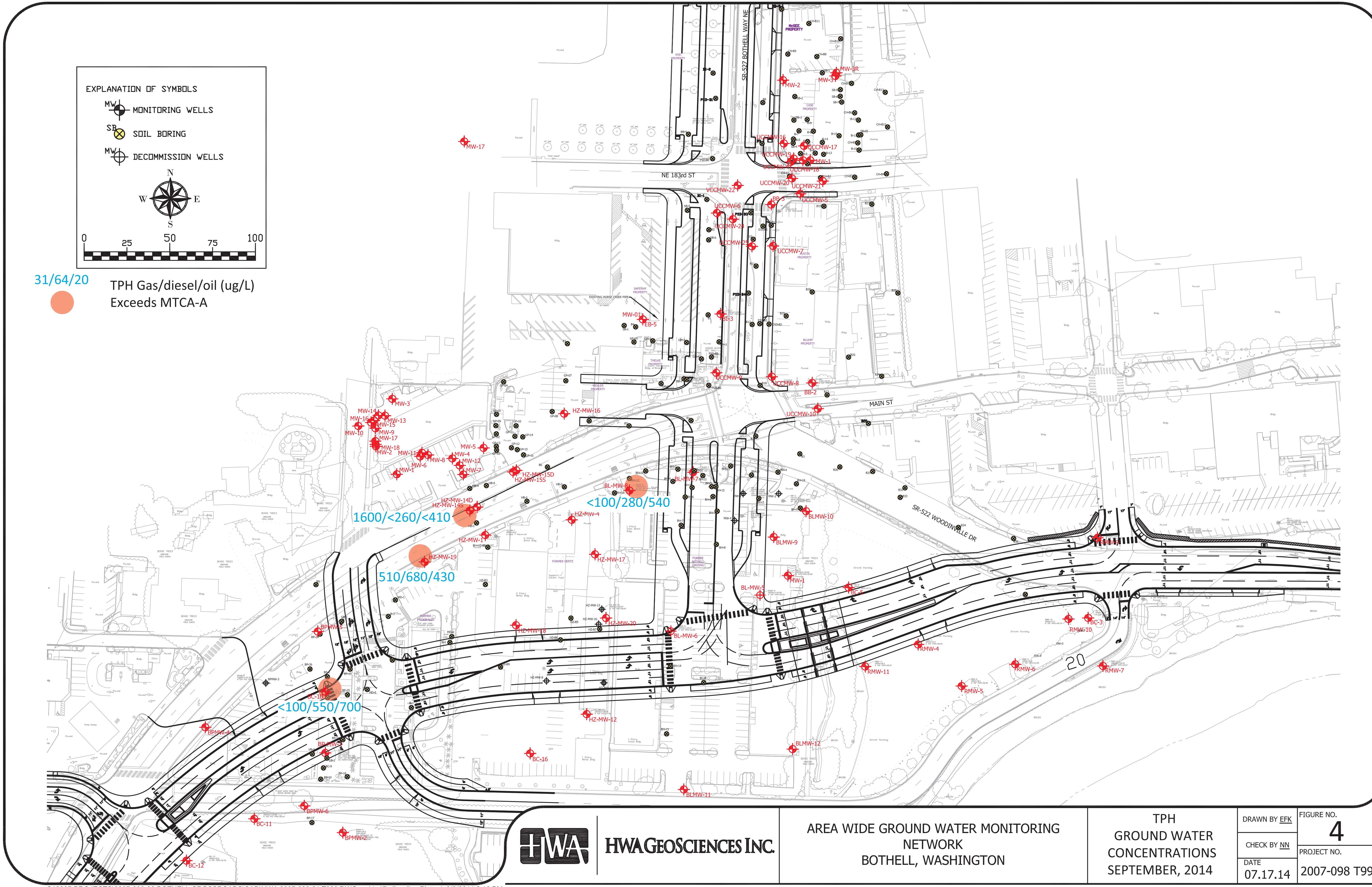


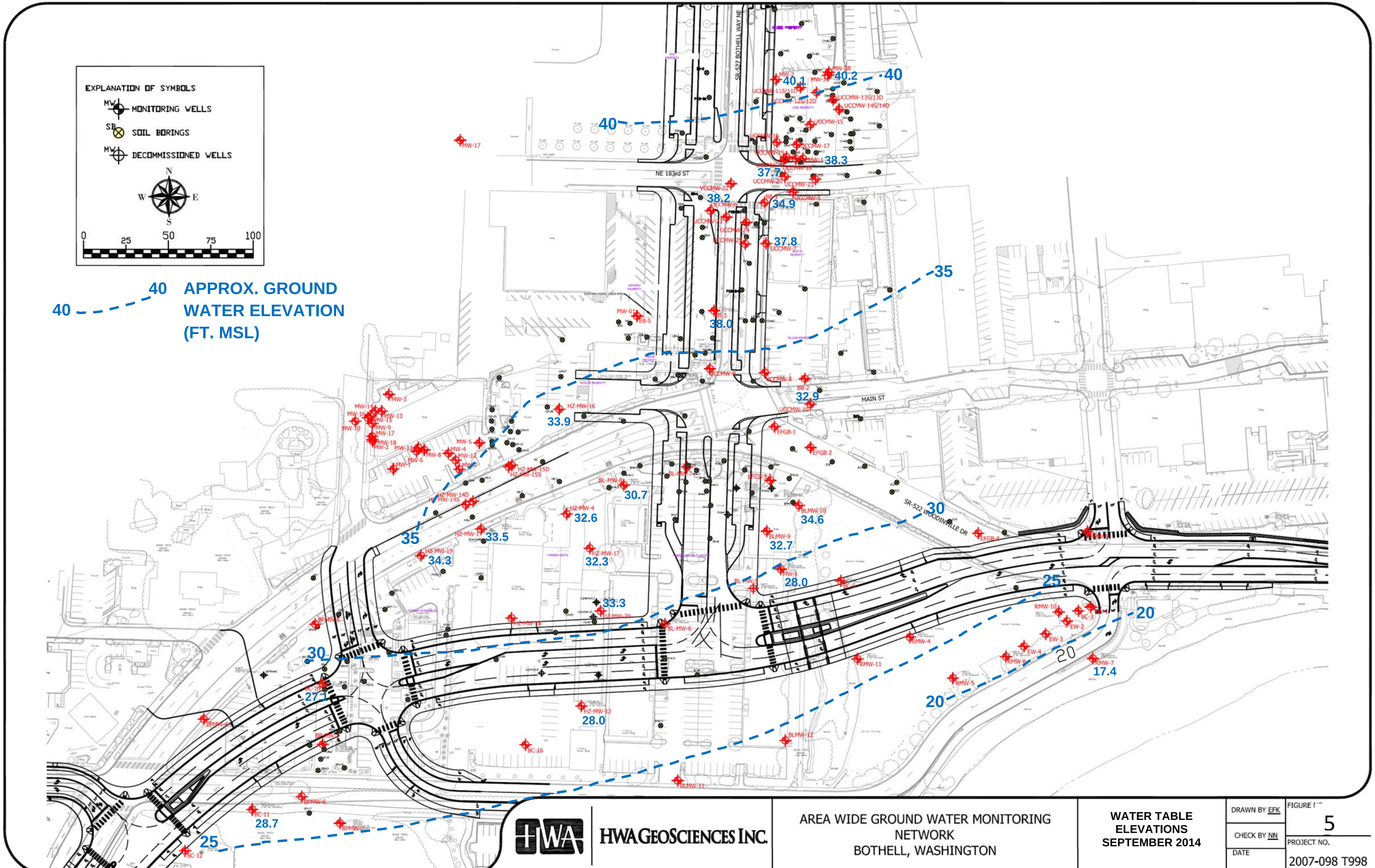
HWA GEOSCIENCES INC.

AREA WIDE GROUND WATER MONITORING NETWORK
BOTHELL, WASHINGTON

TPH GROUND WATER CONCENTRATIONS
SEPTEMBER, 2014

DRAWN BY EFK	FIGURE NO. 4
CHECK BY NN	PROJECT NO.
DATE 07.17.14	2007-098 T998

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T998.DWG <11x17 all wells> Plotted: 9/8/2014 2:16 PM


EXPLANATION OF SYMBOLS
MONITORING WELLS
SOIL BORINGS
DECOMMISSIONED WELLS
0 25 50 75 100
40 APPROX. GROUND WATER ELEVATION (FT. MSL)
HWA GEOSCIENCES INC.
AREA WIDE GROUND WATER MONITORING NETWORK
BOTHELL, WASHINGTON
WATER TABLE ELEVATIONS
SEPTEMBER 2014
DRAWN BY EFK
CHECK BY NN
DATE
FIGURE NO.
5
PROJECT NO.
2007-098 T998
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August 27, 2014
HWA Project No. 2007 098- 998

Jerome B. Cruz, Ph.D.
Washington Department of Ecology
Toxics Cleanup Program, Northwest Regional Office
3190 - 160th SE Bellevue, WA 98008

Subject: **ADDENDUM 2 TO AUGUST 20, 2014 LETTER RE:**
AREA WIDE GROUND WATER MONITORING NETWORK
Bothell Agreed Order Sites
Bothell, WA

Dear Dr. Cruz:

This is the second addendum to the August 20, 2014 letter re. Area Wide Ground Water Monitoring Network. It provides clarification on the following items, based on comments received from the Department of Ecology:

1) corrections to the table previously included in the 8/25/14 addendum #1 to the letter,
2) HZ-MW1 and HZ-MW4 will be sampled during the second sampling event planned in September
3) The City recommends adding BLMW-6R (which replaced the missing/damaged BLMW-6) to the aea wide network due to its location near past vinyl chloride detections
4) Current list of wells and analytes

1 – Second Correction to table:

WELL	WELL CONDITION	CORRECTIVE ACTION PLANNED
BPMW-7	Was blocked in June 2014 and not sampled, but is now accessible for future sampling	Was damaged, now repaired ~~None~~ (8/25/14)
RMW-4	Covered over/lost by contractor, plan to replace	Found and repaired (8/25/14)
RMW-9	Paved over by contractor, plan to replace	Replaced (8/25/14)
BLMW-5	Covered over/lost by contractor, plan to replace	Replaced (8/26/14)
BLMW-6	Covered over/lost by contractor, plan to replace	Replaced (8/26/14) City recommends adding to network
BLMW-8	Covered over/lost by contractor, plan to replace	Found and repaired ~~replace~~ (8/25/14)
BPMW-6	May be lost due to future construction	None - have recently received confirmation that it will not be impacted by future construction ~~Replace if needed~~
BPMW-2	May interfere~~s~~ with new Horse Creek construction	Replace later, if and when needed

Please feel free to contact me if you have any questions or need additional information.
Sincerely,
HWA GEOSCIENCES INC.

Arnie Sugar, LG, LHG
President

Cc: Ching-Pi Wang, Dept of Ecology
Nduta Mbuthia, City of Bothell
Steven Morikawa , City of Bothell

Ground Water Monitoring Summary

Site	**Wells**	**Analytes**
Ultra	MW-1 MW-2 MW-3 BB-3 BI-3 BB-2 UCCMW-6 UCCMW-4 UCCMW-5 UCCMW-7 UCCMW-11-25* * may not sample all based on prior reuslts	HVOCs <u>Optional:</u> Oxidation-Reduction Potential (ORP) Nitrate Sulfate Soluble Ferrous Iron Total organic carbon (TOC) Methane/ethene/ethane
Ultra, downgradient	UCCMW-9 UCCMW-8 UCCMW-10 HZMW-16	HVOCs TPH-G, Dx, BTEX <u>Optional:</u> ORP Nitrate Sulfate Soluble Ferrous Iron TOC Methane/ethene/ethane
Landing	MW-1 BLMW-5R (replaced 8/26/14) BLMW-6R (replaced 8/25/14) BLMW-7 BLMW-9 BLMW-10 BLMW-11 BLMW-12 BLMW-8 (see Hertz)	TPH-G, Dx, BTEX HVOCs Metals (As, Cd, Cr, Pb) sample for T&D, run D initially
Hertz	BC-16 HZMW-1 HZMW-4 BLMW-8 HZMW-12 HZMW-14S, HZMW-14D HZMW-15S, HZMW-15D HZMW-16 HZMW-17 HZMW-19 HZMW-20	HVOCs TPH-G, Dx, BTEX Arsenic (T&D)
Paint	BC-10 BC-11 BPMW-1 BPMW-2 BPMW-4 BPMW-5 BPMW-6	TPH-G, Dx, BTEX Arsenic (T&D)

August 25, 2014
HWA Project No. 2007 098- 998

Jerome B. Cruz, Ph.D.
Washington Department of Ecology
Toxics Cleanup Program, Northwest Regional Office
3190 - 160th SE Bellevue, WA 98008

Subject: **ADDENDUM TO AUGUST 20, 2014 LETTER RE:**
AREA WIDE GROUND WATER MONITORING NETWORK
Bothell Agreed Order Sites
Bothell, WA

Dear Dr. Cruz:

This addendum to the August 20, 2014 letter re. Area Wide Ground Water Monitoring Network provides (1) a correction to the table previously included in the letter, (2) a new map showing the agreed to network and the corresponding nomenclature used on the tables, and (3) mark-ups on the map from the August 20 letter.

1 – Correction to table:

BLMW-7

WELL	WELL CONDITION	CORRECTIVE ACTION PLANNED
B~~P~~MW-7	Was blocked in June 2014 and not sampled, but is now accessible for future sampling	None
RMW-4	Covered over/lost by contractor, plan to replace	Replace
RMW-9	Paved over by contractor, plan to replace	Replace
BLMW-6	Covered over/lost by contractor, plan to replace	Replace
BLMW-8	Covered over/lost by contractor, plan to replace	Replace
BPMW-6	May be lost due to future construction	Replace if needed
BPMW-2	Interferes with new Horse Creek construction	Replace

Please feel free to contact me if you have any questions or need additional information.
Sincerely,
HWA GEOSCIENCES INC.

Arnie Sugar, LG, LHG
President

Cc: Ching-Pi Wang, Dept of Ecology
Nduta Mbuthia, City of Bothell
Steven Morikawa , City of Bothell

21312 30th Drive SE
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Fax: 425.774.2714
www.hwageo.com

Nov 12, 2013 meeting
between ECY, CoB + HWA

- Attendees:
  Sunny Becker
  Jeanne Cruz
  Arnie Sugar
  Ndutu Mbuthia

Summary of well locations
discussion

A - remains, but is shown at different location on the Ultra RI figure 9 as UCCMW-6

B - remains; shown on Ultra Fig 9 as UCC MW-5, location ok

C - remains; shown on Fig 9 as $\boxed{B}$, location ok

D - remains, location ok

E, F, G - deleted

H, I - remain, but will be installed during round 2 since they are in Contractor's laydown yard, locations ok

J - remains, location ok

K - location to be verified. If existing MW-2 well still intact, K will not be needed

L, M - remain, locations ok

N - remains, location ok

O - deleted - shown in clean 2/4 Phase 2 cleanup excavation area

P - deleted

Preliminary Monitoring Network Bothell MTCA Sites

Legend
- Existing monitoring well
- Future monitoring well
- Other_contaminated_sites

Attachment A.1 Monitoring Well network

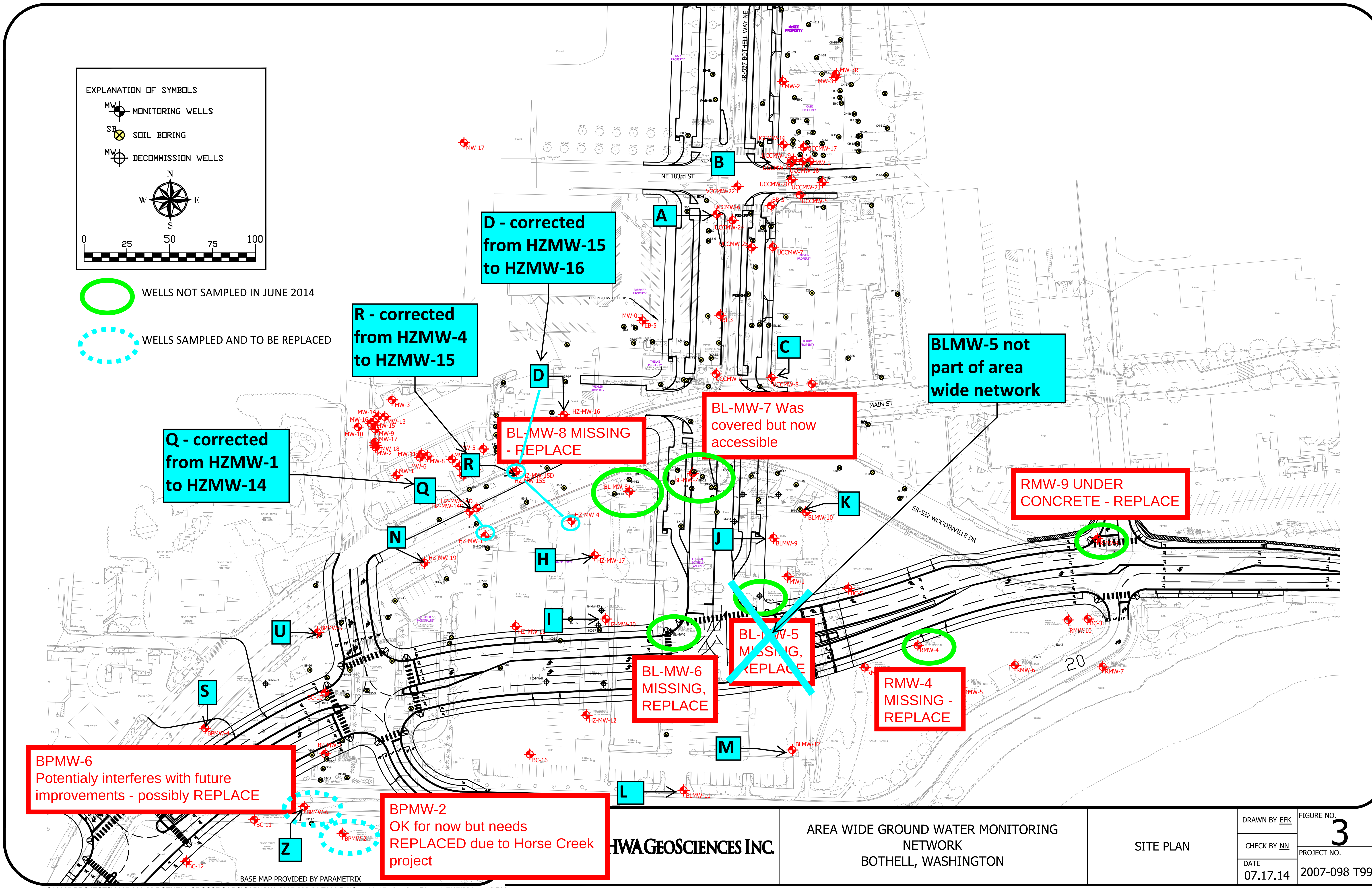
Q, R - existing; installed under Hertz RI

S, U - remains, location ok

T, V, W, X, Y, AA - deleted

Z - remains, location ok

Map from Ecology letter dated July 30, 2012 to Shawn Pomazon



HWA GEOSCIENCES INC.

AREA WIDE GROUND WATER MONITORING NETWORK
BOTHELL, WASHINGTON

SITE PLAN

DRAWN BY EFK
CHECK BY NN
DATE 07.17.14
FIGURE NO. 3
PROJECT NO. 2007-098 T998

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T998.DWG

HWA GEOSCIENCES INC.

Geotechnical Engineering • Hydrogeology • Geoenvironmental Services • Inspection and Testing

August 22, 2014
HWA Project No. 2007 098- 998

Jerome B. Cruz, Ph.D.
Washington Department of Ecology
Toxics Cleanup Program, Northwest Regional Office
3190 - 160th SE Bellevue, WA 98008

Subject: **AREA WIDE GROUND WATER MONITORING NETWORK**
Bothell Agreed Order Sites
Bothell, WA

Dear Dr. Cruz:

This letter summarizes the area wide ground water monitoring well event #1, which occurred in May/June of this year. Attached for your reference are the sampling results previously submitted to Ecology along with the approved well network map. Some wells were not sampled during the first round of ground water sampling in June 2014 as they were either buried or damaged during construction of various infrastructure improvements in downtown Bothell, Washington.

Plans are currently underway to replace these missing wells at the City's cost. These replacement wells were pre-existing and are part of a monitoring network serving several Agreed Orders including Bothell Paint, Bothell Hertz, Bothell Landing, Bothell Riverside, and Ultra Custom Care Cleaners. Please note that the missing wells will be installed prior to the next sampling event that is scheduled in September. Also note that none of the newly installed wells that were recently added to the well network were damaged. Also worth mentioning is that two pre-existing wells near the Paint site might need to be replaced in the near future due to the fact that they lie within the Horse Creek construction limits.

Following is a list of wells not sampled during the June 2014 sampling round, and/or planned for replacement. Figure 1 shows the well locations. Tables 1 through 5 summarize the results of the June 2014 sampling round.

WELL	WELL CONDITION	CORRECTIVE ACTION PLANNED
BLMW-7	Was blocked in June 2014 and not sampled, but is now accessible for future sampling	None
RMW-4	Covered over/lost by contractor, plan to replace	Replace
RMW-9	Paved over by contractor, plan to replace	Replace
BLMW-6	Covered over/lost by contractor, plan to replace	Replace
BLMW-8	Covered over/lost by contractor, plan to replace	Replace
BPMW-6	May be lost due to future construction	Replace if needed
BPMW-2	Interferes with new Horse Creek construction	Replace

21312 30th Drive SE
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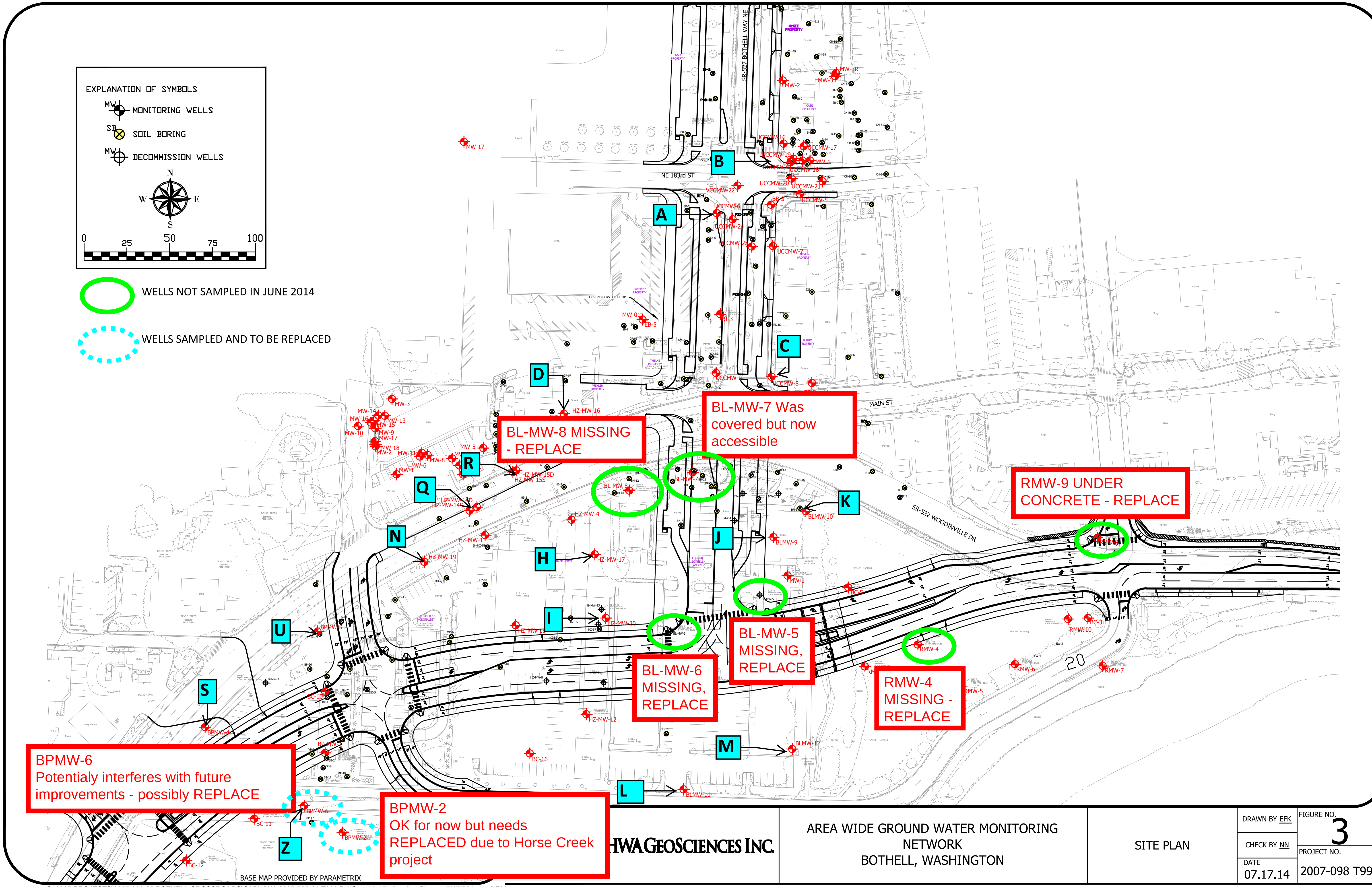
Tel: 425.774.0106
Fax: 425.774.2714
www.hwageo.com

Please feel free to contact me if you have any questions or need additional information.
Sincerely,
HWA GEOSCIENCES INC.

Arnie Sugar, LG, LHG
President

Cc: Ching-Pi Wang, Dept of Ecology
Nduta Mbuthia, City of Bothell
Steven Morikawa , City of Bothell



HWA GEOSCIENCES INC.

AREA WIDE GROUND WATER MONITORING NETWORK
BOTHELL, WASHINGTON

SITE PLAN

DRAWN BY EFK	FIGURE NO. 3
CHECK BY NN	
DATE 07.17.14	PROJECT NO. 2007-098 T998

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098-21 T998.DWG

Nov 12, 2013 meeting
between ECY, COB + HWA

- Attendees:
  Sunny Becker
  Jeanne Cruz
  Arnie Sugar
  Ndutu Mbuthia

Summary of well locations discussion

A - remains, but is shown at different location on the Ultra RI figure 9 as UCCMW-6

B - remains; shown on Ultra Fig 9 as UCC MW-5, location ok

C - remains; shown on Fig 9 as [B], location ok

D - remains, location ok

E, F, G - deleted

H, I - remain, but will be installed during round 2 since they are in contractor's laydown yard
location ok

J - remains, location ok

K - location to be verified. If existing MW-2 well still intact, K will not be needed

L, M - remain, locations ok

N - remains, location ok

O - deleted - shown in clean 3/4 Phase 2 cleanup excavation area

P - deleted

Preliminary Monitoring Network Bothell MTCA Sites

Legend

Existing monitoring well

Future monitoring well

Other_contaminated_sites

Q, R - existing; installed under Hertz RI

S, U - remains, location ok

T, V, W, X, Y, AA - deleted

Z - remains, location ok

Attachment A.1 Monitoring Well network

Map from Ecology letter dated July 30, 2012 to Shawn Pomazon

Table 1
Bothell Hertz 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)	(cis) 1,2-Dichloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Tetrachloro-ethene (µg/L)	Vinyl Chloride (µg/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)	
HZMW-1	5-15	5/30/2014	7.02	6.62	478	14.3	3.23	<0.20	**0.22**	**21**	<0.20	<100	<270	<430	<1.0	<1.0	<1.0	<1.0	**6.3**	<3.0	
HZMW-4	8-18	6/9/2014	6.79	6.35	407	13.9	2.73	<0.20	<0.20	<0.20	<0.20	<100	<270	<430	<1.0	<1.0	<1.0	<1.0	**17**	<3.0	
HZMW-12	10-20	6/10/2014	9.48	6.32	2.18	13.2	0.12	<0.20	<0.20	<0.20	<0.20	<100	430	550	<1.0	<1.0	<1.0	<1.0	**14**	**13**	
HZMW-14S	5-15	5/29/2014	6.51	6.46	799	15.5	0.16	**11**	**23.0**	**1000**	<10	<100	<300	<480	<1.0	<1.0	<1.0	<1.0	**3.3**	<3.0	
HZMW-14D	30-40	5/29/2014	6.62	6.47	622	14.7	0.23	**16**	**3.7**	**100**	<1.0	<100	<290	<460	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	
HZMW-15S	5-15	5/29/2014	5.75	6.35	785	15.0	1.45	**3.6**	**7.1**	**150**	<1.0	<100	<280	<450	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	
HZMW-15D	20-30	5/29/2014	6.08	6.28	1000	14.2	0.12	**180**	**290**	**3700**	<20	<100	<280	<460	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	
HZMW-17	10-20	6/9/2014	7.93	6.61	594	13.8	0.15	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	
HZMW-18	7.5-17.5	6/10/2014	8.51	6.38	1901	14.0	0.14	<0.20	<0.20	<0.20	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	
HZMW-19	5-15	5/30/2014	5.58	6.38	1210	13.8	0.10	**0.40**	**0.94**	**0.97**	<0.20	**1200**	<100	<410	**2.1**	<1.0	**11**	**1.6**	<3.3	<3.0	
		6/9/2014	6.02	6.26	1213	14.3	0.13	**1.1**	**0.67**	**0.28**	<0.20	**720**	<640	<410	<4.0	<4.0	<4.0	<4.5	<3.3	<3.0	
HZMW-20	5-15	6/9/2014	7.48	6.79	1914	15.3	0.28	<0.20	<0.20	<0.20	<0.20	<100	<260	<410	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	
BLMW-8	5-15																				Well cannot be found
BC-16	11-21	6/10/2014	8.70	6.43	4.27	12.9	0.05	<0.20	<0.20	<0.20	<0.20	<100	<470	<510	<1.0	<1.0	<1.0	<1.0	**60**	**18**	
QC Samples																					
Dup 1		5/29/2014						**3.8**	**8.3**	**140**	<2.0	<100	<280	<440	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	Duplicate of HZMW-15S 5/29/14
Trip Blank		5/30/2014						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0	<1.0			
Trip Blank		6/10/2014						<0.20	<0.20	<0.20	<0.20										
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)								**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**5**	**5**	

< – 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
Blank – Not analyzed
1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

Table 2
Bothell Landing 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 (^{o}C)	Dissolved Oxygen (mg/L)	(cis) 1,2-Dichloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Tetrachloro-ethene (µg/L)	Vinyl Chloride (µg/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)	Dissolved Cadmium (µg/L)	Dissolved Chromium (µg/L)	Dissolved Lead (µg/L)	
MW-1	5-15	6/11/2014	8.68	6.57	1410	19.6	0.06	<0.20	<0.20	<0.20	<0.20	<100	<0.28	<0.45	<1.0	<1.0	<1.0	<1.0	**10**	**6.6**	<4.0	<10	<1.0	
BLMW-5	5-10																							Well cannot be found
BLMW-7	5-10																							Well cannot be accessed
BLMW-9	5-15	6/16/2014	7.07	6.49	555	14.5	0.17	<0.20	<0.20	<0.20	<0.20	<100	<0.25	<0.41	<1.0	<1.0	<1.0	<1.0		<3.0	<4.0	<10	<1.0	
BLMW-10	5-10	6/13/2014	6.78	6.09	747	13.6	1.01	<0.20	<0.20	**4.0**	<0.20	<100	<0.25	<0.41	<1.0	<1.0	<1.0	<1.0		<3.0	<4.0	<10	<1.0	
BLMW-11	5-15	6/11/2014	9.08	6.38	2800	14.1	0.07	<0.20	<0.20	<0.20	<0.20	<100	<0.28	<0.47	<1.0	<1.0	<1.0	<1.0	**150**	**150**	<4.0	<10	<1.0	
BLMW-12	5-15	6/12/2014	9.10	6.58	2380	13.4	0.20	<0.20	<0.20	<0.20	<0.20	<100	<0.26	<0.41	<1.0	<1.0	<1.0	<1.0	**130**	**120**	<4.0	<10	<1.0	
QC Samples																								
Dup 6/13/14		6/16/2014						<0.20	<0.20	<0.20	<0.20	<100	<0.26	<0.41	<1.0	<1.0	<1.0	<1.0		**3.2**	<4.0	<10	<1.0	Duplicate of BLMW-9 6/16/14
Trip Blank		6/12/2014						<0.20	<0.20	<0.20	<0.20	<100			<1.0	<1.0	<1.0							
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)								**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**		**5**	**5**	**50**	**15**	

< – 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
Blank – Not analyzed
1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

Table 3
Bothell Paint Site
Ground Water Analytical Results

			FIELD PARAMETERS														NOTES
Sample Location	**Screened Depth, (ft bgs)**	**Sample Date**	**Depth to Water (ft bgs)**	**pH (units)**	**Conductivity (mS)**	**Temperature (^oC)**	**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)**	
BC-10	10-20	6/13/2014	10.60	6.30	796	13.3	0.32	<100	<0.26	<0.41	<1.0	<1.0	<1.0	<1.0	**3.3**	**3.0**	
BC-11	10-20	5/27/2014	12.76	6.53	1514	13.0	0.05	<100	<0.26	<0.41	<1.0	<1.0	<1.0	<1.0	**6.2**	**5.10**	
BPMW-1	10-20	5/27/2014	12.22	6.62	1261	14.8	0.67	<100	<0.26	<0.41	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	
BPMW-2	32-42	5/27/2014	2.91	6.76	644	13.0	0.20	<100	<0.26	<0.41	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	
BPMW-4	10-20	5/28/2014	8.96	6.43	876	13.0	0.10	<100	<0.25	<0.41	<1.0	<1.0	<1.0	<1.0	<3.3	<3.0	
BPMW-5	5-15	5/28/2014	8.10	6.22	1059	13.1	0.31	<100	<0.25	<0.41	<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	<0.25	<0.41	<1.0	<1.0	<1.0	<1.0	**3.3**	**3.0**	
QC Samples																	
Trip Blank		5/28/2014						<100			<1.0	<1.0	<1.0	<1.0			
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900)								**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**5**	**5**	

< – 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
Blank – Not analyzed
1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

Table 4
Bothell Ultra Custom Care Cleaners Site
Ground Water Analytical Results

			FIELD PARAMETERS							LABORATORY RESULTS																	NOTES
Sample Location	Screen Depth, (ft bgs)	Sample Date	Depth to Water (ft bgs)	pH (units)	Conductivity (mS)	Temperature (°C)	Dissolved Oxygen (mg/L)	Fe^{+2} (mg/L)	Redox Potential (millivolt)	(cis) 1,2-Dichloro-ethene (µg/L)	Trichloro-ethene (µg/L)	Tetrachloro-ethene (µg/L)	Vinyl Chloride (µg/L)	WTPH-Gx (µg/L)	WTPH-Dx Diesel (µg/L)	WTPH-Dx Oil (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	
BB-2	9-19	6/10/2014	5.53	6.63	459	14.9	2.70	0.0	+269	<0.40	<0.40	**79**	<0.40								**3.2**	**9.4**	<1.0	<0.70	<1.20	<1.10	Post injection
BB-3	10-20	3/13/2014	7.94	6.11	710	12.4	9.80			<0.20	<0.20	**0.3**	<0.20								**3.5**	**20**	<1.0	<0.50	<0.50	<0.50	
		5/14/2014	8.42	6.48	567	13.7	9.01	0.0	+360	<0.2	<0.2	**0.21**	<0.20								**2.6**	**18**	<1.0	<0.50	<0.50	<0.50	
		6/4/2014	7.76	6.33	569	17.5	4.38			<0.20	<0.20	<0.20	<0.20														Post injection
BI-3	5-10	6/10/2014	4.27	6.39	493	15.4	1.55	0.0	+238	**1.7**	**0.43**	**4.5**	**0.26**								**1.3**	**10**	**1.8**	**128**	<1.2	<1.1	Post injection
MW-1	5-15	3/13/2014	7.75	6.27	568	12.5	7.9			**120**	**30**	**130**	<1.0								**4.4**	**27**	<1.0	<0.50	<0.50	<0.50	
		5/12/2014	8.56	6.09	517	15.0	3.17	0.0	+323	**13**	**4.9**	**21**	<0.20								**6.0**	**13**	<1.0	<0.50	<0.50	<0.50	
		6/5/2014	8.77	5.94	604	15.0	4.05			**5.4**	**2.9**	**15**	<0.20														Post injection
MW-2	3-13	5/11/2014	6.28	6.22	663	14.0	3.45	0.0	+208	<0.20	<0.20	<0.20	<0.20								**8.0**	**36**	**4.9**	**20**	<0.50	<0.50	
		6/2/2014	6.32	5.91	685	15.6	3.31			<0.20	<0.20	**0.26**	<0.20														Post injection
MW-3R	6-16	5/10/2014	6.36	6.23	1045	13.7	7.50	0.0	+238	<0.20	<0.20	**1.7**	<0.20								**9.2**	**110**	**2.3**	<0.50	<0.50	<0.50	
		6/3/2014	6.53	6.13	1090	15.3	4.70			<0.20	<0.20	**1.6**	<0.20														Post injection
UCCMW-4	35-40	3/13/2014	9.45	6.70	675	14.3	4.61			<0.20	<0.20	**0.88**	<0.20								<0.05	**8.1**	<1.0	<0.50	<0.50	<0.50	
		5/12/2014	8.30	6.83	523	15.7	0.16	0.0	+247	<0.20	<0.20	**0.20**	<0.20								<0.05	<5	<1	1.9	<0.5	<0.5	
		6/5/2014	8.18	6.71	589	16.0	0.20			<0.20	<0.20	**0.23**	<0.20														Post injection
UCCMW-5	10-20	5/14/2014	9.79	5.98	357	13.8	9.60	0.0	+376	**0.44**	**0.34**	**14**	<0.20								**0.77**	**9.4**	**1.7**	<0.50	<0.50	<0.50	
		6/5/2014	9.94	5.98	382	14.8	5.35			**0.22**	**0.31**	**14**	<0.20														Post injection
UCCMW-6	5-15	3/13/2014	5.30	5.75	809	10.9	0.80			<0.20	<0.20	**3.8**	<0.20								**0.39**	**17**	**1.5**	**3.8**	<0.50	<0.50	
		5/13/2014	5.50	5.96	608	13.7	0.11	0.0	+363	<0.20	<0.20	**3.5**	<0.20								**1.4**	**16**	<1.0	**0.99**	<0.50	<0.50	
		6/6/2014	5.75	6.02	645	13.8	5.38			<0.20	<0.20	**4.0**	<0.20														Post injection
UCCMW-7	8-18	5/15/2014	5.95	6.23	393	14.1	7.84	0.0	+352	<0.20	<0.20	**27**	<0.20								**2.2**	**28**	<1.0	<0.50	<0.50	<0.50	
		6/3/2014	6.02	6.13	513	14.3	3.98			<0.20	<0.20	**26**	<0.20														Post injection
UCCMW-8	5-15	5/29/2014	6.07	6.52	490	13.9	1.87	0.0	+283	<1.0	<1.0	**110**	<1.0	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	**2.3**	**18**	<1.0	<0.50	<0.50	<0.50	
UCCMW-9	5-15	5/28/2014	6.75	6.51	1164	16.2	0.52	0.0	+276	<1.0	<1.0	**1.0**	<1.0	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	**1.0**	**19**	**2.0**	**16.0**	<1.0	<1.0	
UCCMW-10	5-15	6/13/2014	6.15	5.70	736	17.0	0.60	0.0	+261	<0.20	<0.20	**0.90**	<0.20	<100	<0.30	<0.48	<1.0	<1.0	<1.0	<1.0	**2.0**	**24**	**9.2**	**48.6**	<1.2	<1.1	
UCCMW-11S	8-18	5/11/2014	6.16	6.33	878	13.6	5.27	0.0	-2	<0.20	<0.20	**0.28**	<0.20								**3.8**	**90**	**2.0**	**3.5**	**0.69**	<0.50	
		6/2/2014	6.26	6.07	926	15.0	3.27			<0.20	<0.20	**0.22**	<0.20														Post injection
UCCMW-11D	18-23	5/15/2014	5.68	6.50	389	14.2	5.59	0.0	-8	<0.20	<0.20	<0.20	<0.20								**1.9**	**13**	<1.0	**3.2**	**0.93**	<0.50	
		6/2/2014	6.23	6.52	481	15.0	1.42			<0.20	<0.20	<0.20	<0.20														Post injection
UCCMW-12S	8-18	5/10/2014	6.88	6.33	685	13.6	4.47	0.0	-176	<0.20	<0.20	<0.20	<0.20								**4.1**	**38**	<1.0	**0.89**	<0.50	<0.50	
		6/3/2014	6.99	6.17	2.08	15.1	4.94			<0.20	<0.20	**0.31**	<0.20														Post injection
UCCMW-12D	25-30	5/14/2014	6.93	7.40	637	15.7	0.53	0.0	-584	<0.20	<0.20	<0.20	<0.20								**0.44**	**14**	<1.0	**71**	**12**	**6.3**	
		6/3/2014	7.11	7.12	742	14.4	0.03			<0.20	<0.20	<0.20	<0.20														Post injection
UCCMW-13S	9-19	5/14/2014	6.20	6.11	629	13.5	4.77	**1.1**	+174	<0.20	<0.20	**1.0**	<0.20								**4.6**	**59**	<1.0	<0.50	<0.50	<0.50	Well possibly influenced by ISOTEC injecting nearby
		6/4/2014	7.21	6.04	862	14.4	10.09			<0.20	<0.20	**1.6**	<0.20														Post injection
UCCMW-14S	10-20	5/11/2014	8.69	6.25	984	13.0	5.30	0.0	-168	<0.20	<0.20	**6.0**	<0.20								**3.9**	**110**	**2.8**	**5.8**	**1.3**	**0.67**	
		6/4/2014	8.75	6.31	1023	13.6	8.42			<0.20	<0.20	**6.5**	<0.20														Post injection
UCCMW-14D	21-26	5/13/2014	8.58	6.55	598	14.9	3.38	0.0	+160	<0.20	<0.20	<0.20	<0.20								**3.4**	**29**	<1.0	**1.8**	<0.50	<0.50	
		6/4/2014	8.60	6.26	576	14.0	4.21			<0.20	<0.20	<0.20	<0.20														Post injection
UCCMW-15	9-19	5/11/2014	8.15	6.30	475	13.4	6.28	0.0	+21	<0.20	<0.20	**4.8**	<0.20								**3.6**	**42**	**1.4**	**0.93**	<0.50	<0.50	
		6/5/2014	8.22	6.12	601	14.4	5.45			<0.20	<0.20	**6.1**	<0.20														Post injection
UCCMW-16	9-19	5/14/2014	4.28	6.42	544	15.1	1.98	0.0	+1	<0.20	<0.20	<0.20	<0.20								**1.7**	**16**	<1.0	**2.5**	**0.63**	<0.50	
		6/5/2014	6.73	6.27	761	15.5	5.25			<0.20	<0.20	<0.20	<0.20														Post injection
UCCMW-17	10-20	5/11/2014	8.16	6.20	351	14.6	2.03	0.0	-100	<0.20	<0.20	<0.20	<0.20								**3.1**	**11**	<1.0	**1.5**	<0.50	<0.50	
		6/5/2014	8.19	6.05	621	14.7	4.85			<0.20	<0.20	**0.36**	<0.20														Post injection
UCCMW-19	10-20	5/12/2014	8.12	6.31	440	15.2	1.46	0.0	-166	**32**	**10**	**62**	<0.40								**3.6**	**17**	<1.0	**15**	**3.3**	**1.7**	
		6/5/2014	8.13	5.98	1011	16.3	5.32			<0.20	**41**	**260**	<0.20														Post injection
UCCMW-20	8-18	5/15/2014	7.61	6.28	221	14.2	28.89	0.0	+328	**6.8**	**5.9**	**43**	<0.20								**2.1**	**11**	**1.0**	<0.50	<0.50	<0.50	
		6/3/2014	7.88	6.07	380	15.3	8.04			**6.1**	**6.7**	**48**	<0.20														Post injection
UCCMW-21	12-22	5/15/2014	10.38	6.81	614	14.6	15.00	0.0	-318	<0.20	<0.20	**13**	<0.20								**1.3**	**49**	**3.0**	**5.4**	**1.4**	**1.0**	
		6/3/2014	11.67	6.09	611	13.9	8.77			<0.20	**0.34**	**16**	<0.20														Post injection
UCCMW-22	8-18	6/3/2014	6.29	6.11	472	14.4	2.69			<0.20	<0.20	**0.81**	<0.20														Post injection
UCCMW-23	8-18	5/13/2014	5.43	6.31	628	14.1	0.15	0.0	-288	<0.20	<0.20	**2.2**	<0.20								**0.38**	**10**	**1.9**	**34**	**3.9**	**2.0**	
		6/6/2014	5.57	6.17	536	13.9	6.48			<0.20	<0.20	**2.1**	<0.20														Post injection
UCCMW-24	8-18	5/15/2014	4.70	6.31	486	15.0	7.50	0.0	+7	<0.20	<0.20	**2.2**	<0.20								**2.6**	**18**	**1.7**	**3.9**	**1.2**	**0.71**	
		6/3/2014	3.20	6.18	556	14.9	8.75			<0.20	<0.20	**2.2**	<0.20														Post injection
UCCMW-25	8-18	5/15/2014	4.12	6.08	424	15.3	6.40	0.0	+255	<0.20	<0.20	**6.9**	<0.20								**3.9**	**24**	<1.0	<0.50	<0.50	<0.50	
		6/3/2014	5.15	6.10	636	14.7	6.29			<0.20	<0.20	**9.3**	<0.20														Post injection
HZMW-16	15-25	5/28/2014	6.35	6.52	451	15.5	0.16	0.0	+241	**0.30**	<0.20	**0.32**	<0.20	<100	<250	<410	<1.0	<1.0	<1.0	<1.0	**1.6**	**16**	<1.0	**0.66**	<0.50	<0.50	
QC Samples																											
Dup 1		5/11/2014								<0.20	<0.20	<0.20	<0.20								**3.1**	**10**	<1.0	**1.7**	**0.53**	<0.50	Duplicate of UCCMW-17 5/11/14
Dup 2		5/14/2014								<0.20	<0.20	<0.20	<0.20								**0.47**	**15**	<1.0	**77**	**12**	**6.5**	Duplicate of UCCMW-12D 5/14/14
Dup 01		6/3/2014								<0.20	<0.20	**1.7**	<0.20														Duplicate of MW-3R 6/3/14
Dup 6-5-14		6/6/2014								<0.20	<0.20	**2.1**	<0.20														Duplicate of UCCMW-23 6/6/14
Trip Blank		5/14/2014								<0.20	<0.20	<0.20	<0.20														
Trip Blank		5/15/2014								<0.20	<0.20	<0.20	<0.20														
Trip Blank		6/5/2014								<0.20	<0.20	<0.20	<0.20														
Trip Blank		6/6/2014								<0.20	<0.20	<0.20	<0.20														
WAC 173-200-050 Ground Water Quality Criterion				**6.5-8.5**	**NA**	**NA**	**NA**	**0.30**	**NA**	**0.5**	**3**	**0.8**	**0.02**								**10**	**250**	**NA**	**NA**	**NA**	**NA**	
MTCA Method A/B Cleanup Level (Table 720-1, WAC 173-340-900										**16 (B)**	**5**	**5**	**0.2**	**800/1000[1]**	**500**	**500**	**5**	**1000**	**700**	**1000**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	

< – 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
Blank – Not analyzed
NA – Not applicable
1 – The MTCA Method A ground water cleanup level for gasoline range hydrocarbons is 800 µg/L if benzene is present; the cleanup level is 1000 µg/L if benzene is not detectable

Table 5
Bothell Riverside Site
Ground Water Analytical Results

	Screened Interval (ft bgs)	Date Sampled	FIELD PARAMETERS: Depth to Water (ft below MP)	pH (units)	Conductivity (µS)	Temperture (^oC)	Dissolved Oxygen (mg/L)	Settable Solids (mg/L)	HVOCs: Tetrachloro-ethene (µg/L)	Trichloro-ethene (µg/L)	1,1-Dichloro-ethene (µg/L)	(cis) 1,2-Dichloro-ethene (µg/L)	(trans) 1,2-Dichloro-ethene (µg/L)	Vinyl chloride (µg/L)	NOTES
RMW-4	**15-25**	6/24/14													Wellhead buried under new landscaping
RMW-5	**12-22**	5/24/13	11.51	6.70	932	13.9	1.00		**1.7**	<0.2		<0.2		<0.2	
		6/24/14	14.51	6.48	740	14.5	0.15		**1.4**	**0.40**	<0.20	<0.20	<0.20	<0.20	
RMW-6	**15-25**	9/14/09							<0.2	**0.27**		**3.6**		**5.3**	
		5/24/13	10.42	6.68	467	14.3	1.40		<0.2	<0.2		**2.7**		**3.4**	
		6/24/14	14.79	6.47	407	14.2	0.13		**0.34**	**0.60**	<0.20	**0.42**	<0.20	<0.20	
RMW-7	**15-25**	9/14/09							**50**	**120**		**190**		**22**	
		5/24/13	16.31	6.80	447	16.2	0.30		**9**	**33**		**65**		**9.3**	
		4/4/14	16.65	6.50	1969	12.9	0.55		**0.75**	**3.8**		**35**		**8.3**	
		6/25/14	16.55	6.48	865	15.2	0.03		**5.2**	**24**	<0.20	**80**	**1.1**	**9.9**	
RMW-8	**20-30**	9/15/09							**0.46**	**2.6**		**1.3**		<0.2	
		5/24/13	18.81	6.42	494	16.4	0.10		**0.5**	**0.85**		**0.44**		<0.2	
		6/25/14	19.62	6.27	650	15.7	0.20		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
RMW-9	**20-30**	9/15/09							<0.2	<0.2		<0.2		<0.2	
		5/24/13	13.65	6.38	247	15.7	4.00		<0.2	<0.2		<0.2		<0.2	
		6/24/14									<0.20		<0.20		Well abandoned during SR 522 construction
RMW-10	**32-42**	5/24/13	11.85	6.52	247	13.3	6.60		<0.2	<0.2		<0.2		<0.2	
		6/24/14	15.00	6.19	361	15.4	1.08		<0.2	<0.2	<0.20	<0.2	<0.20	<0.2	
BC-3	**15-25**	9/5/08							**110**	**120**		**46**		<1	
		5/24/13	12.95	6.55	342	15.1	4.00		**25**	**11**		**4**		<0.2	
		6/24/14	14.41	6.06	426	14.8	2.40		**11**	**4.0**	<0.20	**0.75**	<0.20	<0.20	
EX-1	**12.5-32.5**	4/4/14	27.90						**17**	**3**		**1.2**		<0.2	
		6/25/14	14.78	6.61	0.10	18.3	5.68		**27**	**8.1**	<0.20	**6.5**	<0.20	<0.20	
EX-2	**15-35**	4/4/14	23.70						**13**	**2.8**		**1.5**		<0.2	
		6/25/14	17.10	6.58	143	16.5	2.21		**28**	**3.8**	<0.20	**1.5**	<0.20	<0.20	
EX-3	**14-34**	4/4/14	23.80						**49**	**14**		**7.2**		**0.61**	
		6/25/14	19.00	6.58	182	16.4	6.34		**41**	**14**	<0.40	**12**	<0.40	<0.40	
EX-4	**11-31**	4/4/14	12.50												Pump not working
		6/25/14	17.30	6.46	0.22	16.0	1.73		**1.7**	**1.8**	<0.20	**1.1**	<0.20	**0.38**	
DISCH	**NA**	4/4/14	NA	6.48	443	15.3			**25**	**6.3**		**3**		<0.2	
		6/25/14	NA	6.40	200	16.4	1.43	0.0	**30**	**8.4**	<0.20	**5.9**	<0.20	**0.38**	Combined flow of extraction system. Meter reading 0921260 gallons; avg. discharge rate = 5.01 gpm
DUP 6/25/14		6/25/14							**28**	**8.4**	<0.20	**6.4**	<0.20	**0.37**	Duplicate of DISCH 6/25/14
Trip Blank		6/25/14							<0.2	<0.2	<0.20	<0.2	<0.20	<0.2	
MTCA Method A (Table 720-1, WAC 173-340-900) or Method B Cleanup Level									**5**	**5**	**400 (B)**	**16 (B)**	**160 (B)**	**0.2**	
KCIWD Limits								**7.00**	**240**	**500**	**1700**	**Total <2000**		**12**	

Bold indicates analyte detected at a concentration greater than the laboratory reporing limit
Yellow highlight indicates analyte exceeds MTCA cleanup level
KCIWD = King County Industrial Waste Discharge limit
Blank – Not analyzed
NA – Not applicable

APPENDIX J

DATA QUALITY ASSESSMENT

INTRODUCTION

This appendix presents a data quality assessment for the Bothell Landing 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 (2011a 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 Bothell Landing site remedial investigation: field and laboratory. Both components followed Washington Department of Ecology guidance (Ecology, 2004). Also, the remedial investigation work plan (HWA, 2011b) 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, 2011b). 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:

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.

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
- Halogenated Volatile Organic Compounds (HVOCs) using EPA Method 8260C

For the remedial investigation two soil analyses were performed (BLMW-12-9 and BLMW-12-11) and 35 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 MW-1 collected 9/11/14:** The dissolved 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 chromium and lead concentrations in this sample (and higher than MTCA Method A ground water cleanup levels) compared to other ground water samples collected from this well which were below laboratory reporting limits.

EVALUATION OF FIELD DUPLICATE SAMPLE RESULTS

Field duplicate samples were collected at an approximate frequency of one duplicate per 11.7 ground water samples – a frequency significantly more than the ratio of one duplicate per 20 samples specified in the remedial investigation work plan (HWA, 2011b). 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 and HVOC 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 chromium and lead data for the ground water sample collected from well MW-1 on September 11, 2014 and the result qualified as being biased high.
- All reported data should be considered valid as qualified and acceptable for further use.

REFERENCES

Grant, C.G, T.F. Jenkins, and A.R. Mudambi, 1996, *Comparison Criteria for Environmental Chemical Analyses of Split Samples Sent to Different Laboratories-Corps of Engineers Archived Data*, U.S. Army Corps of Engineers Cold Regions & Environmental Research Laboratory, Hanover NH. CRREL Special Report No. 96-9, May 1996.

Flory, D., 2000, *What is "Good" Data*, Quality Assurance Associates (www.qaallc.com/gooddata.html)

OnSite Environmental, 2012, *Quality Assurance Manual, Revision No. 9.3*, August 3, 2012 (www.onsite-env.com/pdf/QA.pdf)

HWA GeoSciences, 2011a, *Documentation of Interim Action at Bothell Landing Site, Bothell, Washington.* Prepared for City of Bothell, February 2, 2011.

HWA, 2011b, *Remedial Investigation Feasibility Study Final Work Plan, Bothell Landing Site Bothell, Washington*, September 19, 2011.

HWA, 2014, *Interim Action Cleanup Action Report, Bothell Landing Site, Bothell, WA*, dated September 2, 2014.

PMI, 2008, *A Guide to the Project Management Body of Knowledge – Fourth Edition* (ANSI/PMI 99-001-2008), Project Management Institute (www.pmi.org).

Quality Assurance Associates, 2010, *Understanding Laboratory Reporting Limits*. (www.qaallc.com/replimit.html)

Washington Department of Ecology, 2004, *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies*, Publication No. 04-03-030.

APPENDIX K

COST ESTIMATES

Bothell Landing 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	$5,000	$5,000
6	Dewatering		LS	1	$5,000	$5,000
7						$0
	Sub-Total					**$31,500**
8	Engineering, PS&E, permitting, construction monitoring	10%	EST	1	$3,150	$3,150
9	WSST	9.6%	EST	1	$3,024	$3,024
10	Contingency	10%	EST	1	$3,150	$3,150
	Total					**$40,824**

Bothell Landing 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 Landing 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			LS	1		$0
3			EA	10		$0
4			LS	1		$0
5						$0
6						$0
7						$0
	Sub-Total					**$5,000**
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	$500	$500
	Total					**$5,500**

Bothell Landing FS
Opinion of Probable Construction Cost
In Situ chemical fixation

Item No.	Description		Unit	Plan Quantity	Unit Cost	Total Amount
1	Mobilization, H&S, etc.		LS	1	$5,000	$5,000
2	Utilities, prep, etc.		LS	1	$4,000	$4,000
3	In situ injections		EA	150	$2,500	$375,000
4	Chemicals		Lbs	132000	$5	$660,000
5						$0
6						$0
7						$0
	Sub-Total					**$1,044,000**
8	Engineering, PS&E, permitting, construction monitoring	10%	EST	1	$104,400	$104,400
9	WSST	9.6%	EST	1	$100,224	$100,224
10	Contingency	10%	EST	1	$104,400	$104,400
	Sub-Total					**$1,353,024**

APPENDIX L

ECOLOGY LETTERS

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 Landing site (Agreed Order No. 6294)

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 25, 2009 (HWA Geosciences, Inc.)	Superseded	
	June 16, 2009 (HWA Geosciences, Inc.)	Superseded	
	July 8, 2009 (HWA Geosciences, Inc. & Parametrix)	Superseded	
	March 7, 2011 (HWA Geosciences, Inc.)	Meeting held	Includes area wide groundwater investigation to delineate and characterize plumes.
	New draft of Work Plan	Expected	
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	February 2, 2011 documentation of Interim Action at Bothell Landing 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	Increased SOW to investigate area solvent and TPH/VOC plumes.
10. Draft Final RI/FS Report	December 2009 Bothell Landing 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
	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 Landing 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, and other contaminants of concern identified in previous investigations, including the Phase I and 2 work and older environmental site investigations.

2. The RI/FS must define what the site boundaries are. This has not been established yet given ongoing data gaps in soil and groundwater at the site.

3. The City has recently acquired nearby properties which are contaminated sites. They are Speedy Auto Glass at 18206 Bothell Way NE (Facility Site No. 58179799, Parcel No. 0726059401) and Al's Auto Bothell Wexler property (also known as Grease Monkey, Facility Site ID # 63618231) at 18131 Bothell Way NE (Parcel no. 2374200115). These and other sites such as Bothell Service Center (Simon and Sons Dry Cleaning), Haynes Union Service/Unocal, and Former Mobil Oil gas station have not been clearly assigned as part of the scope of work of the formal sites. Clear, organized site classification and task 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.

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. Questions were raised on designing the groundwater component for the work plans for the four MTCA sites if the scope for the groundwater contamination investigation is area-wide and applying remedial action grant funds for this purpose. Because Bothell Landing is located in a central position to the downtown Bothell area and the other MTCA sites, I have proposed in a past meeting to use the Bothell Landing Work Plan as a starting point to establish the area-wide groundwater investigation. However, work plans for the other sites, like Bothell Paint and Decorating, Bothell Former Hertz, and Bothell Riverside should also have a groundwater investigation for contaminants unique to the property (or shared geographically among the sites) as identified in the past or future RI activities. The work plans may reference or be written so as to complement the Bothell Landing groundwater Work Plan as needed.

6. Remedial action grant funding will still be apportioned to each site, chiefly based on well 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.

7. 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.

8. At the same time, if the investigations uncover other plumes which may be of a limited extent or diminished nature, then this can be characterized and monitored under its own site. For now, this is the best administrative arrangement for implementing the RI/FS requirements specified in the Agreed Orders.

9. Please find attached a map overlay of Ecology's recommended additional monitoring well locations (plotted as squares). They are situated to delineate commingled plumes and furthest extent of plumes at the sites. These wells are in addition to the proposed well network in the draft Bothell Landing and draft Former Hertz RI/FS work plans submitted to Ecology last June 16, 2011.

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.

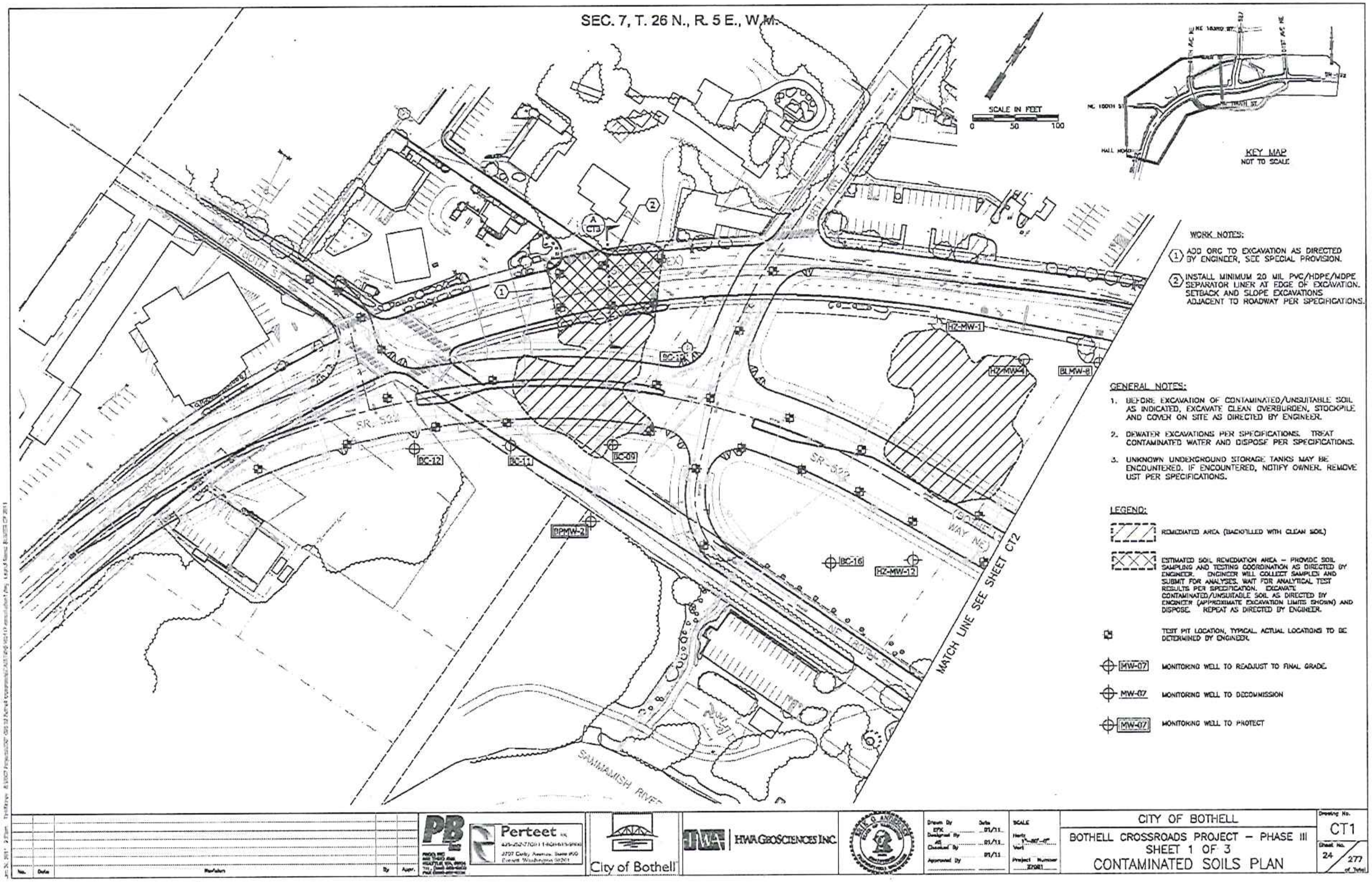
Please get back to me if there is anything incorrect or omitted in this project status table.

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


SEC. 7, T. 26 N., R. 5 E., W.M.
SCALE IN FEET
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KEY MAP
NOT TO SCALE
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 MONITORING WELL TO READJUST TO FINAL GRADE.
MW-07 MONITORING WELL TO DECOMMISSION
MW-07 MONITORING WELL TO PROTECT
HZ-MW-1
HZ-MW-4
BLMW-8
BC-12
BC-11
BC-09
BC-16
HZ-MW-12
BPMW-2
SR 522
NE 180TH ST
SAMMAMISH RIVER
MATCH LINE SEE SHEET CT2
City of Bothell
Perteet
HWA GEOSCIENCES INC
CITY OF BOTHELL
BOTHELL CROSSROADS PROJECT – PHASE III
SHEET 1 OF 3
CONTAMINATED SOILS PLAN
CT1
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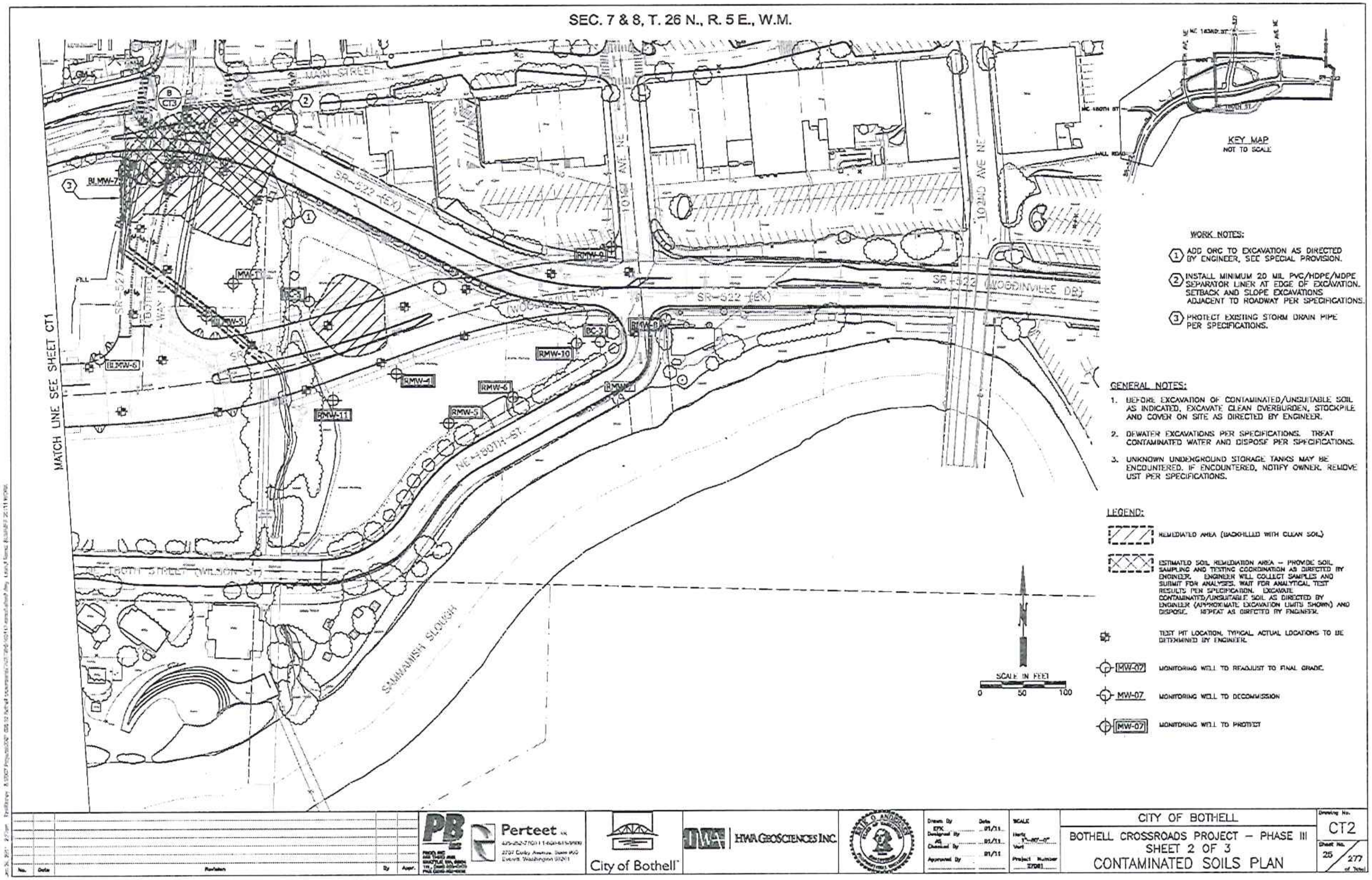
277


SEC. 7 & 8, T. 26 N., R. 5 E., W.M.
MATCH LINE SEE SHEET CT1
MAIN STREET
SR-522 (EX)
101ST AVE NE
102ND AVE NE
SR-522 (WOODINVILLE DR)
NE 180TH ST
SAMMAMISH SLOUGH
RMW-9
RMW-10
RMW-11
RMW-6
RMW-5
BC-3
BLMW-7
BLMW-6
KEY MAP
NOT TO SCALE
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.
3 PROTECT EXISTING STORM DRAIN PIPE 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:
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MW-07 MONITORING WELL TO READJUST TO FINAL GRADE.
MW-07 MONITORING WELL TO DECOMMISSION
MW-07 MONITORING WELL TO PROTECT
SCALE IN FEET
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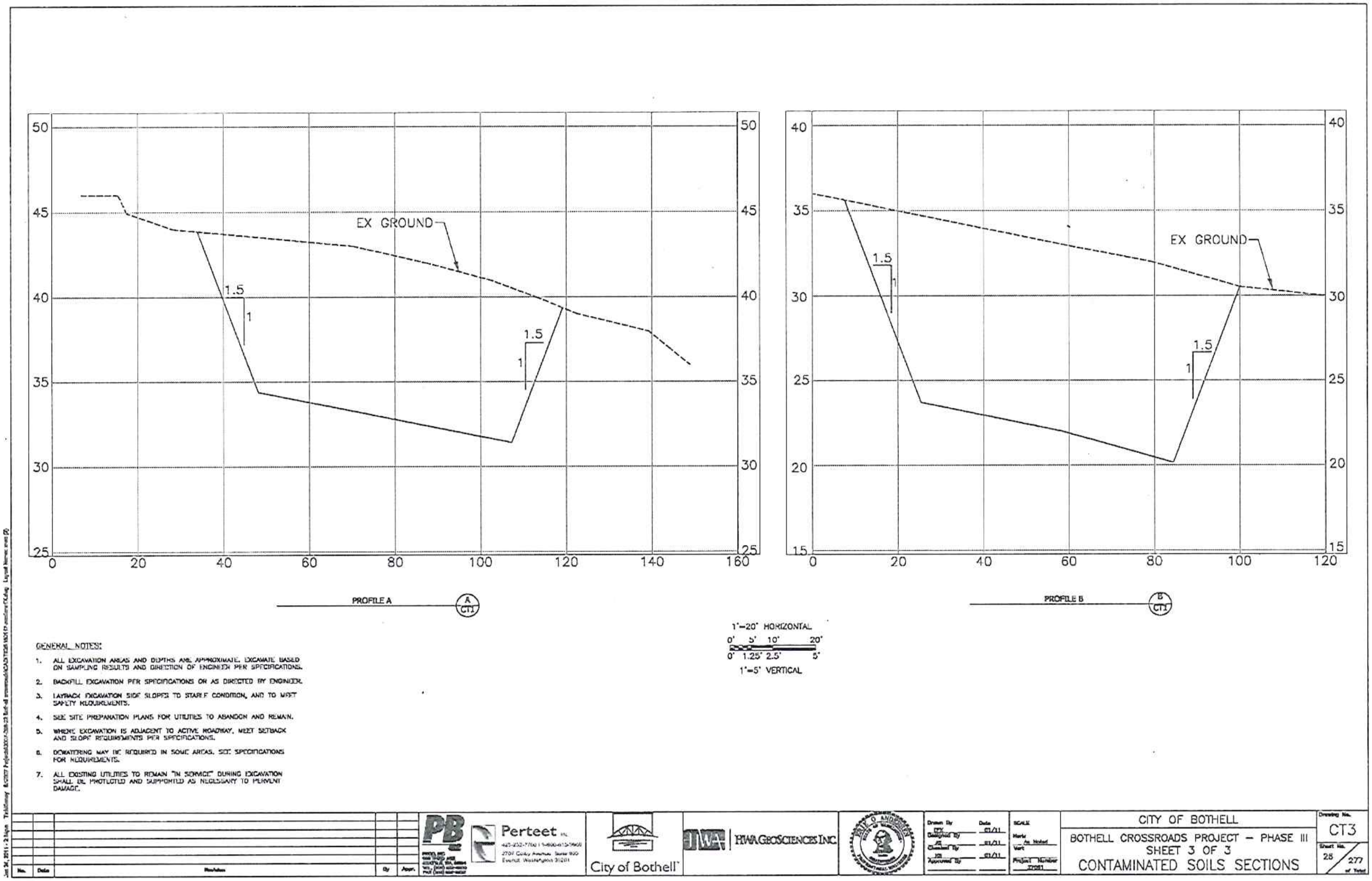
City of Bothell
HWA GEOSCIENCES INC
CITY OF BOTHELL
BOTHELL CROSSROADS PROJECT – PHASE III
SHEET 2 OF 3
CONTAMINATED SOILS PLAN
CT2
25 277


EX GROUND
1.5
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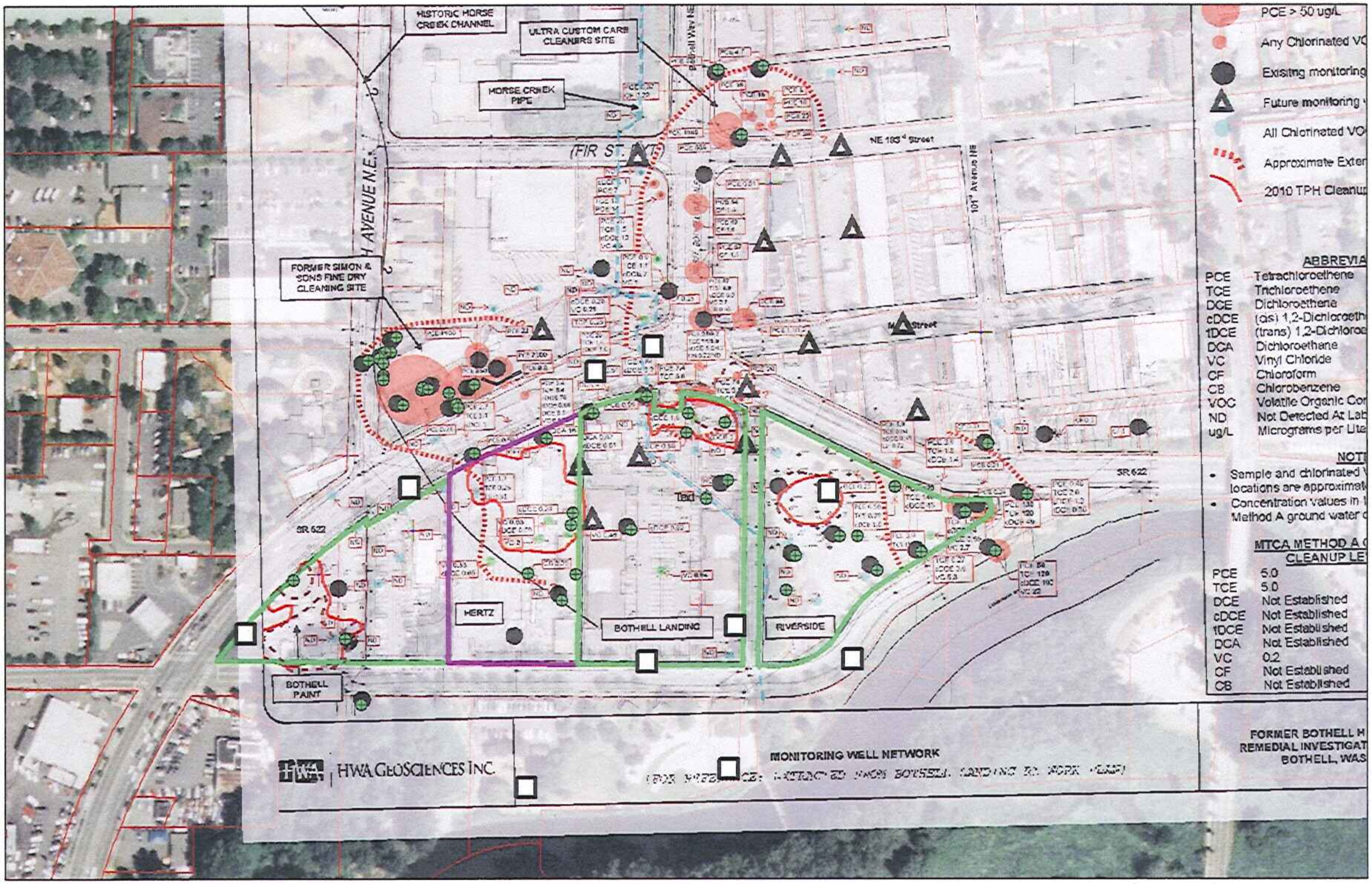
PROFILE A
A
CT1
EX GROUND
PROFILE B
B
CT1
1"=20' HORIZONTAL
0' 5' 10' 20'
0' 1.25' 2.5' 5'
1"=5' VERTICAL
GENERAL NOTES:
1. ALL EXCAVATION AREAS AND DEPTHS ARE APPROXIMATE. EXCAVATE BASED ON SAMPLING RESULTS AND DIRECTION OF ENGINEER PER SPECIFICATIONS.
2. BACKFILL EXCAVATION PER SPECIFICATIONS OR AS 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.
PB
Perteet
City of Bothell
HWA GEOSCIENCES INC.
CITY OF BOTHELL
BOTHELL CROSSROADS PROJECT – PHASE III
SHEET 3 OF 3
CONTAMINATED SOILS SECTIONS
CT3
28
277


HISTORIC HORSE CREEK CHANNEL
ULTRA CUSTOM CARE CLEANERS SITE
HORSE CREEK PIPE
FORMER SIMON & SONS FINE DRY CLEANING SITE
(FIR ST. EXT)
NE 183rd Street
101st Avenue NE
SR 522
HERTZ
BOTHELL LANDING
RIVERSIDE
BOTHELL PAINT
PCE > 50 ug/L
Any Chlorinated VO
Existing monitoring
Future monitoring
All Chlorinated VO
Approximate Exten
2010 TPH Cleanup
ABBREVIA
PCE Tetrachloroethene
TCE Trichloroethene
DCE Dichloroethene
cDCE (cis) 1,2-Dichloroeth
tDCE (trans) 1,2-Dichloroe
DCA Dichloroethane
VC Vinyl Chloride
CF Chloroform
CB Chlorobenzene
VOC Volatile Organic Com
ND Not Detected At Lab
ug/L Micrograms per Lite
NOT
Sample and chlorinated locations are approximat
Concentration values in Method A ground water c
MTCA METHOD A CLEANUP LE
PCE 5.0
TCE 5.0
DCE Not Established
cDCE Not Established
tDCE Not Established
DCA Not Established
VC 0.2
CF Not Established
CB Not Established
HWA GEOSCIENCES INC.
MONITORING WELL NETWORK
FORMER BOTHELL H
REMEDIAL INVESTIGAT
BOTHELL, WAS

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)

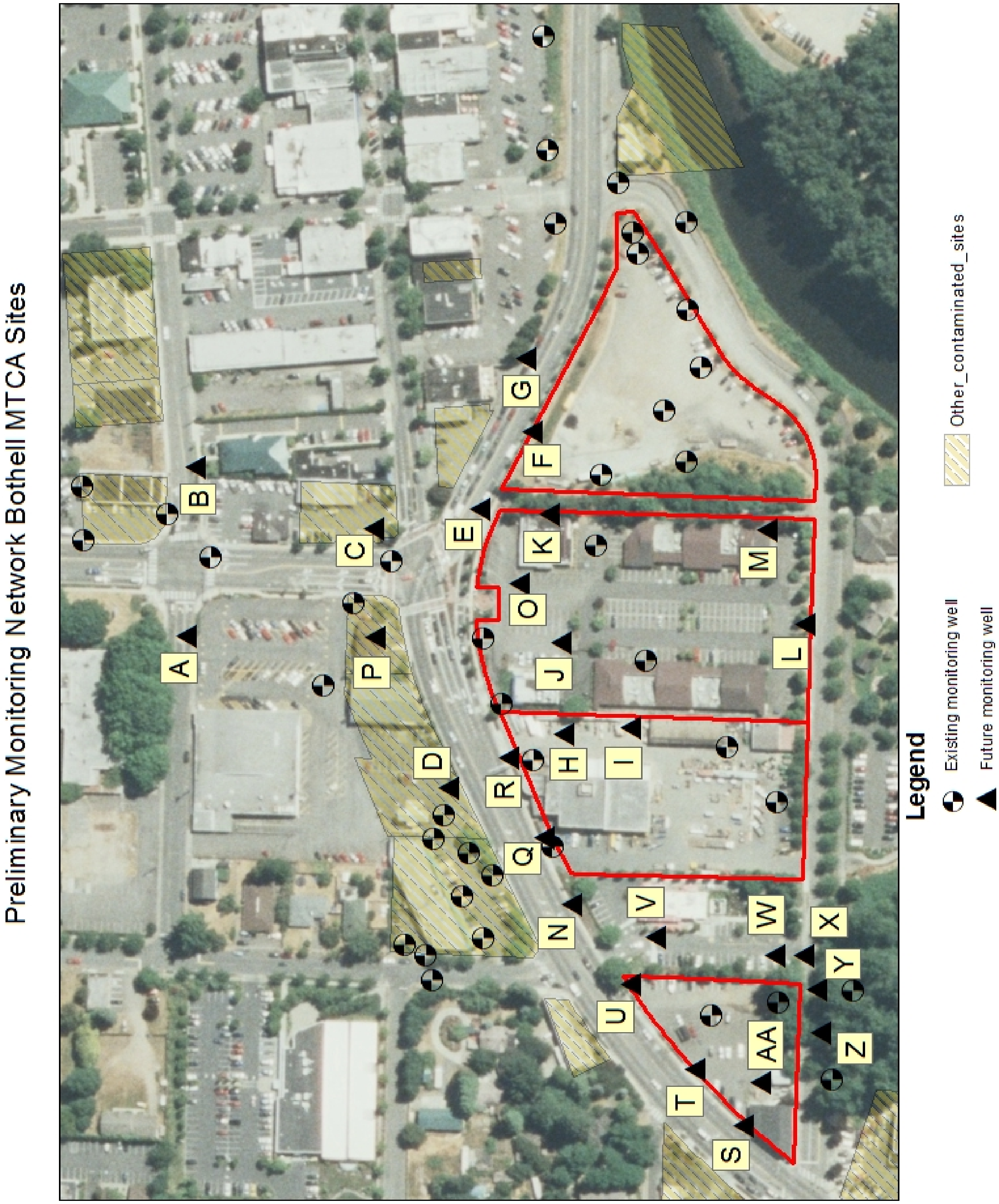
SUMMARY OF CONCERNS:

- 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

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.

<u>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.</u>

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.

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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.

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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.

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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.
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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.
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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.
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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.

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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.

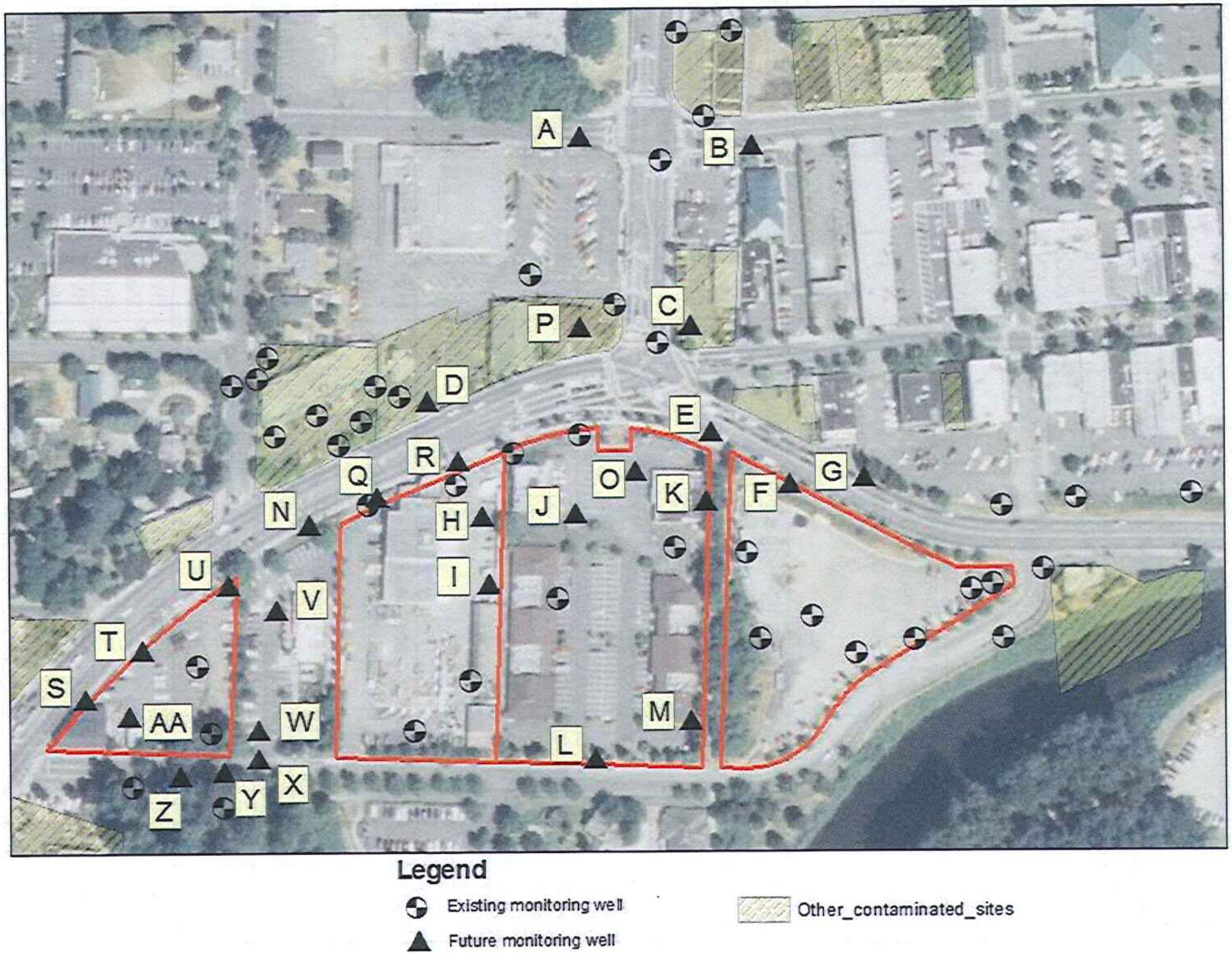
If you have any questions you may reach me at 425-648-7094.

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



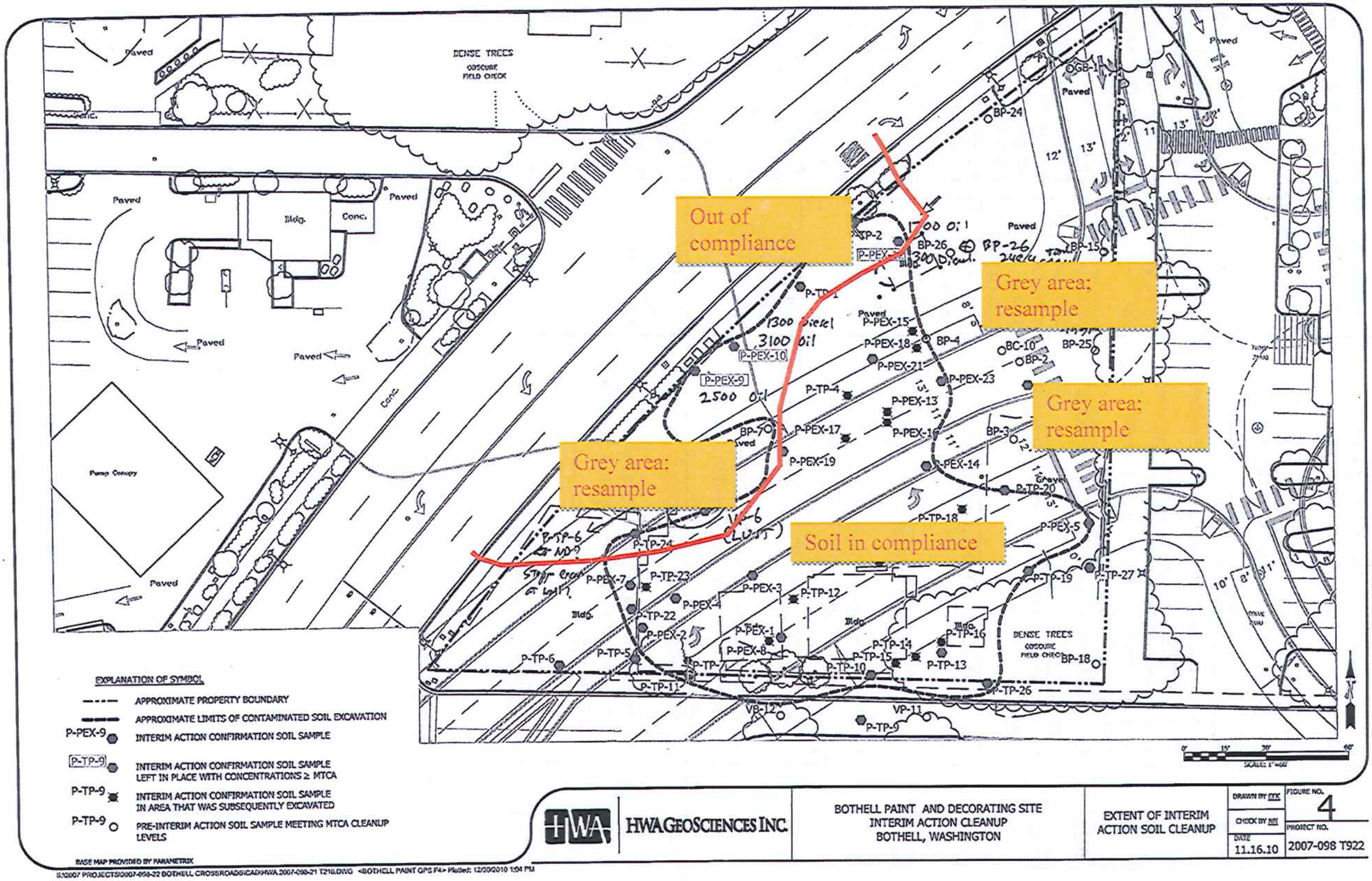
ATTACHMENT 1

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


Out of compliance
Grey area; resample
Grey area; resample
Grey area: resample
Soil in compliance
DENSE TREES OBSCURE FIELD CHECK
Pump Canopy
Paved
Bldg.
Conc.
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
DATE 11.16.10
FIGURE NO. 4
PROJECT NO. 2007-098 T922
SCALE: 1"=60'

APPENDIX M
RESTRICTIVE COVENANT
(existing) RECORDING NO.
20020104001469

Return to
Keith E Moxon
Buck & Gordon LLP
902 Waterfront Place
1011 Western Avenue
Seattle, WA 98104-1097

20020104001469
PUBLIC COV 16 00
PAGE 001 OF 008
01/04/2002 12 27
KING COUNTY, WA

RESTRICTIVE COVENANT

Grantor(s) Beta-Bothell Holding LLC

Grantee(s) State of Washington

Legal Description A portion of Lot A and Lot B, City of Bothell Short Plat No 0-80-079, King County Recording No 8201120582

Assessor's Property Tax Parcel/Account Number(s) 945720-0020-01, 945720-0015-08

RESTRICTIVE COVENANT

BETA-BOTHELL HOLDING LLC
REMEDIAL ACTION AREA

THIS DECLARATION OF RESTRICTIVE COVENANT is made pursuant to RCW 70 105D 030(1)(f) and (g) and WAC 173-340-440 by Beta-Bothell Holding LLC, a Washington limited liability corporation, and its successors and assigns ("Beta"), and the State of Washington Department of Ecology, its successors and assigns (hereafter "Ecology")

An independent remedial action (hereinafter "Remedial Action") occurred at the property that is the subject of this Restrictive Covenant The Remedial Action conducted at the property is described in the following documents

Date	Name	Description
05/20/98	Professional Service Industries, Inc	Underground Storage Tank Removal and Site Assessment Report Intersection of SR 522, SR 527 and Main Street, Bothell, Washington
09/08/99	Kleinfelder	Phase II Soil and Groundwater Exploration Bothell Landing Shopping Plaza, Bothell, Washington
09/21/99	Kleinfelder	Groundwater Monitoring Well Installation and Sampling Bothell Landing Shopping Plaza, Bothell, Washington
05/30/00	Kleinfelder	Groundwater Monitoring Report Bothell Landing Shopping Plaza, Bothell, Washington
09/15/00	Kleinfelder	Groundwater Monitoring Report Bothell Landing Shopping Plaza, Bothell, Washington
01/10/01	Kleinfelder	Groundwater Monitoring Report Bothell Landing Shopping Plaza, Bothell, Washington

These documents are on file at Ecology's Northwest Regional Office, 3190 - 160th Avenue S E , Bellevue, WA 98008-5452

This Restrictive Covenant is required because the Remedial Action resulted in residual concentrations of petroleum contamination which exceed the Model Toxics

Control Act Method A Cleanup Level for groundwater and soil established under WAC 173-340-720 and 740

The undersigned, Beta-Bothell Holding LLC, is the fee owner of real property (hereafter "Property") in the County of King, State of Washington that is subject to this Restrictive Covenant. The Property is legally described as follows

Parcel A

Lot A, City of Bothell Short Plat No D-80-079, recorded under King County Recording Number 8201120582, being a portion of Tracts 2 and 3, Wilson Garden Tracts, according to the plat thereof recorded in Volume 22 of Plats, page 91, in King County, Washington,

Parcel B

Lot B, City of Bothell Short Plat No D-80-079, recorded under King County Recording Number 8201120582, being a portion of Tracts 2, 3 and 4, Wilson Garden Tracts, according to the plat thereof recorded in Volume 22 of Plats, page 91, in King County, Washington

The portion of the Property where residual contamination has been detected after the Remedial Action occurred (hereinafter "Remedial Action Area") is described in Attachment A to this Restrictive Covenant and made a part hereof by reference. The Remedial Action Area is defined by the boundaries of the approximate extent of affected groundwater and the approximate extent of affected soil as depicted in Attachment A

Beta makes the following declaration as to limitations, restrictions, and uses to which the Property may be put and specifies that such declarations shall constitute covenants to run with the land, as provided by law and shall be binding on all parties and all persons claiming under Beta, including all current and future owners of any portion of or interest in the Property (hereafter "Owner")

Section 1

a The Property is intended to be used for retail and other commercial uses and any other uses allowed under the City of Bothell zoning regulatrons codified in the City of Bothell Municipal Code

b. The Remedial Action Area contains petroleum contamination above MTCA Method A groundwater and soil cleanup levels

c Beta shall not alter, modify, or remove any existing structures on the Property in any manner that may result in the release or exposure to the environment of contaminated soil or groundwater or create a new exposure pathway without prior written

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approval from Ecology

d. Any activity on the Property that may result in the release or exposure to the environment of a hazardous substance that remains on the Property or that may create a new exposure pathway, is prohibited without prior written approval from Ecology, PROVIDED that Beta, its employees, contractors, or any permittees or licensees of Beta are not prohibited from performing maintenance and repair on or underneath the Property relating to utility, telecommunications, parking lot areas, or landscaping areas so long as such work complies with applicable law and regulations

e All contaminated soils and groundwater exposed during maintenance/repair or future construction/development work must be remediated or disposed of in a manner consistent with applicable law and regulations

f Examples of activities that are subject to the limitations of this Section 1 in the Remedial Action Area include drilling, digging, placement of any objects or use of any equipment which deforms or stresses the surface beyond its load-bearing capability, piercing the surface with a rod, spike, or similar item, bulldozing or earthwork

g No groundwater may be taken from the Property for any uses unless permission is received in writing from Ecology based on the results of groundwater monitoring showing that the groundwater does not contain hazardous substances in concentrations above MTCA Method A or B cleanup levels Any dewatering activities occurring on the Property will require compliance with "all known, available, and reasonable methods of prevention, control, and treatment" (AKART), which will represent the most current methodology that can be reasonably required for preventing, controlling, or abating any pollutants associated with a dewatering discharge

Section 2

Any activity on the Property that may interfere with the integrity of the Remedial Action and continued protection of human health and the environment is prohibited, except as authorized under Section 1

Section 3

Beta must give thirty (30) days advance written notice to Ecology of Beta's intent to convey any fee interest in the Property No conveyance of title, easement, lease, or other interest in the Property shall be consummated by Beta without adequate and complete provision for any obligations of Beta with respect to continued monitoring, operation, and maintenance of the Remedial Action, if any

Section 4

Beta must restrict leases to uses and activities consistent with the Restrictive Covenant and notify all lessees of the restrictions on the use of the Remedial Action Area

Section 5

Beta must notify and obtain approval from Ecology prior to any use of the Remedial Action Area that is inconsistent with the terms of this Restrictive Covenant Ecology may approve any inconsistent use only after public notice and comment

Section 6

Beta shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Remedial Action, to take samples, to inspect remedial actions conducted at the Property, and to inspect records that are related to the Remedial Action

Section 7

Beta reserves the right under WAC 173-340-440 to record an instrument that provides that this Restrictive Covenant shall no longer limit use of the Remedial Action Area, or be of any further force or effect However, such an instrument may be recorded only if Ecology, after public notice and opportunity for comment, concurs

BETA-BOTHELL HOLDING LLC, a Washington limited liability corporation

By ____________________

Its General Partner

Date January 3, 2002

STATE OF WASHINGTON)
) ss
COUNTY OF KING)

I certify that I know or have satisfactory evidence that Lewis G. Burnham signed this instrument, on oath stated that (he/she) was authorized to execute the instrument and acknowledged it in (his/her) capacity as general partner of BETA-

BOTHELL HOLDING LLC, a Washington limited liability corporation to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument

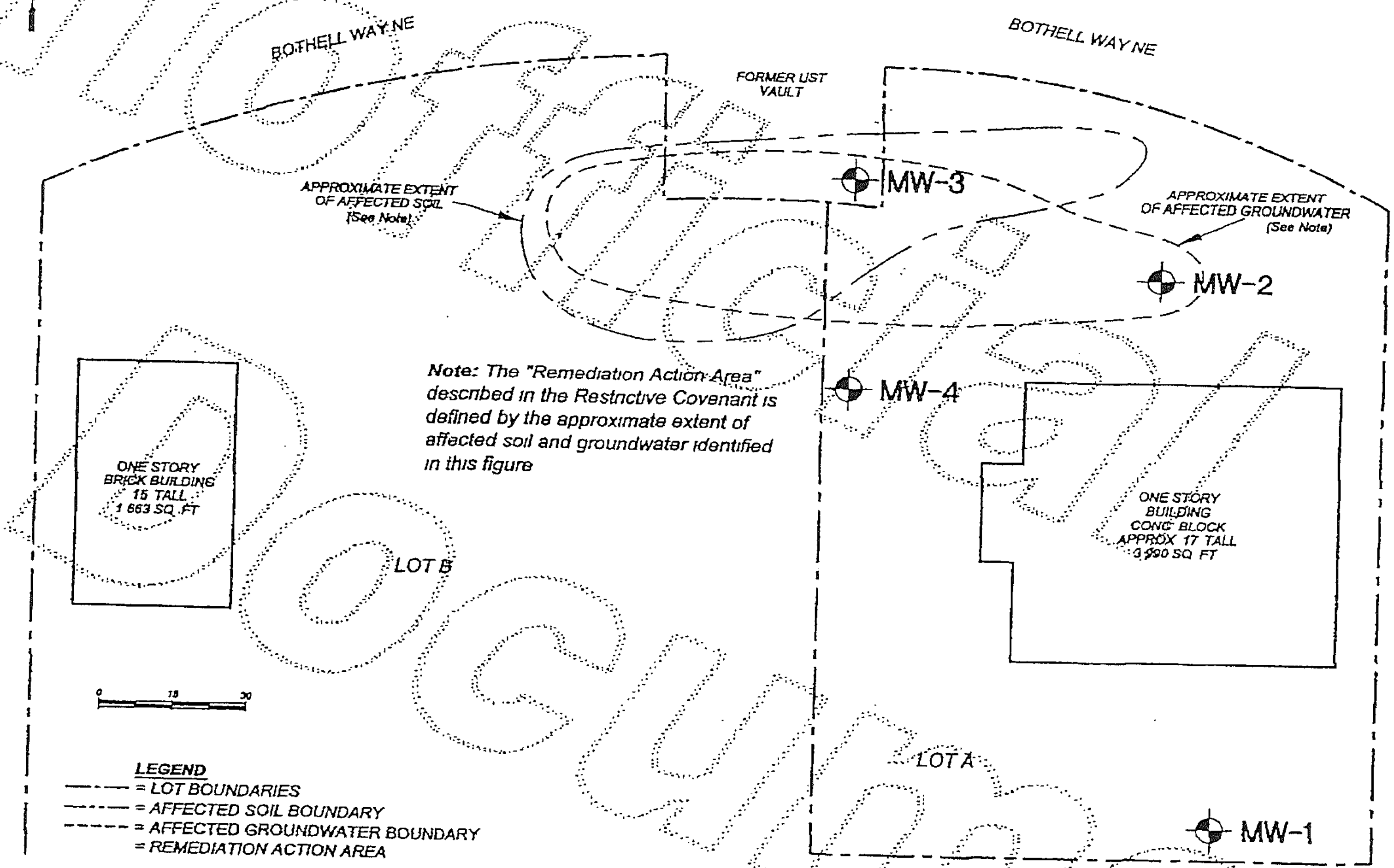
GIVEN under my hand and official seal this 3rd day of January, 2002

VIRGINIA CHRISTOFFERSON
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES
JUNE 19, 2004

Virginia Christofferson
NOTARY PUBLIC in and for the
State of Washington, residing
at Bothell,
My commission expires 6/19/04
Virginia Christofferson
[Type or Print Notary Name]

20020104001469

ATTACHMENT - A



Note: The "Remediation Action Area" described in the Restrictive Covenant is defined by the approximate extent of affected soil and groundwater identified in this figure

KLEINFELDER

BOTHELL LANDING SHOPPING PLAZA
BOTHELL, WASHINGTON

Project 60-1995-02 NOVEMBER 2001

APPROXIMATE BOUNDARIES OF AFFECTED SOIL AND GROUNDWATER

FIGURE 1

20020104001469

APPENDIX N
HWA LETTER REPORT, - ARSENIC IN GROUND WATER BOTHELL DOWNTOWN REDEVELOPMENT PROJECTS AREA, MARCH 7, 2011

HWA GEOSCIENCES INC.
Geotechnical & Pavement Engineering • Hydrogeology • Geoenvironmental • Planning & Permitting • Inspection & Testing

March 7, 2011
HWA Project No. 2007 098

City of Bothell
9654 NE 182nd St
Bothell, Washington 98021

Attention: City of Bothell, Environmental Assessment Project File

Subject: **ARSENIC IN GROUND WATER**
Bothell Downtown Redevelopment Projects Area
Bothell, Washington

The purpose of this memorandum is to address elevated arsenic concentrations observed in ground water samples collected at multiple properties throughout the downtown Bothell area during the course of various site investigations.

Background

Ground water samples from multiple properties collected during various site investigations conducted over nearly two decades had arsenic concentrations exceeding the Washington Department of Ecology's MTCA Method A (Chapter 173-340 WAC) cleanup level of 5 micrograms per liter (μg/L).

Of seven properties with elevated arsenic ground water concentrations, only two had arsenic in soil detected above MTCA cleanup levels, and of these, only one has a known source of anthropogenic arsenic. Except at the former Bothell Paint and Decorating property, and two (out of 45 soil samples analyzed for arsenic) isolated detections at the Northshore School District property, arsenic in soil samples in the projects area occurs at concentrations less than the MTCA Method A soil cleanup level of 20 milligrams per kilogram (mg/kg).

Elevated arsenic concentrations (up to 390 mg/kg) in soil at the former Bothell Paint and Decorating property is attributed to the presence of sandblasting grit containing heavy metals. Beyond the former Bothell Paint and Decorating property, only two soil samples collected during the many site investigations in the Downtown Redevelopment Projects area had arsenic concentrations greater than 20 mg/kg; these were both at the Northshore School District property. One sample (DP-10 at 9.0 feet) in an area of petroleum impacted soils, had an arsenic concentration of 73 mg/kg. Another sample (DP-26-2.5) in an area with no petroleum impacts had an arsenic concentration of 66 mg/kg; this sample was the only one of 10 soil samples collected from 6 borings in and around a

21312 30th Drive SE
Suite 110
Bothell, WA 98021.7010
Tel: 425.774.0106
Fax: 425.774.2714
www.hwageo.com

storage shed where elevated arsenic was detected in ground water. The storage shed area was investigated in detail to ascertain if a source of arsenic was present at this location because soil sample DP-26-2.5 represented the only instance in the NSD investigations in which elevated arsenic in ground water was not associated with petroleum impacts.

Table 1 lists arsenic concentrations measured in ground water samples collected during the many site investigations conducted in the project area. The primary focus of most of the site investigations was soil and ground water contamination caused by petroleum products or halogenated volatile organic compounds. Consequently, of the many ground water samples collected during the site investigations, only 61 ground water samples were analyzed for arsenic.

The various site investigators used dissimilar methodologies to collect the ground water samples, including monitoring wells with low-flow sampling (micro purging) and direct push (Geoprobe) explorations. Thirty two of the 59 ground water samples were analyzed for both total and dissolved arsenic. Forty five of the 59 samples were filtered prior to laboratory analysis for dissolved arsenic; 47 ground water samples were not filtered prior to laboratory analysis for total arsenic.

Figures 1 and 2 depict the locations of samples collected in the Bothell Downtown Redevelopment Projects area that had dissolved arsenic concentrations greater than the MTCA Method A ground water cleanup level of 5 µg/L. Figures 1 and 2 depict only dissolved arsenic concentrations because these data represent a consistent, sediment-free sample matrix while the total arsenic data are not readily evaluated from one sampling location to another because of the dissimilar sampling methodologies used during the many site investigations. Also, the dissolved arsenic concentrations in the Bothell Downtown Redevelopment Projects area can be evaluated with respect to regional studies of arsenic in ground water that reported only dissolved arsenic concentrations (King County, 2001, 2002, 2003, 2005; Ferguson and Johnson, 2006; Ferguson, 2007; Thomas and others, 1997; Turney and others, 1995).

Also shown on Figures 1 and 2 is the approximate potentiometric surface of the shallow ground water system. The ground water flow is southeasterly to the Sammamish River. The ground water elevations at the Northshore School District property were recorded by GeoEngineers in August 2007 and reported in the site's remedial investigation (GeoEngineers, 2007). The ground water elevations in the Bothell Crossroads Project area were recorded by Parametrix in September 2009 and reported in three remedial investigations (Parametrix, 2009a, 2009b, 2009c).

Arsenic Mobility in Ground Water

Increased solubility and mobility of naturally occurring metals (including arsenic) in ground water under reducing conditions has been well documented in the literature. Several local (Puget Sound) examples are cited below. Reducing conditions in the ground can be caused by decomposition of naturally occurring organic material (peat and woody debris), emplaced organic waste or debris, and organic contaminants (e.g., petroleum hydrocarbons and chlorinated solvents), all of which can produce a low oxygen (anaerobic) environment with reducing conditions. This type of environment tends to mobilize naturally occurring metals which would otherwise remain insoluble.

Figures 1 and 2 also show the approximate extent of petroleum and chlorinated solvent contamination in the study area to help illustrate the relationship between the presence of organic contamination and elevated arsenic concentrations in ground water. The areas of contamination were identified in site investigations of the properties (GeoEngineers, 2007; HWA, 2008; Parametrix, 2009a, 2009b, 2009c).

Most of the soil and ground water samples in the Bothell downtown area have been collected in areas of petroleum or chlorinated solvent contamination. At each site, more explorations have typically been advanced in contaminated areas, with fewer upgradient, clean locations sampled. This pattern leads to a strong sampling bias, making it difficult to ascertain whether elevated arsenic in ground water is associated with reducing conditions resulting from contaminant plumes, or other causes. Instances of elevated ground water arsenic in areas with no contamination therefore may indicate a natural source of the arsenic, or a combination of causes (i.e., natural and induced by petroleum contamination). Several such instances are documented in the project area. Many of the boreholes in the Bothell downtown area encountered peat deposits within the alluvial sediments that underlie much of the area (Table 1).

Local and Regional Studies

<u>Sammamish River Valley</u>

The King County Ground Water Protection Program conducted several studies of arsenic in ground water (King County, 2001, 2002, 2003, 2005; Ferguson and Johnson, 2006; and Ferguson, 2007). King County conducted sampling of water and monitoring wells over a nine year period at 89 locations. Elevated arsenic concentrations in drinking water wells were attributed to natural leaching of arsenic from locally derived rocks and soil minerals.

Elevated arsenic concentrations measured in 20 out of 21 ground water monitoring wells in the Sammamish River Valley, at concentrations of up to 169 µg/L, were attributed to peat deposits. The Sammamish River Valley monitoring wells sampled in the King County studies are located in the same drainage (Sammamish River valley) and similar geologic environment to the Bothell Downtown Redevelopment Projects, i.e., a Holocene alluvial river system incised into Pleistocene glacial deposits.

MTCA regulations at WAC 173-340-709 specify methods to define area or natural background concentrations. Area background refers to a contaminant that is consistently present at site due to human activities unrelated to the site. Natural background refers to a contaminant found at the site that is not influenced by human activity, or is, but is widespread. Natural background levels can be used to replace Method A or B cleanup levels when higher. Per the MTCA, background for lognormally distributed data sets is defined as the true upper 90th percentile concentration or four times the true 50th percentile, whichever is lower. HWA used the Department of Ecology's spreadsheet program BCKGD97.XLT (available at www.ecy.wa.gov/programs/tcp/tools/toolmain.html) to statistically analyze the 94 dissolved arsenic analytical results listed in King County's 2005 Sammamish River Valley ground water data report. BCKGD97.XLT calculated that the Sammamish River Valley dissolved arsenic data are lognormally distributed, that the true upper 90th percentile concentration is 35.78 µg/L, and that four times the true 50th percentile concentration is 16.83 µg/L. MTCA compliance monitoring regulations at WAC 173-340-720 specify that the upper one-sided 95 percent confidence limit on the true mean ground water concentration shall be less than the ground water cleanup level or natural background concentration. HWA used Ecology's SITE97.XLT spreadsheet program to calculate the upper one-sided 95 percent confidence limit mean dissolved arsenic concentration of the analytical data in attached Table 1 exclusive of ground water samples collected from monitoring wells at the Bothell Paint and Decorating site located in the area impacted by arsenic-contaminated sandblasting grit (wells GB-2-W, VB-3-W, VB-11-W, BPMW-1-10, and BP-23-15). The upper one-sided 95 percent confidence limit mean dissolved arsenic concentration calculated using SITE97.XLT is 15.77 µg/L, a value slightly less than the background 50th percentile concentration of 16.83 µg/L and considerably less than the 90th percentile concentration of 35.78 µg/L for the Sammamish River Valley data. The BCKGD97. XLT and SITE97.XLT summary output reports for both sets of data are attached to this letter.

<u>Vashon-Maury Island</u>

King County also studied arsenic in ground water on Vashon-Maury Island, where arsenic from the Tacoma ASARCO Smelter has been aerially deposited (Ferguson, 2008). King County concluded that:

> *Initially, a bedrock source was suggested by a correlation of higher arsenic concentrations versus deep for wells in other parts of the county. However, some of the wells with high arsenic concentrations were noted to be shallow or in areas with deep unconsolidated sediments, where an intact bedrock source would be far away…..This raised the possibility that the source of the arsenic to the ground water is a geochemical process similar to that occurring in Bangladesh, where buried Pleistocene peat deposits appear to be releasing arsenic through the anoxic reduction of iron oxyhydroxide. Based on the result of the various monitoring and peat sampling, it appears that degrading periglacial peat deposits are another likely source of naturally-occurring arsenic in ground water supplies in King County.*

<u>Everett Landfill</u>

Elevated arsenic concentrations have been detected in ground water near the Everett Landfill. A HWA (2007a) study concluded that elevated iron, manganese, and arsenic concentrations were not related to landfill impacts. Of three background monitoring wells installed outside the landfill area of influence, the two wells that did not encounter peat did not detect arsenic above detection limits; the one well screened in sand and peat deposits had arsenic concentrations ranging from 13 to 26 µg/L, with a statistically derived (per MTCA) background value of 25 µg/L. GeoEngineers (1997) detected dissolved arsenic in a monitoring well completed in a shallow aquifer at a property north of the landfill at a concentration of 81 µg/L.

Everett Simpson Site

Four shallow monitoring wells installed and sampled by ERM in 1993 at the Everett Simpson site were screened in fill soils over alluvial sands and peat. Historical land use information and soil sampling does not suggest any source of arsenic in the fill soils. ERM detected arsenic in the four wells at concentrations of 8.77, 10.3, 14.4, and 15 µg/L (ERM, 1993).

City of Snohomish

HWA sampled four ground water monitoring wells near the Snohomish River in Snohomish, Washington. The wells are completed in a shallow alluvial aquifer at depths of seven to 13 feet below local grade (HWA, 2007b). The wells contained arsenic concentrations ranging from 18 to 120 µg/L (with little difference between total and dissolved concentrations). The site does not contain an apparent artificial source of arsenic, and 14 soil samples collected in the area did not contain arsenic exceeding the Method A soil cleanup level of 20 milligrams per kilogram (mg/kg).

King County

In their study of the ground water system of eastern King County, Turney and others (1995) summarized that water quality problems, when present, were commonly due to natural causes. They found arsenic in 64 percent of the ground water samples, and 15 percent of the samples had concentrations of 20 µg/L or greater with the highest concentration being 77 µg/L.

Snohomish County

In their study of the ground water system of western Snohomish County, Thomas and others (1997) summarized that water quality problems, when present, were commonly due to natural causes. They found arsenic in 63 percent of the ground water samples, and 18 percent of the samples had concentrations of 10 µg/L or greater with the highest concentration being 280 µg/L.

Conclusions

Elevated arsenic concentrations in the alluvial ground water system throughout the Bothell downtown area in areas where no known anthropogenic source exists are likely due to either 1) reducing conditions in the aquifer caused by the oxygen-consuming decomposition of petroleum hydrocarbons or solvents, 2) reducing conditions in the aquifer caused by the decomposition of natural peat deposits, or 3) some combination of both. In addition, the mean concentration of dissolved arsenic (at a 95 percent upper confidence limit) in ground water in the Bothell downtown area is slightly lower than the background concentration of dissolved arsenic reported by King County (2005) for the Sammamish River Valley.

The implications of this include:

- Naturally occurring arsenic in ground water should not be considered a compound of concern (COC) at sites where no known release of arsenic to the environment has occurred, and soil sampling does not indicate a soil source.
- Separate, discrete petroleum release sites, defined by soil and ground water sampling as discrete releases, should not be considered to be commingled with each other simply because elevated arsenic is detected at multiple sites.
- For sites where elevated ground water arsenic is suspected of being associated with reducing conditions caused by the oxygen-consuming decomposition of petroleum or solvents, the petroleum or solvent cleanup should be the driving concern, with the assumption that addressing the organic contamination issue will eventually return the aquifer to natural background conditions, which may or may not include elevated arsenic concentrations, depending on the aquifer's natural oxidation/reduction state, presence of peat, and natural arsenic concentrations in aquifer soils.

References

ERM-Northwest, Inc., February 1993. *Phase I and II Environmental Site Investigation, Everett Simpson Site, Everett Washington,* Volume I and Volume III, Prepared for Washington Department of Ecology on behalf of City of Everett Public Works Department and Simpson Paper Company.

GeoEngineers, December 12, 1997. Excerpts from Phase I-II Environmental Site Assessment and Preliminary Geotechnical Engineering Report, Newland Property, Prepared for City of Everett.

GeoEngineers, December 14, 2007. *Remedial Investigation, Northshore Downtown Bothell Properties, Bothell, Washington.* Prepared for the Northshore School District.

HWA GeoSciences Inc., 2007a. *Iron, Manganese & Arsenic Background Investigation Everett Landfill/Tire Fire Site, Everett, Washington,* Prepared for City of Everett, February 6, 2007

HWA GeoSciences Inc., 2007b. *Cleanup Action Plan, One Acre Lagoon, Snohomish Wastewater Treatment Plant, Snohomish, Washington*. Prepared for City of Snohomish, August 30, 2007.

HWA GeoSciences Inc., October 10, 2008. *Phase II Environmental Site Assessment Hertz Rentals Property, Bothell, Washington.* Prepared for City of Bothell.

Ferguson, Eric W. and Johnson, Ken, 2006. *Naturally Occurring Arsenic in Groundwater from Glacial Deposits in King County, Washington,* National Ground Water Association Naturally Occurring Contaminants Conference, February 6, 2006.

Ferguson, Eric, 2007. *Naturally Occurring Arsenic in Groundwater from Glacial Deposits in King County, Washington,* 6th Washington Hydrogeology Symposium, Tacoma, Washington

Ferguson, Eric W., 2008. *Naturally Occurring Arsenic in Groundwater on Vashon-Maury Island in King County, Washington,* 2008 National Ground Water Association, Ground Water Summit, Memphis, TN

King County Department of Natural Resources and Parks, 2001. *King County Groundwater Management Program – 2001 Annual Report.*

King County Department of Natural Resources and Parks, 2002. *King County Groundwater Management Program – 2002 Annual Report.*

King County Department of Natural Resources and Parks, 2003. *King County Groundwater Management Program – 2003 Annual Report.*

King County Department of Natural Resources and Parks, 2005. *Sammamish River Valley Groundwater Study 2003-2004 Data Report.*

Landau Associates, 2006. *Arsenic and Lead Mobility in Area-Wide Contamination-Impacted Soil* Technical Memorandum to Dave Bradley, Washington State Department of Ecology, September 14, 2006.

Parametrix. 2009a. *Bothell Landing Remedial Investigation/Feasibility Study.* Prepared for City of Bothell.

Parametrix. 2009b. *Bothell Paint and Decorating Remedial Investigation/Feasibility Study.* Prepared for City of Bothell.

Parametrix. 2009c. *Bothell Riverside Remedial Investigation/Feasibility Study.* Prepared for City of Bothell.

Thomas, B.E., J.M. Wilkinson, and S.S. Embrey, 1997. *The Ground-Water System and Ground-Water Quality in Western Snohomish County, Washington*, U.S. Geological Survey Water-Resources Investigations Report 96-4312.

Turney, G.L., S. C. Kahle, and N. P. Dion, 1995, *Geohydrology and Ground-Water Quality of East King County, Washington*. U.S. Geological Survey Water-Resources Investigations Report 94-4082.

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

3-7-11

Arnie Sugar, LG, LHG
President

State of Washington
Geologist
Hydrogeologist
327
Licensed Geologist
NORMAN C. NIELSEN

3/7/11

Norm Nielsen, LG, LHG, PMP
Senior Hydrogeologist

Attachments

Table 1 Ground Water Concentrations in the City of Bothell's Downtown Redevelopment Projects Area

Figure 1 Summary of Soil & Ground Water Impacts in the NSD Area

Figure 2 Summary of Soil & Ground Water Impacts in the Bothell Crossroads Area

BCKGD97.XLT Calculations: Background Dissolved Arsenic in Sammamish River Valley Ground Water

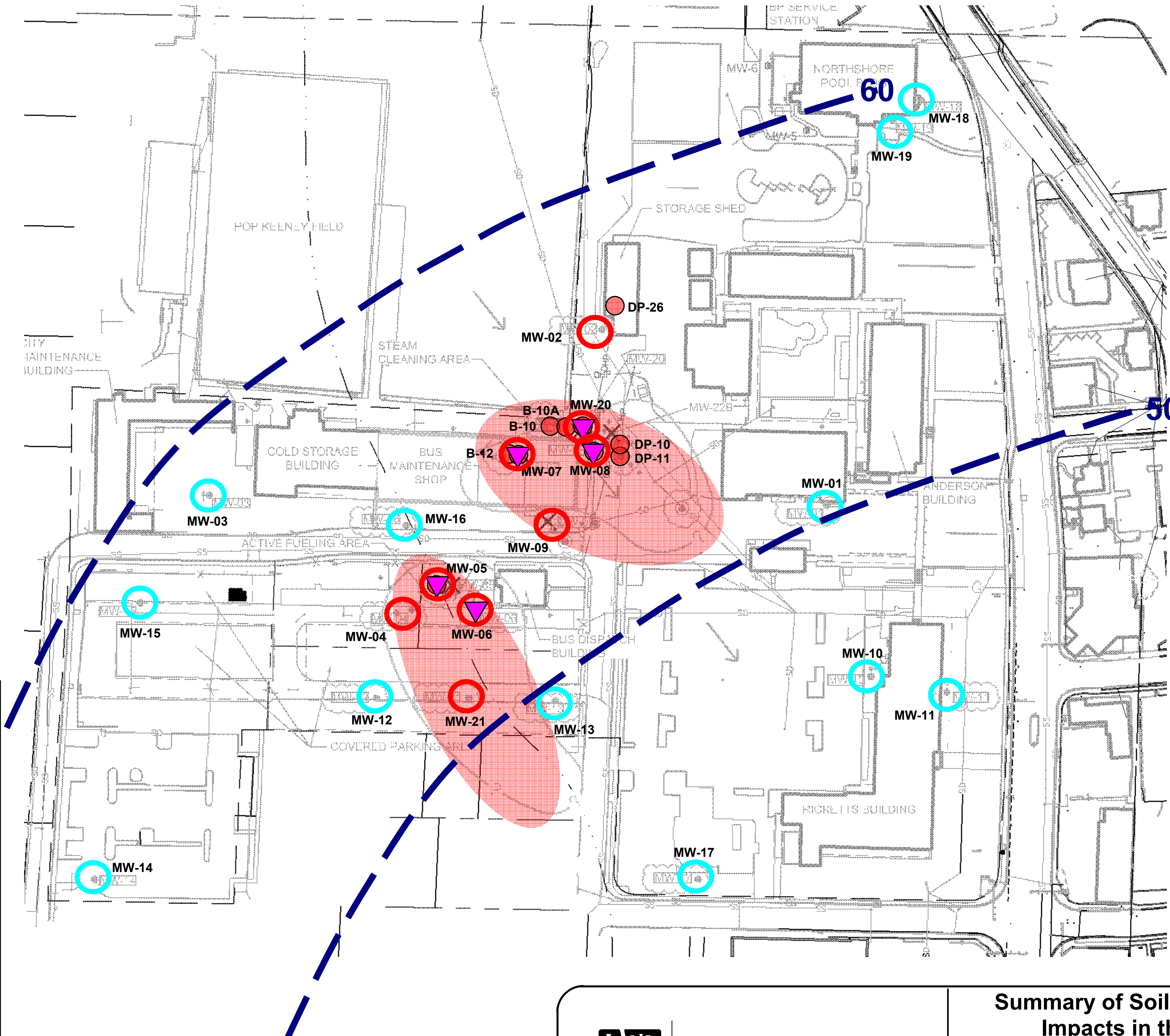
SITE97.XLT Calculations: 95% Upper Confidence Limit Dissolved Arsenic in Ground Water in the Downtown Bothell Redevelopment Projects Area Outside of Bothell Paint Area Having Arsenic-Contaminated Soil

TABLE 1
GROUND WATER CONCENTRATIONS IN THE CITY OF
BOTHELL'S DOWNTOWN REDEVELOPMENT PROJECTS AREA

Site	Boring/Well ID	Total Arsenic (ug/L)	Dissolved Arsenic (ug/L)	Gasoline (mg/L)	Diesel (mg/L)	Heavy Oil (mg/L)	Gasoline+Diesel+Oil (mg/L)	Peat?	Arsenic Contaminated Soil?
MTCA A Cleanup Level		**5**	**5**	**80/100***	**500**	**500**	**NA**	**NA**	**NA**
Former 116th Partners	116-B5-W	<3.3	<3	<0.1	<0.26	<0.41	0	Y	N
Former 116th Partners	116-B6-W	<3.3	<3	<0.1	<0.27	<0.42	0	Y	N
Former 116th Partners, Geotech	BC-12	**11**		<0.1	<0.26	<0.41	0	Y	N
Giannola (Former Bothell Paint)	GB-2-W		**5**	11			11	Y	Y
Victory (Former Bothell Paint)	VB-3-W		**350**	ND	ND	ND	0	Y	Y
Victory (Former Bothell Paint)	VB-10-W		<3	ND	ND	ND	0	Y	N
Victory (Former Bothell Paint)	VB-11-W	**23**	**20**	<0.1	<0.25	<0.40	0	Y	Y
Victory (Former Bothell Paint)	VB-12-W	**4.6**	**4.1**	<0.1	<0.22	<0.35	0	Y	N
Former Bothell Paint, Geotech	BC-10-12	**5.1**	<3	<0.1			0	Y	N
Former Bothell Paint, Geotech	BC-10-12-2	**6.7**	<3	<0.1			0	Y	N
Former Bothell Paint, Geotech	BC-10	**37**		<0.1	**0.31**	**1.4**	1.71	Y	N
Former Bothell Paint	BPMW-1-10	**5.1**	**5**	<0.1			0	Y	Y
Former Bothell Paint	BP-MW-2-6	**3.9**	**3.6**	**0.32**			0.32	Y	N
Former Bothell Paint	BP-MW-3-10	**10**	**5.4**	<0.1			0	N	N
Former Bothell Paint	BP-23-15		**8.5**	<0.1			0	Y	Y
Former McDonalds	MD-B1-W	<5		<0.1	<0.28	<0.45	0	N	N
Former McDonalds	MD-B2-W	<5		<0.1	<0.28	<0.44	0	N	N
Former McDonalds	MD-B4-W	**5.7**		<0.1	<0.30	<0.48	0	N	N
Former Hertz	HZ-MW-4	**24**	<3	<0.1	<0.26	<0.4	0	N	N
Former Hertz	HZ-MW-8	**29**	**21**	<0.4	**0.77**	**6.5**	7.27	N	N
Grease Monkey	GM-2-W	<3.3		<0.1	<0.25	<0.4	0	Y	N
Grease Monkey	GM-4-W	<3.3		<0.1	<0.26	<0.42	0	Y	N
Grease Monkey	GM-5-W	<3.3		<0.1	<0.26	<0.41	0	Y	N
Grease Monkey	GM-6-W	<3.3		<0.4	<0.25	<0.4	0	N	N
Grease Monkey, Geotech	BB-1-W	**180**		<0.1	<0.28	<0.45	0	N	N
SR 527 Geotech	BB-7		<3.3	<0.1	<0.26	<0.41	0	N	N
SR 527 Geotech	BB-10		**5.4**	<0.1	<0.25	<0.4	0	N	N
SR 522 Geotech, East End	BC-1		<3.3	<0.1	<0.26	<0.42	0	N	N
SR 522 Geotech, East End	BC-2	<3.3		<0.1	<0.26	<0.41	0	N	N
NE 180th St., Geotech	BC-11		<3.3	<0.1	<0.25	<0.4	0	Y	N
Bothell Landing	BH-11-W	**49**	**4**	<0.5	**0.15**	<0.25	0.15	Y	N
Bothell Landing	BH-15-W	**68**	**56**	<0.5	<0.13	<0.25	0	Y	N
Bothell Landing, Geotech	BC-8	<3.3	<3	<0.1	<0.26	<0.41	0	Y	N
Bothell Riverside	R-1-13	<3.3		<0.1	<0.25	<0.4	0	N	N
Bothell Riverside	R-1-20	<3.3		<0.1	<0.25	<0.4	0	N	N
Bothell Riverside	R-2-13	<3.3		<0.1	<0.29	<0.46	0	N	N
Bothell Riverside	R-2-20	<3.3		<0.1	<0.25	<0.41	0	N	N
Bothell Riverside	BC-5-14		**6.6**				0	N	N
Bothell Riverside	RMW-6-15		**5.1**				0	N	N
Bothell Riverside	RMW-7-21		**4**				0	N	N
Bothell Riverside	RMW-10-32		**4.7**				0	N	N
Northshore School District	PP02		**8.5**	<0.05	**24**	**65**	89	N	N
Northshore School District	PP03		**9.4**	<0.057	**7.8**	**20**	27.8	N	N
Northshore School District	DP-03-W	**110**	<4		<0.13	<0.25	0	N	N
Northshore School District	DP-04-W	**13**	<4		<0.13	<0.25	0	N	N
Northshore School District	DP-06-W	**470**	**16**		<0.13	<0.25	0	N	N
Northshore School District	DP-10-W	**45**			**7.9**	**23**	30.9	N	Y
Northshore School District	MW-02 (June 2007)	**20**	**5**				0	N	N
Northshore School District	MW-02 (August 2007)	**29**	**26**	<0.05	<0.13	<0.25	0	N	N
Northshore School District	MW-04 (June 2007)	**8**	<4	<0.05	<0.13	<0.25	0	N	N
Northshore School District	MW-04 (August 2007)	**6**	**5**	<0.05	<0.13	<0.25	0	N	N
Northshore School District	MW-05 (August 2007)	**8**	**6**	**7.5**	<0.25	<0.25	7.5	N	N
Northshore School District	MW-06 (June 2007)	**20**	**18**	**0.9**	<0.13	<0.25	0.9	N	N
Northshore School District	MW-06 (August 2007)	**25**	**22**	**0.68**	<0.13	<0.25	0.68	N	N
Northshore School District	MW-07 (June 2007)	**6**	**6**	**Free Product**				N	N
Northshore School District	MW-08 (June 2007)	<4	**12**	**Free Product**				N	N
Northshore School District	MW-09 (June 2007)	**33**	**26**	<0.05	<0.13	<0.25	0	N	N
Northshore School District	MW-09 (August 2007)	**42**	**40**	<0.05	<0.13	<0.25	0	N	N
Northshore School District	MW-20 (June 2007)	**28**	**5**	<0.05	**0.42**	**3**	3.42	N	N
Northshore School District	MW-20 (August 2007)	**31**	**20**	<0.05	**1.1**	**3**	4.1	N	N
Northshore School District	MW-21 (August 2007)	**12**	**10**	**0.76**	<0.13	<0.25	0.76	N	N

Notes:

Bold / Highlighted – Analyte exceeds Ecology MTCA Method A groundwater cleanup level, Chapter 173-340 WAC, shown for reference only. These cleanup levels may not apply at this site, and are provided as a screening level indication of the environmental quality of the site only.
Bold – Analyte Detected
Blank – Not Analyzed
< - Not detected at laboratory's practical quantitation limit
***** 80 mg/L if benzene is detected; 100 mg/L for other mixtures



Soil TPH or Metals > MTCA

Ground Water TPH > MTCA

Ground Water HOC > MTCA

Ground Water Arsenic > MTCA

Ground Water Arsenic < MTCA

Petroleum Impacts

Chlorinated Solvent Impacts

50

Approximate Ground Water Elevation
August 2007

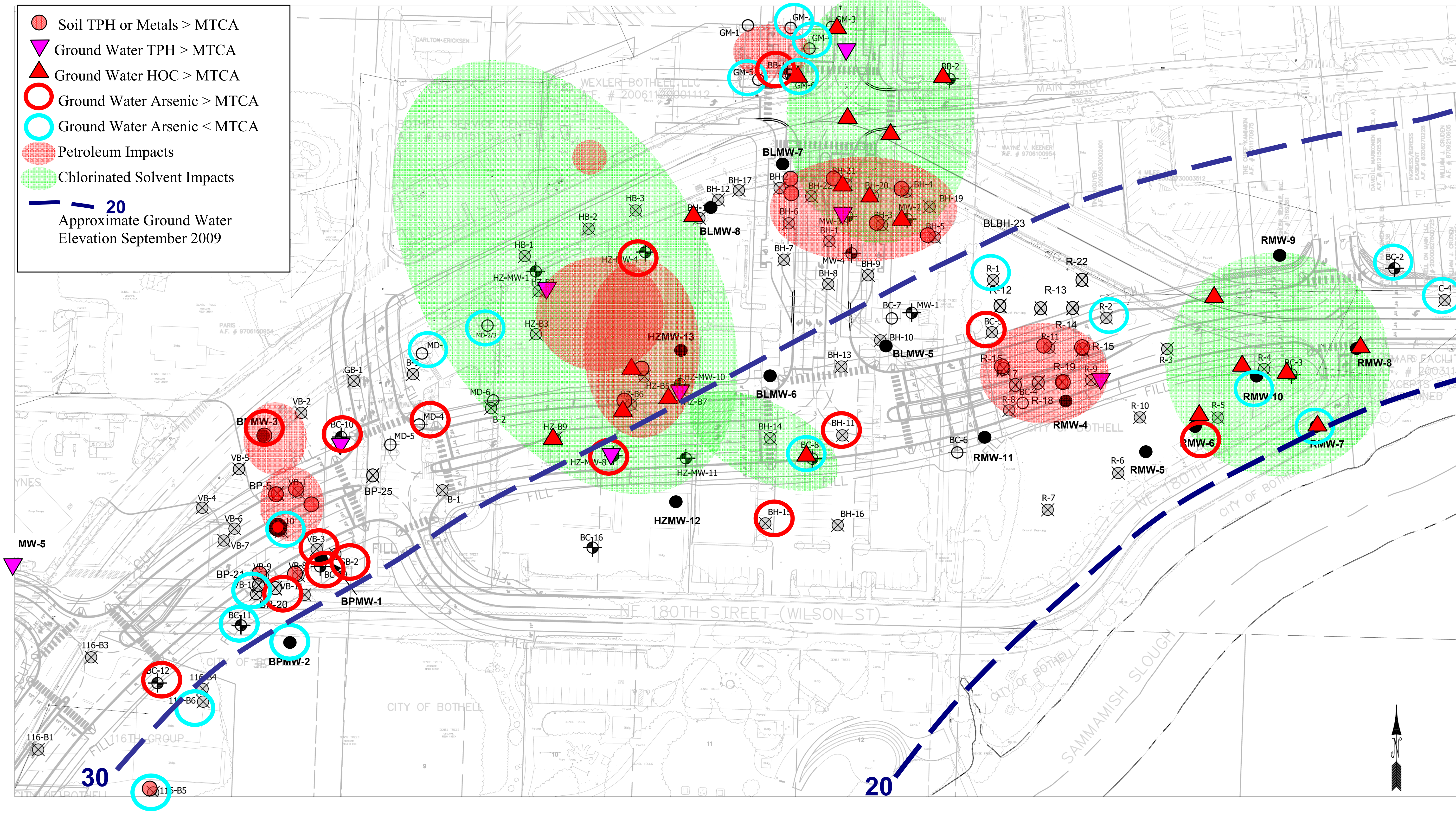
HWA GEOSCIENCES INC.

Summary of Soil & Ground Water Impacts in the NSD Area

Downtown Redevelopment Projects
Bothell, Washington

FIGURE NO. 1

PROJECT NO. 2007-098-21



BASE MAP PROVIDED BY

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD\HWA 2007-098 BASE.DWG <11X17> Plotted: 8/12/2009 12:23 PM

HWA GEOSCIENCES INC.

Downtown Redevelopment Projects
Bothell, Washington

Summary of Soil & Ground Water Impacts in Bothell Crossroads Area

DRAWN BY EFK	FIGURE NO.	2
CHECK BY AS	PROJECT NO.	
DATE 11/2/10		2007-098-21

TITLE

0.52	M4
0.58	W7B
0.6	M4
0.61	M1B
0.61	M4
0.62	M4
0.64	M1B
0.66	M1B
0.68	L2A
0.7	L2A
0.78	L2A
0.79	M1B
0.83	W7B
0.87	M4
0.93	W7B
0.94	L1B
1	L1B
1	L1B
1	L1B
1	L1B
1	M3
1	M3
1	W7A
1	W7B
1.1	L2A
1.1	M3
1.1	M3
1.1	W7A
1.2	M3
<2.5	W1A
<2.5	W1A
<2.5	W1A
1.4	W7A
1.5	W7A
1.8	W1B
1.9	W1B
2	W1B
2	W1B
2.52	L1A
2.7	L1A
2.88	L1A
2.91	L1A
2.96	M2B
3.02	L1A
3.25	M2B
3.36	M2B
3.57	M2B
3.82	W4S
3.91	W2A
3.95	M2B
4.04	W4S

MTCA*Stat* 3.0

Number of samples	94	Uncensored values	
Uncensored	91	Mean	19.50
Censored	3	Lognormal mean	15.44
TOTAL	94	Std. devn.	43.07
		Median	3.91
		Min.	0.52
		Max.	169

Lognormal distribution?

r-squared is: 0.91

Normal distribution?

r-squared is: 0.45

Recommendations:

Use lognormal distribution.

Distribution selection	Enter percentile	Value corresponding to that percentile is:
1	90	35.78
1 = Lognormal	50th	4.21
2 = Normal	4 X 50th	16.83
3 = Nonparametric method	Coefficient of Variation = 3.91	

4.1	W4S
4.1	W8
4.16	W8
4.29	W4S
4.78	W2B
5.06	W2A
5.23	M2A
5.8	M2A
5.83	W2A
5.87	W2A
5.97	W2A
6.28	W5
6.28	W5
6.3	M2A
6.42	W5
6.7	W2B
6.85	W2A
7.06	W5
7.23	W2B
7.79	W5
8.82	M2A
8.96	W2B
9.27	M2A
13.5	L2B
14.3	L2B
14.7	L2B
15.4	L2B
16.3	L2B
17	M1A
20	W8
26.5	M1A
29.2	M1A
34.1	M1A
57.2	W6
85.7	W6
123	W6
125	W6
142	W6
151	W4D
162	W4D
168	W4D

95% CONFIDENCE LIMIT DISSOLVED ARSENIC IN GROUND WATER (μG/L) IN THE DOWNTOWN BOTHELL REDEVELOPMENT PROJECTS AREA OUTSIDE OF BOTHELL PAINT AREA HAVING ARSENIC-CONTAMINATED SOIL

DATA	
Dissolved As (μg/L)	Well ID
3.6	BP-MW-2-6
4	BH-11-W
4	RMW-7-21
4.1	VB-12-W
4.7	RMW-10-32
5	MW-02 (Jun 2007)
5	MW-04 (Aug 2007)
5	MW-20 (Jun 2007)
5.1	RMW-6-15
5.4	BP-MW-3-10
5.4	BB-10
6	MW-05 (Aug 2007)
6	MW-07 (Jun 2007)
6.6	BC-5-14
8.5	PP02
9.4	PP03
10	MW-21 (Aug 2007)
16	DP-06-W
18	MW-06 (Jun 2007)
20	MW-20 (Aug 2007)
21	HZ-MW-8
22	MW-06 (Aug 2007)
26	MW-02 (Aug 2007)
26	MW-09 (Jun 2007)
40	MW-09 (Aug 2007)
56	BH-15-W
<3	VB-10-W
<3	BC-10-12
<3	BC-10-12-2
<3	HZ-MW-4
<3	BC-8
<3.3	116-B5-W
<3.3	116-B6-W
<3.3	BB-7
<3.3	BC-1
<3.3	BC-11
<4	DP-03-W
<4	DP-04-W
<4	MW-04 (Jun 2007)
<4	MW-08 (Jun 2007)

Number of samples		Uncensored values	
Uncensored	26	Mean	13.18
Censored	14	Lognormal mean	12.90
Detection limit or PQL	3	Std. devn.	12.7948018
Method detection limit	0.07	Median	6.3
TOTAL	40	Min.	3.6
		Max.	56

Lognormal distribution?		Normal distribution?	
r-squared is:	0.960	r-squared is:	0.865

Recommendations:
Use lognormal distribution.

UCL (Land's method) is 15.7667804225153
Cohen's method applied.