

BP West Coast Products, LLC

CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

Former ARCO Olympia Bulk Terminal
Industrial Petroleum Distributors Site
1120 West Bay Drive
Olympia, Washington 98502
Agreed Order DE 10470
F/S ID: 1436
Cleanup Site ID: 4240

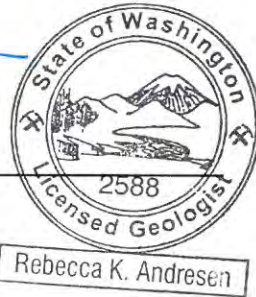
October 3, 2016



Ross LaGrandeur
Technical Associate



Rebecca Andresen, L.G.
Vice President



Brian Marcum
Project Manager

CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

Former ARCO Olympia Bulk Terminal
Industrial Petroleum Distributors Site
1120 West Bay Drive
Olympia, Washington 98502
Agreed Order DE 10470
F/S ID: 1436
Cleanup Site ID: 4240

Prepared for:

BP West Coast Products, LLC

Prepared by:

Arcadis U.S., Inc.

1100 Olive Way

Suite 800

Seattle

Washington 98101

Tel 206 325 5254

Fax 206 325 8218

Our Ref.:

GP09BPNA.WA60

Date:

October 3, 2016

CONTENTS

Acronyms and Abbreviations.....	v
1 Introduction	1
2 Pre-Excavation Soil Sampling Activities	1
2.1 Soil Sampling Locations	1
2.1.1 Sample Logging and Field Screening.....	1
2.1.2 Sample Collection	2
2.1.3 Field Quality Control	2
2.2 Deviations During Soil Sampling Activities.....	2
3 Pre-Excavation Sampling Results.....	3
3.1 Soil Cleanup Levels.....	3
3.2 Data Validation	4
<i>Holding Times</i>	4
<i>Blank Contamination</i>	5
<i>Surrogates/System Monitoring Compounds</i>	5
<i>MS/MSD Analysis</i>	5
<i>Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis</i>	5
<i>Field Duplicate Analysis</i>	5
<i>System Performance and Overall Assessment</i>	5
3.3 Soil Analytical Results	6
3.3.1 Total Petroleum Hydrocarbons	6
3.3.2 Carcinogenic Polycyclic Aromatic Hydrocarbons	7
3.3.3 Total Naphthalenes.....	7
3.3.4 Results Summary.....	8
3.4 Pre-Excavation Groundwater Monitoring Report	8
4 Construction Plans and Specifications	9
4.1 Preliminary Excavation Plan	9
4.1.1 Well Abandonment.....	9
4.1.2 Temporary Erosion and Sedimentation Control	9
4.1.3 Excavation Area.....	9

CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

4.1.4	Existing Piping Abandonment And Debris Handling.....	9
4.1.5	Soil Handling.....	10
4.1.6	Fill Material Specifications	10
4.1.7	Monitoring Well Installation.....	11
4.2	Waste Characterization and Disposal	11
4.3	Permitting Requirements.....	11
5	References.....	13

TABLES

Table 1	Pre-Excavation Soil Analytical Results
---------	--

FIGURES

Figure 1	Site Map
Figure 2	Soil Sample Locations and Analytical Results – Shallow Interval Depth
Figure 3	Soil Sample Locations and Analytical Results – Middle Interval Depth
Figure 4	Soil Sample Locations and Analytical Results – Deep Interval Depth

APPENDICES

Appendix A	Data Validation Reports
Appendix B	Laboratory Analytical Reports
Appendix C	TPH Chromatogram Assessment
Appendix D	Pre-Excavation Groundwater Monitoring Report
Appendix E	Construction Plans and Specifications
Appendix F	Traffic Control Plan
Appendix G	Stormwater Pollution Prevention Plan

ACRONYMS AND ABBREVIATIONS

AO	Agreed Order
Arcadis	ARCADIS U.S., Inc.
BaP	benzo(a)pyrene
BMPs	Best Management Practices
bgs	below ground surface
CAP	Cleanup Action Plan
Cascade	Cascade Drilling, L.P.
cPAHs	carcinogenic polycyclic aromatic hydrocarbons
cPAHs TEQ	cPAHs adjusted for toxicity
CPS	Construction Plans and Specifications
COC	Constituent of concern
CULs	cleanup levels
DRO	diesel range organics
DU	Decision Unit
Ecology	Washington State Department of Ecology
eNOI	Electronic Notice of Intent
GRO	gasoline range organics
HO	heavy oil range organics
IPD	Industrial Petroleum Distributors
Lancaster	Eurofins Lancaster Laboratories Environmental, LLC in Lancaster, Pennsylvania
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDL	laboratory method detection limit
mg/kg	milligram per kilogram
MS	matrix spike
MSD	matrix spike duplicate
MTCA	Model Toxics Control Act
NOM	natural organic material
Otak	Otak, Inc.
PID	photo ionization detector

CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

ppm	part per million
QA	Quality assurance
QC	Quality control
RCW	Revised Code of Washington
RPD	relative percent difference
SEPA	State Environmental Policy Act
site	lowland portion of the former IPD Site located 1120 West Bay Drive in Olympia, Washington
SVOCs	Semi-Volatile Organic Hydrocarbons
SWPPP	Stormwater Pollution Prevention Plan
TEF	toxic equivalence factor
TEQ	toxic equivalence quotient
TPH	total petroleum hydrocarbons
ULS	ULS Services Corporation
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Hydrocarbons
WAC	Washington Administrative Code
WP	Work Plan

1 INTRODUCTION

On behalf of BP West Coast Products, LLC, Arcadis U.S., Inc. (Arcadis) has prepared this draft Construction Plans and Specifications (CPS) for the lowland portion of the former Industrial Petroleum Distributors (IPD) Site located at 1120 West Bay Drive in Olympia, Washington (the “site”). A Site Location Map is presented on Figure 1.

The purpose of this CPS is to summarize the results of the completed remedial investigation and propose specifications of the cleanup action to address petroleum hydrocarbons in soil exceeding the Model Toxics Control Act (MTCA) Method A cleanup levels (CULs). This CPS is in accordance with the Washington State Department of Ecology (Ecology) Cleanup Action Plan (CAP; Ecology 2014) and Agreed Order (AO) No. DE 10470, effective October 24, 2014. All field activities were performed in accordance with Pre-Excavation Soil Sampling and Excavation Work Plan (WP; Arcadis 2015).

2 PRE-EXCAVATION SOIL SAMPLING ACTIVITIES

2.1 Soil Sampling Locations

Between August 17 and September 2, 2015, Arcadis oversaw the advancement of 71 boring locations at decision units (DU) surrounding previously identified areas of impacted soil within the Port of Olympia property boundary (GP-2, GP-5, GP-6, and MW-6R) and BNSF Right-of-Way (MW-11 and MW-12). Cascade Drilling, L.P. (Cascade) used a combination of direct-push, hollow stem auger, and air knife to advance to a maximum depth of 15 feet below ground surface (bgs). In addition, hand auger methodology was performed by Arcadis and Cascade to advance to shallow depths (6.5 feet bgs). Borings were advanced in all proposed DU locations.

Prior to drilling activities, sample locations were surveyed, staked, and marked with spray paint by Otak, Inc. (Otak) and a subsurface utility investigation was performed by ULS Services Corporation (ULS). Soil samples that were collected from shallow (0 to 5 feet bgs), medium (5 to 10 feet bgs) and deep (10 to 15 feet bgs) intervals are shown in Figures 2, 3 and 4, respectively.

Samples collected at the following intervals include:

- Shallow Interval Depth (0 to 5 feet bgs) – 64 of 71 boring locations, excluding the DUs identified for excavation in the WP.
- Medium Interval Depth (5 to 10 feet bgs) – 71 of 71 boring locations.
- Deep Interval Depth (10 to 15 feet bgs) – 18 of 71 boring locations where field screening indicated the presence of hydrocarbons from 5 to 10 feet bgs.

2.1.1 Sample Logging and Field Screening

Soil borings were cleared to 6.5 feet bgs using a hand auger or air knife. Each soil sample was characterized and observations of soil classification, moisture content, debris, sample recovery, and sample interval were recorded on a boring log. Each soil sample was also screened for Volatile Organic

CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

Hydrocarbons (VOCs) using a photo ionization detector (PID). Elevated VOC readings, defined in the field as greater than or equal to 10 ppm within a soil sample, generally correlate with the presence of petroleum hydrocarbon impacts. Samples collected during soil screening between 5 and 10 feet bgs that exhibited elevated VOC readings were advanced to a depth of 15 feet bgs and an additional sample was collected between 10 to 15 feet bgs.

2.1.2 Sample Collection

153 soil samples were collected, placed on ice, and shipped to Eurofins Lancaster Laboratories Environmental, LLC in Lancaster, Pennsylvania (Lancaster) under chain-of custody protocols. Samples were analysed for:

- Total petroleum hydrocarbons (TPH) as gasoline range organics (GRO) by NWTPH-Gx
- TPH as diesel range organics (DRO) and heavy oil range organics (HO) by NWTPH-Dx with 2-gram Silica gel cleanup (shake method).
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and total naphthalenes by United States Environmental Protection Agency (USEPA) Method 8270

2.1.3 Field Quality Control

Quality control (QC) samples were collected in accordance with the WP. The QC samples included blind field duplicates, trip blanks and sample spikes.

Blind field duplicates were collected at a rate of one for every 20 samples (9 total). Blind duplicates were labeled with a generic sample designation (DUP-1 to DUP-9) and were used to assess the precision of the laboratory results. Field duplicates were analyzed for the same parameters as the associated parent samples, and were used to measure the variability inherent in the sampling process. An additional duplicate (DUP-9) was created at the lab and was also analyzed.

Trip blanks were prepared and submitted at a rate of one per shipment (7 total). Trip blanks containing analyte-free water were produced by Lancaster and were shipped with the collected samples.

Matrix spike/matrix spike duplicates (MS/MSD) were generated by Lancaster at a rate greater than one for every 20 samples (9 total). For the samples designated as MS/MSD samples, approximately three times the standard sample volume was collected.

2.2 Deviations During Soil Sampling Activities

During sampling, adjustments to the WP were made when unanticipated circumstances were encountered. Adjustments in the field were made after collaboration and considerations from the project team and the regulator. Samples were collected within each of the designated DUs. However, borings at eight DUs could not be advanced at their centers due to the following obstructions:

- A large rock was encountered less than 5 feet bgs at AUS-SB43. The boring was offset approximately 2.8 feet to the southeast. Samples collected at this offset were relabeled AUS-SB43A.

CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

- Trees blocked access to the center of AUS-SB25 and AUS-SB26. The borings were offset approximately 4 feet to the south.
- Abandoned underground piping was located at the center of AUS-SB23. The boring was offset approximately 4.2 feet to the northeast.
- On the northwest corner of the property, a large pile of rock filled dirt was encountered within the pre-excavation soil sampling area. To avoid disturbing the pile prior to excavation activities, AUS-SB1, AUS-SB4 and AUS-SB5 boring locations were moved 4 feet to the east, 5.7 feet to the southeast, and 4 feet to the east, respectively, each within their DU.
- Samples were collected from 0 to 5 feet bgs and 5 to 10 feet bgs at the center of AUS-SB18. Refusal was encountered at approximately 7 to 9 feet bgs. PID field screening indicated the presence of elevated VOCs; therefore, another boring 3.5 feet to the northwest was advanced and sampled within the 10-15 feet bgs depth interval. The sample collected at this offset was relabeled AUS-SB18A.

During field activities, elevated PID readings were detected at AUS-SB52. Since this sample location is located along the perimeter of the original sampling horizontal extent, additional DUs (AUS-SB41-A, AUS-52-A and AUS-62-A) adjacent and to the northeast of AUS-SB52, were advanced to further delineate potential petroleum-related impacts. Subsequently, elevated PID readings were encountered at AUS-SB-41-A and six additional DUs (AUS-SB41-B, AUS-SB41-C, AUS-SB41-D, AUS-SB41-E, and AUS-SB52-B) were added to include the area surrounding this sample. PID readings in these surrounding samples did not exceed 40 ppm.

During sampling, a layer of organic debris primarily comprised of decaying wood was encountered in approximately 75 percent of soil borings between 3 to 15 feet bgs. Boring locations where woody debris was not observed were located along the western edge of the sample area, with woody debris present in borings extending towards the east. Due to the high organic material content of these samples and the likelihood for results to be biased high due to the presence of biogenic interference, DRO and HO were analyzed using silica gel cleanup with the approval of Ecology.

3 PRE-EXCAVATION SAMPLING RESULTS

3.1 Soil Cleanup Levels

Soil CULs for the site were established under AO No. DE 10470. Petroleum hydrocarbons and their constituents are the primary constituents of concern (COCs) related to historical site operations. Previous investigations indicate impacts are present in soil and groundwater at the site. MTCA Methods A CULs for Unrestricted Land Use are used for soil at the site and are listed below, according to MTCA Table 740-1.

MTCA Method A CULs for Soil

COC	CUL (mg/kg)
GRO	30/100 ¹
DRO	2,000
HO	2,000
cPAHs ²	0.1
Total Naphthalenes ³	5

Notes:

CULs from Ecology's MTCA Method A Soil CULs for Unrestricted Land Uses (Washington Administrative Code [WAC] 173-340-900, Table 740-1).

¹ Method A CULs for GRO are determined based on the presence of benzene. As presented in the Pre-excavation Soil Sampling and Excavation Work Plan (Arcadis 2014), benzene was not detected in soils at the site.

² cPAHs adjusted for toxicity (cPAHs TEQ) according to WAC 173-340-708(8). CUL based on benzo(a)pyrene (BaP) equivalencies (WAC 173-340-900, Table 740-1) for the following constituents: benzo(a)anthracene, BaP, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene. If one or more adjusted cPAH constituents were reported as Non-Detect, half of the reporting limit was used in calculations.

³ Naphthalenes is a sum total of 1-methyl-naphthalene, 2-methyl-naphthalene, and naphthalene. If one or more Naphthalenes constituents were reported as Non-Detect, half of the reporting limit was used in calculations.

mg/kg = milligram per kilogram.

Soil CULs were based on estimates of the reasonable maximum exposure scenario expected to occur, given current and/or future use of the site. According to WAC-173-340-740(1)(a), *"The department has determined that residential land use is generally the site use requiring the most protective cleanup levels and that exposure to hazardous substances under residential land use conditions represents the reasonable maximum exposure scenario."* Therefore, CULs established under MTCA Method A are protective for the maximum exposure scenario for impacted soil, given current and/or future anticipated land use at the site.

3.2 Data Validation

A data quality assessment was performed for all soil samples collected. The assessment was conducted as a Tier II evaluation and included the review for data package completeness and annotation of sample results sheets and chain of custody. Data validation reports for each sample set are included as Appendix A.

Holding Times

Two samples and one duplicate were analyzed outside of the specified holding time for semi-volatile organic hydrocarbons (SVOCs) and three samples and one duplicate were analyzed outside of the specified holding time for TPH. Samples results that were associated with analyses that exceeded the specified holding times were qualified as noted in the data validation reports. All other holding times were met.

CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Compounds were not detected above the laboratory method detection limit (MDL) in any of the associated QA blanks; therefore detected samples results were not associated with blank contamination.

Surrogates/System Monitoring Compounds

All samples analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation in the lab to evaluate the performance and efficiency of the analytical technique. Surrogate recoveries for SVOC analysis were outside of the control limits for at least one surrogate compound in six samples and two duplicates. Additionally, six samples analyzed for SVOCs required dilution due to the high concentration of a target compound. Recoveries for at least one surrogate compound used for TPH analysis were outside of the control limits in 24 samples, three duplicates, and one MS/MSD.

MS/MSD Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. Recoveries for eight MS and nine MSD samples were outside the control limits for at least one of the analyzed SVOC compounds. Two MS/MSD samples exhibited a relative percent difference (RPD) for at least one SVOC compound that was greater than the control limit. Recoveries for eight MS and 10 MSD samples were outside the control limits and four MS/MSD samples exhibited an RPD that was greater than the control for at least one TPH compound.

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The LCS associated with eight samples and two duplicates had a recovery for one SVOC compound that was outside the control limits. Recoveries of LCS/LCSD analyses for TPH were within the control limits for all samples.

Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. The RPD for six of the duplicates compared to their respective parent samples was outside the control limits for at least one of the SVOC compounds that were analyzed. Four of the duplicates displayed an RPD that was outside the control limits for at least one of the TPH compounds that were analyzed.

System Performance and Overall Assessment

The laboratory noted that an SVOC internal standard (Perylene-d12) did not meet QC acceptance limits for nine samples and one duplicate. The results for the compounds associated with that standard were qualified as estimated for these locations.

CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

Overall system performance was acceptable. Other than for those deviations summarized here and specifically mentioned in the data validation reports, the overall data quality is within the guidelines specified in the methods. The sample results presented in Table 1 are qualified as documented in the data validation reports to reflect the deviations outside the established quality control limits.

3.3 Soil Analytical Results

Soil analytical results are shown in Table 1 and on Figures 2, 3 and 4. Laboratory Analytical Reports are included as Appendix B.

3.3.1 Total Petroleum Hydrocarbons

Shallow Interval Depth (0-5 feet bgs)

GRO were detected at concentrations above the CUL in four samples, with concentrations ranging from 150 to 2,400 mg/kg. DRO and HO concentrations were not detected above their respective CULs in any samples from the shallow interval depth.

Medium Interval Depth (5-10 feet bgs)

GRO were detected at concentrations above the CUL in four samples, with concentrations ranging from 160 to 1,700 mg/kg. GRO concentrations were estimated above the CUL in seven samples, with GRO concentrations ranging from 110 to 870 mg/kg. The MDLs of three samples were above the CUL with MDLs ranging from 260 to 1,000 mg/kg.

DRO were detected at concentrations above the CUL in three samples, with concentrations ranging from 4,400 to 9,600 mg/kg. HO was detected at concentrations above the CUL in the same three samples and five additional samples, with concentrations ranging from 2,100 to 64,000 mg/kg. The duplicate of one sample (DUP-6) also contained DRO and HO concentrations (8,900 and 44,000 mg/kg, respectively) above their respective CULs while the parent sample (SB-36-7.5) contained DRO and HO concentrations (710 and 1,200 mg/kg respectively) below the respective CULs.

The duplicate of one sample (DUP-6) also contained a GRO concentration (1,100 mg/kg) above the CUL while the parent sample (SB-36-7.5) contained an estimated GRO concentration (71 mg/kg) below the CUL. This may have been due to insufficient homogenization of the sample in the field.

Deep Interval Depth (10-15 feet bgs)

GRO were not detected at concentrations above the CUL; however, the MDL of SB-41-E-12.5 was above the CUL (230 mg/kg).

DRO were detected at concentrations above the CUL in one sample with a concentration of 2,500 mg/kg. HO was detected at concentrations above the CUL in three samples, with concentrations ranging from 2,100 to 2,300 mg/kg.

3.3.2 Carcinogenic Polycyclic Aromatic Hydrocarbons

Ecology uses the toxic equivalence factor (TEF) methodology developed by the USEPA to evaluate the toxicity and assess the risks of cPAH mixtures. The TEF methodology uses a reference chemical, BaP, that has a well characterized toxicity. The TEF applied to each cPAH compound is an estimate of the relative toxicity compared to BaP. The toxic equivalence quotient (TEQ) is calculated by applying the TEF to each compound and summing, to produce a total concentration of cPAHs as BaP. The required TEF used in calculating the TEQ for each sample are established under WAC 173-340-708(e).

Shallow Interval Depth (0-5 feet bgs)

At least one cPAHs constituent was detected above the MDL in each of the 64 samples. None of the samples collected from the shallow interval depth contained cPAHs TEQ concentrations above the CUL.

Medium Interval Depth (5-10 feet bgs)

No detections of cPAHs above the MDL were observed in 12 samples. Results for cPAH TEQ were calculated at concentrations above the CUL in six samples, with concentrations ranging from 0.173 to 22.757 mg/kg.

The duplicate of one sample (DUP-6) had a calculated cPAH TEQ concentration (5.509 mg/kg) above the CUL while the parent sample (SB-36-7.5) was substantially lower (0.004 mg/kg).

Deep Interval Depth (10-15 feet bgs)

No detections of cPAHs above the MDL were observed in five samples. Results for cPAH TEQ were calculated at concentrations above the CUL in two samples with concentrations of 0.175 and 8.786 mg/kg.

3.3.3 Total Naphthalenes

Shallow Interval Depth (0-5 feet bgs)

At least one naphthalene constituent was detected above the MDL in each of the 64 samples. Total naphthalenes were detected at concentrations above the CUL in two samples with concentrations of 14.2 and 5.61 mg/kg.

Medium Interval Depth (5-10 feet bgs)

Total naphthalenes were detected at concentrations above the CUL in 11 samples, with concentrations ranging from 6.36 to 56 mg/kg. The duplicate of two samples (DUP-6 and DUP-7) also contained total naphthalenes concentrations (12.8 and 20.15 mg/kg respectively) above the CUL while the parent sample (SB-36-7.5 and SB-6-7.5) contained total naphthalenes concentrations (0.77 and 3.356 mg/kg respectively) below the CUL. This may have been due to insufficient homogenization of the sample in the field.

Deep Interval Depth (10-15 feet bgs)

CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

Total naphthalenes were detected at concentrations above the CUL in one sample with a concentration of 87 mg/kg.

3.3.4 Results Summary

153 soil samples were collected and analyzed for TPH as GRO, DRO and HO, cPAHs and naphthalenes. A summary of the soil analytical results is presented in the following table.

COC	Number of soil samples analysed ²			Number of soil samples containing COC above CUL		
	(0-5)	(5-10)	(10-15)	(0-5)	(5-10)	(10-15)
GRO	64	71	18	4	15	1
DRO	64	71	18	0	4	1
HO	64	71	18	0	9	3
cPAHs	64	71	18	0	7	2
Naphthalenes	64	71	18	2	13	1
Total DUs to be Excavated ¹				4	26	6

1 = Total soil samples may be different that the sum of numbers for each COC since the same sample could contain more than one exceedance.

2 = Quality control samples are not included in total soil samples count for this table.

Arcadis examined the chromatograms for samples SB-41-B-12.5, SB-41-C-12.5, and SB-41-D-12.5 due to their exclusive HO exceedances. Due to the presence of large amounts of natural organic material ([NOM]; woody, organic debris) observed along the western portion of the sampling grid, Arcadis believes that detected exceedances at these locations for DRO and HO indicate that NOM has influenced the results. Since these chromatograms do not indicate the presence of gasoline, diesel or heavy range petroleum products, these DUs are assumed to be naturally occurring organic matter and will not be removed during excavation activities. These chromatograms and associated assessment are included as Appendix C.

3.4 Pre-Excavation Groundwater Monitoring Report

The Pre-Excavation Groundwater Monitoring event was completed on September 2, 2015 following pre-excavation soil sampling activities. The report is included as Appendix D.

4 CONSTRUCTION PLANS AND SPECIFICATIONS

A preliminary outline of the anticipated excavation procedure and activities is presented in the following sections. CPS drawings are included as Appendix E. Excavation activities will be completed under the supervision of Arcadis field staff.

4.1 Preliminary Excavation Plan

4.1.1 Well Abandonment

Prior to excavation activities, four monitoring wells within proposed areas of excavation (MW-10, MW-11, MW-12 and MW-6R) will be decommissioned following Washington State Standards (WAC 173-160-381). As described below, following the completion of the proposed excavation, one new monitoring well will be installed approximately 5 feet to the south of MW-10. The proposed monitoring well location is depicted on the restoration plan included in the CPS drawings included as Appendix E.

4.1.2 Temporary Erosion and Sedimentation Control

Erosion and sediment control best management practices (BMPs) will be implemented to minimize storm and surface water pollution due to site construction activities. Temporary BMPs used at the site will include wattles and sand bags around stormwater infrastructure, a construction entrance, and a silt fence surrounding the active work area. An erosion and sediment control plan has been prepared as part of the CPS drawings included as Appendix E.

4.1.3 Excavation Area

The extent of remedial excavation was established based on the analytical results collected as part of the Pre-excavation Soil Sampling event. Soil within each DU where analytical samples exceed CULs will be excavated and disposed off-site. DUs measure 10 feet by 10 feet and were evaluated in 5 foot intervals, up to a maximum depth of 15 feet bgs. Three DUs will be excavated within the shallow interval depth, 26 DUs will be excavated in the medium interval depth, and 6 DUs will be excavated within the deep depth interval. In addition, 10 DUs that were previously identified within the shallow interval depth will be removed. In total, approximately 840 cubic yards of soil will be excavated. The excavation areas are included in the CPS drawings as Appendix E.

In locations where there are exceedances within the middle or deep interval, but not within the shallow interval, the top 5 feet of soil will be excavated, stockpiled and used as backfill above 5 feet bgs in the excavated DUs.

4.1.4 Existing Piping Abandonment And Debris Handling

Underground piping present on the western side of the excavation area will be removed above 5 feet bgs with the remaining piping abandoned in place. The end of the abandoned piping below 5 feet will be sealed and grouted in place.

CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

A metal sheet is present on the ground surface within sample grids G-5, G-6, H-5 and H-6. The metal sheet, including all other surficial debris encountered during excavation activities, will be relocated or disposed of off-site prior to excavation in that area.

4.1.5 Soil Handling

Soil will be excavated mechanically using trench boxes at depths below 5 feet bgs. This approach will not require dewatering within the excavation area. DU locations will be excavated to the appropriate depth, then backfilled with clean coarse angular material below the water table. During previous groundwater monitoring events, groundwater has been observed between 1.9 and 3.9 feet bgs in monitoring wells within the excavation area (MW-10, MW-11, MW-12, MW-6R). Soils from DUs that are excavated but do not exceed CULs will be stockpiled and reused as backfill above 5 feet bgs. Impacted soil will be stockpiled on-site and loaded into dump trucks for hauling and off-site disposal.

A staging area for placement of impacted soils will be established on the north side of the excavation and will consist of a double layer of chemically resistant reinforced polyethylene liner wrapped over staked hay bales on the edges. The containment area will also be surrounded by silt fencing and will be covered with plastic sheeting during while staff is off-site. Trucks may also be directly loaded in the areas that are located adjacent to the excavation. Locations of soil stockpile areas are shown on the CPS drawings included as Appendix E. On-site truck routes are described in the Traffic Control Plan included as Appendix F.

4.1.6 Fill Material Specifications

To restore the excavations to pre-existing grade and create a stable surface, a mixture of coarse sand, aggregate, previously-excavated material/imported general fill, and topsoil will be used to backfill excavated areas. A processed sand and aggregate mixture with minimal fines content will be used as backfill below the groundwater table because it will compact readily by tamping with the excavator bucket and because its strength will not be compromised by being placed underwater.

The sand and aggregate mixture will be placed in approximately horizontal layers, although it is recognized that backfilling below the water table will limit the operator's control of lift thickness. The aggregate will be compacted by tamping with the excavator bucket. Aggregate placement will continue until the grade is above the groundwater table, at which point general fill will be placed to grade.

Backfilling to grade above the groundwater table will be accomplished using previously excavated soil with concentrations below MTCA Method A CULs. If additional material is needed, general fill will be imported from an off-site source. Prior to acceptance of an off-site borrow source, Arcadis will review fill specifications to verify the lack of chemical constituents above applicable criteria and to establish basic geotechnical properties. The previously-excavated soil/ imported general fill will be placed in lifts of controlled thickness and compacted using equipment appropriately sized for the excavation. Because of the variable nature of the previously-excavated soil/general fill, compaction assessment may be assessed by proof-rolling or similar testing rather than by achieving a percentage of maximum dry density from a laboratory compaction curve. A test pad may also be used to establish the necessary compaction effort so that direct testing of the backfill in the excavations will not be necessary. Fill material specifications and restoration plan are presented in the CPS included as Appendix E.

4.1.7 Monitoring Well Installation

As mentioned above, monitoring wells within areas of excavation will be abandoned prior to removal activities. Arcadis will install one replacement monitoring (MW-13) to ensure adequate downgradient monitoring. If additional monitoring wells are deemed necessary, the specific locations will be determined post excavation.

4.2 Waste Characterization and Disposal

Soil will be disposed of at a Subtitle D landfill approved to accept petroleum contaminated soil. Waste will be characterized using the sampling data collected during the pre-excavation soil sampling event. If additional analytical is required by the waste disposal facility or Ecology, additional sampling of the impacted stockpile for select constituents of concern will be performed. It is anticipated that the material will be classified as non-hazardous, non-regulated, petroleum contaminated soil.

Dump trucks and trailers, equipped with an open-box bed, will loaded onsite. Prior to loaded trucks leaving the property, tires will be inspected and cleaned manually to remove visible debris. All loads will be covered to control fugitive dust during transportation. West Bay Drive will be monitored to confirm that excavated materials are not tracked to the roadway. All trucks will be transported under bill of lading and soils excavated will be tracked with weight tickets provided by the trucking company to the Arcadis staff.

4.3 Permitting Requirements

In addition to the approved State Environmental Policy Act (SEPA) Checklist and Unanticipated Discovery of Cultural Resources and Human Skeletal Remains Plan prepared as part of the WP (Arcadis 2015), the following plans have been prepared as part of these CPS documentation:

- Stormwater Pollution Prevention Plan (SWPPP) in accordance with the Washington State water pollution control requirements (Chapter 90.48 Revised Code of Washington [RCW]) - An electronic notice of intent (eNOI) has been submitted for coverage under the Washington State Construction Stormwater Permit. Arcadis is currently working with Ecology toward approval, which will be completed within 60 days prior to the commencement of work. The SWPPP is included as Appendix G.
- Traffic Control Plan in accordance with Washington State Department of Transportation requirements - Included as Appendix F.

Additionally, a clearing permit in accordance with the City of Olympia Municipal Code (Chapter 16.48) will be prepared prior to construction activities. An Air Monitoring Plan will also be prepared and implemented by the selected excavation contractor prior to excavation activities in accordance with the Regulations of the Olympic Region Clean Air Agency and the Washington State Clean Air Act (Chapter 70.94 RCW).

The cleanup action must still comply with the substantive requirements of the laws in accordance with Chapter VII, Section O, Paragraph 2 of the AO and with WAC 173-340-710(9)(c). Although no Shoreline Substantial Development permit (City of Olympia Municipal Code Chapter 14.08) is required under WAC 173-340-710(9)(c), Arcadis will evaluate the substantive requirements of the Shoreline Management Act

CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

(Chapter 90.58 RCW) and applicable Shoreline Management Plan (Chapter 173-27 WAC) in coordination with the City of Olympia.

5 REFERENCES

Arcadis U.S., Inc. 2015. Pre-excavation Soil Sampling and Excavation Work Plan, Former ARCO Olympia Bulk Terminal, Industrial Petroleum Distributors Site (Facility Identification No. 1436), 1120 West Bay Drive, Olympia, Washington. June 2.

Washington State Department of Ecology, 2014. Cleanup Action Plan, Industrial Petroleum Distributors. October.

Washington State Department of Ecology, 2014. Agreed Order No. DE 10470. October 24.

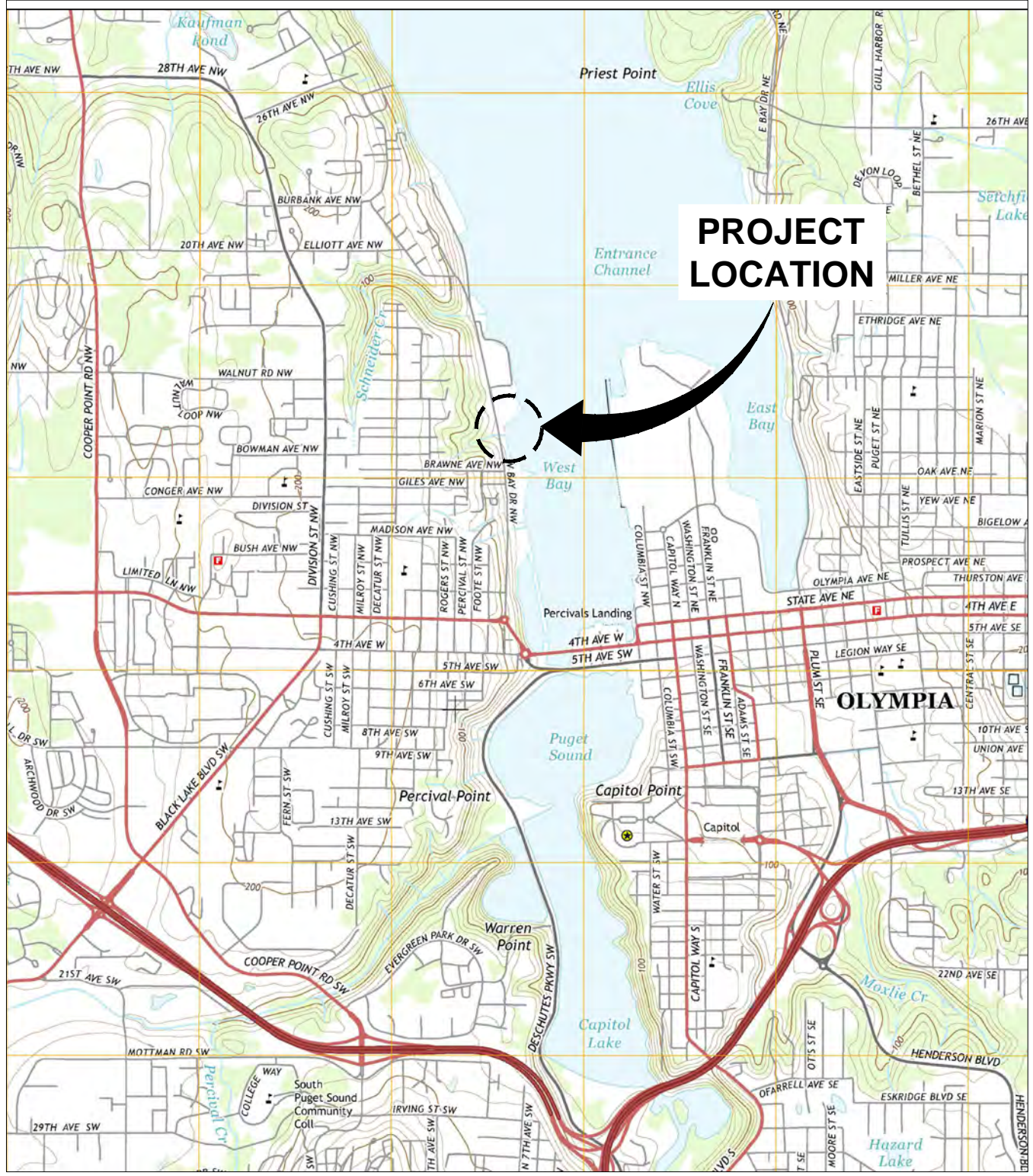
TABLES



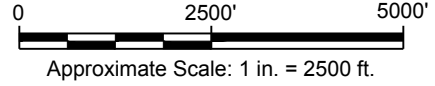
FIGURES



CITY:(Revd) DIV:GROUP:(Revd) DB:(Revd) LD:(Opt) PIC:(Opt) PM:(Revd) TM:(Opt) LTR:(Opt)ON*OFF=REF*
 G:\ENV\CAD\Emeryville\ACT\G08BPNAW60\K0000\Const Plans&Specs 122015\DWG\G08BPNAW60\N01.dwg LAYOUT: 1 SAVED: 12/14/2015 1:24 PM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 12/22/2015 11:47 AM BY: REYES,ALEC
 XREFS: IMAGES: TOPO 2014 BulkTerminal\OlympiaWA.jpg PROJECTNAME: ----



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., TUMWATER, WASHINGTON, 2014



BP WEST COAST PRODUCTS LLC
 FORMER INDUSTRIAL PETROLEUM DISTRIBUTORS
 BULK TERMINAL, 1120 WEST BAY DRIVE, OLYMPIA, WA
CONSTRUCTION PLANS AND SPECIFICATIONS

SITE LOCATION MAP

ARCADIS | Design & Consultancy
 for natural and built assets

FIGURE
1

CITY:\(Read) DIV\GROUP\Read\DE\Read\LD\Opt\ PIC\Opt\ PM\Read\ Lyr\Opt\ION\OFF\REF\ G:\ENVCAD\Emeryville\ACT\GP\98PNA\WA60\0000\Const\Plans&Specs\12-2015\DWG\GP98PNA\WA60_C02.dwg LAYOUT: 2. SAVED: 12/14/2015 1:26 PM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ACAD2.CTB PLOTTED: 12/22/2015 11:53 AM BY: REYES, ALEC



LEGEND

- SUBJECT PROPERTY LINE BOUNDARY
- NOT DETECTED ABOVE LABORATORY REPORTING LIMIT OR DETECTED BELOW OR = MTCA-A
- DETECTED > MTCA-A
- TPH-G
- TPH-D/HO
- cPAHs
- Naph
- TPH-G = TOTAL PETROLEUM HYDROCARBONS AS GASOLINE RANGE ORGANICS
- TPH-D/HO = TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND HEAVY OIL ORGANICS RANGE
- cPAH = CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS ADJUSTED FOR TOXICITY
- NAPH = NAPHTHALENES
- MTCA-A = MTCA METHOD A CLEANUP LEVEL
- EXCAVATION GRIDS

NOTE: SHALLOW INTERVAL DEPTH IS FROM 0 to 5 FEET BELOW GROUND SURFACE

ABANDONED PIER

Approximate Scale: 1 in. = 20 ft.

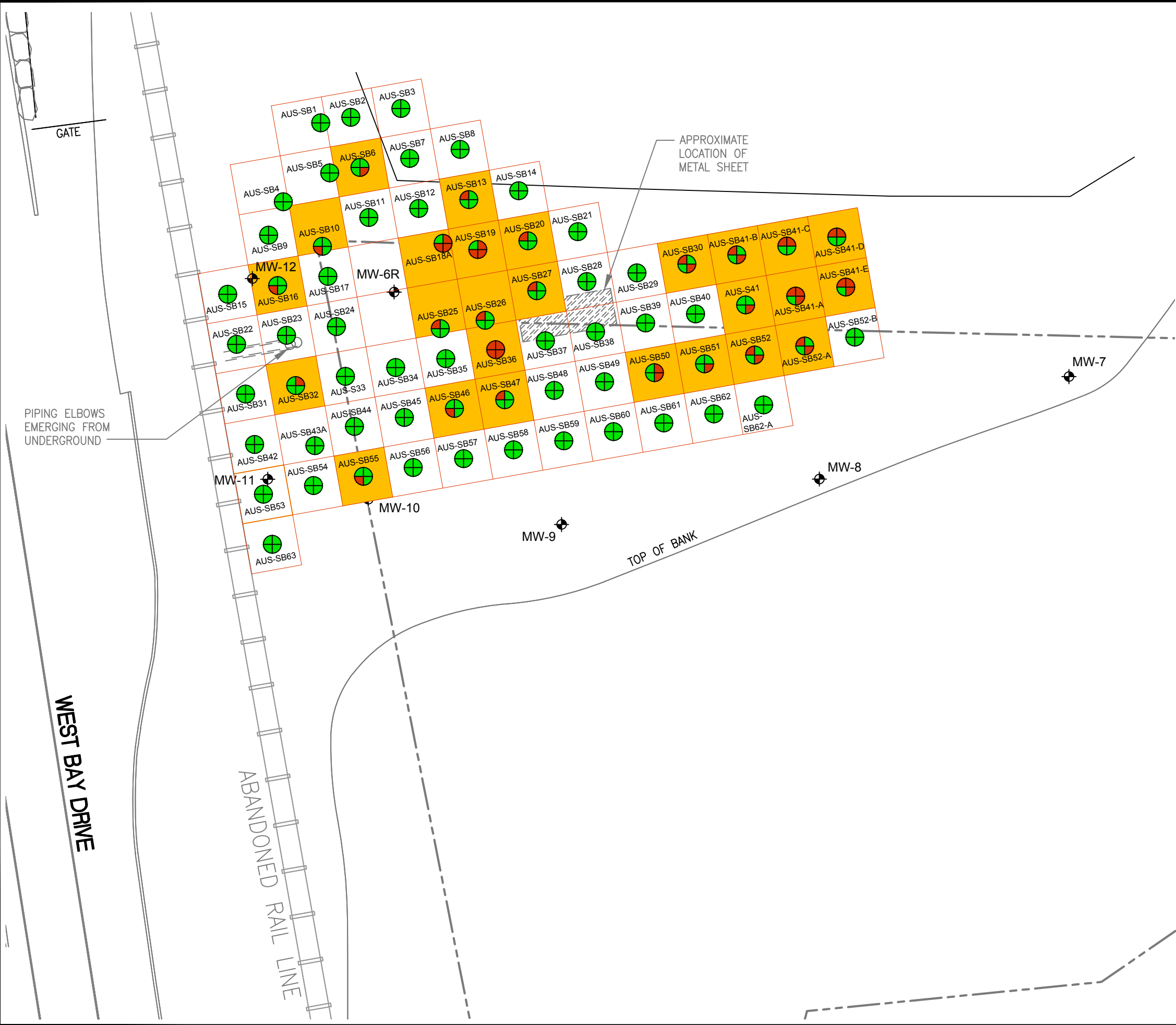
THIS MAP PREPARED FROM FIELD SURVEYS BY OTAK IN MAY 2010 AND OCTOBER 2010.

BP WEST COAST PRODUCTS LLC
FORMER INDUSTRIAL PETROLEUM DISTRIBUTORS
BULK TERMINAL, 1120 WEST BAY DRIVE, OLYMPIA, WA
CONSTRUCTION PLANS AND SPECIFICATIONS

SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS - SHALLOW INTERVAL DEPTH

FIGURE 2

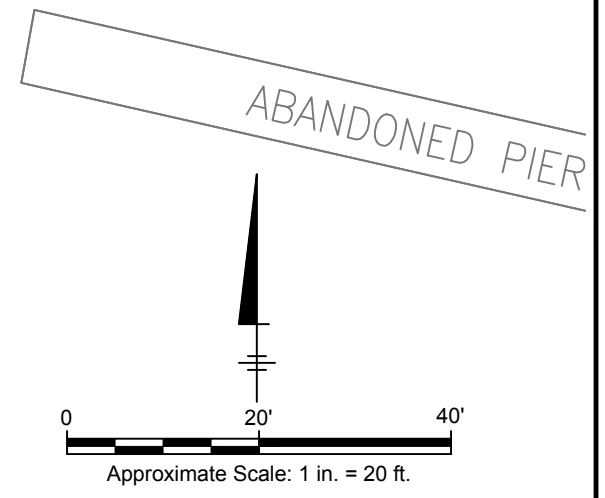
CITY:\(Read) DIV\GROUP\Read DB\Read LD\Opt PIC\Opt PM\Read Lyr\Opt\ON\OFF=REF G:\ENV\CAD\Emeryville\ACT\GPO9BPN\WA60\000\Const Plans&Specs 12-2015\DWG\GPO9BPN\WA60 C03.dwg LAYOUT: 3 SAVER: 12/22/2015 11:52 AM ACADVER: 19.1S (LMS TECH) PAGES: 19 PLOTSTYLETABLE: ACAD2.ctb PLOTTED: 12/22/2015 11:53 AM BY: REYES, ALEC



LEGEND

- SUBJECT PROPERTY LINE BOUNDARY
- NOT DETECTED ABOVE LABORATORY REPORTING LIMIT OR DETECTED BELOW OR = MTCA-A
- DETECTED > MTCA-A
- TPH-G
- TPH-D/HO
- cPAHs
- Naph
- TPH-G = TOTAL PETROLEUM HYDROCARBONS AS GASOLINE RANGE ORGANICS
- TPH-D/HO = TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND HEAVY OIL ORGANICS RANGE
- cPAH = CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS ADJUSTED FOR TOXICITY
- NAPH = NAPHTHALENES
- MTCA-A = MTCA METHOD A CLEANUP LEVEL
- EXCAVATION GRIDS

NOTE:
MIDDLE INTERVAL DEPTH IS FROM 5 TO 10 FEET BELOW GROUND SURFACE



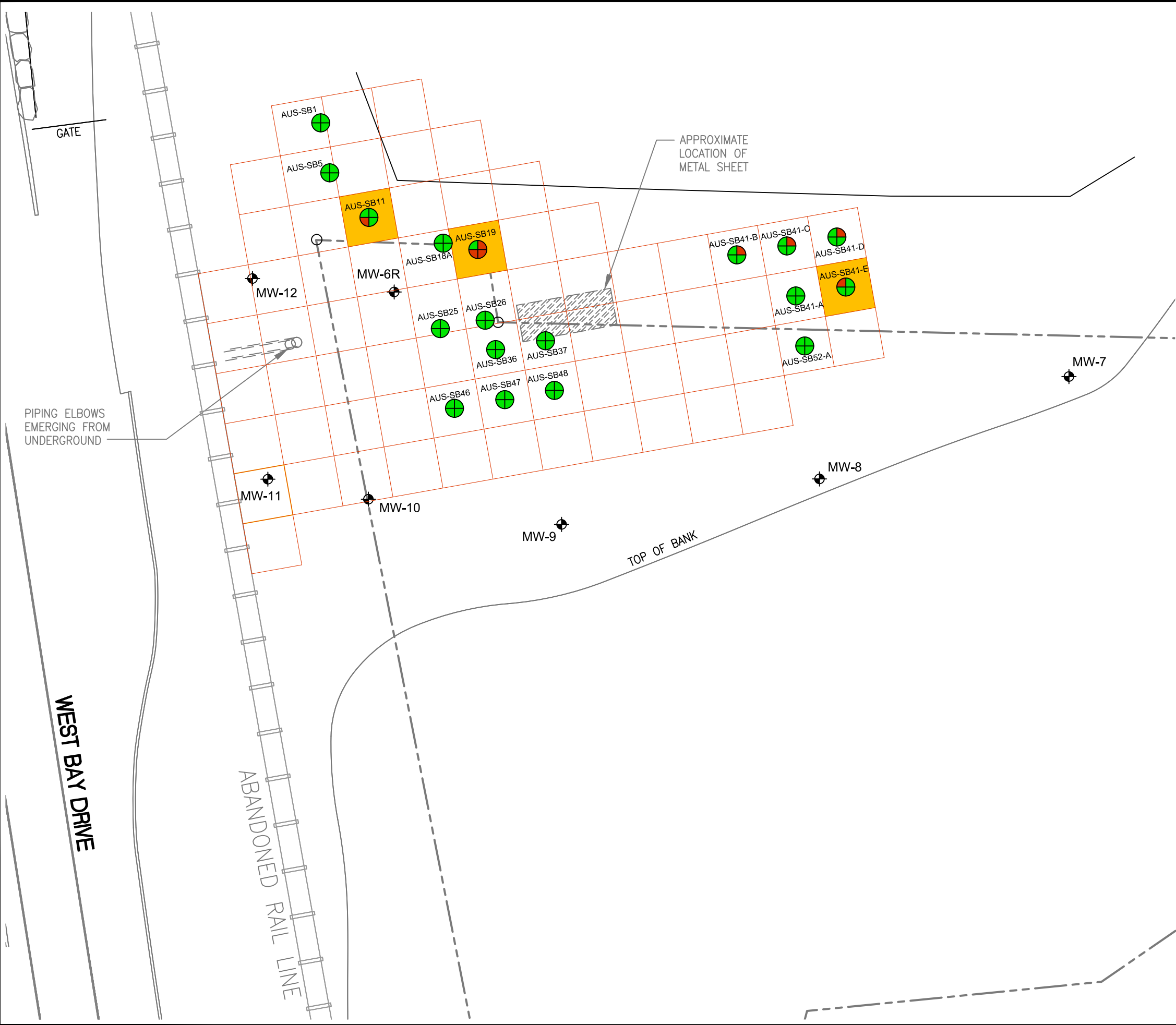
THIS MAP PREPARED FROM FIELD SURVEYS BY OTAK IN MAY 2010 AND OCTOBER 2010.

BP WEST COAST PRODUCTS LLC
FORMER INDUSTRIAL PETROLEUM DISTRIBUTORS
BULK TERMINAL, 1120 WEST BAY DRIVE, OLYMPIA, WA
CONSTRUCTION PLANS AND SPECIFICATIONS

SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS - MIDDLE INTERVAL DEPTH



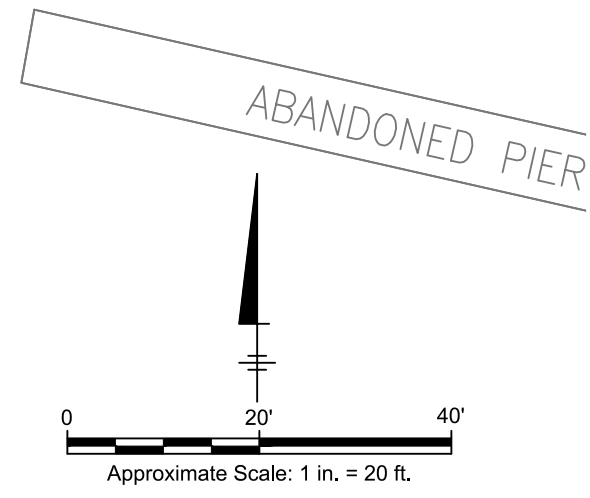
CITY:\Reed\DIV\GROUP\Reed\DB\Reed\LD\Opt\PIC\Opt\PM\Reed\TM\Opt\LYR\Opt\CON\OFF=REF*
 G:\ENVCAD\Emery\file\ACT\GPOBPNNAWA60\K0000\Remedial\EXC 09-2016\DWG\GPOBPNNAWA60 CO4.dwg LAYOUT_4_SAVED_9/21/2016 3:33 PM ACADVER: 19.1S (LMS TECH) PAGES: 4 PLOTSETUP: --- PLOTSTYLETABLE: ACAD2.CTB PLOTTED: 9/21/2016 3:57 PM BY: REYES, ALEC



LEGEND

- SUBJECT PROPERTY LINE BOUNDARY
- NOT DETECTED ABOVE LABORATORY REPORTING LIMIT OR DETECTED BELOW OR = MTCA-A
- DETECTED > MTCA-A
- TPH-G TPH-D/HO
- cPAHs Naph
- TPH-G = TOTAL PETROLEUM HYDROCARBONS AS GASOLINE RANGE ORGANICS
- TPH-D/HO = TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND HEAVY OIL ORGANICS RANGE
- cPAH = CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS ADJUSTED FOR TOXICITY
- NAPH = NAPHTHALENES
- MTCA-A = MTCA METHOD A CLEANUP LEVEL
- EXCAVATION GRIDS

NOTE:
 DEEP INTERVAL DEPTH IS FROM 10 TO 15 FEET BELOW GROUND SURFACE



THIS MAP PREPARED FROM FIELD SURVEYS BY OTAK IN MAY 2010 AND OCTOBER 2010.

BP WEST COAST PRODUCTS LLC
 FORMER INDUSTRIAL PETROLEUM DISTRIBUTORS
 BULK TERMINAL, 1120 WEST BAY DRIVE, OLYMPIA, WA
CONSTRUCTION PLANS AND SPECIFICATIONS

SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS - DEEP INTERVAL DEPTH

ARCADIS Design & Consultancy for natural and built assets

FIGURE
4

APPENDIX A

Data Validation Reports



BP OLY

Data Review

OLYMPIA, WA

Semivolatiles and TPH

SDG # 1586402

Analyses Performed By:
Lancaster Laboratories
Lancaster, PA

Report # 24719R
Review Level: Tier II
Project: GP09BPNA.WA60.K000

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1586402 for samples collected in association with the BP OLY site. The review was conducted at a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	TPH	MET	TSS
AUS-SB-41(2-2.5)	8015041	Soil	08/17/15			X	X		
AUS-SB-52(2-2.5)	8015044	Soil	08/17/15			X	X		
AUS-SB-62(2-2.5)	8015045	Soil	08/17/15			X	X		
AUS-SB-1A(4.5-5)	8015046	Soil	08/17/15			X	X		
AUS-SB-2(2-2.5)	8015047	Soil	08/17/15			X	X		
AUS-SB-3(2-2.5)	8015048	Soil	08/17/15			X	X		
AUS-SB-5A(4.5-5)	8015049	Soil	08/17/15			X	X		
AUS-SB-6(2-2.5)	8015050	Soil	08/17/15			X	X		
AUS-SB-7(2-2.5)	8015051	Soil	08/17/15			X	X		
AUS-SB-8(2-2.5)	8015052	Soil	08/17/15			X	X		
AUS-SB-51(2-2.5)	8015053	Soil	08/17/15			X	X		
AUS-SB-9(2-2.5)	8015054	Soil	08/17/15			X	X		
AUS-SB-10A(2-2.5)	8015055	Soil	08/17/15			X	X		
AUS-SB-11(2-2.5)	8015056	Soil	08/17/15			X	X		
AUS-SB-61(2-2.5)	8015057	Soil	08/17/15			X	X		
AUS-SB-50(2-2.5)	8015058	Soil	08/17/15			X	X		
AUS-SB-40(2-2.5)	8015059	Soil	08/18/15			X	X		
AU-SB-12(2-2.5)	8015062	Soil	08/18/15			X	X		
AU-SB-13(2-2.5)	8015063	Soil	08/18/15			X	X		
AU-SB-30(2-2.5)	8015064	Soil	08/18/15			X	X		
AU-SB-14(2-2.5)	8015065	Soil	08/18/15			X	X		
AU-SB-20(2-2.5)	8015066	Soil	08/18/15			X	X		
AU-SB-21(2-2.5)	8015067	Soil	08/18/15			X	X		
AU-SB-29(2-2.5)	8015068	Soil	08/18/15			X	X		
AU-SB-19(2-2.5)	8015069	Soil	08/18/15			X	X		
AU-SB-39(2-2.5)	8015070	Soil	08/18/15			X	X		
AU-SB-18(2-2.5)	8015071	Soil	08/18/15			X	X		

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	TPH	MET	TSS
AU-SB-17(2-2.5)	8015072	Soil	08/18/15			X	X		
AU-SB-28(2-2.5)	8015074	Soil	08/18/15			X	X		
AU-SB-38(2-2.5)	8015076	Soil	08/18/15			X	X		
DUP-1	8015078	Soil	08/17/15	AUS-SB-52(2-2.5)		X	X		
DUP-2	8015079	Soil	08/18/15	AU-SB-12(2-2.5)		X	X		
Trip Blank	8015080	Water	08/17/15				X		

Note:

1. Samples AUS-SB-41(2-2.5) and AUS-SB-40(2-2.5) were used as the MS/MSDs for the SVOC analyses.
2. Samples AUS-SB-41(2-2.5), AUS-SB-40(2-2.5) and AUS-SB-19(2-2.5) were used as the MS/MSDs for the Dx analyses.
3. Samples AUS-SB-41(2-2.5) and AUS-SB-40(2-2.5) were used as the MS/MSDs for the Gx analyses.
4. Sample DUP-9 from SDG 1597468 was a blind field duplicate associated with sample AUS-SB-41(2-2.5).

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8270 (SIM) and ECY 97-602 . Data were reviewed in accordance with the USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines and as requested by USEPA Region 10:

- Concentration (C) Qualifiers
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - U The analyte was not detected at or above the reported result.
 - J The analyte was positively identified. The associated numerical result is an estimate.
 - UJ The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
 - R The data are unusable for all purposes.

 - N There is evidence the analyte is present in this sample.

 - JN There is evidence the analyte is present in this sample. The associated numerical result is an estimate.
 - D The sample result is reported from a diluted analysis.
 - EJ The sample result is greater than the calibration range. The associated numerical value is an estimated concentration only.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270 (SIM)	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
AUS-SB-52(2-2.5)	Fluoranthene-d10	AC
	Benzo(a)pyrene-d12	AC
	1-Methylnaphthalene-d10	>UL
AUS-SB-38(2-2.5)	Fluoranthene-d10	<LL but >10%
	Benzo(a)pyrene-d12	<LL but >10%

Sample Locations	Surrogate	Recovery
AUS-SB-38(2-2.5)	1-Methylnaphthalene-d10	<LL but >10%
DUP-1	Fluoranthene-d10	AC
	Benzo(a)pyrene-d12	AC
	1-Methylnaphthalene-d10	>UL

UL Upper control limit
 LL Low Limit
 AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Surrogates diluted below the calibration curve due to the high concentration of a target compounds	Non-detect	J ¹
	Detect	

¹ A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
AUS-SB-41(2-2.5)	Dibenz(a,h)anthracene	AC	<LL but >10%
	Indeno(1,2,3-cd)pyrene	AC	<LL but >10%
	1-Methylnaphthalene	AC	>UL
	2-Methylnaphthalene	AC	>UL

Sample Locations	Compound	MS Recovery	MSD Recovery
AUS-SB-41(2-2.5)	Napthalane	AC	>UL
AUS-SB-40(2-2.5)	Dibenz(a,h)anthracene	<LL but >10%	<LL but >10%
	Indeno(1,2,3-cd)pyrene	<LL but >10%	<LL but >10%

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
AUS-SB-41(2-2.5)	Napthalane

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5. Laboratory Control Sample

The LCS/ analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
AUS-SB-52(2-2.5)/DUP-1	Benzo(b)fluoranthene	0.014 J	0.0092 J	AC
	Chrysene	0.015 J	0.010 J	AC
	1-Methylnaphthalene	4.6	7.8	51.6%
	2-Methylnaphthalene	7.7	12	43.7%
	Naphthalene	1.9	2.9	41.7%
AUS-SB-12(2-2.5)/DUP-2	Benzo(b)fluoranthene	0.0084 J	0.0093 J	AC
	Chrysene	0.0011 J	0.0071 J	AC
	1-Methylnaphthalene	0.0034	0.0017 J	AC
	2-Methylnaphthalene	0.0060	0.0032	AC
	Naphthalene	0.0081	0.0043	AC

AC Acceptable

The compound(s) 1-methylnaphthalene associated with sample locations AUS-SB-52(2-2.5) and DUP-1 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

7. System Performance and Overall Assessment

The laboratory noted that the internal standard Perylene-d12 did not meet QC acceptance limits for sample locations AUS-SB-39(2-2.5), AUS-SB-38(2-2.5) and DUP-1. The results for associated compounds Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene and Dibenz(a,h)anthracene in sample locations AUS-SB-39(2-2.5), AUS-SB-38(2-2.5) and DUP-1 were qualified as estimated.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270 (SIM)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X	X		
Field Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

%R Percent recovery

RPD Relative percent difference

NWTPH-GX AND DX

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH – Gx and Dx ECY 97-602	Soil	14 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
AUS-SB-51(2-2.5) AUS-SB-9(2-2.5) AUS-SB-10A(2-2.5) AUS-SB-11(2-2.5) AUS-SB-61(2-2.5)	Trifluorotoluene-F	>UL

Sample Locations	Surrogate	Recovery
AUS-SB-50(2-2.5) AU-SB-12(2-2.5) AU-SB-13(2-2.5) AU-SB-30(2-2.5) AUS-SB-40(2-2.5) AU-SB-40(2-2.5)-MS AU-SB-40(2-2.5)-MSD AU-SB-14(2-2.5) AU-SB-20(2-2.5) AU-SB-21(2-2.5) AU-SB-29(2-2.5) AU-SB-19(2-2.5) AU-SB-18(2-2.5) AU-SB-28(2-2.5) AU-SB-39(2-2.5) DUP-2	Trifluorotoluene-F	>UL
DUP-1 AU-SB-52(2-2.5)	Trifluorotoluene-F	D
AU-SB-30(2-2.5)	Orthoterphenyl	>UL

Upper control limit (UL)
Diluted (D)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
AU-SB-40(2-2.5)	DRO/HRO	AC	<LL but >10%
AU-SB-41(2-2.5)	Gx	>UL	>UL

AC = Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration (D).	Detect	No Action
	Non-detect	

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
AU-SB-41(2-2.5)	Gx

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the

RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
AUS-SB-52(2-2.5)/DUP-1	Gx	2400	1200	AC
	DRO	1300	3800	98%
	HRO	380 U	170 J	AC
AUS-SB-12(2-2.5)/DUP-2	Gx	2.4 J	1.7 J	AC
	DRO	3.6 J	8.3 U	AC
	HRO	16 J	25 J	AC

AC = Acceptable.

The compound DRO associated with sample locations AUS-SB-52(2-2.5) and DUP-1 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR TPH

Gx/Dx; ECY 97-602	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Trip blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

%R - percent recovery, RPD - relative percent difference,

VALIDATION PERFORMED

BY: Rachelle Borne

SIGNATURE: 

DATE: November 30, 2015

PEER REVIEW: Joseph C. Houser

DATE: December 11, 2015

**CHAIN OF CUSTODY/
CORRECTED SAMPLE ANALYSIS DATA SHEETS**



Laboratory Management Program LaMP Chain of Custody Record

R224110

BP Site Node Path: _____

Req Due Date (mm/dd/yy): Standard TAT Rush TAT: Yes ___ No ___

BP Facility No: Former Olympia Bulk Plant

Lab Work Order Number: 175798

Lab Name: Lancaster Laboratories	Facility Address: Forge 1117 West Bay Drive	Consultant/Contractor: ARCADIS
Lab Address: 2425 New Holland Pike	City, State, ZIP Code: Olympia, WA	Consultant/Contractor Project No: CPO98ANA.WA.60
Lab PM: Stacy Butt	Lead Regulatory Agency: WADOE	Address: 1100 Olive Way, Suite 800
Lab Phone: 717-656-2300	California Global ID No.: -	Consultant/Contractor PM: Brian Marcum
Lab Shipping Acont: -	Enfos Proposal No: -	Phone: 206-726-4755 Email: brian.marcum@arcadis-us.com
Lab Bottle Order No: 175798	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: Brian Marcum and to lab.enfosdoc@bp.com
Other Info:	Stage: Activity:	Invoice To: BP ___ Contractor X

BP Project Manager (PM): -	Matrix	No. Containers / Preservative	Requested Analyses	Report Type & QC Level
BP PM Phone: -				Standard X
BP PM Email: -				Full Data Package ___

Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container	Unpreserved	H2SO4	HNO3	HCl	Methanol	PAHs + Naph 63 2205/2206	CRD 63 MWTPH-Gx	PRD 63 MWTPH-Dx	Comments
	AUS-SB-41(2-2.5)	08-17-15	1130	X				9	6				3	X	X	X	MS/MSD, Rush TAT(2 hrs)
	AUS-SB-52(2-2.5)		1200	X				3	2				1	X	X	X	Rush TAT (2-Days)
	AUS-SB-62(2-2.5)		1215	X				3	2				1	X	X	X	
	AUS-SB-1A(2-2.5) 366 (4.5-5)		1225														
	AUS-SB-2(2-2.5)		1235														
	AUS-SB-3(2-2.5)		1245														
	AUS-SB-5A(2-2.5) (4.5-5)		1255														
	AUS-SB-6(2-2.5)		1305														
	AUS-SB-7(2-2.5)		1320														
	AUS-SB-8(2-2.5)	08-17-15	1340	X				3	2				1	X	X	X	

Sampler's Name: Eric Cooper	Relinquished By / Affiliation: S Deane	Date: 8/7/15	Time: 14:25	Accepted By / Affiliation: Y*2 G/ ELLE	Date: 8-20-15	Time: 10:00
Shipment Method: UPS	Ship Date: 08-19-15	8/19/15	1700			
Shipment Tracking No: 1Z 75Y 02X YO 4252 8367						

Special Instructions: Rush TAT for AUS-SB-41(2-2.5), AUS-SB-50(2-2.5) and AUS-SB-52(2-2.5)

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 15.2-4 °F(5) | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No



13255 1586407 8015041-80
Laboratory Management Program LaMP Chain of Custody Record

R224111

Page 2 of 4

BP Site Node Path: _____
 BP Facility No: Former Olympian Bulk Plant

Req Due Date (mm/dd/yy): Standard TAT Rush TAT: Yes ___ No ___
 Lab Work Order Number: 175798

Lab Name: <u>Lancaster Laboratories</u>	Facility Address: <u>1117 West Bay Drive</u>	Consultant/Contractor: <u>ARCADES</u>
Lab Address: <u>2425 New Holland Drive</u>	City, State, ZIP Code: <u>Olympia, WA</u>	Consultant/Contractor Project No: <u>GPO98PNA.WA60</u>
Lab PM: <u>Stacy Butt</u>	Lead Regulatory Agency: <u>WADOE</u>	Address: <u>1100 Olive Way, Suite 800</u>
Lab Phone: <u>717-656-2300</u>	California Global ID No.: _____	Consultant/Contractor PM: <u>Brian Marcum</u>
Lab Shipping Acct: _____	Enfos Proposal No: _____	Phone: _____ Email: <u>brian.marcum@arcades.us</u>
Lab Bottle Order No: <u>175798</u>	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: <u>Brian Marcum</u> and to <u>lab.enfosdoc@bp.com</u>
Other Info: _____	Stage: _____ Activity: _____	Invoice To: BP ___ Contractor <u>X</u>

BP Project Manager (PM): _____				Matrix				No. Containers / Preservative				Requested Analyses										Report Type & QC Level											
BP PM Phone: _____				Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container	Unpreserved	H2SO4	HNO3	HCl	Methanol	PAHs + Naph by 2000 SOP	GRO by NWRPH-6x	DRO by NWRPH-Dx											Standard <u>X</u>	Full Data Package _____					
BP PM Email: _____																											Comments						
Lab No.	Sample Description	Date	Time											Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.																			
	AUS-SB-51 (2-2.5)	08-17-15	1400	X				5	2				1	X	X	X																	
	AUS-SB-9 (2-2.5)		1420																														
	AUS-SB-10A (2-2.5)		1430																														
	AUS-SB-11 (2-2.5)		1440																														
	AUS-SB-61 (2-2.5)		1510	Y				Y	Y				Y																				
	AUS-SB-50 (2-2.5)	08-17-15	1545	X				3	2																								
	AUS-SB-40C (2-2.5)	08-18-15	0905	X				9	6																								
	AUS-SB-12 (2-2.5)		0826					3	2																								
	AUS-SB-13 (2-2.5)		0840	Y				3	2					Y	Y	Y																	
	AUS-SB-30C (2-2.5)	08-18-15	0855	X				3	2					X	X	X																	

Sampler's Name: <u>Eric Espie</u>	Relinquished By / Affiliation		Date	Time	Accepted By / Affiliation		Date	Time
Sampler's Company: <u>ARCADES</u>	<u>Eric Espie</u>		<u>08/19</u>	<u>1700</u>				
Shipment Method: <u>UPS</u> Ship Date: <u>08-19-15</u>								
Shipment Tracking No: _____					<u>YBS IELCF</u>		<u>8-20-15</u>	<u>1000</u>

Special Instructions: _____

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 1.5-2.4 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No



13255 1586402 8015041-80
Laboratory Management Program LaMP Chain of Custody Record

R224112

Page 3 of 4

BP Site Node Path: _____

Req Due Date (mm/dd/yy): Standard TAT

Rush TAT: Yes ___ No ___

BP Facility No: Former Olympia Bulk Plant

Lab Work Order Number: 175798

Lab Name: <u>Lancaster Laboratories</u>	Facility Address: <u>1117 West Bay Drive</u>	Consultant/Contractor: <u>ARCADES</u>
Lab Address: <u>2425 New Holland Drive</u>	City, State, ZIP Code: <u>Olympia WA</u>	Consultant/Contractor Project No: <u>GPO9BPNA.WAGO</u>
Lab PM: <u>Stacy Burt</u>	Lead Regulatory Agency: <u>WA DOE</u>	Address: <u>1100 Olive Way, Suite 800</u>
Lab Phone: <u>717-656-2300</u>	California Global ID No.: <u>—</u>	Consultant/Contractor PM: <u>Brian Marcum</u>
Lab Shipping Acct: <u>1754-ee</u>	Enfos Proposal No: <u>—</u>	Phone: <u>—</u> Email: <u>brian.marcum@arcades.com</u>
Lab Bottle Order No: <u>175798</u>	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: <u>Brian Marcum</u> and to <u>lab.enfosdoc@bp.com</u>
Other Info: <u>—</u>	Stage: _____ Activity: _____	Invoice To: BP ___ Contractor <u>X</u>

BP Project Manager (PM): <u>—</u>	Matrix	No. Containers / Preservative	Requested Analyses	Report Type & QC Level
BP PM Phone: <u>—</u>				Standard <u>X</u>
BP PM Email: <u>—</u>				Full Data Package ___

Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container:	Unpreserved	H2SO4	HNO3	HCl	Methanol	PAHs + Naph by 3270C SW	GR0 by NWTPH-Gx	DRO by NWTPH-Dx	Comments
	AUS-SB-14(2-2.5)	08-18-15	0940	X				3	2				1	X	X	X	
	AUS-SB-20(2-2.5)	08-18-15	1000	X				3	2				1	X	X	X	
	AUS-SB-21(2-2.5)		1035														
	AUS-SB-29(2-2.5)		1040														
	AUS-SB-19(2-2.5)		1100														
	AUS-SB-39(2-2.5)		1110														
	AUS-SB-18(2-2.5)		1130														
	AUS-SB-17(2-2.5)		1140														
	AUS-SB-16(2-2.5)	↓	1320	↓				↓	↓				↓	↓	↓		
	AUS-SB-28(2-2.5)	08-18-15	1330	X				3	2				1	X	X	X	

Sampler's Name: <u>Eric Epke</u>	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: <u>ARCADES</u>	<u>Eric Epke</u>	<u>08/19</u>	<u>1700</u>			
Shipment Method: <u>UPS</u>	Ship Date: <u>08-19-15</u>					
Shipment Tracking No:				<u>4261ELCK</u>	<u>8/20/15</u>	<u>10:00</u>

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: (es)/No | Temp Blank: (es)/No | Cooler Temp on Receipt: 5-2.4 °F/(0) | Trip Blank: (es)/No | MS/MSD Sample Submitted: (es)/No



X13255 1586402 8015041-80
Laboratory Management Program LaMP Chain of Custody Record

R224113
Standard TAT
175798

BP Site Node Path: _____
 BP Facility No: Former Olympia Bulk Plant

Req Due Date (mm/dd/yy): _____
 Lab Work Order Number: _____

Lab Name: <u>Lancaster Laboratories</u>	Facility Address: <u>1117 West Bay Drive</u>	Consultant/Contractor: <u>ARCADIS</u>
Lab Address: <u>2425 New Holland Drive</u>	City, State, ZIP Code: <u>Olympia, WA</u>	Consultant/Contractor Project No: <u>CPO9BP.NA.WA60</u>
Lab PM: <u>Stacy Butt</u>	Lead Regulatory Agency: <u>WA DOE</u>	Address: <u>1100 Olive Way, Suite 800</u>
Lab Phone: <u>717-656-2500</u>	California Global ID No.: <u>—</u>	Consultant/Contractor PM: <u>Brian Marcum</u>
Lab Shipping Acct: _____	Enfos Proposal No: <u>—</u>	Phone: _____ Email: <u>Brian.marcum@arcadis-us.com</u>
Lab Bottle Order No: <u>175798</u>	Accounting Mode: Provision _____ OOC-BU _____ OOC-RM _____	Email EDD To: <u>Brian Marcum</u> and to <u>lab_enfosdoc@bp.com</u>
Other Info:	Stage: _____ Activity: _____	Invoice To: BP _____ Contractor <u>X</u>

BP Project Manager (PM): _____
 BP PM Phone: _____
 BP PM Email: _____

Lab No.	Sample Description	Date	Time	Matrix				No. Containers / Preservative							Requested Analyses									Report Type & QC Level				
				Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Containers	Unpreserved	H2SO4	HNO3	HCl	Methanol	PANL + NapH by SPLOL STM	CRD by NWTPH-6x	PRO by NWTPH-Dx												
	AUS-SP-15 (2-2.5)	08-18-15	1340	X				3	2																			
	AUS-SP-38 (2-2.5)	08-18-15	1405	X				3	2																			
	AUS-SP-49 (2-2.5)	08-18-15	1445	X				3	2																			
	DVP-1	08-17-15	—	X				3	2																			
	DVP-2	08-18-15	—	X				3	2																			
	TRIP BLANK	—	—		X			3					3															

Sampler's Name: <u>Eric Epple</u>	Relinquished By / Affiliation: <u>Eric Epple / [Signature]</u>	Date: <u>08-14</u>	Time: <u>1700</u>	Accepted By / Affiliation: _____	Date: _____	Time: _____
Sampler's Company: <u>ARCADIS</u>	_____					
Shipment Method: <u>UPS</u> Ship Date: <u>08-19-15</u>	_____					
Shipment Tracking No: _____	_____					

Special Instructions: _____

Sample Description: AUS-SB-41(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015041
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 11:30 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASB41

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0035 J	0.00080	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0035	0.00080	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.012	0.00080	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0026	0.00080	0.0020	1
10725	Chrysene	218-01-9	0.012	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0013 J	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0030 J	0.00080	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.024 J	0.00080	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.055 J	0.00080	0.0020	1
10725	Naphthalene	91-20-3	0.087 J	0.00080	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	27 J	1.5	7.5	31.27
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	28	3.6	8.3	1
02214	HRO C24-C40 w/Si Gel	n.a.	82	12	36	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	16.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 00:48	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 12:23	Marie D Beamenderfer	31.27
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 11:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015 19:50	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15237820002B	08/25/2015 19:44	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-41(2-2.5)-MS Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015042
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 11:30 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

ASB41

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.046	0.00079	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.042	0.00079	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.053	0.00079	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.042	0.00079	0.0020	1
10725	Chrysene	218-01-9	0.053	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	0.038	0.00079	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.038	0.00079	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.060	0.00079	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.090	0.00079	0.0020	1
10725	Naphthalene	91-20-3	0.12	0.00079	0.0020	1
GC Volatiles ECY 97-602 NWT PH-Gx						
02005	NWT PH-GX Soil C7-C12	n.a.	97	1.8	8.9	37.25
GC Petroleum ECY 97-602 NWT PH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	210	3.6	8.3	1
02214	HRO C24-C40 w/Si Gel	n.a.	110	12	36	1
Wet Chemistry SM 2540 G-1997						
00118	Moisture	n.a.	16.4	0.50	0.50	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 01:21	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602 NWT PH-Gx	1	15235A34A	08/23/2015 13:23	Marie D Beamenderfer	37.25
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 11:30	Client Supplied	n.a.
02214	NWT PH-Dx soil w/Si Gel	ECY 97-602 NWT PH-Dx modified	1	152520004A	09/11/2015 20:12	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWT PH-Dx 06/97	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
00118	Moisture	SM 2540 G-1997	1	15237820002B	08/25/2015 19:44	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-41(2-2.5)-MSD Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015043
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 11:30 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

ASB41

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.041	0.00079	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.041	0.00079	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.050	0.00079	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.045	0.00079	0.0020	1
10725	Chrysene	218-01-9	0.051	0.00039	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	0.031	0.00079	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.030	0.00079	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.075	0.00079	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.12	0.00079	0.0020	1
10725	Naphthalene	91-20-3	0.17	0.00079	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	45	1.4	6.8	28.37
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	170	3.6	8.3	1
02214	HRO C24-C40 w/Si Gel	n.a.	71	12	36	1
Wet Chemistry SM 2540 G-1997						
00118	Moisture	n.a.	16.4	0.50	0.50	1
00121	Moisture Duplicate	n.a.	14.3	0.50	0.50	1
The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 01:53	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15235A34A	08/23/2015 13:58	Marie D	28.37
06647	GC-5g Field Preserved MeOH	NWTPH-Gx				Beamenderfer	
		SW-846 5035A	1	201523338620	08/17/2015 11:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520004A	09/11/2015 20:33	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-41(2-2.5)-MSD Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015043
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 11:30 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00

630 Plaza Drive

Reported: 09/22/2015 16:07

Highlands Ranch CO 80129

ASB41

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	SM 2540 G-1997	1	15237820002B	08/25/2015 19:44	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	15237820002B	08/25/2015 19:44	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-52(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015044
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 12:00 by EE

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 08/20/2015 10:00

630 Plaza Drive

Reported: 09/22/2015 16:07

Highlands Ranch CO 80129

ASB52

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0084	0.021	10
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0084	0.021	10
10725	Benzo(b)fluoranthene	205-99-2	0.014 J	0.0084	0.021	10
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0084	0.021	10
10725	Chrysene	218-01-9	0.015 J	0.0042	0.021	10
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0084	0.021	10
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0084	0.021	10
10725	1-Methylnaphthalene	90-12-0	4.6 J	0.084	0.21	100
10725	2-Methylnaphthalene	91-57-6	7.7	0.084	0.21	100
10725	Naphthalene	91-20-3	1.9	0.0084	0.021	10
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	2,400 J	390	2,000	7673.56
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	1,300 J	38	89	10
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	130	380	10
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	22.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	08/31/2015 10:09	Brian K Graham	10
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	08/31/2015 10:42	Brian K Graham	100
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15235A34B	08/24/2015 18:03	Marie D	7673.56
06647	GC-5g Field Preserved MeOH	NWTPH-Gx				Beamenderfer	
		SW-846 5035A	1	201523338620	08/17/2015 12:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520004A	09/11/2015 23:48	Heather E Williams	10
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-52(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015044
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 12:00 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00

630 Plaza Drive

Reported: 09/22/2015 16:07

Highlands Ranch CO 80129

ASB52

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15237820002B	08/25/2015 19:44	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-62(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015045
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 12:15 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

ASB62

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00082	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.00098 J	0.00082	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0049	0.00082	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.00095 J	0.00082	0.0020	1
10725	Chrysene	218-01-9	0.0043	0.00041	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00082	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.00091 J	0.00082	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0011 J	0.00082	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0019 J	0.00082	0.0020	1
10725	Naphthalene	91-20-3	0.014	0.00082	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	2.0	9.9	40.14
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	6.6 J	3.7	8.6	1
02214	HRO C24-C40 w/Si Gel	n.a.	49	12	37	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	19.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 02:58	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 16:19	Marie D Beamenderfer	40.14
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 12:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015 20:55	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-1A(4.5-5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015046
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 12:25 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASB1A

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0012 J	0.00085	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.0014 J	0.00085	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.0035	0.00085	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	0.0014 J	0.00085	0.0021	1
10725	Chrysene	218-01-9	0.0028	0.00042	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00085	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00085	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.0029	0.00085	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.0049	0.00085	0.0021	1
10725	Naphthalene	91-20-3	0.0037	0.00085	0.0021	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.5	7.7	29.91
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	9.2	3.8	8.9	1
02214	HRO C24-C40 w/Si Gel	n.a.	64	13	38	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	22.0	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 03:32	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 16:54	Marie D Beamenderfer	29.91
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 12:25	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015 21:17	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-2(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015047
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 12:35 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

ASB02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00083	0.0021	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00083	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.0012 J	0.00083	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00083	0.0021	1
10725	Chrysene	218-01-9	0.0012 J	0.00041	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00083	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00083	0.0021	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00083	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.0011 J	0.00083	0.0021	1
10725	Naphthalene	91-20-3	0.0024	0.00083	0.0021	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.3	6.5	26.04
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	5.7 J	3.7	8.7	1
02214	HRO C24-C40 w/Si Gel	n.a.	49	12	37	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	20.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 04:04	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 17:29	Marie D Beamenderfer	26.04
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 12:35	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015 21:38	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-3(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015048
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 12:45 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

ASB03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0056	0.00082	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0062	0.00082	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.013	0.00082	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0052	0.00082	0.0020	1
10725	Chrysene	218-01-9	0.010	0.00041	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	0.00084 J	0.00082	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0028	0.00082	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0010 J	0.00082	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0020 J	0.00082	0.0020	1
10725	Naphthalene	91-20-3	0.0045	0.00082	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.5	7.3	29.4
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	8.7	3.7	8.7	1
02214	HRO C24-C40 w/Si Gel	n.a.	68	12	37	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	19.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 04:37	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 18:05	Marie D Beamenderfer	29.4
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 12:45	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015 22:00	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-5A(4.5-5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015049
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 12:55 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASB5A

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0029	0.00083	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.0031	0.00083	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.0060	0.00083	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	0.0020 J	0.00083	0.0021	1
10725	Chrysene	218-01-9	0.0043	0.00041	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00083	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0012 J	0.00083	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.0053	0.00083	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.012	0.00083	0.0021	1
10725	Naphthalene	91-20-3	0.0074	0.00083	0.0021	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.3	6.6	26.31
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.8	8.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	13	38	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	20.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 05:10	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 18:40	Marie D Beamenderfer	26.31
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 12:55	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015 22:22	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-6(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015050
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 13:05 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASB06

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.00095 J	mg/kg	mg/kg	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00091	0.0023	1
10725	Benzo(b)fluoranthene	205-99-2	0.0034	0.00091	0.0023	1
10725	Benzo(k)fluoranthene	207-08-9	0.00095 J	0.00091	0.0023	1
10725	Chrysene	218-01-9	0.0022 J	0.00045	0.0023	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00091	0.0023	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00091	0.0023	1
10725	1-Methylnaphthalene	90-12-0	0.0010 J	0.00091	0.0023	1
10725	2-Methylnaphthalene	91-57-6	0.0011 J	0.00091	0.0023	1
10725	Naphthalene	91-20-3	0.0070	0.00091	0.0023	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	2.4 J	mg/kg	mg/kg	32.37
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	13	mg/kg	mg/kg	1
02214	HRO C24-C40 w/Si Gel	n.a.	120	4.1	9.6	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	27.6	%	%	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 09:32	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 19:15	Marie D Beamenderfer	32.37
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 13:05	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015 23:05	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-7(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015051
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 13:20 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

ASB07

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0017 J	0.00086	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.0020 J	0.00086	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.0051	0.00086	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	0.0016 J	0.00086	0.0021	1
10725	Chrysene	218-01-9	0.0040	0.00043	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00086	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0010 J	0.00086	0.0021	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00086	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.0011 J	0.00086	0.0021	1
10725	Naphthalene	91-20-3	0.0022	0.00086	0.0021	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.4	7.1	27.33
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	5.9 J	3.9	9.1	1
02214	HRO C24-C40 w/Si Gel	n.a.	22 J	13	39	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	23.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 05:43	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 19:51	Marie D Beamenderfer	27.33
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 13:20	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015 23:26	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-8(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015052
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 13:40 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

ASB08

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0011 J	0.00080	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0013 J	0.00080	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0049	0.00080	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0013 J	0.00080	0.0020	1
10725	Chrysene	218-01-9	0.0039	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00080	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0018 J	0.00080	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0025	0.00080	0.0020	1
10725	Naphthalene	91-20-3	0.0075	0.00080	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.5	7.3	30.03
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	36	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	17.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 06:15	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 20:26	Marie D Beamenderfer	30.03
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 13:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015 01:15	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-51(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015053
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 14:00 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

ASB51

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0017 J	0.00087	0.0022	1
10725	Benzo(a)pyrene	50-32-8	0.0016 J	0.00087	0.0022	1
10725	Benzo(b)fluoranthene	205-99-2	0.0079	0.00087	0.0022	1
10725	Benzo(k)fluoranthene	207-08-9	0.0020 J	0.00087	0.0022	1
10725	Chrysene	218-01-9	0.0064	0.00043	0.0022	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00087	0.0022	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0013 J	0.00087	0.0022	1
10725	1-Methylnaphthalene	90-12-0	0.014	0.00087	0.0022	1
10725	2-Methylnaphthalene	91-57-6	0.022	0.00087	0.0022	1
10725	Naphthalene	91-20-3	0.021	0.00087	0.0022	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.7	8.4	32.19
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	24	3.9	9.1	1
02214	HRO C24-C40 w/Si Gel	n.a.	15 J	13	39	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	23.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 09:00	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 21:01	Marie D Beamenderfer	32.19
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 14:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015 01:36	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-9(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015054
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 14:20 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

ASB09

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.035	0.00070	0.0018	1
10725	Benzo(a)pyrene	50-32-8	0.040	0.00070	0.0018	1
10725	Benzo(b)fluoranthene	205-99-2	0.13	0.00070	0.0018	1
10725	Benzo(k)fluoranthene	207-08-9	0.032	0.00070	0.0018	1
10725	Chrysene	218-01-9	0.080	0.00035	0.0018	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0070	0.00070	0.0018	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.020	0.00070	0.0018	1
10725	1-Methylnaphthalene	90-12-0	0.026	0.00070	0.0018	1
10725	2-Methylnaphthalene	91-57-6	0.042	0.00070	0.0018	1
10725	Naphthalene	91-20-3	0.038	0.00070	0.0018	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	1.0 J	1.0	5.1	23.78
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	20	3.1	7.3	1
02214	HRO C24-C40 w/Si Gel	n.a.	110	10	31	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	5.9	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 10:06	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 22:12	Marie D Beamenderfer	23.78
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 14:20	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015 05:12	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-10A(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015055
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 14:30 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

AS10A

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.033	0.00081	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.035	0.00081	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.095	0.00081	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.041	0.00081	0.0020	1
10725	Chrysene	218-01-9	0.079	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0050	0.00081	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.017	0.00081	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0067	0.00081	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0099	0.00081	0.0020	1
10725	Naphthalene	91-20-3	0.013	0.00081	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.4	7.1	29.27
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.6	8.5	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	36	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	17.5	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 06:49	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 22:47	Marie D Beamenderfer	29.27
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 14:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015 20:51	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-11(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015056
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 14:40 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASB11

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0030	0.00083	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.0040	0.00083	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.010	0.00083	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	0.0033	0.00083	0.0021	1
10725	Chrysene	218-01-9	0.0076	0.00042	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00083	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0021	0.00083	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.0023	0.00083	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.0028	0.00083	0.0021	1
10725	Naphthalene	91-20-3	0.0048	0.00083	0.0021	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.3	6.7	26.83
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.8	8.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	13	38	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	20.5	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 07:21	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 23:22	Marie D Beamenderfer	26.83
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 14:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015 02:19	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-61(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015057
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 15:10 by EE

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 08/20/2015 10:00

630 Plaza Drive

Reported: 09/22/2015 16:07

Highlands Ranch CO 80129

ASB61

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00079	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.00085 J	0.00079	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0038	0.00079	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.00094 J	0.00079	0.0020	1
10725	Chrysene	218-01-9	0.0030	0.00039	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00079	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00079	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0050	0.00079	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.010	0.00079	0.0020	1
10725	Naphthalene	91-20-3	0.0073	0.00079	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.3	6.6	27.76
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
			mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.5	8.3	1
02214	HRO C24-C40 w/Si Gel	n.a.	12 J	12	35	1
Wet Chemistry SM 2540 G-1997						
			%	%	%	
00111	Moisture	n.a.	15.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 07:54	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 23:57	Marie D Beamenderfer	27.76
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 15:10	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015 03:03	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-50(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015058
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 15:45 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASB50

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00075	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.0011 J	0.00075	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.0041	0.00075	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.0012 J	0.00075	0.0019	1
10725	Chrysene	218-01-9	0.0031	0.00038	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.00077 J	0.00075	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.0025	0.00075	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.0062	0.00075	0.0019	1
10725	Naphthalene	91-20-3	0.0036	0.00075	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx						
			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.3	6.4	27.99
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
			mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel	n.a.	10	3.4	7.9	1
02214	HRO C24-C40 w/Si Gel	n.a.	18 J	11	34	1
Wet Chemistry SM 2540 G-1997						
			%	%	%	
00111	Moisture	n.a.	12.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 08:27	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/24/2015 00:33	Marie D Beamenderfer	27.99
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 15:45	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015 03:24	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-40(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015059
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 08:05 by EE

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 08/20/2015 10:00

630 Plaza Drive

Reported: 09/22/2015 16:07

Highlands Ranch CO 80129

ASB40

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0016 J	0.00081	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0023	0.00081	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0090	0.00081	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0022	0.00081	0.0020	1
10725	Chrysene	218-01-9	0.0075	0.00041	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.00081	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0018 J	0.00081	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.010	0.00081	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.029	0.00081	0.0020	1
10725	Naphthalene	91-20-3	0.014	0.00081	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	7.7 J	1.7	8.6	34.74
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	9.7 J	3.7	8.6	1
02214	HRO C24-C40 w/Si Gel	n.a.	71	12	37	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	18.8	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/03/2015 10:15	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/25/2015 15:25	Jeremy C Giffin	34.74
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 08:05	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015 03:46	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-40(2-2.5)-MS Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015060
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 08:05 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

ASB40

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.036	0.00081	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.038	0.00081	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.050	0.00081	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.043	0.00081	0.0020	1
10725	Chrysene	218-01-9	0.043	0.00041	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	0.027	0.00081	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.027	0.00081	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.045	0.00081	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.064	0.00081	0.0020	1
10725	Naphthalene	91-20-3	0.049	0.00081	0.0020	1
GC Volatiles ECY 97-602 NWT PH-Gx						
02005	NWT PH-GX Soil C7-C12	n.a.	31	1.5	7.5	30.36
GC Petroleum ECY 97-602 NWT PH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	110	3.7	8.5	1
02214	HRO C24-C40 w/Si Gel	n.a.	82	12	37	1
Wet Chemistry SM 2540 G-1997						
00118	Moisture	n.a.	18.8	0.50	0.50	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/03/2015 10:49	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:00	Sherry L Morrow	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602 NWT PH-Gx	1	15236A34A	08/25/2015 16:01	Jeremy C Giffin	30.36
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 08:05	Client Supplied	n.a.
02214	NWT PH-Dx soil w/Si Gel	ECY 97-602 NWT PH-Dx modified	1	152520005A	09/12/2015 04:07	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWT PH-Dx 06/97	1	152520005A	08/28/2015 10:55	Denise L Trimby	1
00118	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-40(2-2.5)-MSD Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015061
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 08:05 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASB40

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.034	0.00081	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.038	0.00081	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.050	0.00081	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.048	0.00081	0.0020	1
10725	Chrysene	218-01-9	0.039	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	0.025	0.00081	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.024	0.00081	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.043	0.00081	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.057	0.00081	0.0020	1
10725	Naphthalene	91-20-3	0.046	0.00081	0.0020	1
GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C12	n.a.	32	1.6	8.1	33.03
GC Petroleum	ECY 97-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg		
Hydrocarbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	n.a.	100	3.7	8.5	1
02214	HRO C24-C40 w/Si Gel	n.a.	89	12	37	1
Wet Chemistry	SM 2540 G-1997	%	%	%		
00118	Moisture	n.a.	18.8	0.50	0.50	1
00121	Moisture Duplicate	n.a.	17.3	0.50	0.50	1
The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 08:34	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15236A34A	08/25/2015 16:36	Jeremy C Giffin	33.03
06647	GC-5g Field Preserved MeOH	NWTPH-Gx SW-846 5035A	1	201523338620	08/18/2015 08:05	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520005A	09/12/2015 04:29	Heather E Williams	1
07024	DRO Alternate Soil Extraction	NWTPH-Dx modified ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10:55	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-40(2-2.5)-MSD Grab Soil
 Former Olympia Bulk Plant COC: R224110
 1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015061
 LL Group # 1586402
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 08:05 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00

630 Plaza Drive

Reported: 09/22/2015 16:07

Highlands Ranch CO 80129

ASB40

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-12(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015062
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 08:20 by EE

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 08/20/2015 10:00

630 Plaza Drive

Reported: 09/22/2015 16:07

Highlands Ranch CO 80129

ASB12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00080	0.0020	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00080	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.00084 J	0.00080	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00080	0.0020	1
10725	Chrysene	218-01-9	0.0011 J	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00080	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0034	0.00080	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0060	0.00080	0.0020	1
10725	Naphthalene	91-20-3	0.0081	0.00080	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	2.4 J	1.5	7.5	30.9
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	3.6 J	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel	n.a.	16 J	12	36	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	17.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 02:15	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/24/2015 01:08	Marie D Beamenderfer	30.9
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 08:20	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015 04:51	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-13(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015063
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 08:40 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

ASB13

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.00097 J	0.00078	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.0010 J	0.00078	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.0026	0.00078	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00078	0.0019	1
10725	Chrysene	218-01-9	0.0028	0.00039	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00078	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.00088 J	0.00078	0.0019	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00078	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.0010 J	0.00078	0.0019	1
10725	Naphthalene	91-20-3	0.0041	0.00078	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	1.6 J	1.4	7.1	30.2
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.5	8.1	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	35	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	14.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 02:50	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/24/2015 01:43	Marie D Beamenderfer	30.2
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 08:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015 19:50	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-30(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015064
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 08:55 by EE

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 08/20/2015 10:00

630 Plaza Drive

Reported: 09/22/2015 16:07

Highlands Ranch CO 80129

ASB30

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0074	0.00076	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.0076	0.00076	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.029	0.00076	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.0079	0.00076	0.0019	1
10725	Chrysene	218-01-9	0.022	0.00038	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0015 J	0.00076	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0049	0.00076	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.073	0.00076	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.23	0.00076	0.0019	1
10725	Naphthalene	91-20-3	0.091	0.00076	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	24 J	1.6	8.2	35.44
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	430 J	17	40	5
02214	HRO C24-C40 w/Si Gel	n.a.	700 J	57	170	5
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	13.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 02:26	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 14:33	Marie D Beamenderfer	35.44
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 08:55	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/12/2015 00:10	Heather E Williams	5
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15237820002B	08/25/2015 19:44	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-14(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015065
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 09:40 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASB14

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00080	0.0020	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00080	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0013 J	0.00080	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00080	0.0020	1
10725	Chrysene	218-01-9	0.0014 J	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00080	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.00084 J	0.00080	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0016 J	0.00080	0.0020	1
10725	Naphthalene	91-20-3	0.011	0.00080	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	2.4 J	1.3	6.7	27.56
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	5.9 J	3.6	8.5	1
02214	HRO C24-C40 w/Si Gel	n.a.	18 J	12	36	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	17.5	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 03:25	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/25/2015 20:31	Jeremy C Giffin	27.56
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 09:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015 20:12	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-20(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015066
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 10:00 by EE

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 08/20/2015 10:00

630 Plaza Drive

Reported: 09/22/2015 16:07

Highlands Ranch CO 80129

ASB20

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0011 J	0.00078	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0015 J	0.00078	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0036	0.00078	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0011 J	0.00078	0.0020	1
10725	Chrysene	218-01-9	0.0036	0.00039	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00078	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0013 J	0.00078	0.0020	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00078	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.00088 J	0.00078	0.0020	1
10725	Naphthalene	91-20-3	0.0016 J	0.00078	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.2	6.0	25.66
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.5	8.2	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	35	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	15.1	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 04:00	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/25/2015 21:06	Jeremy C Giffin	25.66
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 10:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015 20:33	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-21(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015067
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 10:35 by EE

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 08/20/2015 10:00

630 Plaza Drive

Reported: 09/22/2015 16:07

Highlands Ranch CO 80129

ASB21

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00078	0.0019	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00078	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.0015 J	0.00078	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00078	0.0019	1
10725	Chrysene	218-01-9	0.0015 J	0.00039	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00078	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00078	0.0019	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00078	0.0019	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00078	0.0019	1
10725	Naphthalene	91-20-3	0.0022	0.00078	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.3	6.3	27.06
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.5	8.1	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	35	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	14.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 04:35	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/25/2015 21:42	Jeremy C Giffin	27.06
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 10:35	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015 20:55	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015 19:46	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-29(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015068
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 10:40 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASB29

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0076	0.00083	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.0079	0.00083	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.028	0.00083	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	0.011	0.00083	0.0021	1
10725	Chrysene	218-01-9	0.034	0.00042	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0014 J	0.00083	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0053	0.00083	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.0038	0.00083	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.0044	0.00083	0.0021	1
10725	Naphthalene	91-20-3	0.0088	0.00083	0.0021	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	3.8 J	1.7	8.3	32.95
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	5.5 J	3.7	8.7	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	37	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	20.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 05:10	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/25/2015 22:17	Jeremy C Giffin	32.95
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 10:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015 21:17	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015 19:46	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-19(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015069
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 11:00 by EE

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 08/20/2015 10:00

630 Plaza Drive

Reported: 09/22/2015 16:07

Highlands Ranch CO 80129

ASB19

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00075	0.0019	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00075	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.0012 J	0.00075	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00075	0.0019	1
10725	Chrysene	218-01-9	0.0013 J	0.00037	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00075	0.0019	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00075	0.0019	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00075	0.0019	1
10725	Naphthalene	91-20-3	0.00075 J	0.00075	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.3	6.7	29.74
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.4	7.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	34	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	10.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 05:44	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/25/2015 22:52	Jeremy C Giffin	29.74
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 11:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015 21:38	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015 19:46	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-39(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015070
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 11:10 by EE

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 08/20/2015 10:00

630 Plaza Drive

Reported: 09/22/2015 16:07

Highlands Ranch CO 80129

ASB39

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270C SIM		mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0018 J	0.00094	0.0024	1
10725	Benzo(a)pyrene	50-32-8	0.0013 J	0.00094	0.0024	1
10725	Benzo(b)fluoranthene	205-99-2	0.0044 J	0.00094	0.0024	1
10725	Benzo(k)fluoranthene	207-08-9	N.D. UJ	0.00094	0.0024	1
10725	Chrysene	218-01-9	0.0047	0.00047	0.0024	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.00094	0.0024	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0017 J	0.00094	0.0024	1
10725	1-Methylnaphthalene	90-12-0	0.011	0.00094	0.0024	1
10725	2-Methylnaphthalene	91-57-6	0.016	0.00094	0.0024	1
10725	Naphthalene	91-20-3	0.0082	0.00094	0.0024	1

The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken:
The sample was re-analyzed and internal standard areas are again outside of the QC acceptance limits, indicating a matrix effect. The reported data is from the initial analysis of the sample.

GC Volatiles	ECY 97-602 NWT PH-Gx	mg/kg	mg/kg	mg/kg	
02005 NWT PH-GX Soil C7-C12	n.a.	N.D.	52	260	918.64

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWT PH-Dx modified	mg/kg	mg/kg	mg/kg	
02214 DRO C12-C24 w/Si Gel	n.a.	190	21	49	5
02214 HRO C24-C40 w/Si Gel	n.a.	1,300	70	210	5

Wet Chemistry	SM 2540 G-1997	%	%	%	
00111 Moisture	n.a.	29.6	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 06:19	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:00	Sherry L Morrow	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602 NWT PH-Gx	1	15236A34B	08/26/2015 16:16	Marie D Beamenderfer	918.64
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 11:10	Client Supplied	n.a.

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-39(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015070
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 11:10 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASB39

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015 23:05	Heather E Williams	5
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015 19:46	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-18(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015071
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 11:30 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASB18

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0020	mg/kg	0.00075	1
10725	Benzo(a)pyrene	50-32-8	0.0023	mg/kg	0.00075	1
10725	Benzo(b)fluoranthene	205-99-2	0.0054	mg/kg	0.00075	1
10725	Benzo(k)fluoranthene	207-08-9	0.0020	mg/kg	0.00075	1
10725	Chrysene	218-01-9	0.0046	mg/kg	0.00037	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	mg/kg	0.00075	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0011 J	mg/kg	0.00075	1
10725	1-Methylnaphthalene	90-12-0	N.D.	mg/kg	0.00075	1
10725	2-Methylnaphthalene	91-57-6	0.0013 J	mg/kg	0.00075	1
10725	Naphthalene	91-20-3	0.00094 J	mg/kg	0.00075	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	mg/kg	1.4	30.6
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	mg/kg	3.4	1
02214	HRO C24-C40 w/Si Gel	n.a.	26 J	mg/kg	11	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	12.0	%	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 06:54	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/25/2015 17:23	Jeremy C Giffin	30.6
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 11:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015 23:26	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015 19:46	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-17(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015072
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 11:40 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

ASB17

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.012	0.00084	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.011	0.00084	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.046	0.00084	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	0.018	0.00084	0.0021	1
10725	Chrysene	218-01-9	0.043	0.00042	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0016 J	0.00084	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0063	0.00084	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.0085	0.00084	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.015	0.00084	0.0021	1
10725	Naphthalene	91-20-3	0.014	0.00084	0.0021	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.5	7.5	29.5
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.8	8.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	13	38	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	20.9	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 07:28	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/26/2015 00:03	Jeremy C Giffin	29.5
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 11:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015 23:48	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015 19:46	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-28(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015074
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 13:30 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASB28

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0011 J	0.00082	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0016 J	0.00082	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0044	0.00082	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0010 J	0.00082	0.0020	1
10725	Chrysene	218-01-9	0.0029	0.00041	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00082	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00082	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0038	0.00082	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0063	0.00082	0.0020	1
10725	Naphthalene	91-20-3	0.0069	0.00082	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	8.1 J	1.6	7.9	31.84
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	61	3.7	8.6	1
02214	HRO C24-C40 w/Si Gel	n.a.	410	12	37	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	19.8	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 08:01	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/26/2015 00:38	Jeremy C Giffin	31.84
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 13:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/12/2015 00:10	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015 19:46	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-38(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015076
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 14:05 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

ASB38

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.011 J	0.0016	0.0041	1
10725	Benzo(a)pyrene	50-32-8	0.010 J	0.0016	0.0041	1
10725	Benzo(b)fluoranthene	205-99-2	0.029 J	0.0016	0.0041	1
10725	Benzo(k)fluoranthene	207-08-9	0.012 J	0.0016	0.0041	1
10725	Chrysene	218-01-9	0.025 J	0.00081	0.0041	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D. JJ	0.0016	0.0041	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0033 J	0.0016	0.0041	1
10725	1-Methylnaphthalene	90-12-0	0.0094 J	0.0016	0.0041	1
10725	2-Methylnaphthalene	91-57-6	0.0081 J	0.0016	0.0041	1
10725	Naphthalene	91-20-3	0.0034 J	0.0016	0.0041	1

The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken:
The sample was re-analyzed and internal standard areas are again outside of the QC acceptance limits, indicating a matrix effect. The reported data is from the initial analysis of the sample.

GC Volatiles	ECY 97-602 NWTTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 NWTTPH-GX Soil C7-C12	n.a.	17 J	5.4	27	54.91

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTTPH-Dx modified	mg/kg	mg/kg	mg/kg	
02214 DRO C12-C24 w/Si Gel	n.a.	470	37	86	5
02214 HRO C24-C40 w/Si Gel	n.a.	1,700	120	370	5

Wet Chemistry	SM 2540 G-1997	%	%	%	
00111 Moisture	n.a.	59.4	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 08:06	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katherine V Dinan	1
02005	NWTTPH-GX Soil C7-C12	ECY 97-602 NWTTPH-Gx	1	15236A34A	08/26/2015 01:13	Jeremy C Giffin	54.91
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 14:05	Client Supplied	n.a.

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-38(2-2.5) Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015076
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 14:05 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASB38

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520006A	09/12/2015 01:15	Heather E Williams	5
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520006A	08/30/2015 15:30	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015 19:46	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-1 Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015078
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

ASDP1

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270C SIM		mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0089	0.022	10
10725	Benzo(a)pyrene	50-32-8	N.D. UJ	0.0089	0.022	10
10725	Benzo(b)fluoranthene	205-99-2	0.0092 J	0.0089	0.022	10
10725	Benzo(k)fluoranthene	207-08-9	N.D. UJ	0.0089	0.022	10
10725	Chrysene	218-01-9	0.010 J	0.0045	0.022	10
10725	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.0089	0.022	10
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. UJ	0.0089	0.022	10
10725	1-Methylnaphthalene	90-12-0	7.8 J	0.089	0.22	100
10725	2-Methylnaphthalene	91-57-6	12	0.089	0.22	100
10725	Naphthalene	91-20-3	2.9	0.0089	0.022	10

The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken:
The sample was re-analyzed and internal standard areas are again outside of the QC acceptance limits, indicating a matrix effect. The reported data is from the initial analysis of the sample.

GC Volatiles	ECY 97-602 NWT PH-Gx	mg/kg	mg/kg	mg/kg
02005 NWT PH-GX Soil C7-C12	n.a.	1,200 J	190	970

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWT PH-Dx modified	mg/kg	mg/kg	mg/kg
02214 DRO C12-C24 w/Si Gel	n.a.	3,800 J	40	94
02214 HRO C24-C40 w/Si Gel	n.a.	170 J	130	400

Wet Chemistry	SM 2540 G-1997	%	%	%
00111 Moisture	n.a.	26.2	0.50	0.50

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 10:50	Brian K Graham	10
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 11:56	Brian K Graham	100
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katheryne V Dinan	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602 NWT PH-Gx	1	15235A34B	08/24/2015 21:15	Marie D Beamenderfer	3569.5

*=This limit was used in the evaluation of the final result

Sample Description: DUP-1 Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015078
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASDP1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 00:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015 05:34	Heather E Williams	10
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015 19:46	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-2 Grab Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015079
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASDP2

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00079	0.0020	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00079	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.00093 J	0.00079	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00079	0.0020	1
10725	Chrysene	218-01-9	0.00071 J	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00079	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00079	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0017 J	0.00079	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0032	0.00079	0.0020	1
10725	Naphthalene	91-20-3	0.0043	0.00079	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	1.7 J	1.4	7.2	30.09
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.5	8.3	1
02214	HRO C24-C40 w/Si Gel	n.a.	25 J	12	35	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	16.6	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 01:32	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/26/2015 01:49	Jeremy C Giffin	30.09
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 00:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520006A	09/12/2015 01:36	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520006A	08/30/2015 15:30	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015 19:46	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: Trip Blank Water
Former Olympia Bulk Plant COC: R224110
1117 West Bay Dr - Olympia, WA

LL Sample # WW 8015080
LL Group # 1586402
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015

Atlantic Richfield c/o ARCADIS

Submitted: 08/20/2015 10:00

Suite 600

Reported: 09/22/2015 16:07

630 Plaza Drive

Highlands Ranch CO 80129

ASBTB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
	ECY 97-602	NWTPH-Gx	ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	N.D.	50	250	1

General Sample Comments

State of Washington Lab Certification No. C457
State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15232C20A	08/21/2015 12:11	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	15232C20A	08/21/2015 12:11	Jeremy C Giffin	1

*=This limit was used in the evaluation of the final result

BP OLY

Data Review

OLYMPIA, WA

Semivolatiles and TPH

SDG # 1586959

Analyses Performed By:
Lancaster Laboratories
Lancaster, PA

Report # 24720R
Review Level: Tier II
Project: GP09BPNA.WA60.K000

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1586959 for samples collected in association with the BP OLY site. The review was conducted at a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	TPH	MET	TSS
AUS-SB-62-Offset(4.5-5)	8018583	Soil	08/20/15			X	X		
AUS-SB-41-Offset(2-2.5)	8018584	Soil	08/20/15			X	X		
AUS-SB-52-Offset(2-2.5)	8018585	Soil	08/20/15			X	X		

Note:

1. Sample AUS-SB-62-Offset(4.5-5) was used as the MS/MSDs for the Dx analyses.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8270 (SIM) and ECY 97-602. Data were reviewed in accordance with the USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines and as requested by USEPA Region 10:

- Concentration (C) Qualifiers
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - U The analyte was not detected at or above the reported result.
 - J The analyte was positively identified. The associated numerical result is an estimate.
 - UJ The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
 - R The data are unusable for all purposes.

 - N There is evidence the analyte is present in this sample.

 - JN There is evidence the analyte is present in this sample. The associated numerical result is an estimate.
 - D The sample result is reported from a diluted analysis.
 - EJ The sample result is greater than the calibration range. The associated numerical value is an estimated concentration only.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270 (SIM)	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within the control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A site-specific MS/MSD was not included in the data package.

5. Laboratory Control Sample

The LCS/ analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270 (SIM)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

%R Percent recovery

RPD Relative percent difference

NWTPH-GX AND DX

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH – Gx and Dx ECY 97-602	Soil	14 days from collection to analysis	Cool to <6 °C

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
AUS-SB-62-Offset(4.5-5) AUS-SB-41-Offset(2-2.5) AUS-SB-52-Offset(2-2.5)	21 days	<14 Days

Sample results associated with sample locations analyzed by analytical method ECY 97-602 DX with Silica Gel were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within the laboratory control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
AUS-SB-62-Offset(4.5-5)	DRO	<LL but >10%	<LL but >10%

AC = Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration (D).	Detect	No Action
	Non-detect	

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR TPH

Gx/Dx; ECY 97-602	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Trip blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

%R - percent recovery, RPD - relative percent difference,

VALIDATION PERFORMED

BY:

Rachelle Borne

SIGNATURE:



DATE: December 1, 2015

PEER REVIEW: Joseph C. Houser

DATE: December 10, 2015

**CHAIN OF CUSTODY/
CORRECTED SAMPLE ANALYSIS DATA SHEETS**



13255 1586959 8018583-86
Laboratory Management Program LaMP Chain of Custody Record

R224127

Page 1 of 1

BP Site Node Path: _____

Req Due Date (mm/dd/yy): Standard TAT

Standard TAT

Rush TAT: Yes No

BP Facility No: 08- former Olympic Bulk Plant

Lab Work Order Number: 175798

175798

Lab Name: <u>Lancaster Laboratories</u>	Facility Address: <u>1117 West Bay Drive</u>	Consultant/Contractor: <u>ARCADIS</u>
Lab Address: <u>2425 New Holland Pike, Lancaster, PA</u>	City, State, ZIP Code: <u>Olympia, WA</u>	Consultant/Contractor Project No: <u>GPO9BNA.WAGE</u>
Lab PM: <u>Shay Butt</u>	Lead Regulatory Agency: <u>WADCE</u>	Address: <u>1100 Olive Way, Seattle, WA</u>
Lab Phone: <u>717-656-2300</u>	California Global ID No.: <u>—</u>	Consultant/Contractor PM: <u>Brian Marcus</u>
Lab Shipping Acct: <u>—</u>	Enfos Proposal No: <u>—</u>	Phone: <u>206-726-4758</u> Email: <u>brian.marcus@arcadis-us.com</u>
Lab Bottle Order No: <u>175798</u>	Accounting Mode: Provision <input type="checkbox"/> OOC-BU <input type="checkbox"/> OOC-RM <input type="checkbox"/>	Email EDD To: <u>Brian Marcus</u> and to <u>lab.enfosdoc@bp.com</u>
Other Info: <u>—</u>	Stage: _____ Activity: _____	Invoice To: BP <input type="checkbox"/> Contractor <input checked="" type="checkbox"/>

BP Project Manager (PM): _____				Matrix		No. Containers / Preservative							Requested Analyses							Report Type & QC Level					
BP PM Phone: _____				Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Containers	Unpreserved	H2SO4	HNO3	HCl	Methanol	ANIS - 2000 by 2/20/15	GRO by NTEP/fgx	PRO by NTEP/fgx								Standard <input checked="" type="checkbox"/>	Full Data Package <input type="checkbox"/>
BP PM Email: _____																									
Lab No.	Sample Description	Date	Time																				Comments		
	<u>AUS-17-62-Offset (4.5-5)</u>	<u>08-20-15</u>	<u>1545</u>	<u>X</u>				<u>3</u>	<u>2</u>				<u>1</u>	<u>X</u>	<u>X</u>	<u>X</u>								<u>Hold ; Rush TAT</u>	
	<u>AUS-17-41-Offset (2-2.5)</u>	<u>08-20-15</u>	<u>1620</u>	<u>X</u>				<u>3</u>	<u>2</u>				<u>1</u>	<u>X</u>	<u>X</u>	<u>X</u>								<u>Hold ; Rush TAT</u>	
	<u>AUS-17-82-Offset (2-2.5)</u>	<u>08-20-15</u>	<u>1635</u>	<u>X</u>				<u>3</u>	<u>2</u>				<u>1</u>	<u>X</u>	<u>X</u>	<u>X</u>								<u>Hold ; Rush TAT</u>	
	<u>TRIP BLANK</u>	<u>—</u>	<u>—</u>	<u>X</u>				<u>1</u>				<u>1</u>		<u>X</u>										<u>Hold ; Rush TAT</u>	
<i>[Handwritten signature and scribbles]</i>																									

Sampler's Name: <u>Eric Eric</u>	Relinquished By / Affiliation: <u>Eric Eric</u>	Date: <u>08/21</u>	Time: <u>1700</u>	Accepted By / Affiliation: _____	Date: _____	Time: _____		
Sampler's Company: <u>ARCADIS</u>								
Shipment Method: <u>UPS</u>	Ship Date: <u>08-21-15</u>							
Shipment Tracking No: _____						<u>W/S / ELK</u>	<u>8/22/15</u>	<u>1025</u>

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 1.2 - 2.2 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Sample Description: AUS-SB-62-Offset(4.5-5) Soil
Former Olympia Bulk Plant COC: R224127
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018583
LL Group # 1586959
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 15:45 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 09/14/2015 17:32

AVS62

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.84	2.1	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.84	2.1	1
10725	Benzo(b)fluoranthene	205-99-2	2.6	0.84	2.1	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.84	2.1	1
10725	Chrysene	218-01-9	2.6	0.42	2.1	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.84	2.1	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	1.0 J	0.84	2.1	1
10725	1-Methylnaphthalene	90-12-0	3.4	0.84	2.1	1
10725	2-Methylnaphthalene	91-57-6	4.4	0.84	2.1	1
10725	Naphthalene	91-20-3	25	0.84	2.1	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	33	2.7	13	52.03
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons modified						
08272	Diesel Range Organics C12-C24	n.a.	29 J	3.8	8.8	1
08272	Heavy Range Organics C24-C40	n.a.	58	13	38	1
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	11 J	3.8	8.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D. UJ	13	38	1
The holding time was not met. The analysis was added to the sample with insufficient time remaining in the holding time.						
Wet Chemistry SM 2540 G-1997						
02111	Moisture	n.a.	21.6	1.0	1.0	1
"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15243SLE026	09/03/2015 04:34	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15243SLE026	09/01/2015 09:30	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15243A34A	09/01/2015 14:33	Jeremy C Giffin	52.03

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-62-Offset(4.5-5) Soil
Former Olympia Bulk Plant COC: R224127
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018583
LL Group # 1586959
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 15:45 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 09/14/2015 17:32

630 Plaza Drive

Highlands Ranch CO 80129

AVS62

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524038693	08/20/2015 15:45	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	152430020A	09/01/2015 12:03	Christine E Dolman	1
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520029A	09/12/2015 14:15	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520029A	09/10/2015 09:00	Olivia Arosemena	1
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	152430020A	08/31/2015 18:45	Sally L Appleyard	1
02111	Moisture	SM 2540 G-1997	1	15244912201A	09/01/2015 12:26	Nancy J Shoop	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-41-Offset(2-2.5) Soil
Former Olympia Bulk Plant COC: R224127
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018584
LL Group # 1586959
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 16:20 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 09/14/2015 17:32

AVS41

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.91 J	0.77	1.9	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.77	1.9	1
10725	Benzo(b)fluoranthene	205-99-2	1.5 J	0.77	1.9	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.77	1.9	1
10725	Chrysene	218-01-9	2.7	0.39	1.9	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.77	1.9	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.77	1.9	1
10725	1-Methylnaphthalene	90-12-0	36	0.77	1.9	1
10725	2-Methylnaphthalene	91-57-6	99	0.77	1.9	1
10725	Naphthalene	91-20-3	63	0.77	1.9	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	55	5.6	28	119.02
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons modified						
08272	Diesel Range Organics C12-C24	n.a.	30	3.5	8.1	1
08272	Heavy Range Organics C24-C40	n.a.	N.D.	12	35	1
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	44 J	3.4	8.0	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D. UJ	11	34	1
The holding time was not met. The analysis was added to the sample with insufficient time remaining in the holding time.						
Wet Chemistry SM 2540 G-1997						
02111	Moisture	n.a.	14.4	1.0	1.0	1
"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15243SLE026	09/03/2015 05:18	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15243SLE026	09/01/2015 09:30	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15243A34A	09/01/2015 02:29	Jeremy C Giffin	119.02

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-41-Offset(2-2.5) Soil
Former Olympia Bulk Plant COC: R224127
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018584
LL Group # 1586959
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 16:20 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 09/14/2015 17:32

Highlands Ranch CO 80129

AVS41

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524038693	08/20/2015 16:20	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	152430020A	09/01/2015 10:39	Christine E Dolman	1
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520029A	09/12/2015 14:58	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520029A	09/10/2015 09:00	Olivia Arosemena	1
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	152430020A	08/31/2015 18:45	Sally L Appleyard	1
02111	Moisture	SM 2540 G-1997	1	15244912201A	09/01/2015 12:40	Nancy J Shoop	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-52-Offset(2-2.5) Soil
Former Olympia Bulk Plant COC: R224127
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018585
LL Group # 1586959
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 16:35 by EE

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 09/14/2015 17:32

Highlands Ranch CO 80129

AVS52

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.82	2.1	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.82	2.1	1
10725	Benzo(b)fluoranthene	205-99-2	2.0 J	0.82	2.1	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.82	2.1	1
10725	Chrysene	218-01-9	2.5	0.41	2.1	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.82	2.1	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.82	2.1	1
10725	1-Methylnaphthalene	90-12-0	1.4 J	0.82	2.1	1
10725	2-Methylnaphthalene	91-57-6	3.0	0.82	2.1	1
10725	Naphthalene	91-20-3	14	0.82	2.1	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.2	6.2	25.02
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons modified						
08272	Diesel Range Organics C12-C24	n.a.	5.7 J	3.7	8.6	1
08272	Heavy Range Organics C24-C40	n.a.	20 J	12	37	1
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D. UJ	3.6	8.5	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D. UJ	12	36	1
The holding time was not met. The analysis was added to the sample with insufficient time remaining in the holding time.						
Wet Chemistry SM 2540 G-1997						
02111	Moisture	n.a.	18.8	1.0	1.0	1
"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15243SLE026	09/03/2015 05:50	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15243SLE026	09/01/2015 09:30	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15243A34A	08/31/2015 20:58	Jeremy C Giffin	25.02

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-52-Offset(2-2.5) Soil
Former Olympia Bulk Plant COC: R224127
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018585
LL Group # 1586959
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 16:35 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 09/14/2015 17:32

630 Plaza Drive

Highlands Ranch CO 80129

AVS52

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524038693	08/20/2015 16:35	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	152430020A	09/01/2015 11:00	Christine E Dolman	1
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520029A	09/12/2015 15:20	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520029A	09/10/2015 09:00	Olivia Arosemena	1
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	152430020A	08/31/2015 18:45	Sally L Appleyard	1
02111	Moisture	SM 2540 G-1997	1	15244912201A	09/01/2015 12:48	Nancy J Shoop	1

*=This limit was used in the evaluation of the final result

BP OLY

Data Review

OLYMPIA, WA

Semivolatiles and TPH

SDG # 1586960

Analyses Performed By:
Lancaster Laboratories
Lancaster, PA

Report # 24721R
Review Level: Tier II
Project: GP09BPNA.WA60.K000

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1586960 for samples collected in association with the BP OLY site. The review was conducted at a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	TPH	MET	TSS
AUS-SB-60(2-2.5)	8018587	Soil	08/19/15			X	X		
AUS-SB-59(4.5-5)	8018588	Soil	08/19/15			X	X		
AUS-SB-48(2-2.5)	8018589	Soil	08/19/15			X	X		
AUS-SB-58(2-2.5)	8018590	Soil	08/19/15			X	X		
AUS-SB-47(2-2.5)	8018591	Soil	08/19/15			X	X		
AUS-SB-57(2-2.5)	8018592	Soil	08/19/15			X	X		
AUS-SB-46(2-2.5)	8018595	Soil	08/19/15			X	X		
AUS-SB-56(4.5-5)	8018596	Soil	08/19/15			X	X		
AUS-SB-55(4.5-5)	8018597	Soil	08/19/15			X	X		
AUS-SB-45(2-2.5)	8018598	Soil	08/19/15			X	X		
AUS-SB-34(4.5-5)	8018599	Soil	08/19/15			X	X		
AUS-SB-35(2-2.5)	8018600	Soil	08/19/15			X	X		
AUS-SB-36(2-2.5)	8018601	Soil	08/19/15			X	X		
AUS-SB-37(2-2.5)	8018602	Soil	08/20/15			X	X		
AUS-SB-27(2-2.5)	8018603	Soil	08/20/15			X	X		
AUS-SB-31(2-2.5)	8018604	Soil	08/20/15			X	X		
AUS-SB-32(2-2.5)	8018605	Soil	08/20/15			X	X		
AUS-SB-44(4.5-5)	8018606	Soil	08/20/15			X	X		
AUS-SB-22(2-2.5)	8018607	Soil	08/20/15			X	X		
AUS-SB-54(2-2.5)	8018611	Soil	08/20/15			X	X		
AUS-SB-4A(2-2.5)	8018612	Soil	08/20/15			X	X		
AUS-SB-42(2-2.5)	8018613	Soil	08/20/15			X	X		
AUS-SB-26A(2-2.5)	8018615	Soil	08/20/15			X	X		
AUS-SB-25A(2-2.5)	8018616	Soil	08/20/15			X	X		
AUS-SB-43A(2-2.5)	8018617	Soil	08/20/15			X	X		
AUS-SB-63(2-2.5)	8018620	Soil	08/20/15			X	X		
DUP-3	8018621	Soil	08/19/15	AUS-SB-46(2-2.5)		X	X		

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	TPH	MET	TSS
DUP-4	8018622	Soil	08/20/15	AUS-SB-44(4.5-5)		X	X		

Note:

1. Samples AUS-SB-57(2-2.5) and AUS-SB-22(2-2.5) were used as the MS/MSDs.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8270 (SIM) and ECY 97-602. Data were reviewed in accordance with the USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines and as requested by USEPA Region 10:

- Concentration (C) Qualifiers
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - U The analyte was not detected at or above the reported result.
 - J The analyte was positively identified. The associated numerical result is an estimate.
 - UJ The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
 - R The data are unusable for all purposes.

 - N There is evidence the analyte is present in this sample.

 - JN There is evidence the analyte is present in this sample. The associated numerical result is an estimate.
 - D The sample result is reported from a diluted analysis.
 - EJ The sample result is greater than the calibration range. The associated numerical value is an estimated concentration only.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270 (SIM)	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
AUS-SB-44(4.5-5)	43 Days	<14 Days

Sample results associated with sample locations analyzed by analytical method SW-846 8270 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
AUS-SB-42(2-2.5)	Fluoranthene-d10	AC
	Benzo(a)pyrene-d12	<LL but >10%
	1-Methylnaphthalene-d10	AC
DUP-3	Fluoranthene-d10	<LL but >10%
	Benzo(a)pyrene-d12	<LL but >10%
	1-Methylnaphthalene-d10	<LL but >10%
AUS-SB-44(4.5-5)	Fluoranthene-d10	>UL
	Benzo(a)pyrene-d12	AC
	1-Methylnaphthalene-d10	>UL

UL Upper control limit

LL Low Limit

AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Surrogates diluted below the calibration curve due to the high concentration of a target compounds	Non-detect	J ¹
	Detect	

¹ A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established

acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
AUS-SB-57(2-2.5)	Dibenz(a,h)anthracene	<LL but >10%	<LL but >10%
	Indeno(1,2,3-cd)pyrene	<LL but >10%	<LL but >10%
AUS-SB-22(2-2.5)	Benzo(a)Anthracene	>UL	>UL
	Benzo(a)Pyrene	>UL	>UL
	Benzo(k)Fluoranthene	>UL	>UL
	Chrysene	>UL	>UL
	Indeno(1,2,3-cd)pyrene	<LL but >10%	AC
	1-Methylnaphthalene	>UL	>UL
	2-Methylnaphthalene	>UL	>UL
	Naphthalene	AC	>UL
AUS-SB-44(4.5-5)	Chrysene	<LL but >10%	<LL but >10%
	Dibenz(a,h)anthracene	<LL but >10%	<LL but >10%
	Indeno(1,2,3-cd)pyrene	<LL but >10%	<LL but >10%

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

5. Laboratory Control Sample

The LCS/ analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery
AUS-SB-22(2-2.5) AUS-SB-54(2-2.5) AUS-SB-4A(2-2.5) AUS-SB-42(2-2.5) AUS-SB-26A(2-2.5) AUS-SB-25A(2-2.5) AUS-SB-43A(2-2.5) AUS-SB-63(2-2.5) DUP-3 DUP-4	Benzo(k)Fluoranthene	>UL

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
AUS-SB-46(2-2.5)/DUP-3	Benzo(a)anthracene	0.0055	0.0013 J	AC
	Benzo(a)pyrene	0.0061	0.0014 J	AC
	Benzo(b)fluoranthene	0.013	0.0042	102.3%

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Benzo(k)fluoranthene	0.0042	0.0017 J	AC
AUS-SB-46(2-2.5)/DUP-3	Chrysene	0.011	0.0038	97.3%
	Indeno(1,2,3-cd)pyrene	0.0025	0.0085 J	AC
	1-Methylnaphthalene	0.013	0.0019 J	149%
	2-Methylnaphthalene	0.022	0.0031	150.6%
	Naphthalene	0.019	0.0038	133.3%
AUS-SB-44(4.5-5)/DUP-4	Chrysene	0.028 J	0.038	AC
	1-Methylnaphthalene	2.6	2.5	3.9%
	2-Methylnaphthalene	2.3	2.5	8.3%
	Naphthalene	0.71	0.55	25.4%

AC Acceptable

The compound(s) benzo(b)fluoranthene, chrysene, 1-methylnaphthalene, 2-methylnaphthalene and naphthalene associated with sample locations AUS-SB-46(2-2.5) and DUP-3 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

7. System Performance and Overall Assessment

The laboratory noted that the internal standard Perylene-d12 did not meet QC acceptance limits for sample locations AUS-SB-45(2-2.5), AUS-SB-34(4.5-5), Aus-SB-35(2-2.5), AUS-SB-36(2-2.5), AUS-SB-27(2-2.5), AUS-SB-31(2-2.5) and AUS-SB-57(2-2.5). The results for associated compounds Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene and Dibenz(a,h)anthracene in sample locations AUS-SB-45(2-2.5), AUS-SB-34(4.5-5), Aus-SB-35(2-2.5), AUS-SB-36(2-2.5), AUS-SB-27(2-2.5), AUS-SB-31(2-2.5) and AUS-SB-57(2-2.5) were qualified as estimated.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270 (SIM)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X	X		
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

%R Percent recovery

RPD Relative percent difference

NWTPH-GX AND DX

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH – Gx and Dx ECY 97-602	Soil	14 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
DUP-4	Trifluorotoluene-F	>UL

Upper control limit (UL)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
AUS-SB-57(2-2.5)	Gx	AC	>UL
AUS-SB-22(2-2.5)	Gx	>UL	>UL

AC = Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration (D).	Detect	No Action
	Non-detect	

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
AUS-SB-22(2-2.5)	DRO

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
AUS-SB-46(2-2.5)/DUP-3	Gx	91 U	91 U	AC
	DRO	110	150	30.8%
	HRO	170	270	45.5%
AUS-SB-44(4.5-5)/DUP-4	Gx	1900	990	63.0%
	DRO	820	1900	79.4%
	HRO	34 J	300 U	AC

AC = Acceptable.

The compounds Gx and DRO associated with sample locations AUS-SB-44(4.5-5) and DUP-4 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR TPH

Gx/Dx; ECY 97-602	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Trip blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

%R - percent recovery, RPD - relative percent difference,

VALIDATION PERFORMED

BY: Rachelle Borne

SIGNATURE: 

DATE: December 1, 2015

PEER REVIEW: Joseph C. Houser

DATE: December 11, 2015

**CHAIN OF CUSTODY/
CORRECTED SAMPLE ANALYSIS DATA SHEETS**



Laboratory Management Program LaMP Chain of Custody Record

R224123

Page 1 of 4

BP Site Node Path: _____

Req Due Date (mm/dd/yy): Standard TAT

Rush TAT: Yes ___ No ___

BP Facility No: Former Olympia Bulk Plant

Lab Work Order Number: 175798

Lab Name: Lancaster Laboratories	Facility Address: 1117 West Bay Drive	Consultant/Contractor: ARCADIS
Lab Address: 2425 New Holland Pike, Lancaster PA	City, State, ZIP Code: Olympia, WA	Consultant/Contractor Project No: GPO18PNA.W160
Lab PM: Stacy Butt	Lead Regulatory Agency: WADDE	Address: 1100 Olive Way, Seattle, WA
Lab Phone: 717-658-2300	California Global ID No.: —	Consultant/Contractor PM: Brian Marcum
Lab Shipping Acct: —	Enfos Proposal No.: —	Phone: 206-726-4755 Email: brian.marcum@arcadis.com
Lab Bottle Order No: 175798	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: Brian Marcum and to lab.enfosdoc@bp.com
Other Info: —	Stage: Activity:	Invoice To: BP Contractor <input checked="" type="checkbox"/>

BP Project Manager (PM): —	Matrix	No. Containers / Preservative	Requested Analyses	Report Type & QC Level
BP PM Phone: —				Standard <input checked="" type="checkbox"/>
BP PM Email: —				Full Data Package ___

Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container:	Unpreserved	H2SO4	HNO3	HCl	Methanol	PAHs + Naph by 22015M	SRD by NWTM-Gx	DRO by NWTM-dx	Comments
	AUS-SB-60 (2-2.5)	08-19-15	0715	X				3	2				1	X	X	X	
	AUS-SB-59 (4.5-5)		0730														
	AUS-SB-48 (2-2.5)		0750														
	AUS-SB-58 (2-2.5)		0800														
	AUS-SB-47 (2-2.5)		0815														
	AUS-SB-57 (2-2.5)		0840														MS/MSD
	AUS-SB-46 (2-2.5)		1000														
	AUS-SB-56 (4.5-5)		1015														
	AUS-SB-55 (4.5-5)		1040														
	AUS-SB-45 (2-2.5)	08-19-15	1120	X				3	2				1	X	X	X	

Sampler's Name: Eric Espie	Relinquished By / Affiliation: Eric Espie	Date: 08/21	Time: 1700	Accepted By / Affiliation: [Signature]	Date: 8-22-15	Time: 1625
Shipment Method: UPS	Ship Date: 08-21-15					
Shipment Tracking No:					464 / ELUC	

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 12-2-2 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No



BP Site Node Path: _____ Req Due Date (mm/dd/yy): Standard TAT Rush TAT: Yes ___ No ___
 BP Facility No: Former Olympia Bulk Plant Lab Work Order Number: 175718

Lab Name: <u>Lancaster Laboratories</u>	Facility Address: <u>1117 West Bay Drive</u>	Consultant/Contractor: <u>ARCADES</u>
Lab Address: <u>2425 New Holland Pike, Lancaster, PA</u>	City, State, ZIP Code: <u>Olympia WA</u>	Consultant/Contractor Project No: <u>CP098PNA.WACO</u>
Lab PM: <u>Stacy Buttz</u>	Lead Regulatory Agency: <u>WADOE</u>	Address: <u>1100 Olive Way, Seattle, WA</u>
Lab Phone: <u>717-656-2300</u>	California Global ID No.: <u>-</u>	Consultant/Contractor PM: <u>Brian Marcum</u>
Lab Shipping Acct: <u>-</u>	Enfos Proposal No: <u>-</u>	Phone: <u>206-726-4755</u> Email: <u>brian.marcum@arcades.us.com</u>
Lab Bottle Order No: <u>175718</u>	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: <u>Brian Marcum</u> and to <u>lab.enfosdoc@bp.com</u>
Other Info: <u>-</u>	Stage: _____ Activity: _____	Invoice To: BP ___ Contractor <u>X</u>

BP Project Manager (PM): <u>-</u>	Matrix	No. Containers / Preservative	Requested Analyses	Report Type & QC Level
BP PM Phone: <u>-</u>				Standard <u>X</u>
BP PM Email: <u>-</u>				Full Data Package ___

Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container:	Unpreserved	H2SO4	HNO3	HCl	Methanol	Requested Analyses			Comments
														PAHs + NPH. by 220X SEP	GC by NWPH-5X	PCO by NWPH-5X	
	AUS-58-34 (4.5-5)	08-19-15	1155	X				3	2				1	X	X	X	
	AUS-58-35 (2-2.5)	08-19-15	1200	X				3	2				1	X	X	X	
	AUS-58-36 (2-2.5)	08-19-15	1415	X				3	2				1	X	X	X	
	AUS-58-37 (2-2.5)	08-20-15	0740	X				3	2				1	X	X	X	
	AUS-58-27 (2-2.5)	08-20-15	0905	X				3	2				1	X	X	X	
	AUS-58-31 (2-2.5)	08-20-15	0900	X				3	2				1	X	X	X	
	AUS-58-32 (2-2.5)	08-20-15	0910	X				3	2				1	X	X	X	
	AUS-58-44 (4.5-5)	08-20-15	0955	X				3	2				1	X	X	X	
	AUS-58-22 (2-2.5)	08-20-15	1140	X				9	6			3		X	X	X	MS/MSD
	AUS-58-23 (2-2.5)	08-20-15	1200	X				3	2			1		X	X	X	

Sampler's Name: <u>Eric Epke</u>	Relinquished By / Affiliation		Date	Time	Accepted By / Affiliation		Date	Time
Sampler's Company: <u>ARCADES</u>	<u>Eric Epke</u>		<u>08/21</u>	<u>1700</u>				
Shipment Method: <u>UPS</u>	Ship Date: <u>08-21-15</u>							
Shipment Tracking No:					<u>Yto 4 / ELLE</u>		<u>8/22-15</u>	<u>1025</u>

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 1.2-2.2 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No



Laboratory Management Program LaMP Chain of Custody Record

13255 1586960 8018587-623

R224125

BP Site Node Path:

Req Due Date (mm/dd/yy): Standard TAT Rush TAT: Yes No

BP Facility No: Former Olympia Park Plant

Lab Work Order Number: 175798

Lab Name: Lancaster Laboratories Facility Address: 1117 West Bay Drive Consultant/Contractor: ARCADIS
Lab Address: 2425 New Holland Pike, Lancaster, PA City, State, ZIP Code: Olympia, WA
Lab PM: Stacy Burr Lead Regulatory Agency: WADCE Address: 1100 Olive Way, Seattle, WA
Lab Phone: 717-656-2300 California Global ID No.: - Consultant/Contractor PM: Brian Marcum
Lab Shipping Acct: - Enfos Proposal No: - Phone: 206-726-4755 Email: brian.marcum@arcadis.com
Lab Bottle Order No: 175798 Accounting Mode: Provision OOC-BU OOC-RM Email EDD To: Brian Marcum and to lab.enfosdoc@bp.com
Other Info: - Stage: Activity: Invoice To: BP Contractor X

BP Project Manager (PM): - Matrix No. Containers / Preservative Requested Analyses Report Type & QC Level
BP PM Phone: - Standard X
BP PM Email: - Full Data Package

Table with columns: Lab No., Sample Description, Date, Time, Soil/Liquid, Air/Vapor, Is this location a well?, Total Number of Container, Unpreserved, H2SO4, HNO3, HCl, Methanol, Comments. Includes handwritten entries for AUS-SB-54, AUS-SB-4A, AUS-SB-42, AUS-SB-24, AUS-SB-26A, AUS-SB-25A, AUS-SB-43A, AUS-SB-53, AUS-SB-23, AUS-SB-63.

Sampler's Name: Eric Elce Relinquished By / Affiliation Date Time Accepted By / Affiliation Date Time
Sampler's Company: ARCADIS Eric Elce 08/21 1700
Shipment Method: UPS Ship Date: 08-21-15
Shipment Tracking No: 7451 ELCE 8-22-15 1025

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes/No Temp Blank: Yes/No Cooler Temp on Receipt: 1-2-2.2 °F/C Trip Blank: Yes/No MS/MSD Sample Submitted: Yes/No



Laboratory Management Program LaMP Chain of Custody Record

13255 1586960 8018587-623

R224126

Page 4 of 4

BP Site Node Path:

Req Due Date (mm/dd/yy): Standard TAT Rush TAT: Yes ___ No ___

BP Facility No: Former Olympic Bulk Plant

Lab Work Order Number: 175798

Lab Name: <u>Lancaster Laboratories</u>	Facility Address: <u>1117 West Bay Drive</u>	Consultant/Contractor: <u>ARCADES</u>
Lab Address: <u>2425 New Holland Pkwy Lancaster, PA</u>	City, State, ZIP Code: <u>Olympia, WA</u>	Consultant/Contractor Project No: <u>GP09PPMA, WA60</u>
Lab PM: <u>Stacy Burt</u>	Lead Regulatory Agency: <u>WA DOE</u>	Address: <u>1100 Olive Way, Seattle, WA</u>
Lab Phone: <u>717-656-2500</u>	California Global ID No.: <u>—</u>	Consultant/Contractor PM: <u>Brian Marcum</u>
Lab Shipping Acct: <u>—</u>	Enfos Proposal No.: <u>—</u>	Phone: <u>206-726-4759</u> Email: <u>brian.marcum@arcades.com</u>
Lab Bottle Order No: <u>175798</u>	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: <u>Brian Marcum</u> and to <u>lab.enfosdoc@bp.com</u>
Other Info: <u>—</u>	Stage: _____ Activity: _____	Invoice To: BP ___ Contractor <u>X</u>

Lab No.	Sample Description	Date	Time	Matrix				No. Containers / Preservative				Requested Analyses								Report Type & QC Level					
				Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container:	Unpreserved	H2SO4	HNO3	HCl	Methanol	MSDS	PAH	GRE	DRO	Other	Standard	Full Data Package					
	DUP-3	08-19-15	—	X				3	2																
	DUP-4	08-20-15	—	X				3	2																
	TRIP BLANK	—	—		X			4																	

Sampler's Name: <u>Eric Apple</u>	Relinquished By / Affiliation: <u>Eric Apple</u>	Date: <u>08/21</u>	Time: <u>1700</u>	Accepted By / Affiliation: <u>Lto G / ELLE</u>	Date: <u>8-22-15</u>	Time: <u>1625</u>
Sampler's Company: <u>ARCADES</u>						
Shipment Method: <u>UPS</u>	Ship Date: <u>08-21-15</u>					
Shipment Tracking No: _____						

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 1-2-2.2 °F | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Sample Description: AUS-SB-60(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018587
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 07:15 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS60

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0012 J	0.00080	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0017 J	0.00080	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0051	0.00080	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0014 J	0.00080	0.0020	1
10725	Chrysene	218-01-9	0.0048	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0018 J	0.00080	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.00093 J	0.00080	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0017 J	0.00080	0.0020	1
10725	Naphthalene	91-20-3	0.0092	0.00080	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	17	86	357.53
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	36	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	17.1	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 02:04	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15242A34A	08/30/2015 13:16	Jeremy C Giffin	357.53
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201523538634	08/19/2015 07:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520006A	09/12/2015 01:58	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520006A	08/30/2015 15:30	Denise L Trimby	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-60(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018587
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 07:15 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS60

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-59(4.5-5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018588
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 07:30 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS59

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0034	0.00088	0.0022	1
10725	Benzo(a)pyrene	50-32-8	0.0048	0.00088	0.0022	1
10725	Benzo(b)fluoranthene	205-99-2	0.0081	0.00088	0.0022	1
10725	Benzo(k)fluoranthene	207-08-9	0.0031	0.00088	0.0022	1
10725	Chrysene	218-01-9	0.0070	0.00044	0.0022	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00088	0.0022	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0029	0.00088	0.0022	1
10725	1-Methylnaphthalene	90-12-0	0.0072	0.00088	0.0022	1
10725	2-Methylnaphthalene	91-57-6	0.013	0.00088	0.0022	1
10725	Naphthalene	91-20-3	0.040	0.00088	0.0022	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	16	79	299.37
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	10	3.9	9.2	1
02214	HRO C24-C40 w/Si Gel	n.a.	69	13	39	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	24.5	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 02:37	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15242A34A	08/30/2015 13:52	Jeremy C Giffin	299.37
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201523538634	08/19/2015 07:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520006A	09/12/2015 02:19	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520006A	08/30/2015 15:30	Denise L Trimby	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-59(4.5-5) Soil
 Former Olympia Bulk Plant COC: R224123
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018588
 LL Group # 1586960
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 07:30 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS59

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-48(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018589
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 07:50 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS48

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00080	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0011 J	0.00080	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0031	0.00080	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00080	0.0020	1
10725	Chrysene	218-01-9	0.0024	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00080	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0055	0.00080	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0043	0.00080	0.0020	1
10725	Naphthalene	91-20-3	0.0079	0.00080	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	14	68	283.5
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	20	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	36	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	17.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 03:10	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15242A34A	08/30/2015 14:27	Jeremy C Giffin	283.5
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201523538634	08/19/2015 07:50	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520006A	09/12/2015 03:03	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520006A	08/30/2015 15:30	Denise L Trimby	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-48(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018589
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 07:50 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS48

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-58(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018590
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 08:00 by EE

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS58

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.00092 J	mg/kg	mg/kg	1
10725	Benzo(a)pyrene	50-32-8	0.0012 J	0.00075	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.0045	0.00075	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.0011 J	0.00075	0.0019	1
10725	Chrysene	218-01-9	0.0042	0.00038	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.00097 J	0.00075	0.0019	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00075	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.0012 J	0.00075	0.0019	1
10725	Naphthalene	91-20-3	0.0034	0.00075	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	mg/kg	mg/kg	295.7
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	mg/kg	mg/kg	1
02214	HRO C24-C40 w/Si Gel	n.a.	12 J	3.4	8.0	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	12.6	%	%	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 03:43	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katherlyne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15242A34A	08/30/2015 15:02	Jeremy C Giffin	295.7
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201523538634	08/19/2015 08:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520006A	09/12/2015 03:24	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520006A	08/30/2015 15:30	Denise L Trimby	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-58(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018590
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 08:00 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS58

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-47(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018591
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 08:15 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVS47

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0021	0.00078	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0030	0.00078	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0085	0.00078	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0022	0.00078	0.0020	1
10725	Chrysene	218-01-9	0.0082	0.00039	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00078	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0015 J	0.00078	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0028	0.00078	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0048	0.00078	0.0020	1
10725	Naphthalene	91-20-3	0.0038	0.00078	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	14	69	292.22
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	370	3.5	8.3	1
02214	HRO C24-C40 w/Si Gel	n.a.	210	12	35	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	15.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 04:16	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15242A34A	08/30/2015 15:37	Jeremy C Giffin	292.22
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201523538634	08/19/2015 08:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520006A	09/12/2015 03:46	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520006A	08/30/2015 15:30	Denise L Trimby	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-47(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018591
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 08:15 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS47

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-57(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018592
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 08:40 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVS57

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.00097 J	0.00075	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.0018 J	0.00075	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.0052 J	0.00075	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.00094 J	0.00075	0.0019	1
10725	Chrysene	218-01-9	0.0035	0.00037	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. UJ	0.00075	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.0012 J	0.00075	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.0018 J	0.00075	0.0019	1
10725	Naphthalene	91-20-3	0.0030	0.00075	0.0019	1

The recovery for the sample internal standard(s) is outside the QC acceptance limits. The recovery for the internal standard(s) is also outside the QC acceptance limits in the associated matrix spike(s), indicating a matrix effect.

GC Volatiles	ECY 97-602 NWT PH-Gx	mg/kg	mg/kg	mg/kg	
02005 NWT PH-GX Soil C7-C12	n.a.	N.D.	1.2	6.2	27.39

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWT PH-Dx modified	mg/kg	mg/kg	mg/kg	
02214 DRO C12-C24 w/Si Gel	n.a.	4.1 J	3.4	7.9	1
02214 HRO C24-C40 w/Si Gel	n.a.	25 J	11	34	1

Wet Chemistry	SM 2540 G-1997	%	%	%	
00111 Moisture	n.a.	11.5	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/04/2015 10:47	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katherine V Dinan	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602	1	15238A34A	08/27/2015 17:54	Jeremy C Giffin	27.39
06647	GC-5g Field Preserved MeOH	NWT PH-Gx SW-846 5035A	1	201523538634	08/19/2015 08:40	Client Supplied	n.a.

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-57(2-2.5) Soil
 Former Olympia Bulk Plant COC: R224123
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018592
 LL Group # 1586960
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 08:40 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS57

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520006A	09/12/2015 04:07	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520006A	08/30/2015 15:30	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-57(2-2.5)MS Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018593
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 08:40 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS57

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.033	0.00075	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.035	0.00075	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.052	0.00075	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.042	0.00075	0.0019	1
10725	Chrysene	218-01-9	0.037	0.00037	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	0.023	0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.021	0.00075	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.038	0.00075	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.041	0.00075	0.0019	1
10725	Naphthalene	91-20-3	0.042	0.00075	0.0019	1
GC Volatiles ECY 97-602 NWT PH-Gx						
02005	NWT PH-GX Soil C7-C12	n.a.	17	1.4	7.1	31.36
GC Petroleum ECY 97-602 NWT PH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	110	3.4	7.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	24 J	11	34	1
Wet Chemistry SM 2540 G-1997						
00118	Moisture	n.a.	11.5	0.50	0.50	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/04/2015 11:21	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katherlyne V Dinan	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602 NWT PH-Gx	1	15238A34A	08/27/2015 18:33	Jeremy C Giffin	31.36
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015 08:40	Client Supplied	n.a.
02214	NWT PH-Dx soil w/Si Gel	ECY 97-602 NWT PH-Dx modified	1	152520006A	09/12/2015 04:29	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWT PH-Dx 06/97	1	152520006A	08/30/2015 15:30	Denise L Trimby	1
00118	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-57(2-2.5)MSD Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018594
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 08:40 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS57

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.034	0.00075	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.034	0.00075	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.050	0.00075	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.040	0.00075	0.0019	1
10725	Chrysene	218-01-9	0.038	0.00037	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	0.021	0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.020	0.00075	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.034	0.00075	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.036	0.00075	0.0019	1
10725	Naphthalene	91-20-3	0.037	0.00075	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	17	1.2	5.9	25.91
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	120	3.4	7.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	26 J	11	34	1
Wet Chemistry SM 2540 G-1997						
00118	Moisture	n.a.	11.5	0.50	0.50	1
00121	Moisture Duplicate	n.a.	11.6	0.50	0.50	1
The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/04/2015 11:55	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katherine V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15238A34A	08/27/2015 19:09	Jeremy C Giffin	25.91
06647	GC-5g Field Preserved MeOH	NWTPH-Gx SW-846 5035A	1	201523538634	08/19/2015 08:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520006A	09/12/2015 04:51	Heather E Williams	1
07024	DRO Alternate Soil Extraction	NWTPH-Dx modified ECY 97-602 NWTPH-Dx 06/97	1	152520006A	08/30/2015 15:30	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-57(2-2.5)MSD Soil
 Former Olympia Bulk Plant COC: R224123
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018594
 LL Group # 1586960
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 08:40 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS57

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-46(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018595
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 10:00 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS46

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0055	0.00081	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0061	0.00081	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.013 J	0.00081	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0042	0.00081	0.0020	1
10725	Chrysene	218-01-9	0.011 J	0.00041	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00081	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0025	0.00081	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.013 J	0.00081	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.022 J	0.00081	0.0020	1
10725	Naphthalene	91-20-3	0.019	0.00081	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	18	91	372.92
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	110	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel	n.a.	170	12	36	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	17.9	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 04:48	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15242A34A	08/30/2015 16:13	Jeremy C Giffin	372.92
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201523538634	08/19/2015 10:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520006A	09/12/2015 05:12	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520006A	08/30/2015 15:30	Denise L Trimby	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-46(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018595
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 10:00 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS46

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-56(4.5-5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018596
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 10:15 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS56

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0016 J	0.00088	0.0022	1
10725	Benzo(a)pyrene	50-32-8	0.0025	0.00088	0.0022	1
10725	Benzo(b)fluoranthene	205-99-2	0.0070	0.00088	0.0022	1
10725	Benzo(k)fluoranthene	207-08-9	0.0017 J	0.00088	0.0022	1
10725	Chrysene	218-01-9	0.0046	0.00044	0.0022	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00088	0.0022	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0013 J	0.00088	0.0022	1
10725	1-Methylnaphthalene	90-12-0	0.0084	0.00088	0.0022	1
10725	2-Methylnaphthalene	91-57-6	0.015	0.00088	0.0022	1
10725	Naphthalene	91-20-3	0.028	0.00088	0.0022	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	16	79	296.61
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	23	3.9	9.2	1
02214	HRO C24-C40 w/Si Gel	n.a.	81	13	39	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	25.0	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 07:00	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15242A34A	08/30/2015 16:48	Jeremy C Giffin	296.61
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201523538634	08/19/2015 10:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520007A	09/12/2015 06:18	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520007A	08/31/2015 08:45	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-56(4.5-5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018596
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 10:15 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS56

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-55(4.5-5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018597
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 10:40 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS55

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00094	0.0023	1
10725	Benzo(a)pyrene	50-32-8	0.0011 J	0.00094	0.0023	1
10725	Benzo(b)fluoranthene	205-99-2	0.0019 J	0.00094	0.0023	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00094	0.0023	1
10725	Chrysene	218-01-9	0.0011 J	0.00047	0.0023	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00094	0.0023	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00094	0.0023	1
10725	1-Methylnaphthalene	90-12-0	0.0011 J	0.00094	0.0023	1
10725	2-Methylnaphthalene	91-57-6	0.0017 J	0.00094	0.0023	1
10725	Naphthalene	91-20-3	0.0074	0.00094	0.0023	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	17	86	305.23
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	4.2	9.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	14	42	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	29.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 05:22	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katherlyne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15242A34A	08/30/2015 17:58	Jeremy C Giffin	305.23
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201523538634	08/19/2015 10:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520007A	09/12/2015 07:01	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520007A	08/31/2015 08:45	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-55(4.5-5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018597
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 10:40 by EE Atlantic Richfield c/o ARCADIS
Suite 600
Submitted: 08/22/2015 10:25 630 Plaza Drive
Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS55

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-45(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018598
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 11:20 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS45

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.016	0.00095	0.0024	1
10725	Benzo(a)pyrene	50-32-8	0.040 J	0.00095	0.0024	1
10725	Benzo(b)fluoranthene	205-99-2	0.069 J	0.00095	0.0024	1
10725	Benzo(k)fluoranthene	207-08-9	0.014 J	0.00095	0.0024	1
10725	Chrysene	218-01-9	0.031	0.00047	0.0024	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0027 J	0.00095	0.0024	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0073 J	0.00095	0.0024	1
10725	1-Methylnaphthalene	90-12-0	0.034	0.00095	0.0024	1
10725	2-Methylnaphthalene	91-57-6	0.079	0.00095	0.0024	1
10725	Naphthalene	91-20-3	0.060	0.00095	0.0024	1

The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken:
The sample was re-analyzed and internal standard areas are again outside of the QC acceptance limits, indicating a matrix effect. The reported data is from the initial analysis of the sample.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	19	94	329.79
Reporting limits were raised due to sample foaming.						

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg		
02214	DRO C12-C24 w/Si Gel	n.a.	48	4.3	10	1
02214	HRO C24-C40 w/Si Gel	n.a.	130	14	43	1

Wet Chemistry	SM 2540 G-1997	%	%	%		
00111	Moisture	n.a.	29.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 08:39	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katherlyne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15242A34A	08/30/2015 18:34	Jeremy C Giffin	329.79

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-45(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018598
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 11:20 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVS45

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015 11:20	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015 09:33	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-34(4.5-5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018599
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 11:55 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS34

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270C SIM		mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0056	0.0012	0.0029	1
10725	Benzo(a)pyrene	50-32-8	0.047 J	0.0012	0.0029	1
10725	Benzo(b)fluoranthene	205-99-2	0.073 J	0.0012	0.0029	1
10725	Benzo(k)fluoranthene	207-08-9	N.D. UJ	0.0012	0.0029	1
10725	Chrysene	218-01-9	0.012	0.00058	0.0029	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0015 J	0.0012	0.0029	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0029 J	0.0012	0.0029	1
10725	1-Methylnaphthalene	90-12-0	1.3	0.012	0.029	10
10725	2-Methylnaphthalene	91-57-6	1.7	0.012	0.029	10
10725	Naphthalene	91-20-3	0.38	0.0012	0.0029	1

The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken:
The sample was re-analyzed and internal standard areas are again outside of the QC acceptance limits, indicating a matrix effect. The reported data is from the initial analysis of the sample.

GC Volatiles	ECY 97-602 NWT PH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWT PH-GX Soil C7-C12	n.a.	180	27	130 383.19

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWT PH-Dx modified	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel	n.a.	420	5.2	12 1
02214	HRO C24-C40 w/Si Gel	n.a.	51 J	17	52 1

Wet Chemistry	SM 2540 G-1997	%	%	%	
00111	Moisture	n.a.	42.4	0.50	0.50 1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 09:12	Brian K Graham	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/07/2015 00:57	Brian K Graham	10
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katheryne V Dinan	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602 NWT PH-Gx	1	15242A34A	08/30/2015 19:09	Jeremy C Giffin	383.19

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-34(4.5-5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018599
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 11:55 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVS34

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015 11:55	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015 07:23	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-35(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018600
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 12:00 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS35

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.029	0.0078	0.020	10
10725	Benzo(a)pyrene	50-32-8	0.055 J	0.0078	0.020	10
10725	Benzo(b)fluoranthene	205-99-2	0.21 J	0.0078	0.020	10
10725	Benzo(k)fluoranthene	207-08-9	N.D. UJ	0.0078	0.020	10
10725	Chrysene	218-01-9	0.072	0.0039	0.020	10
10725	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.0078	0.020	10
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.014 J	0.0078	0.020	10
10725	1-Methylnaphthalene	90-12-0	0.013 J	0.0078	0.020	10
10725	2-Methylnaphthalene	91-57-6	0.025	0.0078	0.020	10
10725	Naphthalene	91-20-3	0.026	0.0078	0.020	10

The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken:
The sample was re-analyzed and internal standard areas are again outside of the QC acceptance limits, indicating a matrix effect. The reported data is from the initial analysis of the sample.

GC Volatiles	ECY 97-602 NWTTPH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWTTPH-GX Soil C7-C12	n.a.	N.D.	15	77	328.08
Reporting limits were raised due to sample foaming.						

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTTPH-Dx modified	mg/kg	mg/kg	mg/kg		
02214	DRO C12-C24 w/Si Gel	n.a.	200	18	41	5
02214	HRO C24-C40 w/Si Gel	n.a.	1,900	59	180	5

Wet Chemistry	SM 2540 G-1997	%	%	%		
00111	Moisture	n.a.	15.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 11:23	Brian K Graham	10
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katherlyne V Dinan	1
02005	NWTTPH-GX Soil C7-C12	ECY 97-602 NWTTPH-Gx	1	15242A34A	08/30/2015 19:44	Jeremy C Giffin	328.08

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-35(2-2.5) Soil
 Former Olympia Bulk Plant COC: R224123
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018600
 LL Group # 1586960
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 12:00 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVS35

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015 12:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015 12:48	Heather E Williams	5
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-36(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018601
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 14:15 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS36

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM mg/kg						
10725	Benzo(a)anthracene	56-55-3	0.014	0.00074	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.013 J	0.00074	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.036 J	0.00074	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.012 J	0.00074	0.0019	1
10725	Chrysene	218-01-9	0.024	0.00037	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0021 J	0.00074	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0048 J	0.00074	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.0022	0.00074	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.0036	0.00074	0.0019	1
10725	Naphthalene	91-20-3	0.0043	0.00074	0.0019	1

The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken:
The sample was re-analyzed and internal standard areas are again outside of the QC acceptance limits, indicating a matrix effect. The reported data is from the initial analysis of the sample.

GC Volatiles	ECY 97-602 NWT PH-Gx	mg/kg	mg/kg	mg/kg
02005	NWT PH-GX Soil C7-C12	n.a.	N.D.	73
Reporting limits were raised due to sample foaming.				

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWT PH-Dx modified	mg/kg	mg/kg	mg/kg
02214	DRO C12-C24 w/Si Gel	n.a.	21	7.8
02214	HRO C24-C40 w/Si Gel	n.a.	240	34

Wet Chemistry	SM 2540 G-1997	%	%	%
00111	Moisture	n.a.	10.9	0.50
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.				

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 09:44	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katherlyne V Dinan	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602 NWT PH-Gx	1	15242A34A	08/30/2015 20:19	Jeremy C Giffin	323.55

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-36(2-2.5) Soil
 Former Olympia Bulk Plant COC: R224123
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018601
 LL Group # 1586960
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 14:15 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVS36

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015 14:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015 09:54	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-37(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018602
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 07:40 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS37

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.00083 J	0.00074	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.0014 J	0.00074	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.0047	0.00074	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.00095 J	0.00074	0.0019	1
10725	Chrysene	218-01-9	0.0031	0.00037	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00074	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00074	0.0019	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00074	0.0019	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00074	0.0019	1
10725	Naphthalene	91-20-3	0.00080 J	0.00074	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	15	73	328.2
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	10	3.3	7.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	68	11	33	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	10.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 05:54	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katherlyne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15242A34A	08/30/2015 20:55	Jeremy C Giffin	328.2
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201523538634	08/20/2015 07:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520007A	09/12/2015 07:44	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520007A	08/31/2015 08:45	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-37(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018602
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 07:40 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS37

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-27(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018603
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 08:05 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS27

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0021	0.00084	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.026J	0.00084	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.031J	0.00084	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	N.D. UJ	0.00084	0.0021	1
10725	Chrysene	218-01-9	0.0053	0.00042	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.00084	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0011 J	0.00084	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.0022	0.00084	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.0045	0.00084	0.0021	1
10725	Naphthalene	91-20-3	0.0077	0.00084	0.0021	1

The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken:
The sample was re-analyzed and internal standard areas are again outside of the QC acceptance limits, indicating a matrix effect. The reported data is from the initial analysis of the sample.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	21	110	417.27
Reporting limits were raised due to sample foaming.						

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg		
02214	DRO C12-C24 w/Si Gel	n.a.	52	19	44	5
02214	HRO C24-C40 w/Si Gel	n.a.	500	63	190	5

Wet Chemistry	SM 2540 G-1997	%	%	%		
00111	Moisture	n.a.	20.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 07:33	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katherlyne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15242A34A	08/30/2015 21:30	Jeremy C Giffin	417.27

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-27(2-2.5) Soil
 Former Olympia Bulk Plant COC: R224123
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018603
 LL Group # 1586960
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 08:05 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVS27

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015 08:05	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015 10:16	Heather E Williams	5
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-31(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018604
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 09:00 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS31

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0092	0.0013	0.0032	1
10725	Benzo(a)pyrene	50-32-8	0.013 J	0.0013	0.0032	1
10725	Benzo(b)fluoranthene	205-99-2	0.037 J	0.0013	0.0032	1
10725	Benzo(k)fluoranthene	207-08-9	0.0086 J	0.0013	0.0032	1
10725	Chrysene	218-01-9	0.017	0.00065	0.0032	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.0013	0.0032	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0045 J	0.0013	0.0032	1
10725	1-Methylnaphthalene	90-12-0	0.016	0.0013	0.0032	1
10725	2-Methylnaphthalene	91-57-6	0.020	0.0013	0.0032	1
10725	Naphthalene	91-20-3	0.030	0.0013	0.0032	1

The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken:
The sample was re-analyzed and internal standard areas are again outside of the QC acceptance limits, indicating a matrix effect. The reported data is from the initial analysis of the sample.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	28	140	354.54
Reporting limits were raised due to sample foaming.						

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg		
02214	DRO C12-C24 w/Si Gel	n.a.	53	5.8	14	1
02214	HRO C24-C40 w/Si Gel	n.a.	170	19	58	1

Wet Chemistry	SM 2540 G-1997	%	%	%		
00111	Moisture	n.a.	48.5	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 10:17	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katherlyne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15242A34A	08/30/2015 22:05	Jeremy C Giffin	354.54

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-31(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018604
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 09:00 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVS31

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015 09:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015 08:06	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-32(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018605
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 09:10 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS32

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0014 J	0.00084	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.0021	0.00084	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.0046	0.00084	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	0.0012 J	0.00084	0.0021	1
10725	Chrysene	218-01-9	0.0036	0.00042	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00084	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.00090 J	0.00084	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.0028	0.00084	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.0055	0.00084	0.0021	1
10725	Naphthalene	91-20-3	0.0053	0.00084	0.0021	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	14	69	275.19
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.8	8.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	13	38	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	20.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 06:27	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katherlyne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15242A34A	08/30/2015 22:40	Jeremy C Giffin	275.19
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201523538634	08/20/2015 09:10	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520008A	09/12/2015 07:44	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520008A	08/31/2015 08:45	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-32(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018605
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 09:10 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS32

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-44(4.5-5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018606
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 09:55 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS44

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM mg/kg						
10725	Benzo(a)anthracene	56-55-3	N.D. R	0.027	0.068	20
10725	Benzo(a)pyrene	50-32-8	N.D. R	0.027	0.068	20
10725	Benzo(b)fluoranthene	205-99-2	N.D. R	0.027	0.068	20
10725	Benzo(k)fluoranthene	207-08-9	N.D. R	0.027	0.068	20
10725	Chrysene	218-01-9	0.028 J	0.014	0.068	20
10725	Dibenz(a,h)anthracene	53-70-3	N.D. R	0.027	0.068	20
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. R	0.027	0.068	20
10725	1-Methylnaphthalene	90-12-0	2.6 J	0.027	0.068	20
10725	2-Methylnaphthalene	91-57-6	2.3 J	0.027	0.068	20
10725	Naphthalene	91-20-3	0.71 J	0.027	0.068	20

The holding time was not met. Per client request, the sample was placed on hold. When released for analysis, the holding time had already expired.

GC Volatiles	ECY 97-602 NWT PH-Gx	mg/kg	mg/kg	mg/kg	
02005 NWT PH-GX Soil C7-C12	n.a.	1,900	64	320	778.26

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWT PH-Dx modified	mg/kg	mg/kg	mg/kg	
02214 DRO C12-C24 w/Si Gel	n.a.	820	6.1	14	1
02214 HRO C24-C40 w/Si Gel	n.a.	34 J	20	61	1

Wet Chemistry	SM 2540 G-1997	%	%	%	
00111 Moisture	n.a.	51.0	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15273SLE026	10/02/2015 16:14	Holly B Ziegler	20
10811	BNA Soil Microwave SIM	SW-846 3546	1	15273SLE026	10/01/2015 09:30	Jessica M Velez	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602 NWT PH-Gx	1	15268A31B	09/30/2015 04:40	Marie D Beamenderfer	778.26
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201527138944	08/20/2015 09:55	Client Supplied	n.a.
02214	NWT PH-Dx soil w/Si Gel	ECY 97-602 NWT PH-Dx modified	1	152750011A	10/06/2015 19:46	Christine E Dolman	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-44(4.5-5) Soil
 Former Olympia Bulk Plant COC: R224123
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018606
 LL Group # 1586960
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 09:55 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS44

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152750011A	10/03/2015 15:25	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15268820001A	09/25/2015 20:03	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-22(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018607
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 11:40 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS22

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0082 J	0.00084	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.0074 J	0.00084	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.018	0.00084	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	0.0051 J	0.00084	0.0021	1
10725	Chrysene	218-01-9	0.016 J	0.00042	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0015 J	0.00084	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0052 J	0.00084	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.011 J	0.00084	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.015 J	0.00084	0.0021	1
10725	Naphthalene	91-20-3	0.016 J	0.00084	0.0021	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken:
The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	18	90	353.72
Reporting limits were raised due to sample foaming.						

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg		
02214	DRO C12-C24 w/Si Gel	n.a.	N.D. UJ	3.7	8.7	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	37	1

Wet Chemistry	SM 2540 G-1997	%	%	%		
00111	Moisture	n.a.	21.0	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 03:15	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-22(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018607
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 11:40 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVS22

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015 01:37	Jeremy C Giffin	353.72
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015 11:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015 08:27	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-22(2-2.5)MS Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018608
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 11:40 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS22

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.060	0.00083	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.056	0.00083	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.079	0.00083	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	0.058	0.00083	0.0021	1
10725	Chrysene	218-01-9	0.074	0.00042	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	0.032	0.00083	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.037	0.00083	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.064	0.00083	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.072	0.00083	0.0021	1
10725	Naphthalene	91-20-3	0.063	0.00083	0.0021	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken:
The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	18 J	14	68 266.93
GC Petroleum	ECY 97-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified					
02214	DRO C12-C24 w/Si Gel	n.a.	140	3.8	8.8 1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	13	38 1
Wet Chemistry	SM 2540 G-1997	%	%	%	
00118	Moisture	n.a.	21.0	0.50	0.50 1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 04:54	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:00	Nicholas W Shroyer	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15239A34A	08/31/2015 02:12	Jeremy C Giffin	266.93
06647	GC-5g Field Preserved MeOH	NWTPH-Gx SW-846 5035A	1	201523538634	08/20/2015 11:40	Client Supplied	n.a.

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-22(2-2.5)MS Soil
 Former Olympia Bulk Plant COC: R224123
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018608
 LL Group # 1586960
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 11:40 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS22

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015 08:49	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015 08:45	Olivia Arosemena	1
00118	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-22(2-2.5)MSD Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018609
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 11:40 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS22

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.067	0.00083	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.066	0.00083	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.096	0.00083	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	0.066	0.00083	0.0021	1
10725	Chrysene	218-01-9	0.082	0.00042	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	0.030	0.00083	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.038	0.00083	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.069	0.00083	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.076	0.00083	0.0021	1
10725	Naphthalene	91-20-3	0.070	0.00083	0.0021	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken:
The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg
02005 NWTPH-GX Soil C7-C12	n.a.	19 J	15	73

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg
02214 DRO C12-C24 w/Si Gel	n.a.	110	3.8	8.8
02214 HRO C24-C40 w/Si Gel	n.a.	N.D.	13	38

Wet Chemistry	SM 2540 G-1997	%	%	%
00118 Moisture	n.a.	21.0	0.50	0.50
00121 Moisture Duplicate	n.a.	17.0	0.50	0.50

The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 05:27	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-22(2-2.5)MSD Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018609
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 11:40 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVS22

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015 02:47	Jeremy C Giffin	287.48
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015 11:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015 09:11	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015 08:45	Olivia Arosemena	1
00118	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015 22:28	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	15240820002B	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-54(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018611
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 12:10 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS54

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.040	0.0038	0.0096	5
10725	Benzo(a)pyrene	50-32-8	0.036	0.0038	0.0096	5
10725	Benzo(b)fluoranthene	205-99-2	0.092	0.0038	0.0096	5
10725	Benzo(k)fluoranthene	207-08-9	0.025 J	0.0038	0.0096	5
10725	Chrysene	218-01-9	0.075	0.0019	0.0096	5
10725	Dibenz(a,h)anthracene	53-70-3	0.0075 J	0.0038	0.0096	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.025	0.0038	0.0096	5
10725	1-Methylnaphthalene	90-12-0	0.033	0.0038	0.0096	5
10725	2-Methylnaphthalene	91-57-6	0.054	0.0038	0.0096	5
10725	Naphthalene	91-20-3	0.053	0.0038	0.0096	5

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken:
The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	14	72	311.68
Reporting limits were raised due to sample foaming.						

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg		
02214	DRO C12-C24 w/Si Gel	n.a.	23	3.5	8.1	1
02214	HRO C24-C40 w/Si Gel	n.a.	140	12	35	1

Wet Chemistry	SM 2540 G-1997	%	%	%		
00111	Moisture	n.a.	13.8	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 03:48	Brian K Graham	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-54(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018611
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 12:10 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVS54

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015 03:22	Jeremy C Giffin	311.68
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015 12:10	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015 11:21	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-4A(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018612
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 12:30 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS4A

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0036	0.00081	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0030	0.00081	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0096	0.00081	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0041 J	0.00081	0.0020	1
10725	Chrysene	218-01-9	0.011	0.00041	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00081	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0018 J	0.00081	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0012 J	0.00081	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0022	0.00081	0.0020	1
10725	Naphthalene	91-20-3	0.0019 J	0.00081	0.0020	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken:
The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	16	78	318.6
Reporting limits were raised due to sample foaming.						

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg		
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.6	8.5	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	36	1

Wet Chemistry	SM 2540 G-1997	%	%	%		
00111	Moisture	n.a.	18.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 04:21	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-4A(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018612
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 12:30 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVS4A

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015 03:58	Jeremy C Giffin	318.6
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015 12:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015 08:06	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015 22:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-42(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018613
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 10:00 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS42

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.028	0.0036	0.0091	5
10725	Benzo(a)pyrene	50-32-8	0.023	0.0036	0.0091	5
10725	Benzo(b)fluoranthene	205-99-2	0.051	0.0036	0.0091	5
10725	Benzo(k)fluoranthene	207-08-9	0.018 J	0.0036	0.0091	5
10725	Chrysene	218-01-9	0.046	0.0018	0.0091	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0036	0.0091	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.011	0.0036	0.0091	5
10725	1-Methylnaphthalene	90-12-0	0.028	0.0036	0.0091	5
10725	2-Methylnaphthalene	91-57-6	0.037	0.0036	0.0091	5
10725	Naphthalene	91-20-3	0.032	0.0036	0.0091	5

The recovery for a target analyte(s) in the Laboratory Control Spike(s) and the recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary.

The following corrective action was taken:
The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

GC Volatiles	ECY 97-602 NWT PH-Gx	mg/kg	mg/kg	mg/kg	
02005 NWT PH-GX Soil C7-C12	n.a.	N.D.	13	64	294.1
Reporting limits were raised due to sample foaming.					

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWT PH-Dx modified	mg/kg	mg/kg	mg/kg	
02214 DRO C12-C24 w/Si Gel	n.a.	N.D.	3.3	7.7	1
02214 HRO C24-C40 w/Si Gel	n.a.	13 J	11	33	1

Wet Chemistry	SM 2540 G-1997	%	%	%	
00111 Moisture	n.a.	8.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 06:00	Brian K Graham	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-42(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018613
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 10:00 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVS42

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015 04:33	Jeremy C Giffin	294.1
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015 10:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015 08:27	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820003A	08/28/2015 21:09	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-26A(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018615
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 12:55 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS26

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0047	0.012	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0047	0.012	5
10725	Benzo(b)fluoranthene	205-99-2	0.0049 J	0.0047	0.012	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0047	0.012	5
10725	Chrysene	218-01-9	0.0042 J	0.0023	0.012	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0047	0.012	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0047	0.012	5
10725	1-Methylnaphthalene	90-12-0	N.D.	0.0047	0.012	5
10725	2-Methylnaphthalene	91-57-6	N.D.	0.0047	0.012	5
10725	Naphthalene	91-20-3	0.0048 J	0.0047	0.012	5

Reporting limits were raised due to interference from the sample matrix.

GC Volatiles ECY 97-602 NWTPH-Gx						
			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	23	110	401.88

Reporting limits were raised due to sample foaming.

GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
			mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel	n.a.	76	21	49	5
02214	HRO C24-C40 w/Si Gel	n.a.	900	71	210	5

Wet Chemistry SM 2540 G-1997						
			%	%	%	
00111	Moisture	n.a.	29.2	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 06:33	Brian K Graham	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:00	Nicholas W Shroyer	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015 05:08	Jeremy C Giffin	401.88
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015 12:55	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015 22:39	Heather E Williams	5

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-26A(2-2.5) Soil
 Former Olympia Bulk Plant COC: R224123
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018615
 LL Group # 1586960
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 12:55 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS26

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820003A	08/28/2015 21:09	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-25A(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018616
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 15:00 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS25

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0036	0.00078	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.0049	0.00078	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.012	0.00078	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.0045 J	0.00078	0.0019	1
10725	Chrysene	218-01-9	0.0079	0.00039	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	0.00098 J	0.00078	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0036	0.00078	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.0017 J	0.00078	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.0032	0.00078	0.0019	1
10725	Naphthalene	91-20-3	0.0046	0.00078	0.0019	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken:
The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	13	65	277.63
Reporting limits were raised due to sample foaming.						

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg		
02214	DRO C12-C24 w/Si Gel	n.a.	5.8 J	3.5	8.1	1
02214	HRO C24-C40 w/Si Gel	n.a.	55	12	35	1

Wet Chemistry	SM 2540 G-1997	%	%	%		
00111	Moisture	n.a.	14.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 07:06	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-25A(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018616
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 15:00 by EE

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25

630 Plaza Drive

Reported: 10/08/2015 14:30

Highlands Ranch CO 80129

AVS25

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015 06:19	Jeremy C Giffin	277.63
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015 15:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015 08:49	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820003A	08/28/2015 21:09	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-43A(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018617
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 13:05 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS43

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.066	0.0040	0.010	5
10725	Benzo(a)pyrene	50-32-8	0.059	0.0040	0.010	5
10725	Benzo(b)fluoranthene	205-99-2	0.13	0.0040	0.010	5
10725	Benzo(k)fluoranthene	207-08-9	0.053 J	0.0040	0.010	5
10725	Chrysene	218-01-9	0.11	0.0020	0.010	5
10725	Dibenz(a,h)anthracene	53-70-3	0.0082 J	0.0040	0.010	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.027	0.0040	0.010	5
10725	1-Methylnaphthalene	90-12-0	0.013	0.0040	0.010	5
10725	2-Methylnaphthalene	91-57-6	0.025	0.0040	0.010	5
10725	Naphthalene	91-20-3	0.052	0.0040	0.010	5

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken:
The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	17	87	356.26
Reporting limits were raised due to sample foaming.						

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg		
02214	DRO C12-C24 w/Si Gel	n.a.	10	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel	n.a.	77	12	36	1

Wet Chemistry	SM 2540 G-1997	%	%	%		
00111	Moisture	n.a.	17.8	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 07:39	Brian K Graham	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-43A(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018617
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 13:05 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVS43

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015 06:54	Jeremy C Giffin	356.26
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015 13:05	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015 09:11	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820003A	08/28/2015 21:09	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-63(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018620
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 16:00 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVS63

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0062 J	0.0035	0.0086	5
10725	Benzo(a)pyrene	50-32-8	0.0050 J	0.0035	0.0086	5
10725	Benzo(b)fluoranthene	205-99-2	0.018	0.0035	0.0086	5
10725	Benzo(k)fluoranthene	207-08-9	0.0069 J	0.0035	0.0086	5
10725	Chrysene	218-01-9	0.0097	0.0017	0.0086	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0035	0.0086	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0052 J	0.0035	0.0086	5
10725	1-Methylnaphthalene	90-12-0	N.D.	0.0035	0.0086	5
10725	2-Methylnaphthalene	91-57-6	0.0038 J	0.0035	0.0086	5
10725	Naphthalene	91-20-3	0.0056 J	0.0035	0.0086	5

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken:
The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	12	298.29

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel	n.a.	6.4 J	3.1	1
02214	HRO C24-C40 w/Si Gel	n.a.	61	10	1

Wet Chemistry	SM 2540 G-1997	%	%	%	
00111	Moisture	n.a.	4.1	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 08:13	Brian K Graham	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:00	Nicholas W Shroyer	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015 07:29	Jeremy C Giffin	298.29

*=This limit was used in the evaluation of the final result

Sample Description: AUS-SB-63(2-2.5) Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018620
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 16:00 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVS63

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015 16:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015 09:33	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820003A	08/28/2015 21:09	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-3 Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018621
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVSD3

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0013 J	0.00081	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0014 J	0.00081	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0042 J	0.00081	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0017 J	0.00081	0.0020	1
10725	Chrysene	218-01-9	0.0038 J	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.00081	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.00085 J	0.00081	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0019 J	0.00081	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0031 J	0.00081	0.0020	1
10725	Naphthalene	91-20-3	0.0038 J	0.00081	0.0020	1

The recovery for a target analyte(s) in the Laboratory Control Spike(s) and the recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary.

The following corrective action was taken:
The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial.

GC Volatiles	ECY 97-602 NWT PH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWT PH-GX Soil C7-C12	n.a.	N.D.	18	91	376.54
Reporting limits were raised due to sample foaming.						

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWT PH-Dx modified	mg/kg	mg/kg	mg/kg		
02214	DRO C12-C24 w/Si Gel	n.a.	150	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel	n.a.	270	12	36	1

Wet Chemistry	SM 2540 G-1997	%	%	%		
00111	Moisture	n.a.	17.6	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 08:46	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-3 Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018621
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVSD3

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15244A34A	09/02/2015 21:30	Marie D Beamenderfer	376.54
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015 00:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015 10:59	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820003A	08/28/2015 21:09	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-4 Soil
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018622
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVSD4

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.026 J	0.013	0.033	10
10725	Benzo(a)pyrene	50-32-8	0.028 J	0.013	0.033	10
10725	Benzo(b)fluoranthene	205-99-2	0.032 J	0.013	0.033	10
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.013	0.033	10
10725	Chrysene	218-01-9	0.038	0.0065	0.033	10
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.013	0.033	10
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.013	0.033	10
10725	1-Methylnaphthalene	90-12-0	2.5	0.013	0.033	10
10725	2-Methylnaphthalene	91-57-6	2.5	0.013	0.033	10
10725	Naphthalene	91-20-3	0.55	0.013	0.033	10
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	990 J	120	620	1569.26
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	1,900 J	30	69	5
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	98	300	5
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	49.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/09/2015 08:27	Brian K Graham	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:00	Nicholas W Shroyer	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015 08:04	Jeremy C Giffin	1569.26
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015 00:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015 10:16	Heather E Williams	5
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015 08:45	Olivia Arosemena	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-4 Soil
 Former Olympia Bulk Plant COC: R224123
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018622
 LL Group # 1586960
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 by EE

Atlantic Richfield c/o ARCADIS

Submitted: 08/22/2015 10:25

Suite 600

Reported: 10/08/2015 14:30

630 Plaza Drive

Highlands Ranch CO 80129

AVSD4

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15240820003A	08/28/2015 21:09	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: TRIP BLANK Water
Former Olympia Bulk Plant COC: R224123
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8018623
LL Group # 1586960
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

AVSTB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
	ECY 97-602	NWTPH-Gx	ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	N.D.	50	250	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15238A53A	08/27/2015 14:50	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15238A53A	08/27/2015 14:50	Brett W Kenyon	1

*=This limit was used in the evaluation of the final result

BP OLY

Data Review

OLYMPIA, WA

Semivolatiles and TPH

SDG # 1589716

Analyses Performed By:
Lancaster Laboratories
Lancaster, PA

Report # 24722R
Review Level: Tier II
Project: GP09BPNA.WA60.K000

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1589716 for samples collected in association with the BP OLY site. The review was conducted at a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	TPH	MET	TSS
SB-53-7.5	8032047	Soil	08/27/15			X	X		
SB-42-7.5	8034048	Soil	08/27/15			X	X		
SB-31-7.5	8032049	Soil	08/27/15			X	X		
SB-32-7.5	8032050	Soil	08/27/15			X	X		
SB-22-7.5	8032051	Soil	08/27/15			X	X		
SB-23-A-7.5	8032052	Soil	08/27/15			X	X		
SB-16-7.5	8032053	Soil	08/27/15			X	X		
SB-15-7.5	8032054	Soil	08/27/15			X	X		
SB-63-7.5	8032055	Soil	08/27/15			X	X		
SB-54-7.5	8032056	Soil	08/27/15			X	X		
SB-43-A-7.5	8032057	Soil	08/27/15			X	X		
SB-55-9.5	8032058	Soil	08/27/15			X	X		
SB-1A-12.5	8032059	Soil	08/28/15			X	X		
SB-2-9.5	8032062	Soil	08/28/15			X	X		
SB-5A-12.5	8032063	Soil	08/28/15			X	X		
SB-4A-7.5	8032064	Soil	08/28/15			X	X		
SB-9-7.5	8032065	Soil	08/28/15			X	X		
SB-10-7.5	8032066	Soil	08/28/15			X	X		
SB-58-7.5	8032067	Soil	08/28/15			X	X		
DUP-5	8032068	Soil	08/28/15	SB-5A-12.5		X	X		
SB-41-7.5	8032069	Soil	08/28/15			X	X		
SB-52-7.5	8032070	Soil	08/28/15			X	X		
SB-30-7.5	8032071	Soil	08/28/15			X	X		
SB-40-7.5	8032072	Soil	08/28/15			X	X		
SB-51-7.5	8032073	Soil	08/28/15			X	X		
SB-62-7.5	8032074	Soil	08/28/15			X	X		
SB-1A-7.5	8032075	Soil	08/28/15			X	X		

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	TPH	MET	TSS
SB-29-7.5	8032076	Soil	08/28/15			X	X		
SB-39-7.5	8032077	Soil	08/28/15			X	X		
SB-25A-7.5	8032078	Soil	08/28/15			X	X		
SB-25A-12.5	8032079	Soil	08/28/15			X	X		
SB-5A-7.5	8032080	Soil	08/28/15			X	X		
SB-50-7.5	8032081	Soil	08/28/15			X	X		
SB-61-7.5	8032082	Soil	08/28/15			X	X		
SB-21-7.5	8032083	Soil	08/28/15			X	X		
SB-28-7.5	8032084	Soil	08/28/15			X	X		
SB-27-7.5	8032085	Soil	08/28/15			X	X		
SB-38-7.5	8032086	Soil	08/28/15			X	X		
SB-49-7.5	8032087	Soil	08/28/15			X	X		
TRIP Water	8032088	Water	08/27/15				X		

Note:

1. Samples SB-1A-12.5, SB-22-7.5 and SB-25A-12.5 were used as the MS/MSDs for the SVOC analyses.
2. Sample SB-1A-12.5 was used as the MS/MSD for the TPH analyses.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8270 (SIM) and ECY 97-602 . Data were reviewed in accordance with the USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines and as requested by USEPA Region 10:

- Concentration (C) Qualifiers
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - U The analyte was not detected at or above the reported result.
 - J The analyte was positively identified. The associated numerical result is an estimate.
 - UJ The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
 - R The data are unusable for all purposes.
 - N There is evidence the analyte is present in this sample.
 - JN There is evidence the analyte is present in this sample. The associated numerical result is an estimate.
 - D The sample result is reported from a diluted analysis.
 - EJ The sample result is greater than the calibration range. The associated numerical value is an estimated concentration only.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270 (SIM)	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
SB-54-7.5	Fluoranthene-d10	AC
	Benzo(a)pyrene-d12	<LL but >10%
	1-Methylnaphthalene-d10	AC

LL Low Limit
AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Surrogates diluted below the calibration curve due to the high concentration of a target compounds	Non-detect	J ¹
	Detect	

¹ A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
SB-22-7.5	Benzo(b)Fluoranthene	>UL	AC
	Benzo(k)Fluoranthene	>UL	AC
	Dibenz(a,h)anthracene	<LL but >10%	<LL but >10%
	Indeno(1,2,3-cd)pyrene	<LL but >10%	<LL but >10%

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J

Control Limit	Sample Result	Qualification
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

5. Laboratory Control Sample

The LCS/ analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SB-5A-12.5/DUP-5	1-Methylnaphthalene	0.0025 U	0.011	AC
	2-Methylnaphthalene	0.0025 U	0.012	AC
	Naphthalene	0.0025 U	0.0057	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270 (SIM)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

%R Percent recovery

RPD Relative percent difference

NWTPH-GX AND DX

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH – Gx and Dx ECY 97-602	Soil	14 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
SB-1A-7.5	Trifluorotoluene-F	>UL
SB-25A-7.5		

Upper control limit (UL)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited recoveries and RPDs within the laboratory control limits.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SB-5A-12.5/DUP-5	Gx	U	U	AC
	DRO	U	U	AC
	HRO	U	U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR TPH

Gx/Dx; ECY 97-602	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Trip blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

%R - percent recovery, RPD - relative percent difference,

VALIDATION PERFORMED

BY:

Rachelle Borne

SIGNATURE:



DATE: December 3, 2015 Revised
12/28/15

PEER REVIEW: Joseph C. Houser

DATE: December 11, 2015

**CHAIN OF CUSTODY/
CORRECTED SAMPLE ANALYSIS DATA SHEETS**



13255 1589716 8032017-88
Laboratory Management Program LaMP Chain of Custody Record R224114

BP Site Node Path: _____ Req Due Date (mm/dd/yy): _____ Rush TAT: Yes ___ No ___
 BP Facility No: Farm, Olympia Butte Max Lab Work Order Number: _____

Lab Name: <u>Leicester Labs</u>	Facility Address: <u>1117 West Bay drive</u>	Consultant/Contractor: <u>Accordis</u>
Lab Address: <u>2425 New Holland Pkwy, PA</u>	City, State, ZIP Code: <u>Olympia, WA</u>	Consultant/Contractor Project No: <u>BP090MAWA.60</u>
Lab PM: <u>Stacy Buttr</u>	Lead Regulatory Agency: <u>WADOLE</u>	Address: <u>1100 Olive Way, Seattle WA</u>
Lab Phone: <u>717-650-2300</u>	California Global ID No.:	Consultant/Contractor PM: <u>Brian Morrison</u>
Lab Shipping Acct:	Enfos Proposal No.:	Phone: <u>206-726-4755</u> Email: <u>Brian.Morrison@accordis-us.com</u>
Lab Bottle Order No.:	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: <u>Brian Morrison</u> and to <u>lab.enfosdoc@bp.com</u>
Other Info:	Stage: _____ Activity: _____	Invoice To: BP ___ Contractor <u>X</u>

BP Project Manager (PM):	Matrix	No. Containers / Preservative	Requested Analyses	Report Type & QC Level
BP PM Phone:				Standard ___
BP PM Email:				Full Data Package ___

Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container:	Unpreserved	H2SO4	HNO3	HCl	Methanol	NTTPH-Gx *	NTTPH-Dx *	CPAHS + Naph: *	Comments
	SB-53-7.5	8-27-15	0945	✓				3	2					X	X	X	
	SB-42-7.5	8-27-15	1000	✓				3	2								*Analyses requested per M. Perkins 9/8/15
	SB-31-7.5	8-27-15	1015	✓				3	2								
	SB-32-7.5	8-27-15	1030	✓				3	2								
	SB-22-7.5	8-27-15	1045	✓				3	2								
	SB-23A-7.5	8-27-15	1100	✓				3	2								
	SB-16-7.5	8-27-15	1500	✓				3	2								
	SB-15-7.5	8-27-15	1530	✓				3	2								
	SB-63-7.5	8-27-15	1600	✓				3	2								
	SB-54-7.5	8-27-15	1615	✓				3	2								

Sampler's Name: <u>Jason Little</u>	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: <u>Accordis</u>						
Shipment Method: <u>VPS</u> Ship Date:						
Shipment Tracking No:				<u>Brian Morrison</u>	<u>9/15</u>	<u>0925</u>

Special Instructions:



13255 1584716 8032047-88
Laboratory Management Program LaMP Chain of Custody Record R224115

BP Site Node Path: _____
BP Facility No: Former Olympic Vulk Plot

Req Due Date (mm/dd/yy): _____
Rush TAT: Yes ___ No ___
Lab Work Order Number: _____

Lab Name: <u>Conner Labs</u>	Facility Address: <u>1117 W Bay Drive</u>	Consultant/Contractor: <u>Aradis</u>
Lab Address: <u>2429 New Holland Pike, ^{Wash PA}</u>	City, State, ZIP Code: <u>Olympia WA</u>	Consultant/Contractor Project No: <u>CP09BPNA.WA60</u>
Lab PM: <u>Stacy Burr</u>	Lead Regulatory Agency: <u>WADOL</u>	Address: <u>1100 Olive Way, Seattle, WA</u>
Lab Phone: <u>717-656-2300</u>	California Global ID No.:	Consultant/Contractor PM: <u>Brian Merum</u>
Lab Shipping Acct:	Enfos Proposal No:	Phone: <u>206-726-4755</u> Email: <u>Brian.Merum@aradis.com</u>
Lab Bottle Order No:	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: <u>Brian Merum</u> and to <u>lab_enfosdoc@bp.com</u>
Other Info:	Stage: _____ Activity: _____	Invoice To: BP ___ Contractor <input checked="" type="checkbox"/>

BP Project Manager (PM):				Matrix		No. Containers / Preservative						Requested Analyses						Report Type & QC Level					
BP PM Phone:				Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container	Unpreserved	H2SO4	HNO3	HCl	Methanol	NUTPH-Gx *	NUTPH-Dx w/Sig	CPAAs + weph *							Standard ___
BP PM Email:																							Full Data Package ___
Lab No.	Sample Description	Date	Time																		Comments		
	SB-43-A-7.5	8-27-15	1645	✓				3	2					1	X	X	X						
	SB-55-9.5	8-27-15	1715	✓				3	2					1									
	SB-1A-12.5	8-28-15	1020	✓				9	6					3								MS/MSD	
	SB-2-9.5	8-28-15	1030	✓				3	2					1									
	SB-SA-12.5	8-28-15	1045	✓				3	2					1									
	SB-4A-7.5	8-28-15	1110	✓				3	2					1									
	SB-9-7.5	8-28-15	1120	✓				3	2					1									
	SB-10-7.5	8-28-15	1155	✓				3	2					1									
	SB-58-7.5	8-28-15	1315	✓				3	2					1									
	DUP-5	8-28-15		✓				3	2														

Sampler's Name: <u>Tom Levin</u>	Relinquished By / Affiliation		Date	Time	Accepted By / Affiliation		Date	Time
Sampler's Company: <u>Aradis</u>					<u>Brian Merum</u>		<u>8/28/15</u>	<u>925</u>
Shipment Method: <input checked="" type="checkbox"/> UPS	Ship Date:							
Shipment Tracking No:								

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 30.46 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No



Laboratory Management Program LaMP Chain of Custody Record

R224116

Page ____ of ____

BP Site Node Path: _____

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes ___ No ___

BP Facility No: Environ Olympics B-19 Post

Lab Work Order Number: _____

Lab Name: <u>Concast Labs</u>	Facility Address: <u>1117 W Bay Dr</u>	Consultant/Contractor: <u>Arcadis</u>
Lab Address: <u>2425 New Holland Div^{Concast} PA</u>	City, State, ZIP Code: <u>Olympia, WA</u>	Consultant/Contractor Project No: <u>609908NANM00</u>
Lab PM: <u>Stacy Burr</u>	Lead Regulatory Agency: <u>WADSW</u>	Address: <u>1100 Olive Way, Seattle, WA</u>
Lab Phone: <u>717-656-2300</u>	California Global ID No.:	Consultant/Contractor PM: <u>Brian Marcin</u>
Lab Shipping Acct:	Enfos Proposal No:	Phone: <u>206-726-4755</u> Email: <u>Brian.Marcin@arcadis.com</u>
Lab Bottle Order No:	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: <u>Brian.Marcin@arcadis.com</u> and to <u>lab.enfosdoc@bp.com</u>
Other Info:	Stage: _____ Activity: _____	Invoice To: <u>Arcadis - US, Inc</u> BP _____ Contractor _____

BP Project Manager (PM):				Matrix				No. Containers / Preservative				Requested Analyses								Report Type & QC Level						
BP PM Phone:																				Standard ___						
BP PM Email:																				Full Data Package ___						
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container:	Unpreserved	H2SO4	HNO3	HCl	Methanol	NIOPH-Gx *	NIOPH-D x w/Sig	CPATHs + naph. *									Comments	
	SB-41-7.5	8-28-15	0730	✓				3	2					X	X	X										
	SB-52-7.5	↓	0800	✓				3	2					X	X	X										
	SB-30-7.5		0830	✓				3	2																	
	SB-40-7.5		0900	✓				3	2																	
	SB-51-7.5		0930	✓				3	2																	
	SB-62-7.5		0945	✓				3	2																	
	SB-1A-7.5		1000	✓				3	2																	
	SB-29-7.5		1022	✓				3	2																	
	SB-39-7.5		1035	✓				3	2																	
	SB-25A-7.5		1240	✓				3	7																	

Sampler's Name: <u>Jarin LITKA</u>	Relinquished By / Affiliation				Date	Time	Accepted By / Affiliation				Date	Time
Sampler's Company: <u>Arcadis</u>												
Shipment Method: <u>VPS</u>	Ship Date:				<u>Brian Marcin</u>				<u>9-15-15</u>			
Shipment Tracking No:												

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 3040 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No



Laboratory Management Program LaMP Chain of Custody Record R224117

BP Site Node Path: _____ Req Due Date (mm/dd/yy): _____ Rush TAT: Yes ___ No ___
 BP Facility No: Former Olympia Bulk Mount Lab Work Order Number: _____

Lab Name: <u>LANCOSTER Labs</u>	Facility Address: <u>1117 W Bay drive</u>	Consultant/Contractor: <u>Accordis</u>
Lab Address: <u>7225 New Holland Pike</u>	City, State, ZIP Code: <u>Olympia, WA</u>	Consultant/Contractor Project No: <u>6P99BNAWA60</u>
Lab PM: <u>2125 New St Stacy Butt</u>	Lead Regulatory Agency: <u>WSDOE</u>	Address: <u>1100 Olive Way, Seattle, WA</u>
Lab Phone: <u>717-656-2300</u>	California Global ID No.:	Consultant/Contractor PM: <u>Brian Morrison</u>
Lab Shipping Acctn:	Enfos Proposal No:	Phone: <u>206-726-4755</u> Email: <u>Brian.Morrison@accordis-bp.com</u>
Lab Bottle Order No:	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: <u>Brian Morrison</u> and to <u>lab.enfosdoc@bp.com</u>
Other Info:	Stage: _____ Activity: _____	Invoice To: BP ___ Contractor ___

BP Project Manager (PM):				Matrix		No. Containers / Preservative						Requested Analyses										Report Type & QC Level					
BP PM Phone:																						Standard ___					
BP PM Email:																						Full Data Package ___					
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container:	Unpreserved	H2SO4	HNO3	HCl	Methanol											Comments			
	<u>SB-25A-12.5</u>	<u>8-28-15</u>	<u>1245</u>	<input checked="" type="checkbox"/>				<u>3</u>	<u>2</u>																		
	<u>SB-5A-7.5</u>	<u>8-28-15</u>	<u>1040</u>	<input checked="" type="checkbox"/>				<u>3</u>	<u>2</u>																		
	<u>SB-50-7.5</u>		<u>1050</u>	<input checked="" type="checkbox"/>				<u>3</u>	<u>2</u>																		
	<u>SB-61-7.5</u>		<u>1120</u>	<input checked="" type="checkbox"/>				<u>3</u>	<u>2</u>																		
	<u>SB-21-7.5</u>		<u>1140</u>	<input checked="" type="checkbox"/>				<u>3</u>	<u>2</u>																		
	<u>SB-28-7.5</u>		<u>1230</u>	<input checked="" type="checkbox"/>				<u>3</u>	<u>2</u>																		
	<u>SB-27-7.5</u>		<u>1250</u>	<input checked="" type="checkbox"/>				<u>3</u>	<u>2</u>																		
	<u>SB-38-7.5</u>		<u>1305</u>	<input checked="" type="checkbox"/>				<u>3</u>	<u>2</u>																		
	<u>SB-49-7.5</u>		<u>1320</u>	<input checked="" type="checkbox"/>				<u>3</u>	<u>2</u>																		
	<u>TRIP</u>			<input checked="" type="checkbox"/>				<u>3</u>	<u>3</u>				<input checked="" type="checkbox"/>														

Sampler's Name: <u>Jana Kitch</u>	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time	
Sampler's Company: <u>Accordis</u>							
Shipment Method: <u>WPS</u> Ship Date:					<u>Brian Morrison</u>	<u>9-15-15</u>	<u>9:25</u>
Shipment Tracking No:							

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place (Yes/No) | Temp Blank (Yes/No) | Cooler Temp on Receipt: 30.46 °F/C | Trip Blank: (Yes/No) | MS/MSD Sample Submitted (Yes/No)

BP Remediation Management COC - Effective Date: starting August 16, 2011. Use for Remediation projects only BP LaMP COC Rev. 8, 24 June 2012

Sample Description: SB-53-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032047
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 09:45 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-53

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00075	0.0019	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00075	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.00075	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00075	0.0019	1
10725	Chrysene	218-01-9	N.D.	0.00037	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00075	0.0019	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00075	0.0019	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00075	0.0019	1
10725	Naphthalene	91-20-3	N.D.	0.00075	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.0	5.0	22.17
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.4	7.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	34	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	12.1	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLE026	09/16/2015 15:11	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLE026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/03/2015 21:05	Jeremy C Giffin	22.17
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015 09:45	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/10/2015 09:49	Nicholas R Rossi	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015 11:05	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-53-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032047
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 09:45 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-53

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-42-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032048
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB-42

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00075	0.0019	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00075	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.00075	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00075	0.0019	1
10725	Chrysene	218-01-9	N.D.	0.00037	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00075	0.0019	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00075	0.0019	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00075	0.0019	1
10725	Naphthalene	91-20-3	N.D.	0.00075	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.1	5.5	24.33
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.4	7.9	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	34	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	11.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLE026	09/16/2015 15:44	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLE026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/03/2015 21:41	Jeremy C Giffin	24.33
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015 10:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/10/2015 10:31	Nicholas R Rossi	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015 11:05	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-42-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032048
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-42

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-31-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032049
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:15 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB-31

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00074	0.0019	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00074	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.00074	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00074	0.0019	1
10725	Chrysene	218-01-9	N.D.	0.00037	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00074	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00074	0.0019	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00074	0.0019	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00074	0.0019	1
10725	Naphthalene	91-20-3	N.D.	0.00074	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	0.98	4.9	21.79
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.4	7.9	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	34	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	11.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLE026	09/16/2015 16:18	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLE026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/03/2015 22:16	Jeremy C Giffin	21.79
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015 10:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/10/2015 10:52	Nicholas R Rossi	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015 11:05	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-31-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032049
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:15 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-31

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-32-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032050
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB-32

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.011	0.00079	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.015	0.00079	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.016	0.00079	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0079	0.00079	0.0020	1
10725	Chrysene	218-01-9	0.013	0.00039	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0025	0.00079	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0091	0.00079	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0013 J	0.00079	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0022	0.00079	0.0020	1
10725	Naphthalene	91-20-3	0.0053	0.00079	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.3	6.3	26.18
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	37 J	36	84	10
02214	HRO C24-C40 w/Si Gel	n.a.	2,200	120	360	10
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	16.9	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLE026	09/17/2015 07:13	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLE026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/03/2015 22:51	Jeremy C Giffin	26.18
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015 10:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/14/2015 23:39	Christine E Dolman	10
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015 11:05	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-32-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032050
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:30 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/01/2015 09:25

Suite 600

Reported: 09/28/2015 15:12

630 Plaza Drive

Highlands Ranch CO 80129

SB-32

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-22-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032051
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:45 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-22

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270C SIM		mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00073	0.0018	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00073	0.0018	1
10725	Benzo(b)fluoranthene	205-99-2	0.00079 J	0.00073	0.0018	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00073	0.0018	1
10725	Chrysene	218-01-9	N.D.	0.00037	0.0018	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.00073	0.0018	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. UJ	0.00073	0.0018	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00073	0.0018	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00073	0.0018	1
10725	Naphthalene	91-20-3	N.D.	0.00073	0.0018	1
GC Volatiles	ECY 97-602 NWTPH-Gx		mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	0.97	4.9	21.82
GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified		mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.3	7.7	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	33	1
Wet Chemistry	SM 2540 G-1997		%	%	%	
00111	Moisture	n.a.	10.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/19/2015 03:22	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/03/2015 23:27	Jeremy C Giffin	21.82
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015 10:45	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/10/2015 11:13	Nicholas R Rossi	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015 11:05	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-22-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032051
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:45 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-22

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-23-A-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032052
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 11:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB23A

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00074	0.0018	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00074	0.0018	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.00074	0.0018	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00074	0.0018	1
10725	Chrysene	218-01-9	N.D.	0.00037	0.0018	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00074	0.0018	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00074	0.0018	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00074	0.0018	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00074	0.0018	1
10725	Naphthalene	91-20-3	N.D.	0.00074	0.0018	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.1	5.3	23.75
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.3	7.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	33	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	10.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/19/2015 03:56	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246A34A	09/04/2015 00:37	Jeremy C Giffin	23.75
06647	GC-5g Field Preserved MeOH	NWTPH-Gx SW-846 5035A	1	201524538729	08/27/2015 11:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152480017A	09/10/2015 11:34	Nicholas R Rossi	1
07024	DRO Alternate Soil Extraction	NWTPH-Dx modified ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015 11:05	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-23-A-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032052
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 11:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB23A

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-16-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032053
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 15:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB-16

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	1.4	0.0080	0.020	10
10725	Benzo(a)pyrene	50-32-8	1.8	0.0080	0.020	10
10725	Benzo(b)fluoranthene	205-99-2	2.1	0.0080	0.020	10
10725	Benzo(k)fluoranthene	207-08-9	0.86	0.0080	0.020	10
10725	Chrysene	218-01-9	1.5	0.0040	0.020	10
10725	Dibenz(a,h)anthracene	53-70-3	0.10	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.27	0.00080	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.019	0.00080	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.052	0.00080	0.0020	1
10725	Naphthalene	91-20-3	0.13	0.00080	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	0.84	4.2	17.2
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	4.0 J	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel	n.a.	24 J	12	36	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	17.8	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/19/2015 04:30	Catherine E Bachman	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015 12:23	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/04/2015 01:12	Jeremy C Giffin	17.2
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015 15:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/14/2015 23:18	Christine E Dolman	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-16-7.5 Soil
 Former Olympia Bulk Plant COC: R224114
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032053
 LL Group # 1589716
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 15:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-16

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015 11:05	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-15-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032054
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 15:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB-15

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00074	0.0018	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00074	0.0018	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.00074	0.0018	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00074	0.0018	1
10725	Chrysene	218-01-9	N.D.	0.00037	0.0018	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00074	0.0018	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00074	0.0018	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00074	0.0018	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00074	0.0018	1
10725	Naphthalene	91-20-3	N.D.	0.00074	0.0018	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	0.94	4.7	21.23
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.3	7.7	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	33	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	9.5	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/19/2015 05:03	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246A34A	09/04/2015 01:48	Jeremy C Giffin	21.23
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201524538729	08/27/2015 15:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152480017A	09/10/2015 12:16	Nicholas R Rossi	1
07024	DRO Alternate Soil Extraction	NWTPH-Dx modified					
		ECY 97-602	1	152480017A	09/08/2015 11:05	Denise L Trimby	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-15-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032054
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 15:30 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/01/2015 09:25

Suite 600

Reported: 09/28/2015 15:12

630 Plaza Drive

Highlands Ranch CO 80129

SB-15

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-63-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032055
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 16:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-63

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00079	0.0020	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00079	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0013 J	0.00079	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00079	0.0020	1
10725	Chrysene	218-01-9	0.0011 J	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00079	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00079	0.0020	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00079	0.0020	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00079	0.0020	1
10725	Naphthalene	91-20-3	0.00088 J	0.00079	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	13	63	263.59
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.6	8.3	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	36	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	16.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015 12:56	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246A34A	09/04/2015 04:44	Jeremy C Giffin	263.59
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201524538729	08/27/2015 16:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152480017A	09/10/2015 12:37	Nicholas R Rossi	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152480017A	09/08/2015 11:05	Denise L Trimby	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-63-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032055
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 16:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-63

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-54-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032056
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 16:15 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB-54

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00076	0.0019	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00076	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.00076	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00076	0.0019	1
10725	Chrysene	218-01-9	N.D.	0.00038	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00076	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00076	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.00092 J	0.00076	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.0021	0.00076	0.0019	1
10725	Naphthalene	91-20-3	0.0018 J	0.00076	0.0019	1

The recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.0	5.1	22.51

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg		
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.4	7.9	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	34	1

Wet Chemistry	SM 2540 G-1997	%	%	%		
00111	Moisture	n.a.	12.5	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015 13:29	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/04/2015 04:09	Jeremy C Giffin	22.51
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015 16:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/10/2015 12:58	Nicholas R Rossi	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-54-7.5 Soil
 Former Olympia Bulk Plant COC: R224114
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032056
 LL Group # 1589716
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 16:15 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-54

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015 11:05	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-43-A-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032057
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 16:45 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB43A

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0046	0.00078	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0057	0.00078	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0092	0.00078	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0031	0.00078	0.0020	1
10725	Chrysene	218-01-9	0.0057	0.00039	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00078	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0016 J	0.00078	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0023	0.00078	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0034	0.00078	0.0020	1
10725	Naphthalene	91-20-3	0.010	0.00078	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.3	6.4	27.49
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	100	3.5	8.1	1
02214	HRO C24-C40 w/Si Gel	n.a.	520	12	35	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	14.6	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015 14:02	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/04/2015 02:23	Jeremy C Giffin	27.49
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015 16:45	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015 08:26	Christine E Dolman	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015 11:05	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-43-A-7.5 Soil
 Former Olympia Bulk Plant COC: R224114
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032057
 LL Group # 1589716
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 16:45 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB43A

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-55-9.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032058
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 17:15 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB-55

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	4.7	0.013	0.033	10
10725	Benzo(a)pyrene	50-32-8	4.7	0.013	0.033	10
10725	Benzo(b)fluoranthene	205-99-2	5.5	0.013	0.033	10
10725	Benzo(k)fluoranthene	207-08-9	2.1	0.013	0.033	10
10725	Chrysene	218-01-9	5.0	0.0066	0.033	10
10725	Dibenz(a,h)anthracene	53-70-3	0.59	0.013	0.033	10
10725	Indeno(1,2,3-cd)pyrene	193-39-5	2.4	0.013	0.033	10
10725	1-Methylnaphthalene	90-12-0	0.72	0.013	0.033	10
10725	2-Methylnaphthalene	91-57-6	0.90	0.013	0.033	10
10725	Naphthalene	91-20-3	2.3	0.013	0.033	10
GC Volatiles ECY 97-602 NWT PH-Gx						
02005	NWT PH-GX Soil C7-C12	n.a.	N.D.	27	140	341.72
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWT PH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	57	5.9	14	1
02214	HRO C24-C40 w/Si Gel	n.a.	260	20	59	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	50.0	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/23/2015 09:23	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602	1	15246A34A	09/04/2015 05:20	Jeremy C Giffin	341.72
06647	GC-5g Field Preserved MeOH	NWT PH-Gx					
		SW-846 5035A	1	201524538729	08/27/2015 17:15	Client Supplied	n.a.
02214	NWT PH-Dx soil w/Si Gel	ECY 97-602	1	152480018A	09/10/2015 08:03	Christine E Dolman	1
		NWT PH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152480018A	09/08/2015 11:05	Denise L Trimby	1
		NWT PH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-55-9.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032058
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 17:15 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-55

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-1A-12.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032059
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:20 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

S1A12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00080	0.0020	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00080	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.00080	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00080	0.0020	1
10725	Chrysene	218-01-9	N.D.	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00080	0.0020	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00080	0.0020	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00080	0.0020	1
10725	Naphthalene	91-20-3	N.D.	0.00080	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.2	6.1	25.06
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	36	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	17.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLE026	09/16/2015 06:55	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLE026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/03/2015 19:19	Jeremy C Giffin	25.06
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015 10:20	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015 04:12	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015 11:05	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-1A-12.5 Soil
 Former Olympia Bulk Plant COC: R224114
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032059
 LL Group # 1589716
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:20 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

S1A12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-1A-12.5 MS Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032060
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:20 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

S1A12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.046	0.00081	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.043	0.00081	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.052	0.00081	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.041	0.00081	0.0020	1
10725	Chrysene	218-01-9	0.045	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	0.044	0.00081	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.042	0.00081	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.040	0.00081	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.041	0.00081	0.0020	1
10725	Naphthalene	91-20-3	0.041	0.00081	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	9.7	1.1	5.7	23.35
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	140	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	36	1
Wet Chemistry SM 2540 G-1997						
00118	Moisture	n.a.	17.7	0.50	0.50	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLE026	09/16/2015 07:28	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLE026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/03/2015 19:55	Jeremy C Giffin	23.35
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015 10:20	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015 04:32	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015 11:05	Denise L Trimby	1
00118	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-1A-12.5 MSD Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032061
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:20 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

S1A12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.047	0.00080	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.045	0.00080	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.054	0.00080	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.044	0.00080	0.0020	1
10725	Chrysene	218-01-9	0.047	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	0.046	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.045	0.00080	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.043	0.00080	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.044	0.00080	0.0020	1
10725	Naphthalene	91-20-3	0.043	0.00080	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	8.7	1.1	5.6	22.85
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	150	3.6	8.5	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	36	1
Wet Chemistry SM 2540 G-1997						
00118	Moisture	n.a.	17.7	0.50	0.50	1
00121	Moisture Duplicate	n.a.	16.9	0.50	0.50	1
The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLE026	09/16/2015 08:01	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLE026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246A34A	09/03/2015 20:30	Jeremy C Giffin	22.85
06647	GC-5g Field Preserved MeOH	NWTPH-Gx SW-846 5035A	1	201524538729	08/28/2015 10:20	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152480018A	09/10/2015 04:53	Heather E Williams	1
07024	DRO Alternate Soil Extraction	NWTPH-Dx modified ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015 11:05	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-1A-12.5 MSD Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032061
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:20 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

S1A12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	1
00121	Moisture Duplicate	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-2-9.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032062
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

S295-

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0079	0.00076	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.0082	0.00076	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.012	0.00076	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.0040	0.00076	0.0019	1
10725	Chrysene	218-01-9	0.0086	0.00038	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00076	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0017 J	0.00076	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.00076 J	0.00076	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.0019 J	0.00076	0.0019	1
10725	Naphthalene	91-20-3	0.0020	0.00076	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	10	52	225.77
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.4	7.9	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	34	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	12.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015 15:09	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246B34A	09/05/2015 00:37	Jeremy C Giffin	225.77
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201524538729	08/28/2015 10:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152480018A	09/10/2015 07:42	Christine E Dolman	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152480018A	09/08/2015 11:05	Denise L Trimby	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-2-9.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032062
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:30 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/01/2015 09:25

Suite 600

Reported: 09/28/2015 15:12

630 Plaza Drive

Highlands Ranch CO 80129

S295-

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-5A-12.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032063
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:45 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB-5A

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0010	0.0025	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0010	0.0025	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.0010	0.0025	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0010	0.0025	1
10725	Chrysene	218-01-9	N.D.	0.00051	0.0025	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0010	0.0025	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0010	0.0025	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.0010	0.0025	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.0010	0.0025	1
10725	Naphthalene	91-20-3	N.D.	0.0010	0.0025	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.0	5.2	22.36
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.4	7.9	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	34	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	13.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015 15:42	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/04/2015 20:30	Jeremy C Giffin	22.36
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015 10:45	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015 05:15	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015 11:05	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-5A-12.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032063
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:45 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-5A

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-4A-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032064
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:10 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/01/2015 09:25

Suite 600

Reported: 09/28/2015 15:12

630 Plaza Drive

Highlands Ranch CO 80129

SB-4A

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00075	0.0019	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00075	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.0012 J	0.00075	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00075	0.0019	1
10725	Chrysene	218-01-9	0.00073 J	0.00037	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00075	0.0019	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00075	0.0019	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00075	0.0019	1
10725	Naphthalene	91-20-3	N.D.	0.00075	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	11	54	237.54
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.4	7.9	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	34	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	11.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015 16:15	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246B34A	09/05/2015 01:12	Jeremy C Giffin	237.54
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201524538729	08/28/2015 11:10	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152480018A	09/10/2015 05:35	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152480018A	09/08/2015 11:05	Denise L Trimby	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-4A-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032064
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:10 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-4A

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-9-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032065
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:20 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB-09

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0043	0.00085	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.0053	0.00085	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.012	0.00085	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	0.0034	0.00085	0.0021	1
10725	Chrysene	218-01-9	0.0070	0.00043	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00085	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0016 J	0.00085	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.0013 J	0.00085	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.0028	0.00085	0.0021	1
10725	Naphthalene	91-20-3	0.0040	0.00085	0.0021	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	13	66	255.37
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.8	8.9	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	13	38	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	22.1	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015 16:48	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246B34A	09/05/2015 01:47	Jeremy C Giffin	255.37
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201524538729	08/28/2015 11:20	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152480018A	09/10/2015 07:00	Christine E Dolman	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152480018A	09/08/2015 11:05	Denise L Trimby	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-9-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032065
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:20 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/01/2015 09:25

Suite 600

Reported: 09/28/2015 15:12

630 Plaza Drive

Highlands Ranch CO 80129

SB-09

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-10-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032066
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:55 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB-10

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.15	0.00079	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.16	0.00079	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.21	0.00079	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.095	0.00079	0.0020	1
10725	Chrysene	218-01-9	0.16	0.00039	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	0.011	0.00079	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.032	0.00079	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.011	0.00079	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.019	0.00079	0.0020	1
10725	Naphthalene	91-20-3	0.043	0.00079	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	11	55	229.36
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.6	8.3	1
02214	HRO C24-C40 w/Si Gel	n.a.	21 J	12	36	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	16.0	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015 17:22	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246B34A	09/05/2015 02:23	Jeremy C Giffin	229.36
06647	GC-5g Field Preserved MeOH	NWTPH-Gx SW-846 5035A	1	201524538729	08/28/2015 11:55	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015 07:21	Christine E Dolman	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015 11:05	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-10-7.5 Soil
 Former Olympia Bulk Plant COC: R224114
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032066
 LL Group # 1589716
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:55 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-10

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-58-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032067
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 13:15 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-58

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00085	0.0021	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00085	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.00085	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00085	0.0021	1
10725	Chrysene	218-01-9	N.D.	0.00043	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00085	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00085	0.0021	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00085	0.0021	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00085	0.0021	1
10725	Naphthalene	91-20-3	N.D.	0.00085	0.0021	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	57	4.9	25	95.3
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	30	3.8	8.9	1
02214	HRO C24-C40 w/Si Gel	n.a.	29	13	38	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	22.6	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/23/2015 09:56	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/05/2015 03:33	Jeremy C Giffin	95.3
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015 13:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015 05:57	Christine E Dolman	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015 11:05	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-58-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032067
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 13:15 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-58

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032068
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

DUP-5

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00077	0.0019	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00077	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.00077	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00077	0.0019	1
10725	Chrysene	218-01-9	N.D.	0.00039	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00077	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00077	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.011	0.00077	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.012	0.00077	0.0019	1
10725	Naphthalene	91-20-3	0.0057	0.00077	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.0	5.1	21.64
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.5	8.1	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	35	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	14.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/23/2015 10:29	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/04/2015 21:05	Jeremy C Giffin	21.64
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015 00:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015 06:39	Christine E Dolman	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015 11:05	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032068
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/01/2015 09:25

Suite 600

Reported: 09/28/2015 15:12

630 Plaza Drive

Highlands Ranch CO 80129

DUP-5

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032069
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 07:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB-41

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0030	0.0074	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0030	0.0074	1
10725	Benzo(b)fluoranthene	205-99-2	0.0039 J	0.0030	0.0074	1
10725	Benzo(k)fluoranthene	207-08-9	0.0067 J	0.0030	0.0074	1
10725	Chrysene	218-01-9	0.0030 J	0.0015	0.0074	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0030	0.0074	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0030	0.0074	1
10725	1-Methylnaphthalene	90-12-0	4.3	0.030	0.074	10
10725	2-Methylnaphthalene	91-57-6	5.5	0.030	0.074	10
10725	Naphthalene	91-20-3	0.76	0.0030	0.0074	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	81 J	33	160	181.39
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	250	13	31	1
02214	HRO C24-C40 w/Si Gel	n.a.	750	45	130	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	77.8	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/23/2015 11:02	Joseph M Gambler	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/24/2015 06:50	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246B34A	09/05/2015 04:08	Jeremy C Giffin	181.39
01150	GC - Bulk Soil Prep	NWTPH-Gx					
02214	NWTPH-Dx soil w/Si Gel	SW-846 5030A	1	201524538726	09/02/2015 20:22	Mitchell R Washel	n.a.
		ECY 97-602	1	152520029A	09/12/2015 15:42	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520029A	09/10/2015 09:00	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-7.5 Soil
 Former Olympia Bulk Plant COC: R224114
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032069
 LL Group # 1589716
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 07:30 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-41

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-52-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032070
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 08:00 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/01/2015 09:25

Suite 600

Reported: 09/28/2015 15:12

630 Plaza Drive

Highlands Ranch CO 80129

SB-52

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0048 J	0.0026	0.0064	1
10725	Benzo(a)pyrene	50-32-8	0.0034 J	0.0026	0.0064	1
10725	Benzo(b)fluoranthene	205-99-2	0.0088	0.0026	0.0064	1
10725	Benzo(k)fluoranthene	207-08-9	0.0049 J	0.0026	0.0064	1
10725	Chrysene	218-01-9	0.0090	0.0013	0.0064	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0026	0.0064	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0026	0.0064	1
10725	1-Methylnaphthalene	90-12-0	6.6	0.026	0.064	10
10725	2-Methylnaphthalene	91-57-6	8.9	0.026	0.064	10
10725	Naphthalene	91-20-3	1.3	0.0026	0.0064	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	110 J	27	140	176.54
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	640	12	27	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,100	39	120	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	74.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/23/2015 11:36	Joseph M Gambler	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/24/2015 07:22	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246B34A	09/05/2015 04:44	Jeremy C Giffin	176.54
01150	GC - Bulk Soil Prep	NWTPH-Gx					
02214	NWTPH-Dx soil w/Si Gel	SW-846 5030A	1	201524538726	09/02/2015 20:25	Mitchell R Washel	n.a.
		ECY 97-602	1	152520029A	09/12/2015 16:03	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520029A	09/10/2015 09:00	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-52-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032070
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 08:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-52

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-30-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032071
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 08:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-30

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.025	0.063	10
10725	Benzo(a)pyrene	50-32-8	N.D.	0.025	0.063	10
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.025	0.063	10
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.025	0.063	10
10725	Chrysene	218-01-9	N.D.	0.013	0.063	10
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.025	0.063	10
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.025	0.063	10
10725	1-Methylnaphthalene	90-12-0	2.9	0.025	0.063	10
10725	2-Methylnaphthalene	91-57-6	3.8	0.025	0.063	10
10725	Naphthalene	91-20-3	1.2	0.025	0.063	10
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	160	28	140	181.87
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	280	11	26	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,500	38	110	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	73.6	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/24/2015 07:55	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/05/2015 05:19	Jeremy C Giffin	181.87
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015 20:28	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520029A	09/12/2015 16:25	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520029A	09/10/2015 09:00	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-40-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032072
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 09:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-40

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.023	0.059	10
10725	Benzo(a)pyrene	50-32-8	N.D.	0.023	0.059	10
10725	Benzo(b)fluoranthene	205-99-2	0.031 J	0.023	0.059	10
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.023	0.059	10
10725	Chrysene	218-01-9	0.040 J	0.012	0.059	10
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.023	0.059	10
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.023	0.059	10
10725	1-Methylnaphthalene	90-12-0	1.8	0.023	0.059	10
10725	2-Methylnaphthalene	91-57-6	2.1	0.023	0.059	10
10725	Naphthalene	91-20-3	0.87	0.023	0.059	10
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	62	310	439.6
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	400	11	25	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,200	35	110	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	71.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/24/2015 08:28	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/04/2015 19:19	Jeremy C Giffin	439.6
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015 20:30	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520029A	09/12/2015 16:47	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520029A	09/10/2015 09:00	Olivia Arosemena	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-40-7.5 Soil
 Former Olympia Bulk Plant COC: R224114
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032072
 LL Group # 1589716
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 09:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-40

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-51-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032073
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 09:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-51

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.030	0.074	10
10725	Benzo(a)pyrene	50-32-8	N.D.	0.030	0.074	10
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.030	0.074	10
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.030	0.074	10
10725	Chrysene	218-01-9	N.D.	0.015	0.074	10
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.030	0.074	10
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.030	0.074	10
10725	1-Methylnaphthalene	90-12-0	3.5	0.030	0.074	10
10725	2-Methylnaphthalene	91-57-6	3.8	0.030	0.074	10
10725	Naphthalene	91-20-3	0.87	0.030	0.074	10
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	84	420	470.2
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	220	13	31	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,300	45	130	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	77.6	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/24/2015 09:01	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246B34A	09/04/2015 22:15	Jeremy C Giffin	470.2
		NWTPH-Gx					
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015 20:32	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520029A	09/12/2015 17:09	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520029A	09/10/2015 09:00	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-51-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032073
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 09:30 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-51

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-62-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032074
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 09:45 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-62

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.030	0.074	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.030	0.074	1
10725	Benzo(b)fluoranthene	205-99-2	0.052 J	0.030	0.074	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.030	0.074	1
10725	Chrysene	218-01-9	0.065 J	0.015	0.074	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.030	0.074	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.030	0.074	1
10725	1-Methylnaphthalene	90-12-0	0.64	0.030	0.074	1
10725	2-Methylnaphthalene	91-57-6	0.60	0.030	0.074	1
10725	Naphthalene	91-20-3	2.5	0.030	0.074	1

Reporting limits were raised due to limited sample volume.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	52 J	20	170.84

Reporting limits were raised due to sample foaming.

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel	n.a.	190	8.9	21
02214	HRO C24-C40 w/Si Gel	n.a.	1,100	30	89

Wet Chemistry	SM 2540 G-1997	%	%	%	
00111	Moisture	n.a.	66.2	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015 11:37	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246B34A	09/05/2015 05:54	Jeremy C Giffin	170.84
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015 20:35	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520029A	09/12/2015 17:30	Heather E Williams	1
07024	DRO Alternate Soil Extraction	NWTPH-Dx modified ECY 97-602 NWTPH-Dx 06/97	1	152520029A	09/10/2015 09:00	Olivia Arosemena	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-62-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032074
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 09:45 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-62

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-1A-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032075
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

S1A75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.044	0.0019	0.0048	1
10725	Benzo(a)pyrene	50-32-8	0.045	0.0019	0.0048	1
10725	Benzo(b)fluoranthene	205-99-2	0.060	0.0019	0.0048	1
10725	Benzo(k)fluoranthene	207-08-9	0.020	0.0019	0.0048	1
10725	Chrysene	218-01-9	0.048	0.00097	0.0048	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0036 J	0.0019	0.0048	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.012	0.0019	0.0048	1
10725	1-Methylnaphthalene	90-12-0	0.013	0.0019	0.0048	1
10725	2-Methylnaphthalene	91-57-6	0.019	0.0019	0.0048	1
10725	Naphthalene	91-20-3	0.046	0.0019	0.0048	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	80	400	684.04
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	1,300	8.7	20	1
02214	HRO C24-C40 w/Si Gel	n.a.	680	29	87	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	65.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015 12:10	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246B34A	09/04/2015 22:51	Jeremy C Giffin	684.04
01150	GC - Bulk Soil Prep	NWTPH-Gx					
02214	NWTPH-Dx soil w/Si Gel	SW-846 5030A	1	201524538726	09/02/2015 20:36	Mitchell R Washel	n.a.
		ECY 97-602	1	152520029A	09/12/2015 17:52	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520029A	09/10/2015 09:00	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-1A-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032075
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

S1A75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-29-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032076
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:22 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB-29

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0023	0.0058	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0023	0.0058	1
10725	Benzo(b)fluoranthene	205-99-2	0.0034 J	0.0023	0.0058	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0023	0.0058	1
10725	Chrysene	218-01-9	0.0035 J	0.0012	0.0058	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0023	0.0058	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0023	0.0058	1
10725	1-Methylnaphthalene	90-12-0	2.0	0.023	0.058	10
10725	2-Methylnaphthalene	91-57-6	2.3	0.023	0.058	10
10725	Naphthalene	91-20-3	0.38	0.0023	0.0058	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	80 J	39	190	274.82
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	420	10	24	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,300	35	100	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	71.6	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015 12:44	Joseph M Gambler	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015 21:28	Catherine E Bachman	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/05/2015 06:29	Jeremy C Giffin	274.82
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015 20:38	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520030A	09/12/2015 14:58	Heather E Williams	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-29-7.5 Soil
 Former Olympia Bulk Plant COC: R224114
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032076
 LL Group # 1589716
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:22 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-29

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520030A	09/10/2015 09:00	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-39-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032077
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:35 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/01/2015 09:25

Suite 600

Reported: 09/28/2015 15:12

630 Plaza Drive

Highlands Ranch CO 80129

SB-39

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.020	0.0023	0.0057	1
10725	Benzo(a)pyrene	50-32-8	0.0099	0.0023	0.0057	1
10725	Benzo(b)fluoranthene	205-99-2	0.029	0.0023	0.0057	1
10725	Benzo(k)fluoranthene	207-08-9	0.0083	0.0023	0.0057	1
10725	Chrysene	218-01-9	0.036	0.0011	0.0057	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0023	0.0057	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0038 J	0.0023	0.0057	1
10725	1-Methylnaphthalene	90-12-0	1.9	0.023	0.057	10
10725	2-Methylnaphthalene	91-57-6	1.9	0.023	0.057	10
10725	Naphthalene	91-20-3	1.0	0.0023	0.0057	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	68 J	37	190	271.04
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	330	10	24	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,400	34	100	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	71.0	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015 13:17	Joseph M Gambler	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015 22:01	Catherine E Bachman	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/05/2015 07:05	Jeremy C Giffin	271.04
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015 20:39	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520030A	09/12/2015 15:20	Heather E Williams	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-39-7.5 Soil
 Former Olympia Bulk Plant COC: R224114
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032077
 LL Group # 1589716
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:35 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-39

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520030A	09/10/2015 09:00	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-25A-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032078
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 12:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

S25A7

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0053 J	0.0025	0.0063	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0025	0.0063	1
10725	Benzo(b)fluoranthene	205-99-2	0.0065	0.0025	0.0063	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0025	0.0063	1
10725	Chrysene	218-01-9	0.0065	0.0013	0.0063	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0025	0.0063	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0025	0.0063	1
10725	1-Methylnaphthalene	90-12-0	0.012	0.0025	0.0063	1
10725	2-Methylnaphthalene	91-57-6	0.011	0.0025	0.0063	1
10725	Naphthalene	91-20-3	0.021	0.0025	0.0063	1
GC Volatiles ECY 97-602 NWT PH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWT PH-GX Soil C7-C12	n.a.	N.D.	1,000	5,200	6802.42
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWT PH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	500	11	26	1
02214	HRO C24-C40 w/Si Gel	n.a.	2,000	38	110	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	73.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015 13:50	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015 17:40	Shawn J McMullen	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602	1	15246B34A	09/04/2015 23:26	Jeremy C Giffin	6802.42
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015 20:51	Mitchell R Washel	n.a.
02214	NWT PH-Dx soil w/Si Gel	ECY 97-602	1	152520030A	09/12/2015 15:42	Heather E Williams	1
07024	DRO Alternate Soil Extraction	NWT PH-Dx modified	1	152520030A	09/10/2015 09:00	Olivia Arosemena	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-25A-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032078
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 12:40 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

S25A7

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-25A-12.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032079
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 12:45 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

25A12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00080	0.0020	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00080	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.00080	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00080	0.0020	1
10725	Chrysene	218-01-9	N.D.	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00080	0.0020	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00080	0.0020	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00080	0.0020	1
10725	Naphthalene	91-20-3	N.D.	0.00080	0.0020	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.1	5.5	22.7
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.6	8.5	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	36	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	17.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015 08:19	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/04/2015 19:54	Jeremy C Giffin	22.7
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015 12:45	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520030A	09/12/2015 21:13	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520030A	09/10/2015 09:00	Olivia Arosemena	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-25A-12.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032079
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 12:45 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

25A12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-5A-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032080
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

S5A75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0049 J	0.0030	0.0074	1
10725	Benzo(a)pyrene	50-32-8	0.0057 J	0.0030	0.0074	1
10725	Benzo(b)fluoranthene	205-99-2	0.010	0.0030	0.0074	1
10725	Benzo(k)fluoranthene	207-08-9	0.0037 J	0.0030	0.0074	1
10725	Chrysene	218-01-9	0.0057 J	0.0015	0.0074	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0030	0.0074	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0030	0.0074	1
10725	1-Methylnaphthalene	90-12-0	0.065	0.0030	0.0074	1
10725	2-Methylnaphthalene	91-57-6	0.093	0.0030	0.0074	1
10725	Naphthalene	91-20-3	0.018	0.0030	0.0074	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	73	360	451.9
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	850	12	28	1
02214	HRO C24-C40 w/Si Gel	n.a.	580	40	120	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	75.1	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015 14:23	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15251A34A	09/08/2015 20:32	Jeremy C Giffin	451.9
01150	GC - Bulk Soil Prep	NWTPH-Gx					
02214	SW-846 5030A	SW-846 5030A	1	201524538726	09/02/2015 20:53	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520030A	09/12/2015 16:25	Heather E Williams	1
07024	DRO Alternate Soil Extraction	NWTPH-Dx modified					
07024	ECY 97-602	ECY 97-602	1	152520030A	09/10/2015 09:00	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-5A-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032080
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:40 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

S5A75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-50-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032081
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:50 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB-50

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0098 J	0.0040	0.010	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0040	0.010	1
10725	Benzo(b)fluoranthene	205-99-2	0.0099 J	0.0040	0.010	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0040	0.010	1
10725	Chrysene	218-01-9	0.015	0.0020	0.010	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0040	0.010	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0051 J	0.0040	0.010	1
10725	1-Methylnaphthalene	90-12-0	2.7	0.040	0.10	10
10725	2-Methylnaphthalene	91-57-6	2.9	0.040	0.10	10
10725	Naphthalene	91-20-3	0.76	0.0040	0.010	1
Reporting limits were raised due to limited sample volume.						
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	38 J	33	170	268.3
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	350	18	43	2
02214	HRO C24-C40 w/Si Gel	n.a.	2,100	61	180	2
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	67.5	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015 14:57	Joseph M Gambler	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015 22:34	Catherine E Bachman	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246B34A	09/05/2015 07:40	Jeremy C Giffin	268.3
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015 20:55	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520030A	09/12/2015 23:01	Heather E Williams	2
		NWTPH-Dx modified					

*=This limit was used in the evaluation of the final result

Sample Description: SB-50-7.5 Soil
 Former Olympia Bulk Plant COC: R224114
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032081
 LL Group # 1589716
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:50 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-50

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520030A	09/10/2015 09:00	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-61-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032082
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:15 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB-61

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0046 J	0.0034	0.0086	1
10725	Benzo(a)pyrene	50-32-8	0.0048 J	0.0034	0.0086	1
10725	Benzo(b)fluoranthene	205-99-2	0.011	0.0034	0.0086	1
10725	Benzo(k)fluoranthene	207-08-9	0.0049 J	0.0034	0.0086	1
10725	Chrysene	218-01-9	0.013	0.0017	0.0086	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0034	0.0086	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0034	0.0086	1
10725	1-Methylnaphthalene	90-12-0	0.11	0.0034	0.0086	1
10725	2-Methylnaphthalene	91-57-6	0.10	0.0034	0.0086	1
10725	Naphthalene	91-20-3	0.79	0.0034	0.0086	1
Reporting limits were raised due to limited sample volume.						
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	40 J	32	160	269.47
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	260	9.0	21	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,400	30	90	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	66.6	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015 15:30	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15251A34A	09/08/2015 23:28	Jeremy C Giffin	269.47
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015 20:56	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520030A	09/12/2015 17:09	Heather E Williams	1
07024	DRO Alternate Soil Extraction	NWTPH-Dx modified ECY 97-602 NWTPH-Dx 06/97	1	152520030A	09/10/2015 09:00	Olivia Arosemena	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-61-7.5 Soil
 Former Olympia Bulk Plant COC: R224114
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032082
 LL Group # 1589716
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:15 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-61

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-21-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032083
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-21

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0025	0.0063	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0025	0.0063	1
10725	Benzo(b)fluoranthene	205-99-2	0.0035 J	0.0025	0.0063	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0025	0.0063	1
10725	Chrysene	218-01-9	0.0048 J	0.0013	0.0063	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0025	0.0063	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0025	0.0063	1
10725	1-Methylnaphthalene	90-12-0	0.36	0.0025	0.0063	1
10725	2-Methylnaphthalene	91-57-6	0.14	0.0025	0.0063	1
10725	Naphthalene	91-20-3	0.052	0.0025	0.0063	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	69	350	455.11
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	340	11	27	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,800	38	110	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	73.8	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015 16:03	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15251A34A	09/08/2015 19:22	Jeremy C Giffin	455.11
		NWTPH-Gx					
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015 20:58	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520030A	09/12/2015 17:30	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520030A	09/10/2015 09:00	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-21-7.5 Soil
 Former Olympia Bulk Plant COC: R224114
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032083
 LL Group # 1589716
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:40 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-21

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-28-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032084
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 12:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-28

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0027	0.0066	1
10725	Benzo(a)pyrene	50-32-8	0.0028 J	0.0027	0.0066	1
10725	Benzo(b)fluoranthene	205-99-2	0.0081	0.0027	0.0066	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0027	0.0066	1
10725	Chrysene	218-01-9	0.0049 J	0.0013	0.0066	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0027	0.0066	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0027	0.0066	1
10725	1-Methylnaphthalene	90-12-0	0.76	0.0027	0.0066	1
10725	2-Methylnaphthalene	91-57-6	0.21	0.0027	0.0066	1
10725	Naphthalene	91-20-3	0.11	0.0027	0.0066	1
GC Volatiles ECY 97-602 NWT PH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWT PH-GX Soil C7-C12	n.a.	N.D.	73	360	449.8
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWT PH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	220	12	28	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,600	40	120	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	75.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015 23:08	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015 17:40	Shawn J McMullen	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602	1	15251A34A	09/08/2015 21:07	Jeremy C Giffin	449.8
01150	GC - Bulk Soil Prep	NWT PH-Gx					
02214	NWT PH-Dx soil w/Si Gel	SW-846 5030A	1	201524538726	09/02/2015 21:00	Mitchell R Washel	n.a.
		ECY 97-602	1	152520030A	09/12/2015 17:52	Heather E Williams	1
		NWT PH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520030A	09/10/2015 09:00	Olivia Arosemena	1
		NWT PH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-28-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032084
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 12:30 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-28

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-27-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032085
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 12:50 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-27

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0030	0.0075	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0030	0.0075	1
10725	Benzo(b)fluoranthene	205-99-2	0.0059 J	0.0030	0.0075	1
10725	Benzo(k)fluoranthene	207-08-9	0.0032 J	0.0030	0.0075	1
10725	Chrysene	218-01-9	0.0048 J	0.0015	0.0075	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0030	0.0075	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0030	0.0075	1
10725	1-Methylnaphthalene	90-12-0	0.64	0.0030	0.0075	1
10725	2-Methylnaphthalene	91-57-6	0.21	0.0030	0.0075	1
10725	Naphthalene	91-20-3	0.066	0.0030	0.0075	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	140 J	52	260	288.78
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	220	13	31	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,400	45	130	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	77.8	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015 23:41	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15251A34A	09/08/2015 22:18	Jeremy C Giffin	288.78
01150	GC - Bulk Soil Prep	NWTPH-Gx					
02214	NWTPH-Dx soil w/Si Gel	SW-846 5030A	1	201524538726	09/02/2015 21:01	Mitchell R Washel	n.a.
		ECY 97-602	1	152520030A	09/12/2015 18:26	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520030A	09/10/2015 09:00	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-27-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032085
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 12:50 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/01/2015 09:25

Suite 600

Reported: 09/28/2015 15:12

630 Plaza Drive

Highlands Ranch CO 80129

SB-27

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-38-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032086
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 13:05 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/01/2015 09:25

Suite 600

Reported: 09/28/2015 15:12

630 Plaza Drive

Highlands Ranch CO 80129

SB-38

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0028	0.0071	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0028	0.0071	1
10725	Benzo(b)fluoranthene	205-99-2	0.0046 J	0.0028	0.0071	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0028	0.0071	1
10725	Chrysene	218-01-9	0.0030 J	0.0014	0.0071	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0028	0.0071	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0028	0.0071	1
10725	1-Methylnaphthalene	90-12-0	0.068	0.0028	0.0071	1
10725	2-Methylnaphthalene	91-57-6	0.035	0.0028	0.0071	1
10725	Naphthalene	91-20-3	0.028	0.0028	0.0071	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	77	390	453.02
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	350	13	29	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,400	42	130	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	76.5	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/18/2015 00:14	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15251A34A	09/08/2015 19:57	Jeremy C Giffin	453.02
01150	GC - Bulk Soil Prep	NWTPH-Gx					
02214	NWTPH-Dx soil w/Si Gel	SW-846 5030A	1	201524538726	09/02/2015 21:04	Mitchell R Washel	n.a.
		ECY 97-602	1	152520031A	09/12/2015 12:48	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520031A	09/10/2015 09:00	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-38-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032086
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 13:05 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25

630 Plaza Drive

Reported: 09/28/2015 15:12

Highlands Ranch CO 80129

SB-38

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-49-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032087
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 13:20 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

SB-49

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0027 J	0.0024	0.0060	1
10725	Benzo(a)pyrene	50-32-8	0.0025 J	0.0024	0.0060	1
10725	Benzo(b)fluoranthene	205-99-2	0.0075	0.0024	0.0060	1
10725	Benzo(k)fluoranthene	207-08-9	0.0057 J	0.0024	0.0060	1
10725	Chrysene	218-01-9	0.0049 J	0.0012	0.0060	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0024	0.0060	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0024 J	0.0024	0.0060	1
10725	1-Methylnaphthalene	90-12-0	0.97	0.0024	0.0060	1
10725	2-Methylnaphthalene	91-57-6	0.31	0.0024	0.0060	1
10725	Naphthalene	91-20-3	0.11	0.0024	0.0060	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	65 J	40	200	275.56
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	820	11	25	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,700	36	110	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	72.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/18/2015 00:47	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15251A34A	09/08/2015 22:53	Jeremy C Giffin	275.56
01150	GC - Bulk Soil Prep	NWTPH-Gx					
02214	NWTPH-Dx soil w/Si Gel	SW-846 5030A	1	201524538726	09/02/2015 21:05	Mitchell R Washel	n.a.
		ECY 97-602	1	152520031A	09/12/2015 13:09	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152520031A	09/10/2015 09:00	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-49-7.5 Soil
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032087
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 13:20 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/01/2015 09:25

Suite 600

Reported: 09/28/2015 15:12

630 Plaza Drive

Highlands Ranch CO 80129

SB-49

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: TRIP Water
Former Olympia Bulk Plant COC: R224114
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8032088
LL Group # 1589716
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015

Atlantic Richfield c/o ARCADIS

Submitted: 09/01/2015 09:25

Suite 600

Reported: 09/28/2015 15:12

630 Plaza Drive

Highlands Ranch CO 80129

OLYTB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
	ECY 97-602	NWTPH-Gx	ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	N.D.	50	250	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 12:31	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015 12:31	Brett W Kenyon	1

*=This limit was used in the evaluation of the final result

BP OLY

Data Review

OLYMPIA, WA

Semivolatiles and TPH

SDG # 1590592

Analyses Performed By:
Lancaster Laboratories
Lancaster, PA

Report # 24723R
Review Level: Tier II
Project: GP09BPNA.WA60.K000

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1590592 for samples collected in association with the BP OLY site. The review was conducted at a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	TPH	MET	TSS
SB-48-7.5	8036396	Soil	08/31/15			X	X		
SB-3-7.5	0836397	Soil	08/31/15			X	X		
SB-7-7.5	8036398	Soil	08/31/15			X	X		
SB-36-7.5	8036399	Soil	08/31/15			X	X		
SB-36-12.5	8036402	Soil	08/31/15			X	X		
SB-12-7.5	8036403	Soil	08/31/15			X	X		
SB-18-7.5	8036404	Soil	08/31/15			X	X		
SB-18A-12.5	8036405	Soil	08/31/15			X	X		
SB-6-7.5	8036406	Soil	08/31/15			X	X		
SB-11-7.5	8036409	Soil	08/31/15			X	X		
SB-11-12.5	8036410	Soil	08/31/15			X	X		
SB-20-7.5	8036411	Soil	08/31/15			X	X		
SB-20-12.5	8036412	Soil	08/31/15			X	X		
SB-17-7.5	8036413	Soil	08/31/15			X	X		
SB-24-7.5	8036414	Soil	08/31/15						
SB-33-7.5	8036415	Soil	08/31/15			X	X		
SB-19-7.5	8036416	Soil	08/31/15			X	X		
SB-19-14.5	8036417	Soil	08/31/15			X	X		
SB-44-7.5	8036418	Soil	08/31/15						
SB-56-7.5	8036419	Soil	08/31/15			X	X		
SB-45-7.5	8036420	Soil	08/31/15			X	X		
SB-46-7.5	8036423	Soil	08/31/15			X	X		
SB-46-12.5	8036424	Soil	08/31/15			X	X		
SB-57-7.5	8036425	Soil	08/31/15			X	X		
SB-34-7.5	8036426	Soil	08/31/15			X	X		
SB-8-7.5	8036427	Soil	09/01/15			X	X		
SB-13-7.5	8036428	Soil	09/01/15			X	X		

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	TPH	MET	TSS
SB-41-Offset-7.5	8036429	Soil	09/01/15			X	X		
SB-41-Offset-12.5	8036430	Soil	09/01/15			X	X		
SB-52-Offset-7.5	8036431	Soil	09/01/15			X	X		
SB-52-Offset-12.5	8036432	Soil	09/01/15			X	X		
SB-60-Offset-7.5	8036433	Soil	09/01/15			X	X		
SB-60-7.5	8036434	Soil	09/01/15			X	X		
SB-59-7.5	8036435	Soil	09/01/15			X	X		
SB-47-7.5	8036436	Soil	09/01/15			X	X		
SB-47-12.5	8036437	Soil	09/01/15			X	X		
SB-37-7.5	8036438	Soil	09/01/15			X	X		
SB-37-12.5	8036439	Soil	09/01/15			X	X		
SB-26A-7.5	8036440	Soil	09/01/15			X	X		
SB-26A-12.5	8036441	Soil	09/01/15			X	X		
SB-35-7.5	8036442	Soil	09/01/15			X	X		
SB-14-7.5	8036443	Soil	09/01/15			X	X		
SB-41-D-2.5	8036444	Soil	09/01/15			X	X		
SB-41-E-2.5	8036445	Soil	09/01/15			X	X		
SB-41-C-2.5	8036446	Soil	09/01/15			X	X		
SB-41-E-7.5	8036447	Soil	09/01/15			X	X		
SB-41-E-12.5	8036448	Soil	09/01/15			X	X		
SB-41-C-7.5	8036449	Soil	09/01/15			X	X		
SB-41-C-12.5	8036450	Soil	09/01/15			X	X		
SB-41-D-7.5	8036451	Soil	09/01/15			X	X		
SB-41-D-12.5	8036452	Soil	09/01/15			X	X		
SB-41-B-2.5	8036453	Soil	09/02/15			X	X		
SB-52-B-2.5	8036454	Soil	09/02/15			X	X		
SB-41-B-7.5	8036455	Soil	09/02/15			X	X		
SB-41-B-12.5	8036456	Soil	09/02/15			X	X		
SB-52-B-7.5	8036457	Soil	09/02/15			X	X		
DUP-6	8036458	Soil	08/31/15	SB-36-7.5		X	X		
DUP-7	8036459	Soil	08/31/15	SB-6-7.5		X	X		
TRIP BLANK	8036460	Soil	09/01/15			X			
DUP-8	8036461	Soil	08/31/15	SB-45-7.5		X	X		

Note:

1. Samples SB-36-7.5, SB-6-7.5, SB-45-7.5, SB-52-B-2.5 and SB-52-B-7.5 were used as the MS/MSDs.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8270 (SIM) and ECY 97-602 . Data were reviewed in accordance with the USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines and as requested by USEPA Region 10:

- Concentration (C) Qualifiers
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - U The analyte was not detected at or above the reported result.
 - J The analyte was positively identified. The associated numerical result is an estimate.
 - UJ The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
 - R The data are unusable for all purposes.

 - N There is evidence the analyte is present in this sample.

 - JN There is evidence the analyte is present in this sample. The associated numerical result is an estimate.
 - D The sample result is reported from a diluted analysis.
 - EJ The sample result is greater than the calibration range. The associated numerical value is an estimated concentration only.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270 (SIM)	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
SB-45-7.5	17 days	<14 Days

Sample results associated with sample locations analyzed by analytical method SW-846 8270 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
SB-12-7.5	Fluoranthene-d10	AC
	Benzo(a)pyrene-d12	<LL but >10%
	1-Methylnaphthalene-d10	AC
SB-19-14.5 SB-41-C-7.5 SB-41-C-12.5 SB-41-D-12.5 SB-18-7.5 SB-19-7.5	Fluoranthene-d10	D
	Benzo(a)pyrene-d12	D
	1-Methylnaphthalene-d10	D

LL Low Limit
AC Acceptable
D Dilution

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Surrogates diluted below the calibration curve due to the high concentration of a target compounds	Non-detect	J ¹
	Detect	

¹ A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
SB-45-7.5	Dibenz(a,h)anthracene	<LL but >10%	<LL but >10%
	Indeno(1,2,3-cd)pyrene	<LL but >10%	<LL but >10%
SB-36-7.5	Benzo(a)Anthracene	<LL but >10%	<LL but >10%
	Benzo(a)Pyrene	AC	<LL but >10%
	Benzo(k)Fluoranthene	AC	AC
	Chrysene	<LL but >10%	<LL but >10%
	Dibenz(a,h)anthracene	<LL but >10%	<LL but >10%
	Indeno(1,2,3-cd)pyrene	<LL but >10%	<LL but >10%
	1-Methylnaphthalene	>UL	<LL but >10%
	2-Methylnaphthalene	>UL	<10%
	Naphthalene	>UL	AC
SB-6-7.5	Benzo(b)Fluoranthene	AC	>UL
	Dibenz(a,h)anthracene	<LL but >10%	<LL but >10%
	Indeno(1,2,3-cd)pyrene	<LL but >10%	<LL but >10%
	Naphthalene	>UL	>UL

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

Sample locations associated with LCS/LCSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
SB-36-7.5	1-Methylnaphthalene
	2-Methylnaphthalene

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SB-36-7.5/DUP-6	Benzo(a)Anthracene	0.0027 J	5.3	NC
	Benzo(a)Pyrene	0.0025 J	4.0	NC
	Benzo(b)Fluoranthene	0.0061	6.0	NC
	Benzo(k)Fluoranthene	0.0059 U	2.3	NC
	Chrysene	0.0065	5.5	NC
	Dibenz(a,h)anthracene	0.0059 U	0.27	NC
	Indeno(1,2,3-cd)pyrene	0.0059 U	0.67	NC
	1-Methylnaphthalene	0.37	3.4	NC
	2-Methylnaphthalene	0.35	3.4	NC

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Naphthalene	0.050	6.0	NC
SB-6-7.5/DUP-7	Chrysene	0.010 J	0.062 U	AC
	1-Methylnaphthalene	1.4	7.9	NC
	2-Methylnaphthalene	1.9	12	NC
	Naphthalene	0.056	0.25	NC
SB-45-7.5/DUP-8	Benzo(a)Anthracene	0.0052	0.0046 J	AC
	Benzo(a)Pyrene	0.0069	0.0057 J	AC
	Benzo(b)Fluoranthene	0.010	0.019	AC
	Benzo(k)Fluoranthene	0.0045	0.0065	AC
	Chrysene	0.0055	0.012	AC
	Indeno(1,2,3-cd)pyrene	0.0019	0.0034 J	AC
	1-Methylnaphthalene	0.0015 J	0.020	AC
	2-Methylnaphthalene	0.0015 J	0.015	AC
	Naphthalene	0.0043	0.037	NC

AC Acceptable
NC Non Compliant

The compound(s) benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, 1-methylnaphthalene, 2-methylnaphthalene and naphthalene associated with sample locations SB-36-7.5 and DUP-6 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

The compound(s) 1-methylnaphthalene, 2-methylnaphthalene and naphthalene associated with sample locations SB-6-7.5 and DUP-7 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

The compound naphthalene associated with sample locations SB-6-7.5 and DUP-7 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270 (SIM)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X	X		
Field Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

%R Percent recovery

RPD Relative percent difference

NWTPH-GX AND DX

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH – Gx and Dx ECY 97-602	Soil	14 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
SB-41-E-7.5 SB-41-B-7.5	Trifluorotoluene-F	>UL
SB-18-7.5 SB-19-7.5 DUP-6	Orthoterphenyl	>UL

Upper control limit (UL)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented

in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
SB-6-7.5	Gx	>UL	>UL
SB-36-7.5	Gx	>UL	>UL
SB-45-7.5	Gx	>UL	<10%
SB-36-7.5	DRO	<LL but >10%	<LL but >10%
SB-52-B-2.5	DRO	>UL	AC

AC = Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration (D).	Detect	No Action
	Non-detect	

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
SB-36-7.5 SB-45-7.5	Gx

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SB-36-7.5/DUP-6	Gx	71 J	1100	175.7%
	DRO	710	8900	170.4%
	HRO	1200	44000	189.4%
SB-6-7.5/DUP-7	Gx	140 U	71 J	AC
	DRO	290	440	41.1%
	HRO	1100	1500	30.8%
SB-45-7.5/DUP-8	Gx	330 U	25 U	AC
	DRO	86	290	108.5%

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SB-45-7.5/DUP-8	HRO	350	740	71.6%

AC Acceptable

The compounds Gx, DRO and HRO associated with sample locations SB-36-7.5 and DUP-6 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

The compounds Gx, DRO and HRO associated with sample locations SB-45-7.5 and DUP-8 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR TPH

Gx/Dx; ECY 97-602	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Trip blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

%R - percent recovery, RPD - relative percent difference,

VALIDATION PERFORMED

BY:

Rachelle Borne

SIGNATURE:



DATE: December 7, 2015

PEER REVIEW: Joseph C. Houser

DATE: December 11, 2015

**CHAIN OF CUSTODY/
CORRECTED SAMPLE ANALYSIS DATA SHEETS**



13255 1590592 8036396-461
Laboratory Management Program LaMP Chain of Custody Record R224118

BP Site Node Path: _____

Req Due Date (mm/dd/yy): Standard TAT

Rush TAT: Yes ___ No ___

BP Facility No: Frank Olympia BUN Plant

Lab Work Order Number: _____

Lab Name: <u>Longwater Laboratories</u>	Facility Address: <u>1117 W Bay Drive</u>	Consultant/Contractor: <u>Arceus</u>
Lab Address: <u>2425 New Holburn Pike, Lewis PA</u>	City, State, ZIP Code: <u>Olympia, WA</u>	Consultant/Contractor Project No: <u>6P09BPNA</u>
Lab PM: <u>Stacy Britt</u>	Lead Regulatory Agency: <u>WAD02</u>	Address: <u>1100 Olive Way</u>
Lab Phone: <u>717-656-2500</u>	California Global ID No.: _____	Consultant/Contractor PM: <u>Brian Merum</u>
Lab Shipping Acct: _____	Enfos Proposal No: _____	Phone: <u>706-726-4758</u> Email: <u>Brian.Merum@arceus.com</u>
Lab Bottle Order No: _____	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: <u>Brian Merum</u> and to <u>lab.enfosdoc@bp.com</u>
Other Info: _____	Stage: _____ Activity: _____	Invoice To: BP ___ Contractor <u>X</u>

BP Project Manager (PM):				Matrix				No. Containers / Preservative				Requested Analyses										Report Type & QC Level							
BP PM Phone:				Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container:	Unpreserved	H2SO4	HNO3	HCl	Methanol	CPAH + Naphthalene	NWPFI-gx	NWTIH-fl/dy											Standard ___	Full Data Package ___	
BP PM Email:																											Comments		
Lab No.	Sample Description	Date	Time											Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.															
	SB-48-7.5	8/31/15	1045	✓				2	2				✓	✓	✓														
	SB-3-7.5		1115	✓				2	2				✓	✓	✓														
	SB-7-7.5		1130	✓				2	2				✓	✓	✓														
	SB-36-7.5		1150	✓				6	6			3	✓	✓	✓														MS/MSD
	SB-36-12.5		1215	✓				3	2			1	✓	✓	✓														
	SB-12-7.5		1230	✓				2	2				✓	✓	✓														
	SB-18-7.5		1240	✓				2	2				✓	✓	✓														
	SB-18A-12.5		1330	✓				3	2			1	✓	✓	✓														
	SB-6-7.5		1340	✓				9	6			3	✓	✓	✓														MS/MSD
	SB-11-7.5		1400	✓				2	2				✓	✓	✓														

Sampler's Name: <u>Joan Witte</u>	Relinquished By / Affiliation		Date	Time	Accepted By / Affiliation		Date	Time
Sampler's Company: <u>Arceus</u>	<u>JJ / Arceus</u>		<u>9-3-15</u>	<u>1627</u>	<u>[Signature]</u>			
Shipment Method: <u>via FedEx via</u> Ship Date: <u>9/3/15</u>								
Shipment Tracking No: _____							<u>9/4/15</u>	<u>935</u>

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place Yes / No | Temp Blank Yes / No | Cooler Temp on Receipt 0.9-2.2 °F | Trip Blank: Yes / No | MS/MSD Sample Submitted Yes / No



Laboratory Management Program LaMP Chain of Custody Record

R224119

Page 2 of 6

BP Site Node Path: _____

Req Due Date (mm/dd/yy): Standard TAT

Rush TAT: Yes ___ No ___

BP Facility No: France Olympia Bulk Plant

Lab Work Order Number: _____

Lab Name: <u>Lanier Laboratories</u>	Facility Address: <u>1117 West Bay Street</u>	Consultant/Contractor: <u>Arcadis</u>
Lab Address: <u>2425 New Holland Pike, Bensalem, PA</u>	City, State, ZIP Code: <u>Olympia, WA</u>	Consultant/Contractor Project No: <u>61090PNAWA.61</u>
Lab PM: <u>Stacy Burr</u>	Lead Regulatory Agency: <u>WADSW</u>	Address: <u>1100 Olive Way, Seattle, WA</u>
Lab Phone: <u>717-656-2300</u>	California Global ID No.: _____	Consultant/Contractor PM: <u>Brian Marston</u>
Lab Shipping Acct: _____	Enfos Proposal No: _____	Phone: <u>206-726-4758</u> Email: <u>Brian.Marston@arcadis.com</u>
Lab Bottle Order No: _____	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: <u>Brian.Marston</u> and to <u>lab.enfosdoc@bp.com</u>
Other Info: _____	Stage: _____ Activity: _____	Invoice To: BP ___ Contractor <input checked="" type="checkbox"/>

BP Project Manager (PM):				Matrix			No. Containers / Preservative						Requested Analyses												Report Type & QC Level							
BP PM Phone:				Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container:	Unpreserved	H2SO4	HNO3	HCl	Methanol	Standard												Full Data Package						
BP PM Email:														Comments																		
Lab No.	Sample Description	Date	Time																													
	SB-11-12.5	8-31-15	1410	✓				3	2					1	✓	✓	✓															
	SB-20-7.5		1420	✓				2	2						✓	✓	✓															
	SB-20-12.5		1430	✓				2	2						✓	✓	✓															
	SB-17-7.5		1440	✓				3	2					1	✓	✓	✓															
	SB-24-7.5		1450	✓				3	2					1	✓	✓	✓															
	SB-33-7.5		1500	✓				3	2					1	✓	✓	✓															
	SB-19-7.5		1505	✓				2	2						✓	✓	✓															
	SB-19-14.5		1525	✓				3	2					1	✓	✓	✓															
	SB-44-7.5		1520	✓				3	2					1	✓	✓	✓															
	SB-56-7.5		1600	✓				3	2					1	✓	✓	✓															

Sampler's Name: <u>Jason Viera</u>	Relinquished By / Affiliation: <u>[Signature] / Arcadis</u>	Date: <u>9-3-15</u>	Time: <u>1600</u>	Accepted By / Affiliation: <u>[Signature]</u>	Date: <u>9/4/15</u>	Time: <u>935</u>
Sampler's Company: <u>Arcadis</u>						
Shipment Method: <u>UPS Next Day</u> Ship Date: <u>9/3/15</u>						
Shipment Tracking No: _____						

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt 09.22 °F | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No



13255 1590592 8036396-461
Laboratory Management Program LaMP Chain of Custody Record

R224122

BP Site Node Path: _____

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes ___ No ___

BP Facility No: Farmers Olympia PUM Plant

Lab Work Order Number: _____

Lab Name: <u>Lancaster Laboratory</u>	Facility Address: <u>117 W Bay drive</u>	Consultant/Contractor: <u>Arceus</u>
Lab Address: <u>2425 New Holland Pike</u>	City, State, ZIP Code: <u>Olympia, WA</u>	Consultant/Contractor Project No: <u>09903PNAVA.00</u>
Lab PM: <u>Stacy Durr</u>	Lead Regulatory Agency: <u>WADWE</u>	Address: <u>1170 Olive Way, Seattle, WA</u>
Lab Phone: <u>717-656-2500</u>	California Global ID No.: _____	Consultant/Contractor PM: <u>Drew Merwin</u>
Lab Shipping Acct: _____	Enfos Proposal No: _____	Phone: <u>206-726-4758</u> Email: <u>D.</u>
Lab Bottle Order No: _____	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: _____ and to <u>lab.enfosdoc@bp.com</u>
Other Info: _____	Stage: _____ Activity: _____	Invoice To: BP ___ Contractor ___

BP Project Manager (PM):				Matrix		No. Containers / Preservative								Requested Analyses								Report Type & QC Level							
BP PM Phone:				Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container:	Unpreserved	H2SO4	HNO3	HCl	Methanol	CPAH + Naphthalenes	NWTTH-0x/HO	NWTTH-6x									Standard ___	Full Data Package ___			
BP PM Email:																													
Lab No.	Sample Description	Date	Time																	Comments									
	SB-45-7.5 *	8-31-15	1610	✓				2	2					✓	✓	✓													*Additional volume submitted for ms/msd per M. Perkins 8/10/15
	SB-46-7.5	8-31-15	1615	✓				2	2					✓	✓	✓													
	SB-46-12.5	8-31-15	1630	✓				3	2			1		✓	✓	✓													
	SB-57-7.5	8-31-15	1640	✓				3	2			1		✓	✓	✓													
	SB-34-7.5	8-31-15	1700	✓				2	2					✓	✓	✓													
	SB-8-7.5	9/1/15	0830	✓				2	2					✓	✓	✓													
	SB-13-7.5	9/1/15	0900	✓				2	2					✓	✓	✓													
	SB-41-offsite-7.5	9/1/15	0920	✓				2	2					✓	✓	✓													
	SB-41-offsite-12.5	9/1/15	0940	✓				2	2					✓	✓	✓													
	SB-52-offsite-7.5	9/1/15	1000	✓				2	2					✓	✓	✓													

Sampler's Name: <u>Jana Loring</u>	Relinquished By / Affiliation		Date	Time	Accepted By / Affiliation		Date	Time
Sampler's Company: <u>Arceus</u>	<u>[Signature]</u>		<u>7-3-15</u>	<u>1600</u>	<u>[Signature]</u>			
Shipment Method: <u>UPS Next day air</u> Ship Date: <u>9/3/15</u>								
Shipment Tracking No:							<u>9/4/15</u>	<u>9:35</u>

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 9-2.2 °C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No



Laboratory Management Program LaMP Chain of Custody Record

13255 1590592 8036396-461

R224121

BP Site Node Path: _____

Req Due Date (mm/dd/yy): Standard TAT

Rush TAT: Yes ___ No ___

BP Facility No: Firms Olympia 0.16 M...

Lab Work Order Number: _____

Lab Name: Lancaster Laboratories; Facility Address: 1117 W Bay Drive; Consultant/Contractor: Arcadis; Lab Address: 2425 New Holland Pike Lancaster CA; City, State, ZIP Code: Olympia, WA; Lab PM: Stacy Britt; Lead Regulatory Agency: WADDE; Address: 1100 Olive Way, Seattle, WA; Lab Phone: 717-656-2500; California Global ID No.: -; Consultant/Contractor PM: Brian Morum; Lab Shipping Acct: -; Enfos Proposal No.: -; Phone: 206-726-4758; Email: Brian.Morum@arcadis.com; Lab Bottle Order No: -; Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___; Email EDD To: Brian Morum and to lab.enfosdoc@bp.com; Other Info: -; Stage: -; Activity: -; Invoice To: BP ___ Contractor ___

BP Project Manager (PM): _____; Matrix: _____; No. Containers / Preservative: _____; Requested Analyses: _____; Report Type & QC Level: Standard ___ Full Data Package ___

Table with columns: Lab No., Sample Description, Date, Time, Matrix (Soil/Solid, Water/Liquid, Air/Vapor, Is this location a well?), Total Number of Container, Unpreserved, H2SO4, HNO3, HCl, Methanol, CAPI + NAPHTHOLS, NWT/H/G, NWT/H/N, NWT/H/O. Rows include sample IDs like SB-52-offsite-12.5, SB-62-offsite-7.5, etc.

Sampler's Name: John Vitru; Relinquished By / Affiliation: [Signature] / Arcadis; Date: 7-3-15; Time: 1600; Accepted By / Affiliation: [Signature]; Date: 9/4/15; Time: 9:35

Special Instructions: THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes/No; Temp Blank: Yes/No; Cooler Temp on Receipt: 0.9.2.2 °F(C); Trip Blank: Yes/No; MS/MSD Sample Submitted: Yes/No



BP Site Node Path:

Req Due Date (mm/dd/yy):

Rush TAT: Yes No

BP Facility No: Former Olympia Bula Plant

Lab Work Order Number:

Lab Name: Loneriger Laboratories, Facility Address: 1117 W Boy Drive, Consultant/Contractor: Arcelex, Lab Address: 2725 New Holland Pike, City, State, ZIP Code: Olympia, WA, Consultant/Contractor Project No: GIOBINAWA GP, Lab PM: Stacy Burt, Lead Regulatory Agency: WADSW, Address: 1190 Olive Way, Seattle, WA, Lab Phone: 717-656-2500, California Global ID No., Consultant/Contractor PM: Brian Merion, Lab Shipping Acct: Enfos Proposal No., Phone: 206-776-4758, Email: Brian.Merion@enfos.com, Lab Bottle Order No: Accounting Mode: Provision OOC-BU OOC-RM, Email EDD To: Brian Merion and to lab.enfosdoc@bp.com, Other Info: Stage: Activity: Invoice To: BP Contractor

BP Project Manager (PM), BP PM Phone, BP PM Email, Matrix, No. Containers / Preservative, Requested Analyses, Report Type & QC Level

Table with columns: Lab No., Sample Description, Date, Time, Soil / Solid, Water / Liquid, Air / Vapor, Is this location a well?, Total Number of Containers, Unpreserved, H2SO4, HNO3, HCl, Methanol, CPHH + Napthalene, NUTPH-6x, NUTPH-dx/HN, Comments

Sampler's Name: Jason Little, Relinquished By / Affiliation: JZ / Arcelex, Date: 9-3-15, Time: 16:00, Accepted By / Affiliation, Date: 9/4/15, Time: 9:35

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: (Yes/No) Temp Blank: (Yes/No) Cooler Temp on Receipt: 9-2-2 °F/C Trip Blank: (Yes/No) MS/MSD Sample Submitted: (Yes/No)



Laboratory Management Program LaMP Chain of Custody Record R219428

BP Site Node Path: _____

Req Due Date (mm/dd/yy): Standard TAT Rush TAT: Yes ___ No ___

BP Facility No: Former Olympia Data Plant

Lab Work Order Number: _____

Lab Name: Laboratory Laboratories Facility Address: 1117 W Bay drive Consultant/Contractor: Aracelis G09BPNAWA0
 Lab Address: 2425 New Holland Pike, Leavenworth, WA City, State, ZIP Code: Olympia, WA Consultant/Contractor Project No: ~~Olympia 1A~~
 Lab PM: Stacy Dutt Lead Regulatory Agency: WA DOE Address: 1100 Olive Way, Seattle, WA
 Lab Phone: 717-656-2503 California Global ID No.: _____ Consultant/Contractor PM: Brian Merson
 Lab Shipping Acct: _____ Enfors Proposal No: _____ Phone: 206-726-7588 Email: Brian.Merson@enfor.com
 Lab Bottle Order No: ~~756676~~ Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___ Email EDD To: Brian Merson and to lab.enfosdoc@bp.com
 Other Info: _____ Stage: _____ Activity: _____ Invoice To: BP ___ Contractor

BP Project Manager (PM):				Matrix		No. Containers / Preservative							Requested Analyses										Report Type & QC Level											
BP PM Phone:				Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container:	Unpreserved	H2SO4	HNO3	HCl	Methanol	COPPER + NITROGEN	NITRATE/DX	NITRATE/6X											Standard ___							
BP PM Email:																											Full Data Package ___							
Lab No.	Sample Description	Date	Time														Comments																	
	SB-41-D-12.5	9-1-15	1540	✓				2	2						✓	✓	✓																	
	SB-41-B-2.5	9-2-15	0940	✓				2	2						✓	✓	✓																	
	SB-52-B-2.5	9-2-15	1000	✓				3	2						✓	✓	✓																	
	SB-41-B-7.5	9-2-15	1030	✓				2	2						✓	✓	✓																	
	SB-41-B-12.5	9-2-15	1050	✓				2	2						✓	✓	✓																	
	SB-52-B-7.5	9-2-15	1100	✓				3	2						✓	✓	✓																	
	DUP-6	8-31-15		✓				2	2						✓	✓	✓																	
	DUP-7	8-31-15		✓				2	2						✓	✓	✓																	
	TRIA BLANK			✓				6																										
	DUP-8 *	8-31-15																																

Sampler's Name: John Lark Relinquished By / Affiliation: ~~John Lark~~ Date: 8-31-15 Time: 1245
 Sampler's Company: Aracelis Accepted By / Affiliation: _____ Date: _____ Time: _____
 Shipment Method: VIS Next Day Ship Date: 9-3-15 Shipment Tracking No: _____
 Date: 9/1/15 Time: 935
 Special Instructions: _____

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 09-22 °C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Sample Description: SB-48-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036396
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 10:45 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

48-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0027	0.0067	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0027	0.0067	1
10725	Benzo(b)fluoranthene	205-99-2	0.0051 J	0.0027	0.0067	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0027	0.0067	1
10725	Chrysene	218-01-9	0.0052 J	0.0013	0.0067	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0027	0.0067	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0027	0.0067	1
10725	1-Methylnaphthalene	90-12-0	0.70	0.0027	0.0067	1
10725	2-Methylnaphthalene	91-57-6	0.26	0.0027	0.0067	1
10725	Naphthalene	91-20-3	0.080	0.0027	0.0067	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	72	360	440.65
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	530	12	28	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,300	40	120	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	75.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 08:23	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/09/2015 21:18	Jeremy C Giffin	440.65
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:16	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530014A	09/13/2015 05:31	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015 11:00	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-48-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036396
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 10:45 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 10/01/2015 13:13

630 Plaza Drive

Highlands Ranch CO 80129

48-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-3-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036397
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:15 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

03-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0021	0.0053	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0021	0.0053	1
10725	Benzo(b)fluoranthene	205-99-2	0.0030 J	0.0021	0.0053	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0021	0.0053	1
10725	Chrysene	218-01-9	0.0050 J	0.0011	0.0053	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0021	0.0053	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0021	0.0053	1
10725	1-Methylnaphthalene	90-12-0	0.12	0.0021	0.0053	1
10725	2-Methylnaphthalene	91-57-6	0.054	0.0021	0.0053	1
10725	Naphthalene	91-20-3	0.041	0.0021	0.0053	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	57	280	447.77
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	170	9.5	22	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,500	32	95	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	68.5	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 09:02	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/09/2015 21:53	Jeremy C Giffin	447.77
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:18	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530014A	09/13/2015 05:52	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015 11:00	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-3-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036397
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:15 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 10/01/2015 13:13

630 Plaza Drive

Highlands Ranch CO 80129

03-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-7-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036398
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

07-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0026 J	0.0024	0.0060	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0024	0.0060	1
10725	Benzo(b)fluoranthene	205-99-2	0.0061	0.0024	0.0060	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0024	0.0060	1
10725	Chrysene	218-01-9	0.0076	0.0012	0.0060	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0024	0.0060	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0024	0.0060	1
10725	1-Methylnaphthalene	90-12-0	0.96	0.0024	0.0060	1
10725	2-Methylnaphthalene	91-57-6	0.62	0.0024	0.0060	1
10725	Naphthalene	91-20-3	0.23	0.0024	0.0060	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	65	320	448.79
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	290	11	25	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,700	36	110	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	72.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 09:35	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/09/2015 22:28	Jeremy C Giffin	448.79
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:20	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530014A	09/13/2015 06:14	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015 11:00	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-7-7.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036398
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:30 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

07-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-36-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036399
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:50 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

36-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0027 J	0.0023	0.0059	1
10725	Benzo(a)pyrene	50-32-8	0.0025 J	0.0023	0.0059	1
10725	Benzo(b)fluoranthene	205-99-2	0.0061 J	0.0023	0.0059	1
10725	Benzo(k)fluoranthene	207-08-9	N.D. JJ	0.0023	0.0059	1
10725	Chrysene	218-01-9	0.0065 J	0.0012	0.0059	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D. JJ	0.0023	0.0059	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. JJ	0.0023	0.0059	1
10725	1-Methylnaphthalene	90-12-0	0.37 J	0.0023	0.0059	1
10725	2-Methylnaphthalene	91-57-6	0.35 J	0.0023	0.0059	1
10725	Naphthalene	91-20-3	0.050 J	0.0023	0.0059	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	71 J	63	320	445.31
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	710 J	11	25	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,200 J	35	110	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	71.9	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/29/2015 17:43	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/09/2015 18:56	Jeremy C Giffin	445.31
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:21	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530014A	09/13/2015 06:36	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015 11:00	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-36-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036399
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:50 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

36-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-36-7.5 MS Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036400
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:50 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

36-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.084	0.0023	0.0058	1
10725	Benzo(a)pyrene	50-32-8	0.10	0.0023	0.0058	1
10725	Benzo(b)fluoranthene	205-99-2	0.13	0.0023	0.0058	1
10725	Benzo(k)fluoranthene	207-08-9	0.13	0.0023	0.0058	1
10725	Chrysene	218-01-9	0.085	0.0012	0.0058	1
10725	Dibenz(a,h)anthracene	53-70-3	0.060	0.0023	0.0058	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.058	0.0023	0.0058	1
10725	1-Methylnaphthalene	90-12-0	0.71	0.0023	0.0058	1
10725	2-Methylnaphthalene	91-57-6	0.62	0.0023	0.0058	1
10725	Naphthalene	91-20-3	0.20	0.0023	0.0058	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	250	J 61	310	429.88
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	870	11	25	1
02214	HRO C24-C40 w/Si Gel	n.a.	860	36	110	1
Wet Chemistry SM 2540 G-1997						
00118	Moisture	n.a.	71.9	0.50	0.50	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/29/2015 18:17	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/09/2015 19:32	Jeremy C Giffin	429.88
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:23	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530014A	09/13/2015 06:57	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015 11:00	Denise L Trimby	1
00118	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-36-7.5 MSD Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036401
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:50 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

36-75

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM							
10725	Benzo(a)anthracene	56-55-3	0.084		0.0023	0.0058	1
10725	Benzo(a)pyrene	50-32-8	0.091		0.0023	0.0058	1
10725	Benzo(b)fluoranthene	205-99-2	0.12		0.0023	0.0058	1
10725	Benzo(k)fluoranthene	207-08-9	0.11		0.0023	0.0058	1
10725	Chrysene	218-01-9	0.080		0.0012	0.0058	1
10725	Dibenz(a,h)anthracene	53-70-3	0.054		0.0023	0.0058	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.052		0.0023	0.0058	1
10725	1-Methylnaphthalene	90-12-0	0.36		0.0023	0.0058	1
10725	2-Methylnaphthalene	91-57-6	0.34		0.0023	0.0058	1
10725	Naphthalene	91-20-3	0.16		0.0023	0.0058	1
GC Volatiles ECY 97-602 NWTPH-Gx							
02005	NWTPH-GX Soil C7-C12	n.a.	180	J	59	290	413.72
Reporting limits were raised due to sample foaming.							
GC Petroleum ECY 97-602 NWTPH-Dx							
Hydrocarbons w/Si modified							
02214	DRO C12-C24 w/Si Gel	n.a.	850	J	11	25	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,000		35	110	1
Wet Chemistry SM 2540 G-1997							
00118	Moisture	n.a.	71.9		0.50	0.50	1
00121	Moisture Duplicate	n.a.	73.9		0.50	0.50	1
The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.							

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/29/2015 18:50	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/09/2015 20:07	Jeremy C Giffin	413.72
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:24	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530014A	09/13/2015 07:19	Heather E Williams	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-36-7.5 MSD Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036401
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:50 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

36-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015 11:00	Denise L Trimby	1
00118	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-36-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036402
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 12:15 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

36-12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0043	0.00092	0.0023	1
10725	Benzo(a)pyrene	50-32-8	0.0053	0.00092	0.0023	1
10725	Benzo(b)fluoranthene	205-99-2	0.0062	0.00092	0.0023	1
10725	Benzo(k)fluoranthene	207-08-9	0.0037	0.00092	0.0023	1
10725	Chrysene	218-01-9	0.0052	0.00046	0.0023	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00092	0.0023	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0018 J	0.00092	0.0023	1
10725	1-Methylnaphthalene	90-12-0	0.029	0.00092	0.0023	1
10725	2-Methylnaphthalene	91-57-6	0.026	0.00092	0.0023	1
10725	Naphthalene	91-20-3	0.014	0.00092	0.0023	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	14	72	259.88
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	11	4.2	9.7	1
02214	HRO C24-C40 w/Si Gel	n.a.	33 J	14	42	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	28.1	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 10:09	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B34A	09/10/2015 21:04	Jeremy C Giffin	259.88
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	08/31/2015 12:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530014A	09/15/2015 00:47	Heather E Williams	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-36-12.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036402
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 12:15 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

36-12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015 11:00	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-12-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036403
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 12:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

12-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D. UJ	0.0026	0.0066	1
10725	Benzo(a)pyrene	50-32-8	N.D. UJ	0.0026	0.0066	1
10725	Benzo(b)fluoranthene	205-99-2	0.0035 J	0.0026	0.0066	1
10725	Benzo(k)fluoranthene	207-08-9	N.D. UJ	0.0026	0.0066	1
10725	Chrysene	218-01-9	0.0029 J	0.0013	0.0066	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.0026	0.0066	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. UJ	0.0026	0.0066	1
10725	1-Methylnaphthalene	90-12-0	0.12 J	0.0026	0.0066	1
10725	2-Methylnaphthalene	91-57-6	0.044 J	0.0026	0.0066	1
10725	Naphthalene	91-20-3	0.017 J	0.0026	0.0066	1

The recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

GC Volatiles	ECY 97-602 NWT PH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWT PH-GX Soil C7-C12	n.a.	N.D.	69	438.34
Reporting limits were raised due to sample foaming.					

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWT PH-Dx modified	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel	n.a.	580	12	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,900	39	1

Wet Chemistry	SM 2540 G-1997	%	%	%	
00111	Moisture	n.a.	74.7	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 10:42	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Nicholas W Shroyer	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602 NWT PH-Gx	1	15252A34A	09/09/2015 23:03	Jeremy C Giffin	438.34
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:26	Scott W Freisher	n.a.

*=This limit was used in the evaluation of the final result

Sample Description: SB-12-7.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036403
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 12:30 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 10/01/2015 13:13

630 Plaza Drive

Highlands Ranch CO 80129

12-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530014A	09/13/2015 07:41	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015 11:00	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-18-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036404
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 12:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35
Reported: 10/01/2015 13:13

18-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	19 J	0.34	0.85	5
10725	Benzo(a)pyrene	50-32-8	16 J	0.34	0.85	5
10725	Benzo(b)fluoranthene	205-99-2	39 J	0.34	0.85	5
10725	Benzo(k)fluoranthene	207-08-9	N.D. UJ	0.34	0.85	5
10725	Chrysene	218-01-9	26 J	0.17	0.85	5
10725	Dibenz(a,h)anthracene	53-70-3	2.4	0.34	0.85	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	4.4	0.34	0.85	5
10725	1-Methylnaphthalene	90-12-0	16	0.34	0.85	5
10725	2-Methylnaphthalene	91-57-6	19	0.34	0.85	5
10725	Naphthalene	91-20-3	19	0.34	0.85	5

Reporting limits were raised due to interference from the sample matrix.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 NWTPH-GX Soil C7-C12	n.a.	55 J	33	170	399.28

Reporting limits were raised due to sample foaming.

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg	
02214 DRO C12-C24 w/Si Gel	n.a.	4,500 J	150	360	25
02214 HRO C24-C40 w/Si Gel	n.a.	10,000 J	510	1,500	25

Wet Chemistry	SM 2540 G-1997	%	%	%	
00111 Moisture	n.a.	51.7	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 11:15	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Nicholas W Shroyer	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/09/2015 23:39	Jeremy C Giffin	399.28
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:28	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530014A	09/15/2015 01:30	Heather E Williams	25

*=This limit was used in the evaluation of the final result

Sample Description: SB-18-7.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036404
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 12:40 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

18-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015 11:00	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-18A-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036405
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 13:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

18A12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0011 J	0.00072	0.0018	1
10725	Benzo(a)pyrene	50-32-8	0.00096 J	0.00072	0.0018	1
10725	Benzo(b)fluoranthene	205-99-2	0.0011 J	0.00072	0.0018	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00072	0.0018	1
10725	Chrysene	218-01-9	0.00095 J	0.00036	0.0018	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00072	0.0018	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00072	0.0018	1
10725	1-Methylnaphthalene	90-12-0	0.00083 J	0.00072	0.0018	1
10725	2-Methylnaphthalene	91-57-6	0.0014 J	0.00072	0.0018	1
10725	Naphthalene	91-20-3	N.D.	0.00072	0.0018	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	2.0 J	0.91	4.6	21.02
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.2	7.5	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	32	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	7.9	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 11:49	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Nicholas W Shroyer	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B34A	09/10/2015 21:39	Jeremy C Giffin	21.02
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	08/31/2015 13:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530014A	09/15/2015 01:08	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015 11:00	Denise L Trimby	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-18A-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036405
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 13:30 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

18A12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-6-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036406
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 13:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

06-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.013	0.032	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.013	0.032	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.013	0.032	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.013	0.032	5
10725	Chrysene	218-01-9	0.010 J	0.0064	0.032	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D. JJ	0.013	0.032	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. JJ	0.013	0.032	5
10725	1-Methylnaphthalene	90-12-0	1.4 J	0.013	0.032	5
10725	2-Methylnaphthalene	91-57-6	1.9 J	0.013	0.032	5
10725	Naphthalene	91-20-3	0.056 J	0.013	0.032	5
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	69	340	443.49
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	290	12	27	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,100	39	120	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	74.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/24/2015 22:07	Catherine E Bachman	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A31A	09/09/2015 19:03	Jeremy C Giffin	443.49
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:29	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/14/2015 23:42	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015 16:50	JoElla L Rice	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-6-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036406
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 13:40 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 10/01/2015 13:13

630 Plaza Drive

Highlands Ranch CO 80129

06-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-6-7.5 MS Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036407
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 13:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

06-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.13	0.013	0.032	5
10725	Benzo(a)pyrene	50-32-8	0.12	0.013	0.032	5
10725	Benzo(b)fluoranthene	205-99-2	0.16	0.013	0.032	5
10725	Benzo(k)fluoranthene	207-08-9	0.14	0.013	0.032	5
10725	Chrysene	218-01-9	0.12	0.0064	0.032	5
10725	Dibenz(a,h)anthracene	53-70-3	0.057	0.013	0.032	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.056	0.013	0.032	5
10725	1-Methylnaphthalene	90-12-0	3.5	0.013	0.032	5
10725	2-Methylnaphthalene	91-57-6	4.8	0.013	0.032	5
10725	Naphthalene	91-20-3	0.24	0.013	0.032	5
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	170	J 69	340	442.95
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	880	11	27	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,900	38	110	1
Wet Chemistry SM 2540 G-1997						
00118	Moisture	n.a.	74.2	0.50	0.50	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/24/2015 22:40	Catherine E Bachman	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A31A	09/09/2015 19:39	Jeremy C Giffin	442.95
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:31	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/15/2015 01:52	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015 16:50	JoElla L Rice	1
00118	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-6-7.5 MSD Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036408
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 13:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

06-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.13	0.013	0.032	5
10725	Benzo(a)pyrene	50-32-8	0.13	0.013	0.032	5
10725	Benzo(b)fluoranthene	205-99-2	0.19	0.013	0.032	5
10725	Benzo(k)fluoranthene	207-08-9	0.14	0.013	0.032	5
10725	Chrysene	218-01-9	0.13	0.0064	0.032	5
10725	Dibenz(a,h)anthracene	53-70-3	0.061	0.013	0.032	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.057	0.013	0.032	5
10725	1-Methylnaphthalene	90-12-0	2.4	0.013	0.032	5
10725	2-Methylnaphthalene	91-57-6	2.8	0.013	0.032	5
10725	Naphthalene	91-20-3	0.23	0.013	0.032	5
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	140	J 69	340	444.82
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	810	11	27	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,400	38	110	1
Wet Chemistry SM 2540 G-1997						
00118	Moisture	n.a.	74.2	0.50	0.50	1
00121	Moisture Duplicate	n.a.	74.1	0.50	0.50	1
The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/24/2015 23:13	Catherine E Bachman	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A31A	09/09/2015 20:15	Jeremy C Giffin	444.82
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:32	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/15/2015 02:13	Heather E Williams	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-6-7.5 MSD Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036408
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 13:40 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

06-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015 16:50	JoElla L Rice	1
00118	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-11-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036409
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 14:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

11-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.012	0.029	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.012	0.029	5
10725	Benzo(b)fluoranthene	205-99-2	0.016 J	0.012	0.029	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.012	0.029	5
10725	Chrysene	218-01-9	0.0098 J	0.0059	0.029	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.012	0.029	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.012	0.029	5
10725	1-Methylnaphthalene	90-12-0	0.57	0.012	0.029	5
10725	2-Methylnaphthalene	91-57-6	0.75	0.012	0.029	5
10725	Naphthalene	91-20-3	0.093	0.012	0.029	5
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	63	320	443.68
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	310	11	25	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,300	36	110	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	72.0	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 12:22	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/10/2015 00:49	Jeremy C Giffin	443.68
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:34	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/15/2015 02:35	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015 16:50	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-11-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036410
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 14:10 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

11-12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.13	0.0038	0.0095	5
10725	Benzo(a)pyrene	50-32-8	0.13	0.0038	0.0095	5
10725	Benzo(b)fluoranthene	205-99-2	0.18	0.0038	0.0095	5
10725	Benzo(k)fluoranthene	207-08-9	0.073	0.0038	0.0095	5
10725	Chrysene	218-01-9	0.14	0.0019	0.0095	5
10725	Dibenz(a,h)anthracene	53-70-3	0.012	0.0038	0.0095	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.039	0.0038	0.0095	5
10725	1-Methylnaphthalene	90-12-0	0.027	0.0038	0.0095	5
10725	2-Methylnaphthalene	91-57-6	0.031	0.0038	0.0095	5
10725	Naphthalene	91-20-3	0.026	0.0038	0.0095	5
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	11	54	234.04
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.4	8.0	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	34	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	13.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 12:56	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15254A31A	09/11/2015 22:43	Jeremy C Giffin	234.04
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	08/31/2015 14:10	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/14/2015 21:34	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015 16:50	JoElla L Rice	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-11-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036410
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 14:10 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

11-12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-20-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036411
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 14:20 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

20-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0023	0.0057	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0023	0.0057	1
10725	Benzo(b)fluoranthene	205-99-2	0.0047 J	0.0023	0.0057	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0023	0.0057	1
10725	Chrysene	218-01-9	0.0020 J	0.0011	0.0057	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0023	0.0057	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0023	0.0057	1
10725	1-Methylnaphthalene	90-12-0	0.41	0.0023	0.0057	1
10725	2-Methylnaphthalene	91-57-6	0.42	0.0023	0.0057	1
10725	Naphthalene	91-20-3	0.057	0.0023	0.0057	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	160 J	58	290	418.49
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	150	10	24	1
02214	HRO C24-C40 w/Si Gel	n.a.	810	34	100	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	71.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 13:30	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252A34A	09/10/2015 02:35	Jeremy C Giffin	418.49
		NWTPH-Gx					
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:36	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530026A	09/14/2015 23:21	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152530026A	09/11/2015 16:50	JoElla L Rice	1
		NWTPH-Dx 06/97					
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-20-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036412
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 14:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

20-12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0027	0.0067	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0027	0.0067	1
10725	Benzo(b)fluoranthene	205-99-2	0.0065 J	0.0027	0.0067	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0027	0.0067	1
10725	Chrysene	218-01-9	0.0046 J	0.0013	0.0067	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0027	0.0067	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0028 J	0.0027	0.0067	1
10725	1-Methylnaphthalene	90-12-0	0.10	0.0027	0.0067	1
10725	2-Methylnaphthalene	91-57-6	0.11	0.0027	0.0067	1
10725	Naphthalene	91-20-3	0.049	0.0027	0.0067	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	73	360	448.74
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	170	12	28	1
02214	HRO C24-C40 w/Si Gel	n.a.	630	41	120	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	75.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 14:03	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252A34A	09/10/2015 01:24	Jeremy C Giffin	448.74
		NWTPH-Gx					
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:38	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530026A	09/14/2015 23:00	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152530026A	09/11/2015 16:50	JoElla L Rice	1
		NWTPH-Dx 06/97					
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-17-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036413
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 14:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

17-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.018	0.00074	0.0018	1
10725	Benzo(a)pyrene	50-32-8	0.019	0.00074	0.0018	1
10725	Benzo(b)fluoranthene	205-99-2	0.023	0.00074	0.0018	1
10725	Benzo(k)fluoranthene	207-08-9	0.011	0.00074	0.0018	1
10725	Chrysene	218-01-9	0.019	0.00037	0.0018	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0017 J	0.00074	0.0018	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0055	0.00074	0.0018	1
10725	1-Methylnaphthalene	90-12-0	0.0021	0.00074	0.0018	1
10725	2-Methylnaphthalene	91-57-6	0.0027	0.00074	0.0018	1
10725	Naphthalene	91-20-3	0.0045	0.00074	0.0018	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	0.99	4.9	22.05
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.4	7.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	34	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	10.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 14:37	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15254A31A	09/11/2015 21:29	Jeremy C Giffin	22.05
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	08/31/2015 14:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/14/2015 21:55	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015 16:50	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-24-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036414
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 14:50 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 10/01/2015 13:13

630 Plaza Drive

Highlands Ranch CO 80129

24-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00072	0.0018	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00072	0.0018	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.00072	0.0018	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00072	0.0018	1
10725	Chrysene	218-01-9	N.D.	0.00036	0.0018	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00072	0.0018	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00072	0.0018	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00072	0.0018	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00072	0.0018	1
10725	Naphthalene	91-20-3	N.D.	0.00072	0.0018	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	0.83	4.2	19.01
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.2	7.6	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	32	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	8.8	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 15:10	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B34A	09/10/2015 23:25	Jeremy C Giffin	19.01
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	08/31/2015 14:50	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/14/2015 22:16	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015 16:50	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-33-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036415
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

33-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00074	0.0018	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00074	0.0018	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.00074	0.0018	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00074	0.0018	1
10725	Chrysene	218-01-9	N.D.	0.00037	0.0018	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00074	0.0018	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00074	0.0018	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00074	0.0018	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00074	0.0018	1
10725	Naphthalene	91-20-3	N.D.	0.00074	0.0018	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	20	99	443.47
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.3	7.7	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	33	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	10.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 15:43	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15254A31A	09/11/2015 23:19	Jeremy C Giffin	443.47
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201524838751	08/31/2015 15:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530026A	09/14/2015 22:38	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152530026A	09/11/2015 16:50	JoElla L Rice	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-33-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036415
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

33-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-19-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036416
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:05 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35
Reported: 10/01/2015 13:13

19-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	7.7 J	0.11	0.28	5
10725	Benzo(a)pyrene	50-32-8	7.0 J	0.11	0.28	5
10725	Benzo(b)fluoranthene	205-99-2	16 J	0.11	0.28	5
10725	Benzo(k)fluoranthene	207-08-9	N.D. JJ	0.11	0.28	5
10725	Chrysene	218-01-9	11 J	0.057	0.28	5
10725	Dibenz(a,h)anthracene	53-70-3	0.87 J	0.11	0.28	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	1.7	0.11	0.28	5
10725	1-Methylnaphthalene	90-12-0	2.1	0.11	0.28	5
10725	2-Methylnaphthalene	91-57-6	2.0	0.11	0.28	5
10725	Naphthalene	91-20-3	3.3	0.11	0.28	5

Reporting limits were raised due to interference from the sample matrix.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	58	290	423.32

Reporting limits were raised due to sample foaming.

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg		
02214	DRO C12-C24 w/Si Gel	n.a.	9,600 J	1,000	2,400	100
02214	HRO C24-C40 w/Si Gel	n.a.	64,000 J	3,400	10,000	100

Wet Chemistry	SM 2540 G-1997	%	%	%		
00111	Moisture	n.a.	70.7	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 16:16	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252A34A	09/10/2015 02:00	Jeremy C Giffin	423.32
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:39	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530026A	09/15/2015 03:18	Heather E Williams	100
07024	DRO Alternate Soil Extraction	NWTPH-Dx modified ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015 16:50	JoElla L Rice	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-19-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036416
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:05 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

19-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-19-14.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036417
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:25 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

19-14

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	7.7 J	0.041	0.10	50
10725	Benzo(a)pyrene	50-32-8	6.7	0.041	0.10	50
10725	Benzo(b)fluoranthene	205-99-2	6.7	0.041	0.10	50
10725	Benzo(k)fluoranthene	207-08-9	3.1	0.041	0.10	50
10725	Chrysene	218-01-9	7.7	0.020	0.10	50
10725	Dibenz(a,h)anthracene	53-70-3	0.69	0.041	0.10	50
10725	Indeno(1,2,3-cd)pyrene	193-39-5	1.9	0.041	0.10	50
10725	1-Methylnaphthalene	90-12-0	14	0.041	0.10	50
10725	2-Methylnaphthalene	91-57-6	23	0.41	1.0	500
10725	Naphthalene	91-20-3	50	0.41	1.0	500

The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C12	n.a.	28 J	12	59	235.66

Reporting limits were raised due to sample foaming.

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg		
02214	DRO C12-C24 w/Si Gel	n.a.	580	37	87	10
02214	HRO C24-C40 w/Si Gel	n.a.	2,300	120	370	10

Wet Chemistry	SM 2540 G-1997	%	%	%		
00111	Moisture	n.a.	19.5	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015 13:41	Joseph M Gambler	50
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/29/2015 09:57	Joseph M Gambler	500
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15254A31A	09/11/2015 23:55	Jeremy C Giffin	235.66
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	08/31/2015 15:25	Client Supplied	n.a.

*=This limit was used in the evaluation of the final result

Sample Description: SB-19-14.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036417
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:25 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

19-14

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/15/2015 02:56	Heather E Williams	10
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015 16:50	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-44-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036418
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:20 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

44-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0052	0.00074	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.0069	0.00074	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.010	0.00074	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.0045	0.00074	0.0019	1
10725	Chrysene	218-01-9	0.0055	0.00037	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00074	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0019	0.00074	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.0015 J	0.00074	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.0015 J	0.00074	0.0019	1
10725	Naphthalene	91-20-3	0.0043	0.00074	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D. R	8.7	44	193.8
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.4	7.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	34	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	11.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/25/2015 00:19	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15254A31B	09/14/2015 19:25	Marie D Beamenderfer	193.8
06647	GC-5g Field Preserved MeOH	NWTPH-Gx				Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	SW-846 5035A	1	201524838751	08/31/2015 15:20		
		ECY 97-602	1	152530027A	09/12/2015 23:22	Heather E Williams	1
		NWTPH-Dx modified					

*=This limit was used in the evaluation of the final result

Sample Description: SB-44-7.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036418
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:20 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

44-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015 16:50	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-56-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036419
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:00 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600
630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

56-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0012 J	0.00093	0.0023	1
10725	Benzo(a)pyrene	50-32-8	0.0014 J	0.00093	0.0023	1
10725	Benzo(b)fluoranthene	205-99-2	0.0046	0.00093	0.0023	1
10725	Benzo(k)fluoranthene	207-08-9	0.0013 J	0.00093	0.0023	1
10725	Chrysene	218-01-9	0.0031	0.00046	0.0023	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00093	0.0023	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00093	0.0023	1
10725	1-Methylnaphthalene	90-12-0	0.0088	0.00093	0.0023	1
10725	2-Methylnaphthalene	91-57-6	0.013	0.00093	0.0023	1
10725	Naphthalene	91-20-3	0.034	0.00093	0.0023	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	15	75	266.65
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	9.9	4.2	9.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	23 J	14	42	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	29.0	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/25/2015 00:52	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15254A31B	09/14/2015 20:02	Marie D Beamenderfer	266.65
06647	GC-5g Field Preserved MeOH	NWTPH-Gx				Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	SW-846 5035A	1	201524838751	08/31/2015 16:00		
		ECY 97-602	1	152530027A	09/12/2015 23:44	Heather E Williams	1
		NWTPH-Dx modified					

*=This limit was used in the evaluation of the final result

Sample Description: SB-56-7.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036419
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

56-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015 16:50	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-45-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036420
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:10 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

45-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0052 J	0.0036	0.0089	1
10725	Benzo(a)pyrene	50-32-8	0.0054 J	0.0036	0.0089	1
10725	Benzo(b)fluoranthene	205-99-2	0.015 J	0.0036	0.0089	1
10725	Benzo(k)fluoranthene	207-08-9	0.0047 J	0.0036	0.0089	1
10725	Chrysene	218-01-9	0.011 J	0.0018	0.0089	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D. JJ	0.0036	0.0089	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0043 J	0.0036	0.0089	1
10725	1-Methylnaphthalene	90-12-0	0.015 J	0.0036	0.0089	1
10725	2-Methylnaphthalene	91-57-6	0.015 J	0.0036	0.0089	1
10725	Naphthalene	91-20-3	0.038 J	0.0036	0.0089	1

The holding time was not met due to a laboratory error.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	65	330	452.47

Reporting limits were raised due to sample foaming.

GC Petroleum	ECY 97-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg		
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	86 J	11	25	1
02214	HRO C24-C40 w/Si Gel	n.a.	350 J	36	110	1

Wet Chemistry	SM 2540 G-1997	%	%	%		
00111	Moisture	n.a.	72.3	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15259SLF026	09/24/2015 19:55	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15259SLF026	09/17/2015 19:22	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B34A	09/10/2015 18:43	Jeremy C Giffin	452.47
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:40	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530027A	09/14/2015 22:16	Heather E Williams	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-45-7.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036420
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:10 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

45-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015 16:50	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-45-7.5 MS Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036421
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:10 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

45-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.18	0.0036	0.0090	1
10725	Benzo(a)pyrene	50-32-8	0.18	0.0036	0.0090	1
10725	Benzo(b)fluoranthene	205-99-2	0.25	0.0036	0.0090	1
10725	Benzo(k)fluoranthene	207-08-9	0.19	0.0036	0.0090	1
10725	Chrysene	218-01-9	0.18	0.0018	0.0090	1
10725	Dibenz(a,h)anthracene	53-70-3	0.10	0.0036	0.0090	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.099	0.0036	0.0090	1
10725	1-Methylnaphthalene	90-12-0	0.18	0.0036	0.0090	1
10725	2-Methylnaphthalene	91-57-6	0.20	0.0036	0.0090	1
10725	Naphthalene	91-20-3	0.20	0.0036	0.0090	1
The holding time was not met due to a laboratory error.						
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	130	J 63	310	434.28
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	440	11	25	1
02214	HRO C24-C40 w/Si Gel	n.a.	400	36	110	1
Wet Chemistry SM 2540 G-1997						
00118	Moisture	n.a.	72.3	0.50	0.50	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15259SLF026	09/24/2015 20:28	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15259SLF026	09/17/2015 19:22	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B34A	09/10/2015 19:19	Jeremy C Giffin	434.28
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:42	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530027A	09/14/2015 22:38	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015 16:50	JoElla L Rice	1
00118	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-45-7.5 MSD Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036422
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:10 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

45-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.16	0.0035	0.0088	1
10725	Benzo(a)pyrene	50-32-8	0.17	0.0035	0.0088	1
10725	Benzo(b)fluoranthene	205-99-2	0.22	0.0035	0.0088	1
10725	Benzo(k)fluoranthene	207-08-9	0.20	0.0035	0.0088	1
10725	Chrysene	218-01-9	0.16	0.0018	0.0088	1
10725	Dibenz(a,h)anthracene	53-70-3	0.095	0.0035	0.0088	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.092	0.0035	0.0088	1
10725	1-Methylnaphthalene	90-12-0	0.18	0.0035	0.0088	1
10725	2-Methylnaphthalene	91-57-6	0.19	0.0035	0.0088	1
10725	Naphthalene	91-20-3	0.20	0.0035	0.0088	1

The holding time was not met due to a laboratory error.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	63	438.2

Reporting limits were raised due to sample foaming.

Reporting limits were raised due to interference from the sample matrix.

GC Petroleum	ECY 97-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si	modified				
02214	DRO C12-C24 w/Si Gel	n.a.	420	11	25
02214	HRO C24-C40 w/Si Gel	n.a.	450	36	110

Wet Chemistry	SM 2540 G-1997	%	%	%	
00118	Moisture	n.a.	72.3	0.50	0.50
00121	Moisture Duplicate	n.a.	73.9	0.50	0.50

The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15259SLF026	09/24/2015 21:01	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15259SLF026	09/17/2015 19:22	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B34A	09/10/2015 19:54	Jeremy C Giffin	438.2

*=This limit was used in the evaluation of the final result

Sample Description: SB-45-7.5 MSD Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036422
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:10 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 10/01/2015 13:13

630 Plaza Drive

Highlands Ranch CO 80129

45-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:43	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530027A	09/14/2015 23:00	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015 16:50	JoElla L Rice	1
00118	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-46-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036423
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:15 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

46-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.14	0.011	0.028	5
10725	Benzo(a)pyrene	50-32-8	0.13	0.011	0.028	5
10725	Benzo(b)fluoranthene	205-99-2	0.18	0.011	0.028	5
10725	Benzo(k)fluoranthene	207-08-9	0.065	0.011	0.028	5
10725	Chrysene	218-01-9	0.14	0.0055	0.028	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.011	0.028	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.024 J	0.011	0.028	5
10725	1-Methylnaphthalene	90-12-0	2.0	0.011	0.028	5
10725	2-Methylnaphthalene	91-57-6	1.6	0.011	0.028	5
10725	Naphthalene	91-20-3	0.99	0.011	0.028	5
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	60	300	449.3
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	240	9.9	23	1
02214	HRO C24-C40 w/Si Gel	n.a.	710	33	99	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	70.0	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/25/2015 01:25	Catherine E Bachman	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252A31A	09/09/2015 23:24	Jeremy C Giffin	449.3
01150	GC - Bulk Soil Prep	NWTPH-Gx					
02214	NWTPH-Dx soil w/Si Gel	SW-846 5030A	1	201525038756	09/06/2015 22:46	Scott W Freisher	n.a.
		ECY 97-602	1	152530027A	09/14/2015 23:21	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152530027A	09/11/2015 16:50	JoElla L Rice	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-46-7.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036423
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:15 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

46-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-46-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036424
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

46-12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00077	0.0019	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00077	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.00078 J	0.00077	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00077	0.0019	1
10725	Chrysene	218-01-9	N.D.	0.00038	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00077	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00077	0.0019	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00077	0.0019	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00077	0.0019	1
10725	Naphthalene	91-20-3	0.0018 J	0.00077	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	0.96	4.8	20.69
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.5	8.1	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	35	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	13.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/25/2015 01:58	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15254A31A	09/11/2015 22:06	Jeremy C Giffin	20.69
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	08/31/2015 16:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530027A	09/14/2015 21:12	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015 16:50	JoElla L Rice	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-46-12.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036424
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:30 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

46-12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-57-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036425
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

57-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.0027	0.00090	0.0022	1
10725	Benzo(a)pyrene	50-32-8	0.0025	0.00090	0.0022	1
10725	Benzo(b)fluoranthene	205-99-2	0.0067	0.00090	0.0022	1
10725	Benzo(k)fluoranthene	207-08-9	0.0022 J	0.00090	0.0022	1
10725	Chrysene	218-01-9	0.0060	0.00045	0.0022	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00090	0.0022	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.00093 J	0.00090	0.0022	1
10725	1-Methylnaphthalene	90-12-0	0.013	0.00090	0.0022	1
10725	2-Methylnaphthalene	91-57-6	0.028	0.00090	0.0022	1
10725	Naphthalene	91-20-3	0.042	0.00090	0.0022	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	14	70	261.17
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	4.0	9.3	1
02214	HRO C24-C40 w/Si Gel	n.a.	14 J	13	40	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	25.9	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/25/2015 02:31	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15254A31B	09/14/2015 20:38	Marie D Beamenderfer	261.17
06647	GC-5g Field Preserved MeOH	NWTPH-Gx				Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	SW-846 5035A	1	201524838751	08/31/2015 16:40		
		ECY 97-602	1	152530027A	09/14/2015 21:34	Heather E Williams	1
		NWTPH-Dx modified					

*=This limit was used in the evaluation of the final result

Sample Description: SB-57-7.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036425
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:40 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

57-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015 16:50	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-34-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036426
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 17:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

34-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.019 J	0.011	0.028	5
10725	Benzo(a)pyrene	50-32-8	0.016 J	0.011	0.028	5
10725	Benzo(b)fluoranthene	205-99-2	0.044	0.011	0.028	5
10725	Benzo(k)fluoranthene	207-08-9	0.014 J	0.011	0.028	5
10725	Chrysene	218-01-9	0.025 J	0.0056	0.028	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.011	0.028	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.011	0.028	5
10725	1-Methylnaphthalene	90-12-0	1.3	0.011	0.028	5
10725	2-Methylnaphthalene	91-57-6	1.4	0.011	0.028	5
10725	Naphthalene	91-20-3	0.42	0.011	0.028	5
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	55	270	406.28
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	130	10	23	1
02214	HRO C24-C40 w/Si Gel	n.a.	210	33	100	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	70.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/25/2015 03:04	Catherine E Bachman	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15254A31B	09/14/2015 21:14	Marie D Beamenderfer	406.28
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:47	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530027A	09/14/2015 21:55	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015 16:50	JoElla L Rice	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-34-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036426
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 17:00 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 10/01/2015 13:13

630 Plaza Drive

Highlands Ranch CO 80129

34-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-8-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036427
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 08:30 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 10/01/2015 13:13

630 Plaza Drive

Highlands Ranch CO 80129

08-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.011	0.027	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.011	0.027	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.011	0.027	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.011	0.027	5
10725	Chrysene	218-01-9	0.0062 J	0.0054	0.027	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.011	0.027	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.011	0.027	5
10725	1-Methylnaphthalene	90-12-0	0.22	0.011	0.027	5
10725	2-Methylnaphthalene	91-57-6	0.091	0.011	0.027	5
10725	Naphthalene	91-20-3	0.083	0.011	0.027	5
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	54	270	409.85
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	310	19	45	2
02214	HRO C24-C40 w/Si Gel	n.a.	1,800	65	190	2
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	69.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/25/2015 03:37	Catherine E Bachman	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252A31A	09/10/2015 00:00	Jeremy C Giffin	409.85
01150	GC - Bulk Soil Prep	NWTPH-Gx					
02214	NWTPH-Dx soil w/Si Gel	SW-846 5030A	1	201525038756	09/06/2015 22:49	Scott W Freisher	n.a.
		ECY 97-602	1	152530027A	09/14/2015 23:42	Heather E Williams	2
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152530027A	09/11/2015 16:50	JoElla L Rice	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-8-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036427
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 08:30 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

08-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-13-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036428
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 09:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

13-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.011	0.027	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.011	0.027	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.011	0.027	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.011	0.027	5
10725	Chrysene	218-01-9	0.0056 J	0.0053	0.027	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.011	0.027	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.011	0.027	5
10725	1-Methylnaphthalene	90-12-0	0.48	0.011	0.027	5
10725	2-Methylnaphthalene	91-57-6	0.22	0.011	0.027	5
10725	Naphthalene	91-20-3	0.21	0.011	0.027	5
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	260	1,300	2024.3
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	340	48	110	5
02214	HRO C24-C40 w/Si Gel	n.a.	1,900	160	480	5
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	69.0	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/25/2015 04:09	Catherine E Bachman	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15257A34A	09/14/2015 21:35	Jeremy C Giffin	2024.3
01150	GC - Bulk Soil Prep	NWTPH-Gx					
02214	NWTPH-Dx soil w/Si Gel	SW-846 5030A	1	201524838752	09/05/2015 15:00	Lisa J Cooke	n.a.
		ECY 97-602	1	152530027A	09/15/2015 00:47	Heather E Williams	5
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152530027A	09/11/2015 16:50	JoElla L Rice	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-13-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036428
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 09:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

13-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-Offset-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036429
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 09:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

41075

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0094	0.024	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0094	0.024	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.0094	0.024	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0094	0.024	5
10725	Chrysene	218-01-9	0.0084 J	0.0047	0.024	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0094	0.024	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0094	0.024	5
10725	1-Methylnaphthalene	90-12-0	8.7	0.094	0.24	50
10725	2-Methylnaphthalene	91-57-6	13	0.094	0.24	50
10725	Naphthalene	91-20-3	24	0.094	0.24	50
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	1,700	190	970	1695.91
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	1,200	43	100	5
02214	HRO C24-C40 w/Si Gel	n.a.	2,400	140	430	5
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	65.0	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/25/2015 05:15	Catherine E Bachman	5
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015 14:15	Joseph M Gambler	50
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15254A31B	09/14/2015 22:26	Marie D Beamenderfer	1695.91
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:51	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530027A	09/15/2015 01:08	Heather E Williams	5
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015 16:50	JoElla L Rice	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-Offset-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036429
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 09:30 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41075

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-Offset-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036430
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 09:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41012

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0026	0.0066	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0026	0.0066	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.0026	0.0066	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0026	0.0066	1
10725	Chrysene	218-01-9	0.0030 J	0.0013	0.0066	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0026	0.0066	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0026	0.0066	1
10725	1-Methylnaphthalene	90-12-0	0.23	0.0026	0.0066	1
10725	2-Methylnaphthalene	91-57-6	0.24	0.0026	0.0066	1
10725	Naphthalene	91-20-3	0.49	0.0026	0.0066	1
GC Volatiles ECY 97-602 NWT PH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWT PH-GX Soil C7-C12	n.a.	N.D.	71	360	449.51
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWT PH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	250	12	27	1
02214	HRO C24-C40 w/Si Gel	n.a.	840	39	120	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	74.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015 14:48	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602	1	15252A31A	09/10/2015 01:12	Jeremy C Giffin	449.51
		NWT PH-Gx					
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:53	Scott W Freisher	n.a.
02214	NWT PH-Dx soil w/Si Gel	ECY 97-602	1	152530039A	09/15/2015 02:35	Heather E Williams	1
		NWT PH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152530039A	09/14/2015 08:45	Olivia Arosemena	1
		NWT PH-Dx 06/97					
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-52-Offset-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036431
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 10:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

52075

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0099	0.025	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0099	0.025	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.0099	0.025	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0099	0.025	5
10725	Chrysene	218-01-9	0.0084 J	0.0050	0.025	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0099	0.025	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0099	0.025	5
10725	1-Methylnaphthalene	90-12-0	3.9	0.0099	0.025	5
10725	2-Methylnaphthalene	91-57-6	5.8	0.050	0.12	25
10725	Naphthalene	91-20-3	2.8	0.0099	0.025	5
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	160 J	52	260	431.91
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	740	8.9	21	1
02214	HRO C24-C40 w/Si Gel	n.a.	980	30	89	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	66.5	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015 15:21	Joseph M Gambler	5
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/29/2015 10:31	Joseph M Gambler	25
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252A31A	09/10/2015 01:55	Jeremy C Giffin	431.91
		NWTPH-Gx					
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:55	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530039A	09/15/2015 02:56	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152530039A	09/14/2015 08:45	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-52-Offset-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036431
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 10:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

52075

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-52-Offset-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036432
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 10:15 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 10/01/2015 13:13

630 Plaza Drive

Highlands Ranch CO 80129

52012

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0064 J	0.0026	0.0066	1
10725	Benzo(a)pyrene	50-32-8	0.0062 J	0.0026	0.0066	1
10725	Benzo(b)fluoranthene	205-99-2	0.018	0.0026	0.0066	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0026	0.0066	1
10725	Chrysene	218-01-9	0.014	0.0013	0.0066	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0026	0.0066	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0032 J	0.0026	0.0066	1
10725	1-Methylnaphthalene	90-12-0	0.68	0.0026	0.0066	1
10725	2-Methylnaphthalene	91-57-6	0.72	0.0026	0.0066	1
10725	Naphthalene	91-20-3	0.95	0.0026	0.0066	1
GC Volatiles ECY 97-602 NWT PH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWT PH-GX Soil C7-C12	n.a.	N.D.	72	360	454.54
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWT PH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	1,000	12	28	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,300	40	120	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	74.9	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015 15:55	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602 NWT PH-Gx	1	15252A31A	09/09/2015 21:28	Jeremy C Giffin	454.54
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:29	Scott W Freisher	n.a.
02214	NWT PH-Dx soil w/Si Gel	ECY 97-602 NWT PH-Dx modified	1	152530039A	09/15/2015 03:18	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWT PH-Dx 06/97	1	152530039A	09/14/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-62-Offset-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036433
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 10:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

62075

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00097	0.0024	1
10725	Benzo(a)pyrene	50-32-8	0.0018 J	0.00097	0.0024	1
10725	Benzo(b)fluoranthene	205-99-2	0.0059	0.00097	0.0024	1
10725	Benzo(k)fluoranthene	207-08-9	0.0013 J	0.00097	0.0024	1
10725	Chrysene	218-01-9	0.0027	0.00049	0.0024	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00097	0.0024	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0012 J	0.00097	0.0024	1
10725	1-Methylnaphthalene	90-12-0	0.0043	0.00097	0.0024	1
10725	2-Methylnaphthalene	91-57-6	0.0045	0.00097	0.0024	1
10725	Naphthalene	91-20-3	0.042	0.00097	0.0024	1
GC Volatiles ECY 97-602 NWT PH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWT PH-GX Soil C7-C12	n.a.	N.D.	25	120	426.35
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWT PH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	11	4.3	10	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	14	43	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	31.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015 16:28	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602	1	15252B31A	09/10/2015 21:24	Jeremy C Giffin	426.35
06647	GC-5g Field Preserved MeOH	NWT PH-Gx SW-846 5035A	1	201524838751	09/01/2015 10:30	Client Supplied	n.a.
02214	NWT PH-Dx soil w/Si Gel	ECY 97-602 NWT PH-Dx modified	1	152530039A	09/15/2015 14:02	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWT PH-Dx 06/97	1	152530039A	09/14/2015 08:45	Olivia Arosemena	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-62-Offset-7.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036433
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 10:30 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

62075

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-60-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036434
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 10:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

60-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00091	0.0023	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00091	0.0023	1
10725	Benzo(b)fluoranthene	205-99-2	0.0020 J	0.00091	0.0023	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00091	0.0023	1
10725	Chrysene	218-01-9	0.0015 J	0.00046	0.0023	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00091	0.0023	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00091	0.0023	1
10725	1-Methylnaphthalene	90-12-0	0.027	0.00091	0.0023	1
10725	2-Methylnaphthalene	91-57-6	0.025	0.00091	0.0023	1
10725	Naphthalene	91-20-3	0.10	0.00091	0.0023	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	17	86	310.86
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	4.1	9.6	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	14	41	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	27.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015 17:02	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252B31A	09/10/2015 22:00	Jeremy C Giffin	310.86
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201524838751	09/01/2015 10:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530039A	09/15/2015 04:44	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152530039A	09/14/2015 08:45	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-60-7.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036434
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 10:40 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

60-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-59-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036435
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 11:00 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 10/01/2015 13:13

630 Plaza Drive

Highlands Ranch CO 80129

59-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00091	0.0023	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00091	0.0023	1
10725	Benzo(b)fluoranthene	205-99-2	0.0021 J	0.00091	0.0023	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00091	0.0023	1
10725	Chrysene	218-01-9	0.0013 J	0.00045	0.0023	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00091	0.0023	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00091	0.0023	1
10725	1-Methylnaphthalene	90-12-0	0.013	0.00091	0.0023	1
10725	2-Methylnaphthalene	91-57-6	0.0092	0.00091	0.0023	1
10725	Naphthalene	91-20-3	0.045	0.00091	0.0023	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	15	75	274.94
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	5.1 J	4.1	9.6	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	14	41	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	26.9	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015 17:35	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252B31A	09/10/2015 23:19	Jeremy C Giffin	274.94
06647	GC-5g Field Preserved MeOH	NWTPH-Gx SW-846 5035A	1	201524838751	09/01/2015 11:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530039A	09/15/2015 05:06	Heather E Williams	1
07024	DRO Alternate Soil Extraction	NWTPH-Dx modified ECY 97-602 NWTPH-Dx 06/97	1	152530039A	09/14/2015 08:45	Olivia Arosemena	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-59-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036435
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 11:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

59-75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-47-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036436
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 11:10 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 10/01/2015 13:13

630 Plaza Drive

Highlands Ranch CO 80129

47-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.013	0.033	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.013	0.033	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.013	0.033	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.013	0.033	5
10725	Chrysene	218-01-9	0.0080 J	0.0066	0.033	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.013	0.033	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.013	0.033	5
10725	1-Methylnaphthalene	90-12-0	2.6	0.013	0.033	5
10725	2-Methylnaphthalene	91-57-6	1.7	0.013	0.033	5
10725	Naphthalene	91-20-3	0.38	0.013	0.033	5
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	420	73	360	455.48
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	1,500	12	28	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,000	40	120	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	74.9	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015 18:08	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A31A	09/10/2015 02:32	Jeremy C Giffin	455.48
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:31	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530039A	09/15/2015 05:27	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530039A	09/14/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-47-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036437
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 11:20 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

47-12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.020 J	0.010	0.025	5
10725	Benzo(a)pyrene	50-32-8	0.024 J	0.010	0.025	5
10725	Benzo(b)fluoranthene	205-99-2	0.034	0.010	0.025	5
10725	Benzo(k)fluoranthene	207-08-9	0.015 J	0.010	0.025	5
10725	Chrysene	218-01-9	0.026	0.0051	0.025	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.025	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.025	5
10725	1-Methylnaphthalene	90-12-0	0.048	0.010	0.025	5
10725	2-Methylnaphthalene	91-57-6	0.046	0.010	0.025	5
10725	Naphthalene	91-20-3	0.051	0.010	0.025	5
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	53	260	430.27
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	120	9.2	21	1
02214	HRO C24-C40 w/Si Gel	n.a.	690	31	92	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	67.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015 18:42	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A31A	09/10/2015 03:08	Jeremy C Giffin	430.27
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:33	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530039A	09/15/2015 05:48	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530039A	09/14/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-37-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036438
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 12:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

37-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.011	0.029	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.011	0.029	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.011	0.029	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.011	0.029	5
10725	Chrysene	218-01-9	0.0066 J	0.0057	0.029	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.011	0.029	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.011	0.029	5
10725	1-Methylnaphthalene	90-12-0	0.57	0.011	0.029	5
10725	2-Methylnaphthalene	91-57-6	0.26	0.011	0.029	5
10725	Naphthalene	91-20-3	0.090	0.011	0.029	5
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	63	310	449.97
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	740	10	24	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,700	34	100	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	71.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015 19:16	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252A31A	09/09/2015 22:04	Jeremy C Giffin	449.97
		NWTPH-Gx					
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:34	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530039A	09/15/2015 06:10	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152530039A	09/14/2015 08:45	Olivia Arosemena	1
		NWTPH-Dx 06/97					
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-37-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036439
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 12:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

37-12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.013	0.033	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.013	0.033	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.013	0.033	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.013	0.033	5
10725	Chrysene	218-01-9	0.0077 J	0.0065	0.033	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.013	0.033	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.013	0.033	5
10725	1-Methylnaphthalene	90-12-0	0.041	0.013	0.033	5
10725	2-Methylnaphthalene	91-57-6	0.041	0.013	0.033	5
10725	Naphthalene	91-20-3	0.084	0.013	0.033	5
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	69	350	441.7
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	260	12	27	1
02214	HRO C24-C40 w/Si Gel	n.a.	720	39	120	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	74.5	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/28/2015 19:49	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252B31A	09/10/2015 23:56	Jeremy C Giffin	441.7
		NWTPH-Gx					
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:36	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530039A	09/15/2015 14:23	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152530039A	09/14/2015 08:45	Olivia Arosemena	1
		NWTPH-Dx 06/97					
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-26A-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036440
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 12:50 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

26A75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.012	0.030	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.012	0.030	5
10725	Benzo(b)fluoranthene	205-99-2	0.012 J	0.012	0.030	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.012	0.030	5
10725	Chrysene	218-01-9	0.014 J	0.0059	0.030	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.012	0.030	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.012	0.030	5
10725	1-Methylnaphthalene	90-12-0	1.5	0.012	0.030	5
10725	2-Methylnaphthalene	91-57-6	1.5	0.012	0.030	5
10725	Naphthalene	91-20-3	0.23	0.012	0.030	5
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	240 J	65	330	451.96
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	1,700	11	25	1
02214	HRO C24-C40 w/Si Gel	n.a.	2,000	36	110	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	72.2	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/28/2015 20:22	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15254A31B	09/14/2015 21:50	Marie D Beamenderfer	451.96
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:39	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530040A	09/15/2015 05:27	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530040A	09/14/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-26A-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036441
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 12:55 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

26A12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.026 J	0.012	0.030	5
10725	Benzo(a)pyrene	50-32-8	0.030	0.012	0.030	5
10725	Benzo(b)fluoranthene	205-99-2	0.040	0.012	0.030	5
10725	Benzo(k)fluoranthene	207-08-9	0.021 J	0.012	0.030	5
10725	Chrysene	218-01-9	0.029 J	0.0060	0.030	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.012	0.030	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.012	0.030	5
10725	1-Methylnaphthalene	90-12-0	0.029 J	0.012	0.030	5
10725	2-Methylnaphthalene	91-57-6	0.021 J	0.012	0.030	5
10725	Naphthalene	91-20-3	0.062	0.012	0.030	5
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	67	330	457.36
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	300	11	25	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,200	36	110	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	72.6	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/28/2015 20:56	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252B31A	09/11/2015 00:32	Jeremy C Giffin	457.36
		NWTPH-Gx					
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:41	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530040A	09/15/2015 05:48	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152530040A	09/14/2015 08:45	Olivia Arosemena	1
		NWTPH-Dx 06/97					
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 20:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-35-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036442
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 13:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

35-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.025	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.025	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.025	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.025	5
10725	Chrysene	218-01-9	0.0055 J	0.0050	0.025	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.025	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.025	5
10725	1-Methylnaphthalene	90-12-0	1.2	0.010	0.025	5
10725	2-Methylnaphthalene	91-57-6	0.41	0.010	0.025	5
10725	Naphthalene	91-20-3	0.17	0.010	0.025	5
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	51	260	424.34
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	130	9.0	21	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,000	30	90	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	67.0	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/28/2015 21:29	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252B31A	09/11/2015 01:08	Jeremy C Giffin	424.34
		NWTPH-Gx					
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:43	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530040A	09/15/2015 06:10	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152530040A	09/14/2015 08:45	Olivia Arosemena	1
		NWTPH-Dx 06/97					
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-14-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036443
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 13:20 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

14-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0096	0.024	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0096	0.024	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.0096	0.024	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0096	0.024	5
10725	Chrysene	218-01-9	0.0066 J	0.0048	0.024	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0096	0.024	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0096	0.024	5
10725	1-Methylnaphthalene	90-12-0	0.030	0.0096	0.024	5
10725	2-Methylnaphthalene	91-57-6	0.020 J	0.0096	0.024	5
10725	Naphthalene	91-20-3	0.018 J	0.0096	0.024	5
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	47	240	408.71
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	210	8.5	20	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,200	28	85	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	65.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 11:04	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252B31A	09/11/2015 01:44	Jeremy C Giffin	408.71
		NWTPH-Gx					
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:44	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530040A	09/15/2015 06:31	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152530040A	09/14/2015 08:45	Olivia Arosemena	1
		NWTPH-Dx 06/97					
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-D-2.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036444
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 13:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41D25

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00086	0.0022	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00086	0.0022	1
10725	Benzo(b)fluoranthene	205-99-2	0.0014 J	0.00086	0.0022	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00086	0.0022	1
10725	Chrysene	218-01-9	0.0014 J	0.00043	0.0022	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00086	0.0022	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00086	0.0022	1
10725	1-Methylnaphthalene	90-12-0	0.0028	0.00086	0.0022	1
10725	2-Methylnaphthalene	91-57-6	0.0047	0.00086	0.0022	1
10725	Naphthalene	91-20-3	0.0048	0.00086	0.0022	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	2.0	9.8	37.81
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.9	9.0	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	13	39	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	22.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 11:37	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252B31A	09/11/2015 02:27	Jeremy C Giffin	37.81
06647	GC-5g Field Preserved MeOH	NWTPH-Gx SW-846 5035A	1	201524838751	09/01/2015 13:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530040A	09/15/2015 14:02	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530040A	09/14/2015 08:45	Olivia Arosemena	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-D-2.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036444
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 13:40 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41D25

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-E-2.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036445
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 13:50 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

41E25

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00085	0.0021	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00085	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.00085	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00085	0.0021	1
10725	Chrysene	218-01-9	0.00048 J	0.00043	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00085	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00085	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.026	0.00085	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.063	0.00085	0.0021	1
10725	Naphthalene	91-20-3	0.040	0.00085	0.0021	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	14	68	262.95
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.8	8.9	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	13	38	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	22.5	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 12:10	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252B31A	09/11/2015 03:04	Jeremy C Giffin	262.95
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201524838751	09/01/2015 13:50	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530040A	09/15/2015 14:23	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152530040A	09/14/2015 08:45	Olivia Arosemena	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-E-2.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036445
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 13:50 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41E25

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-C-2.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036446
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 14:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41C25

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00086	0.0021	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00086	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.0015 J	0.00086	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00086	0.0021	1
10725	Chrysene	218-01-9	0.0012 J	0.00043	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00086	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00086	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.0011 J	0.00086	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.0015 J	0.00086	0.0021	1
10725	Naphthalene	91-20-3	0.0097	0.00086	0.0021	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	14	72	279.12
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.9	9.0	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	13	39	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	22.8	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 12:44	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B31A	09/11/2015 04:16	Jeremy C Giffin	279.12
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	09/01/2015 14:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530040A	09/15/2015 08:18	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530040A	09/14/2015 08:45	Olivia Arosemena	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-C-2.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036446
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 14:30 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41C25

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-E-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036447
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 14:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

41E75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.025	0.062	10
10725	Benzo(a)pyrene	50-32-8	N.D.	0.025	0.062	10
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.025	0.062	10
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.025	0.062	10
10725	Chrysene	218-01-9	0.017 J	0.012	0.062	10
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.025	0.062	10
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.025	0.062	10
10725	1-Methylnaphthalene	90-12-0	1.3	0.025	0.062	10
10725	2-Methylnaphthalene	91-57-6	1.6	0.025	0.062	10
10725	Naphthalene	91-20-3	4.2	0.025	0.062	10
The holding time was not met due to a laboratory error.						
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	390 J	160	820	1612
Reporting limits were raised due to limited sample extract volume caused by absorption of the matrix of the sample.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	1,400	15	35	2
02214	HRO C24-C40 w/Si Gel	n.a.	2,300	50	150	2
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	60.5	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15259SLF026	09/25/2015 04:42	Catherine E Bachman	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15259SLF026	09/17/2015 19:22	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B31A	09/11/2015 07:24	Jeremy C Giffin	1612
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:46	Scott W Freisher	n.a.

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-E-7.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036447
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 14:40 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41E75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540006A	09/15/2015 19:22	Heather E Williams	2
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152540006A	09/14/2015 16:20	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-E-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036448
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 14:50 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41E12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0082	0.021	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0082	0.021	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.0082	0.021	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0082	0.021	5
10725	Chrysene	218-01-9	0.0095 J	0.0041	0.021	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0082	0.021	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0082	0.021	5
10725	1-Methylnaphthalene	90-12-0	0.17	0.0082	0.021	5
10725	2-Methylnaphthalene	91-57-6	0.19	0.0082	0.021	5
10725	Naphthalene	91-20-3	0.27	0.0082	0.021	5
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	230	1,100	2250.78
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	400	7.5	17	1
02214	HRO C24-C40 w/Si Gel	n.a.	920	25	75	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	60.0	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 13:17	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15257A34A	09/14/2015 22:11	Jeremy C Giffin	2250.78
		NWTPH-Gx					
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524838752	09/05/2015 14:55	Lisa J Cooke	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152540006A	09/15/2015 15:50	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152540006A	09/14/2015 16:20	JoElla L Rice	1
		NWTPH-Dx 06/97					
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-C-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036449
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 15:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

41C75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D. UJ	0.011	0.027	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.011	0.027	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.011	0.027	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.011	0.027	5
10725	Chrysene	218-01-9	N.D.	0.0053	0.027	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.011	0.027	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.011	0.027	5
10725	1-Methylnaphthalene	90-12-0	0.85 J	0.011	0.027	5
10725	2-Methylnaphthalene	91-57-6	0.94 J	0.011	0.027	5
10725	Naphthalene	91-20-3	2.7 J	0.011	0.027	5

Reporting limits were raised due to interference from the sample matrix.

The recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

GC Volatiles	ECY 97-602 NWTTPH-Gx	mg/kg	mg/kg	mg/kg		
02005	NWTTPH-GX Soil C7-C12	n.a.	N.D.	570	2,900	4447.69

Reporting limits were raised due to sample foaming.

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTTPH-Dx modified	mg/kg	mg/kg	mg/kg		
02214	DRO C12-C24 w/Si Gel	n.a.	4,400	48	110	5
02214	HRO C24-C40 w/Si Gel	n.a.	8,200	160	480	5

Wet Chemistry	SM 2540 G-1997	%	%	%		
00111	Moisture	n.a.	68.9	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 13:50	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTTPH-GX Soil C7-C12	ECY 97-602	1	15254A31B	09/14/2015 23:09	Marie D	4447.69
		NWTTPH-Gx				Beamenderfer	
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:49	Scott W Freisher	n.a.

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-C-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036449
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 15:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41C75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540006A	09/15/2015 20:05	Heather E Williams	5
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152540006A	09/14/2015 16:20	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-C-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036450
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 15:20 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

41C12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D. JJ	0.011	0.028	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.011	0.028	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.011	0.028	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.011	0.028	5
10725	Chrysene	218-01-9	N.D.	0.0055	0.028	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.011	0.028	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.011	0.028	5
10725	1-Methylnaphthalene	90-12-0	1.5 J	0.011	0.028	5
10725	2-Methylnaphthalene	91-57-6	1.9 J	0.011	0.028	5
10725	Naphthalene	91-20-3	0.87 J	0.011	0.028	5

Reporting limits were raised due to interference from the sample matrix.

The recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

GC Volatiles	ECY 97-602 NWT PH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWT PH-GX Soil C7-C12	n.a.	63 J	60	300 444.86

Reporting limits were raised due to sample foaming.

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWT PH-Dx modified	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel	n.a.	780	20	47 2
02214	HRO C24-C40 w/Si Gel	n.a.	2,200	67	200 2

Wet Chemistry	SM 2540 G-1997	%	%	%	
00111	Moisture	n.a.	70.1	0.50	0.50 1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 14:24	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWT PH-GX Soil C7-C12	ECY 97-602 NWT PH-Gx	1	15252B31A	09/11/2015 04:52	Jeremy C Giffin	444.86
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:50	Scott W Freisher	n.a.

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-C-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036450
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 15:20 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41C12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540006A	09/15/2015 22:57	Heather E Williams	2
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152540006A	09/14/2015 16:20	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-D-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036451
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 15:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41D75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0083	0.021	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0083	0.021	5
10725	Benzo(b)fluoranthene	205-99-2	0.021 J	0.0083	0.021	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0083	0.021	5
10725	Chrysene	218-01-9	0.021	0.0042	0.021	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0083	0.021	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0083	0.021	5
10725	1-Methylnaphthalene	90-12-0	0.055	0.0083	0.021	5
10725	2-Methylnaphthalene	91-57-6	0.050	0.0083	0.021	5
10725	Naphthalene	91-20-3	0.76	0.0083	0.021	5
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	270	42	210	419.84
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	980	38	88	5
02214	HRO C24-C40 w/Si Gel	n.a.	2,100	130	380	5
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	60.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 14:57	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B31A	09/11/2015 05:35	Jeremy C Giffin	419.84
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:52	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540006A	09/16/2015 18:39	Heather E Williams	5
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152540006A	09/14/2015 16:20	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820006B	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-D-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036452
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 15:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

41D12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM mg/kg						
10725	Benzo(a)anthracene	56-55-3	N.D. JJ	0.0096	0.024	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0096	0.024	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.0096	0.024	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0096	0.024	5
10725	Chrysene	218-01-9	N.D.	0.0048	0.024	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0096	0.024	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0096	0.024	5
10725	1-Methylnaphthalene	90-12-0	0.33 J	0.0096	0.024	5
10725	2-Methylnaphthalene	91-57-6	0.36 J	0.0096	0.024	5
10725	Naphthalene	91-20-3	0.79 J	0.0096	0.024	5

Reporting limits were raised due to interference from the sample matrix.

The recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

GC Volatiles	ECY 97-602 NWTTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 NWTTPH-GX Soil C7-C12	n.a.	N.D.	49	240	417.05

Reporting limits were raised due to sample foaming.

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTTPH-Dx modified	mg/kg	mg/kg	mg/kg	
02214 DRO C12-C24 w/Si Gel	n.a.	2,500	17	40	2
02214 HRO C24-C40 w/Si Gel	n.a.	2,000	58	170	2

Wet Chemistry	SM 2540 G-1997	%	%	%	
00111 Moisture	n.a.	65.7	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 15:30	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTTPH-GX Soil C7-C12	ECY 97-602 NWTTPH-Gx	1	15252B31A	09/11/2015 06:11	Jeremy C Giffin	417.05
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:54	Scott W Freisher	n.a.

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-D-12.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036452
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 15:40 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41D12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540006A	09/15/2015 23:18	Heather E Williams	2
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152540006A	09/14/2015 16:20	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820006B	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-B-2.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036453
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 09:40 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41B25

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0069	0.017	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0069	0.017	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.0069	0.017	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0069	0.017	5
10725	Chrysene	218-01-9	0.0065 J	0.0034	0.017	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0069	0.017	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0069	0.017	5
10725	1-Methylnaphthalene	90-12-0	0.012 J	0.0069	0.017	5
10725	2-Methylnaphthalene	91-57-6	0.017 J	0.0069	0.017	5
10725	Naphthalene	91-20-3	0.36	0.0069	0.017	5
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	150	12	61	147.53
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	340 J	12	29	2
02214	HRO C24-C40 w/Si Gel	n.a.	1,600	41	120	2
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	52.0	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 16:03	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15257A34A	09/14/2015 20:25	Jeremy C Giffin	147.53
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:55	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540006A	09/15/2015 23:40	Heather E Williams	2
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152540006A	09/14/2015 16:20	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820006B	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-52-B-2.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036454
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 10:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

52B25

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0040	0.0099	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0040	0.0099	5
10725	Benzo(b)fluoranthene	205-99-2	0.0095 J	0.0040	0.0099	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0040	0.0099	5
10725	Chrysene	218-01-9	N.D.	0.0020	0.0099	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0040	0.0099	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0040	0.0099	5
10725	1-Methylnaphthalene	90-12-0	N.D.	0.0040	0.0099	5
10725	2-Methylnaphthalene	91-57-6	N.D.	0.0040	0.0099	5
10725	Naphthalene	91-20-3	0.0051 J	0.0040	0.0099	5
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	12	60	247.79
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	210	7.2	17	2
02214	HRO C24-C40 w/Si Gel	n.a.	340	24	72	2
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	16.9	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 16:37	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15257A34A	09/14/2015 22:46	Jeremy C Giffin	247.79
06647	GC-5g Field Preserved MeOH	NWTPH-Gx					
		SW-846 5035A	1	201524838751	09/02/2015 10:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152540006A	09/16/2015 17:34	Heather E Williams	2
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152540006A	09/14/2015 16:20	JoElla L Rice	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-52-B-2.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036454
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 10:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

52B25

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820006B	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-B-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036455
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 10:30 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

41B75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.029 J	0.012	0.030	5
10725	Benzo(a)pyrene	50-32-8	0.016 J	0.012	0.030	5
10725	Benzo(b)fluoranthene	205-99-2	0.036	0.012	0.030	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.012	0.030	5
10725	Chrysene	218-01-9	0.051	0.0060	0.030	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.012	0.030	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.012	0.030	5
10725	1-Methylnaphthalene	90-12-0	14	0.12	0.30	50
10725	2-Methylnaphthalene	91-57-6	25	0.12	0.30	50
10725	Naphthalene	91-20-3	17	0.12	0.30	50
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	870 J	660	3,300	4514.47
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	920	11	25	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,400	36	110	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	72.5	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 17:10	Joseph M Gambler	5
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/30/2015 06:09	Joseph M Gambler	50
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15257A34B	09/15/2015 19:56	Marie D	4514.47
		NWTPH-Gx				Beamenderfer	
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:58	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152540006A	09/15/2015 22:35	Heather E Williams	1
		NWTPH-Dx modified					
07024	DRO Alternate Soil Extraction	ECY 97-602	1	152540006A	09/14/2015 16:20	JoElla L Rice	1
		NWTPH-Dx 06/97					

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-B-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036455
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 10:30 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41B75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820006B	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-B-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036456
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 10:50 by JL

Atlantic Richfield c/o ARCADIS
Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41B12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.021	0.053	10
10725	Benzo(a)pyrene	50-32-8	N.D.	0.021	0.053	10
10725	Benzo(b)fluoranthene	205-99-2	0.022 J	0.021	0.053	10
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.021	0.053	10
10725	Chrysene	218-01-9	0.032 J	0.011	0.053	10
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.021	0.053	10
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.021	0.053	10
10725	1-Methylnaphthalene	90-12-0	1.3	0.021	0.053	10
10725	2-Methylnaphthalene	91-57-6	2.0	0.021	0.053	10
10725	Naphthalene	91-20-3	0.88	0.021	0.053	10
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	83 J	55	280	432.08
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	920	19	45	2
02214	HRO C24-C40 w/Si Gel	n.a.	2,100	64	190	2
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	68.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15254SLF026	09/24/2015 10:40	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15254SLF026	09/14/2015 17:55	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15257A34B	09/15/2015 20:31	Marie D Beamenderfer	432.08
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/07/2015 00:00	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540006A	09/16/2015 00:02	Heather E Williams	2
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152540006A	09/14/2015 16:20	JoElla L Rice	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-41-B-12.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036456
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 10:50 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

41B12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820006B	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-52-B-7.5 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036457
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 11:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

52B75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00088	0.0022	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00088	0.0022	1
10725	Benzo(b)fluoranthene	205-99-2	0.0018 J	0.00088	0.0022	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00088	0.0022	1
10725	Chrysene	218-01-9	0.0016 J	0.00044	0.0022	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00088	0.0022	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00088	0.0022	1
10725	1-Methylnaphthalene	90-12-0	0.0027	0.00088	0.0022	1
10725	2-Methylnaphthalene	91-57-6	0.0047	0.00088	0.0022	1
10725	Naphthalene	91-20-3	0.013	0.00088	0.0022	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	14	72	270.3
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	12	4.0	9.2	1
02214	HRO C24-C40 w/Si Gel	n.a.	20 J	13	40	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	25.3	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15254SLF026	09/24/2015 11:13	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15254SLF026	09/14/2015 17:55	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15257A34B	09/15/2015 21:06	Marie D Beamenderfer	270.3
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	09/02/2015 11:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540008A	09/15/2015 16:11	Heather E Williams	1

*=This limit was used in the evaluation of the final result

Sample Description: SB-52-B-7.5 Soil
 Former Olympia Bulk Plant COC: R224118
 1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036457
 LL Group # 1590592
 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 11:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 10/01/2015 13:13

Highlands Ranch CO 80129

52B75

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152540008A	09/14/2015 20:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15258820006B	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-6 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036458
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

DUP-6

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	5.3 J	0.036	0.091	1
10725	Benzo(a)pyrene	50-32-8	4.0	0.036	0.091	1
10725	Benzo(b)fluoranthene	205-99-2	6.0	0.036	0.091	1
10725	Benzo(k)fluoranthene	207-08-9	2.3	0.036	0.091	1
10725	Chrysene	218-01-9	5.5	0.018	0.091	1
10725	Dibenz(a,h)anthracene	53-70-3	0.27	0.036	0.091	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.67	0.036	0.091	1
10725	1-Methylnaphthalene	90-12-0	3.4	0.036	0.091	1
10725	2-Methylnaphthalene	91-57-6	3.4	0.036	0.091	1
10725	Naphthalene	91-20-3	6.0	0.036	0.091	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	1,100 J	35	170	391.95
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	8,900 J	660	1,500	100
02214	HRO C24-C40 w/Si Gel	n.a.	44,000 J	2,200	6,600	100
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	54.7	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15254SLF026	09/24/2015 11:46	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15254SLF026	09/14/2015 17:55	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A31A	09/10/2015 03:44	Jeremy C Giffin	391.95
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/07/2015 00:01	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530040A	09/15/2015 09:22	Heather E Williams	100
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530040A	09/14/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15258820006B	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-7 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036459
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

DUP-7

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	N.D.	0.025	0.062	10
10725	Benzo(a)pyrene	50-32-8	N.D.	0.025	0.062	10
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.025	0.062	10
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.025	0.062	10
10725	Chrysene	218-01-9	N.D.	0.012	0.062	10
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.025	0.062	10
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.025	0.062	10
10725	1-Methylnaphthalene	90-12-0	7.9 J	0.025	0.062	10
10725	2-Methylnaphthalene	91-57-6	12 J	0.025	0.062	10
10725	Naphthalene	91-20-3	0.25 J	0.025	0.062	10
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	77 J	66	330	438.24
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	440	11	26	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,500	37	110	1
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	73.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15254SLF026	09/24/2015 12:19	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15254SLF026	09/14/2015 17:55	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A31A	09/10/2015 04:20	Jeremy C Giffin	438.24
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/07/2015 00:03	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530040A	09/15/2015 08:39	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530040A	09/14/2015 08:45	Olivia Arosemena	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-7 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036459
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 10/01/2015 13:13

630 Plaza Drive

Highlands Ranch CO 80129

DUP-7

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15258820006B	09/15/2015 21:32	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: TRIP BLANK Water
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036460
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 10/01/2015 13:13

630 Plaza Drive

Highlands Ranch CO 80129

FOBTB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
	ECY 97-602	NWTPH-Gx	ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	N.D.	50	250	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 12:56	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015 12:56	Brett W Kenyon	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-8 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036461
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

DUP-8

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0046 J	0.0024	0.0061	1
10725	Benzo(a)pyrene	50-32-8	0.0057 J	0.0024	0.0061	1
10725	Benzo(b)fluoranthene	205-99-2	0.019	0.0024	0.0061	1
10725	Benzo(k)fluoranthene	207-08-9	0.0065	0.0024	0.0061	1
10725	Chrysene	218-01-9	0.012	0.0012	0.0061	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0024	0.0061	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0034 J	0.0024	0.0061	1
10725	1-Methylnaphthalene	90-12-0	0.020	0.0024	0.0061	1
10725	2-Methylnaphthalene	91-57-6	0.015	0.0024	0.0061	1
10725	Naphthalene	91-20-3	0.037	0.0024	0.0061	1
GC Volatiles ECY 97-602 NWTPH-Gx			mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D. UJ	64	320	439.61
Reporting limits were raised due to sample foaming.						
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	290 J	11	25	1
02214	HRO C24-C40 w/Si Gel	n.a.	740 J	36	110	1
Wet Chemistry SM 2540 G-1997			%	%	%	
00111	Moisture	n.a.	72.6	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15254SLF026	09/24/2015 12:52	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15254SLF026	09/14/2015 17:55	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A31A	09/09/2015 22:47	Jeremy C Giffin	439.61
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/07/2015 00:05	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530040A	09/15/2015 09:00	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530040A	09/14/2015 08:45	Olivia Arosemena	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-8 Soil
Former Olympia Bulk Plant COC: R224118
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036461
LL Group # 1590592
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 10/01/2015 13:13

630 Plaza Drive

Highlands Ranch CO 80129

DUP-8

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	15252820001B	09/09/2015 10:48	William C Schwebel	1

*=This limit was used in the evaluation of the final result

BP OLY

Data Review

OLYMPIA, WA

Semivolatiles and TPH

SDG # 1590593

Analyses Performed By:
Lancaster Laboratories
Lancaster, PA

Report # 24724R
Review Level: Tier II
Project: GP09BPNA.WA60.K000

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1590593 for samples collected in association with the BP OLY site. The review was conducted at a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	TPH	MET	TSS
MW-6R	8036462	Water	09/02/15		X	X	X	X	
MW-6R Filtered	8036463	Water	09/02/15					X	
MW-7	8036464	Water	09/02/15		X	X	X	X	
MW-7 Filtered	8036465	Water	09/02/15					X	
MW-8	8036466	Water	09/02/15		X	X	X	X	
MW-8 Filtered	8036467	Water	09/02/15					X	
MW-9	8036468	Water	09/02/15		X	X	X	X	
MW-9 Filtered	8036469	Water	09/02/15					X	
MW-10	8036470	Water	09/02/15		X	X	X	X	
MW-10 Filtered	8036471	Water	09/02/15					X	
MW-11	8036472	Water	09/02/15		X	X	X	X	
MW-11 Filtered	8036473	Water	09/02/15					X	
MW-12	8036474	Water	09/02/15		X	X	X	X	
MW-12 Filtered	8036475	Water	09/02/15					X	
DUP-1	8036476	Water	09/02/15	MW-7	X	X	X	X	
DUP-1 Filtered	8036477	Water	09/02/15	MW-7 Filtered				X	
Trip Blank	8036478	Water	09/02/15		X	X	X	X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8260, 8270 (SIM), 8011 and ECY 97-602. Data were reviewed in accordance with the USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines and as requested by USEPA Region 10:

- Concentration (C) Qualifiers
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - U The analyte was not detected at or above the reported result.
 - J The analyte was positively identified. The associated numerical result is an estimate.
 - UJ The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
 - R The data are unusable for all purposes.

 - N There is evidence the analyte is present in this sample.

 - JN There is evidence the analyte is present in this sample. The associated numerical result is an estimate.
 - D The sample result is reported from a diluted analysis.
 - EJ The sample result is greater than the calibration range. The associated numerical value is an estimated concentration only.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

s.u. Standard units

All samples were analyzed within the recommended holding time.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD was not included in the data package.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 40% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices. Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-7/DUP-1	All Compounds	U	U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks		X		X	
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS)	X				X
Matrix Spike Duplicate(MSD)	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content	X				X
A. Reporting limits adjusted to reflect sample dilutions		X		X	

%R Percent recovery
 RPD Relative percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270 (SIM)	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the recommended holding time.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD was not included in the data package.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-7/DUP-1	1-Methylnaphthalene	0.16	0.21	AC
	2-Methylnaphthalene	0.14	0.18	AC
	Naphthalene	0.062	0.088	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270 (SIM)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

%R Percent recovery

RPD Relative percent difference

PESTICIDES ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8011	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. pesticide analysis requires that one of the two pesticide surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries reported from the primary column were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS performed on sample MW-6R exhibited a recovery within the control limits

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-7/DUP-1	Ethylene Dibromide	0.029 U	0.028 U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PESTICIDES

Pesticides; SW-846 8011	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
D. Method blanks		X		X	
E. Equipment blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Column %D \leq 40% (If dual column is performed for reporting-not confirmation)	X				X
Dilution Factor		X		X	
Moisture Content	X				X

NWTPH-GX AND DX

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH – Gx and Dx ECY 97-602	Soil	14 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries reported from the primary column were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD was not included in the data package.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-7/DUP-1	Gx	0.029 U	0.028 U	AC
	DRO	130	110	16.7%
	HRO	250 U	250 U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR TPH

Gx/Dx; ECY 97-602	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
F. Method blanks		X		X	
G. Trip blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

%R - percent recovery, RPD - relative percent difference,

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to (United States Environmental Protection Agency) SW-846 6020. Data were reviewed in accordance with the National Functional Guidelines for Data Review for July 2002.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
 - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
 - B The reported value was obtained from a reading less than the contract-required detection limit (CRDL), but greater than or equal to the instrument detection limit (IDL).
- Quantitation (Q) Qualifiers
 - E The reported value is estimated due to the presence of interference.
 - N Spiked sample recovery is not within control limits.
 - * Duplicate analysis is not within control limits.
- Validation Qualifiers
 - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
 - UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
 - UB Analyte considered non-detect at the listed value due to associated blank contamination.
 - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6020	Water	180 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 120%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD performed on sample location MW-6R exhibited recoveries and RPDs within the laboratory control limits.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices.

A laboratory duplicate was not included in the data package.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-7/DUP-1	Lead	1.0 U	1.0 U	AC
MW-7 Filtered/DUP-1 Filtered	Lead (D)	1.0 U	1.0 U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 75% and 125%.

The LCS analysis exhibited recoveries within the control limits.

6. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included in the data package.

7. General Assessment – Total vs. Dissolved

The calculated %D between the total and the dissolved sample results were within the control limit.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW-846 6020	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks	X				X
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
ICP Serial Dilution	X				X
Total vs. Dissolved		X		X	
Reporting Limit Verification		X		X	

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED

BY: Rachelle Borne

SIGNATURE:



DATE: December 7, 2015

PEER REVIEW: Joseph C. Houser

DATE: December 11, 2015

**CHAIN OF CUSTODY/
CORRECTED SAMPLE ANALYSIS DATA SHEETS**



13255 1540593 8036462-78
Laboratory Management Program LaMP Chain of Custody Record R219429

BP Site Node Path: _____

Req Due Date (mm/dd/yy): Standard TAT Rush TAT: Yes ___ No ___

BP Facility No: Former Olympia Bell Plant

Lab Work Order Number: _____

Lab Name: <u>Leinster Laboratory</u>	Facility Address: <u>1117 W Bay Lane</u>	Consultant/Contractor: <u>Arndt</u>
Lab Address: <u>2475 New Holland Pike ^{Leinster, PA}</u>	City, State, ZIP Code: <u>Olympia WA</u>	Consultant/Contractor Project No: <u>6090PMA, WA60</u>
Lab PM: <u>Spacy Brit</u>	Lead Regulatory Agency: <u>WADE</u>	Address: <u>1100 Olive Way</u>
Lab Phone: <u>717-656-2320</u>	California Global ID No.: _____	Consultant/Contractor PM: <u>Brian Moran</u>
Lab Shipping Acct: _____	Enfos Proposal No: _____	Phone: <u>206-726-4578</u> Email: <u>Brian.Moran@enfosdoc-us.com</u>
Lab Bottle Order No: _____	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: <u>Brian Moran</u> and to <u>lab.enfosdoc@bp.com</u>
Other Info: _____	Stage: _____ Activity: _____	Invoice To: BP ___ Contractor <input checked="" type="checkbox"/>

BP Project Manager (PM):				Matrix		No. Containers / Preservative						Requested Analyses										Report Type & QC Level		
BP PM Phone:				Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container:	Unpreserved	H2SO4	HNO3	HCl	Methanol	total Lead	NWTPPI-GX	NWTPPI-VX/HQ	BTEX, MTBE, EDC	EDB by 8011	PAHs by 8270CSM	distilled lead	Standard ___		Full Data Package ___	
BP PM Email:																					Comments			
Lab No.	Sample Description	Date	Time																					
	MW-6R	9-2-15	1515	✓				14	3		1	10		✓	✓	✓	✓	✓	✓	✓				
	MW-7	↓	2030	✓				14	3		1	10		✓	✓	✓	✓	✓	✓	✓				
	MW-8	↓	1930	✓				14	3		1	10		✓	✓	✓	✓	✓	✓	✓				
	MW-9	↓	1850	✓				14	3		1	10		✓	✓	✓	✓	✓	✓	✓				
	MW-10	↓	1800	✓				14	3		1	10		✓	✓	✓	✓	✓	✓	✓				
	MW-11	↓	1725	✓				14	3		1	10		✓	✓	✓	✓	✓	✓	✓				
	MW-12	↓	1620	✓				14	3		1	10		✓	✓	✓	✓	✓	✓	✓				
	DOP-1	↓	—	✓				14	3		1	10		✓	✓	✓	✓	✓	✓	✓				
	TRIP-BLANK	↓	—	✓				2				2		✓	✓	✓	✓	✓	✓	✓				

Sampler's Name: <u>Jason Little</u>	Relinquished By / Affiliation		Date	Time	Accepted By / Affiliation		Date	Time
Sampler's Company: <u>Arndt</u>	<u>JL / Arndt</u>				<u>[Signature]</u>			
Shipment Method: <u>US Next Day</u> Ship Date: <u>9-3-15</u>							<u>9/4/15</u>	<u>935</u>
Shipment Tracking No:								

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: (Yes) No | Temp Blank: Yes/No | Cooler Temp on Receipt: 4-19 °F | Trip Blank: Yes/No | MS/MSD Sample Submitted: Yes/(No)

Sample Description: MW-6R Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036462
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 15:15 by JL

Atlantic Richfield c/o ARCADIS
 Suite 600
 630 Plaza Drive
 Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

OLY6R

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260B						
10335	Benzene	71-43-2	N.D.	0.50	1.0	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene	100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)	1330-20-7	N.D.	0.50	1.0	1
GC/MS Semivolatiles SW-846 8270C SIM						
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.051	1
08357	Benzo(a)pyrene	50-32-8	0.018 J	0.010	0.051	1
08357	Benzo(b)fluoranthene	205-99-2	0.016 J	0.010	0.051	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.051	1
08357	Chrysene	218-01-9	N.D.	0.010	0.051	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.051	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	0.015 J	0.010	0.051	1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.051	1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.051	1
08357	Naphthalene	91-20-3	N.D.	0.030	0.061	1
GC Volatiles ECY 97-602 NWT PH-Gx						
08273	NWT PH-Gx water C7-C12	n.a.	N.D.	50	250	1
Pesticides/PCBs SW-846 8011						
10398	Ethylene dibromide	106-93-4	N.D.	0.0094	0.028	1
GC Petroleum ECY 97-602 NWT PH-Dx						
Hydrocarbons modified						
12899	DX DRO C12-C24	n.a.	N.D.	46	100	1
12899	DX HRO C24-C40	n.a.	N.D.	100	250	1
Metals SW-846 6020						
06035	Lead	7439-92-1	0.72 J	0.13	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 03:28	Caitlin M Carmody	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 03:28	Caitlin M Carmody	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-6R Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036462
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 15:15 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 09/21/2015 14:19

630 Plaza Drive

Highlands Ranch CO 80129

OLY6R

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/11/2015 19:34	Holly B Ziegler	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015 17:30	Ryan A Schafran	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 15:54	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015 15:54	Brett W Kenyon	1
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/19/2015 12:51	Richard A Shober	1
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015 09:00	Roman Kuropatkin	1
12899	DRO/DX Mini-extraction Master	ECY 97-602 NWTPH-Dx modified	1	152550007A	09/16/2015 15:41	Christine E Dolman	1
12907	Mini-extraction DRO DX (water)	ECY 97-602 NWTPH-Dx 06/97	1	152550007A	09/16/2015 02:00	Sherry L Morrow	1
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 11:08	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-6R Filtered Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036463
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 15:15 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 09/21/2015 14:19

Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metals Dissolved						
		SW-846 6020	ug/l	ug/l	ug/l	
06035	Lead	7439-92-1	N.D.	0.13	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 11:10	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-7 Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036464
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 20:30 by JL

Atlantic Richfield c/o ARCADIS
 Suite 600
 630 Plaza Drive
 Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

OLY07

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260B						
10335	Benzene	71-43-2	N.D.	0.50	1.0	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene	100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)	1330-20-7	N.D.	0.50	1.0	1
GC/MS Semivolatiles SW-846 8270C SIM						
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.051	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.051	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.051	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.051	1
08357	Chrysene	218-01-9	N.D.	0.010	0.051	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.051	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.051	1
08357	1-Methylnaphthalene	90-12-0	0.16	0.010	0.051	1
08357	2-Methylnaphthalene	91-57-6	0.14	0.010	0.051	1
08357	Naphthalene	91-20-3	0.062	0.030	0.061	1
GC Volatiles ECY 97-602 NWT PH-Gx						
08273	NWT PH-Gx water C7-C12	n.a.	N.D.	50	250	1
Pesticides/PCBs SW-846 8011						
10398	Ethylene dibromide	106-93-4	N.D.	0.0096	0.029	1
GC Petroleum ECY 97-602 NWT PH-Dx						
Hydrocarbons modified						
12899	DX DRO C12-C24	n.a.	130	45	100	1
12899	DX HRO C24-C40	n.a.	N.D.	100	250	1
Metals SW-846 6020						
06035	Lead	7439-92-1	N.D.	0.13	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 03:05	Caitlin M Carmody	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 03:05	Caitlin M Carmody	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-7 Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036464
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 20:30 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 09/21/2015 14:19

630 Plaza Drive

Highlands Ranch CO 80129

OLY07

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/11/2015 20:02	Holly B Ziegler	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015 17:30	Ryan A Schafran	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 16:20	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015 16:20	Brett W Kenyon	1
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/16/2015 20:32	Richard A Shober	1
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015 09:00	Roman Kuropatkin	1
12899	DRO/DX Mini-extraction Master	ECY 97-602 NWTPH-Dx modified	1	152550007A	09/16/2015 16:05	Christine E Dolman	1
12907	Mini-extraction DRO DX (water)	ECY 97-602 NWTPH-Dx 06/97	1	152550007A	09/16/2015 02:00	Sherry L Morrow	1
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 10:48	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-7 Filtered Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036465
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 20:30 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 09/21/2015 14:19

Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metals Dissolved						
06035	Lead	SW-846 6020 7439-92-1	ug/l N.D.	ug/l 0.13	ug/l 1.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 11:11	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-8 Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036466
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 19:30 by JL

Atlantic Richfield c/o ARCADIS
 Suite 600
 630 Plaza Drive
 Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

OLY08

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260B						
10335	Benzene	71-43-2	N.D.	0.50	1.0	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene	100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)	1330-20-7	N.D.	0.50	1.0	1
GC/MS Semivolatiles SW-846 8270C SIM						
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.051	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.051	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.051	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.051	1
08357	Chrysene	218-01-9	0.012 J	0.010	0.051	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.051	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.051	1
08357	1-Methylnaphthalene	90-12-0	0.12	0.010	0.051	1
08357	2-Methylnaphthalene	91-57-6	0.051 J	0.010	0.051	1
08357	Naphthalene	91-20-3	0.096	0.031	0.061	1
GC Volatiles ECY 97-602 NWT PH-Gx						
08273	NWT PH-Gx water C7-C12	n.a.	N.D.	50	250	1
Pesticides/PCBs SW-846 8011						
10398	Ethylene dibromide	106-93-4	N.D.	0.0095	0.028	1
GC Petroleum ECY 97-602 NWT PH-Dx						
Hydrocarbons modified						
12899	DX DRO C12-C24	n.a.	670	49	110	1
12899	DX HRO C24-C40	n.a.	1,000	110	270	1
Metals SW-846 6020						
06035	Lead	7439-92-1	N.D.	0.13	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 03:51	Caitlin M Carmody	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 03:51	Caitlin M Carmody	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-8 Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036466
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 19:30 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 09/21/2015 14:19

630 Plaza Drive

Highlands Ranch CO 80129

OLY08

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/11/2015 20:30	Holly B Ziegler	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015 17:30	Ryan A Schafran	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 16:45	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015 16:45	Brett W Kenyon	1
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/16/2015 21:04	Richard A Shober	1
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015 09:00	Roman Kuropatkin	1
12899	DRO/DX Mini-extraction Master	ECY 97-602 NWTPH-Dx modified	1	152550007A	09/16/2015 16:28	Christine E Dolman	1
12907	Mini-extraction DRO DX (water)	ECY 97-602 NWTPH-Dx 06/97	1	152550007A	09/16/2015 02:00	Sherry L Morrow	1
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 11:13	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-8 Filtered Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036467
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 19:30 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 09/21/2015 14:19

630 Plaza Drive

Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metals Dissolved						
06035	Lead	7439-92-1	N.D.	0.13	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 11:15	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: **MW-9 Water**
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # **WW 8036468**
LL Group # **1590593**
Account # **13255**

Project Name: **Former Olympia Bulk Plant**

Collected: 09/02/2015 18:50 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

OLY09

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260B						
10335	Benzene	71-43-2	N.D.	0.50	1.0	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene	100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)	1330-20-7	N.D.	0.50	1.0	1
GC/MS Semivolatiles SW-846 8270C SIM						
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.050	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.050	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.050	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.050	1
08357	Chrysene	218-01-9	N.D.	0.010	0.050	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.050	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.050	1
08357	1-Methylnaphthalene	90-12-0	0.12	0.010	0.050	1
08357	2-Methylnaphthalene	91-57-6	0.058	0.010	0.050	1
08357	Naphthalene	91-20-3	0.37	0.030	0.060	1
GC Volatiles ECY 97-602 NWTPH-Gx						
08273	NWTPH-Gx water C7-C12	n.a.	67 J	50	250	1
Pesticides/PCBs SW-846 8011						
10398	Ethylene dibromide	106-93-4	N.D.	0.0096	0.029	1
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons modified						
12899	DX DRO C12-C24	n.a.	N.D.	45	100	1
12899	DX HRO C24-C40	n.a.	N.D.	100	250	1
Metals SW-846 6020						
06035	Lead	7439-92-1	0.30 J	0.13	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 04:14	Caitlin M Carmody	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 04:14	Caitlin M Carmody	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-9 Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036468
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 18:50 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 09/21/2015 14:19

630 Plaza Drive

Highlands Ranch CO 80129

OLY09

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/11/2015 20:58	Holly B Ziegler	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015 17:30	Ryan A Schafran	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 17:10	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015 17:10	Brett W Kenyon	1
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/16/2015 21:20	Richard A Shober	1
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015 09:00	Roman Kuropatkin	1
12899	DRO/DX Mini-extraction Master	ECY 97-602 NWTPH-Dx modified	1	152550007A	09/16/2015 16:52	Christine E Dolman	1
12907	Mini-extraction DRO DX (water)	ECY 97-602 NWTPH-Dx 06/97	1	152550007A	09/16/2015 02:00	Sherry L Morrow	1
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 11:17	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-9 Filtered Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036469
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 18:50 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 09/21/2015 14:19

Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metals Dissolved						
		SW-846 6020	ug/l	ug/l	ug/l	
06035	Lead	7439-92-1	N.D.	0.13	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 11:19	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-10 Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036470
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 18:00 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

OLY10

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260B						
10335	Benzene	71-43-2	N.D.	0.50	1.0	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene	100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)	1330-20-7	N.D.	0.50	1.0	1
GC/MS Semivolatiles SW-846 8270C SIM						
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.051	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.051	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.051	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.051	1
08357	Chrysene	218-01-9	N.D.	0.010	0.051	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.051	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.051	1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.051	1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.051	1
08357	Naphthalene	91-20-3	N.D.	0.030	0.061	1
GC Volatiles ECY 97-602 NWT PH-Gx						
08273	NWT PH-Gx water C7-C12	n.a.	N.D.	50	250	1
Pesticides/PCBs SW-846 8011						
10398	Ethylene dibromide	106-93-4	N.D.	0.0094	0.028	1
GC Petroleum ECY 97-602 NWT PH-Dx						
Hydrocarbons modified						
12899	DX DRO C12-C24	n.a.	N.D.	45	100	1
12899	DX HRO C24-C40	n.a.	N.D.	100	250	1
Metals SW-846 6020						
06035	Lead	7439-92-1	2.1	0.13	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 04:37	Caitlin M Carmody	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 04:37	Caitlin M Carmody	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-10 Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036470
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 18:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 09/21/2015 14:19

Highlands Ranch CO 80129

OLY10

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/14/2015 16:05	Holly B Ziegler	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015 17:30	Ryan A Schafran	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 17:35	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015 17:35	Brett W Kenyon	1
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/16/2015 21:36	Richard A Shober	1
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015 09:00	Roman Kuropatkin	1
12899	DRO/DX Mini-extraction Master	ECY 97-602 NWTPH-Dx modified	1	152550007A	09/16/2015 17:39	Christine E Dolman	1
12907	Mini-extraction DRO DX (water)	ECY 97-602 NWTPH-Dx 06/97	1	152550007A	09/16/2015 02:00	Sherry L Morrow	1
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 11:20	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-10 Filtered Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036471
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 18:00 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 09/21/2015 14:19

Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metals Dissolved						
06035	Lead	SW-846 6020 7439-92-1	0.15 J	ug/l 0.13	ug/l 1.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 11:22	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-11 Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036472
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 17:25 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

OLY11

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260B						
10335	Benzene	71-43-2	N.D.	0.50	1.0	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene	100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)	1330-20-7	N.D.	0.50	1.0	1
GC/MS Semivolatiles SW-846 8270C SIM						
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.050	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.050	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.050	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.050	1
08357	Chrysene	218-01-9	N.D.	0.010	0.050	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.050	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.050	1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.050	1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.050	1
08357	Naphthalene	91-20-3	N.D.	0.030	0.060	1
GC Volatiles ECY 97-602 NWT PH-Gx						
08273	NWT PH-Gx water C7-C12	n.a.	N.D.	50	250	1
Pesticides/PCBs SW-846 8011						
10398	Ethylene dibromide	106-93-4	N.D.	0.0096	0.029	1
GC Petroleum ECY 97-602 NWT PH-Dx						
Hydrocarbons modified						
12899	DX DRO C12-C24	n.a.	N.D.	48	110	1
12899	DX HRO C24-C40	n.a.	N.D.	110	270	1
Metals SW-846 6020						
06035	Lead	7439-92-1	0.87 J	0.13	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 05:00	Caitlin M Carmody	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 05:00	Caitlin M Carmody	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-11 Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036472
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 17:25 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 09/21/2015 14:19

Highlands Ranch CO 80129

OLY11

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/14/2015 16:33	Holly B Ziegler	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015 17:30	Ryan A Schafran	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 18:00	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015 18:00	Brett W Kenyon	1
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/16/2015 21:52	Richard A Shober	1
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015 09:00	Roman Kuropatkin	1
12899	DRO/DX Mini-extraction Master	ECY 97-602 NWTPH-Dx modified	1	152550007A	09/16/2015 18:02	Christine E Dolman	1
12907	Mini-extraction DRO DX (water)	ECY 97-602 NWTPH-Dx 06/97	1	152550007A	09/16/2015 02:00	Sherry L Morrow	1
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 11:31	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-11 Filtered Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036473
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 17:25 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 09/21/2015 14:19

630 Plaza Drive

Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metals Dissolved						
06035	Lead	SW-846 6020 7439-92-1	ug/l N.D.	ug/l 0.13	ug/l 1.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 11:33	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: **MW-12 Water**
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # **WW 8036474**
 LL Group # **1590593**
 Account # **13255**

Project Name: **Former Olympia Bulk Plant**

Collected: 09/02/2015 16:20 by JL

Atlantic Richfield c/o ARCADIS
 Suite 600
 630 Plaza Drive
 Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

OLY12

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260B						
10335	Benzene	71-43-2	N.D.	0.50	1.0	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene	100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)	1330-20-7	N.D.	0.50	1.0	1
GC/MS Semivolatiles SW-846 8270C SIM						
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.050	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.050	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.050	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.050	1
08357	Chrysene	218-01-9	N.D.	0.010	0.050	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.050	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.050	1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.050	1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.050	1
08357	Naphthalene	91-20-3	N.D.	0.030	0.060	1
GC Volatiles ECY 97-602 NWT PH-Gx						
08273	NWT PH-Gx water C7-C12	n.a.	N.D.	50	250	1
Pesticides/PCBs SW-846 8011						
10398	Ethylene dibromide	106-93-4	N.D.	0.0096	0.029	1
GC Petroleum ECY 97-602 NWT PH-Dx						
Hydrocarbons modified						
12899	DX DRO C12-C24	n.a.	N.D.	48	110	1
12899	DX HRO C24-C40	n.a.	N.D.	110	270	1
Metals SW-846 6020						
06035	Lead	7439-92-1	N.D.	0.13	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 05:24	Caitlin M Carmody	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 05:24	Caitlin M Carmody	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-12 Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036474
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 16:20 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 09/21/2015 14:19

630 Plaza Drive

Highlands Ranch CO 80129

OLY12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/14/2015 17:01	Holly B Ziegler	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015 17:30	Ryan A Schafran	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 18:26	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015 18:26	Brett W Kenyon	1
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/16/2015 22:07	Richard A Shober	1
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015 09:00	Roman Kuropatkin	1
12899	DRO/DX Mini-extraction Master	ECY 97-602 NWTPH-Dx modified	1	152550007A	09/16/2015 18:26	Christine E Dolman	1
12907	Mini-extraction DRO DX (water)	ECY 97-602 NWTPH-Dx 06/97	1	152550007A	09/16/2015 02:00	Sherry L Morrow	1
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 11:35	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-12 Filtered Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036475
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 16:20 by JL

Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35

630 Plaza Drive

Reported: 09/21/2015 14:19

Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metals Dissolved						
		SW-846 6020	ug/l	ug/l	ug/l	
06035	Lead	7439-92-1	N.D.	0.13	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 11:37	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-1 Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036476
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 by JL

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

OLYFD

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260B						
10335	Benzene	71-43-2	N.D.	0.50	1.0	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene	100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)	1330-20-7	N.D.	0.50	1.0	1
GC/MS Semivolatiles SW-846 8270C SIM						
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.051	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.051	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.051	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.051	1
08357	Chrysene	218-01-9	N.D.	0.010	0.051	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.051	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.051	1
08357	1-Methylnaphthalene	90-12-0	0.21	0.010	0.051	1
08357	2-Methylnaphthalene	91-57-6	0.18	0.010	0.051	1
08357	Naphthalene	91-20-3	0.088	0.030	0.061	1
GC Volatiles ECY 97-602 NWTPH-Gx						
08273	NWTPH-Gx water C7-C12	n.a.	N.D.	50	250	1
Pesticides/PCBs SW-846 8011						
10398	Ethylene dibromide	106-93-4	N.D.	0.0094	0.028	1
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons modified						
12899	DX DRO C12-C24	n.a.	110	45	100	1
12899	DX HRO C24-C40	n.a.	N.D.	100	250	1
Metals SW-846 6020						
06035	Lead	7439-92-1	N.D.	0.13	1.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 05:47	Caitlin M Carmody	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 05:47	Caitlin M Carmody	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-1 Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036476
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 09/21/2015 14:19

630 Plaza Drive

Highlands Ranch CO 80129

OLYFD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/14/2015 17:29	Holly B Ziegler	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015 17:30	Ryan A Schafran	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 18:51	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015 18:51	Brett W Kenyon	1
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/16/2015 22:55	Richard A Shober	1
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015 09:00	Roman Kuropatkin	1
12899	DRO/DX Mini-extraction Master	ECY 97-602 NWTPH-Dx modified	1	152550007A	09/16/2015 18:49	Christine E Dolman	1
12907	Mini-extraction DRO DX (water)	ECY 97-602 NWTPH-Dx 06/97	1	152550007A	09/16/2015 02:00	Sherry L Morrow	1
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 11:28	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-1 Filtered Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036477
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 by JL

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 09/21/2015 14:19

630 Plaza Drive

Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metals Dissolved						
06035	Lead	SW-846 6020 7439-92-1	ug/l N.D.	ug/l 0.13	ug/l 1.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015 11:29	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015 09:22	Katlin N Cataldi	1

*=This limit was used in the evaluation of the final result

Sample Description: TRIP-BLANK Water
Former Olympia Bulk Plant COC: R219429
1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036478
LL Group # 1590593
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015

Atlantic Richfield c/o ARCADIS

Submitted: 09/04/2015 09:35

Suite 600

Reported: 09/21/2015 14:19

630 Plaza Drive

Highlands Ranch CO 80129

TBOLY

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260B						
10335	Benzene	71-43-2	N.D.	ug/l 0.50	ug/l 1.0	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene	100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)	1330-20-7	N.D.	0.50	1.0	1
GC Volatiles ECY 97-602 NWTPH-Gx						
08273	NWTPH-Gx water C7-C12	n.a.	N.D.	ug/l 50	ug/l 250	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 06:10	Caitlin M Carmody	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 06:10	Caitlin M Carmody	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 13:22	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015 13:22	Brett W Kenyon	1

*=This limit was used in the evaluation of the final result

BP OLY

Data Review

OLYMPIA, WA

Semivolatiles and TPH

SDG # 1597468

Analyses Performed By:
Lancaster Laboratories
Lancaster, PA

Report # 24725R
Review Level: Tier II
Project: GP09BPNA.WA60.K000

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1597468 for samples collected in association with the BP OLY site. The review was conducted at a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	TPH	MET	TSS
DUP-9	8072191	Soil	08/17/15	AUS-SB-41(2-2.5)		X	X		

Note: Sample AUS-SB-41(2-2.5) is in SDG 1586402.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8270 (SIM) and ECY 97-602 . Data were reviewed in accordance with the USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines and as requested by USEPA Region 10:

- Concentration (C) Qualifiers
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - U The analyte was not detected at or above the reported result.
 - J The analyte was positively identified. The associated numerical result is an estimate.
 - UJ The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
 - R The data are unusable for all purposes.

 - N There is evidence the analyte is present in this sample.

 - JN There is evidence the analyte is present in this sample. The associated numerical result is an estimate.
 - D The sample result is reported from a diluted analysis.
 - EJ The sample result is greater than the calibration range. The associated numerical value is an estimated concentration only.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270 (SIM)	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
DUP-9	55 days	<14 days

Sample results associated with sample locations analyzed by analytical method SW-846 8270 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within the control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A site-specific MS/MSD was not included in the data package.

5. Laboratory Control Sample

The LCS/ analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
AUS-SB-41(2-2.5)/DUP-9	Benzo(a)Anthracene	0.0035	0.20	193.1%
	Benzo(a)Pyrene	0.0035	0.23	194 %
	Benzo(b)Fluoranthene	0.012	0.36	187.1%
	Benzo(k)Fluoranthene	0.0026	0.12	191.5%
	Chrysene	0.012	0.24	181%
	Dibenz(a,h)anthracene	0.0013 J	0.030	183.4%
	Indeno(1,2,3-cd)pyrene	0.0030	0.093	187.5%

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	1-Methylnaphthalene	0.024	0.018	28.6%
AUS-SB-41(2-2.5)/DUP-9	2-Methylnaphthalene	0.055	0.043	24.5%
	Naphthalene	0.087	0.060	36.7%

The compounds benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene associated with sample locations AUS-SB-41(2-2.5) and DUP-9 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270 (SIM)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field Duplicate (RPD)					
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

%R Percent recovery

RPD Relative percent difference

NWTPH-GX AND DX

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH – Gx and Dx ECY 97-602	Soil	14 days from collection to analysis	Cool to <6 °C

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
DUP-9	43 Days	<14 Days

Sample results associated with sample locations analyzed by analytical method ECY 97-602 DX with Silica Gel were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within the laboratory control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD was not included in the data package.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
AUS-SB-41(2-2.5)/DUP-9	Gx	27	6.4 J	AC
	DRO	28	7.9 J	AC
	HRO	82	43	AC

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR TPH

Gx/Dx; ECY 97-602	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Trip blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

%R - percent recovery, RPD - relative percent difference,

VALIDATION PERFORMED

BY: Rachelle Borne

SIGNATURE: 

DATE: December 7, 2015

PEER REVIEW: Joseph C. Houser

DATE: December 11, 2015

**CHAIN OF CUSTODY/
CORRECTED SAMPLE ANALYSIS DATA SHEETS**



13255 1586402 8015044-80 G:1597468 S:8072191 ^{8/11/15} _{10/11/15}
Laboratory Management Program LaMP Chain of Custody Record R224110 Page 1 of 4

BP Site Node Path: _____ Req Due Date (mm/dd/yy): Standard TAT Rush TAT: Yes No
 BP Facility No: Former Olympia Bulk Plant Lab Work Order Number: 175798

Lab Name: <u>Lancaster Laboratories</u>	Facility Address: <u>Forge 1117 West Bay Drive</u>	Consultant/Contractor: <u>ARCADIS</u>
Lab Address: <u>2425 New Holland Pike</u>	City, State, ZIP Code: <u>Olympia WA</u>	Consultant/Contractor Project No: <u>CP098NNA.WA60</u>
Lab PM: <u>Stacy Butt</u>	Lead Regulatory Agency: <u>WADOE</u>	Address: <u>1100 Olive Way, Suite 800</u>
Lab Phone: <u>717-656-2300</u>	California Global ID No.: <u>---</u>	Consultant/Contractor PM: <u>Brian Marcum</u>
Lab Shipping Acct: <u>---</u>	Enfos Proposal No: <u>---</u>	Phone: <u>206-726-4755</u> Email: <u>brian.marcum@arcadis-us.com</u>
Lab Bottle Order No: <u>175798</u>	Accounting Mode: Provision <input type="checkbox"/> OOC-BU <input type="checkbox"/> OOC-RM <input type="checkbox"/>	Email EDD To: <u>Brian Marcum</u> and to <u>lab_enfosdoc@bp.com</u>
Other Info:	Stage: _____ Activity: _____	Invoice To: BP <input type="checkbox"/> Contractor <input checked="" type="checkbox"/>

BP Project Manager (PM): _____				Matrix		No. Containers / Preservative								Requested Analyses								Report Type & QC Level				
BP PM Phone: _____				Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container:	Unpreserved	H2SO4	HNO3	HCl	Methanol	PAHs + Naph. by BZTC SD	GRO by NWTPH-Cx	PRO by NWTPH-Dx									Standard <input checked="" type="checkbox"/>	
BP PM Email: _____																									Full Data Package <input type="checkbox"/>	
Lab No.	Sample Description	Date	Time																					Comments		
	AUS-SB-41(2-2.5)*	08-17-15	1130	X				9	6					X	X	X									MS/MSD, Rush TAT (2 bags)	
	AUS-SB-52(2-2.5)		1200	X				3	2					X	X	X									Rush TAT (2-Dwg)	
	AUS-SB-62(2-2.5)		1215	X				3	2					X	X	X										
	AUS-SB-1A(2-2.5) ^(4.5-5)		1225																						*Enter DUP-9 with collection info for this sample per M. Perkins. SB-10/1/15	
	AUS-SB-2(2-2.5)		1235																							
	AUS-SB-3(2-2.5)		1245																							
	AUS-SB-5A(2-2.5) ^(4.5-5)		1255																							
	AUS-SB-6(2-2.5)		1305																							
	AUS-SB-7(2-2.5)		1320																							
	AUS-SB-8(2-2.5)	08-17-15	1340	X				3	2					X	X	X										

Sampler's Name:	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Eric GPR	SDE	8/7/15	1425			
ARCADIS		8/19/15	1700			
Shipment Method: UPS	Ship Date: 08-19-15			Y + G	ELLE	8-20-15
Shipment Tracking No: 1Z 75Y 02X YO 4232 8367						10cc

Special Instructions: Rush TAT form AUS-SB-41(2-2.5), AUS-SB-30(2-2.5) and AUS-SB-52(2-2.5)

THIS LINE - LAB USE ONLY: Custody Seals In Place Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 15-24 °F (C) | Trip Blank: Yes / No | MS/MSD Sample Submitted Yes / No

Sample Description: DUP-9 Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8072191
LL Group # 1597468
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 11:30 by EE

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

Submitted: 10/01/2015 14:38

Reported: 10/14/2015 12:26

DUP-9

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM						
10725	Benzo(a)anthracene	56-55-3	0.20 J	0.00078	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.23	0.00078	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.36	0.00078	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.12	0.00078	0.0019	1
10725	Chrysene	218-01-9	0.24	0.00039	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	0.030	0.00078	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.093	0.00078	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.018	0.00078	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.043	0.00078	0.0019	1
10725	Naphthalene	91-20-3	0.060	0.00078	0.0019	1
GC Volatiles ECY 97-602 NWTPH-Gx						
02005	NWTPH-GX Soil C7-C12	n.a.	6.4 J	1.4	7.0	29.48
The holding time was not met. The sample was submitted to the laboratory outside of the holding time.						
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
02214	DRO C12-C24 w/Si Gel	n.a.	7.9 J	3.5	8.2	1
02214	HRO C24-C40 w/Si Gel	n.a.	43	12	35	1
The holding time was not met. The client was notified and the data reported.						
Wet Chemistry SM 2540 G-1997						
00111	Moisture	n.a.	15.4	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C457
This sample was originally submitted to the laboratory on 08/20/15 at 10:00. We received authorization for further testing on 10/01/15.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15285SLE026	10/13/2015 23:22	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15285SLE026	10/13/2015 07:30	Joseph S Feister	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15279B34A	10/07/2015 19:49	Jeremy C Giffin	29.48

*=This limit was used in the evaluation of the final result

Sample Description: DUP-9 Soil
Former Olympia Bulk Plant COC: R224110
1117 West Bay Drive - Olympia, WA

LL Sample # SW 8072191
LL Group # 1597468
Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 11:30 by EE Atlantic Richfield c/o ARCADIS
Suite 600
Submitted: 10/01/2015 14:38 630 Plaza Drive
Reported: 10/14/2015 12:26 Highlands Ranch CO 80129

DUP-9

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201527439004	10/01/2015 20:31	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152750011A	10/06/2015 20:07	Christine E Dolman	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152750011A	10/03/2015 15:25	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15279820002B	10/06/2015 20:01	Scott W Freisher	1

*=This limit was used in the evaluation of the final result