



Additional Soil, Groundwater, and Sediment Sampling Report

Former Tosco Bainbridge Bulk
Plant 1784
Weaver Avenue and
Shepard Way Northwest
Bainbridge Island, Kitsap County,
Washington

PNEC Corporation d.b.a. SC Fuels





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A handwritten signature in black ink that reads "Emily Blakeway". The script is cursive and fluid.

Emily Blakeway

A handwritten signature in black ink that reads "Mike Noll". The signature is written in a cursive style with a long horizontal flourish at the end.

Mike Noll, LG, LHg



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1. Introduction

GHD Services, Inc. (GHD) is submitting this Additional Soil, Groundwater, and Sediment Sampling report on behalf of PNEC Corporation d.b.a SC Fuels to summarize the December 2018 Site investigation activities and results at the former Tosco Bainbridge Island Bulk Plant 1784, located at Weaver Avenue and Shepard Way Northwest, Bainbridge Island, Kitsap County, Washington (Site; Figure 1). Field activities were completed in accordance with the *Revised Proposal for Additional Soil, Groundwater, and Sediment Sampling* dated November 13, 2018. The assessment was used to further characterize historical soil and groundwater impacts at the Site and to assess current conditions of the beach sediment at the location of the on-Site detention pond discharge pipe. This scope of work was presented to the Washington State Department of Ecology (Ecology) in the *Work Plan for Additional Soil, Groundwater, and Sediment Sampling* prepared by Terracon Consultants, Inc. (Terracon) on May 1, 2018. Changes to the scope of work described in the Work Plan were subsequently identified in the *Opinion Pursuant to Washington Administrative Code (WAC) 173-340-515(5) on Remedial Action*, prepared by Ecology on August 2, 2018, and conversations between GHD and Mr. Mike Warfel of Ecology.

2. Site Description and Background

The Site is a former heating oil bulk petroleum storage facility located approximately 255 feet east of the intersection of Weaver Avenue and Shepard Way Northwest on Bainbridge Island, Kitsap County, Washington (Figure 1).

The 0.9-acre parcel (Kitsap County Parcel No. 272502-4-005-2001) is unpaved, and measures approximately 60 feet wide (east to west) and 990 feet long (Figure 1A). The surrounding properties are residential or undeveloped park property. Weaver Creek is located along a portion of the west side of the Site, and Eagle Harbor is located at the south end of the Site. A residential housing development (Leslie Landing) and associated private road (Bromley Place Northwest) and a City of Bainbridge Island walking path right-of-way (ROW) are located east of the Site. City of Bainbridge Island park property (Strawberry Plant Park) is located west of the Site. Shepard Way Northwest and residences are located north of the Site.

The facility was constructed by Union Oil Company of California (UNOCAL) in about 1970. Former Site features consisted of two 10,000-gallon and two 4,000-gallon horizontal above ground storage tanks (ASTs), a pumping station, an overhead loading rack, and a detention pond in the southern portion of the Site. A Site Plan showing the approximate locations of former Site features is included as Figure 2. Based on a review of historical aerial photographs, there does not appear to have been any product piping from Eagle Harbor to the facility. Copies of the historical aerial photographs were provided to Ecology in Terracon's document, *Response to Ecology July 25, 2017 Opinion Letter*, dated October 12, 2017. Tosco Corporation (Tosco) acquired the Site from UNOCAL in March 1997. PNEC purchased the Site from Tosco in June 1997 and removed the facility ASTs, pumping station, and overhead loading rack structures in September 1997.



Several previous Site assessment and remedial treatment activities have been conducted at the Site by Tosco and PNEC between 1997 and 2017, as described in detail in Terracon's *Site Remediation and Monitoring Summary Report*, dated November 18, 2016. Soil and groundwater impacts exceeding the Washington State Model Toxics Control Act (MTCA) Method A cleanup levels were detected.

Based on the Site history, contaminants of concern (COCs) were identified as gasoline-, diesel-, and oil-range total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); and polycyclic aromatic hydrocarbons (PAHs). Following extensive remedial activities at the Site, gasoline-range TPH (TPHg) and BTEX are no longer detected in the Site groundwater. Based on Site findings, current COCs at the Site are diesel- and oil-range TPH (TPHd and TPHo) and PAHs. Areas where remnant TPH impacts to soil were historically identified between 1999 and 2005 are shown on Figure 2.

3. Investigation Summary

3.1 Brush Clearing and Survey Activities

GHD contracted LandCare to clear brush at the proposed boring locations and along the west property line. LandCare completed the brush clearing on December 10, 2018. GHD contracted Statewide Land Surveying Inc. (Statewide) to survey and stake the west property line. Statewide completed the survey work on December 11, 2018.

3.2 Soil Sampling

Drilling Dates:	December 14 and December 21, 2018
Drilling Company:	Holocene Drilling Inc., Puyallup, Washington
Personnel:	Nathaniel Tandecki of GHD observed the advancement of soil borings and performed soil sampling activities under the supervision of GHD project manager Mike Noll.
Drilling Method:	Direct push
Boring Details:	Eighteen soil borings (GB-1 through GB-18) were advanced at the Site using a direct push drill rig. These boring locations were cleared of subsurface utilities by public and private utility locators. Soil boring GB-1 was advanced near the easternmost area where TPH exceedances in soil were historically identified by Secor in 2005 soil boring B-6 (near existing monitoring well MW-3). Soil borings GB-2 through GB-5 were advanced along the eastern extent of the remedial excavation completed by Noll Environmental in 2001 and near Secor 2005 boring B-2. Soil borings GB-6 and GB-7 were advanced at the northern extent of the 2001 remedial excavation, near existing monitoring well MW-1. Soil borings GB-8 through GB-12 were advanced along



the western extent of the 2001 and 2003 remedial excavations and Secor 2005 soil borings B-5 and B-7 (near existing monitoring well MW-2A). Soil borings GB-13 through GB-15 were advanced on the north, west, and south perimeter, respectively, of the on-Site detention pond. Soil borings GB-16 through GB-18 were advanced through the center of the 2001 remedial excavation fill material. Soil borings GB-1 through GB-15 were advanced to depths ranging from 11 to 15 feet bgs. Soil borings GB-10, GB-11, and GB-14 were advanced at an angle toward the west in order to collect soil data as close as possible to the west property line (see Appendix A Site Photos). Soil borings GB-16 through GB-18 were advanced to 5 feet bgs. Soil boring locations are presented on Figures 2 and 3.

Soil:	Soil encountered during drilling consisted of variable amounts of silt with gravel, silty sand, sand, and silty gravel to the maximum depth explored of 15 feet bgs. See the boring logs in Appendix B for more details.
Groundwater:	Groundwater was first encountered between 5 and 10 feet bgs in the soil borings. Static groundwater was measured between approximately 2 and 4 feet bgs in groundwater monitoring wells MW-1, MW-2A, MW-3, MW-4, and MW-5.

3.3 Groundwater Sampling from Temporary Wells

Sampling Dates:	December 14 and December 21, 2018
Personnel:	Nathaniel Tandecki of GHD performed groundwater sampling activities under the supervision of GHD project manager Mike Noll.
Well Details:	Temporary monitoring wells were installed in soil borings GB-10, GB-13, GB-14, and GB-15 (Figures 2 and 3). The temporary wells were constructed with a ¾-inch diameter polyvinyl chloride (PVC) casing and screened from 5 to 15 feet bgs. Measured depth to groundwater in the temporary wells installed in the soil borings ranged from 3 feet bgs (GB-14) to 7 feet bgs (GB-10). No groundwater sample was collected from temporary well GB-15, as the temporary well was dry after a period of approximately 24 hours.



3.4 Groundwater Sampling from Permanent Groundwater Monitoring Wells

Well Sampling Date: December 14, 2018

Personnel: Nathaniel Tandecki of GHD performed groundwater sampling activities under the supervision of GHD project manager Mike Noll.

Sample Details: The depth to water was measured in existing groundwater monitoring wells MW-1, MW-2A, MW-3, MW-4, and MW-5. Groundwater samples were collected from wells MW-2A, MW-4, and MW-5. Per the Ecology-approved Work Plan, a duplicate groundwater sample (MW-100) was collected from well MW-5. During sampling at well MW-5, the sample tubing slipped to the approximate bottom of the well while the sample bottles were being filled, and the sampler noted that the well purge water had a brown color. Measured depth to groundwater in the wells ranged from 2.05 feet below the top of the well casing (TOC) at well MW-3 to 3.75 feet below TOC at well MW-5. Based on measured depth to groundwater and well survey data, the inferred groundwater flow direction was mainly toward the south in December 2018. A groundwater contour map is included as Figure 4.

3.5 Sediment Sampling

Sediment Sample Date: December 14, 2018

Personnel: Mike Noll performed sediment sampling activities.

Sample Details: One sediment sample (SED-1) was collected from the beach at the identified location of the on-Site pond outfall discharge pipe (Figure 2; Appendix A).

3.6 Waste Disposal

Soil cores, purge water, and equipment decontamination water generated from drilling as investigation derived waste (IDW) were placed into two US Department of Transportation (DOT) approved 55-gallon metal drums, pending analysis and appropriate disposal. The drums were removed from the Site on January 16, 2019, by DH Environmental, Inc. and the IDW was properly disposed as non-hazardous waste at the Chemical Waste Management of the Northwest licensed disposal facility in Arlington, Oregon. A copy of the waste manifest is included in Appendix C.



4. Soil Sampling and Results

Soil borings GB-1 through GB-15 were advanced to assess current Site conditions in locations where historical extents of contamination were not previously delineated and/or impacts were left in place. Soil borings GB-16, GB-17, and GB-18 were advanced within the extents of the northern remedial excavation to assess whether the excavated material placed back into the upper few feet of the excavation in 2001 had residual concentrations of TPH above current MTCA Method A cleanup levels. Soil samples were collected for the purpose of soil classification and for field screening with a photo ionization detector (PID). PID readings ranged from 0.1 to 154 parts per million (ppm). Soil samples collected based on PID readings, intervals of most probable impacts, and/or changes in lithology were submitted for laboratory analyses. Soil samples collected from 4 feet bgs from borings GB-16, GB-17, and GB-18 were submitted for laboratory analyses. PID readings are included in the boring logs in Appendix B.

One or more soil sample was collected for chemical analysis from each boring at the depths noted in the following table.

Table 4.1 Soil Sampling Depths

Borehole ID	Sampling Depth Interval (feet bgs)	Borehole ID	Sampling Depth Interval (feet bgs)
GB-1	8 and 14.5	GB-10	7 and 12
GB-2	9 and 11	GB-11	9 and 14
GB-3	8 and 12	GB-12	9 and 14
GB-4	9 and 14	GB-13	9 and 12
GB-5	8 and 14	GB-14	7 and 12
GB-6	9 and 13	GB-15	7 and 12
GB-7	14	GB-16	4
GB-8	13	GB-17	4
GB-9	9 and 13	GB-18	4

A total of 31 soil samples were analyzed for TPHg by Northwest Method TPH-Gx, TPHd and TPHo by Northwest Method TPH-Dx, and BTEX by U.S. Environmental Protection Agency (EPA) Method 8260. In addition, the two samples with the highest PID detections (GB-2 at 9 feet bgs and GB-3 at 8 feet bgs) were analyzed for PAHs by EPA Method 8270 with Selected Ion Monitoring (SIM), volatile petroleum hydrocarbons (VPH) by Northwest Method VPH, and extractable petroleum hydrocarbons (EPH) by Northwest Method EPH.

TPHd was detected in soil samples collected at depths ranging from 4 to 14 feet bgs from the borings advanced along the eastern edge of the northern remedial excavation (GB-2 through GB-5), the western edge of the northern remedial exaction (GB-9 through GB-12), along the northern edge of the detention pond excavation (GB-13), and within the center of the northern remedial excavation (GB-17) at concentrations ranging from 41 to 2,300 milligrams per kilogram (mg/kg). The TPHd concentration of 2,300 mg/kg in the soil sample collected from boring GB-3 at 8 feet bgs was the only detection above the MTCA Method A cleanup level of 2,000 mg/kg.



Ethylbenzene (0.028 mg/kg) was detected in the soil sample collected from boring GB-2 at 9 feet bgs, and total xylenes (0.070 mg/kg and 0.021 mg/kg, respectively) were detected in the soil samples collected from borings GB-2 at 9 feet bgs and GB-3 at 12 feet bgs. TPHg, TPHo, benzene, and toluene were not detected in the soil samples analyzed at concentrations above their respective laboratory method reporting limits (MRLs).

Total naphthalenes (the total of naphthalene, 1-methyl naphthalene, and 2-methyl naphthalene) were detected in the soil samples collected from borings GB-2 and GB-3 at concentrations of 7.27 mg/kg (GB-2 at 9 feet bgs) and 5.35 mg/kg (GB-3 at 8 feet bgs), both of which are above the MTCA Method A cleanup level of 5 mg/kg (Table 1A). However, the concentrations of naphthalene (0.47 mg/kg), 1-methyl naphthalene (3.5 mg/kg), and 2-methyl naphthalene (3.3 mg/kg) in the soil sample collected from GB-2 at 9 feet bgs are below the MTCA Method B cleanup levels of 1,600 mg/kg, 34.5 mg/kg (carcinogenic cleanup level), and 320 mg/kg (Table 1B). In addition, the concentrations of naphthalene (0.35 mg/kg), 1-methyl naphthalene (1.3 mg/kg), and 2-methyl naphthalene (3.7 mg/kg) in the soil sample collected from GB-3 at 8 feet bgs are below the MTCA Method B cleanup levels.

Other PAHs detected in the soil samples collected from borings GB-2 at 9 feet bgs and GB-3 at 8 feet bgs included acenaphthene (0.28 and 0.31 mg/kg, respectively) and fluorene (0.97 and 1.0 mg/kg, respectively), below their respective MTCA Method B cleanup levels of 4,800 and 3,200 mg/kg. The remaining PAHs analyzed were not detected at concentrations above their respective laboratory MRLs.

Aliphatic and aromatic TPH in the C8 – C10 carbon range were detected in the soil samples collected from borings GB-2 at 9 feet bgs and GB-3 at 8 feet bgs at low concentrations (9 to 22 mg/kg) using the VPH method. Aliphatic and aromatic TPH in the C10 – C12, C12 – C16, C16 – C21, and C21 – C34 carbon ranges were detected in the soil samples collected from borings GB-2 at 9 feet bgs and GB-3 at 8 feet bgs at concentrations ranging from 11 to 1,000 mg/kg using the EPH method.

The BTEX, PAHs, VPH, and EPH results for the soil samples collected from boring GB-2 at 9 feet bgs and GB-3 at 8 feet bgs were utilized to calculate MTCA Method B TPH cleanup levels. The calculated protective TPH concentrations for the soil samples collected from borings GB-2 at 9 feet bgs and GB-3 at 8 feet bgs were 1,528.46 mg/kg and 2,424.83 mg/kg, respectively (Table 1B). The arithmetic mean of these two TPH concentrations is approximately equal to the MTCA Method A cleanup level of 2,000 mg/kg. Therefore, MTCA Method B was not utilized to establish a soil TPH cleanup level for the Site. The MTCA Method B calculation sheets are included in Appendix D.

Only one of the 31 soil samples collected and analyzed in December 2018 for TPHd had an exceedance of the MTCA Method A cleanup level. Therefore, a statistical approach was used to assess the current compliance of the Site soil with MTCA. The analytical results for the current (December 2018) Site soil conditions meet the criteria specified by MTCA, per WAC 173-340-740:

- no single sample concentration shall be greater than two times the soil cleanup level, and
- less than ten percent of the sample concentrations shall exceed the soil cleanup level.

Additionally, a 95% upper confidence level (UCL) was calculated for the TPHd concentrations detected at the Site using the EPA's ProUCL workbook. The results indicated that the 95% UCL for



TPHd at the Site was 646.6 mg/kg, which correlates to the statistical average TPHd concentration in soil at the Site. Since the average TPHd concentration in soil is well below the MTCA Method A cleanup level of 2,000 mg/kg, and the current analytical results meet the above-mentioned criteria specified in WAC 173-340-740, the Site soil is in compliance with MTCA cleanup standards. The ProUCL calculations and results are included in Appendix D.

The soil analytical data are summarized in Tables 1A and 1B. The laboratory reports are included in Appendix E.

5. Groundwater Sampling and Results

Groundwater samples were collected from temporary wells installed in soil borings GB-10, GB-13, and GB-14, and from existing groundwater monitoring wells MW-2A, MW-4, and MW-5. Groundwater samples were collected using a peristaltic pump and low flow sampling techniques, with the sample tubing inlet set approximately mid-screen in the wells. During sampling at well MW-5, the sample tubing unknowingly slipped such that the tubing inlet was at or near the bottom of the well screen. Although the sampler noticed that the sample being collected in the laboratory bottles was becoming brown, the sample was nonetheless submitted to the laboratory for analysis.

The groundwater samples were analyzed for TPHg by Northwest Method TPH-Gx, TPHd and TPHo by Northwest Method TPH-Dx, and VOCs by EPA Method 8260. In addition, the groundwater samples collected from the GB-10, GB-13, and GB-14 temporary wells were analyzed for PAHs by EPA Method 8270 SIM, VPH by Northwest Method VPH, n-hexane and methyl tert butyl ether (MTBE) by EPA Method 8260, and EPH by Northwest Method EPH. The groundwater sample and duplicate sample collected from well MW-5 were also analyzed for PAHs by EPA Method 8270 SIM and EPH by Northwest Method EPH.

Detected concentrations of TPHd in the temporary well samples installed in soil borings GB-10, GB-13, and GB-14 ranged from 770 to 9,400 micrograms per liter ($\mu\text{g/L}$), which exceed the MTCA Method A groundwater cleanup level of 500 $\mu\text{g/L}$ (protective of drinking water ingestion). The highest TPHd concentration (9,400 $\mu\text{g/L}$) was reported for the groundwater sample collected from the GB-10 temporary well, which was located downgradient of well MW-2A. Note that temporary wells installed in direct push soil borings are typically biased high, and these results should not be considered representative of stable aquifer conditions.

Detected concentrations of TPHd in the groundwater samples collected from wells MW-2A, MW-4, and MW-5 ranged from 730 to 4,400 $\mu\text{g/L}$, which exceed the MTCA Method A groundwater cleanup level protective of drinking water ingestion. The highest TPHd concentrations (4,400 $\mu\text{g/L}$ and 4,300 $\mu\text{g/L}$) were reported for the groundwater sample and duplicate sample collected from well MW-5. As previously noted, the samples collected from well MW-5 had a brown color due to the sample tubing inlet slipping to the approximate bottom of the well, where organic matter has apparently settled over the years. This sample result should be considered anomalous, as evidenced by the historical TPHd results as shown in Table 2A and in Graph 2. Note that Ecology sampled well MW-5 in March 2019 as part of a screening process for selecting sites to study regarding the impacts of weathered diesel on freshwater and marine water organisms. The Ecology



TPHd detection in their MW-5 water sample (590 µg/L) approximates the results for samples collected from well MW-5 over the past 10 years (see Graph 2).

TPHg (550 µg/L) was detected in the groundwater sample collected from the GB-13 temporary well at a concentration below the MTCA Method A cleanup level (1,000 µg/L). Toluene (2.2 µg/L) was detected in the groundwater sample collected from the GB-14 temporary well at a concentration below the MTCA Method A cleanup level (1,000 µg/L). N-hexane (1.6 µg/L) was detected in the groundwater sample collected from the GB-10 temporary well at a concentration below the MTCA Method B cleanup level (480 µg/L). TPHo, BTEX, and other VOCs were not detected at concentrations above their respective laboratory MRLs in the remaining samples analyzed.

Total naphthalenes (the total of naphthalene, 1-methyl naphthalene, and 2-methyl naphthalene) were detected in the groundwater samples collected from the GB-10 and GB-13 temporary wells, well MW-5, and the MW-5 duplicate sample at concentrations ranging from 0.025 µg/L to 30.3 µg/L, below the MTCA Method A cleanup level of 160 µg/L (Table 2B).

Other PAHs detected in the groundwater samples collected from the GB-13 temporary, MW-5, and the MW-5 duplicate sample included acenaphthene (0.13 µg/L to 0.19 µg/L) and fluorene (0.12 µg/L to 1.6 µg/L), below their respective MTCA Method B cleanup levels of 960 µg/L and 640 µg/L. Other PAHs were not detected at concentrations above their respective laboratory MRLs in the samples analyzed.

TPH carbon ranges were not detected in the groundwater samples collected from the GB-10, GB-13, and GB-14 temporary wells using the VPH method. Aliphatic and aromatic TPH in the C10 – C12, C12 – C16, C16 – C21, and/or C21 – C34 carbon ranges were detected in the groundwater samples collected from the GB-10, GB-13, and GB-14 temporary wells at concentrations ranging from 59 to 2,400 µg/L using the EPH method. Aliphatic TPH in the C16 – C21 carbon range were detected in the groundwater sample and duplicate sample collected from well MW-5 at concentrations of 76 and 75 µg/L, respectively, using the EPH method.

The groundwater analytical data are summarized in Tables 2A and 2B. The laboratory analytical reports are included in Appendix E.

The BTEX, VOCs, PAHs, and EPH results for the groundwater samples collected from the GB-10 and GB-13 temporary wells, and the MW-5 duplicate sample, were utilized to calculate MTCA Method B TPH cleanup levels. The calculated TPH cleanup levels ranged from 327 µg/L for the GB-13 sample to 1,681 µg/L for the GB-10 sample. The median value of 567.66 µg/L from the MW-100 (MW-5 duplicate) sample is the MTCA Method B cleanup level protective of drinking water ingestion based on the December 2018 sampling results. The MTCA Method B calculation sheets are included in Appendix D.

Based on the measured depth to groundwater and the well TOC elevation data relative to the North American Vertical Datum of 1988 (NAVD88), the groundwater elevation at the Site ranges from about 7 to 15 feet above mean sea level. Given the shallow depth to groundwater and proximity of the Site to Eagle Harbor, the shallow groundwater at the Site is not a viable source of drinking water due to the potential risk of salt water intrusion. Therefore, the site groundwater should be evaluated based on surface water cleanup standards rather than drinking water cleanup standards.



Ecology has recently completed an as yet unpublished study of the effects of weathered diesel on freshwater and marine water organisms. This Site was considered by Ecology as part of the study, and Ecology sampled wells MW-1 and MW-5 on March 18, 2019. Lab results for TPHd analyses from the wells was supplied by Ecology, and are included in Table 2A. A copy of the lab results is included in Appendix E. TPHd concentrations in groundwater samples collected by Ecology from wells MW-1 and MW-5 were 340 µg/L and 590 µg/L, respectfully. The sample collected from MW-5 also reportedly contained TPHo at a concentration of 410 µg/L. The TPHd concentration reported by Ecology for the MW-5 sample is also included in Graph 2.

Although Ecology did not include this Site in their study of weathered diesel, an Ecology presentation in October 2019 included a slide showing preliminary protective values of weathered diesel for the freshwater and marine water organisms selected for their study. A copy of the presentation slide is included in Appendix F. The preliminary protective value for weathered diesel in the marine water environment is 1,200 µg/L. Based on the weathered diesel concentrations detected in the Site groundwater monitoring wells located closest to Eagle Harbor (MW-2A, MW-4, and MW-5), groundwater with residual weathered diesel that is migrating toward the marine waters of Eagle Harbor does not pose a threat to the environment. Graph 1 and Graph 2 show the TPHd detections in the MW-2A and MW-5 groundwater samples collected over the past 4 years relative to the preliminary protective value for weathered diesel in the marine water environment (1,200 µg/L). With the exception of the December 2018 result for the MW-5 sample (caused by a sample tubing issue), both wells have been below the target cleanup level.

6. Sediment Sampling and Results

Sediment sample SED-1 was collected from beach deposits at the approximate termination of the on-Site detention pond discharge pipe. The sediment sample was collected to assess whether historical stormwater runoff from the detention pond may have impacted the beach sediments. A clean stainless steel trowel was used to collect the sediment sample at a depth of 1 to 3 inches below the loose sediment surface, where denser glacial deposits were encountered. Sample SED-1 was analyzed for TPHg by Northwest Method TPH-Gx, TPHd and TPHo by Northwest Method TPH-Dx, BTEX by EPA Method 8260, and PAHs by EPA Method 8270 SIM.

Concentrations of TPHd, TPHo, TPHg, BTEX, and PAHs were not detected above the laboratory MRLs. The sediment analytical data are summarized in Tables 1A and 1B. Analytical reports are included in Appendix E.

7. Summary and Conclusions

On December 14 and 21, 2018, GHD advanced 18 soil borings (GB-1 through GB-18), collected groundwater samples from temporary wells installed in three of the borings (GB-10, GB-13, and GB-14), collected groundwater samples from three existing monitoring wells (MW-2A, MW-4, and MW-5), and collected one sediment sample (SED-1) from the beach at the Site. The soil borings were advanced to a maximum depth of 15 feet bgs to assess current Site conditions in locations where historical extents of contamination were not previously delineated and/or impacts were left



in-place. One to two soil samples were collected from each soil boring and submitted for laboratory analysis.

SEDIMENT: The sediment sample collected from beach sediments at the approximate termination of the on-Site detention pond discharge pipe at a depth of approximately 1 to 3 inches bgs was analyzed for TPHg, TPHd, TPHo, BTEX, and PAHs. All results were below the laboratory MRLs. Therefore, sediments at the most likely location of impacts at the Site meet MTCA cleanup requirements.

SOIL: TPHd was detected in the soil sample collected at 8 feet bgs from boring GB-3, which was advanced along the eastern edge of the northern (2001) remedial excavation, at a concentration above the MTCA Method A cleanup level, but less than two times the MTCA Method A cleanup level. Based on a statistical analysis of the 31 soil samples collected from the Site in December 2018, only one of which exceeded the MTCA Method A cleanup level, the Site soil meets the MTCA cleanup standard as it relates to TPHd.

Total naphthalenes (the total of naphthalene, 1-methyl naphthalene, and 2-methyl naphthalene) were detected in the soil samples collected at 9 and 8 feet bgs, respectively, from borings GB-2 and GB-3, both advanced along the eastern boundary of the northern remedial excavation, at concentrations above the MTCA Method A cleanup level. However, the individual naphthalene, 1-methyl naphthalene, and 2-methyl naphthalene concentrations detected in the two samples were below their respective MTCA Method B cleanup levels. Therefore, the naphthalene, 1-methyl naphthalene, and 2-methyl naphthalene concentrations detected in the Site soil meet the MTCA cleanup standard.

Concentrations of the remaining analyzed compounds were either not detected above their respective laboratory MRLs, or were detected at concentrations below their respective MTCA Method A or MTCA Method B cleanup levels. Based on the December 2018 soil sample results, soil at the Site meets MTCA cleanup requirements.

GROUNDWATER: Four of the soil borings (GB-10, GB-13, GB-14, and GB-15) were completed with temporary groundwater wells, three of which produced water (GB-10, GB-13, and GB-14). Groundwater samples collected from these three temporary groundwater monitoring wells, along with samples collected from three of the existing groundwater monitoring wells (MW-2A, MW-4, and MW-5), were submitted for analysis. Concentrations of TPHd above the MTCA Method A cleanup level protective of drinking water ingestion were detected in the 6 samples analyzed. However, groundwater at the Site is located less than 15 feet above mean sea level, and the Site adjoins the marine waters of Eagle Harbor. In addition, the Site has not operated or been used to store or transfer fuel or other potential contaminants for over 20 years (since March 1997). Therefore, any remnant diesel product in the Site groundwater is highly weathered, as indicated by the contract laboratory and the EPH sample results.

Given the Site's location relative to a marine water body, the groundwater migration direction toward Eagle Harbor, and the weathered condition of the remnant diesel-range TPH, this Site should be evaluated based on potential impacts to marine water organisms from groundwater with remnant weathered diesel migrating to Eagle Harbor. Weathered TPHd concentrations detected in groundwater samples collected from downgradient wells MW-2A, MW-4, and MW-5 have

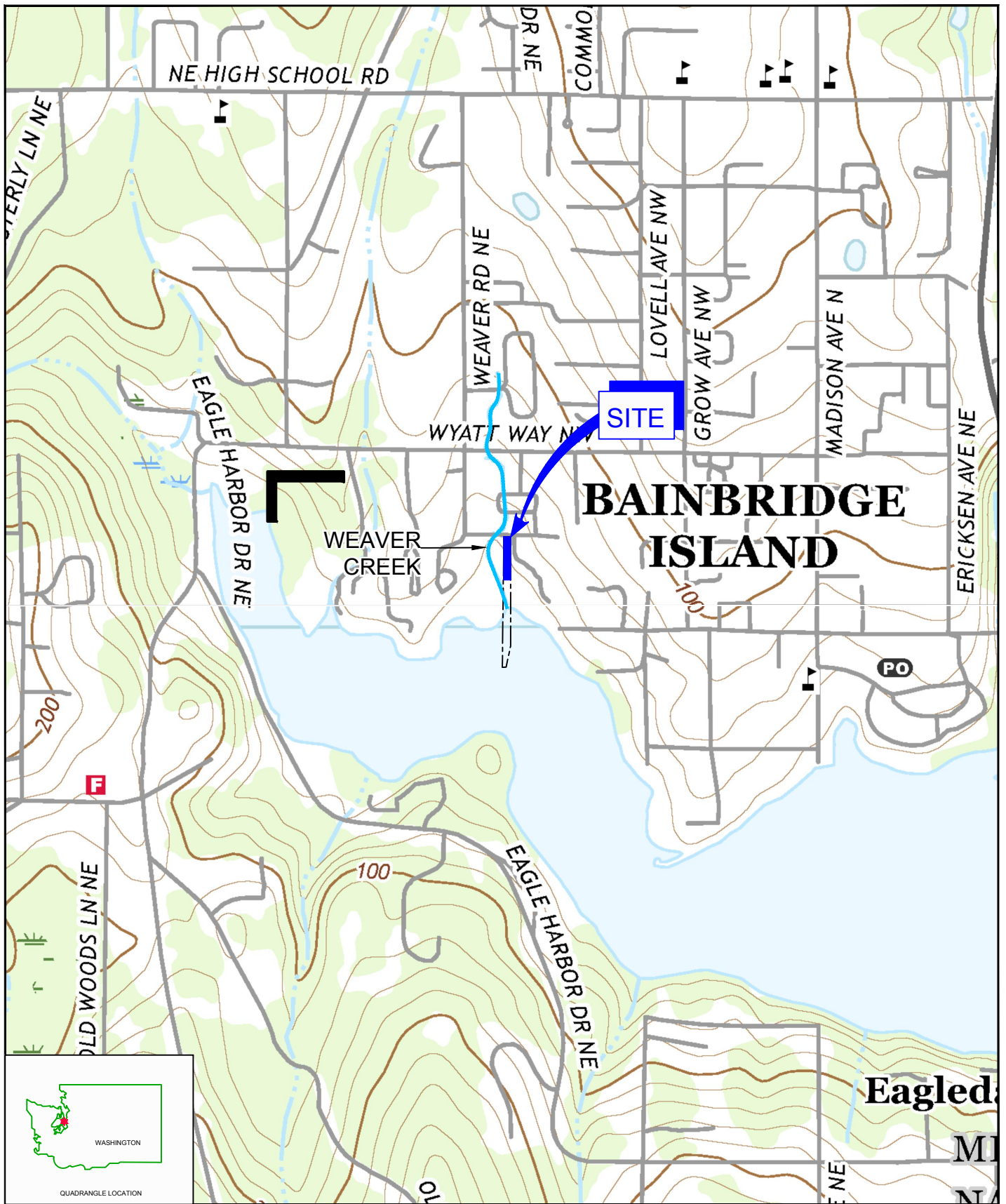


consistently been below the preliminary protective value of 1,200 µg/L for marine organisms, as presented by Ecology based on an unpublished study. Based on these results, the groundwater to surface water pathway does not appear to represent a risk to the environment.

Given the current (December 2018) Site conditions as described in this report, GHD, on behalf of PNEC Corporation d.b.a SC Fuels, is requesting an Ecology opinion of no further cleanup action required for this Site.

If you have any questions regarding the contents of this document, please contact Emily Blakeway or Mike Noll at (425) 563-6500.

Figures



Source: USGS Quadrangle Map, Suquamish and Bremerton East, WA 2017.

0 500 1000ft

Coordinate System:
Washington State
Plane North
WA83-NF



LEGEND



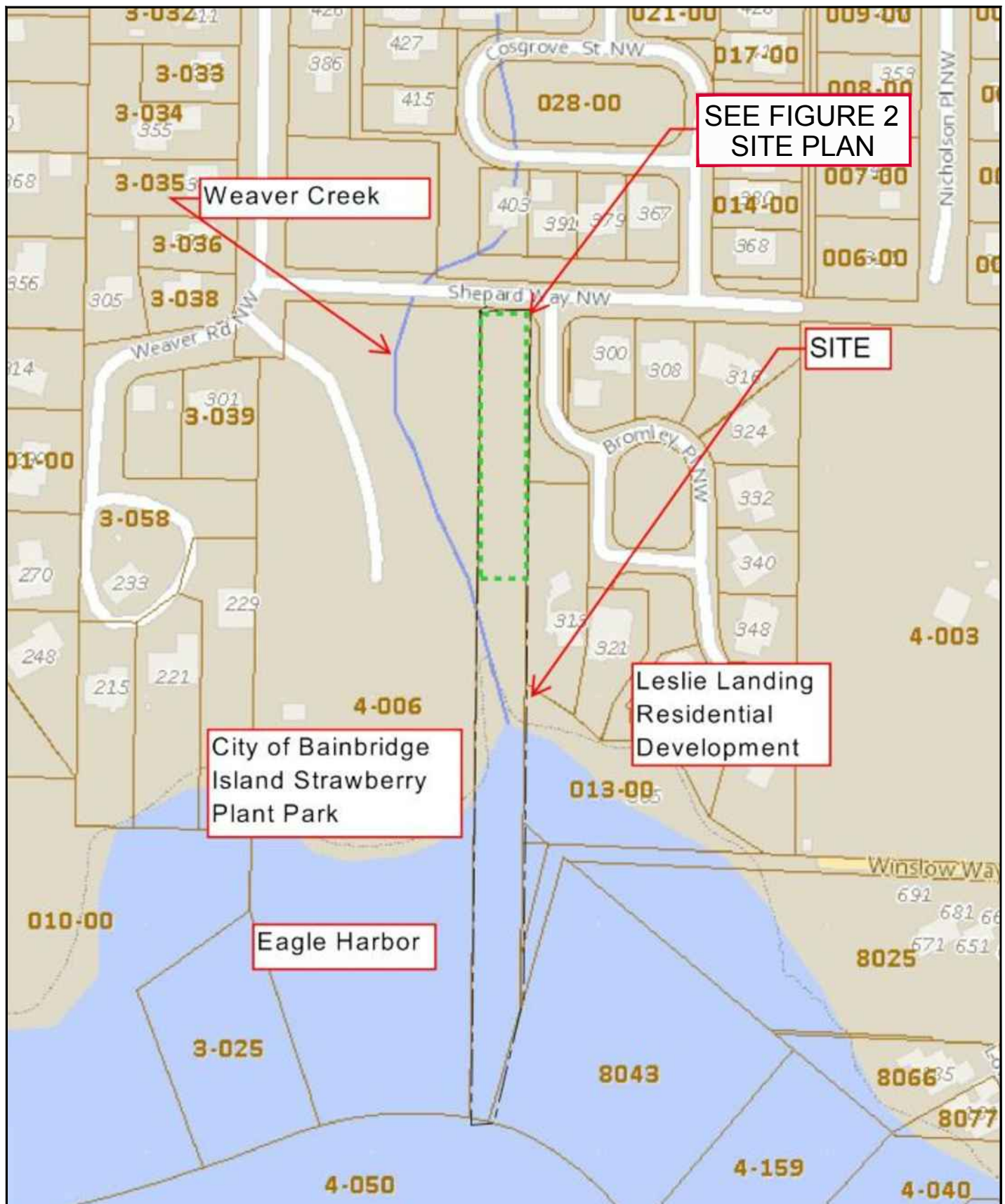
FORMER TOSCO BULK PLANT 1784
WEAVER AVENUE AND SHEPARD WAY NW
BAINBRIDGE ISLAND, WASHINGTON

11187604-18.01

Jan 7, 2019

VICINTY MAP

FIGURE 1



Source: Terracon Consulting Engineers and Scientists Parcel Map Aug 2017.

0 80 160ft

Coordinate System:
Washington State
Plane North
WA83-NF



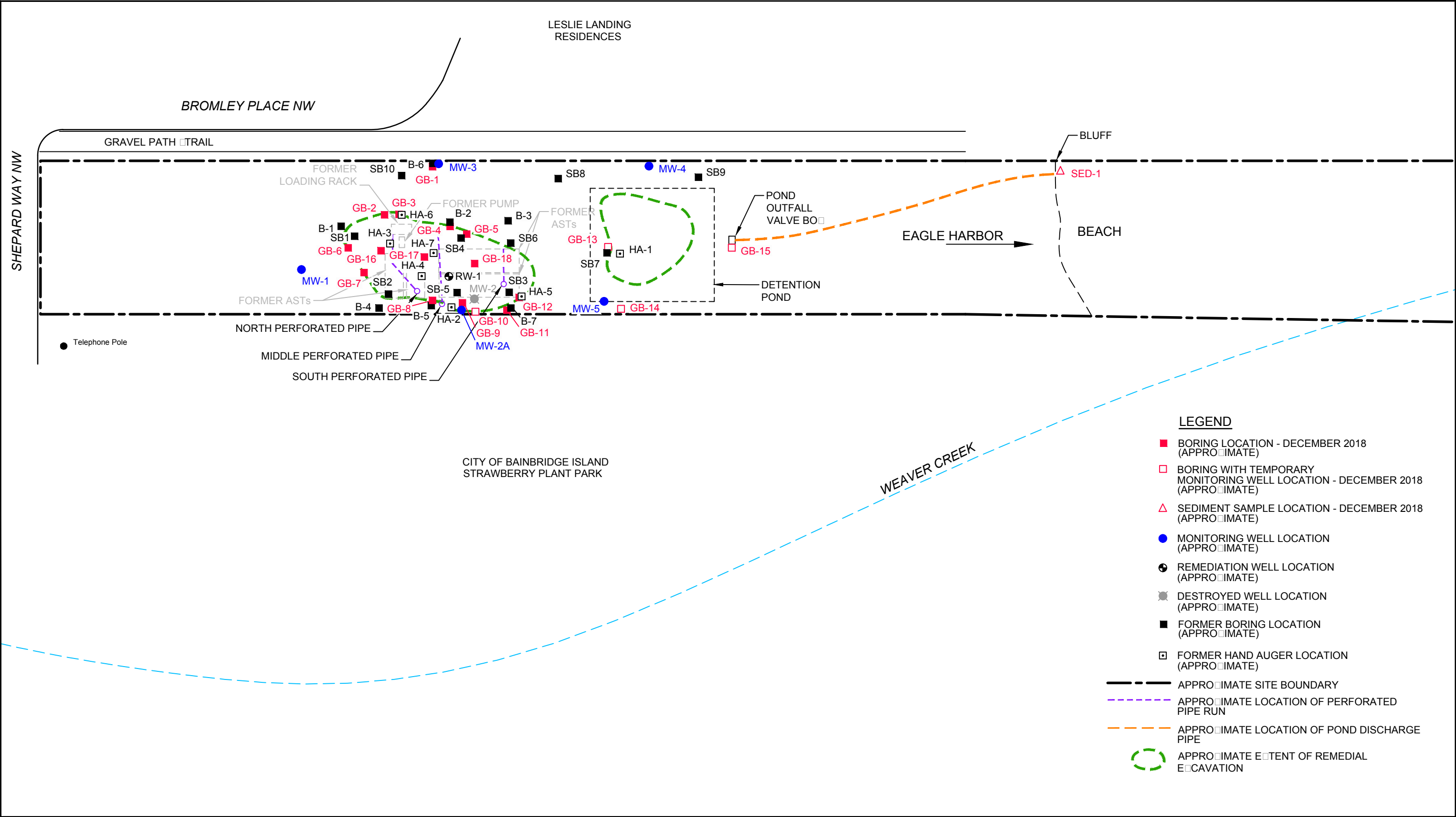
FORMER TOSCO BULK PLANT 1784
WEAVER AVENUE AND SHEPARD WAY NW
BAINBRIDGE ISLAND, WASHINGTON

11187604-18.01

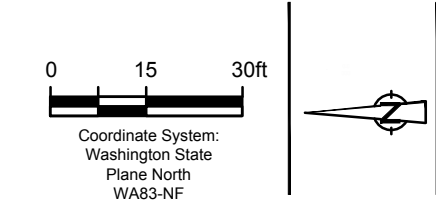
Aug 13, 2019

PARCEL MAP

FIGURE 1A



Source: Terracon Consulting Engineers and Scientists Site Diagram dated Sept 2017.



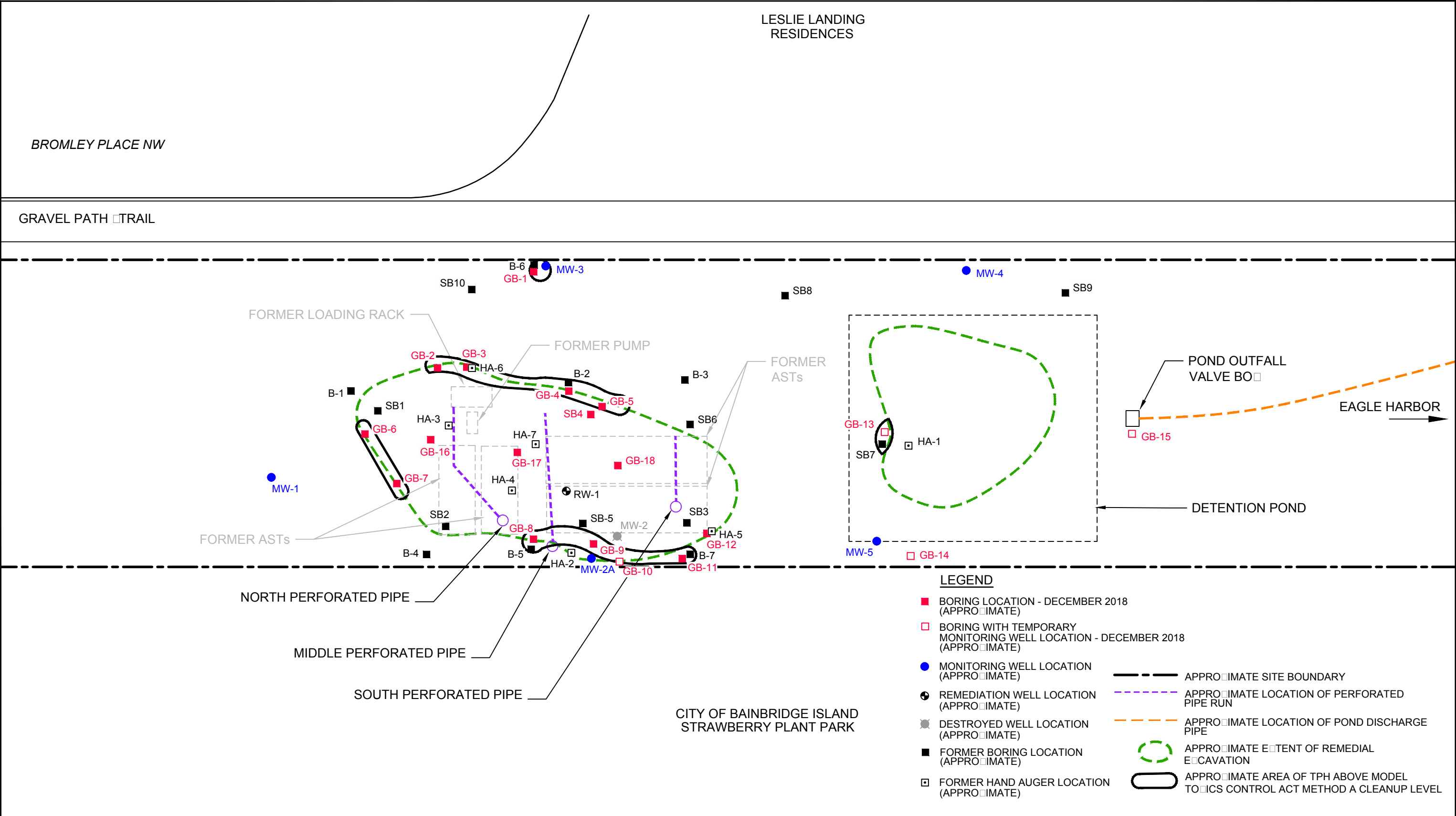
FORMER TOSCO BULK PLANT 1784
WEAVER AVENUE AND SHEPARD WAY NW
BAINBRIDGE ISLAND, KITSAP COUNTY, WASHINGTON

SITE PLAN

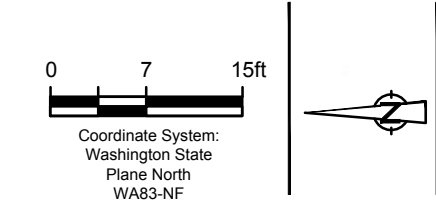
11187604-18.01

Sep 26, 2019

FIGURE 2



Source: Terracon Consulting Engineers and Scientists Site Diagram dated Sept 2017 and Proposed Boring Location Map dated Jan 2018.



FORMER TOSCO BULK PLANT 1784
WEAVER AVENUE AND SHEPARD WAY NW
BAINBRIDGE ISLAND, KITSAP COUNTY, WASHINGTON

DETAILED SITE PLAN

11187604-18.01
Sep 26, 2019

FIGURE 3

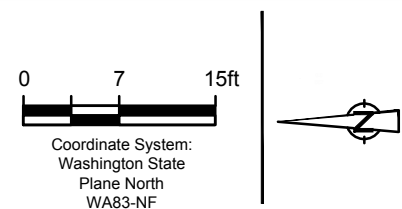
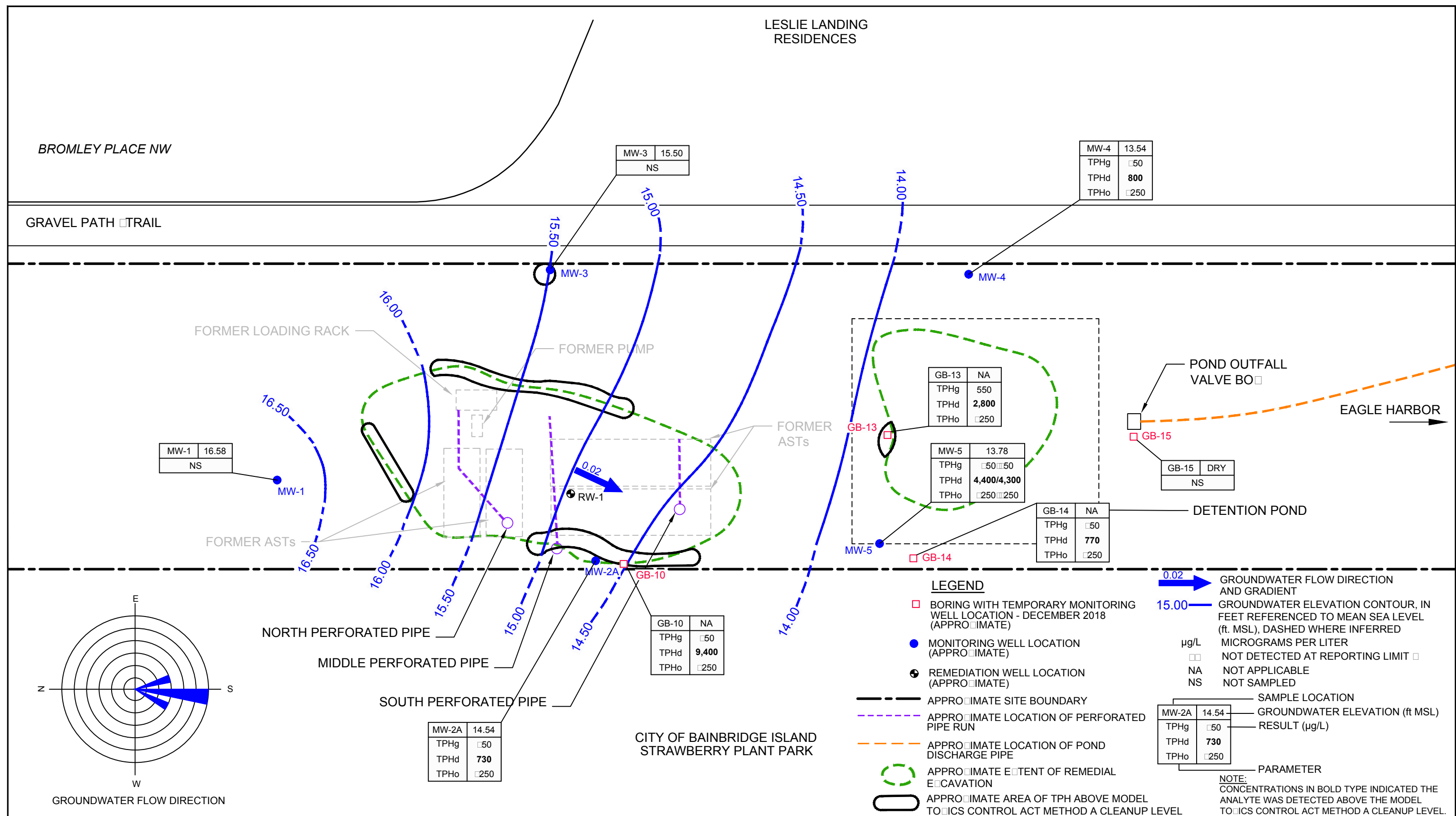


FIGURE 4

Tables

Table 1A

Summary of Hydrocarbon and VOC Soil Analytical Data
Former Tosco Bainbridge Island Bulk Plant 1784
Weaver Avenue and Shepard Way Northwest
Bainbridge Island, Washington

Boring ID/Monitoring Well ID/Sample Location	Sample ID	Sample Date	Sample Depth	Soil Sample Removed/In- place	Hydrocarbons			VOCs ¹			
					TPHg	TPHd	TPHo	Benzene	Toluene	Ethylbenzene	Total Xylenes
					100	2,000	2,000	0.03	7	6	9
					(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
MTCA Method A Cleanup Level											
GHD Subsurface Investigation - December 2018											
GB-1	S.11187604.121418.MN.GB.1.8'	12/14/18	8	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
	S.11187604.121418.MN.GB.1.14.5'	12/14/18	14.5	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
GB-2	S.11187604.121418.MN.GB.2.9'	12/14/18	9	In-Place	<60	1,400 ²	<50	<0.005	<0.010	0.028	0.070
	S.11187604.121418.MN.GB.2.11'	12/14/18	11	In-Place	<3.0	860 ²	<50	<0.005	<0.010	<0.010	<0.020
GB-3	S.11187604.121418.MN.GB.3.8'	12/14/18	8	In-Place	<30	2,300 ²	<100	<0.005	<0.010	<0.010	<0.020
	S.11187604.121418.MN.GB.3.12'	12/14/18	12	In-Place	<30	2,000 ²	<100	<0.005	<0.010	<0.010	0.021
GB-4	S.11187604.121418.MN.GB.4.9'	12/14/18	9	In-Place	<30	1,200 ²	<100	<0.005	<0.010	<0.010	<0.020
	S.11187604.121418.MN.GB.4.14'	12/14/18	14	In-Place	<3.0	840 ²	<100	<0.005	<0.010	<0.010	<0.020
GB-5	S.11187604.121418.MN.GB.5.8'	12/14/18	8	In-Place	<3.0	160 ²	<50	<0.005	<0.010	<0.010	<0.020
	S.11187604.121418.MN.GB.5.14'	12/14/18	14	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
GB-6	S.11187604.122118.MN.GB.6.9'	12/21/18	9	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
	S.11187604.122118.MN.GB.6.13'	12/21/18	13	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
GB-7	S.11187604.122118.MN.GB.7.14'	12/21/18	14	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
GB-8	S.11187604.122118.MN.GB.8.13'	12/21/18	13	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
GB-9	S.11187604.122118.MN.GB.9.9'	12/21/18	9	In-Place	<3.0	73	<50	<0.005	<0.010	<0.010	<0.020
	S.11187604.122118.MN.GB.9.13'	12/21/18	13	In-Place	<3.0	41	<50	<0.005	<0.010	<0.010	<0.020
GB-10	S.11187604.121418.MN.GB.10.7'	12/14/18	7	In-Place	<3.0	220 ²	<50	<0.005	<0.010	<0.010	<0.020
	S.11187604.121418.MN.GB.10.12'	12/14/18	12	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
GB-11	S.11187604.122118.MN.GB.11.9'	12/21/18	9	In-Place	<3.0	380	<50	<0.005	<0.010	<0.010	<0.020
	S.11187604.122118.MN.GB.11.14'	12/21/18	14	In-Place	<3.0	400	<50	<0.005	<0.010	<0.010	<0.020
GB-12	S.11187604.122118.MN.GB.12.8'	12/21/18	8	In-Place	<3.0	100	<50	<0.005	<0.010	<0.010	<0.020
	S.11187604.122118.MN.GB.12.12'	12/21/18	12	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
GB-13	S.11187604.121418.MN.GB.13.9'	12/14/18	9	In-Place	<3.0	190 ²	<50	<0.005	<0.010	<0.010	<0.020
	S.11187604.121418.MN.GB.13.12'	12/14/18	12	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
GB-14	S.11187604.121418.MN.GB.14.7'	12/14/18	7	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
	S.11187604.121418.MN.GB.14.12'	12/14/18	12	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
GB-15	S.11187604.121418.MN.GB.15.7'	12/14/18	7	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
	S.11187604.121418.MN.GB.15.12'	12/14/18	12	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
GB-16	S.11187604.122118.MN.GB.16.4'	12/21/18	4	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
GB-17	S.11187604.122118.MN.GB.17.4'	12/21/18	4	In-Place	<3.0	71	<50	<0.005	<0.010	<0.010	<0.020
GB-18	S.11187604.122118.MN.GB.18.4'	12/21/18	4	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
SED-1	S.11187604.121418.MN.SED-1	12/14/18		In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020
SECOR Subsurface Investigation - May 2005											
B-1	B1-8'	2/16/2005	8	In-Place	<4	<24.2	<48.3	<0.04	<0.04	<0.04	<0.04
B-2	B2-8'	2/16/2005	8	In-Place	619	1,220 ²	<52.6	<0.19	<0.19	<0.19	<0.19
B-3	B3-8'	2/16/2005	8	In-Place	11.9	<24.8	<49.5	<0.0364	<0.0364	<0.0364	<0.0364

Table 1A

Summary of Hydrocarbon and VOC Soil Analytical Data Former Tosco Bainbridge Island Bulk Plant 1784 Weaver Avenue and Shepard Way Northwest Bainbridge Island, Washington											
Boring ID/Monitoring Well ID/Sample Location	Sample ID	Sample Date	Sample Depth	Soil Sample Removed/In- place	Hydrocarbons			VOCs ¹			
					TPHg	TPHd	TPHo	Benzene	Toluene	Ethylbenzene	Total Xylenes
					100	2,000	2,000	0.03	7	6	9
			ft bgs	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
SECOR Subsurface Investigation - May 2005											
B-4	B4-8'	2/16/2005	8	In-Place	5.27	<24.7	<49.3	<0.0363	<0.0363	<0.0363	<0.0363
B-5	B5-8'	2/16/2005	8	In-Place	355	3,300 ²	54.8	<0.204	<0.204	<0.204	<0.204
B-6	B6-8'	2/16/2005	8	In-Place	121	<22.6	<45.3	<0.179	<0.179	<0.179	<0.179
B-7	B7-8'	2/16/2005	7	In-Place	291	1,830 ²	<48.6	<0.167	<0.167	<0.167	<0.167
Recovery Well and MW-2 replacement Well Installation - March 2003											
MW-2A	MW2A-10'	3/19/2003	10	In-Place	79.3	891	<25	<0.12	<0.2	<0.2	0.415
	MW-2A-12.5'	3/19/2003	12.5	In-Place	<5	28.5	<25	<0.03	<0.05	<0.05	<0.1
	MW-2A-15'	3/19/2003	15	In-Place	<5	18.1	<25	<0.03	<0.05	<0.05	<0.1
RW-1	RW1-10'	3/19/2003	10	In-Place	53.0	1,050	<25	<0.06	<0.1	<0.1	0.270
	RW1-12.5'	3/19/2003	12.5	In-Place	<5	13.6	<25	<0.03	<0.05	<0.05	<0.1
	RW1-15'	3/19/2003	15	In-Place	<5	<10	<25	<0.03	<0.05	<0.05	<0.1
Former Tank Excavation at MW-2 - March 2003											
MW-2 Excavation/ Former Tank Excavation	WWALL-4	3/7/2003	4	In-Place	<20	567	<25	<0.03	<0.5	<0.5	<0.1
	WWALL-7	3/7/2003	7	In-Place	367	6,550	<250	<0.03	<0.5	<0.5	1.81
	WWALL-8	3/7/2003	8	In-Place	107	1,240	<25	<0.06	<0.1	0.145	0.411
Monitoring Well Installation - June 2001											
MW-1	MW1-5	6/27/2001	5	In-Place	<20	<50	<100	--	--	--	--
	MW1-10	6/27/2001	10	In-Place	<20	<50	<100	--	--	--	--
MW-2	MW2-5	6/27/2001	5	Removed	<5	24.4	<25	<0.05	<0.05	<0.05	<0.1
	MW2-10	6/27/2001	10	Removed	186	900	<25	<0.05	<0.05	0.179	0.461
	MW2-15	6/27/2001	15	In-Place	75.9	477	<25	<0.05	<0.05	0.0604	0.179
MW-3	MW3-5	6/27/2001	5	In-Place	<20	<50	<100	--	--	--	--
	MW3-10	6/27/2001	10	In-Place	<20	<50	<100	--	--	--	--
MW-4	MW4-5	6/27/2001	5	In-Place	<20	<50	<100	--	--	--	--
	MW4-10	6/27/2001	10	In-Place	<20	<50	<100	--	--	--	--
MW-5	MW5-5	6/27/2001	5	In-Place	<20	<50	<100	--	--	--	--
	MW5-10	6/27/2001	10	In-Place	<20	<50	<100	--	--	--	--
Retention Pond and Former AST Excavation Sampling - June 2001											
North Trench	N-Trench-E-11'	6/13/2001	11	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1
South Trench	S-Trench-E-10'	6/13/2001	10	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1
East Wall	EWALL-N-5'	6/13/2001	5	In-Place	715	2,530	<275	<0.05	<0.05	<0.05	1.17
	EWALL-MID-10'	6/13/2001	10	In-Place	183	804	<75	<0.2	<0.2	<0.2	<0.4
	EWALL-S-8'	6/13/2001	8	In-Place	122	586	<25	<0.5	<0.5	<0.5	<1
North Wall	NWALL-E-6'	6/13/2001	6	In-Place	183	655	<75	<0.2	<0.2	<0.2	<0.4
	NWALL-W-7'	6/13/2001	7	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1

Table 1A

Summary of Hydrocarbon and VOC Soil Analytical Data
Former Tosco Bainbridge Island Bulk Plant 1784
Weaver Avenue and Shepard Way Northwest
Bainbridge Island, Washington

Boring ID/Monitoring Well ID/Sample Location	Sample ID				Hydrocarbons			VOCs ¹			
		Sample Date	Sample Depth	Soil Sample Removed/In- place	TPHg	TPHd	TPHo	Benzene	Toluene	Ethylbenzene	Total Xylenes
MTCA Method A Cleanup Level					100	2,000	2,000	0.03	7	6	9
		ft bgs	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Retention Pond and Former AST Excavation Sampling - June 2001											
West Wall	WWALL-N-7'	6/13/2001	7	In-Place	295	984	<275	ND	ND	ND	ND
	WWALL-MID-10'	6/13/2001	10	In-Place	264	1,330	<275	<0.05	<0.5	<0.5	<1
	WWALL-S-9'	6/13/2001	9	In-Place	179	723	<25	<0.05	<0.5	<0.5	<1
South Wall	WWALL-PIPES-8'	6/13/2001	8	In-Place	302	1,660	<275	<0.05	<0.5	<0.5	<1
	SWALL-8'	6/13/2001	8	In-Place	7.55	40.30	<25	<0.05	<0.05	<0.05	<0.1
Mid-Trench	Mid-Trench-E-12'	6/12/2001	12	In-Place	14.9	57.2	<25	<0.05	<0.05	<0.05	<0.1
	Mid-Trench-W-12'	6/12/2001	12	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1
Pondsed	Pondsed-1-6'	6/27/2000	6	In-Place	<5	353	<275	<0.05	<0.05	<0.05	<0.1
	Pondsed-2-6'	6/27/2000	6	In-Place	<5	29.5	40.8	<0.05	<0.05	<0.05	<0.1
	Pondsed-3-6'	6/27/2000	6	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1
	Pondsed-4-6'	6/27/2000	6	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1
Additionally Site Assessment - December 1999											
SB1	SB1-4	12/3/1999	4	Removed	<5	<10	<25	<0.05	<0.05	<0.05	<0.1
	SB1-6	12/3/1999	6	Removed	--	--	--	--	--	--	--
SB2	SB2-4	12/3/1999	4	Removed	--	--	--	--	--	--	--
	SB2-7	12/3/1999	7	Removed	<5	<10	<25	<0.05	<0.05	<0.05	<0.1
SB3	SB3-3	12/3/1999	3	Removed	681	4,410	<50	<1	<1	<1	<44
	SB3-6	12/3/1999	6	Removed	779	2,790	<30	<1	<1	<1	<2
SB4	SB4-7	12/3/1999	7	Removed	777	1,410	<25	<1	<1	<1	<2
SB5	SB5-4	12/3/1999	4	Removed	ND	ND	<25	<0.05	<0.05	<0.05	<0.1
	SB5-7	12/3/1999	7	Removed	223	1,110	<25	<0.5	<0.5	<0.5	<1
SB6	SB6-4	12/3/1999	4	In-Place	41.2	138	<25	<0.05	<0.05	<0.05	<0.1
	SB6-6	12/3/1999	6	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1
SB7	SB7-3	12/3/1999	3	In-Place	<5	14.4	<25	<0.05	<0.05	<0.05	<0.1
	SB7-6	12/3/1999	6	In-Place	189	182	<25	<0.2	<0.2	<0.2	<0.4
SB8	SB8-7	12/3/1999	7	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1
SB9	SB9-7	12/3/1999	7	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1
SB10	SB10-7	12/3/1999	7	In-Place	50.7	360	<25	<0.05	<0.05	<0.05	<0.1
Pacific Environmental Group, Inc. Soil Investigation - September 1997											
HA1	HA1-1	9/15/1997	1	Removed	--	12	<25	--	--	--	--
HA2	HA2-1	9/15/1997	1	Removed	--	293	59.8	--	--	--	--
	HA2-3	9/15/1997	3	Removed	--	232	27.7	--	--	--	--
HA3	HA3-0.5	9/15/1997	0.5	Removed	--	9,390	<275	--	--	--	--
	HA3-3	9/15/1997	3	Removed	--	9,110	<525	--	--	--	--
	HA3-5	9/15/1997	5	Removed	--	2,360	<275	--	--	--	--

Table 1A

Summary of Hydrocarbon and VOC Soil Analytical Data
Former Tosco Bainbridge Island Bulk Plant 1784
Weaver Avenue and Shepard Way Northwest
Bainbridge Island, Washington

Boring ID/Monitoring Well ID/Sample Location	Sample ID				Hydrocarbons			VOCs ¹			
				Soil Sample Removed/In- place							
		Sample Date	Sample Depth		TPHg	TPHd	TPHo	Benzene	Toluene	Ethylbenzene	Total Xylenes
		MTCA Method A Cleanup Level			100	2,000	2,000	0.03	7	6	9
			ft bgs	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
Pacific Environmental Group, Inc. Soil Investigation - September 1997											
HA4	HA4-1	9/15/1997	1	Removed	--	1,110	31.3	--	--	--	--
	HA4-2.5	9/15/1997	2.5	Removed	--	29	<25	--	--	--	--
HA5	HA5-1	9/15/1997	1	Removed	--	21,200	710	--	--	--	--
	HA5-4.5	9/15/1997	4.5	Removed	--	8,240	<275	--	--	--	--
HA6	HA6-1	9/15/1997	1	Removed	--	15,600	<525	--	--	--	--
	HA6-3.5	9/15/1997	3.5	Removed	--	240	<25	--	--	--	--
HA7	HA7-1	9/15/1997	1	Removed	--	7,370	<275	--	--	--	--

Notes:
Bold values equal or exceed MTCA Method A Cleanup Level.

cPAHs = Carcinogenic polycyclic aromatic hydrocarbons
EPH = Extractable petroleum hydrocarbons
ft bgs = feet below ground surface
mg/kg = Milligrams per kilogram
MTCA = Model Toxics Control Act (Chapter 173-340 WAC)
NA = Not applicable
ND = Less than the laboratory method reporting limit (MRL)
TPHd = Total petroleum hydrocarbons as diesel-range hydrocarbons
TPHg = TPH as gasoline-range hydrocarbons
TPHo = TPH as heavy oil-range hydrocarbons
VOCs = Volatile organic compounds
VPH = Volatile petroleum hydrocarbons
< = Not detected greater than laboratory MRL. Value listed is laboratory MRL.
-- = Not analyzed, not applicable, or not sampled.
1 Only analytes with concentrations above laboratory MRLs and established cleanup levels are listed. See laboratory report for a full list of analytes.
2 Chromatogram indicates that it is likely that sample contains weathered to highly weathered diesel.
3 Reported naphthalenes concentration is the total value of naphthalene, 1-methyl naphthalene, and 2-methyl naphthalene.

ANALYTICAL METHOD:
EPH by NWEPH
PAHs by USEPA Method 8270D Selected Ion Monitoring (SIM)
TPHg by Northwest TPH-Gx
TPHd and TPHo by Northwest TPH-Dx
VOCs by USEPA Method 8260
VPH by NWVPH

Table 2A

Groundwater Monitoring Data, and Hydrocarbon, VOC, and Lead Analytical Results
Former Tosco Bainbridge Island Bulk Plant 1784
Weaver Avenue and Shepard Way Northwest
Bainbridge Island, Washington

Well ID	Sample Date	TOC Elevation	Depth to Water	Groundwater Elevation	Hydrocarbons				VOCs ¹						Lead	
					TPHg	TPHd	TPHo	Total TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Other VOCs	Total Lead	Dissolved Lead
MTCA Method A Cleanup Level:					1,000	500	500	--	5	1,000	700	1,000	20	Varies	15	15
MTCA Method B Total TPH Cleanup Level:					--	--	--	640 ⁶	--	--	--	--	--	--	--	--
		(ft)	(ft)	(ft)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
W.11187604.121418.MN.GB-10	12/14/18	NA	NA	NA	<50	9,400 ²	<250	9,400	<2.0	<2.0	<2.0	<4.0	<2.0	1.6 ⁶	--	--
W.11187604.121418.MN.GB-13 ³	12/14/18	NA	NA	NA	550	2,800 ⁴	<250	3,350	<2.0	<2.0	<2.0	<4.0	<2.0	ND	--	--
W.11187604.122118.MN.GB-14	12/21/18	NA	NA	NA	<50	770 ²	<250	770	<2.0	2.2	<2.0	<4.0	<2.0	ND	--	--
MW-1 (Ecology)	3/18/2019	19.51	--	--	--	340	<390	340	--	--	--	--	--	--	--	--
MW -1	12/14/2018	19.51	2.93	16.58						Gauged only, not sampled.						
MW -1	2/2/2017	19.51	4.05	15.46						Gauged only, not sampled.						
MW -1	11/30/2016	19.51	4.00	15.51	<50	<130	<250	--	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW -1	7/7/2016	19.51	8.61	10.90	<130	<310	<310	--	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW -1	4/20/2016	19.51	5.32	14.19	<130	<310	<310	--	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW -1	2/11/2016	19.51	4.33	15.18						Gauged only, not sampled.						
MW -1	7/1/2015	19.51	8.53	10.98						Gauged only, not sampled.						
MW -1	4/9/2015	19.51	4.88	14.63						Gauged only, not sampled.						
MW -1	2/11/2015	19.51	--	--						Well not sampled or gauged.						
MW -1	8/21/2014	19.51	9.09	10.42	<100	<100	<250	--	<0.5	<5.0	<0.50	<1.5	--	--	--	--
MW -1	8/19/2014	19.51	9.00	10.51						Gauged only, not sampled.						
MW -1	6/18/2007	19.51	7.08	12.43	<50	<76	<95	--	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--
MW -1	3/26/2007	19.51	4.49	15.02	<240	<75	<94	--	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
MW -1	12/20/2006	19.51	3.85	15.66	<48	<76	<95	--	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--
MW -1	9/13/2006	19.51	9.40	10.11	<48	160	150	310	<0.5	<0.7	<0.7	<0.8	<0.5	--	--	--
MW -1	6/26/2003	19.51	6.93	12.58	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW -1	3/30/2003	19.51	4.43	15.08	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW -1	12/21/2002	19.51	4.42	15.09	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW -1	9/30/2002	19.51	8.83	10.68	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW -1	5/23/2002	19.51	5.89	13.62	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	ND	<1	<1
MW -1	3/26/2002	19.51	4.45	15.06	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW -1	12/11/2001	19.51	4.19	15.32	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW -1	9/13/2001	19.51	6.78	12.73	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW -1	6/28/2001	19.51	7.03	12.48	<50	<250	<500	--	<0.5	<0.5	<0.5	1.02	--	--	<1	<1
MW-2	3/4/2003	18.64							Monitoring Well Decomissioned 3/4/2003							
MW-2	12/21/2002	18.64	5.14	13.50	157	3,810	<500		<0.5	<0.5	<0.5	<1	--	--	--	--
MW-2	9/30/2002	18.64	8.61	10.03	368	5,020	<500		<0.5	<0.5	1.46	2.14	--	--	--	--
MW-2	5/23/2002	18.64	5.91	12.73	327	1,240	<500		<0.5	<0.5	2.23	2.01	--	ND	<1	<1
MW-2	3/26/2002	18.64	4.86	13.78	134	512	<500		<0.5	<0.5	<0.5	<1	--	--	--	--
MW-2	12/11/2001	18.64	4.71	13.93	77.8	<250	<500		<0.5	<0.5	<0.5	<1	--	--	--	--
MW-2	9/13/2001	18.64	6.71	11.93	697	649	<500		<0.5	0.762	5.93	5.61	--	--	--	--
MW-2	6/28/2001	18.64	7.17	11.47	1,370	1,780	<500		0.677	<0.5	11.0	18.6	--	--	--	--
MW-2A	12/14/18	18.28	3.74	14.54	<50	730 ²	<250	730	<2.0	<2.0	<2.0	<4.0	--	--	--	--

Table 2A

Groundwater Monitoring Data, and Hydrocarbon, VOC, and Lead Analytical Results
Former Tosco Bainbridge Island Bulk Plant 1784
Weaver Avenue and Shepard Way Northwest
Bainbridge Island, Washington

Well ID	Sample Date	TOC Elevation	Depth to Water	Groundwater Elevation	Hydrocarbons				VOCs ¹						Lead	
					TPHg	TPHd	TPHo	Total TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Other VOCs	Total Lead	Dissolved Lead
MTCA Method A Cleanup Level:					1,000	500	500	--	5	1,000	700	1,000	20	Varies	15	15
MTCA Method B Total TPH Cleanup Level:					--	--	--	640 ⁶	--	--	--	--	--	--	--	--
		(ft)	(ft)	(ft)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-2A	2/2/2017	18.28	4.07	14.21	<50	180	<250	180	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-2A	11/30/2016	18.28	4.02	14.26	<50	200	<250	200	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-2A	7/7/2016	18.28	7.80	10.48	<130	770	<250	770	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-2A	4/20/2016	18.28	5.42	12.86	<130	<310	470	470	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-2A	2/11/2016	18.28	4.46	13.82	--	210	<250	210	--	--	--	--	--	--	--	--
MW-2A	7/1/2015	18.28	7.61	10.67	--	510	<250	510	--	--	--	--	--	--	--	--
MW-2A	4/9/2015	18.28	4.97	13.31	--	<400	<400	--	--	--	--	--	--	--	--	--
MW-2A	2/11/2015	18.28	3.83	14.45	--	330	<250	330	--	--	--	--	--	--	--	--
MW-2A	8/21/2014	18.28	8.31	9.97	<100	920	360	1,280	<0.50	<5.0	<0.50	<1.5	--	--	--	--
MW-2A	8/19/2014	18.28	8.24	10.04	Gauged only, not sampled.											
MW-2A	6/18/2007	18.28	6.78	11.50	<50	330	<95	330	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--
MW-2A	3/26/2007	18.28	4.79	13.49	<48	300	120	420	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
MW-2A	12/20/2006	18.28	4.46	13.82	<48	280	<95	280	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--
MW-2A	9/13/2006	18.28	8.88	9.40	300	2,700	530	3,530	<0.5	<0.7	2	<0.8	<0.5	--	--	--
MW-2A	6/26/2003	18.28	6.49	11.79	728	8,180	533	9,441	<0.5	33.4	2.87	3.79	--	--	--	--
MW-2A	3/30/2003	18.28	4.43	13.85	567	4,370	<500	4,937	<0.5	<0.5	2.24	4.55	--	--	--	--
MW-3	12/14/2018	17.55	2.05	15.50	Gauged only, not sampled.											
MW-3	2/2/2017	17.55	3.41	14.14	Gauged only, not sampled.											
MW-3	11/30/2016	17.55	3.32	14.23	<50	<130	<250	--	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-3	7/7/2016	17.55	7.04	10.51	<130	<310	<310	--	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-3	4/20/2016	17.55	4.32	13.23	<130	<310	<310	--	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-3	2/11/2016	17.55	2.96	14.59	Gauged only, not sampled.											
MW-3	7/1/2015	17.55	6.93	10.62	Gauged only, not sampled.											
MW-3	4/9/2015	17.55	3.85	13.70	Gauged only, not sampled.											
MW-3	2/11/2015	17.55	--	--	Well not sampled or gauged.											
MW-3	8/21/2014	17.55	7.30	10.25	<100	<100	<250	--	<0.50	<5.0	<0.50	<1.5	--	--	--	--
MW-3	8/19/2014	17.55	7.19	10.36	Gauged only, not sampled.											
MW-3	6/18/2007	17.55	5.77	11.78	<50	<76	<95	--	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--
MW-3	3/26/2007	17.55	3.41	14.14	<48	<76	<94	--	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
MW-3	12/20/2006	17.55	3.95	13.60	<48	88	<95	88	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--
MW-3	9/13/2006	17.55	7.40	10.15	<48	88	97	185	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--
MW-3	6/26/2003	17.55	5.59	11.96	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW-3	3/30/2003	17.55	3.16	14.39	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW-3	12/21/2002	17.55	3.27	14.28	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW-3	9/30/2002	17.55	7.11	10.44	<50	<250	<500	--	<0.5	0.513	<0.5	<1	--	--	--	--
MW-3	5/23/2002	17.55	4.73	12.82	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	ND	<1	<1
MW-3	3/26/2002	17.55	3.38	14.17	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW-3	12/11/2001	17.55	2.83	14.72	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW-3	9/13/2001	17.55	5.75	11.80	905	<250	<500	--	<0.5	0.738	5.92	5.68	--	--	--	--

Table 2A

Groundwater Monitoring Data, and Hydrocarbon, VOC, and Lead Analytical Results
Former Tosco Bainbridge Island Bulk Plant 1784
Weaver Avenue and Shepard Way Northwest
Bainbridge Island, Washington

Well ID	Sample Date	TOC Elevation	Depth to Water	Groundwater Elevation	Hydrocarbons				VOCs ¹						Lead	
					TPHg	TPHd	TPHo	Total TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Other VOCs	Total Lead	Dissolved Lead
					(ft)	(ft)	(ft)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MTCA Method A Cleanup Level:					1,000	500	500	--	5	1,000	700	1,000	20	Varies	15	15
MTCA Method B Total TPH Cleanup Level:					--	--	--	640 ⁶	--	--	--	--	--	--	--	--
MW-3	6/28/2001	17.55	5.30	12.25	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	<1	<1
MW-4	12/14/18	17.04	3.50	13.54	<50	800 ²	<250	800	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-4	2/2/2017	17.04	3.53	13.51	<50	<130	160	160	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-4	11/30/2016	17.04	3.42	13.62	<50	<130	380	380	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-4	7/7/2016	17.04	8.40	8.64	<130	240	<360	240	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-4	4/20/2016	17.04	4.45	12.59	<130	<310	320	320	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-4	2/11/2016	17.04	3.67	13.37												
MW-4	7/1/2015	17.04	8.33	8.71												
MW-4	4/9/2015	17.04	4.20	12.84												
MW-4	2/11/2015	17.04	--	--												
MW-4	8/21/2014	17.04	8.94	8.10	<100	410	270	680	<0.50	<5.0	<0.50	<1.5	--	--	--	--
MW-4	8/19/2014	17.04	8.76	8.28												
MW-4	6/18/2007	17.04	6.90	10.14	<50	430	<95	430	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--
MW-4	3/26/2007	17.04	3.91	13.13	<48	150	<95	150	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
MW-4	12/20/2006	17.04	3.34	13.70	<48	230	110	340	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--
MW-4	9/13/2006	17.04	9.65	7.39	<48	390	200	590	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--
MW-4	6/26/2003	17.04	6.57	10.47	<50	496	<500	496	<0.5	<0.5	<0.5	<1	--	--	--	--
MW-4	3/30/2003	17.04	3.62	13.42	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW-4	12/21/2002	17.04	4.00	13.04	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW-4	9/30/2002	17.04	9.32	7.72	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW-4	5/23/2002	17.04	4.53	12.51	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	ND	<1	<1
MW-4	3/26/2002	17.04	3.63	13.41	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW-4	12/11/2001	17.04	3.44	13.60	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW-4	9/13/2001	17.04	7.05	9.99	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MW-4	6/28/2001	17.04	8.30	8.74	<50	<250	<500	--	<0.5	<0.5	<0.5	1.18	--	--	--	--
MW-5 (Ecology)	3/18/2019	17.53	--	--	--	590	410	1,000	--	--	--	--	--	--	--	--
MW-5	12/14/2018	17.53	3.75	13.78	<50	4,400 ²	<250	4,400	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-5	12/14/2018 ⁵	17.53	3.75	13.78	<50	4,300 ²	<250	4,300	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-5	2/2/2017	17.53	3.85	13.68	<50	720	<250	720	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-5	11/30/2016	17.53	3.76	13.77	<50	960	<250	960	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-5	7/7/2016	17.53	9.49	8.04	<130	560	<250	560	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-5	4/20/2016	17.53	4.85	12.68	<130	<310	1,300	1,300	<2.0	<2.0	<2.0	<4.0	--	--	--	--
MW-5	2/11/2016	17.53	4.09	13.44	--	810	<250	810	--	--	--	--	--	--	--	--
MW-5	7/1/2015	17.53	8.01	9.52	--	620	<250	620	--	--	--	--	--	--	--	--
MW-5	4/9/2015	17.53	4.61	12.92	--	940	<400	940	--	--	--	--	--	--	--	--
MW-5	2/11/2015	17.53	3.82	13.71	--	1,200	560	1,760	--	--	--	--	--	--	--	--
MW-5	8/21/2014	17.53	10.71	6.82	<100	800	<500	800	<0.5	<0.5	<0.5	<1.5	--	--	--	--

Table 2A

Groundwater Monitoring Data, and Hydrocarbon, VOC, and Lead Analytical Results
Former Tosco Bainbridge Island Bulk Plant 1784
Weaver Avenue and Shepard Way Northwest
Bainbridge Island, Washington

Well ID	Sample Date	TOC Elevation	Depth to Water	Groundwater Elevation	Hydrocarbons				VOCs ¹						Lead			
					TPHg	TPHd	TPHo	Total TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Other VOCs	Total Lead	Dissolved Lead		
					1,000	500	500	--	5	1,000	700	1,000	20	Varies	15	15		
MTCA Method A Cleanup Level:					1,000	500	500	--	5	1,000	700	1,000	20	Varies	15	15		
MTCA Method B Total TPH Cleanup Level:					--	--	--	640 ⁶	--	--	--	--	--	--	--	--	--	
		(ft)	(ft)	(ft)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)		
MW-5	8/19/2014	17.53	8.76	8.77					Gauged only, not sampled.									
MW-5	6/18/2007	17.53	6.10	11.43	130	1,100	120	1,350	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--		
MW-5	3/26/2007	17.53	4.28	13.25	250	1,300	300	1,850	<0.5	0.7	<0.5	<0.5	<0.5	--	--	--		
MW-5	12/20/2006	17.53	3.97	13.56	200	2,000	390	2,590	<0.5	8	<0.8	<0.8	<0.5	--	--	--		
MW-5	9/13/2006	17.53	11.60	5.93	61	810	230	1,101	<0.5	12	<0.8	<0.8	<0.5	--	--	--		
MW-5	6/26/2003	17.53	5.81	11.72	111	537	<500	648	<0.5	<0.5	<0.5	<1	--	--	--	--		
MW-5	3/30/2003	17.53	4.00	13.53	377	1,410	<500	1,787	<0.5	<0.5	0.52	<1	--	--	--	--		
MW-5	12/21/2002	17.53	4.24	13.29	385	734	<500	1,119	<0.5	<0.5	5.38	3.77	--	--	--	--		
MW-5	9/30/2002	17.53	11.12	6.41	95.2	<250	<500	95.2	<0.5	<0.5	<0.5	<1	--	--	--	--		
MW-5	5/23/2002	17.53	4.81	12.72	236	428	<500	664	<0.5	<0.5	<0.5	<1	--	ND	<1	<1		
MW-5	3/26/2002	17.53	4.00	13.53	469	454	<500	923	<0.5	<0.5	1.94	1.87	--	--	--	--		
MW-5	12/11/2001	17.53	3.91	13.62	571	358	<500	929	<0.5	<0.5	<0.5	<1	--	--	--	--		
MW-5	9/13/2001	17.53	5.61	11.92	77.8	<250	<500	77.8	<0.5	<0.5	<0.5	<1	--	--	--	--		
MW-5	6/28/2001	17.53	6.05	11.48	<50	290	<500	290	<0.5	<0.5	<0.5	<1	--	--	--	--		
RW-1	2/2/2017	18.53	4.31	14.22	<50	130	<250	130	<2.0	<2.0	<2.0	<4.0	--	--	--	--		
RW-1	11/30/2016	18.53	4.27	14.26	<50	160	<250	160	<2.0	<2.0	<2.0	<4.0	--	--	--	--		
RW-1	7/7/2016	18.53	7.98	10.55	<130	300	<250	300	<2.0	<2.0	<2.0	<4.0	--	--	--	--		
RW-1	4/20/2016	18.53	5.65	12.88	<130	<310	<310	--	<2.0	<2.0	<2.0	<4.0	--	--	--	--		
RW-1	2/11/2016	18.53	4.70	13.83	--	290	<250	290	--	--	--	--	--	--	--	--		
RW-1	7/1/2015	18.53	7.79	10.74	--	870	<250	870	--	--	--	--	--	--	--	--		
RW-1	4/9/2015	18.53	5.21	13.32	--	540	<400	540	--	--	--	--	--	--	--	--		
RW-1	2/11/2015	18.53	4.06	14.47	--	410	<250	410	--	--	--	--	--	--	--	--		
RW-1	8/21/2014	18.53	8.45	10.08	<100	210	<250	210	<0.50	<5.0	<0.50	<1.5	--	--	--	--		
RW-1	6/18/2007	18.53	7.02	11.51	<50	280	<96	280	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--		
RW-1	3/26/2007	18.53	5.03	13.50	<48	210	<95	210	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--		
RW-1	12/20/2006	18.53	4.70	13.83	<48	180	<96	180	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--		
RW-1	9/13/2006	18.53	8.80	9.73	<48	<77	<96	--	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--		
RW-1	6/26/2003	18.53	6.73	11.80	<50	471	<500	471	<0.5	<0.5	<0.5	<1	--	--	--	--		
RW-1	3/30/2003	18.53	4.64	13.89	179	1,600	<500	1,779	<0.5	<0.5	0.52	<1	--	--	--	--		
N-PERF PIPE	12/21/2002	NA	NA	NA	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--		
N-PERF PIPE	9/30/2002	NA	NA	NA	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--		
N-PERF PIPE	5/22/2002	NA	NA	NA	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	ND	<1	<1		
N-PERF PIPE	3/26/2002	NA	NA	NA	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--		
N-PERF PIPE	12/11/2001	NA	NA	NA	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--		
N-PERF PIPE	9/13/2001	NA	NA	NA	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--		
N-PERF PIPE	6/27/2001	NA	NA	NA	160	663	<500	823	<0.5	<0.5	<0.5	1.53	--	--	--	--		

Table 2A

Groundwater Monitoring Data, and Hydrocarbon, VOC, and Lead Analytical Results
Former Tosco Bainbridge Island Bulk Plant 1784
Weaver Avenue and Shepard Way Northwest
Bainbridge Island, Washington

Well ID	Sample Date	TOC Elevation	Depth to Water	Groundwater Elevation	Hydrocarbons				VOCs ¹						Lead	
					TPHg	TPHd	TPHo	Total TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Other VOCs	Total Lead	Dissolved Lead
MTCA Method A Cleanup Level:					1,000	500	500	--	5	1,000	700	1,000	20	Varies	15	15
MTCA Method B Total TPH Cleanup Level:					--	--	--	640 ⁶	--	--	--	--	--	--	--	--
		(ft)	(ft)	(ft)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MID-PERF PIPE	12/21/2002	NA	NA	NA	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MID-PERF PIPE	9/30/2002	NA	NA	NA	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MID-PERF PIPE	5/22/2002	NA	NA	NA	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	ND	<1	<1
MID-PERF PIPE	3/26/2002	NA	NA	NA	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MID-PERF PIPE	12/11/2001	NA	NA	NA	57	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
MID-PERF PIPE	9/13/2001	NA	NA	NA	289	426	<500	715	<0.5	<0.5	0.766	2.12	--	--	--	--
MID-PERF PIPE	6/27/2001	NA	NA	NA	604	1,110	<500	1,714	0.796	<0.5	1.52	6.06	--	--	--	--
S-PERF PIPE	12/21/2002	NA	NA	NA	<50	289	<500	289	<0.5	<0.5	<0.5	<1	--	--	--	--
S-PERF PIPE	9/30/2002	NA	NA	NA	<50	<250	<500	--	<0.5	<0.5	<0.5	<1	--	--	--	--
S-PERF PIPE	5/22/2002	NA	NA	NA	154	<250	<500	154	<0.5	<0.5	<0.5	<1	--	ND	<1	<1
S-PERF PIPE	3/26/2002	NA	NA	NA	204	<250	<500	204	<0.5	<0.5	<0.5	<1	--	--	--	--
S-PERF PIPE	12/11/2001	NA	NA	NA	116	<250	<500	116	<0.5	<0.5	<0.5	<1	--	--	--	--
S-PERF PIPE	9/13/2001	NA	NA	NA	246	406	<500	652	<0.5	1.51	<0.5	<1	--	--	--	--
S-PERF PIPE	6/27/2001	NA	NA	NA	241	842	<500	1,083	<0.5	0.641	0.754	2.25	--	--	--	--
SB1	12/7/1999	NA	6	NA	<50	394	<1.37	394	<0.5	<0.5	<0.5	<1	--	--	--	--
SB2	12/7/1999	NA	6	NA	<50	470	<1.39	470	<0.5	0.611	<0.5	<1	--	--	6.28	<1
SB3	12/7/1999	NA	6	NA	2,490	404,000	<75.8	406,490	4.79	<2.5	51.1	82.5	--	--	2.89	<1
SB7	12/7/1999	NA	4	NA	32,300	104,000	<30.8	136,300	<100	<100	<100	<200	--	--	--	--
SB8	12/7/1999	NA	6	NA	<50	1,370	<0.75	1,370	<0.5	<0.5	<0.5	<1	--	--	--	--
SB9	12/7/1999	NA	6	NA	<50	4,404	<0.75	4,404	<0.5	<0.5	<0.5	<1	--	--	--	--
SB10	12/7/1999	NA	6	NA	363	14,900	<0.75	15,263	<0.5	<0.5	<0.5	1.03	--	--	--	--

Groundwater Monitoring Data, and Hydrocarbon, VOC, and Lead Analytical Results
Former Tosco Bainbridge Island Bulk Plant 1784
Weaver Avenue and Shepard Way Northwest
Bainbridge Island, Washington

Notes:

- Bold** values equal or exceed MTCA Method A cleanup level.
Ecology = Washington State Department of Ecology
EPH = Extractable petroleum hydrocarbons
ft = feet
LCS = Laboratory control sample
MTBE = Methyl tert-butyl ether
MTCA = Model Toxics Control Act
NA = Not applicable
ND = Less than laboratory method reporting limit (MRL)
PAH - Polycyclic aromatic hydrocarbons
TOC = Top of casing
TPHd = Total petroleum hydrocarbons (TPH) as diesel-range hydrocarbons
TPHg = TPH as gasoline-range hydrocarbons
TPHo = TPH as heavy oil-range hydrocarbons
USEPA = United States Environmental Protection Agency
µg/L = Micrograms per liter
VOCs = volatile organic compounds
-- = Not Analyzed or Sampled
< = Less than the stated laboratory reporting limit
1 = Only analytes with concentrations above laboratory MRLs and established cleanup levels are listed. See laboratory report for full list of analytes.
2 = Chromatogram indicates that it is likely that sample contains highly weathered diesel.
3 = Chromatogram indicates that it is likely that sample contains an unidentified gasoline range product and highly weathered diesel.
4 = Diesel range product results biased high due to gasoline range product overlap.
5 = This sample was collected as a field duplicate.
6 = Sample contained n-hexane at a concentration of 1.6 µg/L; MTCA Method B cleanup level is 480 µg/L.

ANALYTICAL METHOD:

- EPH by NWEPH Method
PAHs by USEPA Method 8270D with Selected Ion Monitoring (SIM)
TPHg by Northwest TPH-Gx
TPHd and TPHo by Northwest TPH-Dx
Total lead by USEPA Method 6010D
VOCs by USEPA Method 8260

Table 2B

Groundwater Monitoring Data, and PAH, EPH, and MTCA Method B Analytical Data
Former Tosco Bainbridge Island Bulk Plant 1784
Weaver Avenue and Shepard Way Northwest
Bainbridge Island, Washington

Well ID	Sample Date	TOC Elevation	Depth to Water	Groundwater Elevation	PAHs ¹							EPH								MTCA Method B		
					Naphthalenes ²	Acenaphthene	Fluorene	Anthracene	Pyrene	Benzo(a) anthracene	Other PAHs	C10-12 Aliphatics	C12-16 Aliphatics	C16-C21 Aliphatics	C21-34 Aliphatics	C10-C12 Aromatics	C12-C16 Aromatics	C16-C21 Aromatics	C21-C34 Aromatics	Measured TPH Concentration	Calculated Protective TPH Concentration	
MTCA Method B Cleanup Level:					160 ³	960	640	4,800	480	0.12	Varies	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
			(ft)	(ft)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
W.11187604.121418.MN.GB-10	12/14/18	NA	NA	NA	0.025	<0.020	<0.020	<0.020	<0.020	<0.020	ND	<53	590	2,400	810	<53	<53	280	270	4,351.63	1,861.12	
W.11187604.121418.MN.GB-13 ³	12/14/18	NA	NA	NA	30.3	<0.020	1.6	<0.020	<0.020	<0.020	ND ¹	89	180	<50	<50	130	300	59	<50	788.3	317.14	
W.11187604.122118.MN.GB-14	12/21/18	NA	NA	NA	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	ND	<50	<50	<50	<50	<50	<50	<50	<50	2.2	640.00	
MW -1	12/14/2018	19.51	2.93	16.58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	2/2/2017	19.51	4.05	15.46	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	11/30/2016	19.51	4.00	15.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	7/7/2016	19.51	8.61	10.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	4/20/2016	19.51	5.32	14.19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	2/11/2016	19.51	4.33	15.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	7/1/2015	19.51	8.53	10.98	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	4/9/2015	19.51	4.88	14.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	2/11/2015	19.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	8/21/2014	19.51	9.09	10.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	8/19/2014	19.51	9.00	10.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	6/18/2007	19.51	7.08	12.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	3/26/2007	19.51	4.49	15.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	12/20/2006	19.51	3.85	15.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	9/13/2006	19.51	9.40	10.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	6/26/2003	19.51	6.93	12.58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	3/30/2003	19.51	4.43	15.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	12/21/2002	19.51	4.42	15.09	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--	
MW -1	9/30/2002	19.51	8.83	10.68	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--	
MW -1	5/23/2002	19.51	5.89	13.62	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--	
MW -1	3/26/2002	19.51	4.45	15.06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	12/11/2001	19.51	4.19	15.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	9/13/2001	19.51	6.78	12.73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW -1	6/28/2001	19.51	7.03	12.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-2	3/4/2003	18.64									Monitoring Well Decomissioned 3/4/2003											
MW-2	12/21/2002	18.64	5.14	13.50	0.21	0.27	<0.01	0.09	0.07	<0.01	ND	--	--	--	--	--	--	--	--	--	--	
MW-2	9/30/2002	18.64	8.61	10.03	8.0	0.8	0.82	<0.01	<0.01	0.05	ND	--	--	--	--	--	--	--	--	--	--	
MW-2	5/23/2002	18.64	5.91	12.73	18.2	0.868	2.01	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--	
MW-2	3/26/2002	18.64	4.86	13.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-2	12/11/2001	18.64	4.71	13.93	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-2	9/13/2001	18.64	6.71	11.93	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-2	6/28/2001	18.64	7.17	11.47	5.41 ⁵	2.04	5.83	<0.2	<0.2	<0.2	ND	--	--	--	--	--	--	--	--	--	--	
MW-2A	12/14/18	18.28	3.74	14.54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-2A	2/2/2017	18.28	4.07	14.21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-2A	11/30/2016	18.28	4.02	14.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-2A	7/7/2016	18.28	7.80	10.48	<0.022	<0.10	<0.30	<0.076	<0.035	0.040	ND	<50	<50	<50	50	<50	<50	<50	<50	275.34	450.04	
MW-2A	4/20/2016	18.28	5.42	12.86	<0.020	<0.020	<0.020	<0.020	0.21	<0.020	ND	<50	<50	<50	<50	<50	<50	<50	<50	250.10	437.03	
MW-2A	2/11/2016	18.28	4.46	13.82	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	ND	--	--	--	--	--	--	--	--	--	--	
MW-2A	7/1/2015	18.28	7.61	10.67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-2A	4/9/2015	18.28	4.97	13.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-2A	2/11/2015	18.28	3.83	14.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-2A	8/21/2014	18.28	8.31	9.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Table 2B

Groundwater Monitoring Data, and PAH, EPH, and MTCA Method B Analytical Data
Former Tosco Bainbridge Island Bulk Plant 1784
Weaver Avenue and Shepard Way Northwest
Bainbridge Island, Washington

Well ID	Sample Date	TOC Elevation	Depth to Water	Groundwater Elevation	PAHs ¹							EPH								MTCA Method B	
					Naphthalenes ²	Acenaphthene	Fluorene	Anthracene	Pyrene	Benzo(a) anthracene	Other PAHs	C10-12 Aliphatics	C12-16 Aliphatics	C16-C21 Aliphatics	C21-34 Aliphatics	C10-C12 Aromatics	C12-C16 Aromatics	C16-C21 Aromatics	C21-C34 Aromatics	Measured TPH Concentration	Calculated Protective TPH Concentration
					160 ³	960	640	4,800	480	0.12	Varies	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		MTCA Method B Cleanup Level: (ft)	(ft)	(ft)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-2A	8/19/2014	18.28	8.24	10.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2A	6/18/2007	18.28	6.78	11.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2A	3/26/2007	18.28	4.79	13.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2A	12/20/2006	18.28	4.46	13.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2A	9/13/2006	18.28	8.88	9.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2A	6/26/2003	18.28	6.49	11.79	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2A	3/30/2003	18.28	4.43	13.85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	12/14/2018	17.55	2.05	15.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	2/2/2017	17.55	3.41	14.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	11/30/2016	17.55	3.32	14.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	7/7/2016	17.55	7.04	10.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	4/20/2016	17.55	4.32	13.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	2/11/2016	17.55	2.96	14.59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	7/1/2015	17.55	6.93	10.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	4/9/2015	17.55	3.85	13.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	2/11/2015	17.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	8/21/2014	17.55	7.30	10.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	8/19/2014	17.55	7.19	10.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	6/18/2007	17.55	5.77	11.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	3/26/2007	17.55	3.41	14.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	12/20/2006	17.55	3.95	13.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	9/13/2006	17.55	7.40	10.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	6/26/2003	17.55	5.59	11.96	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	3/30/2003	17.55	3.16	14.39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	12/21/2002	17.55	3.27	14.28	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--
MW-3	9/30/2002	17.55	7.11	10.44	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--
MW-3	5/23/2002	17.55	4.73	12.82	<0.1	<0.1	<0.1	<0.1	<0.1	0.0132	ND	--	--	--	--	--	--	--	--	--	--
MW-3	3/26/2002	17.55	3.38	14.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	12/11/2001	17.55	2.83	14.72	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	9/13/2001	17.55	5.75	11.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	6/28/2001	17.55	5.30	12.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	12/14/18	17.04	3.50	13.54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	2/2/2017	17.04	3.53	13.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	11/30/2016	17.04	3.42	13.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	7/7/2016	17.04	8.40	8.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	4/20/2016	17.04	4.45	12.59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	2/11/2016	17.04	3.67	13.37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	7/1/2015	17.04	8.33	8.71	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	4/9/2015	17.04	4.20	12.84	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	2/11/2015	17.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	8/21/2014	17.04	8.94	8.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	8/19/2014	17.04	8.76	8.28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	6/18/2007	17.04	6.90	10.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	3/26/2007	17.04	3.91	13.13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	12/20/2006	17.04	3.34	13.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	9/13/2006	17.04	9.65	7.39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2B

Groundwater Monitoring Data, and PAH, EPH, and MTCA Method B Analytical Data
Former Tosco Bainbridge Island Bulk Plant 1784
Weaver Avenue and Shepard Way Northwest
Bainbridge Island, Washington

Well ID	Sample Date	TOC Elevation	Depth to Water	Groundwater Elevation	PAHs ¹							EPH								MTCA Method B		
					Naphthalenes ²	Acenaphthene	Fluorene	Anthracene	Pyrene	Benzo(a) anthracene	Other PAHs	C10-12 Aliphatics	C12-16 Aliphatics	C16-C21 Aliphatics	C21-34 Aliphatics	C10-C12 Aromatics	C12-C16 Aromatics	C16-C21 Aromatics	C21-C34 Aromatics	Measured TPH Concentration	Calculated Protective TPH Concentration	
MTCA Method B Cleanup Level:					160 ³	960	640	4,800	480	0.12	Varies	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		(ft)	(ft)	(ft)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-4	6/26/2003	17.04	6.57	10.47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	3/30/2003	17.04	3.62	13.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	12/21/2002	17.04	4.00	13.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--	--
MW-4	9/30/2002	17.04	9.32	7.72	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--	--
MW-4	5/23/2002	17.04	4.53	12.51	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	--	--	--	--	--	--	--	--	--	--	--
MW-4	3/26/2002	17.04	3.63	13.41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	12/11/2001	17.04	3.44	13.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	9/13/2001	17.04	7.05	9.99	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	6/28/2001	17.04	8.30	8.74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	12/14/18	17.53	3.75	13.78	0.51	0.13	0.12	<0.020	<0.020	<0.020	ND	<50	<50	76	<50	<50	<50	<50	<50	76.51	18,325.75	
MW-5	12/14/2018 ⁶	17.53	3.75	13.78	1.31	0.19	0.35	<0.020	<0.020	<0.020	ND	<50	<50	75	<50	<50	<50	<50	<50	76.31	11,253.09	
MW-5	2/2/2017	17.53	3.85	13.68	<0.020	<0.020	1.0	<0.020	<0.020	<0.020	ND	<50	75	<50	<50	<50	<50	<50	<50	300.10	472.77	
MW-5	11/30/2016	17.53	3.76	13.77	0.83	0.25	1.1	0.034	<0.020	<0.020	ND	<50	70	<50	<50	<50	<50	<50	<50	295.91	486.68	
MW-5	7/7/2016	17.53	9.49	8.04	<0.022	<0.10	<0.30	<0.076	<0.035	0.046	ND	<50	<50	<50	<50	<50	<50	<50	<50	250.35	437.09	
MW-5	4/20/2016	17.53	4.85	12.68	0.27	<0.020	<0.020	<0.020	0.045	<0.020	ND	<50	84	<50	<50	<50	<50	<50	<50	309.36	477.67	
MW-5	2/11/2016	17.53	4.09	13.44	<0.50	<0.50	1.3	<0.50	<0.50	<0.50	ND	<50	81	<50	<50	<50	<50	<50	<50	306.75	470.57	
MW-5	7/1/2015	17.53	8.01	9.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	4/9/2015	17.53	4.61	12.92	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	2/11/2015	17.53	3.82	13.71	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	8/21/2014	17.53	10.71	6.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	8/19/2014	17.53	8.76	8.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	6/18/2007	17.53	6.10	11.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	3/26/2007	17.53	4.28	13.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	12/20/2006	17.53	3.97	13.56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	9/13/2006	17.53	11.60	5.93	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	6/26/2003	17.53	5.81	11.72	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	3/30/2003	17.53	4.00	13.53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	12/21/2002	17.53	4.24	13.29	12	0.37	0.36	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--	
MW-5	9/30/2002	17.53	11.12	6.41	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--	
MW-5	5/23/2002	17.53	4.81	12.72	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	--	--	--	--	--	--	--	--	--	--	
MW-5	3/26/2002	17.53	4.00	13.53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	12/11/2001	17.53	3.91	13.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	9/13/2001	17.53	5.61	11.92	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	6/28/2001	17.53	6.05	11.48	<0.1 ⁵	<0.1	<0.1	<0.1	<0.1	<0.1	ND	--	--	--	--	--	--	--	--	--	--	
RW-1	2/2/2017	18.53	4.31	14.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RW-1	11/30/2016	18.53	4.27	14.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RW-1	7/7/2016	18.53	7.98	10.55	2.71	0.14	0.12	0.16	<0.035	0.047	ND	<50	56	<50	<50	<50	<50	<50	<50	284.03	458.32	
RW-1	4/20/2016	18.53	5.65	12.88	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RW-1	2/11/2016	18.53	4.70	13.83	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	ND	<50	<50	<50	<50	<50	<50	<50	<50	250.75	430.93	
RW-1	7/1/2015	18.53	7.79	10.74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RW-1	4/9/2015	18.53	5.21	13.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RW-1	2/11/2015	18.53	4.06	14.47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RW-1	8/21/2014	18.53	8.45	10.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RW-1	6/18/2007	18.53	7.02	11.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RW-1	3/26/2007	18.53	5.03	13.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Table 2B

Groundwater Monitoring Data, and PAH, EPH, and MTCA Method B Analytical Data
Former Tosco Bainbridge Island Bulk Plant 1784
Weaver Avenue and Shepard Way Northwest
Bainbridge Island, Washington

Well ID	Sample Date	TOC Elevation	Depth to Water	Groundwater Elevation	PAHs ¹							EPH								MTCA Method B	
					Naphthalenes ²	Acenaphthene	Fluorene	Anthracene	Pyrene	Benzo(a) anthracene	Other PAHs	C10-12 Aliphatics	C12-16 Aliphatics	C16-C21 Aliphatics	C21-34 Aliphatics	C10-C12 Aromatics	C12-C16 Aromatics	C16-C21 Aromatics	C21-C34 Aromatics	Measured TPH Concentration	Calculated Protective TPH Concentration
					160 ³	960	640	4,800	480	0.12	Varies	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		MTCA Method B Cleanup Level: (ft)	(ft)	(ft)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
RW-1	12/20/2006	18.53	4.70	13.83	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RW-1	9/13/2006	18.53	8.80	9.73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RW-1	6/26/2003	18.53	6.73	11.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RW-1	3/30/2003	18.53	4.64	13.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-PERF PIPE	12/21/2002	NA	NA	NA	12	<0.1	<0.01	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--
N-PERF PIPE	9/30/2002	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-PERF PIPE	5/22/2002	NA	NA	NA	<0.1	<0.1	<0.01	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--
N-PERF PIPE	3/26/2002	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-PERF PIPE	12/11/2001	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-PERF PIPE	9/13/2001	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-PERF PIPE	6/27/2001	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MID-PERF PIPE	12/21/2002	NA	NA	NA	0.11	0.03	0.02	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--
MID-PERF PIPE	9/30/2002	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MID-PERF PIPE	5/22/2002	NA	NA	NA	<0.1	<0.1	<0.01	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--
MID-PERF PIPE	3/26/2002	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MID-PERF PIPE	12/11/2001	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MID-PERF PIPE	9/13/2001	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MID-PERF PIPE	6/27/2001	NA	NA	NA	<0.2	1.32	3.17	<0.2	<0.2	<0.2	--	--	--	--	--	--	--	--	--	--	--
S-PERF PIPE	12/21/2002	NA	NA	NA	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--
S-PERF PIPE	9/30/2002	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S-PERF PIPE	5/22/2002	NA	NA	NA	2.44	0.386	1.08	<0.01	<0.01	<0.01	ND	--	--	--	--	--	--	--	--	--	--
S-PERF PIPE	3/26/2002	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S-PERF PIPE	12/11/2001	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S-PERF PIPE	9/13/2001	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S-PERF PIPE	6/27/2001	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB1	12/7/1999	NA	6	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB2	12/7/1999	NA	6	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB3	12/7/1999	NA	6	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB7	12/7/1999	NA	4	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB8	12/7/1999	NA	6	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB9	12/7/1999	NA	6	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB10	12/7/1999	NA	6	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2B

Groundwater Monitoring Data, and PAH, EPH, and MTCA Method B Analytical Data
Former Tosco Bainbridge Island Bulk Plant 1784
Weaver Avenue and Shepard Way Northwest
Bainbridge Island, Washington

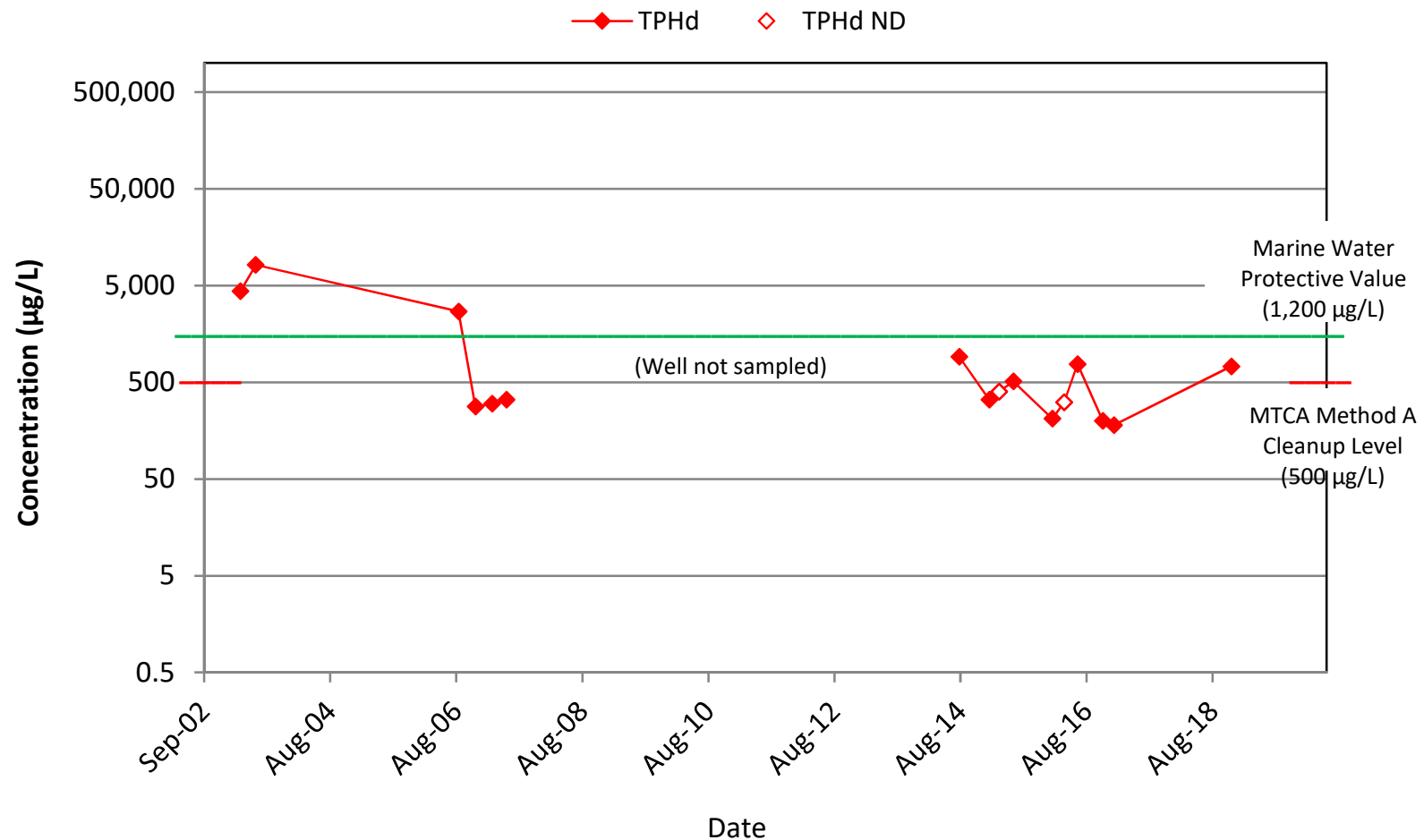
Notes:
Bold values equal or exceed MTCA Method A cleanup level
Ecology = Washington State Department of Ecology
EPH = Extractable petroleum hydrocarbons
ft = feet
LCS = Laboratory control sample
MTBE = Methyl tert-butyl ether
MTCA = Model Toxics Control Act
NA = Not applicable
ND = Less than laboratory method reporting limit (MRL)
PAH - Polycyclic aromatic hydrocarbons
TOC = Top of casing
TPHd = Total petroleum hydrocarbons (TPH) as diesel-range hydrocarbons
TPHg = TPH as gasoline-range hydrocarbons
TPHo = TPH as heavy oil-range hydrocarbons
USEPA = United States Environmental Protection Agency
µg/L = Micrograms per liter
VOCs = volatile organic compounds
-- = Not Analyzed or Sampled
< = Less than the stated laboratory reporting limits
1 = Only analytes with concentrations above laboratory MRLs and established cleanup levels are listed. See laboratory report for full list of analytes.
2 = Reported naphthalenes concentrations is the total value of naphthalene, 1-methyl naphthalene, and 2-methyl naphthalene.
3 = MTCA Method A cleanup level.
4 = Chromatogram indicates that it is likely that sample contains an unidentified gasoline range product and highly weathered diesel.
5 = Reported concentration includes naphthalene only.
6 = This sample is was collected as a field duplicate.

ANALYTICAL METHOD:
EPH by NWEPH Method
PAHs by USEPA Method 8270D Selected Ion Monitoring (SIM)
TPHg by Northwest TPH-Gx
TPHd and TPHo by Northwest TPH-Dx
Total lead by USEPA Method 6010D
VOCs by USEPA Method 8260

Graphs

WELL MW-2A

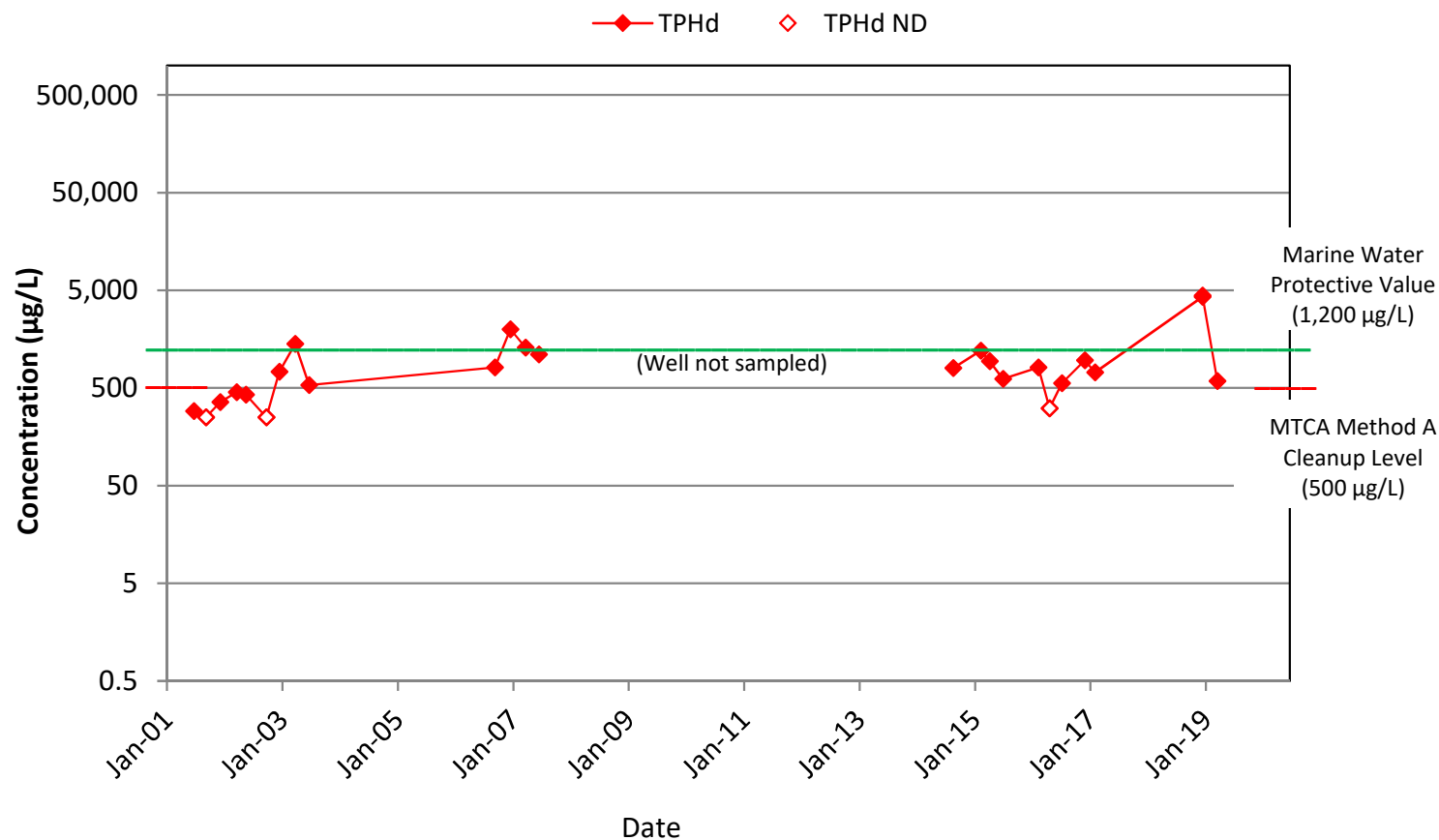
TPHd Concentration vs Time



ND = Not detected at or above laboratory reporting limit; plotted value = reporting limit

GRAPH 1

WELL MW-5 TPHd Concentration vs Time



ND = Not detected at or above laboratory reporting limit; plotted value = reporting limit

GRAPH 2

Appendices

Appendix A

Site Photos



Photo 1 - Advancement of boring GB-14, an angle boring, completed along the western Property boundary.



Photo 2 - View of approximate detention pond discharge pipe location (indicated) and sediment sample SED-1 location (indicated by blue gloves).



Site Photographs

Appendix B

Soil Boring Logs



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-1
DATE COMPLETED: 14 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	SM-SILTY SAND (topsoil)	1.00		1DP		70		
	PEAT	2.00						
4	SM-SILTY SAND, loose to medium dense, reddish brown, wet, no odor or sheen	4.00		2DP GB-1-8'		100		18.5
6	SP-SAND, loose to medium dense, olive gray, wet, no odor or sheen	8.00						
8	SM-SILTY SAND, with gravel	12.00		3DP GB-1-14'		80		24.9
12	ML-SILT, with gravel, very stiff, gray, dry to moist, no odor	15.00						
14	END OF BOREHOLE @ 15.0ft BGS							
16								
18								
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND 
CHEMICAL ANALYSIS 

OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-2
DATE COMPLETED: 14 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	SM-SILTY SAND (topsoil), with gravel, reddish brown			1DP		76		
4	SM-SILTY SAND, olive gray	4.00	▽ ← BACKFILLED WITH BENTONITE CHIPS	2DP		100		24.2
6	SW-SAND, loose, wet, no odor or sheen	5.00						
8	SM-SILTY SAND, with gravel	7.00		3DP GB-2-9'		100		154
10	GM-SILTY GRAVEL, with sand, olive gray	8.00						
12	- some odor at 10.0ft BGS	10.00						
14	ML-SILT, with gravel, very stiff, gray							
16	- REFUSAL at 11.5ft BGS	11.50						
18	END OF BOREHOLE @ 11.5ft BGS							
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▽
CHEMICAL ANALYSIS ○

OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-3
DATE COMPLETED: 14 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	SM-SILTY SAND (topsoil), reddish brown	1.00		1DP		60		
4	SM-SILTY SAND, with gravel, dense, olive gray, dry to moist, slight odor							
6								
8	SP-SAND, gray, wet, no odor or sheen - moderate odor, sheen at 8.0ft BGS	7.00		2DP GB-3-8'		70		48.4
10	GP-SANDY GRAVEL, with silt	9.00						
12	SM-SILTY SAND, dense, olive gray, no odor or sheen	10.00		GB-3-12' 3DP		80		67.2
14	ML-SILT, stiff, olive gray	13.00						
14	GM-SILTY GRAVEL	14.00						
16	END OF BOREHOLE @ 15.0ft BGS	15.00						
18								
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND 
CHEMICAL ANALYSIS 

OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-4
DATE COMPLETED: 14 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	SM-SILTY SAND (topsoil), reddish brown, no odor			1DP		70		
4	SW-GRAVELLY SAND	4.00						
	ML-GRAVELLY SILT, dark brown	5.00						
6	SM-SILTY SAND, with gravel, dense, olive to olive gray, dry to moist, no odor	6.00		2DP		100		5.7
8	GM-SILTY GRAVEL, with sand, dense, gray, moist to wet, some odor, heavy sheen	8.00		GB-4-9'				
10	SW-SAND, loose, gray, wet	10.00		3DP		80		1.3
12								
14	SM-SILTY SAND, with gravel, gray, moist to dry	14.00		GB-4-14'				
15	END OF BOREHOLE @ 15.0ft BGS	15.00						
16								
18								
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇
CHEMICAL ANALYSIS ○

OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-5
DATE COMPLETED: 14 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	SM-SILTY SAND (topsoil)	1.00		1DP		50		
4	SP/SM-SAND/SILTY SAND - brown to olive brown, wet, no odor or sheen from 2.0 to 4.0ft BGS	5.00						
6	SW-SAND, loose, gray, wet, no odor or sheen			2DP GB-5-8'		50		8.2
8								
10				3DP		70		3.0
12		13.50		GB-5-14'				
14	ML-SILT, very stiff, gray, wet, odor, no sheen	15.00						
16	END OF BOREHOLE @ 15.0ft BGS							
18								
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND 
CHEMICAL ANALYSIS 

OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-6
DATE COMPLETED: 17 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	TOPSOIL (SM), loose, brown, moist	1.00		1DP		24		
4	SP-SAND (FILL), loose, olive brown, moist	5.00						
6	SM-SILTY SAND, medium dense, brown, moist, no odor	7.00		2DP		54		1.0
8	GM-SILTY GRAVEL with sand, very dense, gray, dry to moist, no odor	13.00						
10		14.00		3DP		68		0.6
12		15.00						0.6
14	ML-SILT, very stiff, grey, wet, no odor							
16	SM-SILTY SAND, dense, gray, wet							
18	END OF BOREHOLE @ 15.0ft BGS							
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND 
CHEMICAL ANALYSIS 

OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-7
DATE COMPLETED: 17 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	SP-SAND(fill) with silt, firm, loose, brown, moist, no odor			1DP		30		
4								
6								
8				2DP		20		
10								
12								
14	ML-SILT, very stiff, gray, moist, no odor or sheen	13.50		3DP		50		
16	END OF BOREHOLE @ 15.0ft BGS	15.00						0.4
18								
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼
CHEMICAL ANALYSIS ○

OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-8
DATE COMPLETED: 17 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE	SAMPLE					
				NUMBER	INTERVAL	REC (%)		PID (ppm)	
2	SM-SANDY SILT (topsoil), brown, moist, organics	1.00		1DP		30		86.8	
4	SM-SANDY SILT (fill), brown, moist	4.00							
6	SW-SAND, loose to medium dense, gray to olive gray, wet, no odor or sheen	11.00		2DP		40			
8									
10									
12	GP-GRAVEL, loose, gray, wet, no odor, sheen	12.50		3DP GP-8-13'		80			
14	ML-SANDY SILT with gravel, very stiff, some odor, gray, slight sheen	15.00							
16	END OF BOREHOLE @ 15.0ft BGS								
18									
20									
22									
24									
26									
28									
30									
32									
34									

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND 
CHEMICAL ANALYSIS 

OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-9
DATE COMPLETED: 17 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	SM-SILTY SAND (topsoil), brown	1.00		1DP		40		
4	SW-SAND with silt, medium dense, olive brown, moist, no odor or sheen							
6	- wet at 5.0ft BGS			2DP		60		12.4
8	SM-SILTY SAND, medium dense, olive gray, wet, no odor or sheen	7.00						
10	SM-SAND, medium dense, olive gray, wet, no odor or sheen	10.00						
12								
14	ML-SANDY SILT with gravel, very stiff, gray, moist to wet, some odor	13.00		3DP		68		17.6
16	END OF BOREHOLE @ 15.0ft BGS	15.00						
18								
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND 
CHEMICAL ANALYSIS 

OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-10
DATE COMPLETED: 14 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	TEMP MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	SM-SILTY SAND (topsoil/weathered till), sandy silt, some organics, tan to reddish brown							
4	GM-SILTY GRAVEL, with sand, dense, olive brown to light olive gray, moist, no odor, slight sheen	3.00		1DP		24		0.1
6	ML-SANDY SILT, very stiff, olive brown, moist to wet, no odor, no sheen	6.00		GB-10-7 2DP		64		0.9
8								
10								
12				GB-10-12 3DP		100		16.3
14								
16	END OF BOREHOLE @ 15.0ft BGS	15.00						
18								
20								
22								
24								
26								
28								
30								
32								
34								

WELL DETAILS

Screened interval:
5.00 to 15.00ft BGS
Length: 10ft
Diameter: 0.8in
Slot Size: 0.010
Material: PVC

ABANDONED
AND
BACKFILLED
WITH
BENTONITE
CHIPS

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

OVERBURDEN LOG 11187604.WI.CPJ GHD_Corp 1/10/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-11
DATE COMPLETED: 17 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	SM-SILTY SAND, brown	1.00		1DP		50		
4	ML-SANDY SILT, soft, tan, dry							
6	GM-SILTY GRAVEL, dense, olive gray, wet, no odor or sheen	5.00		2DP		50		20.5
8	ML-SANDY SILT, loose, gray, dry, possible sheen	6.00						
10	SM-SILTY SAND, dense, gray, moist to wet, no odor or sheen	9.00		GB11-9'				
12				3DP		40		16.5
14								
16	END OF BOREHOLE @ 15.0ft BGS	15.00		GB11-14'				
18								
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-12
DATE COMPLETED: 17 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	SM-TOPSOIL, some gravel, brown, moist							
4	ML-SILT, soft, reddish brown, dry	2.00		1DP		40		
6	GP-SANDY GRAVEL with silt, dense, gray to olive gray, moist to wet, no odor or sheen	6.00						
8				2DP GB-12-8'		66		18.5
10								
12	ML-SILT, very stiff, gray, moist to wet, no odor	11.00		GB-12-12' 3DP				18.2
14								
16	END OF BOREHOLE @ 15.0ft BGS	15.00						
18								
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-13
DATE COMPLETED: 14 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	TEMP MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	SM-SILTY SAND (topsoil/weathered till)	1.50		1DP		46		
4	GM-SILTY GRAVEL, dense, gray, dry, no odor	4.00						
6	GM-SILTY GRAVEL, with sand, dense, olive brown to tan, becoming olive to olive gray, dry to moist, no sheen							
8	- odor at 8.0ft BGS			2DP		50		
10	SP-SAND, olive brown, wet, no odor or sheen - odor at 9.0ft BGS - no odor at 10.0ft BGS	9.00		GB-13-9				1.2
12				GB-13-12 3DP		100		0.2
14	SM-SILTY SAND, dense, gray, wet, no odor or sheen	13.00						
16	END OF BOREHOLE @ 15.0ft BGS	15.00						
18								
20								
22								
24								
26								
28								
30								
32								
34								

WELL DETAILS

Screened interval:
5.00 to 15.00ft BGS
Length: 10ft
Diameter: 0.8in
Slot Size: 0.010
Material: PVC

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-14
DATE COMPLETED: 14 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	TEMP MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	SM-SILTY SAND (topsoil/weathered till), brown, becoming olive brown			1DP		40		
4	SM-SILTY SAND, with gravel, olive gray, no odor or sheen	4.00						
6	ML-SANDY SILT, dense to stiff, olive brown, moist to wet, no odor, no sheen	5.00						
8	- with silty sand from 8.0 to 8.5ft BGS			GB-14-7 2DP		56		17.5
10	ML-SILT	10.00						
12	SM-SILTY SAND, dense, olive brown	12.00		GB-14-12 3DP		100		4.0
14	GM-SILTY GRAVEL, very dense to very stiff, dark bluish gray, no odor, no sheen	14.00						
16	END OF BOREHOLE @ 15.0ft BGS	15.00						
18								
20								
22								
24								
26								
28								
30								
32								
34								

WELL DETAILS

Screened interval:
5.00 to 15.00ft BGS
Length: 10ft
Diameter: 0.8in
Slot Size: 0.010
Material: PVC

ABANDONED
AND
BACKFILLED
WITH
BENTONITE
CHIPS

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19

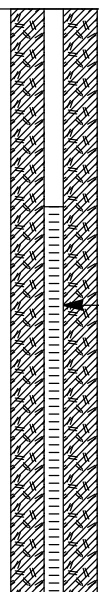


STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-15
DATE COMPLETED: 14 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	TEMP MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	ML-SANDY SILT (topsoil/weathered till), with gravel, dense to stiff, olive brown, dry to moist, no odor	1.00		1DP		56		
4	SM-SILTY SAND/SANDY SILT, dense to stiff, olive brown, dry, no odor, no sheen							
6								
8				GB-15-7 2DP		100		4.5
10								
12	CM-CLAYEY SILT, tan, moist, no odor, no sheen	11.50						
14	SM-SILTY SAND, gray	12.50		GB-15-12 3DP		100		8.2
16	- silty gravel transitioning to gray silty sand with gravel at 13.8ft BGS							
18	END OF BOREHOLE @ 15.0ft BGS	15.00						
20								
22								
24								
26								
28								
30								
32								
34								

WELL DETAILS

Screened interval:
5.00 to 15.00ft BGS
Length: 10ft
Diameter: 0.8in
Slot Size: 0.010
Material: PVC

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-16
DATE COMPLETED: 17 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	SM-TOPSOIL, loose, brown, moist	1.00		1DP		40		14.1
4	SM-SILTY SAND with gravel, dense, olive brown, moist, no odor							
	- grades to olive gray at 4.0ft BGS							
	END OF BOREHOLE @ 5.0ft BGS	5.00						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-17
DATE COMPLETED: 17 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)		PID (ppm)
2	SM-TOPSOIL, loose, brown, moist	1.00	 BACKFILLED WITH BENTONITE CHIPS	1DP		36		14.5
4	SM-SILTY SAND with gravel, dense, olive brown, moist, no odor							
	- grades to olive gray at 4.0ft BGS							
	END OF BOREHOLE @ 5.0ft BGS	5.00						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



OVERBURDEN LOG 11187604.WJ.GPJ GHD Corp 1/10/19



STRATIGRAPHIC LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: FORMER TOSCO BULK PLANT
PROJECT NUMBER: 11187604
CLIENT: PNEC CORP DBA SC FUELS
LOCATION: BAINBRIDGE ISLAND, WASHINGTON

HOLE DESIGNATION: GB-18
DATE COMPLETED: 17 December 2018
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: M. NOLL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	SAMPLE				
			NUMBER	INTERVAL	REC (%)		
	SM-TOPSOIL, loose, brown, moist						
	SM-SILTY SAND with gravel, dense, olive brown, moist, no odor	1.00					
2							
4	- grades to olive gray at 4.0ft BGS						
	END OF BOREHOLE @ 5.0ft BGS	5.00					
6							
8							
10							
12							
14							
16							
18							
20							
22							
24							
26							
28							
30							
32							
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 11187604.WI.GPJ GHD_Corp 1/10/19

Appendix C

Disposal Document

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number N/A		2. Page 1 of 1		3. Emergency Response Phone (800) 337-7455		4. Waste Tracking Number PNEC-011619-01	
		5. Generator's Name and Mailing Address PNEC Corporation d.b.a. SC Fuels 1800 West Katella Ave. Suite 400 Orange, CA 92667 (425)563-6502 Attn: Emily Wakeway		Generator's Site Address (if different than mailing address) Intersection Shepard Dr NW & Bromley Pl NW Bainbridge Island, WA 98110					
Generator's Phone:								U.S. EPA ID Number WAH000047217	
6. Transporter 1 Company Name DH Environmental, Inc.								U.S. EPA ID Number ORD089452353	
7. Transporter 2 Company Name Chemical Waste Management of the Northwest								U.S. EPA ID Number ORD089452353	
8. Designated Facility Name and Site Address Chemical Waste Management of the Northwest 17629 Cedar Springs Lane Arlington, OR 97812 Facility's Phone: (541) 454-2643								U.S. EPA ID Number ORD089452353	
9. Waste Shipping Name and Description				10. Containers		11. Total Quantity	12. Unit Wt./Vol.		
				No.	Type				
1. Material Not Regulated by DOT (non-Regulated IDW water)				01	DM	500	P	K004	
2. Material Not Regulated by DOT (non-Regulated IDW soil)				01	DM	150	P	K004	
3.									
4.									
13. Special Handling Instructions and Additional Information OR340587-STAB01, non-reg IDW 1. water OR340586-LF01/STAB01, non-reg IDW soil 2. IDW soil									
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.									
Generator's/Offor's Printed/Typed Name on behalf of PNEC Corp. dba SC Fuels Leonard J. Wainock				Signature <i>Leonard J. Wainock</i>		Month 01		Day 16	
15. International Shipments		☐ Import to U.S.		☐ Export from U.S.		Port of entry/exit:		Date leaving U.S.:	
Transporter Signature (for exports only):									
16. Transporter Acknowledgment of Receipt of Materials									
Transporter 1 Printed/Typed Name Leonard J. Wainock				Signature <i>Leonard J. Wainock</i>		Month 01		Day 16	
Transporter 2 Printed/Typed Name MICHAEL CASTANEDA				Signature <i>M. Castaneda</i>		Month 1		Day 16	
17. Discrepancy									
17a. Discrepancy Indication Space									
☐ Quantity		☐ Type		☐ Residue		☐ Partial Rejection		☐ Full Rejection	
Manifest Reference Number:									
17b. Alternate Facility (or Generator)						U.S. EPA ID Number			
Facility's Phone:									
17c. Signature of Alternate Facility (or Generator)						Month		Day	
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a									
Printed/Typed Name				Signature		Month		Day	

Appendix D

ProUCL Calculations and Results and MTCA TPH Worksheets

UCL Statistics for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation 1/31/2019 9:17
 From File 11187604-T1 Soil Table_d.xls
 Full Precision OFF
 Confidence Coefficient 95%
 Number of Bootstrap Operations 2000

DRO

General Statistics

Total Number of Observations	31	Number of Distinct Observations	16
Number of Detects	15	Number of Non-Detects	16
Number of Distinct Detects	15	Number of Distinct Non-Detects	1
Minimum Detect	41	Minimum Non-Detect	25
Maximum Detect	2300	Maximum Non-Detect	25
Variance Detects	542005	Percent Non-Detects	51.61%
Mean Detects	682.3	SD Detects	736.2
Median Detects	380	CV Detects	1.079
Skewness Detects	1.18	Kurtosis Detects	0.329
Mean of Logged Detects	5.846	SD of Logged Detects	1.309

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.823	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.881	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.249	Lilliefors GOF Test
5% Lilliefors Critical Value	0.229	Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	343.1	Standard Error of Mean	110.4
SD	593.9	95% KM (BCA) UCL	535.1
95% KM (t) UCL	530.5	95% KM (Percentile Bootstrap) UCL	527.8
95% KM (z) UCL	524.7	95% KM Bootstrap t UCL	621.2
90% KM Chebyshev UCL	674.3	95% KM Chebyshev UCL	824.3
97.5% KM Chebyshev UCL	1033	99% KM Chebyshev UCL	1442

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.398	Anderson-Darling GOF Test
5% A-D Critical Value	0.77	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.159	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.229	Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.864	k star (bias corrected MLE)	0.736
Theta hat (MLE)	789.4	Theta star (bias corrected MLE)	927.2
nu hat (MLE)	25.93	nu star (bias corrected)	22.08
MLE Mean (bias corrected)	682.3	MLE Sd (bias corrected)	795.4

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.334	nu hat (KM)	20.69
Approximate Chi Square Value (20.69, α)	11.36	Adjusted Chi Square Value (20.69, β)	10.98
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	624.8	95% Gamma Adjusted KM-UCL (use when $n < 50$)	646.6

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	330.2
Maximum	2300	Median	0.01
SD	610.8	CV	1.85
k hat (MLE)	0.144	k star (bias corrected MLE)	0.152
Theta hat (MLE)	2285	Theta star (bias corrected MLE)	2172
nu hat (MLE)	8.959	nu star (bias corrected)	9.425
MLE Mean (bias corrected)	330.2	MLE Sd (bias corrected)	846.8
		Adjusted Level of Significance (β)	0.0413

Approximate Chi Square Value (9.43, α)	3.586	Adjusted Chi Square Value (9.43, β)	3.387
95% Gamma Approximate UCL (use when $n \geq 50$)	867.8	95% Gamma Adjusted UCL (use when $n < 50$)	918.7
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.947	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.881	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.151	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.229	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	338	Mean in Log Scale	3.926
SD in Original Scale	606.6	SD in Log Scale	2.285
95% t UCL (assumes normality of ROS data)	522.9	95% Percentile Bootstrap UCL	518.9
95% BCA Bootstrap UCL	576.1	95% Bootstrap t UCL	603.6
95% H-UCL (Log ROS)	4060		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	4.49	95% H-UCL (KM -Log)	779.7
KM SD (logged)	1.58	95% Critical H Value (KM-Log)	3.19
KM Standard Error of Mean (logged)	0.294		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	336.6	Mean in Log Scale	4.132
SD in Original Scale	607.2	SD in Log Scale	1.909
95% t UCL (Assumes normality)	521.7	95% H-Stat UCL	1387
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	530.5	95% GROS Adjusted Gamma UCL	918.7
95% Adjusted Gamma KM-UCL	646.6		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 12/14/18

Site Name: Former Tosco Bainbridge

Sample Name: GB-2-9'

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
<u>Petroleum EC Fraction</u>		
AL_EC >5-6		0.00%
AL_EC >6-8		0.00%
AL_EC >8-10	9	19.20%
AL_EC >10-12	12	25.60%
AL_EC >12-16	11	23.47%
AL_EC >16-21	0	0.00%
AL_EC >21-34		0.00%
AR_EC >8-10		0.00%
AR_EC >10-12		0.00%
AR_EC >12-16	7.5	16.00%
AR_EC >16-21		0.00%
AR_EC >21-34		0.00%
Benzene		0.00%
Toluene		0.00%
Ethylbenzene	0.028	0.06%
Total Xylenes	0.07	0.15%
Naphthalene	0.47	1.00%
1-Methyl Naphthalene	3.5	7.47%
2-Methyl Naphthalene	3.3	7.04%
n-Hexane		0.00%
MTBE		0.00%
Ethylene Dibromide (EDB)		0.00%
1,2 Dichloroethane (EDC)		0.00%
Benzo(a)anthracene		0.00%
Benzo(b)fluoranthene		0.00%
Benzo(k)fluoranthene		0.00%
Benzo(a)pyrene		0.00%
Chrysene		0.00%
Dibenz(a,h)anthracene		0.00%
Indeno(1,2,3-cd)pyrene		0.00%
Sum	46.868	100.00%

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.42	Unitless
Volumetric air content:	0.01	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	1	Unitless

4. Target TPH Ground Water Concentration (if adjusted)

If you adjusted the target TPH ground water

concentration, enter adjusted value here: 1000 ug/L

Notes for Data Entry

Set Default Hydrogeology

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

REMARK:

The analytical concentrations of the following hazardous substances will be subtracted from the associated EC fractions to avoid double counting as per Table 3.3 of the Washington State Department of Ecology's Workbook Tools for Calculating Soil and Groundwater Cleanup Levels under the Model Toxics Control Act Cleanup Regulation User's Guide for MTCATPH 11.1 & MTCASGL 11.0.

Hazardous Substance	Associated EC fraction
n-Hexane	AL_EC>5-6
Ethylbenzene and xylenes	AR_EC>8-10
Naphthalene	AR_EC>10-12
1-Methyl Naphthalene	AR_EC>10-12
2-Methyl Naphthalene	AR_EC>10-12
Benzo(a)anthracene	AR_EC>16-21
Benzo(b)fluoranthene	AR_EC>16-21
Benzo(k)fluoranthene	AR_EC>16-21
Benzo(a)pyrene	AR_EC>16-21
Chrysene	AR_EC>16-21
Dibenz(a,h)anthracene	AR_EC>21-34
Indeno(1,2,3-cd)pyrene	AR_EC>21-34

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 12/14/2018
Site Name: Former Tosco Bainbridge
Sample Name: GB-2-9'
Measured Soil TPH Concentration, mg/kg: 46.868

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	1,528	0.00E+00	3.07E-02	Pass
	Method C	26,198	0.00E+00	1.79E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	Use A2.2	0.00E+00	2.84E+01	Fail
	Target TPH GW Conc. @ 1000 ug/L	11	NA	NA	Fail

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	1,528.46	26,197.59
Most Stringent Criterion	HI =1	HI =1

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	YES	1.53E+03	0.00E+00	1.00E+00	YES	2.62E+04	0.00E+00	1.00E+00
Total Risk=1E-5	NA	NA	NA	NA	NA	NA	NA	NA
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	NA	NA	NA	NA				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	HI=1
Protective Ground Water Concentration, ug/L	91.92
Protective Soil Concentration, mg/kg	2.33

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	9.19E+01	0.00E+00	1.00E+00	2.33E+00
Total Risk = 1E-5	NA	NA	NA	NA	NA
Total Risk = 1E-6	NA	NA	NA	NA	NA
Risk of cPAHs mixture= 1E-5	NA	NA	NA	NA	NA
Benzene MCL = 5 ug/L	NA	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA	NA

3.2. Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 1000 ug/L	1.00E+03	0.00E+00	9.22E+00	1.11E+01

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 12/14/18

Site Name: Former Tosco Bainbridge

Sample Name: GB-3-8'

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
<u>Petroleum EC Fraction</u>		
AL_EC >5-6		0.00%
AL_EC >6-8		0.00%
AL_EC >8-10	35	1.28%
AL_EC >10-12	250	9.16%
AL_EC >12-16	1000	36.66%
AL_EC >16-21	610	22.36%
AL_EC >21-34	65	2.38%
AR_EC >8-10	22	0.81%
AR_EC >10-12	23.65	0.87%
AR_EC >12-16	240	8.80%
AR_EC >16-21	430	15.76%
AR_EC >21-34	47	1.72%
Benzene		0.00%
Toluene		0.00%
Ethylbenzene		0.00%
Total Xylenes		0.00%
Naphthalene	0.35	0.01%
1-Methyl Naphthalene	3.7	0.14%
2-Methyl Naphthalene	1.3	0.05%
n-Hexane		0.00%
MTBE		0.00%
Ethylene Dibromide (EDB)		0.00%
1,2 Dichloroethane (EDC)		0.00%
Benzo(a)anthracene		0.00%
Benzo(b)fluoranthene		0.00%
Benzo(k)fluoranthene		0.00%
Benzo(a)pyrene		0.00%
Chrysene		0.00%
Dibenz(a,h)anthracene		0.00%
Indeno(1,2,3-cd)pyrene		0.00%
Sum	2728	100.00%

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.42	Unitless
Volumetric air content:	0.01	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	1	Unitless

4. Target TPH Ground Water Concentration (if adjusted)

If you adjusted the target TPH ground water

concentration, enter adjusted value here: 500 ug/L

Notes for Data Entry

Set Default Hydrogeology

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

REMARK:

The analytical concentrations of the following hazardous substances will be subtracted from the associated EC fractions to avoid double counting as per Table 3.3 of the Washington State Department of Ecology's Workbook Tools for Calculating Soil and Groundwater Cleanup Levels under the Model Toxics Control Act Cleanup Regulation User's Guide for MTCATPH 11.1 & MTCASGL 11.0.

Hazardous Substance	Associated EC fraction
n-Hexane	AL_EC>5-6
Ethylbenzene and xylenes	AR_EC>8-10
Naphthalene	AR_EC>10-12
1-Methyl Naphthalene	AR_EC>10-12
2-Methyl Naphthalene	AR_EC>10-12
Benzo(a)anthracene	AR_EC>16-21
Benzo(b)fluoranthene	AR_EC>16-21
Benzo(k)fluoranthene	AR_EC>16-21
Benzo(a)pyrene	AR_EC>16-21
Chrysene	AR_EC>16-21
Dibenz(a,h)anthracene	AR_EC>21-34
Indeno(1,2,3-cd)pyrene	AR_EC>21-34

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 12/14/2018

Site Name: Former Tosco Bainbridge

Sample Name: GB-3-8'

Measured Soil TPH Concentration, mg/kg: 2,728.000

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	2,426	0.00E+00	1.12E+00	Fail
	Method C	30,752	0.00E+00	8.87E-02	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	100% NAPL	0.00E+00	2.37E-01	Pass
	Target TPH GW Conc. @ 500 ug/L	100% NAPL	NA	NA	Pass

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

Warning! Check Residual Saturation (WAC340-747(10)).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	2,425.83	30,751.82
Most Stringent Criterion	HI =1	HI =1

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	YES	2.43E+03	0.00E+00	1.00E+00	YES	3.08E+04	0.00E+00	1.00E+00
Total Risk=1E-5	NA	NA	NA	NA	NA	NA	NA	NA
Risk of Benzene= 1E-6	NA	NA	NA	NA	NA			
Risk of cPAHs mixture= 1E-6	NA	NA	NA	NA				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	NA
Protective Ground Water Concentration, ug/L	NA
Protective Soil Concentration, mg/kg	Soil-to-Ground Water is not a critical pathway!

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	1.02E+02	0.00E+00	2.45E-01	100% NAPL
Total Risk = 1E-5	NA	NA	NA	NA	NA
Total Risk = 1E-6	NA	NA	NA	NA	NA
Risk of cPAHs mixture= 1E-5	NA	NA	NA	NA	NA
Benzene MCL = 5 ug/L	NA	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA	NA

Note: 100% NAPL is 5000 mg/kg TPH.

3.2. Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 500 ug/L	1.02E+02	0.00E+00	2.45E-01	100% NAPL

B. Worksheet for Calculating Potable Ground Water Cleanup Levels
(Method B only) WAC 173-340-720

1. Enter Site Information

Date:12/14/2018

Site Name:Former Tosco Bainbridge

Sample info:GB-10

2. Enter Ground Water Concentration Measured

Notes for Data Entry

Chemical of Concern or EC Group	Measured GW Conc	GW Cleanup Level	Current Condition			Adjusted Condition							
			HQ	RISK	Pass or Fail?	GW Conc being tested	HQ	RISK	Pass or Fail?				
	ug/L	ug/L	unitless	unitless		ug/L	unitless	unitless					
<u>Petroleum EC Fraction</u>													
AL_EC >5-6			1.04E-01			9.49E+00	3.95E-02						
AL_EC >6-8													
AL_EC >8-10													
AL_EC >10-12	25												
AL_EC >12-16	590												
AL_EC >16-21	2400												
AL_EC >21-34	810												
AR_EC >8-10			1.56E-01			9.49E+00	5.93E-02						
AR_EC >10-12	25												
AR_EC >12-16	25												
AR_EC >16-21	280												
AR_EC >21-34	270												
Benzene		5	1.56E-03			3.80E-01	5.93E-04						
Toluene	1	1000											
Ethylbenzene		700											
Total Xylenes		1000											
Naphthalene	0.025	160	1.56E-04			9.49E-03	5.93E-05						
1-Methyl Naphthalene	0.1		2.50E-04										
2-Methyl Naphthalene	0.1		3.13E-03										
n-Hexane	1.6		3.33E-03										
MTBE		20											
Ethylene Dibromide (EDB)		0.01											
1,2 Dichloroethane (EDC)		5											
Benzo(a)anthracene		for			<i>for all cPAHs</i>				<i>for all cPAHs</i>				
Benzo(b)fluoranthene		all											
Benzo(k)fluoranthene		cPAHs											
Benzo(a)pyrene		Risk =											
Chrysene		1E-05											
Dibenz(a,h)anthracene										Σ Risk= 0.00E+00			Σ Risk= 0.00E+00
Indeno(1,2,3-cd)pyrene													
Sum	4427.825		2.63E+00	0.00E+00	Fail	1.68E+03	1.00E+00	0.00E+00					

TEST CURRENT CONDITION
Measured TPH GW Conc, ug/L = 4427.825
HI = 2.635E+00
RISK = 0.000E+00
Pass or Fail? Fail

CALCULATE PROTECTIVE CONDITION				
This tool allows the user to calculate a protective TPH ground water concentration based on various ground water quality criteria. The Workbook uses the same composition ratio as for the measured data.			Calculate Protective TPH GW Conc	
Selected Criterion: @ HI=1				
Most Stringent? YES				
Protective TPH GW Conc, ug/L = 1680.53				
HI = 1.00E+00				
RISK = 0.00E+00				
SUMMARY OF PROTECTIVE GW CONCENTRATIONS				
Protective GW TPH Conc, ug/L				
Most Stringent Criterion				
Ground Water Criteria	Most Stringent?	GW TPH, ug/L	RISK @	HI @
HI = 1				
Total Risk = 1E-5				
Total Risk = 1E-6				
Benzene MCL = 5 ug/L				
MTBE = 20 ug/L				
Risk of cPAHs = 1E-5				
Toluene =1000 ug/L				
Ethylbenzene = 700 ug/L				
Total Xylenes = 1000 ug/L				

TEST ADJUSTED CONDITION
This tool allows the user to test whether a particular TPH soil concentration is protective of human health. The Workbook uses the same composition ratio as for the measured data.
Test Adjusted TPH GW Conc
Tested TPH GW Conc, ug/L=
HI=
RISK=
Pass or Fail?

B. Worksheet for Calculating Potable Ground Water Cleanup Levels
(Method B only) WAC 173-340-720

1. Enter Site Information

Date: 12/14/2018

Site Name: Former Tosco Bainbridge

Sample info: GB-13 W

2. Enter Ground Water Concentration Measured

Notes for Data Entry

Chemical of Concern or EC Group	Measured GW Conc	GW Cleanup Level	Current Condition			Adjusted Condition			
			HQ	RISK	Pass or Fail?	GW Conc being tested	HQ	RISK	Pass or Fail?
	ug/L	ug/L	unitless	unitless		ug/L	unitless	unitless	
<u>Petroleum EC Fraction</u>									
AL_EC >5-6			3.71E-01			3.52E+01	1.47E-01		
AL_EC >6-8									
AL_EC >8-10									
AL_EC >10-12	89								
AL_EC >12-16	180								
AL_EC >16-21	25								
AL_EC >21-34	25								
AR_EC >8-10			8.13E-01			5.14E+01	3.21E-01		
AR_EC >10-12	130								
AR_EC >12-16	300								
AR_EC >16-21	59								
AR_EC >21-34	25								
Benzene		5	1.56E-03			3.95E-01	6.18E-04		
Toluene	1	1000							
Ethylbenzene		700							
Total Xylenes		1000							
Naphthalene	2.3	160	1.44E-02			9.10E-01	5.68E-03		
1-Methyl Naphthalene	16		4.00E-02						
2-Methyl Naphthalene	12		3.75E-01						
n-Hexane	0.5		1.04E-03						
MTBE		20							
Ethylene Dibromide (EDB)		0.01							
1,2 Dichloroethane (EDC)		5							
Benzo(a)anthracene		for			<i>for</i> 				

TEST CURRENT CONDITION

Measured TPH GW Conc, ug/L = 864.8

HI = 2.529E+00

RISK = 0.000E+00

Pass or Fail? Fail

CALCULATE PROTECTIVE CONDITION

This tool allows the user to calculate a protective TPH ground water concentration based on various ground water quality criteria. The Workbook uses the same composition ratio as for the measured data.

Calculate Protective TPH GW Conc

Selected Criterion: @ HI=1

Most Stringent? YES

Protective TPH GW Conc, ug/L = 341.97

HI = 1.00E+00

RISK = 0.00E+00

SUMMARY OF PROTECTIVE GW CONCENTRATIONS

Protective GW TPH Conc, ug/L				
Most Stringent Criterion				
Ground Water Criteria	Most Stringent?	GW TPH, ug/L	RISK @	HI @
HI = 1				
Total Risk = 1E-5				
Total Risk = 1E-6				
Benzene MCL = 5 ug/L				
MTBE = 20 ug/L				
Risk of cPAHs = 1E-5				
Toluene =1000 ug/L				
Ethylbenzene = 700 ug/L				
Total Xylenes = 1000 ug/L				

TEST ADJUSTED CONDITION

This tool allows the user to test whether a particular TPH soil concentration is protective of human health. The Workbook uses the same composition ratio as for the measured data.

Test Adjusted TPH GW Conc

Tested TPH GW Conc, ug/L=

HI=

RISK=

Pass or Fail?

B. Worksheet for Calculating Potable Ground Water Cleanup Levels
(Method B only) WAC 173-340-720

1. Enter Site Information

Date:	12/14/2018
Site Name:	Former Tosco Bainbridge
Sample info:	MW-5 Field Duplicate

2. Enter Ground Water Concentration Measured

Notes for Data Entry

Chemical of Concern or EC Group	Measured GW Conc	GW Cleanup Level	Current Condition			Adjusted Condition			
			HQ	RISK	Pass or Fail?	GW Conc being tested	HQ	RISK	Pass or Fail?
	ug/L	ug/L	unitless	unitless		ug/L	unitless	unitless	
<u>Petroleum EC Fraction</u>									
AL_EC >5-6			1.04E-01			5.61E+01	2.34E-01		
AL_EC >6-8									
AL_EC >8-10									
AL_EC >10-12	25								
AL_EC >12-16	25								
AL_EC >16-21	75								
AL_EC >21-34	25								
AR_EC >8-10			1.56E-01			5.61E+01	3.51E-01		
AR_EC >10-12	25								
AR_EC >12-16	25								
AR_EC >16-21	25								
AR_EC >21-34	25								
Benzene		5	1.56E-03			2.25E+00	3.51E-03		
Toluene	1	1000							
Ethylbenzene		700							
Total Xylenes		1000							
Naphthalene	0.31	160	1.94E-03			6.96E-01	4.35E-03		
1-Methyl Naphthalene	1								
2-Methyl Naphthalene	0.01								
n-Hexane	0.5								
MTBE		20							
Ethylene Dibromide (EDB)		0.01							
1,2 Dichloroethane (EDC)		5							
Benzo(a)anthracene		for			<i>for all cPAHs</i>				<i>for all cPAHs</i>
Benzo(b)fluoranthene		all							
Benzo(k)fluoranthene		cPAHs							
Benzo(a)pyrene		Risk =							
Chrysene		1E-05							
Dibenz(a,h)anthracene									
Indeno(1,2,3-cd)pyrene									
Sum	252.82		4.45E-01	0.00E+00		5.68E+02	1.00E+00	0.00E+00	

TEST CURRENT CONDITION
Measured TPH GW Conc, ug/L = 252.82
HI = 4.454E-01
RISK = 0.000E+00
Pass or Fail? Pass

CALCULATE PROTECTIVE CONDITION				
This tool allows the user to calculate a protective TPH ground water concentration based on various ground water quality criteria. The Workbook uses the same composition ratio as for the measured data.				
Calculate Protective TPH GW Conc				
Selected Criterion: @ HI=1				
Most Stringent? YES				
Protective TPH GW Conc, ug/L = 567.66				
HI = 1.00E+00				
RISK = 0.00E+00				
SUMMARY OF PROTECTIVE GW CONCENTRATIONS				
Protective GW TPH Conc, ug/L				
Most Stringent Criterion				
Ground Water Criteria	Most Stringent?	GW TPH, ug/L	RISK @	HI @
HI = 1				
Total Risk = 1E-5				
Total Risk = 1E-6				
Benzene MCL = 5 ug/L				
MTBE = 20 ug/L				
Risk of cPAHs = 1E-5				
Toluene =1000 ug/L				
Ethylbenzene = 700 ug/L				
Total Xylenes = 1000 ug/L				

TEST ADJUSTED CONDITION
This tool allows the user to test whether a particular TPH soil concentration is protective of human health. The Workbook uses the same composition ratio as for the measured data.
Test Adjusted TPH GW Conc
Tested TPH GW Conc, ug/L=
HI=
RISK=
Pass or Fail?

Appendix E

Laboratory Analytical Reports



January 9, 2019

Mr. Mike Noll
GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036

Dear Mr. Noll,

On December 17th, 25 samples were received by our laboratory and assigned our laboratory project number EV18120091. The project was identified as your Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rick Bagan
Laboratory Director

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
		ALS JOB#:	EV18120091
CLIENT CONTACT:	Mike Noll	ALS SAMPLE#:	EV18120091-01
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 2:40:00 PM
CLIENT SAMPLE ID	S.11187604.121418.MN.GB-1-8'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/17/2018	KLS
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/18/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/18/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	85.5	12/17/2018	KLS
C25	NWTPH-DX	79.8	12/18/2018	EBS
Toluene-d8	EPA-8260	93.1	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-02
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 2:45:00 PM
CLIENT SAMPLE ID	S.11187604.121418.MN.GB-1-14.5'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/17/2018	KLS
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/18/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/18/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	86.7	12/17/2018	KLS
C25	NWTPH-DX	87.3	12/18/2018	EBS
Toluene-d8	EPA-8260	93.4	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-03
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 1:30:00 PM
CLIENT SAMPLE ID	S.11187604.121418.MN.GB-2-9'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	60	20	MG/KG	12/19/2018	KLS
C5-C6 Aliphatics	NWVPH	U	5.0	1	MG/KG	01/03/2019	KLS
>C6-C8 Aliphatics	NWVPH	U	5.0	1	MG/KG	01/03/2019	KLS
>C8-C10 Aliphatics	NWVPH	9.0	5.0	1	MG/KG	01/03/2019	KLS
>C8-C10 Aromatics	NWVPH	U	5.0	1	MG/KG	01/03/2019	KLS
Hexane	NWVPH	U	0.20	1	MG/KG	01/03/2019	KLS
TPH-Diesel Range	NWTPH-DX	1400	25	1	MG/KG	12/18/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/18/2018	EBS
>C10-C12 Aliphatics	NWEPH	12	5.0	1	MG/KG	01/03/2019	EBS
>C12-C16 Aliphatics	NWEPH	11	5.0	1	MG/KG	01/03/2019	EBS
>C16-C21 Aliphatics	NWEPH	U	5.0	1	MG/KG	01/03/2019	EBS
>C21-C34 Aliphatics	NWEPH	U	5.0	1	MG/KG	01/03/2019	EBS
>C10-C12 Aromatics	NWEPH	U	5.0	1	MG/KG	01/03/2019	EBS
>C12-C16 Aromatics	NWEPH	7.5	5.0	1	MG/KG	01/03/2019	EBS
>C16-C21 Aromatics	NWEPH	U	5.0	1	MG/KG	01/03/2019	EBS
>C21-C34 Aromatics	NWEPH	U	5.0	1	MG/KG	01/03/2019	EBS
Methyl T-Butyl Ether	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
1,2-Dichloroethane	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
1,2-Dibromoethane	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	28	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	70	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Naphthalene	EPA-8270 SIM	470	20	1	UG/KG	01/03/2019	JMK
2-Methylnaphthalene	EPA-8270 SIM	3300	200	10	UG/KG	01/03/2019	JMK
1-Methylnaphthalene	EPA-8270 SIM	3500	200	10	UG/KG	01/03/2019	JMK
Acenaphthylene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Acenaphthene	EPA-8270 SIM	280	20	1	UG/KG	01/03/2019	JMK
Fluorene	EPA-8270 SIM	970	20	1	UG/KG	01/03/2019	JMK
Phenanthrene	EPA-8270 SIM	1500	200	10	UG/KG	01/03/2019	JMK
Anthracene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Pyrene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Benzo[A]Anthracene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Chrysene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Benzo[B]Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Benzo[K]Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-03
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 1:30:00 PM
CLIENT SAMPLE ID	S.11187604.121418.MN.GB-2-9'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Benzo[A]Pyrene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT 20X Dilution	NWTPH-GX	98.4	12/19/2018	KLS
TFT - Aliphatic	NWVPH	3.37 GS1	01/03/2019	KLS
TFT - Aromatic	NWVPH	0 GS1	01/03/2019	KLS
TFT - Hexane	NWVPH	4.76 GS1	01/03/2019	KLS
C25	NWTPH-DX	85.2	12/18/2018	EBS
C25	NWEPH	120	01/03/2019	EBS
p-Terphenyl	NWEPH	120	01/03/2019	EBS
1,2-Dichloroethane-d4	EPA-8260	98.8	12/18/2018	CCN
Toluene-d8	EPA-8260	108	12/18/2018	CCN
Terphenyl-d14	EPA-8270 SIM	131	01/03/2019	JMK
Terphenyl-d14 10X Dilution	EPA-8270 SIM	109	01/03/2019	JMK

GS1 - Surrogate outside of control limits due to matrix effect.

U - Analyte analyzed for but not detected at level above reporting limit.

Chromatogram indicates that it is likely that sample contains weathered diesel.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-04
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 1:35:00 PM
CLIENT SAMPLE ID	S.11187604.121418.MN.GB-2-11'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	860	25	1	MG/KG	12/18/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/18/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	96.2	12/18/2018	KLS
C25	NWTPH-DX	95.0	12/18/2018	EBS
Toluene-d8	EPA-8260	87.2	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains weathered diesel.



CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-05
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 2:55:00 PM
CLIENT SAMPLE ID	S.11187604.121418.MN.GB-3-8'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	30	10	MG/KG	12/18/2018	KLS
C5-C6 Aliphatics	NWVPH	U	5.0	1	MG/KG	01/03/2019	KLS
>C6-C8 Aliphatics	NWVPH	U	5.0	1	MG/KG	01/03/2019	KLS
>C8-C10 Aliphatics	NWVPH	35	5.0	1	MG/KG	01/03/2019	KLS
>C8-C10 Aromatics	NWVPH	22	5.0	1	MG/KG	01/03/2019	KLS
Hexane	NWVPH	U	0.20	1	MG/KG	01/03/2019	KLS
TPH-Diesel Range	NWTPH-DX	2300	50	2	MG/KG	12/18/2018	EBS
TPH-Oil Range	NWTPH-DX	U	100	2	MG/KG	12/18/2018	EBS
>C10-C12 Aliphatics	NWEPH	250	5.0	1	MG/KG	01/03/2019	EBS
>C12-C16 Aliphatics	NWEPH	1000	5.0	1	MG/KG	01/03/2019	EBS
>C16-C21 Aliphatics	NWEPH	610	5.0	1	MG/KG	01/03/2019	EBS
>C21-C34 Aliphatics	NWEPH	65	5.0	1	MG/KG	01/03/2019	EBS
>C10-C12 Aromatics	NWEPH	29	5.0	1	MG/KG	01/03/2019	EBS
>C12-C16 Aromatics	NWEPH	240	5.0	1	MG/KG	01/03/2019	EBS
>C16-C21 Aromatics	NWEPH	430	5.0	1	MG/KG	01/03/2019	EBS
>C21-C34 Aromatics	NWEPH	47	5.0	1	MG/KG	01/03/2019	EBS
Methyl T-Butyl Ether	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
1,2-Dichloroethane	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
1,2-Dibromoethane	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Naphthalene	EPA-8270 SIM	350	20	1	UG/KG	01/03/2019	JMK
2-Methylnaphthalene	EPA-8270 SIM	1300	200	10	UG/KG	01/03/2019	JMK
1-Methylnaphthalene	EPA-8270 SIM	3700	200	10	UG/KG	01/03/2019	JMK
Acenaphthylene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Acenaphthene	EPA-8270 SIM	310	20	1	UG/KG	01/03/2019	JMK
Fluorene	EPA-8270 SIM	1000	20	1	UG/KG	01/03/2019	JMK
Phenanthrene	EPA-8270 SIM	1800	200	10	UG/KG	01/03/2019	JMK
Anthracene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Pyrene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Benzo[A]Anthracene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Chrysene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Benzo[B]Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Benzo[K]Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-05
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 2:55:00 PM
CLIENT SAMPLE ID	S.11187604.121418.MN.GB-3-8'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Benzo[A]Pyrene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	20	1	UG/KG	01/03/2019	JMK

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT 10X Dilution	NWTPH-GX	104	12/18/2018	KLS
TFT - Aliphatic	NWVPH	24.2 GS1	01/03/2019	KLS
TFT - Aromatic	NWVPH	37.5 GS1	01/03/2019	KLS
TFT - Hexane	NWVPH	26.6 GS1	01/03/2019	KLS
C25 2X Dilution	NWTPH-DX	95.0	12/18/2018	EBS
C25	NWEPH	113	01/03/2019	EBS
p-Terphenyl	NWEPH	96.7	01/03/2019	EBS
1,2-Dichloroethane-d4	EPA-8260	96.3	12/18/2018	CCN
Toluene-d8	EPA-8260	104	12/18/2018	CCN
Terphenyl-d14	EPA-8270 SIM	110	01/03/2019	JMK
Terphenyl-d14 10X Dilution	EPA-8270 SIM	99.0	01/03/2019	JMK

U - Analyte analyzed for but not detected at level above reporting limit.

GS1 - Surrogate outside of control limits due to matrix effect.

Chromatogram indicates that it is likely that sample contains weathered diesel.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-06
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 3:00:00 PM
CLIENT SAMPLE ID	S.11187604.121418.MN.GB-3-12'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	30	10	MG/KG	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	2000	50	2	MG/KG	12/18/2018	EBS
TPH-Oil Range	NWTPH-DX	U	100	2	MG/KG	12/18/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	21	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT 10X Dilution	NWTPH-GX	105	12/18/2018	KLS
C25 2X Dilution	NWTPH-DX	84.2	12/18/2018	EBS
Toluene-d8	EPA-8260	82.6	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains weathered diesel.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-07
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 2:00:00 PM
CLIENT SAMPLE ID	S.11187604.121418.MN.GB-4-9'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	30	10	MG/KG	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	1200	50	2	MG/KG	12/18/2018	EBS
TPH-Oil Range	NWTPH-DX	U	100	2	MG/KG	12/18/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT 10X Dilution	NWTPH-GX	103	12/18/2018	KLS
C25 2X Dilution	NWTPH-DX	82.0	12/18/2018	EBS
Toluene-d8	EPA-8260	99.2	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains weathered diesel.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-08
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 2:05:00 PM
CLIENT SAMPLE ID	S.11187604.121418.MN.GB-4-14'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	840	50	2	MG/KG	12/18/2018	EBS
TPH-Oil Range	NWTPH-DX	U	100	2	MG/KG	12/18/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	92.9	12/18/2018	KLS
C25 2X Dilution	NWTPH-DX	88.8	12/18/2018	EBS
Toluene-d8	EPA-8260	81.0	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains weathered diesel.



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services DATE: 1/9/2019
20818 - 44th Ave W., Suite 190 ALS JOB#: EV18120091
Lynnwood, WA 98036 ALS SAMPLE#: EV18120091-09
CLIENT CONTACT: Mike Noll DATE RECEIVED: 12/17/2018
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref. COLLECTION DATE: 12/14/2018 1:30:00 PM
Code 11187604-2018-01
CLIENT SAMPLE ID S.11187604.121418.MN.GB-5-8' WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	160	25	1	MG/KG	12/18/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/18/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	82.9	12/18/2018	KLS
C25	NWTPH-DX	85.5	12/18/2018	EBS
Toluene-d8	EPA-8260	97.6	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains weathered diesel.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-10
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 1:35:00 PM
CLIENT SAMPLE ID	S.11187604.121418.MN.GB-5-14'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/18/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/18/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	87.4	12/18/2018	KLS
C25	NWTPH-DX	81.2	12/18/2018	EBS
Toluene-d8	EPA-8260	105	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036
DATE: 1/9/2019
ALS JOB#: EV18120091
ALS SAMPLE#: EV18120091-11
CLIENT CONTACT: Mike Noll
DATE RECEIVED: 12/17/2018
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref.
COLLECTION DATE: 12/14/2018 9:25:00 AM
Code 11187604-2018-01
CLIENT SAMPLE ID S.11187604.121418.MN.GB-10-7' WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	220	25	1	MG/KG	12/18/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/18/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	91.0	12/18/2018	KLS
C25	NWTPH-DX	86.4	12/18/2018	EBS
Toluene-d8	EPA-8260	101	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered diesel.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
		ALS JOB#:	EV18120091
CLIENT CONTACT:	Mike Noll	ALS SAMPLE#:	EV18120091-12
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 9:30:00 AM
CLIENT SAMPLE ID	S.11187604.121418.MN.GB-10-12'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/18/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/18/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	93.2	12/18/2018	KLS
C25	NWTPH-DX	83.2	12/18/2018	EBS
Toluene-d8	EPA-8260	109	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036
DATE: 1/9/2019
ALS JOB#: EV18120091
ALS SAMPLE#: EV18120091-13
CLIENT CONTACT: Mike Noll
DATE RECEIVED: 12/17/2018
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref.
COLLECTION DATE: 12/14/2018 1:10:00 PM
Code 11187604-2018-01
CLIENT SAMPLE ID S.11187604.121418.MN.GB-13-9' WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	30	10	MG/KG	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	190	25	1	MG/KG	12/19/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/19/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT 10X Dilution	NWTPH-GX	104	12/18/2018	KLS
C25	NWTPH-DX	87.3	12/19/2018	EBS
Toluene-d8	EPA-8260	90.8	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains weathered diesel 1.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
		ALS JOB#:	EV18120091
		ALS SAMPLE#:	EV18120091-14
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	12/17/2018
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	COLLECTION DATE:	12/14/2018 1:15:00 PM
CLIENT SAMPLE ID	S.11187604.121418.MN.GB-13-12'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/18/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/18/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	90.0	12/18/2018	KLS
C25	NWTPH-DX	94.8	12/18/2018	EBS
Toluene-d8	EPA-8260	101	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036
DATE: 1/9/2019
ALS JOB#: EV18120091
ALS SAMPLE#: EV18120091-15
CLIENT CONTACT: Mike Noll
DATE RECEIVED: 12/17/2018
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref.
COLLECTION DATE: 12/14/2018 10:05:00 AM
Code 11187604-2018-01
CLIENT SAMPLE ID S.11187604.121418.MN.GB-14-7'
WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/19/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/19/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	92.8	12/18/2018	KLS
C25	NWTPH-DX	85.6	12/19/2018	EBS
Toluene-d8	EPA-8260	101	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
		ALS JOB#:	EV18120091
CLIENT CONTACT:	Mike Noll	ALS SAMPLE#:	EV18120091-16
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 10:10:00 AM
CLIENT SAMPLE ID	S.11187604.121418.MN.GB-14-12'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/19/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/19/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	104	12/18/2018	KLS
C25	NWTPH-DX	82.7	12/19/2018	EBS
Toluene-d8	EPA-8260	97.4	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036
DATE: 1/9/2019
ALS JOB#: EV18120091
ALS SAMPLE#: EV18120091-17
CLIENT CONTACT: Mike Noll
DATE RECEIVED: 12/17/2018
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref.
COLLECTION DATE: 12/14/2018 10:50:00 AM
Code 11187604-2018-01
CLIENT SAMPLE ID S.11187604.121418.MN.GB-15-7' WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/18/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/18/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	92.8	12/18/2018	KLS
C25	NWTPH-DX	90.0	12/18/2018	EBS
Toluene-d8	EPA-8260	97.7	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services DATE: 1/9/2019
20818 - 44th Ave W., Suite 190 ALS JOB#: EV18120091
Lynnwood, WA 98036 ALS SAMPLE#: EV18120091-18
CLIENT CONTACT: Mike Noll DATE RECEIVED: 12/17/2018
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref. COLLECTION DATE: 12/14/2018 10:55:00 AM
Code 11187604-2018-01
CLIENT SAMPLE ID S.11187604.121418.MN.GB-15-12' WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/19/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/19/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	97.6	12/18/2018	KLS
C25	NWTPH-DX	97.8	12/19/2018	EBS
Toluene-d8	EPA-8260	97.8	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-19
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 4:20:00 PM
CLIENT SAMPLE ID	S.11187604.121418.MN.SED-1	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/19/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/19/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/18/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/18/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/18/2018	CCN
Naphthalene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
2-Methylnaphthalene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
1-Methylnaphthalene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
Acenaphthylene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
Acenaphthene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
Fluorene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
Phenanthrene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
Anthracene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
Pyrene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
Benzo[A]Anthracene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
Chrysene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
Benzo[B]Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
Benzo[K]Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
Benzo[A]Pyrene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	20	1	UG/KG	12/17/2018	JMK

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	84.8	12/18/2018	KLS
C25	NWTPH-DX	95.8	12/19/2018	EBS
Toluene-d8	EPA-8260	100	12/18/2018	CCN
Terphenyl-d14	EPA-8270 SIM	118	12/17/2018	JMK

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-20
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 3:50:00 PM
CLIENT SAMPLE ID	W.11187604.121418.MN.GB-10	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	50	1	UG/L	12/18/2018	KLS
C5-C6 Aliphatics	NWVPH	U	50	1	UG/L	01/03/2019	KLS
>C6-C8 Aliphatics	NWVPH	U	50	1	UG/L	01/03/2019	KLS
>C8-C10 Aliphatics	NWVPH	U	50	1	UG/L	01/03/2019	KLS
>C8-C10 Aromatics	NWVPH	U	50	1	UG/L	01/03/2019	KLS
Hexane	NWVPH	1.6	1.0	1	UG/L	01/03/2019	KLS
TPH-Diesel Range	NWTPH-DX	9400	130	1	UG/L	12/17/2018	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	12/17/2018	EBS
>C10-C12 Aliphatics	NWEPH	U	53	1	UG/L	01/03/2019	EBS
>C12-C16 Aliphatics	NWEPH	590	53	1	UG/L	01/03/2019	EBS
>C16-C21 Aliphatics	NWEPH	2400	53	1	UG/L	01/03/2019	EBS
>C21-C34 Aliphatics	NWEPH	810	53	1	UG/L	01/03/2019	EBS
>C10-C12 Aromatics	NWEPH	U	53	1	UG/L	01/03/2019	EBS
>C12-C16 Aromatics	NWEPH	U	53	1	UG/L	01/03/2019	EBS
>C16-C21 Aromatics	NWEPH	280	53	1	UG/L	01/03/2019	EBS
>C21-C34 Aromatics	NWEPH	270	53	1	UG/L	01/03/2019	EBS
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
1,2-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Benzene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Toluene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
1,2-Dibromoethane	EPA-8260	U	0.010	1	UG/L	12/17/2018	CCN
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/17/2018	CCN
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Naphthalene	EPA-8270 SIM	0.025	0.020	1	UG/L	12/18/2018	JMK
2-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
1-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Acenaphthylene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Acenaphthene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Fluorene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Phenanthrene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[A]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Chrysene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[B]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-20
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 3:50:00 PM
CLIENT SAMPLE ID	W.11187604.121418.MN.GB-10	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Benzo[A]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	96.7	12/18/2018	KLS
TFT - Aliphatic	NWVPH	96.2	01/03/2019	KLS
TFT - Aromatic	NWVPH	88.6	01/03/2019	KLS
TFT - Hexane	NWVPH	98.0	01/03/2019	KLS
C25	NWTPH-DX	95.0	12/17/2018	EBS
C25	NWEPH	96.1	01/03/2019	EBS
p-Terphenyl	NWEPH	89.8	01/03/2019	EBS
1,2-Dichloroethane-d4	EPA-8260	86.7	12/17/2018	CCN
Toluene-d8	EPA-8260	105	12/17/2018	CCN
Terphenyl-d14	EPA-8270 SIM	32.5 SUR11	12/18/2018	JMK

SUR11 -Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix interferences.

U - Analyte analyzed for but not detected at level above reporting limit.

Chromatogram indicates that it is likely that sample contains highly weathered diesel.



CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-21
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 4:30:00 PM
CLIENT SAMPLE ID	W.11187604.121418.MN.GB-13	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	550	50	1	UG/L	12/19/2018	KLS
C5-C6 Aliphatics	NWVPH	U	50	1	UG/L	01/03/2019	KLS
>C6-C8 Aliphatics	NWVPH	U	50	1	UG/L	01/03/2019	KLS
>C8-C10 Aliphatics	NWVPH	U	50	1	UG/L	01/03/2019	KLS
>C8-C10 Aromatics	NWVPH	U	50	1	UG/L	01/03/2019	KLS
Hexane	NWVPH	U	1.0	1	UG/L	01/03/2019	KLS
TPH-Diesel Range	NWTPH-DX	2800	130	1	UG/L	12/17/2018	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	12/17/2018	EBS
>C10-C12 Aliphatics	NWEPH	89	50	1	UG/L	01/03/2019	EBS
>C12-C16 Aliphatics	NWEPH	180	50	1	UG/L	01/03/2019	EBS
>C16-C21 Aliphatics	NWEPH	U	50	1	UG/L	01/03/2019	EBS
>C21-C34 Aliphatics	NWEPH	U	50	1	UG/L	01/03/2019	EBS
>C10-C12 Aromatics	NWEPH	130	50	1	UG/L	01/03/2019	EBS
>C12-C16 Aromatics	NWEPH	300	50	1	UG/L	01/03/2019	EBS
>C16-C21 Aromatics	NWEPH	59	50	1	UG/L	01/03/2019	EBS
>C21-C34 Aromatics	NWEPH	U	50	1	UG/L	01/03/2019	EBS
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
1,2-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Benzene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Toluene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
1,2-Dibromoethane	EPA-8260	U	0.010	1	UG/L	12/17/2018	CCN
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/17/2018	CCN
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Naphthalene	EPA-8270 SIM	2.3	0.020	1	UG/L	12/18/2018	JMK
2-Methylnaphthalene	EPA-8270 SIM	12	0.20	10	UG/L	12/19/2018	JMK
1-Methylnaphthalene	EPA-8270 SIM	16	0.20	10	UG/L	12/19/2018	JMK
Acenaphthylene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Acenaphthene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Fluorene	EPA-8270 SIM	1.6	0.020	1	UG/L	12/18/2018	JMK
Phenanthrene	EPA-8270 SIM	0.14	0.020	1	UG/L	12/18/2018	JMK
Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[A]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Chrysene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[B]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-21
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 4:30:00 PM
CLIENT SAMPLE ID	W.11187604.121418.MN.GB-13	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Benzo[A]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	94.8	12/19/2018	KLS
TFT - Aliphatic	NWVPH	94.7	01/03/2019	KLS
TFT - Aromatic	NWVPH	89.6	01/03/2019	KLS
TFT - Hexane	NWVPH	96.3	01/03/2019	KLS
C25	NWTPH-DX	99.8	12/17/2018	EBS
C25	NWEPH	99.7	01/03/2019	EBS
p-Terphenyl	NWEPH	72.7	01/03/2019	EBS
1,2-Dichloroethane-d4	EPA-8260	86.3	12/17/2018	CCN
Toluene-d8	EPA-8260	121 GS4	12/17/2018	CCN
Terphenyl-d14	EPA-8270 SIM	105	12/18/2018	JMK
Terphenyl-d14 10X Dilution	EPA-8270 SIM	101	12/19/2018	JMK

GS4 - Surrogate outside of control limits with a high bias. Associated compounds non-detect. No corrective action taken.

U - Analyte analyzed for but not detected at level above reporting limit.

Chromatogram indicates that it is likely that sample contains an unidentified gasoline range product and highly weathered diesel.

Diesel range product results biased high due to gasoline range product overlap.



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services DATE: 1/9/2019
20818 - 44th Ave W., Suite 190 ALS JOB#: EV18120091
Lynnwood, WA 98036 ALS SAMPLE#: EV18120091-22
CLIENT CONTACT: Mike Noll DATE RECEIVED: 12/17/2018
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref. COLLECTION DATE: 12/14/2018 12:05:00 PM
Code 11187604-2018-01
CLIENT SAMPLE ID W.11187604.121418.NT.MW-2A WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	50	1	UG/L	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	730	130	1	UG/L	12/17/2018	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	12/17/2018	EBS
Benzene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Toluene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/17/2018	CCN
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	96.0	12/18/2018	KLS
C25	NWTPH-DX	102	12/17/2018	EBS
Toluene-d8	EPA-8260	105	12/17/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered diesel.



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036
DATE: 1/9/2019
ALS JOB#: EV18120091
ALS SAMPLE#: EV18120091-23
CLIENT CONTACT: Mike Noll
DATE RECEIVED: 12/17/2018
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref.
COLLECTION DATE: 12/14/2018 2:20:00 PM
Code 11187604-2018-01
CLIENT SAMPLE ID W.11187604.121418.NT.MW-4
WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	50	1	UG/L	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	800	130	1	UG/L	12/17/2018	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	12/17/2018	EBS
Benzene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Toluene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/17/2018	CCN
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	95.6	12/18/2018	KLS
C25	NWTPH-DX	83.0	12/17/2018	EBS
Toluene-d8	EPA-8260	104	12/17/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered diesel.



CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-24
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 12:50:00 PM
CLIENT SAMPLE ID	W.11187604.121418.NT.MW-5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	50	1	UG/L	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	4400	130	1	UG/L	12/17/2018	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	12/17/2018	EBS
>C8-C10 Aliphatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C10-C12 Aliphatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C12-C16 Aliphatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C16-C21 Aliphatics	NWEPH	76	50	1	UG/L	12/28/2018	EBS
>C21-C34 Aliphatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C8-C10 Aromatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C10-C12 Aromatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C12-C16 Aromatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C16-C21 Aromatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C21-C34 Aromatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
Benzene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Toluene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/17/2018	CCN
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Naphthalene	EPA-8270 SIM	0.14	0.020	1	UG/L	12/18/2018	JMK
2-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
1-Methylnaphthalene	EPA-8270 SIM	0.37	0.020	1	UG/L	12/18/2018	JMK
Acenaphthylene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Acenaphthene	EPA-8270 SIM	0.13	0.020	1	UG/L	12/18/2018	JMK
Fluorene	EPA-8270 SIM	0.12	0.020	1	UG/L	12/18/2018	JMK
Phenanthrene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[A]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Chrysene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[B]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[A]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-24
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 12:50:00 PM
CLIENT SAMPLE ID	W.11187604.121418.NT.MW-5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS	
			DATE	BY
TFT	NWTPH-GX	97.4	12/18/2018	KLS
C25	NWTPH-DX	113	12/17/2018	EBS
C25	NWEPH	93.1	12/28/2018	EBS
p-Terphenyl	NWEPH	87.7	12/28/2018	EBS
Toluene-d8	EPA-8260	104	12/17/2018	CCN
Terphenyl-d14	EPA-8270 SIM	115	12/18/2018	JMK

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered diesel.



CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-25
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 11:00:00 AM
CLIENT SAMPLE ID	W.11187604.121418.NT.MW-100	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	50	1	UG/L	12/18/2018	KLS
TPH-Diesel Range	NWTPH-DX	4300	130	1	UG/L	12/17/2018	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	12/17/2018	EBS
>C8-C10 Aliphatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C10-C12 Aliphatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C12-C16 Aliphatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C16-C21 Aliphatics	NWEPH	75	50	1	UG/L	12/28/2018	EBS
>C21-C34 Aliphatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C8-C10 Aromatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C10-C12 Aromatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C12-C16 Aromatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C16-C21 Aromatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C21-C34 Aromatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
Benzene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Toluene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/17/2018	CCN
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/17/2018	CCN
Naphthalene	EPA-8270 SIM	0.31	0.020	1	UG/L	12/18/2018	JMK
2-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
1-Methylnaphthalene	EPA-8270 SIM	1.0	0.020	1	UG/L	12/18/2018	JMK
Acenaphthylene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Acenaphthene	EPA-8270 SIM	0.19	0.020	1	UG/L	12/18/2018	JMK
Fluorene	EPA-8270 SIM	0.35	0.020	1	UG/L	12/18/2018	JMK
Phenanthrene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[A]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Chrysene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[B]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[A]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	0.020	1	UG/L	12/18/2018	JMK



CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV18120091
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01	ALS SAMPLE#:	EV18120091-25
		DATE RECEIVED:	12/17/2018
		COLLECTION DATE:	12/14/2018 11:00:00 AM
CLIENT SAMPLE ID	W.11187604.121418.NT.MW-100	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS	
			DATE	BY
TFT	NWTPH-GX	97.8	12/18/2018	KLS
C25	NWTPH-DX	111	12/17/2018	EBS
C25	NWEPH	97.6	12/28/2018	EBS
p-Terphenyl	NWEPH	99.0	12/28/2018	EBS
Toluene-d8	EPA-8260	104	12/17/2018	CCN
Terphenyl-d14	EPA-8270 SIM	110	12/18/2018	JMK

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered diesel.



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036
DATE: 1/9/2019
ALS SDG#: EV18120091
WDOE ACCREDITATION: C601

CLIENT CONTACT: Mike Noll
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref.
Code 11187604-2018-01

LABORATORY BLANK RESULTS

MBG-121718S - Batch 135759 - Soil by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	12/17/2018	KLS

U - Analyte analyzed for but not detected at level above reporting limit.

MBG-121818W - Batch 135760 - Water by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	UG/L	50	12/18/2018	KLS

U - Analyte analyzed for but not detected at level above reporting limit.

MB-010319S - Batch R330726 - Soil by NWVPH

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	9.1	MG/KG	5.0	01/03/2019	KLS
>C6-C8 Aliphatics	NWVPH	7.4	MG/KG	5.0	01/03/2019	KLS
>C8-C10 Aliphatics	NWVPH	5.2	MG/KG	5.0	01/03/2019	KLS
>C8-C10 Aromatics	NWVPH	U	MG/KG	5.0	01/03/2019	KLS
Hexane	NWVPH	U	MG/KG	0.20	01/03/2019	KLS

U - Analyte analyzed for but not detected at level above reporting limit.

MB-010319W - Batch R330723 - Water by NWVPH

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	U	UG/L	50	01/03/2019	KLS
>C6-C8 Aliphatics	NWVPH	U	UG/L	50	01/03/2019	KLS
>C8-C10 Aliphatics	NWVPH	U	UG/L	50	01/03/2019	KLS
>C8-C10 Aromatics	NWVPH	U	UG/L	50	01/03/2019	KLS
Hexane	NWVPH	U	UG/L	1.0	01/03/2019	KLS

U - Analyte analyzed for but not detected at level above reporting limit.

MB-121818S - Batch 136089 - Soil by NWTPH-DX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	MG/KG	25	12/18/2018	EBS
TPH-Oil Range	NWTPH-DX	U	MG/KG	50	12/18/2018	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

CERTIFICATE OF ANALYSIS

CLIENT: GHD Services
 20818 - 44th Ave W., Suite 190
 Lynnwood, WA 98036
CLIENT CONTACT: Mike Noll
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref.
 Code 11187604-2018-01

DATE: 1/9/2019
ALS SDG#: EV18120091
WDOE ACCREDITATION: C601

LABORATORY BLANK RESULTS
MB-121718W - Batch 135762 - Water by NWTPH-DX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	UG/L	130	12/17/2018	EBS
TPH-Oil Range	NWTPH-DX	U	UG/L	250	12/17/2018	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

MB-010219S - Batch 136406 - Soil by NWEPH

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
>C10-C12 Aliphatics	NWEPH	U	MG/KG	5.0	01/03/2019	EBS
>C12-C16 Aliphatics	NWEPH	U	MG/KG	5.0	01/03/2019	EBS
>C16-C21 Aliphatics	NWEPH	U	MG/KG	5.0	01/03/2019	EBS
>C21-C34 Aliphatics	NWEPH	U	MG/KG	5.0	01/03/2019	EBS
>C10-C12 Aromatics	NWEPH	U	MG/KG	5.0	01/03/2019	EBS
>C12-C16 Aromatics	NWEPH	U	MG/KG	5.0	01/03/2019	EBS
>C16-C21 Aromatics	NWEPH	U	MG/KG	5.0	01/03/2019	EBS
>C21-C34 Aromatics	NWEPH	U	MG/KG	5.0	01/03/2019	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

MBLK-R330270 - Batch R330270 - Water by NWEPH

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	U	UG/L	50	12/28/2018	EBS
>C10-C12 Aliphatics	NWEPH	U	UG/L	50	12/28/2018	EBS
>C12-C16 Aliphatics	NWEPH	U	UG/L	50	12/28/2018	EBS
>C16-C21 Aliphatics	NWEPH	U	UG/L	50	12/28/2018	EBS
>C21-C34 Aliphatics	NWEPH	U	UG/L	50	12/28/2018	EBS
>C8-C10 Aromatics	NWEPH	U	UG/L	50	12/28/2018	EBS
>C10-C12 Aromatics	NWEPH	U	UG/L	50	12/28/2018	EBS
>C12-C16 Aromatics	NWEPH	U	UG/L	50	12/28/2018	EBS
>C16-C21 Aromatics	NWEPH	U	UG/L	50	12/28/2018	EBS
>C21-C34 Aromatics	NWEPH	U	UG/L	50	12/28/2018	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

MB-121818S - Batch 135869 - Soil by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
1,1-Dichloroethene	EPA-8260	U	UG/KG	10	12/18/2018	CCN
Methyl T-Butyl Ether	EPA-8260	U	UG/KG	10	12/18/2018	CCN



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036
DATE: 1/9/2019
ALS SDG#: EV18120091
WDOE ACCREDITATION: C601

CLIENT CONTACT: Mike Noll
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref.
Code 11187604-2018-01

LABORATORY BLANK RESULTS

MB-121818S - Batch 135869 - Soil by EPA-8260

1,2-Dichloroethane	EPA-8260	U	UG/KG	10	12/18/2018	CCN
Benzene	EPA-8260	U	UG/KG	5.0	12/18/2018	CCN
Toluene	EPA-8260	U	UG/KG	10	12/18/2018	CCN
1,2-Dibromoethane	EPA-8260	U	UG/KG	5.0	12/18/2018	CCN
Ethylbenzene	EPA-8260	U	UG/KG	10	12/18/2018	CCN
m,p-Xylene	EPA-8260	U	UG/KG	20	12/18/2018	CCN
o-Xylene	EPA-8260	U	UG/KG	10	12/18/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.

MB-121718W - Batch 135749 - Water by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
1,1-Dichloroethene	EPA-8260	U	UG/L	2.0	12/17/2018	CCN
Methyl T-Butyl Ether	EPA-8260	U	UG/L	2.0	12/17/2018	CCN
1,2-Dichloroethane	EPA-8260	U	UG/L	2.0	12/17/2018	CCN
Benzene	EPA-8260	U	UG/L	2.0	12/17/2018	CCN
Toluene	EPA-8260	U	UG/L	2.0	12/17/2018	CCN
1,2-Dibromoethane	EPA-8260	U	UG/L	0.010	12/17/2018	CCN
Ethylbenzene	EPA-8260	U	UG/L	2.0	12/17/2018	CCN
m,p-Xylene	EPA-8260	U	UG/L	4.0	12/17/2018	CCN
o-Xylene	EPA-8260	U	UG/L	2.0	12/17/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.

MB-010219S - Batch 136271 - Soil by EPA-8270 SIM

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Naphthalene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
2-Methylnaphthalene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
1-Methylnaphthalene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
Acenaphthylene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
Acenaphthene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
Fluorene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
Phenanthrene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
Anthracene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
Fluoranthene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
Pyrene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
Benzo[A]Anthracene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
Chrysene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
Benzo[B]Fluoranthene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
Benzo[K]Fluoranthene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036
DATE: 1/9/2019
ALS SDG#: EV18120091
WDOE ACCREDITATION: C601

CLIENT CONTACT: Mike Noll
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref.
Code 11187604-2018-01

LABORATORY BLANK RESULTS

MB-010219S - Batch 136271 - Soil by EPA-8270 SIM

Benzo[A]Pyrene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	UG/KG	20	01/03/2019	JMK

U - Analyte analyzed for but not detected at level above reporting limit.

MB-121718S - Batch 135700 - Soil by EPA-8270 SIM

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Naphthalene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
2-Methylnaphthalene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
1-Methylnaphthalene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
Acenaphthylene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
Acenaphthene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
Fluorene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
Phenanthrene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
Anthracene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
Fluoranthene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
Pyrene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
Benzo[A]Anthracene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
Chrysene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
Benzo[B]Fluoranthene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
Benzo[K]Fluoranthene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
Benzo[A]Pyrene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	UG/KG	20	12/17/2018	JMK

U - Analyte analyzed for but not detected at level above reporting limit.

MB-121818W - Batch 135776 - Water by EPA-8270 SIM

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Naphthalene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
2-Methylnaphthalene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
1-Methylnaphthalene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
Acenaphthylene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
Acenaphthene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
Fluorene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
Phenanthrene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
Anthracene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036
DATE: 1/9/2019
ALS SDG#: EV18120091
WDOE ACCREDITATION: C601

CLIENT CONTACT: Mike Noll
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref.
Code 11187604-2018-01

LABORATORY BLANK RESULTS

MB-121818W - Batch 135776 - Water by EPA-8270 SIM

Fluoranthene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
Pyrene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
Benzo[A]Anthracene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
Chrysene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
Benzo[B]Fluoranthene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
Benzo[K]Fluoranthene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
Benzo[A]Pyrene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	UG/L	0.020	12/18/2018	JMK

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

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CLIENT CONTACT: Mike Noll
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref.
Code 11187604-2018-01

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 135759 - Soil by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
TPH-Volatile Range - BS	NWTPH-GX	83.3			66.5	122.7	12/18/2018	KLS
TPH-Volatile Range - BSD	NWTPH-GX	84.5	1		66.5	122.7	12/18/2018	KLS

ALS Test Batch ID: 135760 - Water by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
TPH-Volatile Range - BS	NWTPH-GX	88.5			66.5	122.7	12/18/2018	KLS
TPH-Volatile Range - BSD	NWTPH-GX	90.9	3		66.5	122.7	12/18/2018	KLS

ALS Test Batch ID: R330726 - Soil by NWVPH

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
C5-C6 Aliphatics - BS	NWVPH	99.7			70	130	01/03/2019	KLS
C5-C6 Aliphatics - BSD	NWVPH	94.2	6		70	130	01/03/2019	KLS
>C6-C8 Aliphatics - BS	NWVPH	80.0			70	130	01/03/2019	KLS
>C6-C8 Aliphatics - BSD	NWVPH	78.9	1		70	130	01/03/2019	KLS
>C8-C10 Aliphatics - BS	NWVPH	84.4			70	130	01/03/2019	KLS
>C8-C10 Aliphatics - BSD	NWVPH	87.9	4		70	130	01/03/2019	KLS
>C8-C10 Aromatics - BS	NWVPH	91.8			70	130	01/03/2019	KLS
>C8-C10 Aromatics - BSD	NWVPH	96.2	5		70	130	01/03/2019	KLS
Hexane - BS	NWVPH	101			70	130	01/03/2019	KLS
Hexane - BSD	NWVPH	94.9	6		70	130	01/03/2019	KLS

ALS Test Batch ID: R330723 - Water by NWVPH

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
C5-C6 Aliphatics - BS	NWVPH	98.8			70	130	01/03/2019	KLS
C5-C6 Aliphatics - BSD	NWVPH	105	6		70	130	01/03/2019	KLS
>C6-C8 Aliphatics - BS	NWVPH	81.6			70	130	01/03/2019	KLS
>C6-C8 Aliphatics - BSD	NWVPH	87.3	7		70	130	01/03/2019	KLS
>C8-C10 Aliphatics - BS	NWVPH	87.2			70	130	01/03/2019	KLS
>C8-C10 Aliphatics - BSD	NWVPH	94.9	8		70	130	01/03/2019	KLS
>C8-C10 Aromatics - BS	NWVPH	99.0			70	130	01/03/2019	KLS
>C8-C10 Aromatics - BSD	NWVPH	100	1		70	130	01/03/2019	KLS
Hexane - BS	NWVPH	99.9			70	130	01/03/2019	KLS
Hexane - BSD	NWVPH	106	5		70	130	01/03/2019	KLS



CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
		ALS SDG#:	EV18120091
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Mike Noll		
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 136089 - Soil by NWTPH-DX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
TPH-Diesel Range - BS	NWTPH-DX	93.8			75.5	122.1	12/18/2018	EBS
TPH-Diesel Range - BSD	NWTPH-DX	106	12		75.5	122.1	12/18/2018	EBS

ALS Test Batch ID: 135762 - Water by NWTPH-DX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
TPH-Diesel Range - BS	NWTPH-DX	91.5			67	125.2	12/17/2018	EBS
TPH-Diesel Range - BSD	NWTPH-DX	93.4	2		67	125.2	12/17/2018	EBS

ALS Test Batch ID: 136406 - Soil by NWEPH

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
>C10-C12 Aliphatics - BS	NWEPH	103			70	130	01/03/2019	EBS
>C10-C12 Aliphatics - BSD	NWEPH	101	2		70	130	01/03/2019	EBS
>C12-C16 Aliphatics - BS	NWEPH	110			70	130	01/03/2019	EBS
>C12-C16 Aliphatics - BSD	NWEPH	108	2		70	130	01/03/2019	EBS
>C16-C21 Aliphatics - BS	NWEPH	110			70	130	01/03/2019	EBS
>C16-C21 Aliphatics - BSD	NWEPH	108	1		70	130	01/03/2019	EBS
>C21-C34 Aliphatics - BS	NWEPH	109			70	130	01/03/2019	EBS
>C21-C34 Aliphatics - BSD	NWEPH	109	0		70	130	01/03/2019	EBS
>C10-C12 Aromatics - BS	NWEPH	94.2			70	130	01/03/2019	EBS
>C10-C12 Aromatics - BSD	NWEPH	86.0	9		70	130	01/03/2019	EBS
>C12-C16 Aromatics - BS	NWEPH	98.0			70	130	01/03/2019	EBS
>C12-C16 Aromatics - BSD	NWEPH	99.5	2		70	130	01/03/2019	EBS
>C16-C21 Aromatics - BS	NWEPH	102			70	130	01/03/2019	EBS
>C16-C21 Aromatics - BSD	NWEPH	106	4		70	130	01/03/2019	EBS
>C21-C34 Aromatics - BS	NWEPH	88.9			70	130	01/03/2019	EBS
>C21-C34 Aromatics - BSD	NWEPH	90.0	1		70	130	01/03/2019	EBS

ALS Test Batch ID: R330270 - Water by NWEPH

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
>C8-C10 Aliphatics - BS	NWEPH	71.7			70	130	12/28/2018	EBS
>C8-C10 Aliphatics - BSD	NWEPH	90.7	23		70	130	12/28/2018	EBS
>C10-C12 Aliphatics - BS	NWEPH	93.8			70	130	12/28/2018	EBS
>C10-C12 Aliphatics - BSD	NWEPH	97.9	4		70	130	12/28/2018	EBS
>C12-C16 Aliphatics - BS	NWEPH	107			70	130	12/28/2018	EBS
>C12-C16 Aliphatics - BSD	NWEPH	106	1		70	130	12/28/2018	EBS

CERTIFICATE OF ANALYSIS

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		ALS SDG#:	EV18120091
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Mike Noll		
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01		

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
>C16-C21 Aliphatics - BS	NWEPH	108			70	130	12/28/2018	EBS
>C16-C21 Aliphatics - BSD	NWEPH	108	0		70	130	12/28/2018	EBS
>C21-C34 Aliphatics - BS	NWEPH	114			70	130	12/28/2018	EBS
>C21-C34 Aliphatics - BSD	NWEPH	113	0		70	130	12/28/2018	EBS
>C8-C10 Aromatics - BS	NWEPH	76.6			70	130	12/28/2018	EBS
>C8-C10 Aromatics - BSD	NWEPH	79.0	3		70	130	12/28/2018	EBS
>C10-C12 Aromatics - BS	NWEPH	90.7			70	130	12/28/2018	EBS
>C10-C12 Aromatics - BSD	NWEPH	85.8	6		70	130	12/28/2018	EBS
>C12-C16 Aromatics - BS	NWEPH	94.6			70	130	12/28/2018	EBS
>C12-C16 Aromatics - BSD	NWEPH	97.9	3		70	130	12/28/2018	EBS
>C16-C21 Aromatics - BS	NWEPH	99.4			70	130	12/28/2018	EBS
>C16-C21 Aromatics - BSD	NWEPH	102	3		70	130	12/28/2018	EBS
>C21-C34 Aromatics - BS	NWEPH	102			70	130	12/28/2018	EBS
>C21-C34 Aromatics - BSD	NWEPH	105	3		70	130	12/28/2018	EBS

ALS Test Batch ID: 135869 - Soil by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
1,1-Dichloroethene - BS	EPA-8260	110			70	130	12/18/2018	CCN
1,1-Dichloroethene - BSD	EPA-8260	114	3		70	130	12/18/2018	CCN
Methyl T-Butyl Ether - BS	EPA-8260	96.3			50	150	12/18/2018	CCN
Methyl T-Butyl Ether - BSD	EPA-8260	101	5		50	150	12/18/2018	CCN
1,2-Dichloroethane - BS	EPA-8260	116			50	150	12/18/2018	CCN
1,2-Dichloroethane - BSD	EPA-8260	114	2		50	150	12/18/2018	CCN
Benzene - BS	EPA-8260	113			75	138	12/18/2018	CCN
Benzene - BSD	EPA-8260	114	1		75	138	12/18/2018	CCN
Toluene - BS	EPA-8260	128		SQ1	71.6	122.1	12/18/2018	CCN
Toluene - BSD	EPA-8260	128	1	SQ1	71.6	122.1	12/18/2018	CCN
1,2-Dibromoethane - BS	EPA-8260	100			50	150	12/18/2018	CCN
1,2-Dibromoethane - BSD	EPA-8260	100	0		50	150	12/18/2018	CCN
Ethylbenzene - BS	EPA-8260	98.0			50	150	12/18/2018	CCN
Ethylbenzene - BSD	EPA-8260	99.1	1		50	150	12/18/2018	CCN
m,p-Xylene - BS	EPA-8260	115			50	150	12/18/2018	CCN
m,p-Xylene - BSD	EPA-8260	115	1		50	150	12/18/2018	CCN
o-Xylene - BS	EPA-8260	101			50	150	12/18/2018	CCN
o-Xylene - BSD	EPA-8260	101	0		50	150	12/18/2018	CCN

SQ1 - Spike outside of control limits with a high bias. Associated compounds non-detect. No corrective action taken.



CERTIFICATE OF ANALYSIS

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WDOE ACCREDITATION: C601

CLIENT CONTACT: Mike Noll
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref.
Code 11187604-2018-01

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 135749 - Water by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
1,1-Dichloroethene - BS	EPA-8260	80.8			72.5	136	12/17/2018	CCN
1,1-Dichloroethene - BSD	EPA-8260	83.2	3		72.5	136	12/17/2018	CCN
Methyl T-Butyl Ether - BS	EPA-8260	105			50	150	12/17/2018	CCN
Methyl T-Butyl Ether - BSD	EPA-8260	117	11		50	150	12/17/2018	CCN
1,2-Dichloroethane - BS	EPA-8260	81.5			50	150	12/17/2018	CCN
1,2-Dichloroethane - BSD	EPA-8260	89.7	10		50	150	12/17/2018	CCN
Benzene - BS	EPA-8260	91.4			74.7	143	12/17/2018	CCN
Benzene - BSD	EPA-8260	98.5	7		74.7	143	12/17/2018	CCN
Toluene - BS	EPA-8260	96.2			71.7	139	12/17/2018	CCN
Toluene - BSD	EPA-8260	103	7		71.7	139	12/17/2018	CCN
1,2-Dibromoethane - BS	EPA-8260	101			50	150	12/17/2018	CCN
1,2-Dibromoethane - BSD	EPA-8260	113	11		50	150	12/17/2018	CCN
Ethylbenzene - BS	EPA-8260	87.4			50	150	12/17/2018	CCN
Ethylbenzene - BSD	EPA-8260	93.5	7		50	150	12/17/2018	CCN
m,p-Xylene - BS	EPA-8260	92.5			50	150	12/17/2018	CCN
m,p-Xylene - BSD	EPA-8260	99.7	7		50	150	12/17/2018	CCN
o-Xylene - BS	EPA-8260	94.5			50	150	12/17/2018	CCN
o-Xylene - BSD	EPA-8260	102	8		50	150	12/17/2018	CCN

ALS Test Batch ID: 135700 - Soil by EPA-8270 SIM

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Naphthalene - BS	EPA-8270 SIM	99.0			20	150	12/17/2018	JMK
Naphthalene - BSD	EPA-8270 SIM	79.9	21		20	150	12/17/2018	JMK
2-Methylnaphthalene - BS	EPA-8270 SIM	94.9			20	150	12/17/2018	JMK
2-Methylnaphthalene - BSD	EPA-8270 SIM	76.3	22		20	150	12/17/2018	JMK
1-Methylnaphthalene - BS	EPA-8270 SIM	102			20	150	12/17/2018	JMK
1-Methylnaphthalene - BSD	EPA-8270 SIM	83.5	20		20	150	12/17/2018	JMK
Acenaphthylene - BS	EPA-8270 SIM	92.7			20	150	12/17/2018	JMK
Acenaphthylene - BSD	EPA-8270 SIM	76.2	20		20	150	12/17/2018	JMK
Acenaphthene - BS	EPA-8270 SIM	97.2			41	107	12/17/2018	JMK
Acenaphthene - BSD	EPA-8270 SIM	78.6	21		41	107	12/17/2018	JMK
Fluorene - BS	EPA-8270 SIM	109			20	150	12/17/2018	JMK
Fluorene - BSD	EPA-8270 SIM	89.2	20		20	150	12/17/2018	JMK
Phenanthrene - BS	EPA-8270 SIM	92.1			20	150	12/17/2018	JMK
Phenanthrene - BSD	EPA-8270 SIM	73.7	22		20	150	12/17/2018	JMK
Anthracene - BS	EPA-8270 SIM	102			20	150	12/17/2018	JMK
Anthracene - BSD	EPA-8270 SIM	82.6	21		20	150	12/17/2018	JMK



CERTIFICATE OF ANALYSIS

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		ALS SDG#:	EV18120091
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Mike Noll		
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01		

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Fluoranthene - BS	EPA-8270 SIM	99.4			20	150	12/17/2018	JMK
Fluoranthene - BSD	EPA-8270 SIM	81.2	20		20	150	12/17/2018	JMK
Pyrene - BS	EPA-8270 SIM	83.6			18	136	12/17/2018	JMK
Pyrene - BSD	EPA-8270 SIM	67.5	21		18	136	12/17/2018	JMK
Benzo[A]Anthracene - BS	EPA-8270 SIM	72.5			20	150	12/17/2018	JMK
Benzo[A]Anthracene - BSD	EPA-8270 SIM	57.6	23		20	150	12/17/2018	JMK
Chrysene - BS	EPA-8270 SIM	108			20	150	12/17/2018	JMK
Chrysene - BSD	EPA-8270 SIM	90.5	18		20	150	12/17/2018	JMK
Benzo[B]Fluoranthene - BS	EPA-8270 SIM	83.1			20	150	12/17/2018	JMK
Benzo[B]Fluoranthene - BSD	EPA-8270 SIM	61.7	30		20	150	12/17/2018	JMK
Benzo[K]Fluoranthene - BS	EPA-8270 SIM	111			20	150	12/17/2018	JMK
Benzo[K]Fluoranthene - BSD	EPA-8270 SIM	97.8	13		20	150	12/17/2018	JMK
Benzo[A]Pyrene - BS	EPA-8270 SIM	76.5			20	150	12/17/2018	JMK
Benzo[A]Pyrene - BSD	EPA-8270 SIM	57.7	28		20	150	12/17/2018	JMK
Indeno[1,2,3-Cd]Pyrene - BS	EPA-8270 SIM	91.9			20	150	12/17/2018	JMK
Indeno[1,2,3-Cd]Pyrene - BSD	EPA-8270 SIM	76.4	18		20	150	12/17/2018	JMK
Dibenz[A,H]Anthracene - BS	EPA-8270 SIM	89.8			20	150	12/17/2018	JMK
Dibenz[A,H]Anthracene - BSD	EPA-8270 SIM	77.7	14		20	150	12/17/2018	JMK
Benzo[G,H,I]Perylene - BS	EPA-8270 SIM	94.1			20	150	12/17/2018	JMK
Benzo[G,H,I]Perylene - BSD	EPA-8270 SIM	84.1	11		20	150	12/17/2018	JMK

ALS Test Batch ID: 136271 - Soil by EPA-8270 SIM

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Naphthalene - BS	EPA-8270 SIM	96.1			20	150	01/03/2019	JMK
Naphthalene - BSD	EPA-8270 SIM	113	16		20	150	01/03/2019	JMK
2-Methylnaphthalene - BS	EPA-8270 SIM	100			20	150	01/03/2019	JMK
2-Methylnaphthalene - BSD	EPA-8270 SIM	120	18		20	150	01/03/2019	JMK
1-Methylnaphthalene - BS	EPA-8270 SIM	108			20	150	01/03/2019	JMK
1-Methylnaphthalene - BSD	EPA-8270 SIM	127	16		20	150	01/03/2019	JMK
Acenaphthylene - BS	EPA-8270 SIM	97.3			20	150	01/03/2019	JMK
Acenaphthylene - BSD	EPA-8270 SIM	115	17		20	150	01/03/2019	JMK
Acenaphthene - BS	EPA-8270 SIM	103			41	107	01/03/2019	JMK
Acenaphthene - BSD	EPA-8270 SIM	116	13	S	41	107	01/03/2019	JMK
Fluorene - BS	EPA-8270 SIM	113			20	150	01/03/2019	JMK
Fluorene - BSD	EPA-8270 SIM	135	17		20	150	01/03/2019	JMK
Phenanthrene - BS	EPA-8270 SIM	101			20	150	01/03/2019	JMK
Phenanthrene - BSD	EPA-8270 SIM	121	18		20	150	01/03/2019	JMK
Anthracene - BS	EPA-8270 SIM	98.3			20	150	01/03/2019	JMK



CERTIFICATE OF ANALYSIS

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CLIENT CONTACT: Mike Noll
CLIENT PROJECT: Former TOSCO Bulk Plant - SSOW Ref.
Code 11187604-2018-01

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Anthracene - BSD	EPA-8270 SIM	116	16		20	150	01/03/2019	JMK
Fluoranthene - BS	EPA-8270 SIM	107			20	150	01/03/2019	JMK
Fluoranthene - BSD	EPA-8270 SIM	129	19		20	150	01/03/2019	JMK
Pyrene - BS	EPA-8270 SIM	101			18	136	01/03/2019	JMK
Pyrene - BSD	EPA-8270 SIM	109	8		18	136	01/03/2019	JMK
Benzo[A]Anthracene - BS	EPA-8270 SIM	91.0			20	150	01/03/2019	JMK
Benzo[A]Anthracene - BSD	EPA-8270 SIM	121	28		20	150	01/03/2019	JMK
Chrysene - BS	EPA-8270 SIM	97.8			20	150	01/03/2019	JMK
Chrysene - BSD	EPA-8270 SIM	110	12		20	150	01/03/2019	JMK
Benzo[B]Fluoranthene - BS	EPA-8270 SIM	106			20	150	01/03/2019	JMK
Benzo[B]Fluoranthene - BSD	EPA-8270 SIM	141	28		20	150	01/03/2019	JMK
Benzo[K]Fluoranthene - BS	EPA-8270 SIM	108			20	150	01/03/2019	JMK
Benzo[K]Fluoranthene - BSD	EPA-8270 SIM	135	22		20	150	01/03/2019	JMK
Benzo[A]Pyrene - BS	EPA-8270 SIM	105			20	150	01/03/2019	JMK
Benzo[A]Pyrene - BSD	EPA-8270 SIM	134	24		20	150	01/03/2019	JMK
Indeno[1,2,3-Cd]Pyrene - BS	EPA-8270 SIM	105			20	150	01/03/2019	JMK
Indeno[1,2,3-Cd]Pyrene - BSD	EPA-8270 SIM	138	27		20	150	01/03/2019	JMK
Dibenz[A,H]Anthracene - BS	EPA-8270 SIM	75.2			20	150	01/03/2019	JMK
Dibenz[A,H]Anthracene - BSD	EPA-8270 SIM	100	28		20	150	01/03/2019	JMK
Benzo[G,H,I]Perylene - BS	EPA-8270 SIM	107			20	150	01/03/2019	JMK
Benzo[G,H,I]Perylene - BSD	EPA-8270 SIM	136	24		20	150	01/03/2019	JMK

S - Outside of control limits.

ALS Test Batch ID: 135776 - Water by EPA-8270 SIM

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Naphthalene - BS	EPA-8270 SIM	44.4			36	118	12/18/2018	JMK
Naphthalene - BSD	EPA-8270 SIM	51.1	14		36	118	12/18/2018	JMK
2-Methylnaphthalene - BS	EPA-8270 SIM	38.2			20	150	12/18/2018	JMK
2-Methylnaphthalene - BSD	EPA-8270 SIM	46.1	19		20	150	12/18/2018	JMK
1-Methylnaphthalene - BS	EPA-8270 SIM	46.5			20	150	12/18/2018	JMK
1-Methylnaphthalene - BSD	EPA-8270 SIM	56.9	20		20	150	12/18/2018	JMK
Acenaphthylene - BS	EPA-8270 SIM	58.2			20	150	12/18/2018	JMK
Acenaphthylene - BSD	EPA-8270 SIM	66.8	14		20	150	12/18/2018	JMK
Acenaphthene - BS	EPA-8270 SIM	57.1			37	125	12/18/2018	JMK
Acenaphthene - BSD	EPA-8270 SIM	64.2	12		37	125	12/18/2018	JMK
Fluorene - BS	EPA-8270 SIM	75.4			20	150	12/18/2018	JMK
Fluorene - BSD	EPA-8270 SIM	85.2	12		20	150	12/18/2018	JMK
Phenanthrene - BS	EPA-8270 SIM	74.2			20	150	12/18/2018	JMK

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
		ALS SDG#:	EV18120091
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Mike Noll		
CLIENT PROJECT:	Former TOSCO Bulk Plant - SSOW Ref. Code 11187604-2018-01		

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Phenanthrene - BSD	EPA-8270 SIM	81.2	9		20	150	12/18/2018	JMK
Anthracene - BS	EPA-8270 SIM	86.3			20	150	12/18/2018	JMK
Anthracene - BSD	EPA-8270 SIM	91.2	6		20	150	12/18/2018	JMK
Fluoranthene - BS	EPA-8270 SIM	85.3			20	150	12/18/2018	JMK
Fluoranthene - BSD	EPA-8270 SIM	92.5	8		20	150	12/18/2018	JMK
Pyrene - BS	EPA-8270 SIM	89.2			59	156	12/18/2018	JMK
Pyrene - BSD	EPA-8270 SIM	93.1	4		59	156	12/18/2018	JMK
Benzo[A]Anthracene - BS	EPA-8270 SIM	60.5			20	150	12/18/2018	JMK
Benzo[A]Anthracene - BSD	EPA-8270 SIM	69.2	13		20	150	12/18/2018	JMK
Chrysene - BS	EPA-8270 SIM	101			20	150	12/18/2018	JMK
Chrysene - BSD	EPA-8270 SIM	105	4		20	150	12/18/2018	JMK
Benzo[B]Fluoranthene - BS	EPA-8270 SIM	71.4			20	150	12/18/2018	JMK
Benzo[B]Fluoranthene - BSD	EPA-8270 SIM	76.9	7		20	150	12/18/2018	JMK
Benzo[K]Fluoranthene - BS	EPA-8270 SIM	96.6			20	150	12/18/2018	JMK
Benzo[K]Fluoranthene - BSD	EPA-8270 SIM	101	5		20	150	12/18/2018	JMK
Benzo[A]Pyrene - BS	EPA-8270 SIM	65.9			20	150	12/18/2018	JMK
Benzo[A]Pyrene - BSD	EPA-8270 SIM	75.5	14		20	150	12/18/2018	JMK
Indeno[1,2,3-Cd]Pyrene - BS	EPA-8270 SIM	74.7			20	150	12/18/2018	JMK
Indeno[1,2,3-Cd]Pyrene - BSD	EPA-8270 SIM	81.2	8		20	150	12/18/2018	JMK
Dibenz[A,H]Anthracene - BS	EPA-8270 SIM	72.4			20	150	12/18/2018	JMK
Dibenz[A,H]Anthracene - BSD	EPA-8270 SIM	79.6	9		20	150	12/18/2018	JMK
Benzo[G,H,I]Perylene - BS	EPA-8270 SIM	86.2			43	140	12/18/2018	JMK
Benzo[G,H,I]Perylene - BSD	EPA-8270 SIM	90.1	4		43	140	12/18/2018	JMK

APPROVED BY



Laboratory Director



ALS Environmental
8620 Holly Drive, Suite 100
Everett, WA 98208
Phone (425) 356-2600
Fax (425) 356-2626
http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only)

EV18120091

Date 12-15-18 Page 1 of 3

PROJECT ID: 11187604					ANALYSIS REQUESTED										OTHER (Specify)									
REPORT TO COMPANY: GHD Services, Inc.					☐ NWTPH-HCID ☐ NWTPH-DX ☐ NWTPH-GX ☒ BTEX by EPA 8021 ☐ BTEX by EPA 8260 ☒ ☐ MTBE by EPA 8021 ☐ MTBE by EPA 8260 ☒ ☐ Halogenated Volatiles by EPA 8260 ☐ Volatile Organic Compounds by EPA 8260 ☐ EDB / EDC by EPA 8260 SIM (water) ☐ EDB / EDC by EPA 8260 (soil) ☐ Semivolatile Organic Compounds by EPA 8270 ☐ Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM ☐ PCB by EPA 8092 ☐ Pesticides by EPA 8081 ☐ ☐ Metals-MTCA-5 ☐ RCRA-8 ☐ Pri Pol ☐ TAL ☐ ☐ Metals Other (Specify) ☐ TCLP-Metals ☐ VOA ☐ Semi-Vol ☐ Pest ☐ Herbs ☐ ☒ VPH + n-Hexane ☒ EPH										PROJECT MANAGER: Mike Nell					NUMBER OF CONTAINERS RECEIVED IN GOOD CONDITION?				
ADDRESS:																								
PHONE: (425) 34032409 PO. #:																								
E-MAIL: Michael L. Nell @ GHD.com																								
INVOICE TO COMPANY: GHD																								
ATTENTION:																								
ADDRESS:																								
SAMPLE I.D.	DATE	TIME	TYPE	LAB#																				
S.11187604.121418.MN. 1. GB-1-8'	12-14-18	1440	S	1	X	X	X														4			
S.11187604.121418.MN. 2. GB-1-14.5'		1445		2	X	X	X														4			
S.11187604.121418.MN. 3. GB-2-9'		1330		3	X	X	X	(X)				(X)	(X)					(X)	(X)		4			
S.11187604.121418.MN. 4. GB-2-11'		1335		4	X	X	X														4			
S.11187604.121418.MN. 5. GB-3-2'		1455		5	X	X	X	(X)				(X)	(X)					(X)	(X)		4			
S.11187604.121418.MN. 6. GB-3-12'		1500		6	X	X	X														4			
S.11187604.121418.MN. 7. GB-4-9'		1400		7	X	X	X														4			
S.11187604.121418.MN. 8. GB-4-14'		1405		8	X	X	X														4			
S.11187604.121418.MN. 9. GB-5-2'		1330		9	X	X	X														4			
S.11187604.121418.MN. 10. GB-5-14'	12-14-18	1335	S	10	X	X	X														4			

SPECIAL INSTRUCTIONS (X) Added per mike 1-2-19 Client is aware samples are out of Hold Time.

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: [Signature] / GHD / 12-12-2018 / 0800

Received By: [Signature] ALS 12/7/18 8:00

2. Relinquished By:

Received By:

TURNAROUND REQUESTED in Business Days*
Organic, Metals & Inorganic Analysis OTHER:

10 5 3 2 1 SAME DAY

Fuels & Hydrocarbon Analysis

10 5 3 2 1 SAME DAY

Specify: SS/LW ref
11187604-2018-01



ALS Environmental
8620 Holly Drive, Suite 100
Everett, WA 98208
Phone (425) 356-2600
Fax (425) 356-2626
http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only)

EV18120091

Date 12-15-18 Page 2 Of 3

PROJECT ID: 11187604					ANALYSIS REQUESTED										OTHER (Specify)																	
REPORT TO COMPANY: GHD																																
PROJECT MANAGER: Mike Noll																																
ADDRESS:																																
PHONE: PO. #: 34032469																																
E-MAIL:																																
INVOICE TO COMPANY: GHD																																
ATTENTION:																																
ADDRESS:																																
SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA 8021	BTEX by EPA 8260	MTBE by EPA 8021	MTBE by EPA 8260	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082	Pesticides by EPA 8081	Metals-MTCA-5	RORA-8	PH Pol	TAL	Metals Other (Specify)	TCLP-Metals	VOA	Semi-Vol	Pest	Herbs	NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?	
8. 11187604.121418.MN.	12-14-18	0925	S	11		X	X	X																							4	
1. GB-10-7						X	X	X																							4	
5. 11187604.121418.MN.		0930		12		X	X	X																							4	
2. GB-10-12						X	X	X																							4	
3. 11187604.121418.MN.		1310		13		X	X	X																							4	
4. GB-13-9						X	X	X																							4	
5. 11187604.121418.MN.		1315		14		X	X	X																							4	
4. GB-12-12						X	X	X																							4	
5. 11187604.121418.MN.		1005		15		X	X	X																							4	
5. GB-14-7						X	X	X																							4	
6. 11187604.121418.MN.		1010		16		X	X	X																							4	
6. GB-14-12						X	X	X																							4	
7. 11187604.121418.MN.		1050		17		X	X	X																							4	
7. GB-15-7						X	X	X																							4	
8. 11187604.121418.MN.		1055	V	18		X	X	X																							4	
8. GB-15-12						X	X	X																							4	
9. 11187604.121418.MN.		1620	S	19		X	X	X																							4	
9. SET-1						X	X	X																							4	
10. 11187604.121418.MN.	12-14-18	1550	W	20		X	X	X																							10	
10. GB-10						X	X	X																							10	

SPECIAL INSTRUCTIONS VPH outside of Hold time.

Added per Mike Noll, 1-2-2019

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: Mike Noll / GHD / 12-17-2018 / 0800
Received By: John B. ALS 12/17/18 8:00
2. Relinquished By: _____
Received By: _____

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis

10 5 3 2 1 SAME DAY

Fuels & Hydrocarbon Analysis

3 1 SAME DAY

OTHER:

Specify: SSAW ref.
11187604-2018-01



ALS Environmental
8620 Holly Drive, Suite 100
Everett, WA 98208
Phone (425) 356-2600
Fax (425) 356-2626
http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only)

EV18120091

Date 12-15-18 Page 3 Of 3

PROJECT ID: 11187604					ANALYSIS REQUESTED										OTHER (Specify)																				
REPORT TO COMPANY: GHD																																			
PROJECT MANAGER: Mike Nelli																																			
ADDRESS:																																			
PHONE:					P.O. #: 34032469																														
E-MAIL:																																			
INVOICE TO COMPANY:																																			
ATTENTION:																																			
ADDRESS:																																			
SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-OX	BTEX by EPA 8021	BTEX by EPA 8260	MTBE by EPA 8021	MTBE by EPA 8260	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082	Pesticides by EPA 8081	Metals-MTCA-5	PCRA-8	Pb Pol	TAL	Metals Other (Specify)	TCLP-Metals	VOA	Semi-Vol	Pest	Herbs	EPH	Extract Only - PAHs + EPH	VPH + n-Hexane	NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?	
W. 11187604-121418.MN. 1. GB-13	12-14-18	1630	W	21	X	X	X	X	X					X			X																10		
W. 11187604-121418.NT. 2. MB-2A		1205		22	X	X	X																										6		
W. 11187604-121418.NT. 3. MB-4		1420		23	X	X	X																										6		
W. 11187604-121418.NT. 4. MB-5		1250		24	X	X	X										X																10		
W. 11187604-121418.NT. 5. MB-10		1100	W	25	X	X	X										X																10		
6.																																			
7.																																			
8.																																			
9.																																			
10.																																			

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: Amel S. NICE / GHD / 12-12-2018 / 0800
Received By: [Signature] ALS 12/17/18 08:00
2. Relinquished By: _____
Received By: _____

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis

10 5 3 2 1 SAME DAY

Fuels & Hydrocarbon Analysis

Standard 3 1 SAME DAY

OTHER:

Specify: SSW ref
11187604-2018-01



January 9, 2019

Mr. Mike Noll
GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036

Dear Mr. Noll,

On December 21st, 14 samples were received by our laboratory and assigned our laboratory project number EV18120155. The project was identified as your 11187604 / SSOW 11187604-2018-01. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rick Bagan
Laboratory Director

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
		ALS JOB#:	EV18120155
		ALS SAMPLE#:	EV18120155-01
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	12/21/2018
CLIENT PROJECT:	11187604 / SSOW 11187604-2018-01	COLLECTION DATE:	12/21/2018 12:50:00 PM
CLIENT SAMPLE ID	S.11187604.122118.MN. GB-6-9'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/27/2018	JMK
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/28/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/28/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/26/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/26/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	96.6	12/27/2018	JMK
C25	NWTPH-DX	86.7	12/28/2018	EBS
Toluene-d8	EPA-8260	90.8	12/26/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services	DATE:	1/9/2019
	20818 - 44th Ave W., Suite 190	ALS JOB#:	EV18120155
	Lynnwood, WA 98036	ALS SAMPLE#:	EV18120155-02
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	12/21/2018
CLIENT PROJECT:	11187604 / SSOW 11187604-2018-01	COLLECTION DATE:	12/21/2018 1:00:00 PM
CLIENT SAMPLE ID	S.11187604.122118.MN. GB-6-13'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/27/2018	JMK
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/29/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/29/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/26/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/26/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	85.8	12/27/2018	JMK
C25	NWTPH-DX	103	12/29/2018	EBS
Toluene-d8	EPA-8260	92.6	12/26/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services DATE: 1/9/2019
20818 - 44th Ave W., Suite 190 ALS JOB#: EV18120155
Lynnwood, WA 98036 ALS SAMPLE#: EV18120155-03
CLIENT CONTACT: Mike Noll DATE RECEIVED: 12/21/2018
CLIENT PROJECT: 11187604 / SSOW 11187604-2018-01 COLLECTION DATE: 12/21/2018 12:35:00 PM
CLIENT SAMPLE ID S.11187604.122118.MN. GB-7-14' WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/27/2018	JMK
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/29/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/29/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/26/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/26/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	89.9	12/27/2018	JMK
C25	NWTPH-DX	95.2	12/29/2018	EBS
Toluene-d8	EPA-8260	92.8	12/26/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.

**CERTIFICATE OF ANALYSIS**

CLIENT:	GHD Services	DATE:	1/9/2019
	20818 - 44th Ave W., Suite 190	ALS JOB#:	EV18120155
	Lynnwood, WA 98036	ALS SAMPLE#:	EV18120155-04
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	12/21/2018
CLIENT PROJECT:	11187604 / SSOW 11187604-2018-01	COLLECTION DATE:	12/21/2018 11:40:00 AM
CLIENT SAMPLE ID	S.11187604.122118.MN. GB-8-13'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/27/2018	JMK
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/29/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/29/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/26/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/26/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	95.6	12/27/2018	JMK
C25	NWTPH-DX	96.7	12/29/2018	EBS
Toluene-d8	EPA-8260	84.7	12/26/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services	DATE:	1/9/2019
	20818 - 44th Ave W., Suite 190	ALS JOB#:	EV18120155
	Lynnwood, WA 98036	ALS SAMPLE#:	EV18120155-05
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	12/21/2018
CLIENT PROJECT:	11187604 / SSOW 11187604-2018-01	COLLECTION DATE:	12/21/2018 11:15:00 AM
CLIENT SAMPLE ID	S.11187604.122118.MN. GB-9-9'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/27/2018	JMK
TPH-Diesel Range	NWTPH-DX	73	25	1	MG/KG	12/29/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/29/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/26/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/26/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	86.1	12/27/2018	JMK
C25	NWTPH-DX	107	12/29/2018	EBS
Toluene-d8	EPA-8260	106	12/26/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered diesel.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
		ALS JOB#:	EV18120155
		ALS SAMPLE#:	EV18120155-06
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	12/21/2018
CLIENT PROJECT:	11187604 / SSOW 11187604-2018-01	COLLECTION DATE:	12/21/2018 11:25:00 AM
CLIENT SAMPLE ID	S.11187604.122118.MN. GB-9-13'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/27/2018	JMK
TPH-Diesel Range	NWTPH-DX	41	25	1	MG/KG	12/29/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/29/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/26/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/26/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	91.8	12/27/2018	JMK
C25	NWTPH-DX	98.3	12/29/2018	EBS
Toluene-d8	EPA-8260	98.4	12/26/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered diesel.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services	DATE:	1/9/2019
	20818 - 44th Ave W., Suite 190	ALS JOB#:	EV18120155
	Lynnwood, WA 98036	ALS SAMPLE#:	EV18120155-07
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	12/21/2018
CLIENT PROJECT:	11187604 / SSOW 11187604-2018-01	COLLECTION DATE:	12/21/2018 9:20:00 AM
CLIENT SAMPLE ID	S.11187604.122118.MN. GB-11-9'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/27/2018	JMK
TPH-Diesel Range	NWTPH-DX	380	25	1	MG/KG	12/29/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/29/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/26/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/26/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	89.2	12/27/2018	JMK
C25	NWTPH-DX	101	12/29/2018	EBS
Toluene-d8	EPA-8260	95.3	12/26/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered diesel.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services	DATE:	1/9/2019
	20818 - 44th Ave W., Suite 190	ALS JOB#:	EV18120155
	Lynnwood, WA 98036	ALS SAMPLE#:	EV18120155-08
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	12/21/2018
CLIENT PROJECT:	11187604 / SSOW 11187604-2018-01	COLLECTION DATE:	12/21/2018 9:30:00 AM
CLIENT SAMPLE ID	S.11187604.122118.MN. GB-11-14'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/27/2018	JMK
TPH-Diesel Range	NWTPH-DX	400	25	1	MG/KG	12/29/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/29/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/26/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/26/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	87.1	12/27/2018	JMK
C25	NWTPH-DX	92.9	12/29/2018	EBS
Toluene-d8	EPA-8260	98.8	12/26/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered diesel.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services	DATE:	1/9/2019
	20818 - 44th Ave W., Suite 190	ALS JOB#:	EV18120155
	Lynnwood, WA 98036	ALS SAMPLE#:	EV18120155-09
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	12/21/2018
CLIENT PROJECT:	11187604 / SSOW 11187604-2018-01	COLLECTION DATE:	12/21/2018 9:40:00 AM
CLIENT SAMPLE ID	S.11187604.122118.MN. GB-12-8'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/27/2018	JMK
TPH-Diesel Range	NWTPH-DX	100	25	1	MG/KG	12/29/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/29/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/26/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/26/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	95.6	12/27/2018	JMK
C25	NWTPH-DX	84.9	12/29/2018	EBS
Toluene-d8	EPA-8260	106	12/26/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered diesel.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services	DATE:	1/9/2019
	20818 - 44th Ave W., Suite 190	ALS JOB#:	EV18120155
	Lynnwood, WA 98036	ALS SAMPLE#:	EV18120155-10
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	12/21/2018
CLIENT PROJECT:	11187604 / SSOW 11187604-2018-01	COLLECTION DATE:	12/21/2018 9:45:00 AM
CLIENT SAMPLE ID	S.11187604.122118.MN. GB-12-12'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/27/2018	JMK
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/29/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/29/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/26/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/26/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	85.7	12/27/2018	JMK
C25	NWTPH-DX	99.5	12/29/2018	EBS
Toluene-d8	EPA-8260	99.4	12/26/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services	DATE:	1/9/2019
	20818 - 44th Ave W., Suite 190	ALS JOB#:	EV18120155
	Lynnwood, WA 98036	ALS SAMPLE#:	EV18120155-11
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	12/21/2018
CLIENT PROJECT:	11187604 / SSOW 11187604-2018-01	COLLECTION DATE:	12/21/2018 10:15:00 AM
CLIENT SAMPLE ID	S.11187604.122118.MN. GB-16-4'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/27/2018	JMK
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/29/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/29/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/26/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/26/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	90.3	12/27/2018	JMK
C25	NWTPH-DX	92.2	12/29/2018	EBS
Toluene-d8	EPA-8260	96.3	12/26/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services	DATE:	1/9/2019
	20818 - 44th Ave W., Suite 190	ALS JOB#:	EV18120155
	Lynnwood, WA 98036	ALS SAMPLE#:	EV18120155-12
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	12/21/2018
CLIENT PROJECT:	11187604 / SSOW 11187604-2018-01	COLLECTION DATE:	12/21/2018 10:25:00 AM
CLIENT SAMPLE ID	S.11187604.122118.MN. GB-17-4'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/27/2018	JMK
TPH-Diesel Range	NWTPH-DX	71	25	1	MG/KG	12/29/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/29/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/26/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/26/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	84.7	12/27/2018	JMK
C25	NWTPH-DX	91.4	12/29/2018	EBS
Toluene-d8	EPA-8260	98.0	12/26/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered diesel.

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
		ALS JOB#:	EV18120155
		ALS SAMPLE#:	EV18120155-13
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	12/21/2018
CLIENT PROJECT:	11187604 / SSOW 11187604-2018-01	COLLECTION DATE:	12/21/2018 10:30:00 AM
CLIENT SAMPLE ID	S.11187604.122118.MN. GB-18-4'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	12/27/2018	JMK
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	12/29/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	12/29/2018	EBS
Benzene	EPA-8260	U	5.0	1	UG/KG	12/26/2018	CCN
Toluene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	12/26/2018	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	12/26/2018	CCN

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	95.7	12/27/2018	JMK
C25	NWTPH-DX	90.9	12/29/2018	EBS
Toluene-d8	EPA-8260	91.3	12/26/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
		ALS JOB#:	EV18120155
		ALS SAMPLE#:	EV18120155-14
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	12/21/2018
CLIENT PROJECT:	11187604 / SSOW 11187604-2018-01	COLLECTION DATE:	12/21/2018 10:50:00 AM
CLIENT SAMPLE ID	W.11187604.122118.MN. GB-14	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	50	1	UG/L	12/27/2018	JMK
C5-C6 Aliphatics	NWVPH	U	50	1	UG/L	01/03/2019	KLS
>C6-C8 Aliphatics	NWVPH	U	50	1	UG/L	01/03/2019	KLS
>C8-C10 Aliphatics	NWVPH	U	50	1	UG/L	01/03/2019	KLS
>C8-C10 Aromatics	NWVPH	U	50	1	UG/L	01/03/2019	KLS
Hexane	NWVPH	U	1.0	1	UG/L	01/03/2019	KLS
TPH-Diesel Range	NWTPH-DX	770	130	1	UG/L	12/29/2018	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	12/29/2018	EBS
>C10-C12 Aliphatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C12-C16 Aliphatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C16-C21 Aliphatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C21-C34 Aliphatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C10-C12 Aromatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C12-C16 Aromatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C16-C21 Aromatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
>C21-C34 Aromatics	NWEPH	U	50	1	UG/L	12/28/2018	EBS
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	UG/L	12/21/2018	CCN
1,2-Dichloroethane	EPA-8260	U	2.0	1	UG/L	12/21/2018	CCN
Benzene	EPA-8260	U	2.0	1	UG/L	12/21/2018	CCN
Toluene	EPA-8260	2.2	2.0	1	UG/L	12/24/2018	CCN
1,2-Dibromoethane	EPA-8260	U	0.010	1	UG/L	12/21/2018	CCN
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	12/21/2018	CCN
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	12/21/2018	CCN
o-Xylene	EPA-8260	U	2.0	1	UG/L	12/21/2018	CCN
Naphthalene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
2-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
1-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
Acenaphthylene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
Acenaphthene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
Fluorene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
Phenanthrene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
Benzo[A]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
Chrysene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
Benzo[B]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
Benzo[A]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services DATE: 1/9/2019
20818 - 44th Ave W., Suite 190 ALS JOB#: EV18120155
Lynnwood, WA 98036 ALS SAMPLE#: EV18120155-14
CLIENT CONTACT: Mike Noll DATE RECEIVED: 12/21/2018
CLIENT PROJECT: 11187604 / SSOW 11187604-2018-01 COLLECTION DATE: 12/21/2018 10:50:00 AM
CLIENT SAMPLE ID W.11187604.122118.MN. GB-14 WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	0.020	1	UG/L	12/28/2018	JMK

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	96.4	12/27/2018	JMK
TFT - Aliphatic	NWVPH	94.5	01/03/2019	KLS
TFT - Aromatic	NWVPH	85.6	01/03/2019	KLS
TFT - Hexane	NWVPH	94.6	01/03/2019	KLS
C25	NWTPH-DX	101	12/29/2018	EBS
C25	NWEPH	119 GS4	12/28/2018	EBS
p-Terphenyl	NWEPH	98.1	12/28/2018	EBS
1,2-Dichloroethane-d4	EPA-8260	98.1	12/21/2018	CCN
Toluene-d8	EPA-8260	94.5	12/21/2018	CCN
Toluene-d8	EPA-8260	109	12/24/2018	CCN
Terphenyl-d14	EPA-8270 SIM	87.9	12/28/2018	JMK

U - Analyte analyzed for but not detected at level above reporting limit.

GS4 - Surrogate outside of control limits with a high bias. Associated compounds non-detect. No corrective action taken.

Chromatogram indicates that it is likely that sample contains highly weathered diesel.



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036
DATE: 1/9/2019
ALS SDG#: EV18120155
WDOE ACCREDITATION: C601

CLIENT CONTACT: Mike Noll
CLIENT PROJECT: 11187604 / SSOW 11187604-2018-01

LABORATORY BLANK RESULTS

MBG-122618S2 - Batch 136049 - Soil by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	12/26/2018	JMK

U - Analyte analyzed for but not detected at level above reporting limit.

MBG-122718W - Batch 136099 - Water by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	UG/L	50	12/27/2018	JMK

U - Analyte analyzed for but not detected at level above reporting limit.

MB-010319W - Batch R330723 - Water by NWVPH

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	U	UG/L	50	01/03/2019	KLS
>C6-C8 Aliphatics	NWVPH	U	UG/L	50	01/03/2019	KLS
>C8-C10 Aliphatics	NWVPH	U	UG/L	50	01/03/2019	KLS
>C8-C10 Aromatics	NWVPH	U	UG/L	50	01/03/2019	KLS
Hexane	NWVPH	U	UG/L	1.0	01/03/2019	KLS

U - Analyte analyzed for but not detected at level above reporting limit.

MB-122718S - Batch 136100 - Soil by NWTPH-DX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	MG/KG	25	12/28/2018	EBS
TPH-Oil Range	NWTPH-DX	U	MG/KG	50	12/28/2018	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

MB-122818W - Batch 136142 - Water by NWTPH-DX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	UG/L	130	12/28/2018	EBS
TPH-Oil Range	NWTPH-DX	U	UG/L	250	12/28/2018	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

MBLK-R330224 - Batch R330224 - Water by NWEPH

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
>C10-C12 Aliphatics	NWEPH	U	UG/L	50	12/28/2018	EBS
>C12-C16 Aliphatics	NWEPH	U	UG/L	50	12/28/2018	EBS

CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services	DATE:	1/9/2019
	20818 - 44th Ave W., Suite 190	ALS SDG#:	EV18120155
	Lynnwood, WA 98036	WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Mike Noll		
CLIENT PROJECT:	11187604 / SSOW 11187604-2018-01		

LABORATORY BLANK RESULTS
MBLK-R330224 - Batch R330224 - Water by NWEPH

>C16-C21 Aliphatics	NWEPH	U	UG/L	50	12/28/2018	EBS
>C21-C34 Aliphatics	NWEPH	U	UG/L	50	12/28/2018	EBS
>C10-C12 Aromatics	NWEPH	U	UG/L	50	12/28/2018	EBS
>C12-C16 Aromatics	NWEPH	U	UG/L	50	12/28/2018	EBS
>C16-C21 Aromatics	NWEPH	U	UG/L	50	12/28/2018	EBS
>C21-C34 Aromatics	NWEPH	U	UG/L	50	12/28/2018	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

MB-122618S - Batch 136179 - Soil by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
1,1-Dichloroethene	EPA-8260	U	UG/KG	10	12/26/2018	CCN
Benzene	EPA-8260	U	UG/KG	5.0	12/26/2018	CCN
Toluene	EPA-8260	U	UG/KG	10	12/26/2018	CCN
Ethylbenzene	EPA-8260	U	UG/KG	10	12/26/2018	CCN
m,p-Xylene	EPA-8260	U	UG/KG	20	12/26/2018	CCN
o-Xylene	EPA-8260	U	UG/KG	10	12/26/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.

MB-122118W - Batch 135988 - Water by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
1,1-Dichloroethene	EPA-8260	U	UG/L	2.0	12/21/2018	CCN
Methyl T-Butyl Ether	EPA-8260	U	UG/L	2.0	12/21/2018	CCN
1,2-Dichloroethane	EPA-8260	U	UG/L	2.0	12/21/2018	CCN
Benzene	EPA-8260	U	UG/L	2.0	12/21/2018	CCN
Toluene	EPA-8260	U	UG/L	2.0	12/21/2018	CCN
1,2-Dibromoethane	EPA-8260	U	UG/L	0.010	12/21/2018	CCN
Ethylbenzene	EPA-8260	U	UG/L	2.0	12/21/2018	CCN
m,p-Xylene	EPA-8260	U	UG/L	4.0	12/21/2018	CCN
o-Xylene	EPA-8260	U	UG/L	2.0	12/21/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.

MB-122418W - Batch 135991 - Water by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
1,1-Dichloroethene	EPA-8260	U	UG/L	2.0	12/24/2018	CCN
Toluene	EPA-8260	U	UG/L	2.0	12/24/2018	CCN

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036
CLIENT CONTACT: Mike Noll
CLIENT PROJECT: 11187604 / SSOW 11187604-2018-01

DATE: 1/9/2019
ALS SDG#: EV18120155
WDOE ACCREDITATION: C601

LABORATORY BLANK RESULTS

MB-122718W - Batch 136117 - Water by EPA-8270 SIM

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Naphthalene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
2-Methylnaphthalene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
1-Methylnaphthalene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
Acenaphthylene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
Acenaphthene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
Fluorene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
Phenanthrene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
Anthracene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
Fluoranthene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
Pyrene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
Benzo[A]Anthracene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
Chrysene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
Benzo[B]Fluoranthene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
Benzo[K]Fluoranthene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
Benzo[A]Pyrene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	UG/L	0.020	12/28/2018	JMK

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036
DATE: 1/9/2019
ALS SDG#: EV18120155
WDOE ACCREDITATION: C601

CLIENT CONTACT: Mike Noll
CLIENT PROJECT: 11187604 / SSOW 11187604-2018-01

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 136049 - Soil by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
TPH-Volatile Range - BS	NWTPH-GX	86.8			66.5	122.7	12/26/2018	JMK
TPH-Volatile Range - BSD	NWTPH-GX	86.7	0		66.5	122.7	12/26/2018	JMK

ALS Test Batch ID: 136099 - Water by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
TPH-Volatile Range - BS	NWTPH-GX	87.2			66.5	122.7	12/27/2018	JMK
TPH-Volatile Range - BSD	NWTPH-GX	89.3	2		66.5	122.7	12/27/2018	JMK

ALS Test Batch ID: R330723 - Water by NWVPH

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
C5-C6 Aliphatics - BS	NWVPH	98.8			70	130	01/03/2019	KLS
C5-C6 Aliphatics - BSD	NWVPH	105	6		70	130	01/03/2019	KLS
>C6-C8 Aliphatics - BS	NWVPH	81.6			70	130	01/03/2019	KLS
>C6-C8 Aliphatics - BSD	NWVPH	87.3	7		70	130	01/03/2019	KLS
>C8-C10 Aliphatics - BS	NWVPH	87.2			70	130	01/03/2019	KLS
>C8-C10 Aliphatics - BSD	NWVPH	94.9	8		70	130	01/03/2019	KLS
>C8-C10 Aromatics - BS	NWVPH	99.0			70	130	01/03/2019	KLS
>C8-C10 Aromatics - BSD	NWVPH	100	1		70	130	01/03/2019	KLS
Hexane - BS	NWVPH	99.9			70	130	01/03/2019	KLS
Hexane - BSD	NWVPH	106	5		70	130	01/03/2019	KLS

ALS Test Batch ID: 136100 - Soil by NWTPH-DX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
TPH-Diesel Range - BS	NWTPH-DX	89.9			75.5	122.1	12/28/2018	EBS
TPH-Diesel Range - BSD	NWTPH-DX	96.2	7		75.5	122.1	12/28/2018	EBS

ALS Test Batch ID: 136142 - Water by NWTPH-DX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
TPH-Diesel Range - BS	NWTPH-DX	90.8			67	125.2	12/28/2018	EBS
TPH-Diesel Range - BSD	NWTPH-DX	88.2	3		67	125.2	12/28/2018	EBS

ALS Test Batch ID: R330224 - Water by NWEPH

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
>C10-C12 Aliphatics - BS	NWEPH	92.8			70	130	12/28/2018	EBS



CERTIFICATE OF ANALYSIS

CLIENT:	GHD Services 20818 - 44th Ave W., Suite 190 Lynnwood, WA 98036	DATE:	1/9/2019
		ALS SDG#:	EV18120155
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Mike Noll		
CLIENT PROJECT:	11187604 / SSOW 11187604-2018-01		

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
>C10-C12 Aliphatics - BSD	NWEPH	95.6	3		70	130	12/28/2018	EBS
>C12-C16 Aliphatics - BS	NWEPH	101			70	130	12/28/2018	EBS
>C12-C16 Aliphatics - BSD	NWEPH	106	6		70	130	12/28/2018	EBS
>C16-C21 Aliphatics - BS	NWEPH	101			70	130	12/28/2018	EBS
>C16-C21 Aliphatics - BSD	NWEPH	107	5		70	130	12/28/2018	EBS
>C21-C34 Aliphatics - BS	NWEPH	104			70	130	12/28/2018	EBS
>C21-C34 Aliphatics - BSD	NWEPH	111	6		70	130	12/28/2018	EBS
>C10-C12 Aromatics - BS	NWEPH	80.1			70	130	12/28/2018	EBS
>C10-C12 Aromatics - BSD	NWEPH	85.3	6		70	130	12/28/2018	EBS
>C12-C16 Aromatics - BS	NWEPH	92.9			70	130	12/28/2018	EBS
>C12-C16 Aromatics - BSD	NWEPH	99.7	7		70	130	12/28/2018	EBS
>C16-C21 Aromatics - BS	NWEPH	96.9			70	130	12/28/2018	EBS
>C16-C21 Aromatics - BSD	NWEPH	105	8		70	130	12/28/2018	EBS
>C21-C34 Aromatics - BS	NWEPH	101			70	130	12/28/2018	EBS
>C21-C34 Aromatics - BSD	NWEPH	110	8		70	130	12/28/2018	EBS

ALS Test Batch ID: 136179 - Soil by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
1,1-Dichloroethene - BS	EPA-8260	109			70	130	12/26/2018	CCN
1,1-Dichloroethene - BSD	EPA-8260	97.6	11		70	130	12/26/2018	CCN
Benzene - BS	EPA-8260	108			75	138	12/26/2018	CCN
Benzene - BSD	EPA-8260	97.1	10		75	138	12/26/2018	CCN
Toluene - BS	EPA-8260	118			71.6	122.1	12/26/2018	CCN
Toluene - BSD	EPA-8260	107	9		71.6	122.1	12/26/2018	CCN
Ethylbenzene - BS	EPA-8260	86.1			50	150	12/26/2018	CCN
Ethylbenzene - BSD	EPA-8260	77.0	11		50	150	12/26/2018	CCN
m,p-Xylene - BS	EPA-8260	100			50	150	12/26/2018	CCN
m,p-Xylene - BSD	EPA-8260	91.1	10		50	150	12/26/2018	CCN
o-Xylene - BS	EPA-8260	89.0			50	150	12/26/2018	CCN
o-Xylene - BSD	EPA-8260	81.2	9		50	150	12/26/2018	CCN

ALS Test Batch ID: 135988 - Water by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
1,1-Dichloroethene - BS	EPA-8260	120			72.5	136	12/21/2018	CCN
1,1-Dichloroethene - BSD	EPA-8260	119	1		72.5	136	12/21/2018	CCN
Methyl T-Butyl Ether - BS	EPA-8260	130			50	150	12/21/2018	CCN
Methyl T-Butyl Ether - BSD	EPA-8260	131	1		50	150	12/21/2018	CCN
1,2-Dichloroethane - BS	EPA-8260	122			50	150	12/21/2018	CCN



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036
DATE: 1/9/2019
ALS SDG#: EV18120155
WDOE ACCREDITATION: C601

CLIENT CONTACT: Mike Noll
CLIENT PROJECT: 11187604 / SSOW 11187604-2018-01

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
1,2-Dichloroethane - BSD	EPA-8260	120	2		50	150	12/21/2018	CCN
Benzene - BS	EPA-8260	116			74.7	143	12/21/2018	CCN
Benzene - BSD	EPA-8260	115	1		74.7	143	12/21/2018	CCN
Toluene - BS	EPA-8260	123			71.7	139	12/21/2018	CCN
Toluene - BSD	EPA-8260	121	1		71.7	139	12/21/2018	CCN
1,2-Dibromoethane - BS	EPA-8260	107			50	150	12/21/2018	CCN
1,2-Dibromoethane - BSD	EPA-8260	107	0		50	150	12/21/2018	CCN
Ethylbenzene - BS	EPA-8260	99.5			50	150	12/21/2018	CCN
Ethylbenzene - BSD	EPA-8260	97.6	2		50	150	12/21/2018	CCN
m,p-Xylene - BS	EPA-8260	114			50	150	12/21/2018	CCN
m,p-Xylene - BSD	EPA-8260	116	2		50	150	12/21/2018	CCN
o-Xylene - BS	EPA-8260	95.4			50	150	12/21/2018	CCN
o-Xylene - BSD	EPA-8260	95.6	0		50	150	12/21/2018	CCN

ALS Test Batch ID: 135991 - Water by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
1,1-Dichloroethene - BS	EPA-8260	120			72.5	136	12/24/2018	CCN
1,1-Dichloroethene - BSD	EPA-8260	119	1		72.5	136	12/24/2018	CCN
Toluene - BS	EPA-8260	113			71.7	139	12/24/2018	CCN
Toluene - BSD	EPA-8260	98.5	14		71.7	139	12/24/2018	CCN

ALS Test Batch ID: 136117 - Water by EPA-8270 SIM

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Naphthalene - BS	EPA-8270 SIM	66.4			36	118	12/28/2018	JMK
Naphthalene - BSD	EPA-8270 SIM	64.5	3		36	118	12/28/2018	JMK
2-Methylnaphthalene - BS	EPA-8270 SIM	66.9			20	150	12/28/2018	JMK
2-Methylnaphthalene - BSD	EPA-8270 SIM	65.4	2		20	150	12/28/2018	JMK
1-Methylnaphthalene - BS	EPA-8270 SIM	78.7			20	150	12/28/2018	JMK
1-Methylnaphthalene - BSD	EPA-8270 SIM	77.0	2		20	150	12/28/2018	JMK
Acenaphthylene - BS	EPA-8270 SIM	75.2			20	150	12/28/2018	JMK
Acenaphthylene - BSD	EPA-8270 SIM	75.2	0		20	150	12/28/2018	JMK
Acenaphthene - BS	EPA-8270 SIM	76.7			37	125	12/28/2018	JMK
Acenaphthene - BSD	EPA-8270 SIM	77.0	0		37	125	12/28/2018	JMK
Fluorene - BS	EPA-8270 SIM	84.1			20	150	12/28/2018	JMK
Fluorene - BSD	EPA-8270 SIM	83.9	0		20	150	12/28/2018	JMK
Phenanthrene - BS	EPA-8270 SIM	83.8			20	150	12/28/2018	JMK
Phenanthrene - BSD	EPA-8270 SIM	82.9	1		20	150	12/28/2018	JMK
Anthracene - BS	EPA-8270 SIM	83.5			20	150	12/28/2018	JMK



CERTIFICATE OF ANALYSIS

CLIENT: GHD Services
20818 - 44th Ave W., Suite 190
Lynnwood, WA 98036
CLIENT CONTACT: Mike Noll
CLIENT PROJECT: 11187604 / SSOW 11187604-2018-01

DATE: 1/9/2019
ALS SDG#: EV18120155
WDOE ACCREDITATION: C601

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Anthracene - BSD	EPA-8270 SIM	82.9	1		20	150	12/28/2018	JMK
Fluoranthene - BS	EPA-8270 SIM	87.0			20	150	12/28/2018	JMK
Fluoranthene - BSD	EPA-8270 SIM	84.7	3		20	150	12/28/2018	JMK
Pyrene - BS	EPA-8270 SIM	76.4			59	156	12/28/2018	JMK
Pyrene - BSD	EPA-8270 SIM	75.3	1		59	156	12/28/2018	JMK
Benzo[A]Anthracene - BS	EPA-8270 SIM	68.8			20	150	12/28/2018	JMK
Benzo[A]Anthracene - BSD	EPA-8270 SIM	62.9	9		20	150	12/28/2018	JMK
Chrysene - BS	EPA-8270 SIM	92.8			20	150	12/28/2018	JMK
Chrysene - BSD	EPA-8270 SIM	94.6	2		20	150	12/28/2018	JMK
Benzo[B]Fluoranthene - BS	EPA-8270 SIM	81.4			20	150	12/28/2018	JMK
Benzo[B]Fluoranthene - BSD	EPA-8270 SIM	79.0	3		20	150	12/28/2018	JMK
Benzo[K]Fluoranthene - BS	EPA-8270 SIM	90.5			20	150	12/28/2018	JMK
Benzo[K]Fluoranthene - BSD	EPA-8270 SIM	96.9	7		20	150	12/28/2018	JMK
Benzo[A]Pyrene - BS	EPA-8270 SIM	81.3			20	150	12/28/2018	JMK
Benzo[A]Pyrene - BSD	EPA-8270 SIM	76.5	6		20	150	12/28/2018	JMK
Indeno[1,2,3-Cd]Pyrene - BS	EPA-8270 SIM	95.1			20	150	12/28/2018	JMK
Indeno[1,2,3-Cd]Pyrene - BSD	EPA-8270 SIM	90.2	5		20	150	12/28/2018	JMK
Dibenz[A,H]Anthracene - BS	EPA-8270 SIM	89.1			20	150	12/28/2018	JMK
Dibenz[A,H]Anthracene - BSD	EPA-8270 SIM	90.8	2		20	150	12/28/2018	JMK
Benzo[G,H,I]Perylene - BS	EPA-8270 SIM	87.8			43	140	12/28/2018	JMK
Benzo[G,H,I]Perylene - BSD	EPA-8270 SIM	84.6	4		43	140	12/28/2018	JMK

APPROVED BY

Laboratory Director



ALS Job# (Laboratory Use Only)

EV18120155

Date 12-12-2018 Page 1 Of 2

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: Michael S. [Signature] / GHD / 12-21-2018 / 1715

Received By: [Signature] / ALS / 12/21/18 / 17:15

2. Relinquished By: _____

Received By: _____

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis

Fuels & Hydrocarbon Analysis

OTHER: SSW ref
Specify: 1187404-2018-01

**Turnaround request less than standard may incur Rush Charges*



ALS Environmental
8620 Holly Drive, Suite 100
Everett, WA 98208
Phone (425) 356-2600
Fax (425) 356-2626
http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only)

EV18120155

Date 12-21-2018 Page 2 Of 2

PROJECT ID: <u>11187604</u>					ANALYSIS REQUESTED															OTHER (Specify)																					
REPORT TO COMPANY: <u>GND</u>					☐ NWTPH-HCID ☐ NWTPH-DX ☐ NWTPH-GX ☒ BTEX by EPA 8021 ☐ BTEX by EPA 8260 ☒ ☐ MTBE by EPA 8021 ☐ MTBE by EPA 8260 ☐ ☐ Halogenated Volatiles by EPA 8260 ☐ Volatile Organic Compounds by EPA 8260 ☒ EDB / EDC by EPA 8260 SIM (water) + <u>MTBE</u> ☐ EDB / EDC by EPA 8260 (soil) ☐ Semivolatile Organic Compounds by EPA 8270 ☐ Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM ☐ PCB by EPA 8082 ☐ Pesticides by EPA 8081 ☐ ☐ Metals-MTCA-5 ☐ RCRA-9 ☐ PFI Po ☐ TAL ☐ ☐ Metals Other (Specify) ☐ TCLP-Metals ☐ VOA ☐ Semi-Vol ☐ Pest ☐ Herbs ☐ <u>Extract only PAHs + EPH</u> <u>EPH, VPH</u>															NUMBER OF CONTAINERS RECEIVED IN GOOD CONDITION?																					
PROJECT MANAGER: <u>Mike Noll</u>																																									
ADDRESS:																																									
PHONE: P.O. #: <u>34032469</u>																																									
E-MAIL:																																									
INVOICE TO COMPANY:																																									
ATTENTION:																																									
ADDRESS:																																									
SAMPLE I.D.					DATE					TIME					TYPE					LAB#																					
1. <u>GB-16-4 210</u>					<u>12/18/18</u>					<u>1015</u>					<u>S</u>					<u>1211</u>																					
2. <u>GB-17-4 210</u>										<u>1025</u>					<u>FS</u>					<u>1512</u>																					
3. <u>GB-18-4 210</u>										<u>1030</u>					<u>FS</u>					<u>1513</u>																					
4. <u>GB-19-4 210</u>										<u>X</u>					<u>FS</u>					<u>916</u>																					
5. <u>GB-20-4 210</u>										<u>X</u>					<u>FS</u>					<u>916</u>																					
6. <u>GB-14 210</u>					<u>12/18/18</u>					<u>1050</u>					<u>W</u>					<u>1514</u>																					
7.																																									
8.																																									
9.																																									
10.																																									

SPECIAL INSTRUCTIONS A = added Per Mike Noll 1/2/19

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: Mike Noll / GND / 12-21-2018 / 1715

Received By: ALS 12/21/18 1715

2. Relinquished By: _____

Received By: _____

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis

10 5 3 2 1 SAME DAY

Fuels & Hydrocarbon Analysis

3 1 SAME DAY

OTHER:

Specify: SSW ref
11187604-2018-01

*Turnaround request less than standard may incur Rush Charges

DEPARTMENT OF ECOLOGY
Manchester Environmental Laboratory
7411 Beach Drive East • Port Orchard, Washington 98366-8204

Case Narrative

April 8, 2019

To: Hobbs, William

Project: NWTPH-Dx Tox

Work Order: 1903038

Subject: Semivolatile Petroleum Products

From: Karin Bailey

LB

Sample Receipt

Enclosed are the TPHD results for the samples received by MEL on March 19, 2019. All samples were received in acceptable condition unless noted in Analyst Comments. All samples were prepared and analyzed within holding times unless noted in Analyst Comments.

Analytical Methods

These samples were prepared, analyzed, and verified by MEL according to the submitted chain-of-custody and MEL's procedures. A Sample Correlation Table with batch summary is located in Appendix A. The samples were:

- extracted following a modification of method SW3535A.
- cleaned up following a modification of method(s) SW3630C, .
- analyzed following a modification of method NWTPH-DX.

Analyst Comments

TPHD by GCFID. Aliquots of the extracts requesting clean-up, along with aliquots of the associated QC extracts, were treated with silica gel clean-up. The data that went through silica gel clean-up was appended with a "-RE1" after the sample name and a "-2" after the QC name.

Sample Qualification

The samples were qualified according to MEL's procedures. The table in Appendix B summarizes the manual qualifiers added by MEL. All results reported below the method reporting limit (RL) were automatically qualified as estimates, but not included in Appendix B. The qualifiers are defined in Appendix C.

Sample Verification

All analyses met QC acceptance criteria except as noted in Appendix D. All analytes met linearity requirements unless noted in Appendix E.

**Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
Semivolatile Petroleum Products**

Project: NWTPH-Dx Tox

Field ID: BBT-MW5

Work Order: 1903038
Project Officer: Hobbs, William
Initial Vol: 975 mL
Final Vol: 3 mL

Lab ID #: 1903038-01
Collected: 3/18/2019
Prep Method: SW3535A
Analysis Method: NWTPH-DX

Batch ID: B19C104
Prepared: 3/19/2019
Analyzed: 3/27/2019
Matrix: Water
Units: mg/L

CAS#	Analyte	Result	Qualifier	RL	MDL
68476-34-6	Diesel Range Organics	0.59		0.15	
NULL	Residual Range Organics	0.41	U	0.38	

Surrogate Recovery:

CAS#	Analyte	Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane	0.181	0.226	80	50-150

Authorized by: _____

Release Date: _____

4/8/19

**Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
Semivolatile Petroleum Products**

Project: NWTPH-Dx Tox

Field ID: BBT-MW5

Work Order: 1903038
Project Officer: Hobbs, William
Initial Vol: 975 mL
Final Vol: 3 mL

Lab ID #: 1903038-01RE1
Collected: 3/18/2019
Prep Method: SW3535A
Analysis Method: NWTPH-DX

Batch ID: B19C104
Prepared: 3/19/2019
Analyzed: 4/4/2019
Matrix: Water
Units: mg/L

CAS#	Analyte	Result	Qualifier	RL	MDL
68476-34-6	Diesel Range Organics	0.44		0.15	
NULL	Residual Range Organics	0.38	U	0.38	

Surrogate Recovery:

CAS#	Analyte	Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane	0.218	0.226	97	50-150

Authorized by:

Release Date:

4/8/19

**Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
Semivolatile Petroleum Products**

Project: NWTPH-Dx Tox

Field ID: BBT-MW5 rep

Work Order: 1903038
Project Officer: Hobbs, William
Initial Vol: 1000 mL
Final Vol: 3 mL

Lab ID #: 1903038-02
Collected: 3/18/2019
Prep Method: SW3535A
Analysis Method: NWTPH-DX

Batch ID: B19C104
Prepared: 3/19/2019
Analyzed: 3/27/2019
Matrix: Water
Units: mg/L

CAS#	Analyte	Result	Qualifier	RL	MDL
68476-34-6	Diesel Range Organics	0.58		0.15	
NULL	Residual Range Organics	0.39	U	0.38	

Surrogate Recovery:

CAS#	Analyte	Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane	0.178	0.220	81	50-150

Authorized by: _____

Release Date: _____

**Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
Semivolatile Petroleum Products**

Project: NWTPH-Dx Tox

Field ID: BBT-MW5 rep

Work Order: 1903038
Project Officer: Hobbs, William
Initial Vol: 1000 mL
Final Vol: 3 mL

Lab ID #: 1903038-02RE1
Collected: 3/18/2019
Prep Method: SW3535A
Analysis Method: NWTPH-DX

Batch ID: B19C104
Prepared: 3/19/2019
Analyzed: 4/4/2019
Matrix: Water
Units: mg/L

CAS#	Analyte	Result	Qualifier	RL	MDL
68476-34-6	Diesel Range Organics	0.39		0.15	
NULL	Residual Range Organics	0.38	U	0.38	

Surrogate Recovery:

CAS#	Analyte	Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane	0.218	0.220	99	50-150

Authorized by: VB

Release Date: 4/8/19

**Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
Semivolatile Petroleum Products**

Project: NWTPH-Dx Tox

Field ID: BBT-MW1

Work Order: 1903038
Project Officer: Hobbs, William
Initial Vol: 960 mL
Final Vol: 3 mL

Lab ID #: 1903038-03
Collected: 3/18/2019
Prep Method: SW3535A
Analysis Method: NWTPH-DX

Batch ID: B19C104
Prepared: 3/19/2019
Analyzed: 3/27/2019
Matrix: Water
Units: mg/L

CAS#	Analyte	Result	Qualifier	RL	MDL
68476-34-6	Diesel Range Organics	0.34		0.16	
NULL	Residual Range Organics	0.39	U	0.39	

Surrogate Recovery:

CAS#	Analyte	Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane	0.176	0.229	77	50-150

Authorized by: _____

Release Date: _____

4/8/19

**Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
Semivolatile Petroleum Products**

Project: NWTPH-Dx Tox

Field ID: BBT-MW1

Work Order: 1903038
Project Officer: Hobbs, William
Initial Vol: 960 mL
Final Vol: 3 mL

Lab ID #: 1903038-03RE1
Collected: 3/18/2019
Prep Method: SW3535A
Analysis Method: NWTPH-DX

Batch ID: B19C104
Prepared: 3/19/2019
Analyzed: 4/4/2019
Matrix: Water
Units: mg/L

CAS#	Analyte	Result	Qualifier	RL	MDL
68476-34-6	Diesel Range Organics	0.16	U	0.16	
NULL	Residual Range Organics	0.39	U	0.39	

Surrogate Recovery:

CAS#	Analyte	Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane	0.218	0.229	95	50-150

Authorized by:

Release Date:

4/8/19

**Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
Semivolatile Petroleum Products**

Project: NWTPH-Dx Tox

QC Type : Method Blank

Work Order: Batch QC
Project Officer: Hobbs, William
Initial Vol: 1000 mL
Final Vol: 3 mL

Lab ID #: B19C104-BLK1
Prep Method: SW3535A
Analysis Method: NWTPH-DX
Source Field ID: B19C104-BLK1

Batch ID: B19C104
Prepared: 3/19/2019
Analyzed: 3/27/2019
Matrix: Water
Units: mg/L

CAS#	Analyte	Result	Qualifier	RL	MDL
68476-34-6	Diesel Range Organics	0.15	U	0.15	
NULL	Residual Range Organics	0.38	U	0.38	

Surrogate Recovery:

CAS#	Analyte	Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane	0.191	0.220	87	50-150

Authorized by: _____

Release Date: _____

4/8/19

**Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
Semivolatile Petroleum Products**

Project: NWTPH-Dx Tox

QC Type : Method Blank

Work Order: Batch QC
Project Officer: Hobbs, William
Initial Vol: 1000 mL
Final Vol: 3 mL

Lab ID #: B19C104-BLK2
Prep Method: SW3535A
Analysis Method: NWTPH-DX
Source Field ID: B19C104-BLK2

Batch ID: B19C104
Prepared: 3/19/2019
Analyzed: 4/4/2019
Matrix: Water
Units: mg/L

CAS#	Analyte	Result	Qualifier	RL	MDL
68476-34-6	Diesel Range Organics	0.15	U	0.15	
NULL	Residual Range Organics	0.38	U	0.38	

Surrogate Recovery:

CAS#	Analyte	Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane	0.354	0.220	161	50-150

Authorized by: _____

Release Date: _____

4/8/19

**Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
Semivolatile Petroleum Products**

Project: NWTPH-Dx Tox

QC Type : LCS

Work Order: Batch QC
Project Officer: Hobbs, William
Initial Vol: 1000 mL
Final Vol: 3 mL

Lab ID #: B19C104-BS1
Prep Method: SW3535A
Analysis Method: NWTPH-DX
Source Field ID: B19C104-BS1

Batch ID: B19C104
Prepared: 3/19/2019
Analyzed: 3/27/2019
Matrix: Water
Units: %

Analyte	Result	Spike Level	RL	%Rec	%Rec Limits
Diesel Range Organics	2.13	3.00	0.15	71	70-130

Surrogate Recovery:

CAS#	Analyte	Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane	0.194	0.220	88	50-150

Authorized by: _____

Release Date: _____

4/8/19

**Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
Semivolatile Petroleum Products**

Project: NWTPH-Dx Tox

QC Type : LCS

Work Order: Batch QC
Project Officer: Hobbs, William
Initial Vol: 1000 mL
Final Vol: 3 mL

Lab ID #: B19C104-BS2
Prep Method: SW3535A
Analysis Method: NWTPH-DX
Source Field ID: B19C104-BS2

Batch ID: B19C104
Prepared: 3/19/2019
Analyzed: 4/4/2019
Matrix: Water
Units: %

Analyte	Result	Spike Level	RL	%Rec	%Rec Limits
Diesel Range Organics	2.58	3.00	0.15	86	70-130

Surrogate Recovery:

CAS#	Analyte	Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane	0.227	0.220	103	50-150

Authorized by: LB

Release Date: 4/8/19

**Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
Semivolatile Petroleum Products**

Project: NWTPH-Dx Tox

QC Type : LCS Dup

Work Order: Batch QC
Project Officer: Hobbs, William
Initial Vol: 1000 mL
Final Vol: 3 mL

Lab ID #: B19C104-BSD1
Prep Method: SW3535A
Analysis Method: NWTPH-DX
Source Field ID: B19C104-BSD1

Batch ID: B19C104
Prepared: 3/19/2019
Analyzed: 3/27/2019
Matrix: Water
Units: %

Analyte	Sample Result	Spike Level	%Rec	RPD	%Rec Limits	RPD Limit
Diesel Range Organics	2.35	3.00	78	10	70-130	40

Surrogate Recovery:

CAS#	Analyte	Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane	0.200	0.220	91	50-150

Authorized by:

Release Date:

**Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
Semivolatile Petroleum Products**

Project: NWTPH-Dx Tox

QC Type : LCS Dup

Work Order: Batch QC
Project Officer: Hobbs, William
Initial Vol: 1000 mL
Final Vol: 3 mL

Lab ID #: B19C104-BSD2
Prep Method: SW3535A
Analysis Method: NWTPH-DX
Source Field ID: B19C104-BSD2

Batch ID: B19C104
Prepared: 3/19/2019
Analyzed: 4/4/2019
Matrix: Water
Units: %

Analyte	Sample Result	Spike Level	%Rec	RPD	%Rec Limits	RPD Limit
Diesel Range Organics	2.83	3.00	94	9	70-130	40

Surrogate Recovery:

CAS#	Analyte	Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane	0.232	0.220	105	50-150

Authorized by: _____

Release Date: _____

4/8/19

**Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
Semivolatile Petroleum Products**

Project: NWTPH-Dx Tox

QC Type : Duplicate

Work Order: Batch QC
Project Officer: Hobbs, William
Initial Vol: 975 mL
Final Vol: 3 mL

Lab ID #: B19C104-DUP1
Prep Method: SW3535A
Analysis Method: NWTPH-DX
Source Field ID: B19C104-DUP1
Source Lab ID #: 1903038-01

Batch ID: B19C104
Prepared: 3/19/2019
Analyzed: 3/27/2019
Matrix: Water
Units: mg/L

Analyte	Sample Result	Sample Qual	Source Result	RPD	RPD Limit
Diesel Range Organics	0.55		0.59	8	40
Residual Range Organics	0.38	U	0.41	NC	40

Surrogate Recovery:

CAS#	Analyte	Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane	0.185	0.226	82	50-150

Authorized by: LB

Release Date: 4/8/19

**Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
Semivolatile Petroleum Products**

Project: NWTPH-Dx Tox

QC Type : Duplicate

Work Order: Batch QC
Project Officer: Hobbs, William
Initial Vol: 975 mL
Final Vol: 3 mL

Lab ID #: B19C104-DUP2
Prep Method: SW3535A
Analysis Method: NWTPH-DX
Source Field ID: B19C104-DUP2
Source Lab ID #: 1903038-01RE1

Batch ID: B19C104
Prepared: 3/19/2019
Analyzed: 4/4/2019
Matrix: Water
Units: mg/L

Analyte	Sample Result	Sample Qual	Source Result	RPD	RPD Limit
Diesel Range Organics	0.40		0.44	10	40
Residual Range Organics	0.38	U	0.00	NC	40

Surrogate Recovery:

CAS#	Analyte	Result	Spike Level	% Rec.	% Rec. Limits
629-99-2	Pentacosane	0.231	0.226	102	50-150

Authorized by: LB

Release Date: 4/8/19

Appendix A Sample Correlation Table

Batch ID: B19C104

Prep Method: SW3535A

Prepared: 3/19/2019

Analysis Method: NWTPH-DX

<u>Field ID</u>	<u>MEL ID</u>
BBT-MW5	1903038-01
BBT-MW5	1903038-01RE1
BBT-MW5 repREP	1903038-02
BBT-MW5 repREP	1903038-02RE1
BBT-MW1	1903038-03
BBT-MW1	1903038-03RE1
Blank	B19C104-BLK1
Blank	B19C104-BLK2
LCS	B19C104-BS1
LCS	B19C104-BS2
LCS Dup	B19C104-BSD1
LCS Dup	B19C104-BSD2
Duplicate (BBT-MW5)	B19C104-DUP1
Duplicate (BBT-MW5)	B19C104-DUP2

Appendix B

Manual Qualification Table

WO: 1903038

Analysis: TPHD

MRL raised due to background; analyte was not detected at or above the reported result.

Residual Range Organics U: 1903038-01, 1903038-02,

Appendix C

Data Qualifier Definitions

Code	Definition
E	Reported result is an estimate because it exceeds the calibration range.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
N	The analysis indicates the present of an analyte for which there is presumptive evidence to make a “tentative identification”.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents its approximate concentration.
NAF	Not analyzed for.
NC	Not calculated.
REJ	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
U	The analyte was not detected at or above the reported sample quantitation limit.
UJ	The analyte was not detected at or above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately measure the analyte in the sample.
bold	The analyte was present in the sample. (Visual aid to locate detected compounds on the analytical report.)

Appendix D

QC Exceptions Report

Lab ID	Analyte	Exception
B19C104-BLK2	surr: Pentacosane	Exceeds upper control limit

Appendix E
Initial Calibration Exceptions Report

Calibration ID: B9A2301

Analysis: TPHD

LabNumber Analyte

QC Exception

No ICAL exceptions.

Appendix E
Initial Calibration Exceptions Report

Calibration ID: B9D0401

Analysis: TPHD

LabNumber Analyte

QC Exception

No ICAL exceptions.

Appendix F

Ecology Weathered Diesel Study Protective Value Slide

Study and Proposed Protective Concentrations: Study #3

- *Concentrations of Weathered Diesel Range Organics Predicted to be Protective of Aquatic Receptors in Surface Waters*
 - Purpose: *To provide weathered diesel range organic concentrations that are predicted to be protective of aquatic receptors in marine and fresh surface waters at any MTCA cleanup site.
 - Note: *This study is ongoing – protective values are preliminary
 - Receptor – response:

Freshwater	=	Fathead minnow – survival and growth
		Water flea – survival and reproduction
Marine water	=	Topsmelt – survival and growth
		Purple sea urchin – fertilization
 - Results:

Hazardous Substance	Protective Value	
	Freshwater (µg/L)	Marine Water (µg/L)
Diesel Range Organics	3000	1200



about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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