Groundwater Monitoring Report
April 2014 through March 2015
Cascade Pole Site
Olympia, Washington

July 30, 2015

Prepared for

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1.0 INTRODUCTION

This report summarizes groundwater monitoring activities conducted between April 1, 2014 and March 31, 2015 at the Cascade Pole Site (Site), in Olympia, Washington. This report is the eighth annual report summarizing the groundwater monitoring that has been conducted as part of the Long-Term Groundwater Compliance Monitoring (LTGCM) program outlined in the amendment to Consent Decree No. DE 00TCPSR-753 [Washington State Department of Ecology (Ecology) 2007]. The groundwater compliance monitoring plan (CMP; Landau Associates 2007) identifies the processes for the collection of groundwater samples and the measurement of groundwater elevations. The LTGCM program consists of the following elements:

- **Hydraulic Control Monitoring:** Monthly monitoring of groundwater elevations at perimeter and interior monitoring wells. The groundwater elevation data are utilized to monitor the effectiveness of the groundwater extraction and treatment systems in achieving hydraulic control. The locations of monitoring wells are shown on Figures 1 and 2.
- **Perimeter Well Monitoring:** Collection of semiannual water quality samples from paired monitoring wells located along the perimeter (inside and outside) of the slurry wall. Groundwater samples are collected from the following paired wells: PZ-12 and PZ-13, LW-3 and PZ-17, LW-4R and PZ-18, and MW-02S and PZ-19. The analytical results for the water quality samples are utilized in the evaluation of the effectiveness of the extraction and treatment systems in controlling horizontal migration of contaminants. Paired groundwater monitoring well locations for the perimeter monitoring are shown on Figure 1.
- **Interior Well Monitoring:** Collection of semiannual water quality samples from paired upper and lower aquifer wells located within the interior of the containment area. Groundwater samples are collected from the following paired interior wells: MW-01S and MW-01D, MW-02S and MW-02D, and MW-05S and MW-05D. In addition to the paired upper and lower aquifer wells, semiannual water quality samples are collected from well CW-13. The analytical results for the paired upper and lower aquifer wells are utilized in the evaluation of vertical containment. Paired groundwater monitoring wells for the interior monitoring program are shown on Figure 2.
- **Reporting:** Annual Reporting of the LTGCM activities are submitted to Ecology.

1.1 BACKGROUND

The former Cascade Pole Company (CPC) wood-treatment Site is located approximately 1 mile north of downtown Olympia, at the northern end of the peninsula that extends into Budd Inlet. The Port of Olympia (Port) owns the property, adjacent parcels, and adjacent in-waterway sediments. A detailed history of the Site can be found in the CPC remedial investigation (RI) and feasibility study (FS) reports for the Sediments Operable Unit (SOU; Landau Associates 1993a,b). Environmental cleanup of the Site is proceeding under the Washington State Model Toxics Control Act (MTCA).

The Port implemented several interim remedial actions in the upland area of the Site to address contamination from the former wood treatment activities. These interim actions prevented further migration of hazardous substances from contaminated soil and groundwater into the adjacent groundwater, surface water, and sediment. A groundwater extraction and non-aqueous phase liquid (NAPL) recovery and treatment system was installed in 1991 and 1992. This system was expanded in 1999 and modified in conjunction with the construction of the upland sediment containment cell. In early 1993, a dense NAPL (DNAPL) recovery trench and an associated sheetpile cutoff wall were installed along a portion of the shoreline to eliminate the migration of DNAPL into Budd Inlet. The cutoff wall was extended to encircle the Site through installation of a soil-bentonite slurry wall in 1996 and 1997. The cutoff wall was keyed into the aquitard and encompasses the former wood treating facility and treated pole storage yards; areas where NAPL has been observed and impacted groundwater. The trench was abandoned in 2001 due to DNAPL recovery deficiencies.

Excavated and dredged sediments generated from cleanup of the SOU were placed in an upland containment cell within the cutoff wall, which was constructed within the northeast portion of the SOU. In addition, contaminated sediment and soil near the original sheetpile cutoff wall were contained during cleanup of the SOU by a second sheetpile cutoff wall. The second cutoff wall was keyed into the existing slurry wall on each end and the underlying aquitard forming a shoreline containment cell.

A major portion of the Site was paved between the fall of 1997 and the summer of 1998 to assist with stormwater runoff control and to reduce surface water infiltration. In 2004, a portion of the Site adjacent to the sediment containment cell was capped as part of the Phase I capping project. The Phase II paving and capping project of the sediment containment cell was completed in 2009. In December 2010, the Phase III capping project was conducted along the northern portion of the Site and has resulted in the completion of the planned capping projects. Upon completion of the capping activities, a new groundwater treatment system was installed to replace the 1993 system and to increase the Site treatment capacity by threefold. The new system began operation after the completion of the functional testing in January 2012.

1.2 HYDRAULIC CONTROL GOALS

Short-term goals for hydraulic containment have been identified for the Site. The short-term goals are applicable until the Site has been fully capped with a low-permeability cover, the treatment system is fully operational, and engineering review of the hydraulic control system has been conducted. At that time, long-term hydraulic containment control goals will be established in consultation with Ecology.

The short-term goal of the hydraulic control system at the Site is to prevent overtopping of the cutoff wall throughout the containment area. The short-term performance criterion consists of maximum groundwater elevations within the cutoff wall, depending on adjacent cutoff wall top elevations (Landau Associates 2000). The groundwater elevation performance criteria are 15.5 feet (ft) along the majority of the cutoff wall alignment, and 16.5 ft along wall alignment sections adjacent to Budd Inlet. The long-term Site hydraulic control goal is the establishment and maintenance of inward and upward hydraulic gradients throughout the containment area.

1.3 GROUNDWATER QUALITY COMPLIANCE MONITORING GOALS

The goal of the groundwater quality compliance monitoring is to assess the effectiveness of the groundwater extraction and treatment system. The CMP identifies four pairs of shallow monitoring wells located along the perimeter (inside and outside) of the bentonite cutoff wall and three shallow and deep well pairs within the containment area to monitor the effectiveness of the containment system. One additional shallow extraction well not currently being operated, CW-13, is also being sampled at Ecology's request.

Groundwater quality results are compared to MTCA Method B values for the protection of marine surface water with the exception of petroleum hydrocarbons, which have been compared to MTCA Method A cleanup levels. To evaluate the analytical data for carcinogenic polycyclic aromatic hydrocarbons (cPAHs), the toxicity equivalency quotients (TEQ) of individual cPAHs were calculated and summed for comparison to the benzo(a)pyrene cleanup level using the methodology established in Washington Administrative Code (WAC) 173-340-708. To calculate the TEQ, the toxicity equivalency factor (TEF) for a given cPAH compound was multiplied by the compound concentration, or half the reporting limit for compounds that were not detected above the laboratory reporting limit, and the resulting values were summed. The resulting TEQ was compared to the MTCA Method B cleanup level for benzo(a)pyrene of 0.1 micrograms per liter (µg/L). Pentachlorophenol (PCP) is initially analyzed using U.S. Environmental Protection Agency (EPA) Method 8270 with a reporting limit of 10.0 µg/L. If the initial PCP results are not detected at the reporting limits, then samples are selected for follow-up analysis using EPA Method 8041 with a lower reporting limit of 0.25 µg/L. The PCP analysis sequence is conducted to allow for initial screening for elevated detections of the compound without damage to laboratory equipment, and the follow-up analysis allows for comparison of results to MTCA Method B cleanup levels.

2.0 COMPLIANCE MONITORING PROCEDURES

Two planned groundwater quality monitoring events were conducted at the Site during this reporting period (September 2014 and March 2015). In addition, two verification sampling events were conducted, one in June 2014 at well LW-3 and one in October 2014 at well PZ-17. Verification monitoring was conducted at any exterior monitoring well location where the measured concentration of a constituent of concern exceeded the cleanup screening levels established for the Site. Monthly groundwater elevation data were also collected to evaluate system hydraulic control measures in accordance with the CMP (Landau Associates 2007). The following sections describe the sampling methods for collection of water level measurements and groundwater sampling.

2.1 HYDRAULIC CONTROL MEASUREMENTS

Monthly groundwater level measurements from the selected compliance perimeter well pairs (PZ-12 and PZ-13, LW-3 and PZ-17, LW-4R and PZ-18, and MW-02S and PZ-19) and from interior monitoring well shallow and deep aquifer pairs (MW-01S, D; MW-02S, D; and MW-05S, D) have been collected throughout the reporting period (April 2014 through March 2015). The groundwater level was not able to be measured at the following wells due to ongoing log and bark storage activities and railcar obstruction: PZ-17 (June 2014), PZ-18 (June 2014), and LW-4R (December 2014).

The depths to groundwater measurements were collected using an electronic water level meter and measurements were recorded to the nearest 0.01 ft. Measurements were made from surveyed reference points on the top of the well casing. Depth to groundwater was converted to groundwater elevation for each well using a surveyed reference elevation at the top of the casing. Table 1 shows the depth to water measurements, top of casing elevations, and groundwater elevations measured during this reporting period. Historical groundwater elevation data are presented in Appendix A.

2.2 GROUNDWATER SAMPLING

Groundwater quality monitoring events were conducted in September 2014 during a time of low groundwater elevations, which corresponded to a typical “dry season”, and in March 2015 at a time when high groundwater elevations corresponded to a typical “wet season”. In addition, two verification events occurred in June and October 2014, at wells LW-3 and PZ-17, respectively. The June 2014 verification event occurred because the well cap was accidently removed during collection of monthly groundwater measurements prior to removing standing water within the monument, allowing the standing water to enter the well. The well was subsequently re-developed using a submersible high volume pump and an analytical sample was collected. The October 2014 verification sample was collected at PZ-17 due to the

September 2014 exceedance of the cleanup screening level for total petroleum hydrocarbons (TPH) in the motor oil range. Groundwater samples were collected using low-flow sampling techniques as described in the CMP (Landau Associates 2007). Groundwater was purged from the selected wells using a non-dedicated peristaltic pump. Field parameters (pH, conductivity, redox, and temperature), along with groundwater levels, were monitored every 3 to 5 minutes during the purge process to verify the flow rate and to minimize groundwater level drawdown. Groundwater samples were collected directly into laboratory-prepared containers, labeled, stored in a cooler with a maintained temperature of 4^{o} to 6^{o} C, and transported to the laboratory in accordance with proper chain-of-custody procedures.

A total of 14 wells were sampled as part of the LTGCM plan. The selected wells included perimeter well pairs (PZ-12 and PZ-13, LW-3 and PZ-17, LW-4R and PZ-18, and MW-02S and PZ-19) and interior wells MW-01S, D; MW-02S, D; and MW-05S, D; and CW-13).

Groundwater samples were submitted to Analytical Resources Inc. (ARI) located in Tukwila, Washington. Samples were analyzed for polycyclic aromatic hydrocarbons (PAHs) using EPA Method 8270 with selected ion monitoring (SIM); gasoline-range TPH (TPH-G) using Method NWTPH-G; diesel- and oil-range TPH (TPH-D and TPH-O, respectively); and creosote using Method NWTPH-Dx. Follow-up PCP analysis was conducted using low reporting limit testing, EPA Method 8041, if results from the PAH testing using EPA Method 8270 indicated results were below the associated method reporting limit. The analytical results for this reporting period are summarized in Table 2. Historical groundwater quality data are presented in Appendix A. The laboratory analytical reports for samples collected during this reporting period are presented in Appendix B.

3.0 COMPLIANCE MONITORING RESULTS

The following sections discuss the performance of the system in regards to the hydraulic control and groundwater quality criteria. Groundwater elevation data collected during this reporting period is summarized in Table 1. Groundwater quality compliance monitoring data collected during this reporting period is summarized in Table 2. Historical groundwater elevation data and historical groundwater quality data are presented in Appendix A. Laboratory reports for the June, September, and October 2014 and March 2015 sampling events are presented in Appendix B.

3.1 HYDRAULIC CONTROL

The LTGCM plan indicates that hydraulic control for the Site will be maintained by a series of shallow extraction wells directing water to the onsite treatment system. The short-term groundwater elevation performance criteria are maintaining groundwater levels below the perimeter cutoff wall, which requires maintaining groundwater elevations below 15.5 ft along the majority of the cutoff wall alignment, and below 16.5 ft along wall alignment sections adjacent to Budd Inlet. Available groundwater elevation data collected during this reporting period indicate that the short-term elevation criteria were consistently met at well pair PZ-12 and PZ-13 (northwest portion of the Site), at well pair PZ-17 and LW-3 (southwestern portion of the Site), LW-4R and PZ-18 (southern portion of the Site), and at well pair MW-05S and MW-05D (eastern portion of the Site). However, the short-term groundwater elevation criteria were exceeded during the reporting period at the following times and location:

- Groundwater elevations observed at perimeter well MW-02S exceeded the short-term goal three out of the twelve measurements collected during this reporting period.. The goal exceedances occurred in April and May 2014 and February 2015.

3.2 ANALYTICAL RESULTS

The groundwater analytical results for the two semiannual sampling events (September 2014 and March 2015) and the two verification events (June and October 2014) are summarized in Table 2. Analytical results for constituents detected above the cleanup screening levels during this reporting period are shown on Figure 3. Historical groundwater analytical data for compliance monitoring wells are presented in Appendix A. Laboratory reports for samples collected during this reporting period are provided in Appendix B. The following paragraphs summarize the analytical results for this reporting period.

3.2.1 SHALLOW WELLS

All analytical results for the shallow wells located outside of the slurry wall were below the respective cleanup levels during this reporting period with the exception of the September 2014 results for

PZ-17 where TPH-O was reported at 640 µg/L, which is above the cleanup screening level (500 µg/L). Based on this elevated TPH-O concentration, a verification sample was collected at PZ-17 (October 2014). The verification sample results, and the subsequent March 2015 results, exhibited TPH-O concentrations that were below the laboratory reporting limit. The September 2014 event was the first time TPH-O has been detected above the laboratory reporting limit at PZ-17 since the initiation of the LTGCM in June 2005.

Low-level naphthalene concentrations were reported at PZ-13 (5.9 µg/L) and PZ-19 (3.8 µg/L and 3.3 µg/L). However, these concentrations are well below the cleanup level (4,900 µg/L).

Groundwater quality data from shallow wells located on the interior of the slurry wall indicate low-level naphthalene concentrations at PZ-12 (2.7 µg/L), LW-3 (0.539 µg/L) and MW-05S (1.4 and 1.7 µg/L); however, these concentrations are well below the cleanup level (4,900 µg/L). Low-level TPH-G, TPH-D, and creosote concentrations were detected at LW-3 (189 µg/L, 247 µg/L, and 270 µg/L, respectively), all below the cleanup level (500 µg/L). PCP was detected at MW-02S at a low concentration during the September 2014 sampling event (0.83 µg/L), which is well below the cleanup screening level (3 µg/L). Low creosote concentrations were detected at MW-05S (100 and 130 µg/L), which are well below the cleanup screening level (500 µg/L).

A number of analytes were detected above the cleanup screening levels in the groundwater samples collected from shallow interior well MW-01S as shown on Figure 3. Samples from MW-01S indicate naphthalene concentrations at 8,000 and 10,000 µg/L during the reporting period, which are above the cleanup screening level (4,900 µg/L). PCP concentrations of 2,900 and 4,900 µg/L were detected during the reporting period, compared to the cleanup screening level of 3 µg/L. The TEQ calculated values for cPAHs were reported at 0.326 to 0.834 µg/L (using half the reporting limit for cPAHs not detected above the reporting limits), compared to the screening level of 0.1 µg/L. TPH-G concentrations at MW-01S were above the cleanup screening level (1,000 µg/L) with concentrations at 44,000 to 52,000 µg/L. During the March 2015 and September 2014 monitoring events, TPH-D concentrations were reported at 3,700 and 11,000 µg/L, and creosote concentrations at 16,000 and 59,000 µg/L, compared to the cleanup screening level of 500 µg/L. During the September 2014 event, the TPH-O concentration was 690 µg/L, compared to the cleanup screening level of 500 µg/L.

Exceedance of the cleanup screening levels at well MW-01S is not a compliance issue because the well is located within the groundwater containment area and represents shallow groundwater conditions. Concentrations for constituents of concern detected in groundwater samples collected from MW-01D were either not detected at concentrations above the reporting limits or were detected at low concentrations below the respective cleanup screening levels.

The analytical results for other shallow wells (LW4R and CW-13) located inside the slurry wall indicate compounds were below the laboratory reporting limits.

3.2.2 DEEP WELLS

The analytical results from the sampling events indicate that no analytical results exceed the cleanup screening levels for the three deep interior wells during this reporting period. Naphthalene concentrations below the cleanup screening level were detected at each of the three deep wells: MW-01D exhibited naphthalene concentrations of 1.9 and 2.7 µg/L, MW-02D exhibited a concentration of 6 µg/L in March 2015, and MW-05D exhibited a concentration of 1.1 µg/L in Septemner 2014, all of which are well below the naphthalene cleanup screening level (4,900 µg/L). A low-level PCP concentration was detected at MW-01D (1.7 µg/L) during the March 2015 event, which is below the cleanup screening level of 3.0 µg/L. Low-level oil-range TPH concentrations (400 and 330 µg/L) and creosote-range concentrations (290 and 140 µg/L) were also detected at MW-01D, which are below the cleanup screening level of 500 µg/L. A low creosote concentration of 130 µg/L was reported at MW-02D during the September 2014 event.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Evaluation of groundwater elevations for shallow monitoring wells located along the perimeter of the bentonite slurry wall indicates that the hydraulic control system is generally preventing groundwater inside of the containment area from exceeding the short-term hydraulic containment goals, with the exception of well pair MW-02S/PZ-19, which exceeded the goal in April and May 2014 and February 2015, which corresponds to the typical wet season.

Analytical results indicate no exceedances of the groundwater cleanup screening levels in shallow wells located outside of the slurry wall, with the exception of a TPH-O concentration at PZ-17 of 640 µg/L during the September 2014 event. Verification sampling conducted in October 2014 and the subsequent March 2015 event indicate motor oil concentrations at PZ-17 were below the laboratory reporting limit for both of these sampling events. Groundwater cleanup screening levels were exceeded for a number of constituents in samples collected from interior shallow well MW-01S; however, these exceedances are not of concern because the wells are located inside the containment system perimeter and analytical results for the deeper well (MW-01D) at this location did not exceed the cleanup screening levels.

The next semiannual sampling event is currently scheduled for late August to early October 2015, to coincide with typical low groundwater elevations representative of a "dry season" event. The "wet season" event will be conducted in February or March 2016, depending on precipitation rates. Results of these sampling events will be reported following completion of the "wet season" 2016 monitoring event.

5.0 LIMITATIONS

This report has been prepared for the exclusive use of the Port of Olympia for specific application to the Cascade Pole Site in Olympia, Washington. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of Landau Associates. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

This document has been prepared under the supervision and direction of the following key staff.

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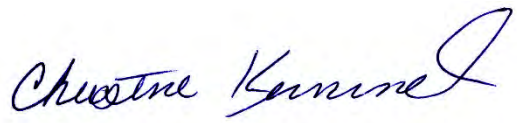

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6.0 REFERENCES

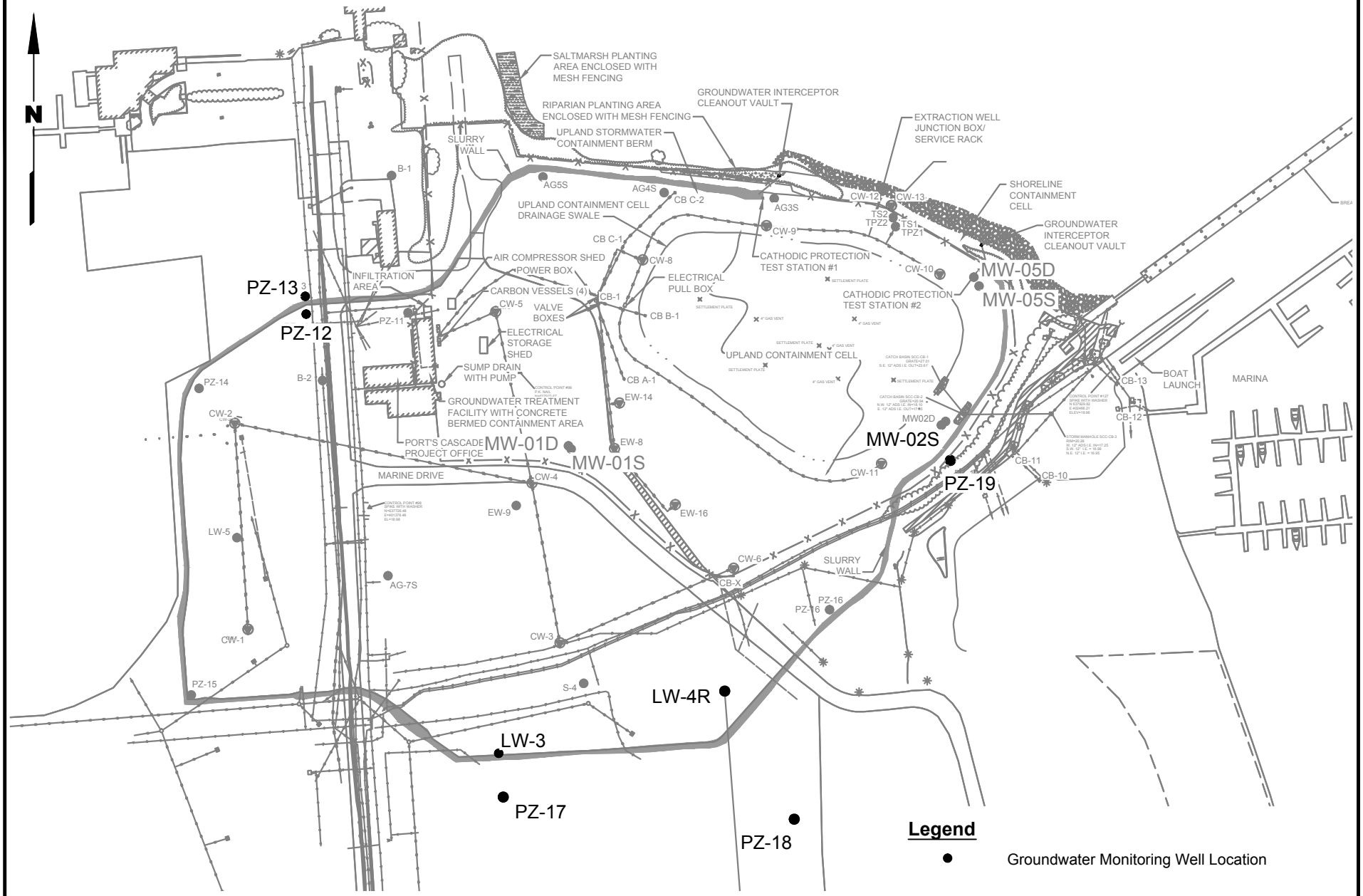
Ecology. 2007. *Long-Term Groundwater Monitoring, Amendment No. One to Agreed Order No. DE 00TCPSR-753.* December 20.

Landau Associates. 2007. *Groundwater Compliance Monitoring Plan, Cascade Pole Company Site, Olympia, Washington.* September 21.

Landau Associates. 2000. Technical Memorandum, Re: *Development of Groundwater Hydraulic Controls, Extraction Well Locations and Flow Rates, Cascade Pole Site, Olympia, Washington,* from Lawrence D. Beard and Li Ma to Mr. Richard Reis, The IT Group.

Landau Associates. 1993a. *Remedial Investigation Report, Sediments Operable Unit, Cascade Pole Company Site, Port of Olympia, Washington.* January 22.

Landau Associates. 1993b. *Feasibility Study, Sediments Operable Unit, Cascade Pole Company Site, Port of Olympia, Washington.* October 18.



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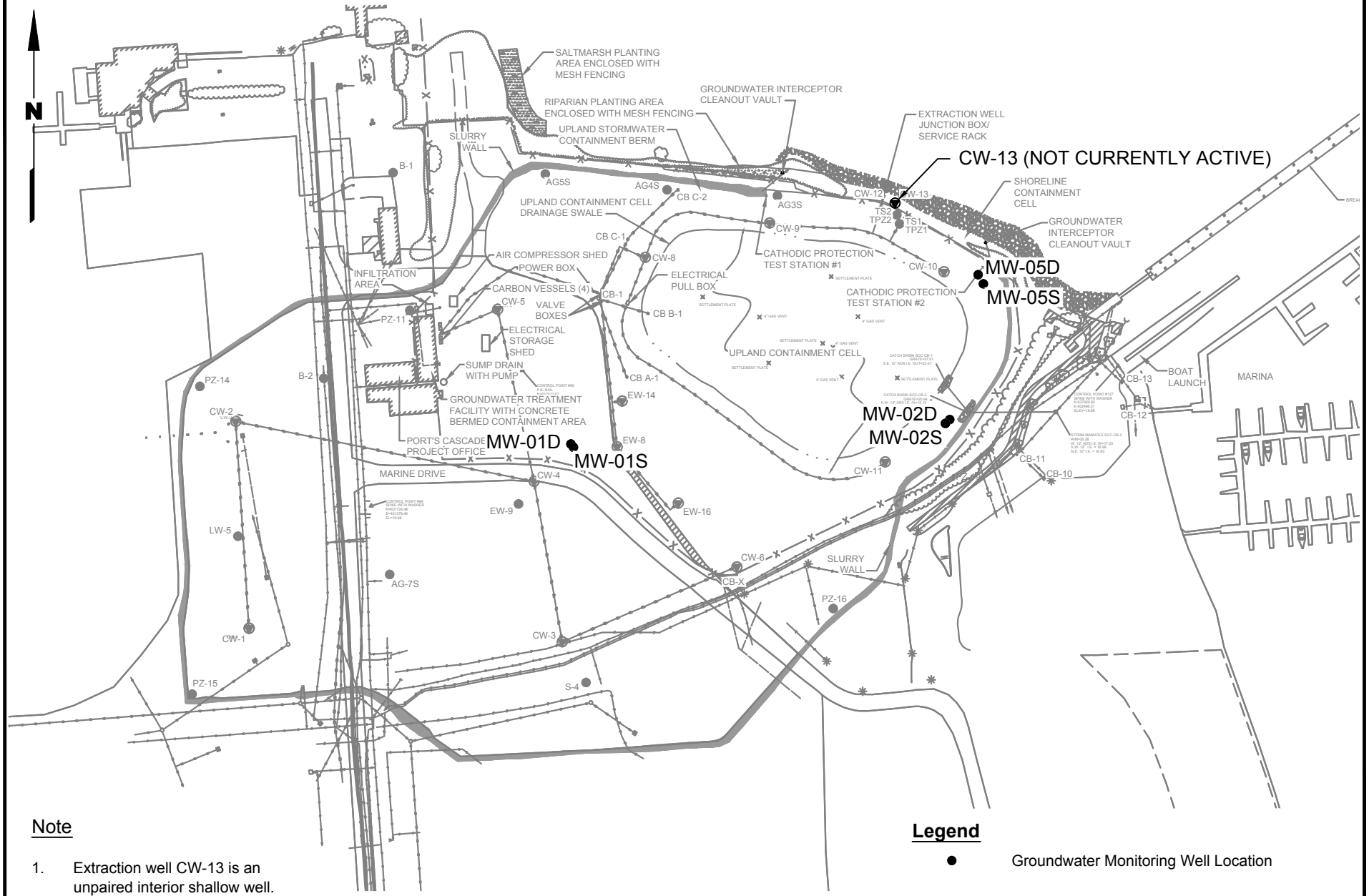
Perimeter Paired Groundwater Monitoring Network Well Locations

Figure 1



Note

1. Extraction well CW-13 is an unpaired interior shallow well.

Legend

● Groundwater Monitoring Well Location

0 200 400

Scale in Feet

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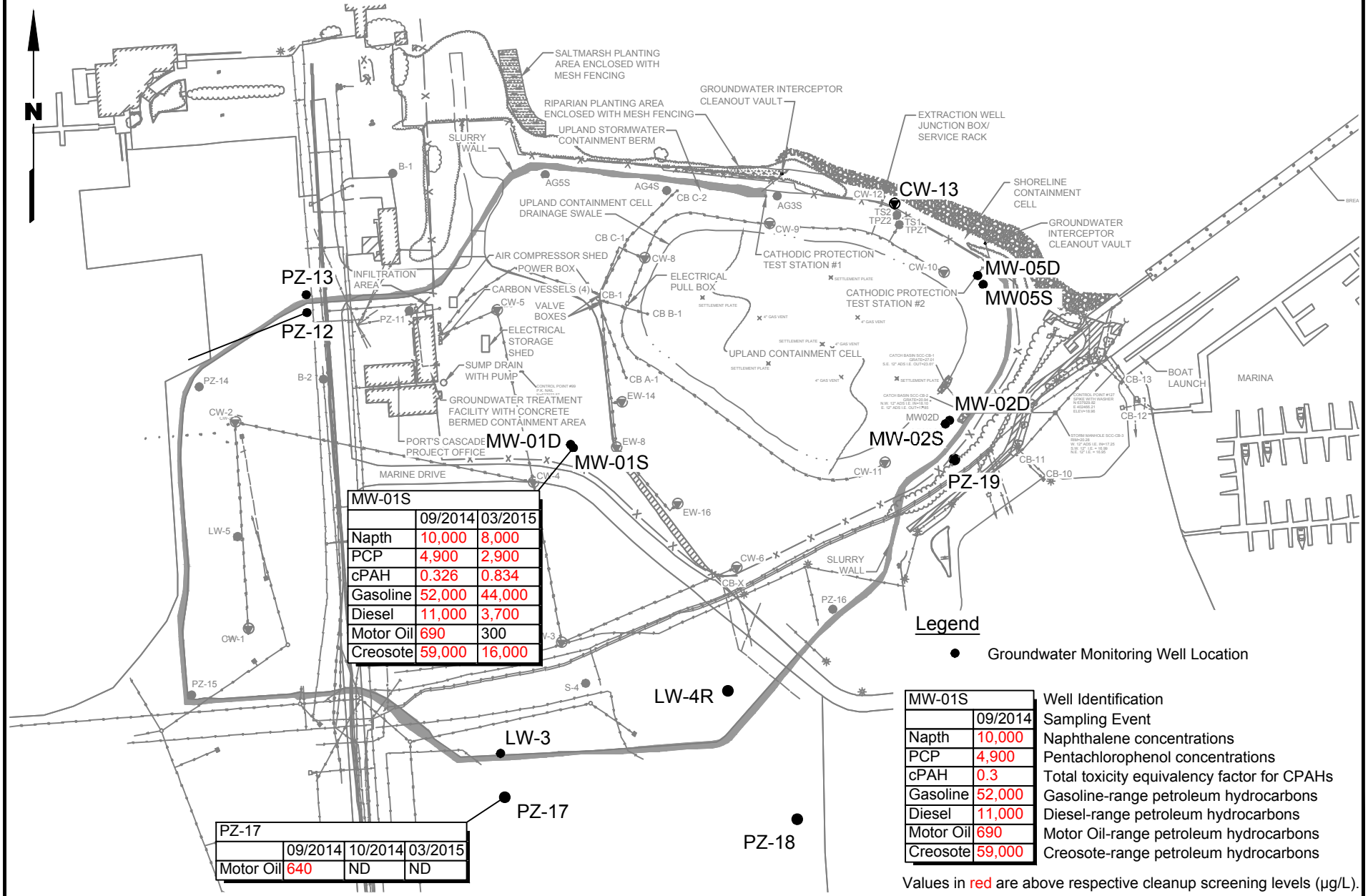
Deep and Shallow Interior Groundwater Monitoring Well Pairs

Figure 2



MW-01S		
	09/2014	03/2015
Napth	10,000	8,000
PCP	4,900	2,900
cPAH	0.326	0.834
Gasoline	52,000	44,000
Diesel	11,000	3,700
Motor Oil	690	300
Creosote	59,000	16,000

PZ-17			
	09/2014	10/2014	03/2015
Motor Oil	640	ND	ND

Legend

● Groundwater Monitoring Well Location

MW-01S	
	09/2014
Napth	10,000
PCP	4,900
cPAH	0.3
Gasoline	52,000
Diesel	11,000
Motor Oil	690
Creosote	59,000

Well Identification
Sampling Event
Naphthalene concentrations
Pentachlorophenol concentrations
Total toxicity equivalency factor for CPAHs
Gasoline-range petroleum hydrocarbons
Diesel-range petroleum hydrocarbons
Motor Oil-range petroleum hydrocarbons
Creosote-range petroleum hydrocarbons

Values in red are above respective cleanup screening levels (µg/L).

0 200 400
Scale in Feet

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Groundwater Quality Exceedances

Figure 3

TABLE 1
GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
4/6/2014	PZ-13	6.08	19.50	13.42	--	--
4/6/2014	PZ-12	4.90	19.00	14.10	15.50	No
5/17/2014	PZ-13	6.49	19.50	13.01	--	--
5/17/2014	PZ-12	4.88	19.00	14.12	15.50	No
6/22/2014	PZ-13	7.19	19.50	12.31	--	--
6/22/2014	PZ-12	5.41	19.00	13.59	15.50	No
7/5/2014	PZ-13	7.34	19.50	12.16	--	--
7/5/2014	PZ-12	5.57	19.00	13.43	15.50	No
8/12/2014	PZ-13	7.19	19.50	12.31	--	--
8/12/2014	PZ-12	5.97	19.00	13.03	15.50	No
9/23/2014	PZ-13	7.32	19.50	12.18	--	--
9/23/2014	PZ-12	6.20	19.00	12.80	15.50	No
10/11/2014	PZ-13	6.83	19.50	12.67	--	--
10/11/2014	PZ-12	6.20	19.00	12.80	15.50	No
11/9/2014	PZ-13	5.79	19.50	13.71	--	--
11/9/2014	PZ-12	5.71	19.00	13.29	15.50	No
12/7/2014	PZ-13	5.93	19.50	13.57	--	--
12/7/2014	PZ-12	5.56	19.00	13.44	15.50	No
1/3/2015	PZ-13	6.17	19.50	13.33	--	--
1/3/2015	PZ-12	5.34	19.00	13.66	15.50	No
2/14/2015	PZ-13	5.90	19.50	13.60	--	--
2/14/2015	PZ-12	5.05	19.00	13.95	15.50	No
3/9/2015	PZ-13	7.01	19.50	12.49	--	--
3/9/2015	PZ-12	5.46	19.00	13.54	15.50	No
4/6/2014	PZ-17	6.88	20.48	13.60	--	--
4/6/2014	LW-3	5.95	19.83	13.88	15.50	No
5/17/2014	PZ-17	6.55	20.48	13.93	--	--
5/17/2014	LW-3	4.98	19.83	14.85	15.50	No
6/22/2014	PZ-17	NA	20.48	NA	--	--
6/22/2014	LW-3	6.12	19.83	13.71	15.50	NA
7/5/2014	PZ-17	7.96	20.48	12.52	--	--
7/5/2014	LW-3	6.14	19.83	13.69	15.50	No

TABLE 1
GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
8/12/2014	PZ-17	9.11	20.48	11.37	--	--
8/12/2014	LW-3	6.53	19.83	13.30	15.50	No
9/23/2014	PZ-17	9.38	20.48	11.10	--	--
9/23/2014	LW-3	6.71	19.83	13.12	15.50	No
10/11/2014	PZ-17	8.77	20.48	11.71	--	--
10/11/2014	LW-3	7.03	19.83	12.80	15.50	No
11/9/2014	PZ-17	7.87	20.48	12.61	--	--
11/10/2014	LW-3	6.73	19.83	13.10	15.50	No
12/7/2014	PZ-17	7.77	20.48	12.71	--	--
12/7/2014	LW-3	6.46	19.83	13.37	15.50	No
1/3/2015	PZ-17	7.96	20.48	12.52	--	--
1/3/2015	LW-3	6.36	19.83	13.47	15.50	No
2/14/2015	PZ-17	8.04	20.48	12.44	--	--
2/14/2015	LW-3	6.07	19.83	13.76	15.50	No
3/9/2015	PZ-17	8.51	20.48	11.97	--	--
3/9/2015	LW-3	6.07	19.83	13.76	15.50	No
4/6/2014	PZ-18	10.11	21.2	11.09	--	--
4/6/2014	LW-4R	7.39	22.02	14.63	15.50	No
5/17/2014	PZ-18	7.53	21.2	13.67	--	--
5/17/2014	LW-4R	6.61	22.02	15.41	15.50	No
6/22/2014	PZ-18	NA	21.2	NA	--	--
6/22/2014	LW-4R	7.35	22.02	14.67	15.50	NA
7/5/2014	PZ-18	10.29	21.2	10.91	--	--
7/5/2014	LW-4R	6.92	22.02	15.10	15.50	No
8/12/2014	PZ-18	6.25	21.2	14.95	--	--
8/12/2014	LW-4R	6.56	22.02	15.46	15.50	No
9/23/2014	PZ-18	7.23	21.2	13.97	--	--
9/23/2014	LW-4R	6.65	22.02	15.37	15.50	No
10/11/2014	PZ-18	9.74	21.2	11.46	--	--
10/11/2014	LW-4R	6.68	22.02	15.34	15.50	No

TABLE 1
GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
11/9/2014	PZ-18	7.86	21.2	13.34	--	--
11/9/2014	LW-4R	6.9	22.02	15.12	15.50	No
12/7/2014	PZ-18	7.84	21.2	13.36	--	--
12/7/2014	LW-4R	NA	22.02	NA	15.50	NA
1/3/2015	PZ-18	7.75	21.2	13.45	--	--
1/3/2015	LW-4R	7.16	22.02	14.86	15.50	No
2/14/2015	PZ-18	7.81	21.2	13.39	--	--
2/14/2015	LW-4R	7.4	22.02	14.62	15.50	No
3/9/2015	PZ-18	7.73	21.2	13.47	--	--
3/9/2015	LW-4R	6.89	22.02	15.13	15.50	No
4/6/2014	PZ-19	13.46	23.67	10.21	--	--
4/6/2014	MW-02S	16.15	31.96	15.81	15.50	Yes
5/17/2014	PZ-19	15.88	23.67	7.79	--	--
5/17/2014	MW-02S	16.14	31.96	15.82	15.50	Yes
6/22/2014	PZ-19	14.82	23.67	8.85	--	--
6/22/2014	MW-02S	16.94	31.96	15.02	15.50	No
7/5/2014	PZ-19	14.13	23.67	9.54	--	--
7/5/2014	MW-02S	17.16	31.96	14.80	15.50	No
8/12/2014	PZ-19	15.96	23.67	7.71	--	--
8/12/2014	MW-02S	17.39	31.96	14.57	15.50	No
9/23/2014	PZ-19	13.34	23.67	10.33	--	--
9/23/2014	MW-02S	17.69	31.96	14.27	15.50	No
10/11/2014	PZ-19	13.57	23.67	10.10	--	--
10/11/2014	MW-02S	17.84	31.96	14.12	15.50	No
11/9/2014	PZ-19	13.31	23.67	10.36	--	--
11/9/2014	MW-02S	16.84	31.96	15.12	15.50	No
12/7/2014	PZ-19	12.72	23.67	10.95	--	--
12/7/2014	MW-02S	16.71	31.96	15.25	15.50	No
1/3/2015	PZ-19	11.98	23.67	11.69	--	--
1/3/2015	MW-02S	16.46	31.96	15.50	15.50	No
2/14/2015	PZ-19	12.33	23.67	11.34	--	--
2/14/2015	MW-02S	16.02	31.96	15.94	15.50	Yes

TABLE 1
GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
3/9/2015	PZ-19	12.81	23.67	10.86	--	--
3/9/2015	MW-02S	16.71	31.96	15.25	15.50	No
4/6/2014	MW-02S	16.15	31.96	15.81	--	
4/6/2014	MW-02D	19.32	31.81	12.49	--	
5/17/2014	MW-02S	16.14	31.96	15.82	--	
5/17/2014	MW-02D	19.21	31.81	12.60	--	
6/22/2014	MW-02S	16.94	31.96	15.02	--	
6/22/2014	MW-02D	18.15	31.81	13.66	--	
7/5/2014	MW-02S	17.16	31.96	14.80	--	
7/5/2014	MW-02D	18.99	31.81	12.82	--	
8/12/2014	MW-02S	17.39	31.96	14.57	--	
8/12/2014	MW-02D	21.06	31.81	10.75	--	
9/23/2014	MW-02S	17.69	31.96	14.27	--	
9/23/2014	MW-02D	19.11	31.81	12.70	--	
10/11/2014	MW-02S	17.84	31.96	14.12	--	
10/11/2014	MW-02D	19.21	31.81	12.60	--	
11/9/2014	MW-02S	16.84	31.96	15.12	--	
11/9/2014	MW-02D	18.71	31.81	13.10	--	
12/7/2014	MW-02S	16.71	31.96	15.25	--	
12/7/2014	MW-02D	17.29	31.81	14.52	--	
1/3/2015	MW-02S	16.46	31.96	15.50	--	
1/3/2015	MW-02D	16.3	31.81	15.51	--	
2/14/2015	MW-02S	16.02	31.96	15.94	--	
2/14/2015	MW-02D	18.19	31.81	13.62	--	
3/9/2015	MW-02S	16.71	31.96	15.25	--	
3/9/2015	MW-02D	17.39	31.81	14.42	--	
4/6/2014	MW-01S	7.05	21.64	14.59	--	
4/6/2014	MW-01D	8.86	21.72	12.86	--	
5/17/2014	MW-01S	6.95	21.64	14.69	--	
5/17/2014	MW-01D	8.97	21.72	12.75	--	

TABLE 1
GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
6/22/2014	MW-01S	7.42	21.64	14.22	--	
6/22/2014	MW-01D	8.54	21.72	13.18	--	
7/5/2014	MW-01S	7.62	21.64	14.02	--	
7/5/2014	MW-01D	8.80	21.72	12.92	--	
8/12/2014	MW-01S	7.97	21.64	13.67	--	
8/12/2014	MW-01D	10.29	21.72	11.43	--	
9/23/2014	MW-01S	8.25	21.64	13.39	--	
9/23/2014	MW-01D	7.88	21.72	13.84	--	
10/11/2014	MW-01S	8.46	21.64	13.18	--	
10/11/2014	MW-01D	8.63	21.72	13.09	--	
11/9/2014	MW-01S	7.86	21.64	13.78	--	
11/9/2014	MW-01D	7.67	21.72	14.05	--	
12/7/2014	MW-01S	7.74	21.64	13.90	--	
12/7/2014	MW-01D	7.36	21.72	14.36	--	
1/3/2015	MW-01S	7.49	21.64	14.15	--	
1/3/2015	MW-01D	6.87	21.72	14.85	--	
2/14/2015	MW-01S	7.2	21.64	14.44	--	
2/14/2015	MW-01D	7.79	21.72	13.93	--	
3/9/2015	MW-01S	7.48	21.64	14.16	--	
3/9/2015	MW-01D	7.02	21.72	14.70	--	
4/6/2014	MW-05S	13.39	29.45	16.06	16.50	No
4/6/2014	MW-05D	13.64	26.50	12.86	--	--
5/17/2014	MW-05S	13.34	29.45	16.11	16.50	No
5/17/2014	MW-05D	12.97	26.50	13.53	--	--
6/22/2014	MW-05S	14.12	29.45	15.33	16.50	No
6/22/2014	MW-05D	11.81	26.50	14.69	--	--
7/5/2014	MW-05S	14.35	29.45	15.10	16.50	No
7/5/2014	MW-05D	13.17	26.50	13.33	--	--
8/12/2014	MW-05S	14.52	29.45	14.93	16.50	No
8/12/2014	MW-05D	15.60	26.50	10.90	--	--
9/23/2014	MW-05S	14.79	29.45	14.66	16.50	No
9/23/2014	MW-05D	13.18	26.50	13.32	--	--

TABLE 1
GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
10/11/2014	MW-05S	14.98	29.45	14.47	16.50	No
10/11/2014	MW-05D	13.23	26.50	13.27	--	--
11/9/2014	MW-05S	13.53	29.45	15.92	16.50	No
11/9/2014	MW-05D	13.27	26.50	13.23	--	--
12/7/2014	MW-05S	13.87	29.45	15.58	16.50	No
12/7/2014	MW-05D	11.53	26.50	14.97	--	--
1/3/2015	MW-05S	13.58	29.45	15.87	16.50	No
1/3/2015	MW-05D	10.05	26.50	16.45	--	--
2/14/2015	MW-05S	13.16	29.45	16.29	16.50	No
2/14/2015	MW-05D	11.99	26.50	14.51	--	--
3/9/2015	MW-05S	13.94	29.45	15.51	16.50	No
3/9/2015	MW-05D	10.95	26.50	15.55	--	--

NM = Not measured.
NA = Not available.
MLLW = Mean low low water.

(a) Below top of PVC well casing.
(b) Short-term hydraulic control goal is 15.5 ft along the majority of the cutoff wall alignment and 16.5 ft adjacent to Budd Inlet.

Note: Groundwater elevations determined by subtracting depth to groundwater below top of casing (ft) from top of well casing elevation (MLLW, ft).

TABLE 2
SUMMARY OF CURRENT ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels (a)	PZ-12 ZB62K 9/24/2014	PZ-12 ZZ61A 3/9/2015	PZ-13 ZB62L 9/24/2014	PZ-13 ZZ61B 3/9/2015	PZ-17 ZB62F 9/23/2014	PZ-17 ZF85A 10/16/2014	PZ-17 ZZ61H 3/9/2015
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)								
EPA Method SW8270D / SW8270D-SIM								
Naphthalene	4900	**2.7**	1.0 U	**5.9**	1.0 U	1.0 U	NA	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U
Acenaphthylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U
Acenaphthene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U
Dibenzofuran		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U
Fluorene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U
Pentachlorophenol	3	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	NA	10 UJ
Phenanthrene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U
Anthracene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U
Fluoranthene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	0.10 U
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U
Total Benzofluoranthenes		0.10 U	0.20 U	0.10 U	0.20 U	0.11 U	NA	0.20 U
cPAH TEQ	0.1 (b)	ND	ND	ND	ND	ND	NA	ND
cPAH TEQ (Using 1/2 RL for ND)	0.1 (b)	0.071	0.076	0.071	0.076	0.078	NA	0.076
PENTACHLOROPHENOL (µg/L)								
EPA Method SW8041								
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA	0.25 U
PETROLEUM HYDROCARBONS								
Method NWTPH-G (µg/L)								
Gasoline	1,000	250 U	250 U	250 U	250 U	250 U	NA	250 U
Method NWTPH-Dx (µg/L)								
Diesel	500	100 U	100 U	100 U	110 U	**110**	100 U	100 U
Motor Oil	500	200 U	200 U	200 U	220 U	**640**	200 U	200 U
Creosote Oil	500	100 U	100 U	100 U	110 U	**310**	100 U	100 U

TABLE 2
SUMMARY OF CURRENT ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels (a)	PZ-18 ZB62G 9/23/2014	PZ-18 ZZ61G 3/9/2015	PZ-19 ZB62O 9/24/2014	PZ-19 ZZ61L 3/10/2015	LW-3 2014060297 6/11/2014	LW-3 ZB62D 9/23/2014	LW-3 ZZ61J 3/9/2015
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)								
EPA Method SW8270D / SW8270D-SIM								
Naphthalene	4900	1.0 U	1.0 U	**3.8**	**3.3**	**0.539**	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U
Acenaphthene		1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U
Dibenzofuran		1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U
Fluorene		1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U
Pentachlorophenol	3	10 UJ	10 UJ	10 UJ	10 UJ	0.100 U	10 UJ	UJ
Phenanthrene		1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U
Anthracene		1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.11 U	0.10 U	0.10 U	0.10 U	0.100 U	0.12 U	0.10 U
Chrysene		0.11 U	0.10 U	0.10 U	0.10 U	0.100 U	0.12 U	0.10 U
Benzo(a)Pyrene		0.11 U	0.10 U	0.10 U	0.10 U	0.100 U	0.12 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.11 U	0.10 U	0.10 U	0.10 U	0.100 U	0.12 U	0.10 U
Dibenz(a,h)Anthracene		0.11 U	0.10 U	0.10 U	0.10 U	0.100 U	0.12 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	**0.168**	1.0 U	1.0 U
Total Benzofluoranthenes		0.11 U	0.20 U	0.10 U	0.20 U	0.100 U	0.12 U	0.20 U
cPAH TEQ	0.1 (b)	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (Using 1/2 RL for ND)	0.1 (b)	0.078	0.076	0.071	0.076	0.071	0.085	0.076
PENTACHLOROPHENOL (µg/L)								
EPA Method SW8041								
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	0.25 U		0.25 U	0.25 U
PETROLEUM HYDROCARBONS								
Method NWTPH-G (µg/L)								
Gasoline	1,000	250 U	250 U	250 U	250 U	**189**	250 U	250 U
Method NWTPH-Dx (µg/L)								
Diesel	500	100 U	110 U	100 U	100 U	**247**	100 U	120 U
Motor Oil	500	200 U	220 U	200 U	200 U	500 U	200 U	230 U
Creosote Oil	500	100 U	110 U	100 U	100 U	NA	**270**	120 U

TABLE 2
SUMMARY OF CURRENT ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels (a)	LW-4R ZB62E 9/23/2014	LW-4R ZZ61K 3/9/2015	MW-01S ZB62M 9/24/2014	MW-01S ZZ61N 3/10/2015	MW-02S ZB62A 9/23/2014	MW-02S ZZ61I 3/9/2015	MW-05S ZB62B 9/23/2014	Dup of MW-05S PZ-30 ZB62C 9/23/2014
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)									
EPA Method SW8270D / SW8270D-SIM									
Naphthalene	4900	1.0 U	1.0 U	**10,000**	**8,000**	1.0 U	1.0 U	**1.7**	**1.4**
2-Methylnaphthalene		1.0 U	1.0 U	**550**	**720**	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		1.0 U	1.0 U	**240**	**280**	**1.0**	1.0 U	**8.6**	**9.4**
Dibenzofuran		1.0 U	1.0 U	**71**	**110**	1.0 U	1.0 U	1.0 U	1.0 U
Fluorene		1.0 U	1.0 U	**66**	**73**	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	10 UJ	10 UJ	**4,900** J	**2,900** J	10 UJ	10 UJ	10 UJ	10 UJ
Phenanthrene		1.0 U	1.0 U	**68**	**69**	1.0 U	1.0 U	1.0 U	1.0 U
Anthracene		1.0 U	1.0 U	**17**	**16**	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.11 U	0.10 U	**0.83**	**1.5**	0.11 U	0.10 U	0.11 U	0.12 U
Chrysene		0.11 U	0.10 U	**0.82**	**1.6**	0.11 U	0.10 U	0.11 U	0.12 U
Benzo(a)Pyrene		0.11 U	0.10 U	0.3 U	**0.54**	0.11 U	0.10 U	0.11 U	0.12 U
Indeno(1,2,3-cd)Pyrene		0.11 U	0.10 U	0.3 U	**0.13**	0.11 U	0.10 U	0.11 U	0.12 U
Dibenz(a,h)Anthracene		0.11 U	0.10 U	0.3 U	0.10 U	0.11 U	0.10 U	0.11 U	0.12 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	**450**	**420**	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes		0.11 U	0.20 U	**0.55**	**1.1**	0.11 U	0.20 U	0.11 U	0.12 U
cPAH TEQ	0.1 (b)	ND	ND	**0.146**	**0.829**	ND	ND	ND	ND
cPAH TEQ (Using 1/2 RL for ND)	0.1 (b)	0.078	0.076	**0.326**	**0.834**	0.078	0.076	0.078	0.085
PENTACHLOROPHENOL (µg/L)									
EPA Method SW8041									
Pentachlorophenol	3	0.25 U	0.25 U	NA	NA	**0.83**	0.25 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS									
Method NWTPH-G (µg/L)									
Gasoline	1,000	250 U	250 U	**52,000**	**44,000**	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)									
Diesel	500	100 U	120 U	**11,000**	**3,700**	100 U	120 U	100 U	100 U
Motor Oil	500	200 U	240 U	**690**	**300**	200 U	230 U	200 U	200 U
Creosote Oil	500	100 U	120 U	**59,000**	**16,000**	100 U	120 U	**100**	**130**

TABLE 2
SUMMARY OF CURRENT ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels (a)	MW-05S ZZ61D 3/9/2015	Dup of MW-05S PZ-30 ZZ61C 3/9/2015	MW-01D ZB62N 9/24/2014	MW-01D ZZ61O 3/10/2015	MW-02D ZB62I 9/23/2014	MW-02D ZZ61M 3/10/2015	MW-05D ZB62J 9/23/2014	MW-05D ZZ61F 3/9/2015
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)									
EPA Method SW8270D / SW8270D-SIM									
Naphthalene	4900	**1.4**	**1.4**	**1.9**	**2.7**	1.0 U	**6**	**1.1**	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U	1.0 U	1.0 U	**2.3**	1.0 U	1.0 U	1.0 U
Acenaphthene		**6.5**	**7.1**	1.0 U	1.0 U	**3.8**	**3.8**	**2.5**	1.0 U
Dibenzofuran		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.2**	1.0 U	1.0 U
Fluorene		1.0 U	1.0 U	1.0 U	1.0 U	**1.0**	**1.9**	1.0 U	1.0 U
Pentachlorophenol	3	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Phenanthrene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.4**	1.0 U	1.0 U
Anthracene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U
Chrysene		0.10 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U
Benzo(a)Pyrene		0.10 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.2**	1.0 U	1.0 U
Total Benzofluoranthenes		0.20 U	0.20 U	0.11 U	0.20 U	0.11 U	0.20 U	0.11 U	0.20 U
cPAH TEQ	0.1 (b)	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (Using 1/2 RL for ND)	0.1 (b)	0.076	0.076	0.078	0.076	0.078	0.076	0.078	0.076
PENTACHLOROPHENOL (µg/L)									
EPA Method SW8041									
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	**1.7**	0.25 U	0.25 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS									
Method NWTPH-G (µg/L)									
Gasoline	1,000	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)									
Diesel	500	100 UJ	110 U	100 U	110 U	100 U	120 U	100 U	110 U
Motor Oil	500	200 UJ	220 U	**400**	**330**	200 U	230 U	200 U	220 U
Creosote Oil	500	100 UJ	110 U	**290**	**140**	**130**	120 U	100 U	110 U

TABLE 2
SUMMARY OF CURRENT ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels (a)	CW-13 ZB62H 9/23/2014	CW-13 ZZ61E 3/9/2015
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)			
EPA Method SW8270D / SW8270D-SIM			
Naphthalene	4900	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U
Acenaphthene		1.0 U	1.0 U
Dibenzofuran		1.0 U	1.0 U
Fluorene		1.0 U	1.0 U
Pentachlorophenol	3	10 UJ	10 UJ
Phenanthrene		1.0 U	1.0 U
Anthracene		1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U
Benzo(a)Anthracene		0.11 U	0.10 U
Chrysene		0.11 U	0.10 U
Benzo(a)Pyrene		0.11 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.11 U	0.10 U
Dibenz(a,h)Anthracene		0.11 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U
Total Benzofluoranthenes		0.11 U	0.20 U
cPAH TEQ	0.1 (b)	ND	ND
cPAH TEQ (Using 1/2 RL for ND)	0.1 (b)	0.078	0.076
PENTACHLOROPHENOL (µg/L)			
EPA Method SW8041			
Pentachlorophenol	3	0.25 U	0.25 U
PETROLEUM HYDROCARBONS			
Method NWTPH-G (µg/L)			
Gasoline	1,000	250 U	250 U
Method NWTPH-Dx (µg/L)			
Diesel	500	100 U	100 U
Motor Oil	500	200 U	210 U
Creosote Oil	500	100 U	100 U

TABLE 2
SUMMARY OF CURRENT ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

µg/L = micrograms per liter

U = Indicates the compound was undetected at the given reporting limit.

J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate.

ND = Not Detected.

Bold indicates detected compound. Box indicates exceedance of screening levels.

Box indicates exceedance of screening level.

TEQ = toxicity equivalency factor as described in WAC 173-340-708 (8).

SIM = select ion monitoring

EPA = U.S. Environmental Protection Agency

MTCA = Model Toxics Control Act

RL = Reporting Limit

WAC = Washington Administrative Code

cPAH = carcinogenic polycyclic aromatic hydrocarbon

PCP = pentachlorophenol

NWTPH-Dx = total petroleum hydrocarbons diesel range

NWTPH-Gx = TPH gasoline range

(a) Groundwater screening levels are MTCA Method B for marine surface water for cPAHs and PCP; MTCA Method A for TPH-G/TPH-Dx.

(b) cPAH cleanup screening levels based on practical quantitation limit (PQL) for individual cPAHs.

APPENDIX A

Historical Analytical Results and Groundwater Elevations

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-12 2005060439-08 6/27/2005	PZ-12 2006030253-01 3/20/2006	PZ-12 2006110182-02 11/11/2006	PZ-12 LS10B 10/1/2007	PZ-12 MO26G 3/20/208	PZ-12 NH92A 7/29/208	PZ-12 OH11B 1/8/2009	PZ-12 PK28A 8/11/2009	PZ-12 QF84J 1/15/2010	PZ-12 RS33A 10/18/2010	PZ-12 SO90O 3/24/2011	PZ-12 TH68B 8/8/2011	PZ-12 UL19B 3/7/2012	PZ-12 VP53F 10/25/2012	PZ-12 WF57A 2/27/2013	PZ-12 XC89D 8/29/2013
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method SW8270D / SW8270D-SIM																	
Naphthalene	4900	0.10 U	NA	**0.30**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**3.0**	1.0 U	1.0 U	1.0 U	1.0 U	**1.8**
2-Methylnaphthalene		NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibenzofuran		NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluorene		0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	NA	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	10 U
Phenanthrene		0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbazole		NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA
Anthracene		**0.20**	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	NA	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes											0.10 U	0.10 U	0.10 U	0.10 U	0.20 U	0.20 U	0.20 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.071	0.071	0.071	0.071	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method SW8041/SW8270C,D																	
Pentachlorophenol	3	10 U	0.10 U	0.1 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.26 U	0.25 U	0.25 U	**1.8**	0.25 U	0.25 U	**0.31**	0.25 U	**5.8**
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	50 U	50 U	50 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	100 U	100 U	100 U	250 U	250 U	250 U	250 U	250 U	250 U	100 U	110 U	100 U	100 U	100 U	100 U	100 U
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	500 U	500 U	250 U	500 U	200 U	220 U	200 U	200 U	200 U	200 U	200 U
Creosote Oil	500	NA	NA	NA	NA	250 U	500 U	250 U	500 U	250 U	100 U	220 U	200 U	200 U	100 U	**100**	100 U
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-12 YA02K 2/19/2014	PZ-12 ZB62K 9/24/2014	PZ-12 ZZ61A 3/9/2015	PZ-13 2005060392-01 6/27/2005	PZ-13 2006030241-01 3/19/2006	PZ-13 2006110182-01 11/11/2006	PZ-13 LS10A 9/30/2007	PZ-13 MO26H 3/19/208	PZ-13 NH92B 7/29/208	PZ-13 OH11A 1/8/2009	PZ-13 PK28B 8/11/2009	PZ-13 PP40A 9/21/2009	PZ-13 QF84F 1/14/2010	PZ-13 RS33B 10/18/2010	PZ-13 SO90E 3/24/2011	PZ-13 TH68A 8/8/2011
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method SW8270D / SW8270D-SIM																	
Naphthalene	4900	1.0 U	**2.7**	1.0 U	0.10 U	NA	**10.2**	1.0 U	1.0 U	1.0 U	1.0 U	**9.1**	**4.0**	**2.2**	1.0 U	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		1.0 U	1.0 U	1.0 U	0.10 U	NA	0.75	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibenzofuran		1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluorene		1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	10 U	10 UJ	10 UJ	NA	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	5 U	NA	5.0 U	5.0 U	5.0 U	5.0 U
Phenanthrene		1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbazole		NA	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 UJ	1.0 U	1.0 U
Anthracene		1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	NA	NA	NA
Benzo(k)Fluoranthene		NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	1.0 U	0.10 U	NA	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes		0.10 U	0.10 U	0.20 U											0.10 U	0.10 U	0.10 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.071	0.071	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.76	0.076	0.071	0.071	0.071
PENTACHLOROPHENOL (µg/L)																	
EPA Method SW8041/SW8270C,D																	
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	10 U	0.10 U	0.10 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.26 U		0.25 U	0.25 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	250 U	250 U	250 U	50 U	50 U	**112**	250 U	250 U	250 U	250 U	**1,900**	**310**	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	100 U	100 U	100 U	100 U	100 U	100 U	250 U	250 U	250 U	250 U	250 U		250 U	100 U	100 U	100 U
Motor Oil	500	200 U	200 U	200 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	250 U		500 U	200 U	200 U	200 U
Creosote Oil	500	100 U	100 U	100 U	NA	NA	NA	NA	250 U	500 U	250 U	500 U		250 U	100 U	200 U	200 U
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**56**	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-13 UL19F 3/7/2012	PZ-13 VP53A 10/25/2012	PZ-13 WF57B 2/27/2013	PZ-13 XC89B 8/29/2013	PZ-13 XH58A 10/1/2013	PZ-13 YA02H 2/19/2014	PZ-13 ZB62L 9/24/2014	PZ-13 ZZ61B 3/9/2015	PZ-17 2005060439-04 6/28/2005	PZ-17 2006030253-02 3/20/2006	PZ-17 2006110200-01 11/13/2006	PZ-17 LS10E 10/1/2007	PZ-17 MO07B 3/19/208	PZ-17 NH70B 7/28/208	PZ-17 OH11C 1/8/2009
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																
EPA Method SW8270D / SW8270D-SIM																
Naphthalene	4900	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	**5.9**	1.0 U	0.10 U	NA	**0.11**	1.0 U	1.0 U	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	0.10 U	NA	**0.23**	1.0 U	1.0 U	1.0 U	1.0 U
Dibenzofuran		1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U
Fluorene		1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	5.0 U	10 U	10 U	10 U	NA	10 U	10 UJ	10 UJ	NA	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U
Phenanthrene		1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbazole		1.0 U	1.0 U	NA	NA	NA	NA	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U
Anthracene		1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(k)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes		0.10 U	0.20 U	0.20 U	0.20 U	NA	0.10 U	0.10 U	0.20 U							
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.071	0.076	0.076	0.076	NA	0.071	0.071	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)																
EPA Method SW8041/SW8270C,D																
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	0.25 U	NA	0.25 U	0.25 U	0.25 U	10 U	0.10 U	0.10 U	0.25 U	0.25 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS																
Method NWTPH-G (µg/L)																
Gasoline	1,000	**250**	250 U	250 U	250 U	NA	250 U	250 U	250 U	50 U	50 U	50 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																
Diesel	500	100 U	100 U	100 U	100 U	100 U	100 U	100 U	110 U	100 U	100 U	100 U	250 U	250 U	250 U	250 U
Motor Oil	500	200 U	200 U	200 U	**540**	200 U	200 U	200 U	220 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Creosote Oil	500	200 U	100 U	**170**	**160**	100 U	100 U	100 U	110 U	NA	NA	NA	NA	250 U	500 U	250 U
BTEX (µg/L)																
Method SW8021B/SW021B MOD																
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-17 PJ99B 8/10/2009	PZ-17 QF84C 1/14/2010	PZ-17 RS33D 10/18/2010	PZ-17 SO90L 3/24/2011	PZ-17 TH68C 8/8/2011	PZ-17 UL19C 3/7/2012	PZ-17 VP53G 10/26/2012	PZ-17 WF57G 2/27/2013	PZ-17 XC81H 8/28/2013	PZ-17 YA02O 2/19/2014	PZ-17 ZB62F 9/23/2014	PZ-17 ZF85A 10/16/2014	PZ-17 ZZ61H 3/9/2015	PZ-18 2005060439-01 6/29/2005	PZ-18 2006030261-01 3/21/2006
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																
EPA Method SW8270D / SW8270D-SIM																
Naphthalene	4900	1.2 U	1.0 U	1.0 U	**3.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	0.10 U	NA
2-Methylnaphthalene		1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	NA	NA
Acenaphthylene		1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	0.10 U	NA
Acenaphthene		1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	0.10 U	NA
Dibenzofuran		1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	NA	NA
Fluorene		1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	0.10 U	NA
Pentachlorophenol	3	5.9 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	10 U	10 U	10 UJ	NA	10 UJ	NA	NA
Phenanthrene		1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	0.10 U	NA
Carbazole		1.2 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	NA	1.0 U	NA	NA
Anthracene		1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	0.10 U	NA
Fluoranthene		1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	0.10 U	NA
Pyrene	2600	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	0.10 U	NA
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U
Benzo(k)Fluoranthene		0.10 U	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	0.10 U	NA
1-Methylnaphthalene		1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	NA	NA
Total Benzofluoranthenes				0.10 U	0.11 U	0.10 U	0.10 U	0.20 U	0.20 U	0.20 U	0.10 U	0.11 U	NA	0.20 U		
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.071	0.078	0.071	0.071	0.076	0.076	0.076	0.071	0.078	NA	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)																
EPA Method SW8041/SW8270C,D																
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.8 U	0.25 U	NA	0.25 U	10 U	0.10 U
PETROLEUM HYDROCARBONS																
Method NWTPH-G (µg/L)																
Gasoline	1,000	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	NA	250 U	50 U	50 U
Method NWTPH-Dx (µg/L)																
Diesel	500	250 U	250 U	100 U	100 U	110 U	100 U	100 U	100 U	100 U	100 U	**110**	100 U	100 U	100 UJ	100 U
Motor Oil	500	500 U	500 U	200 U	200 U	220 U	200 U	200 U	200 U	200 U	200 U	**640**	200 U	200 U	500 UJ	500 U
Creosote Oil	500	250 U	250 U	100 U	200 U	220 U	200 U	100 U	**150**	100 U	100 U	**310**	100 U	100 U	NA	**140**
BTEX (µg/L)																
Method SW8021B/SW021B MOD																
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-18 2006110239-01 11/14/2006	PZ-18 LS10C 10/1/2007	PZ-18 MO07C 3/19/208	PZ-18 NH70C 7/28/208	PZ-18 NM64A 8/28/208	PZ-18 OH11E 1/8/2009	PZ-18 PJ99C 8/10/2009	PZ-18 PP40B 9/21/2009	PZ-18 QF84K 1/15/2010	PZ-18 RS33L 10/19/2010	PZ-18 SO90F 3/24/2011	PZ-18 TH68F 8/8/2011	PZ-18 UL19E 3/7/2012	PZ-18 UO79A 3/30/2012	PZ-18 VP10B 10/24/2012	PZ-18 WF72G 2/28/2013
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method SW8270D / SW8270D-SIM																	
Naphthalene	4900	**0.13**	1.0 U	1.0 U	1.0 U	NA	1.0 U	**3.2**	1.0 U	**2.8**	1.0 U	1.0 U	1.0 U	3.0 U	NA	1.0 U	1.0 U
2-Methylnaphthalene		NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0 U	NA	1.0 U	1.0 U
Acenaphthylene		0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0 U	NA	1.0 U	1.0 U
Acenaphthene		0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0 U	NA	1.0 U	1.0 U
Dibenzofuran		NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0 U	NA	1.0 U	1.0 U
Fluorene		0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0 U	NA	1.0 U	1.0 U
Pentachlorophenol	3	NA	5.0 U	5.0 U	5.0 U	NA	5.0 U	5.6 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	15 U	NA	10 U	10 U
Phenanthrene		0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0 U	NA	1.0 U	1.0 U
Carbazole		NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	NA	1.0 U	1.0 UJ	1.0 U	1.0 U	3.0 U	NA	1.0 U	NA
Anthracene		0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0 U	NA	1.0 U	1.0 U
Fluoranthene		0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0 U	NA	1.0 U	1.0 U
Pyrene	2600	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0 U	NA	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	0.11 U	NA	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	0.11 U	NA	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U
Benzo(g,h,i)Perylene		0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0 U	NA	1.0 U	1.0 U
1-Methylnaphthalene		NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0 U	NA	1.0 U	1.0 U
Total Benzofluoranthenes											0.10 U	0.10 U	0.10 U	0.10 U	NA	0.20 U	0.20 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.076	0.076	NA	0.076	0.076	0.76	0.083	0.071	0.071	0.071	0.071	NA	0.076	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method SW8041/SW8270C,D																	
Pentachlorophenol	3	0.10 U	0.25 U	0.25 U	**1.8** (d)	0.25 U	0.25 U	0.25 U	NA	**0.41**	**0.91**	0.25 U	0.31 U	0.25 U	NA	0.25 U	**0.48**
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	50 U	250 U	250 U	250 U	NA	250 U	250 U	NA	250 U	250 U	250 U	250 U	**270**	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	100 U	250 U	250 U	250 U	NA	250 U	250 U	NA	250 U	100 U	110 U	120 U	**130**	100 U	100 U	100 U
Motor Oil	500	500 U	500 U	500 U	500 U	NA	500 U	500 U	NA	500 U	200 U	220 U	240 U	200 U	200 U	200 U	200 U
Creosote Oil	500	NA	NA	250 U	500 U	NA	250 U	250 U	NA	250 U	100 U	220 U	240 U	**470**	200 U	100 U	**140**
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-18 XC81I 8/28/2013	PZ-18 YA02F 2/18/2014	PZ-18 ZB62G 9/23/2014	PZ-18 ZZ61G 3/9/2015	PZ-19 2005060439-03 6/29/2005	PZ-19 2006030294-04 3/22/2006	PZ-19 2006110239-04 11/14/2006	PZ-19 LS21E 10/2/2007	PZ-19 MO26B 3/20/208	PZ-19 NH70E 7/28/208	PZ-19 NM64B 8/28/208	PZ-19 OH25C 1/9/2009	PZ-19 PK28E 8/11/2009	PZ-19 QG15C 1/18/2010	PZ-19 RS33H 10/19/2010	PZ-19 SO90H 3/25/2011
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method SW8270D / SW8270D-SIM																	
Naphthalene	4900	1.0 U	1.0 U	1.0 U	1.0 U	**0.13**	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibenzofuran		1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluorene		1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	10 U	10 U	10 UJ	10 UJ	NA	NA	NA	5.0 U	5.0 U	5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Phenanthrene		1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbazole		NA	NA	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U
Anthracene		1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		NA	NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	NA	NA
Benzo(k)Fluoranthene		NA	NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 UJ	0.10 U	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes		0.20 U	0.10 U	0.11 U	0.20 U											0.10 U	0.10 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.071	0.078	0.076	0.076	0.076	0.076	0.076	0.076	0.076	NA	0.076	0.076	0.076	0.071	0.071
PENTACHLOROPHENOL (µg/L)																	
EPA Method SW8041/SW8270C,D																	
Pentachlorophenol	3	0.26 U	0.25 U	0.25 U	0.25 U	10 U	0.10 U	0.10 U	0.21 U	0.25 U	**0.70** J (f)	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	250 U	250 U	250 U	250 U	50 U	50 U	50 U	250 U	250 U	250 U	NA	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	110 U	100 U	100 U	110 U	**106**	100 U	100 U	250 U	250 U	250 U	NA	250 U	250 U	250 U	100 U	110 U
Motor Oil	500	210 U	200 U	200 U	220 U	500 U	500 U	500 U	500 U	500 U	500 U	NA	500 U	250 U	500 U	200 U	230 U
Creosote Oil	500	110 U	100 U	100 U	110 U	NA	NA	NA	NA	250 U	500 U	NA	250 U	500 U	250 U	100 U	230 U
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-19 TI17B 8/9/2011	PZ-19 UL56G 3/8/2012	PZ-19 VP10C 10/24/2012	PZ-19 WF72C 2/28/2013	PZ-19 XC81E 8/28/2013	PZ-19 YA02E 2/18/2014	PZ-19 ZB62O 9/24/2014	PZ-19 ZZ61L 3/10/2015	LW-3 2005060439-05 6/28/2005	LW-3 2006030316-02 3/23/2006	LW-3 2006110200-02 11/13/2006	Dup of LW-3 PZ30 2006110200-04 11/13/2006	LW-3 LS10G 10/1/2007	LW-3 MO07A 3/19/208	LW-3 NH70A 7/28/208
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																
EPA Method SW8270D / SW8270D-SIM																
Naphthalene	4900	1.0 U	**2.8**	1.0 U	**3.8**	1.0 U	1.0 U	**3.8**	**3.3**	**0.21**	NA	**0.12**	**0.13**	1.0 U	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	1.0 U	1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
Acenaphthene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
Dibenzofuran		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	1.0 U	1.0 U	1.0 U
Fluorene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	5.0 U	5.0 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ	NA	NA	NA	NA	5.0 U	5.0 U	5.0 U
Phenanthrene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
Carbazole		1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	NA	NA	NA	NA	1.0 U	1.0 U	1.0 U
Anthracene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(k)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(a)Pyrene		0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes		0.11 U	0.10 U	0.20 U	0.20 U	0.20 U	0.10 U	0.10 U	0.20 U							
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.078	0.071	0.076	0.076	0.076	0.071	0.071	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)																
EPA Method SW8041/SW8270C,D																
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	10 U	0.10 U	0.10 U	0.10 U	**3.6** J	0.25 U	**0.57**
PETROLEUM HYDROCARBONS																
Method NWTPH-G (µg/L)																
Gasoline	1,000	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	**1,750** (e)	**53**	50 U	50 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																
Diesel	500	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	250 U	250 U	250 U
Motor Oil	500	200 U	200 U	100 U	200 U	200 U	200 U	200 U	200 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Creosote Oil	500	200 U	200 U	200 U	**140**	100 U	100 U	100 U	100 U	NA	NA	NA	NA	NA	250 U	500 U
BTEX (µg/L)																
Method SW8021B/SW021B MOD																
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	LW-3 OH11D 1/8/2009	LW-3 PJ99A 8/10/2009	LW-3 QF84E 1/14/2010	LW-3 RS33C 10/18/2010	LW-3 SO90M 3/24/2011	LW-3 TH68D 8/8/2011	LW-3 UL19D 3/7/2012	LW-3 VP53H 10/26/2012	LW-3 WF57H 2/27/2013	LW-3 XC81J 8/28/2013	LW-3 YA02N 2/19/2014	LW-3 2014060297 6/11/2014	LW-3 ZB62D 9/23/2014	LW-3 ZZ61J 3/9/2015	LW-4R 2005060439-02 6/29/2005	LW-4R 2006030316-01 3/23/2006
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method SW8270D / SW8270D-SIM																	
Naphthalene	4900	1.0 U	2.0 UJ	1.0 U	3.0 U	**7.9**	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	**2.0**	**0.539**	1.0 U	1.0 U	0.10 U	NA
2-Methylnaphthalene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U	NA	NA
Acenaphthylene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U	0.10 U	NA
Acenaphthene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U	0.10 U	NA
Dibenzofuran		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U		1.0 U	1.0 U	NA	NA
Fluorene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U	0.10 U	NA
Pentachlorophenol	3	5.0 U	10 UJ	5.0 U	15 U	5.0 U	5.0 U	15 U	10 U	10 U	10 U	10 U	0.100 U	10 UJ	10 UJ	NA	NA
Phenanthrene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U	0.10 U	NA
Carbazole		1.0 U	2.0 UJ	1.0 U	3.0 UJ	1.0 U	1.0 U	3.0 U	1.0 U	NA	NA	NA		1.0 U	1.0 U	NA	NA
Anthracene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U	0.10 U	NA
Fluoranthene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U	0.10 U	NA
Pyrene	2600	1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U	0.10 U	NA
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.100 U	0.12 U	0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.100 U	0.12 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA	0.100 U	NA	NA	0.10 U	0.10 U
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA	0.100 U	NA	NA	0.10 U	0.10 U
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.100 U	0.12 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.100 U	0.12 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.100 U	0.12 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.100 U	1.0 U	1.0 U	0.10 U	NA
1-Methylnaphthalene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.168**	1.0 U	1.0 U	NA	NA
Total Benzofluoranthenes					0.10 U	1.0 U	0.10 U	0.10 U	0.20 U	0.20 U	0.22 U	0.10 U		0.12 U	0.20 U		
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.076	0.071	0.71 U	0.071	0.071	0.076	0.076	0.083	0.071	0.071	0.085	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method SW8041/SW8270C,D																	
Pentachlorophenol	3	0.25 U	0.28 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.31 U	3.7 U		0.25 U	0.25 U	10 U	0.10 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	250 U	**20,000**	**1,800**	250 U	250 U	**1,400**	**1,300**	**4,100**	**270**	250 U	250 U	**189**	250 U	250 U	50 U	50 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	250 U	**770**	**1,200**	100 U	120 U	**170**	**620**	**410**	**1,600**	**150**	**2,100**	**247**	100 U	120 U	100 U	100 U
Motor Oil	500	500 U	**1,300**	**1,200**	200 U	250 U	220 U	**1,200**	**310**	**860**	230 U	**1,200**	500 U	200 U	230 U	500 U	500 U
Creosote Oil	500	250 U	**2,000**	**4,400**	**170**	250 U	**390**	**2,100**	**2,800**	**12,000**	**580**	**9,200**		**270**	120 U	NA	NA
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	LW-4R 2006110239-02 11/14/2006	LW-4R LS10D 10/1/2007	LW-4R MO07D 3/19/208	LW-4R NH70D 7/28/208	LW-4R OH11F 1/8/2009	LW-4R PJ99D 8/10/2009	LW-4R QF84L 1/15/2010	LW-4R RS33N 10/19/2010	LW-4R SO90A 3/24/2011	LW-4R TH68E 8/8/2011	LW-4R UL19A 3/7/2012	LW-4R VP10F 10/24/2012	LW-4R WF72F 2/28/2013	LW-4R XC81K 8/28/2013	LW-4R YA02L 2/19/2014	LW-4R ZB62E 9/23/2014
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method SW8270D / SW8270D-SIM																	
Naphthalene	4900	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.9**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**2.1**	1.0 U
2-Methylnaphthalene		NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibenzofuran		NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluorene		0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	10 U	10 U	10 UJ
Phenanthrene		0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbazole		NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U
Anthracene		0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U
Benzo(g,h,i)Perylene		0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes									0.10 U	0.10 U	0.10 U	0.10 U	0.20 U	0.20 U	0.20 U	0.10 U	0.11 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.076	0.076	0.076	0.076	0.083	0.071	0.071	0.071	0.071	0.076	0.076	0.076	0.071	0.078
PENTACHLOROPHENOL (µg/L)																	
EPA Method SW8041/SW8270C,D																	
Pentachlorophenol	3	0.10 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	**0.42**	0.25 U	0.25 U	0.25 U	0.25 U	**0.85**	0.28 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	50 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	100 U	250 U	250 U	250 U	250 U	250 U	250 U	100 U	130 U	110 U	100 U	100 U	100 U	100 U	100 U	100 U
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	500 U	500 U	200 U	260 U	220 U	200 U	100 U	**400**	200 U	200 U	200 U
Creosote Oil	500	NA	NA	250 U	500 U	250 U	250 U	250 U	100 U	260 U	220 U	200 U	200 U	**200**	100 U	100 U	100 U
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	LW-4R ZZ61K 3/9/2015	MW-01S 2005070010-01 6/30/2005	MW-01S 2006030261-04 3/21/2006	Dup of MW-01S PZ30 2006030261-05 3/21/2006	MW-01S 2006110251-01 11/15/2006	MW-01S LS10F 10/1/2007	MW-01S MO07F 3/19/208	MW-01S NH92C 7/29/208	MW-01S OH25E 1/9/2009	MW-01S PJ99F 8/10/2009	MW-01S QF84H 1/15/2010	MW-01S RS33M 10/19/2010	MW-01S SO90N 3/25/2011	MW-01S TI17G 8/9/2011	MW-01S UL56H 3/8/2012	MW-01S VP53D 10/25/2012
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method SW8270D / SW8270D-SIM																	
Naphthalene	4900	1.0 U	**5,130**	NA	NA	**3,120**	**11,000**	**7,100**	**11,000**	**9,000**	**9,100**	**5,000**	**9,100**	**5,400**	**6,900**	**5,000**	**4600**
2-Methylnaphthalene		1.0 U	NA	NA	NA	NA	**920**	**1,000**	**810**	**1,000**	**890**	**900**	**750**	**740**	**680**	**1100**	**710**
Acenaphthylene		1.0 U	**860**	NA	NA	**33**	**8.9**	**10**	**6.6**	**9.7** J	2.0 U	100 U	100 U	1.0 U	1.0 U	**6.8**	**10**
Acenaphthene		1.0 U	10 U	NA	NA	**398**	**210**	**290**	**200**	**290**	**250**	**270**	**190**	**200**	**190**	**340**	**220**
Dibenzofuran		1.0 U	NA	NA	NA	NA	**73**	**130**	**98**	**110**	**99**	**120**	100 U	**64**	**79**	**79**	**110**
Fluorene		1.0 U	**380**	NA	NA	**112**	**59**	**100**	**63**	**86**	**72**	100 U	100 U	**47**	**47**	**69**	**90**
Pentachlorophenol	3	10 UJ	NA	NA	NA	NA	**8,300**	**4,100**	**2,000**	**1,600**	**3,900**	**4,400**	**3,500**	**4,200**	**4,200**	**3,200**	**4,300**
Phenanthrene		1.0 U	**23**	NA	NA	**132**	**46**	**98**	**53**	**76**	**44**	100 U	100 U	**44**	**34**	**65**	**82**
Carbazole		1.0 U	NA	NA	NA	NA	**120**	**120**	**69**	**80**	**86**	100 U	100 UJ	**57**	**24**	**53**	**52**
Anthracene		1.0 U	**17**	NA	NA	**96**	**14**	**26**	**14**	**17**	**40**	100 U	100 U	**12**	**10**	**18**	**21**
Fluoranthene		1.0 U	10 U	NA	NA	**172**	**6.3**	**30**	**11**	**13**	**14**	100 U	100 U	**7.8**	**2.0**	**19**	**18**
Pyrene	2600	1.0 U	**12**	NA	NA	**24**	**7.8**	**15**	**5.2**	**11**	**7.4**	100 U	100 U	**3.9**	**1.7**	**14**	**8.9**
Benzo(a)Anthracene		0.10 U	10 U	**0.84**	**0.86**	10 U	**1.6**	**2.1**	5.0 U	**1.5** J	**3.6** J	**4.2**	**0.58**	1.0 U	**1.0**	**1.8**	**2.5**
Chrysene		0.10 U	10 U	**0.55**	**0.57**	10 U	**1.7**	**2.2**	5.0 U	**1.6** J	**3.8** J	**4.4**	**0.51**	1.0 U	**1.1**	**1.8**	**2.4**
Benzo(b)Fluoranthene		NA	10 U	**0.98**	**1.05**	10 U	**0.88**	**1.1**	5.0 U	1.0 U	**1.0**	**1.3**	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene		NA	10 U	**0.55**	**0.59**	10 U	**0.32**	1.0 U	5.0 U	1.0 U	**1.0**	**1.3**	NA	NA	NA	NA	NA
Benzo(a)Pyrene		0.10 U	10 U	**0.74**	**0.80**	10 U	**0.53**	1.0 U	5.0 U	1.0 U	**1.3**	**1.6**	**0.18**	1.0 U	**0.33**	**0.65**	**0.76**
Indeno(1,2,3-cd)Pyrene		0.10 U	10 U	**0.22**	**0.24**	10 U	**0.12**	1.0 U	5.0 U	1.0 U	**0.34**	**0.35**	0.10 U	1.0 U	0.12 U	**0.14**	**0.11**
Dibenz(a,h)Anthracene		0.10 U	10 U	0.10 U	0.10 U	10 U	0.10 U	1.0 U	5.0 U	1.0 U	**0.20**	**0.17**	0.10 U	1.0 U	0.12 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	10 U	NA	NA	10 U	1.0 U	10 U	5.0 U	10 U	2.0 U	100 U	100 U	1.0 U	1.0 U	1.0 U	3.0 U
1-Methylnaphthalene		1.0 U	NA	NA	NA	NA	**470**	**640**	**570**	**610**	**520**	**520**	**400**	**380**	**390**	**770**	**560**
Total Benzofluoranthenes		0.20 U											**0.35**	1.0 U	**0.76**	**1.4**	**1.5**
cPAH TEQ (b)	0.1 (c)	ND	ND	**1.00**	**1.08**	ND	**0.839**	**0.342**	ND	**0.166**	**1.95**	**2.38**	**0.278**	ND	**0.517**	**1.0**	**1.2**
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	**1.01**	**1.08**	0.076	**0.84**	**0.992**	**3.78**	**0.866**	**1.95**	**2.38**	**0.288**	0.71 U	**0.529**	**1.0**	**1.2**
PENTACHLOROPHENOL (µg/L)																	
EPA Method SW8041/SW8270C,D																	
Pentachlorophenol	3	0.25 U	**7,470**	**3,440**	**3,330**	**9,120**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	250 U	**5,830** (f)	**9,620**	**9,580**	**28,000**	**52,000**	**16,000**	**40,000**	**41,000**	**14,000**	**23,000**	**36,000**	**57,000**	**55,000**	**26,000**	**34,000**
Method NWTPH-Dx (µg/L)																	
Diesel	500	120 U	100 U	100 U	100 U	100 U	**9,100**	**9,300**	**7,800**	**5,600**	**7,600**	**6,000**	**4,800**	**5,100**	**9,800**	**4,400**	**6,200**
Motor Oil	500	240 U	500 U	500 U	500 U	500 U	2500 U	5000 U	5,000 U	5,000 U	2500 U	5000 U	2000 U	**500**	1000 U	200 U	5000 U
Creosote Oil	500	120 U	**13,000**	**6530** J	**5,090** J	**8,370**	NA	**48,000**	**46,000**	**48,000**	**22,000**	**24,000**	**35,000**	**24,000**	**31,000**	**18,000**	**44,000**
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-01S WF72D 2/28/2013	MW-01S XC89C 8/29/2013	MW-01S YA02M 2/19/2014	MW-01S ZB62M 9/24/2014	MW-01S ZZ61N 3/10/2015	MW-02S 2005070010-05 7/1/2005	MW-02S 2006030294-01 3/22/2006	MW-02S 2006110251-04 11/15/2006	MW-02S LS21A 10/2/2007	MW-02S MO26E 3/20/208	MW-02S NH70G 7/28/208	MW-02S OG76B 1/7/2009	Dup of MW-02S MW30 OG76A 1/7/2009	MW-02S PK28C 8/11/2009	MW-02S QG15B 1/18/2010
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																
EPA Method SW8270D / SW8270D-SIM																
Naphthalene	4900	**7,100**	**6,800**	**6,800**	**10,000**	**8,000**	**0.29**	NA	**44.1**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Methylnaphthalene		**1000**	**780**	**1,200**	**550**	**720**	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		100 U	10 U	10 U	10 U	10 U	**0.10**	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		**320**	**270**	**330**	**240**	**280**	**0.92**	NA	**0.36**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibenzofuran		**140**	**140**	**160**	**71**	**110**	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluorene		**110**	**110**	**120**	**66**	**73**	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	**4,700**	**4,000**	**6,600**	**4,900** J	**2,900** J	NA	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Phenanthrene		**94** J	**130**	**120**	**68**	**69**	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbazole		NA	NA	NA	**100**	**53**	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Anthracene		100 U	**39**	**27**	**17**	**16**	**1.19** E	NA	**1.65**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		100 U	**56**	**44**	10 U	10 U	**0.28**	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	100 U	**34**	**22**	10 U	10 U	**0.18**	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		**1.7**	**4.1**	**2.1**	**0.83**	**1.5**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		**1.6**	**3.4**	**2.2**	**0.82**	**1.6**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		NA	NA	NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(k)Fluoranthene		NA	NA	NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U
Benzo(a)Pyrene		1.0 U	**1.4**	**0.69**	0.3 U	**0.54**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		1.0 U	**0.58**	**0.15**	0.3 U	**0.13**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		1.0 U	**0.53**	0.10 U	0.3 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		100 U	10 U	10 U	10 U	10 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		**580**	**580**	**580**	**450**	**420**	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes		2.0 U	**2.7**	**1.4**	**0.55**	**1.1**										
cPAH TEQ (b)	0.1 (c)	**0.186**	**2.2**	**1.1**	**0.146**	**0.829**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	**0.886**	**2.2**	**1.1**	**0.326**	**0.834**	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)																
EPA Method SW8041/SW8270C,D																
Pentachlorophenol	3	NA	NA	NA	NA	NA	0.50 U	0.10 U	**0.63**	0.21 U	0.25 U	**1.0**	0.25 U	0.25 U	0.26 U	0.25 U
PETROLEUM HYDROCARBONS																
Method NWTPH-G (µg/L)																
Gasoline	1,000	**38,000**	**48,000**	**47,000**	**52, 000**	**44000**	50 U	50 U	**99**	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																
Diesel	500	**5,500**	**9,400**	**7,300**	**11,000**	**3700**	100 U	100 U	100 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Motor Oil	500	**890**	**280**	**390**	**690**	**300**	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	250 U	500 U
Creosote Oil	500	**40,000**	**39,000**	**34,000**	**59000**	**16000**	NA	NA	NA	NA	250 U	500 U	250 U	250 U	500 U	250 U
BTEX (µg/L)																
Method SW8021B/SW021B MOD																
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-02S RS33E 10/18/2010	MW-02S SO90I 3/25/2011	MW-02S TI17E 8/9/2011	MW-02S UL56D 3/8/2012	MW-02S VP10H 10/24/2012	MW-02S WF72B 2/28/2013	MW-02S XC81F 8/28/2013	MW-02S YA02J 2/19/2014	MW-02S ZB62A 9/23/2014	MW-02S ZZ61I 3/9/2015	MW-05S 2005070010-03 6/30/2005	Dup of MW-05S PZ30 2005070010-04 6/30/2005	MW-05S 2006030294-07 3/22/2006	MW-05S 2006110275-01 11/16/2006	MW-05S LS21C 10/2/2007
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																
EPA Method SW8270D / SW8270D-SIM																
Naphthalene	4900	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.9**	1.0 U	1.0 U	1.0 U	1.0 U	**10.8** E	**11.8** E	NA	**29.1**	**92**
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	**2.5**
Acenaphthylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.29**	**0.27**	NA	**0.14**	1.0 U
Acenaphthene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.1**	**1.2**	**1.2**	**1.0**	1.0 U	**5.25** E	**5.13** E	NA	**5.91**	**9.2**
Dibenzofuran		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	**3.2**
Fluorene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**2.26** E	**2.26** E	NA	**1.00**	**2.8**
Pentachlorophenol	3	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ	NA	NA	NA	NA	5.0 U
Phenanthrene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.45** E	**1.76** E	NA	**1.18**	**1.9**
Carbazole		1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	NA	NA	NA	NA	**1.9**
Anthracene		1.0 U	1.0 U	**1.1**	1.0 U	1.0 U	**1.0**	1.0 U	**1.1**	1.0 U	1.0 U	**1.23** E	**1.25** E	NA	**1.02**	1.0 U
Fluoranthene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.71** E	**1.75** E	NA	**0.90**	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.64** E	**1.71** E	NA	**0.41**	1.0 U
Benzo(a)Anthracene		0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U	**0.28**	**0.33**	0.10 U	**0.18**	0.10 U
Chrysene		0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U	**0.20**	**0.22**	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(k)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(a)Pyrene		0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	0.10 U	NA	0.10 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	**5.2**
Total Benzofluoranthenes		0.10 U	0.12 U	0.10 U	0.10 U	0.20 U	0.20 U	0.22 U	0.10 U	0.11 U	0.20 U					
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.030**	**0.035**	ND	**0.018**	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.071	0.085	0.071	0.071	0.076	0.076	0.083	0.071	0.078	0.076	**0.039**	**0.044**	0.076	**0.089**	0.076
PENTACHLOROPHENOL (µg/L)																
EPA Method SW8041/SW8270C,D																
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.28 U	0.25 U	**0.83**	0.25 U	0.10 U	0.50 U	0.10 U	0.10 U	0.25 U
PETROLEUM HYDROCARBONS																
Method NWTPH-G (µg/L)																
Gasoline	1,000	250 U	250 U	**480**	250 U	250 U	250 U	250 U	250 U	250 U	250 U	50 U	50 U	50 U	50 U	**530**
Method NWTPH-Dx (µg/L)																
Diesel	500	100 U	120 U	**130**	100 U	100 U	100 U	130 U	100 U	100 U	120 U	100 U	100 U	**430**	100 U	250 U
Motor Oil	500	200 U	240 U	**990**	200 U	200 U	210 U	260 U	**240**	200 U	230 U	500 U	500 U	500 U	500 U	500 U
Creosote Oil	500	100 U	240 U	200 U	200 U	**110**	**210**	130 U	100 U	100 U	120 U	NA	NA	NA	NA	NA
BTEX (µg/L)																
Method SW8021B/SW021B MOD																
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-05S MO26C 3/20/208	Dup of MW-05S PZ30 MO26A 3/20/208	MW-05S NH92E 7/29/208	Dup of MW-05S PZ30 NH92F 7/29/208	MW-05S OG76C 1/7/2009	MW-05S PK28H 8/11/2009	Dup of MW-05S PZ30 PK28I 8/11/2009	MW-05S QF84B 1/14/2010	Dup of MW-05S PZ30 QF84G 1/14/2010	MW-05S RS33I 10/19/2010	Dup of MW-05S Duplicate RS33J 10/19/2010	MW-05S SO90C 3/25/2011	Dup of MW-05S Duplicate SO90B 3/25/2011	MW-05S TI17C 8/9/2011	Dup of MW-05S Duplicate TI17A 8/9/2011
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																
EPA Method SW8270D / SW8270D-SIM																
Naphthalene	4900	**48**	**43**	**46**	**39**	**17**	1.0 U	1.0 U	**5.3**	**5.3**	**1.8** J	**4.8** J	1.0 U	1.0 U	1.0 U	1.0 U
2-Methylnaphthalene		**2.0**	**1.8**	**2.0**	**2.1**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		**8.8**	**7.6**	**8.3**	**7.3**	**6.6**	**4.3**	**4.4**	**13**	**11**	**9.0**	**8.3**	**6.0**	**6.1**	**7.6**	**8.1**
Dibenzofuran		**2.9**	**2.5**	**2.6**	**2.3**	**1.6**	1.0 U	1.0 U	**3.1**	**2.2**	**2.0**	**2.0**	1.0 U	1.0 U	1.0 U	**1.0**
Fluorene		**2.6**	**2.2**	**2.0**	**1.7**	1.0 U	1.0 U	1.0 U	**1.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Phenanthrene		**1.8**	**1.6**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbazole		**1.1**	1.0 U	**1.0**	1.0 U	**1.2**	1.0 U	1.0 U	**1.9**	**1.3**	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Anthracene		1.0 U	1.0 U	1.0 U	1.0 U	**1.0**	**1.2**	**1.3**	**1.4**	**1.5**	1.0 U	1.0 U	**1.2**	**1.2**	**1.1**	**1.3**
Fluoranthene		**1.1**	**1.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		**0.10**	**0.10**	**0.11**	0.10 U	**0.13**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.12 U	0.12 U	0.11 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	**0.13**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.12 U	0.12 U	0.11 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 UJ	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	**0.12**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.12 U	0.12 U	0.11 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.12 U	0.12 U	0.11 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.12 U	0.12 U	0.11 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		**3.9**	**3.4**	**4.0**	**3.6**	**1.7**	1.0 U	1.0 U	**2.6** J	**1.5** J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes											0.10 U	0.10 U	0.12 U	0.12 U	0.12 U	0.11 U
cPAH TEQ (b)	0.1 (c)	0.010	0.010	0.011	ND	**0.134**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.081	0.081	0.082	0.076	**0.154**	0.076	0.076	0.076	0.076	0.071	0.071	0.085	0.085	0.085	0.078
PENTACHLOROPHENOL (µg/L)																
EPA Method SW8041/SW8270C,D																
Pentachlorophenol	3	0.25 U	0.25 U	0.25 UJ	0.25 UJ	0.25 U	0.25 U	0.27 U	0.25 U	0.25 U	0.25 U	0.27 U	0.25 U	0.25 U	0.28 U	0.28 U
PETROLEUM HYDROCARBONS																
Method NWTPH-G (µg/L)																
Gasoline	1,000	**320**	250 U	**270**	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																
Diesel	500	250 U	250 U	250 U	NA	250 U	250 U	250 U	250 U	250 U	100 U	100 U	120 U	120 U	100 U	**110**
Motor Oil	500	500 U	500 U	500 U	NA	500 U	250 U	250 U	500 U	500 U	200 U	200 U	250 U	230 U	200 UJ	**500** J
Creosote Oil	500	**410**	**390**	500 U	NA	250 U	500 U	500 U	250 U	250 U	100 U	100 U	250 U	230 U	200 U	200 U
BTEX (µg/L)																
Method SW8021B/SW021B MOD																
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-05S UL56E 3/8/2012	Dup of MW-05S PZ-30 UL56F 3/8/2012	MW-05S VP10E 10/24/2012	Dup of MW-05S PZ-30 VP10D 10/24/2012	MW-05S WF57E 2/27/2013	Dup of MW-05S PZ-30 WF57F 2/27/2013	MW-05S XC81D 8/28/2013	Dup of MW-05S PZ-30 XC81G 8/28/2013	MW-05S YA02B 2/18/2014	Dup of MW-05S PZ-30 YA02A 2/18/2014	MW-05S ZB62B 9/23/2014	Dup of MW-05S PZ-30 ZB62C 9/23/2014	MW-05S ZZ61D 3/9/2015	Dup of MW-05S PZ-30 ZZ61C 3/9/2015	MW-01D 10/7/1998
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																
EPA Method SW8270D / SW8270D-SIM																
Naphthalene	4900	**1.1**	**2.0**	1.0 U	1.0 U	**1.6**	**1.6**	1.0 U	1.0 U	1.0 U	1.0 U	**1.7**	**1.4**	**1.4**	**1.4**	**91**
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA
Acenaphthylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.2 U
Acenaphthene		**7.5**	**8.2**	**8.2**	**10**	**10**	**11**	**8.7**	**9.4**	**9.0**	**10**	**8.6**	**9.4**	**6.5**	**7.1**	**58**
Dibenzofuran		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA
Fluorene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**30**
Pentachlorophenol	3	5.0 U	5.0 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ	10 UJ	10 UJ	NA
Phenanthrene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**56**
Carbazole		1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	NA
Anthracene		1.0 U	1.0 U	**1.0**	**1.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.0**	1.0 U	1.0 U	1.0 U	1.0 U	**8.7**
Fluoranthene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**9.4**
Pyrene	2600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**7.6**
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.12 U	0.10 U	0.10 U	**1.0**
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.12 U	0.10 U	0.10 U	**1.2**
Benzo(b)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.3**
Benzo(k)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.3**
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.12 U	0.10 U	0.10 U	0.2 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.12 U	0.10 U	0.10 U	0.2 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.12 U	0.10 U	0.10 U	0.2 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.2 U
1-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA
Total Benzofluoranthenes		0.10 U	0.10 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.10 U	0.10 U	0.11 U	0.12 U	0.20 U	0.20 U	
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.172**
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.071	0.071	0.076	0.076	0.076	0.076	0.076	0.076	0.071	0.071	0.078	0.085	0.076	0.076	**0.292**
PENTACHLOROPHENOL (µg/L)																
EPA Method SW8041/SW8270C,D																
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.52 U	0.25 U	0.25 U	0.25 U	0.25 U	**18**
PETROLEUM HYDROCARBONS																
Method NWTPH-G (µg/L)																
Gasoline	1,000	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	NA
Method NWTPH-Dx (µg/L)																
Diesel	500	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 UJ	110 U	**2,500**
Motor Oil	500	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 UJ	220 U	**2,800**
Creosote Oil	500	200 U	200 U	**170**	**170**	**230**	**210**	100 U	100 U	100 U	100 U	**100**	**130**	100 UJ	110 U	NA
BTEX (µg/L)																
Method SW8021B/SW021B MOD																
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-01D 2006030261-02 3/21/2006	MW-01D 2006110251-02 11/15/2006	MW-01D LS10H 10/1/2007	MW-01D MO07E 3/19/208	MW-01D NH92D 7/29/208	MW-01D OH25D 1/9/2009	MW-01D PJ99E 8/10/2009	MW-01D QF84I 1/15/2010	MW-01D RS33O 10/19/2010	MW-01D SO90J 3/25/2011	MW-01D TI17F 8/9/2011	MW-01D UL56I 3/8/2012	MW-01D VP53C 10/25/2012	MW-01D WF72E 2/28/2013	MW-01D XC89A 8/29/2013	MW-01D YA02I 2/19/2014
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method SW8270D / SW8270D-SIM																	
Naphthalene	4900	NA	**1.24**	1.0 U	1.0 U	**2.2**	**0.7** J	**1.8**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.8**	**1.1**	**1.2**
2-Methylnaphthalene		NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		NA	**0.48**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibenzofuran		NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluorene		NA	**0.31**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	10 U	10 U
Phenanthrene		NA	**1.42**	1.0 U	1.0 U	1.0 U	**0.6** J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbazole		NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA
Anthracene		NA	**0.39**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		NA	**0.89**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	NA	**0.39**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	**0.11**	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	**0.11**	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes										0.10 U	0.10 U	0.12 U	0.10 U	0.20 U	0.20 U	0.20 U	0.10 U
cPAH TEQ (b)	0.1 (c)	ND	ND	**0.0121**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	**0.082**	0.076	0.076	0.076	0.076	0.083	0.071	0.071	0.085	0.071	0.076	0.076	0.076	0.071
PENTACHLOROPHENOL (µg/L)																	
EPA Method SW8041/SW8270C,D																	
Pentachlorophenol	3	0.10 U	0.10 U	**0.2** UJ	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.29 U	**0.85**	0.25 U	**2.0**	0.28 U	0.25 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	50 U	50 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	100 U	100 U	250 U	250 U	250 U	250 U	250 U	250 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U
Creosote Oil	500	**106**	NA	NA	250 U	500 U	250 U	250 U	250 U	100 U	200 U	200 U	200 U	100 U	**160**	100 U	100 U
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-01D ZB62N 9/24/2014	MW-01D ZZ61O 3/10/2015	MW-02D 10/7/1998	MW-02D 2006030294-02 3/22/2006	MW-02D 2006110251-05 11/15/2006	MW-02D LS21B 10/2/2007	Dup of MW-02D PZ30 LS21F 10/2/2007	MW-02D MO26I 3/19/208	MW-02D NH92H 7/29/208	MW-02D OH25A 1/9/2009	MW-02D PK28D 8/11/2009	MW-02D QG15A 1/18/2010	MW-02D RS33F 10/18/2010	MW-02D SO90G 3/25/2011	MW-02D TI17D 8/9/2011	MW-02D UL56A 3/8/2012
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method SW8270D / SW8270D-SIM																	
Naphthalene	4900	**1.9**	**2.7**	**600**	NA	**143**	**680** J	**500** J	**380**	1.1 U	**210**	**230**	**180**	1.0 U	**76**	**110**	**19**
2-Methylnaphthalene		1.0 U	1.0 U	NA	NA	NA	**120**	**85**	**94**	1.1 U	**26**	**38**	**36**	1.0 U	**13**	**9.4**	**1.5**
Acenaphthylene		1.0 U	1.0 U	**1.0**	NA	**0.95**	**1.6**	**1.3**	**1.2**	1.1 U	1.0 U	1.0 U	1.0 U	**1.9**	1.0 U	1.0 U	1.0 U
Acenaphthene		1.0 U	1.0 U	**54**	NA	**96**	**86** J	**67** J	**70**	1.1 U	**26**	**35**	**34**	**8.8**	**21**	**18**	**9.3**
Dibenzofuran		1.0 U	1.0 U	NA	NA	NA	**35**	**26**	**30**	1.1 U	**8.1**	**12**	**14**	**3.0**	**7.9**	**6.1**	**3.2**
Fluorene		1.0 U	1.0 U	**18**	NA	**40**	**37** J	**28** J	**30**	1.1 U	**9.3**	**12**	**15**	**11**	**8.4**	**5.8**	**3.8**
Pentachlorophenol	3	10 UJ	10 UJ	NA	NA	NA	5.0 U	5.0 U	5.0 U	5.5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Phenanthrene		1.0 U	1.0 U	**7.1**	NA	**27**	**23** J	**18** J	**22**	1.1 U	**6.0**	**7.2**	**9.1**	**5.0**	**5.1**	**3.9**	**2.3**
Carbazole		1.0 U	1.0 U	NA	NA	NA	**23**	**16**	**21**	**1.5**	**8.0**	**9.0**	**9.1**	**8.3** J	**5.7**	**4.9**	**1.4**
Anthracene		1.0 U	1.0 U	1.0 U	NA	**0.50**	1.0 U	1.0 U	**1.0**	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U	**2.0**	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	**1.7**	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.11 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.11 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		NA	NA	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA	NA	NA
Benzo(k)Fluoranthene		NA	NA	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	NA	NA	NA	NA
Benzo(a)Pyrene		0.11 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.11 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.11 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	NA	NA	NA	**77**	**68**	**66**	1.1 U	**22**	**32**	**30**	1.0 U	**15**	**13**	**5.1**
Total Benzofluoranthenes		0.11 U	0.20 U											0.10 U	0.10 U	0.10 U	0.10 U
cPAH TEQ (b)	0.1 (c)	ND	ND	**15**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.078	0.076	ND	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.071	0.071	0.071	0.071
PENTACHLOROPHENOL (µg/L)																	
EPA Method SW8041/SW8270C,D																	
Pentachlorophenol	3	0.25 U	**1.7**	5.0 U	0.10 U	10 U	0.23 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	250 U	250 U	NA	**495**	**830**	**3,100**	**2,900**	**1,700**	**980**	**760**	**790**	**600**	**420**	**620**	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	100 U	110 U	**1,800**	100 U	100 U	**290**	**280**	**540**	250 U	250 U	250 U	250 U	100 U	120 U	**140**	100 U
Motor Oil	500	**400**	**330**	**5,200**	500 U	500 U	500 U	500 U	500 U	500 U	500 U	250 U	500 U	200 U	230 U	200 U	**210**
Creosote Oil	500	**290**	**140**	NA	**790**	**1,710**	NA	NA	**4,200**	500 U	**990**	**600**	**700**	**270**	**280**	**440**	200 U
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-02D VP10A 10/24/2012	MW-02D WF72A 2/28/2013	MW-02D XC81B 8/28/2013	MW-02D YA02D 2/18/2014	MW-02D ZB62I 9/23/2014	MW-02D ZZ61M 3/10/2015	MW-05D 10/7/1998	MW-05D 2006030294-06 3/22/2006	MW-05D 2006110275-02 11/16/2006	MW-05D LS21D 10/2/2007	MW-05D MO26F 3/20/208	MW-05D NH92G 7/29/208	MW-05D OH25B 1/9/2009	MW-05D PK28G 8/11/2009	MW-05D QF84A 1/14/2010	MW-05D RS33K 10/19/2010
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method SW8270D / SW8270D-SIM																	
Naphthalene	4900	**43**	**1.0**	1.0 U	1.0 U	1.0 U	**6**	**4.0**	NA	**21.0**	**28**	**27**	**2.2**	**1.2**	**3.4**	1.0 U	1.0 U
2-Methylnaphthalene		**11**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	**3.0**	**3.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		**1.1**	1.0 U	1.0 U	1.0 U	**2.3**	1.0 U	**4.1**	NA	**0.10**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.1**	1.0 U
Acenaphthene		**26**	**7.2**	**4.7**	**6.6**	**3.8**	**3.8**	**15**	NA	**6.39**	**5.8**	**6.7**	**3.9**	**0.6** J	**3.7**	1.0 U	**4.2**
Dibenzofuran		**11**	**2.8**	**1.0**	**2.3**	1.0 U	**1.2**	NA	NA	NA	**2.2**	**2.5**	**1.4**	1.0 U	**1.1**	1.0 U	1.0 U
Fluorene		**13**	**4.7**	**3.3**	**3.2**	**1.0**	**1.9**	**5.0**	NA	**2.60**	**1.8**	**2.3**	**1.0**	1.0 U	**1.2**	1.0 U	1.0 U
Pentachlorophenol	3	10 U	10 U	10 U	10 U	10 UJ	10 UJ	NA	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Phenanthrene		**8.3**	**2.2**	1.0 U	**2.0**	1.0 U	**1.4**	**8.5**	NA	**0.89**	**1.1**	**1.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbazole		**9.0**	NA	NA	NA	**4.0**	1.0 U	NA	NA	NA	**1.5**	**1.6**	**1.4**	1.0 U	**1.5**	1.0 U	**1.6** J
Anthracene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	**0.25**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**8.5**	NA	**0.60**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**7.0**	NA	**0.27**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	1.0 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		NA	NA	NA	NA	NA	NA	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA
Benzo(k)Fluoranthene		NA	NA	NA	NA	NA	NA	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		**19**	**1.9**	1.0 U	**2.1**	1.0 U	**1.2**	NA	NA	NA	**2.8**	**3.1**	1.0 U	1.0 U	**1.0**	1.0 U	1.0 U
Total Benzofluoranthenes		0.20 U	0.20 U	0.20 U	0.10 U	0.11 U	0.20 U										0.10 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	**4.0**	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.076	0.071	0.078	0.076	ND	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.071
PENTACHLOROPHENOL (µg/L)																	
EPA Method SW8041/SW8270C,D																	
Pentachlorophenol	3	0.25 U	0.25 U	**0.37**	0.25 U	0.25 U	0.25 U	5.0 U	0.10 U	0.10 U	0.22 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.26 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	**510**	250 U	**620**	250 U	250 U	250 U	NA	50 U	50 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	**130**	100 U	**160**	100 U	100 U	120 U	**440**	100 U	100 U	250 U	250 U	250 U	250 U	250 U	250 U	100 U
Motor Oil	500	200 U	200 U	**470**	200 U	200 U	230 U	**520**	500 U	500 U	500 U	500 U	500 U	500 U	250 U	500 U	200 U
Creosote Oil	500	**910**	**270**	**530**	100 U	**130**	120 U	NA	NA	NA	NA	**370**	500 U	250 U	500 U	250 U	100 U
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-05D SO90D 3/25/2011	MW05D TI17I 8/9/2011	MW-05D UL56C 3/8/2012	MW-05D VP53E 10/25/2012	MW-05D WF57D 2/27/2013	MW-05D XC81A 8/28/2013	MW-05D YA02G 2/19/2014	MW-05D ZB62J 9/23/2014	MW-05D ZZ61F 3/9/2015	CW-13 2006110275-04 11/16/2006	CW-13 LS22A 10/2/2007	CW-13 MO26D 3/20/208	CW-13 NH70F 7/28/208	CW-13 PK28F 8/11/2009	CW-13 QF84D 1/14/2010	CW-13 RS33G 10/19/2010
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method SW8270D / SW8270D-SIM																	
Naphthalene	4900	1.0 U	**2.1**	1.0 U	**1.3**	**2.9**	1.0 U	1.0 U	**1.1**	1.0 U	**1.54**	**8.7**	**11**	**30**	**4.8**	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.48**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		**1.3**	**2.6**	**3.3**	**5.6**	**4.0**	**5.5**	1.0 U	**2.5**	1.0 U	**50.0**	**64**	**44**	**51**	**25**	1.0 U	**5.4**
Dibenzofuran		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	**19**	**15**	**18**	**7.6**	1.0 U	**1.5**
Fluorene		1.0 U	**1.2**	1.0 U	**1.3**	**1.6**	1.0 U	1.0 U	1.0 U	1.0 U	**20.7**	**25**	**16**	**21**	**8.7**	1.0 U	**2.4**
Pentachlorophenol	3	5.0 U	5.0 U	5.0 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Phenanthrene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**34.5**	**31**	**14**	**21**	**8.2**	1.0 U	**1.2**
Carbazole		1.0 U	1.0 U	**1.1**	**2.2**	NA	NA	NA	1.0 U	1.0 U	NA	**14**	**11**	**13**	**3.0**	1.0 U	1.0 UJ
Anthracene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**4.38**	**3.3**	**1.8**	**2.8**	1.0 U	1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**5.47**	**5.9**	**1.8**	**3.2**	1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**2.44**	**2.2**	1.0 U	**1.4**	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	**0.37**	**0.24**	**0.14**	**0.13**	0.10 U	0.10 U	0.10 U
Chrysene		0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	**0.25**	**0.24**	**0.10**	**0.12**	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA
Benzo(k)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	NA
Benzo(a)Pyrene		0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	**1.4**	1.0 U	1.0 U	1.0 U	1.0 U	NA	**34**	**27**	**34**	**12**	1.0 U	1.0 U
Total Benzofluoranthenes		0.12 U	0.11 U	0.10 U	0.20 U	0.20 U	0.20 U	0.10 U	0.11 U	0.20 U							0.10 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.040**	**0.0264**	**0.015**	**0.014**	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.085	0.078	0.071	0.076	0.076	0.076	0.071	0.078	0.076	**0.110**	**0.096**	**0.085**	**0.084**	0.076	0.076	0.071
PENTACHLOROPHENOL (µg/L)																	
EPA Method SW8041/SW8270C,D																	
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	**2.2**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.10 U	0.22 U	0.25 U	**2.9**	0.26 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	**83**	**750**	**630**	**1,000**	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	110 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	110 U	100 U	250 U	**290**	**270**	250 U	250 U	100 U
Motor Oil	500	220 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	220 U	500 U	500 U	500 U	500 U	250 U	500 U	200 U
Creosote Oil	500	220 U	200 U	200 U	100 U	**210**	100 U	100 U	100 U	110 U	**471**	NA	**1,100**	**960**	500 U	250 U	100 U
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	CW-13 SO90K 3/25/2011	CW-13 TI17H 8/9/2011	CW-13 UL56B 3/8/2012	CW-13 VP53B 10/25/2012	CW-13 WF57C 2/27/2013	CW-13 XC81C 8/28/2013	CW-13 YA02C 2/18/2014	CW-13 ZB62H 9/23/2014	CW-13 ZZ61E 3/9/2015
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)										
EPA Method SW8270D / SW8270D-SIM										
Naphthalene	4900	1.0 U	**5.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		1.0 U	**4.3**	1.0 U	**5.2**	1.0 U	**1.5**	1.0 U	1.0 U	1.0 U
Dibenzofuran		1.0 U	1.0 U	1.0 U	**2.5**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluorene		1.0 U	1.0 U	1.0 U	**2.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	5.0 U	5.0 U	5.0 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ
Phenanthrene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbazole		1.0 U	**1.4**	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U
Anthracene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U
Benzo(b)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.11 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes		0.10 U	0.10 U	0.10 U	0.20 U	0.20 U	0.22 U	0.10 U	0.11 U	0.20 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.071	0.071	0.071	0.076	0.076	0.083	0.071	0.078	0.076
PENTACHLOROPHENOL (µg/L)										
EPA Method SW8041/SW8270C,D										
Pentachlorophenol	3	0.25 U	**1.0**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS										
Method NWTPH-G (µg/L)										
Gasoline	1,000	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)										
Diesel	500	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Motor Oil	500	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	210 U
Creosote Oil	500	200 U	200 U	200 U	100 U	**110**	100 U	100 U	100 U	100 U
BTEX (µg/L)										
Method SW8021B/SW021B MOD										
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA

µg/L = micrograms per liter
U = Indicates the compound was undetected at the given reporting limit.
J = Indicates the analyte was positively identified; the associated value is approximate
UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate
E = The reported concentration is an estimate; the result exceeded the instrument calibration range.
NA = Not analyzed.
ND = Not Detected.
Bold indicates detected compound. Box indicates exceedance of screening levels
Box indicates exceedance of screening level.

SIM = select ion monitoring
EPA = U.S. Environmental Protection Agency
MTCA = Model Toxics Control Act
WAC = Washington Administrative Code
RL = Reporting Limit
BTEX = benzene, toluene, ethylbenzene, and xylenes
cPAH = carcinogenic polycyclic aromatic hydrocarbon
PCP = pentachlorophenol
NWTPH-Dx = total petroleum hydrocarbons diesel range
NWTPH-Gx = TPH gasoline range

(a) Groundwater screening levels are MTCA Method B for marine surface water for cPAHs and PCP; MTCA Method A for TPH-G/TPH-Dx.
(b) TEQ = toxicity equivalency factor as described in WAC 173-340-708 (8)
(c) cPAH cleanup screening levels based on practical quantitation limit (PQL) for individual cPAHs.
(d) PCP results on 7/28/08 for PZ-18 and PZ-19 were not consistent with historical results. Confirmation verification samples were collected on 8/28/08. Both sets of data are presented in this table
(e) The gasoline-range hydrocarbon result for this sample consisted of a solitary peak, identified by GCMS as toluene.
(f) The sample contains gasoline-range hydrocarbons, which does not appear to be automotive gasoline

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
1	11/8/2006	PZ-13	4.67	19.50	14.83	--	
	11/8/2006	PZ-12	4.02	19.00	14.98	15.50	No
	12/31/2006	PZ-13	5.56	19.50	13.94	--	
	12/31/2006	PZ-12	3.91	19.00	15.09	15.50	No
	3/2/2007	PZ-13	6.06	19.50	13.44	--	
	3/2/2007	PZ-12	4.04	19.00	14.96	15.50	No
	3/31/2007	PZ-13	6.39	19.50	13.11	--	
	3/31/2007	PZ-12	4.03	19.00	14.97	15.50	No
	4/23/2007	PZ-13	6.58	19.50	12.92	--	
	4/23/2007	PZ-12	4.42	19.00	14.58	15.50	No
	5/28/2007	PZ-13	7.36	19.50	12.14	--	
	5/28/2007	PZ-12	4.88	19.00	14.12	15.50	No
	6/30/2007	PZ-13	7.33	19.50	12.17	--	
	6/30/2007	PZ-12	5.11	19.00	13.89	15.50	No
	8/1/2007	PZ-13	7.19	19.50	12.31	--	
	8/1/2007	PZ-12	5.10	19.00	13.90	15.50	No
	9/29/2007	PZ-13	7.32	19.50	12.18	--	
	9/29/2007	PZ-12	5.63	19.00	13.37	15.50	No
	11/22/2007	PZ-13	6.91	19.50	12.59	--	
	11/22/2007	PZ-12	5.27	19.00	13.73	15.50	No
	1/26/2008	PZ-13	5.99	19.50	13.51	--	
	1/26/2008	PZ-12	3.93	19.00	15.07	15.50	No
	2/28/2008	PZ-13	6.44	19.50	13.06	--	
	2/28/2008	PZ-12	3.69	19.00	15.31	15.50	No
	3/19/2008	PZ-13	6.71	19.50	12.79	--	
	3/19/2008	PZ-12	3.84	19.00	15.16	15.50	No
	4/28/2008	PZ-13	7.19	19.50	12.31	--	
	4/28/2008	PZ-12	4.00	19.00	15.00	15.50	No
	5/31/2008	PZ-13	7.39	19.50	12.11	--	
	5/31/2008	PZ-12	4.43	19.00	14.57	15.50	No
	6/30/2008	PZ-13	7.26	19.50	12.24	--	
	6/30/2008	PZ-12	4.58	19.00	14.42	15.50	No
	7/12/2008	PZ-13	7.36	19.50	12.14	--	
	7/12/2008	PZ-12	4.72	19.00	14.28	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	8/28/2008	PZ-13	7.34	19.50	12.16	--	
	8/28/2008	PZ-12	5.23	19.00	13.77	15.50	No
	9/20/2008	PZ-13	7.32	19.50	12.18	--	
	9/20/2008	PZ-12	5.39	19.00	13.61	15.50	No
	10/12/2008	PZ-13	8.36	19.50	11.14	--	
	10/12/2008	PZ-12	5.51	19.00	13.49	15.50	No
	11/30/2008	PZ-13	6.42	19.50	13.08	--	
	11/30/2008	PZ-12	4.83	19.00	14.17	15.50	No
	12/31/2008	PZ-13	6.42	19.50	13.08	--	
	12/31/2008	PZ-12	4.83	19.00	14.17	15.50	No
	1/31/2009	PZ-13	6.57	19.50	12.93	--	
	1/31/2009	PZ-12	4.39	19.00	14.61	15.50	No
	2/23/2009	PZ-13	6.95	19.50	12.55	--	
	2/23/2009	PZ-12	4.59	19.00	14.41	15.50	No
	3/29/2009	PZ-13	6.68	19.50	12.82	--	
	3/29/2009	PZ-12	4.28	19.00	14.72	15.50	No
	4/18/2009	PZ-13	7.61	19.50	11.89	--	
	4/18/2009	PZ-12	4.31	19.00	14.69	15.50	No
	5/16/2009	PZ-13	6.62	19.50	12.88	--	
	5/16/2009	PZ-12	4.10	19.00	14.90	15.50	No
	6/21/2009	PZ-13	7.03	19.50	12.47	--	
	6/21/2009	PZ-12	4.58	19.00	14.42	15.50	No
	7/20/2009	PZ-13	7.09	19.50	12.41	--	
	7/20/2009	PZ-12	4.94	19.00	14.06	15.50	No
	8/10/2009	PZ-13	7.31	19.50	12.19	--	
	8/10/2009	PZ-12	5.18	19.00	13.82	15.50	No
	9/7/2009	PZ-13	7.91	19.50	11.59	--	
	9/7/2009	PZ-12	5.33	19.00	13.67	15.50	No
	10/10/2009	PZ-13	7.45	19.50	12.05	--	
	10/10/2009	PZ-12	5.85	19.00	13.15	15.50	No
	11/28/2009	PZ-13	5.99	19.50	13.51	--	
	11/28/2009	PZ-12	4.74	19.00	14.26	15.50	No
	12/31/2009	PZ-13	6.06	19.50	13.44	--	
	12/31/2009	PZ-12	4.70	19.00	14.30	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	1/14/2010	PZ-13	5.20	19.50	14.30	--	
	1/14/2010	PZ-12	4.16	19.00	14.84	15.50	No
	2/21/2010	PZ-13	6.04	19.50	13.46	--	
	2/21/2010	PZ-12	4.01	19.00	14.99	15.50	No
	3/17/2010	PZ-13	6.40	19.50	13.10	--	
	3/17/2010	PZ-12	3.98	19.00	15.02	15.50	No
	4/25/2010	PZ-13	6.65	19.50	12.85	--	
	4/25/2010	PZ-12	4.06	19.00	14.94	15.50	No
	5/16/2010	PZ-13	6.99	19.50	12.51	--	
	5/16/2010	PZ-12	4.15	19.00	14.85	15.50	No
	6/26/2010	PZ-13	6.83	19.50	12.67	--	
	6/26/2010	PZ-12	4.47	19.00	14.53	15.50	No
	7/23/2010	PZ-13	7.33	19.50	12.17	--	
	7/23/2010	PZ-12	4.91	19.00	14.09	15.50	No
	8/30/2010	PZ-13	7.49	19.50	12.01	--	
	8/30/2010	PZ-12	5.17	19.00	13.83	15.50	No
	9/30/2010	PZ-13	6.98	19.50	12.52	--	
	9/30/2010	PZ-12	5.17	19.00	13.83	15.50	No
	10/18/2010	PZ-13	7.11	19.50	12.39	--	
	10/18/2010	PZ-12	4.91	19.00	14.09	15.50	No
	11/29/2010	PZ-13	6.23	19.50	13.27	--	
	11/29/2010	PZ-12	4.40	19.00	14.60	15.50	No
	12/25/2010	PZ-13	5.21	19.50	14.29	--	
	12/25/2010	PZ-12	4.08	19.00	14.92	15.50	No
	1/29/2011	PZ-13	6.01	19.50	13.49	--	
	1/29/2011	PZ-12	4.18	19.00	14.82	15.50	No
	2/20/2011	PZ-13	6.13	19.50	13.37	--	
	2/20/2011	PZ-12	4.28	19.00	14.72	15.50	No
	3/24/2011	PZ-13	5.23	19.50	14.27	--	
	3/24/2011	PZ-12	3.72	19.00	15.28	15.50	No
	4/23/2011	PZ-13	6.18	19.50	13.32	--	
	4/23/2011	PZ-12	3.84	19.00	15.16	15.50	No
	5/30/2011	PZ-13	6.75	19.50	12.75	--	
	5/30/2011	PZ-12	4.25	19.00	14.75	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	6/26/2011	PZ-13	7.21	19.50	12.29	--	
	6/26/2011	PZ-12	4.78	19.00	14.22	15.50	No
	7/30/2011	PZ-13	7.26	19.50	12.24	--	
	7/30/2011	PZ-12	5.00	19.00	14.00	15.50	No
	8/8/2011	PZ-13	7.17	19.50	12.33	--	
	8/8/2011	PZ-12	4.96	19.00	14.04	15.50	No
	9/24/2011	PZ-13	7.61	19.50	11.89	--	
	9/24/2011	PZ-12	5.31	19.00	13.69	15.50	No
	10/29/2011	PZ-13	6.85	19.50	12.65	--	
	10/29/2011	PZ-12	5.45	19.00	13.55	15.50	No
	11/26/2011	PZ-13	4.98	19.50	14.52	--	
	11/26/2011	PZ-12	4.05	19.00	14.95	15.50	No
	12/26/2011	PZ-13	6.87	19.50	12.63	--	
	12/26/2011	PZ-12	5.27	19.00	13.73	15.50	No
	1/28/2012	PZ-13	4.60	19.50	14.90	--	
	1/28/2012	PZ-12	3.55	19.00	15.45	15.50	No
	2/26/2012	PZ-13	5.77	19.50	13.73	--	
	2/26/2012	PZ-12	3.95	19.00	15.05	15.50	No
	3/7/2012	PZ-13	6.64	19.50	12.86	--	
	3/7/2012	PZ-12	4.20	19.00	14.80	15.50	No
	4/21/2012	PZ-13	6.15	19.50	13.35	--	
	4/21/2012	PZ-12	4.09	19.00	14.91	15.50	No
	5/19/2012	PZ-13	6.83	19.50	12.67	--	
	5/19/2012	PZ-12	4.32	19.00	14.68	15.50	No
	6/30/2012	PZ-13	6.89	19.50	12.61	--	
	6/30/2012	PZ-12	4.12	19.00	14.88	15.50	No
	7/27/2012	PZ-13	7.15	19.50	12.35	--	
	7/27/2012	PZ-12	4.05	19.00	14.95	15.50	No
	8/12/2012	PZ-13	7.29	19.50	12.21	--	
	8/12/2012	PZ-12	3.93	19.00	15.07	15.50	No
	9/30/2012	PZ-13	7.22	19.50	12.28	--	
	9/30/2012	PZ-12	3.97	19.00	15.03	15.50	No
	10/24/2012	PZ-13	6.81	19.50	12.69	--	
	10/24/2012	PZ-12	4.13	19.00	14.87	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	11/24/2012	PZ-13	5.04	19.50	14.46	--	
	11/24/2012	PZ-12	3.52	19.00	15.48	15.50	No
	12/30/2012	PZ-13	5.15	19.50	14.35	--	
	12/30/2012	PZ-12	3.56	19.00	15.44	15.50	No
	1/25/2013	PZ-13	6.57	19.50	12.93	--	
	1/25/2013	PZ-12	4.11	19.00	14.89	15.50	No
	2/9/2013	PZ-13	6.68	19.50	12.82	--	
	2/9/2013	PZ-12	4.38	19.00	14.62	15.50	No
	3/31/2013	PZ-13	6.85	19.50	12.65	--	
	3/31/2013	PZ-12	NA	19.00	NA	15.50	--
	4/29/2013	PZ-13	6.90	19.50	12.60	--	
	4/29/2013	PZ-12	NA	19.00	NA	15.50	No
	5/31/2013	PZ-13	6.96	19.50	12.54	--	
	5/31/2013	PZ-12	5.09	19.00	13.91	15.50	No
	6/9/2013	PZ-13	7.17	19.50	12.33	--	
	6/9/2013	PZ-12	5.16	19.00	13.84	15.50	No
	7/21/2013	PZ-13	7.07	19.50	12.43	--	
	7/21/2013	PZ-12	5.47	19.00	13.53	15.50	No
	8/29/2013	PZ-13	7.37	19.50	12.13	--	
	8/29/2013	PZ-12	5.76	19.00	13.24	15.50	No
	9/21/2013	PZ-13	7.00	19.50	12.50	--	
	9/21/2013	PZ-12	5.71	19.00	13.29	15.50	No
	10/6/2013	PZ-13	5.69	19.50	13.81	--	
	10/6/2013	PZ-12	4.85	19.00	14.15	15.50	No
	11/10/2013	PZ-13	6.67	19.50	12.83	--	
	11/10/2013	PZ-12	5.69	19.00	13.31	15.50	No
	12/15/2013	PZ-13	7.05	19.50	12.45	--	
	12/15/2013	PZ-12	5.90	19.00	13.10	15.50	No
	1/5/2014	PZ-13	7.03	19.50	12.47	--	
	1/5/2014	PZ-12	6.05	19.00	12.95	15.50	No
	2/1/2014	PZ-13	6.53	19.50	12.97	--	
	2/1/2014	PZ-12	5.69	19.00	13.31	15.50	No
	3/1/2014	PZ-13	5.59	19.50	13.91	--	
	3/1/2014	PZ-12	5.03	19.00	13.97	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	4/6/2014	PZ-13	6.08	19.50	13.42	--	
	4/6/2014	PZ-12	4.90	19.00	14.10	15.50	No
	5/17/2014	PZ-13	6.49	19.50	13.01	--	
	5/17/2014	PZ-12	4.88	19.00	14.12	15.50	No
	6/22/2014	PZ-13	7.19	19.50	12.31	--	
	6/22/2014	PZ-12	5.41	19.00	13.59	15.50	No
	7/5/2014	PZ-13	7.34	19.50	12.16	--	
	7/5/2014	PZ-12	5.57	19.00	13.43	15.50	No
	8/12/2014	PZ-13	7.19	19.50	12.31	--	
	8/12/2014	PZ-12	5.97	19.00	13.03	15.50	No
	9/23/2014	PZ-13	7.32	19.50	12.18	--	
	9/23/2014	PZ-12	6.20	19.00	12.80	15.50	No
	10/11/2014	PZ-13	6.83	19.50	12.67	--	--
	10/11/2014	PZ-12	6.20	19.00	12.80	15.50	No
	11/9/2014	PZ-13	5.79	19.50	13.71	--	--
	11/9/2014	PZ-12	5.71	19.00	13.29	15.50	No
	12/7/2014	PZ-13	5.93	19.50	13.57	--	--
	12/7/2014	PZ-12	5.56	19.00	13.44	15.50	No
	1/3/2015	PZ-13	6.17	19.50	13.33	--	--
	1/3/2015	PZ-12	5.34	19.00	13.66	15.50	No
	2/14/2015	PZ-13	5.90	19.50	13.60	--	--
	2/14/2015	PZ-12	5.05	19.00	13.95	15.50	No
	3/9/2015	PZ-13	7.01	19.50	12.49	--	--
	3/9/2015	PZ-12	5.46	19.00	13.54	15.50	No
2	11/8/2006	PZ-17	7.58	20.48	12.90	--	
	11/8/2006	LW-3	5.62	20.36	14.74	15.50	No
	12/31/2006	PZ-17	6.98	20.48	13.50	--	
	12/31/2006	LW-3	4.97	20.36	15.39	15.50	No
	3/2/2007	PZ-17	6.94	20.48	13.54	--	
	3/2/2007	LW-3	4.97	20.36	15.39	15.50	No
	3/31/2007	PZ-17	6.87	20.48	13.61	--	
	3/31/2007	LW-3	4.79	20.36	15.57	15.50	Yes

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	4/23/2007	PZ-17	7.05	20.48	13.43	--	
	4/23/2007	LW-3	4.84	20.36	15.52	15.50	Yes
	5/28/2007	PZ-17	7.31	20.48	13.17	--	
	5/28/2007	LW-3	5.43	20.36	14.93	15.50	No
	6/30/2007	PZ-17	7.48	20.48	13.00	--	
	6/30/2007	LW-3	5.35	20.36	15.01	15.50	No
	8/1/2007	PZ-17	7.73	20.48	12.75	--	
	8/1/2007	LW-3	5.78	20.36	14.58	15.50	No
	9/29/2007	PZ-17	7.83	20.48	12.65	--	
	9/29/2007	LW-3	6.38	20.36	13.98	15.50	No
	11/22/2007	PZ-17	7.89	20.48	12.59	--	
	11/22/2007	LW-3	6.18	20.36	14.18	15.50	No
	1/26/2008	PZ-17	6.87	20.48	13.61	--	
	1/26/2008	LW-3	4.70	20.36	15.66	15.50	Yes
	2/28/2008	PZ-17	6.69	20.48	13.79	--	
	2/28/2008	LW-3	4.47	20.36	15.89	15.50	Yes
	3/19/2008	PZ-17	6.84	20.48	13.64	--	
	3/19/2008	LW-3	4.58	20.36	15.78	15.50	Yes
	4/28/2008	PZ-17	7.13	20.48	13.35	--	
	4/28/2008	LW-3	4.63	20.36	15.73	15.50	Yes
	5/31/2008	PZ-17	7.68	20.48	12.80	--	
	5/31/2008	LW-3	5.34	20.36	15.02	15.50	No
	6/30/2008	PZ-17	7.57	20.48	12.91	--	
	6/30/2008	LW-3	5.54	20.36	14.82	15.50	No
	7/12/2008	PZ-17	7.63	20.48	12.85	--	
	7/12/2008	LW-3	5.70	20.36	14.66	15.50	No
	8/28/2008	PZ-17	7.91	20.48	12.57	--	
	8/28/2008	LW-3	5.31	20.36	15.05	15.50	No
	9/20/2008	PZ-17	7.99	20.48	12.49	--	
	9/20/2008	LW-3	6.37	20.36	13.99	15.50	No
	10/12/2008	PZ-17	8.21	20.48	12.27	--	
	10/12/2008	LW-3	6.59	20.36	13.77	15.50	No
	11/30/2008	PZ-17	8.01	20.48	12.47	--	
	11/30/2008	LW-3	5.73	20.36	14.63	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	12/31/2008	PZ-17	7.95	20.48		12.53	--	
	12/31/2008	LW-3	NM	20.36		--	15.50	--
	1/31/2009	PZ-17	7.77	20.48		12.71	--	
	1/31/2009	LW-3	5.07	20.03	(c)	14.96	15.50	No
	2/23/2009	PZ-17	7.71	20.48		12.77	--	
	2/23/2009	LW-3	5.58	20.03	(c)	14.45	15.50	No
	3/29/2009	PZ-17	NM	20.48		--	--	
	3/29/2009	LW-3	6.62	20.03	(c)	13.41	15.50	--
	4/18/2009	PZ-17	7.73	20.48		12.75	--	
	4/18/2009	LW-3	6.63	20.03	(c)	13.40	15.50	No
	5/16/2009	PZ-17	7.60	20.48		12.88	--	
	5/16/2009	LW-3	5.05	20.03	(c)	14.98	15.50	No
	6/21/2009	PZ-17	7.61	20.48		12.87	--	
	6/21/2009	LW-3	7.28	20.03	(c)	12.75	15.50	No
	7/20/2009	PZ-17	7.79	20.48		12.69	--	
	7/20/2009	LW-3	6.07	20.03	(c)	13.96	15.50	No
	8/10/2009	PZ-17	7.86	20.48		12.62	--	
	8/10/2009	LW-3	6.55	20.03	(c)	13.48	15.50	No
	9/7/2009	PZ-17	8.04	20.48		12.44	--	
	9/7/2009	LW-3	6.69	20.03	(c)	13.34	15.50	No
	10/10/2009	PZ-17	8.13	20.48		12.35	--	
	10/10/2009	LW-3	7.01	20.03	(c)	13.02	15.50	No
	11/28/2009	PZ-17	7.77	20.48		12.71	--	
	11/28/2009	LW-3	7.26	20.03	(c)	12.77	15.50	No
	12/31/2009	PZ-17	7.61	20.48		12.87	--	
	12/31/2009	LW-3	7.06	20.03	(c)	12.97	15.50	No
	1/14/2010	PZ-17	7.46	20.48		13.02	--	
	1/14/2010	LW-3	6.81	20.03	(c)	13.22	15.50	No
	2/21/2010	PZ-17	7.17	20.48		13.31	--	
	2/21/2010	LW-3	6.94	20.03	(c)	13.09	15.50	No
	3/17/2010	PZ-17	7.22	20.48		13.26	--	
	3/17/2010	LW-3	6.37	20.03	(c)	13.66	15.50	--
	4/25/2010	PZ-17	7.04	20.48		13.44	--	
	4/25/2010	LW-3	6.18	20.03	(c)	13.85	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	5/16/2010	PZ-17	7.14	20.48		13.34	--	
	5/16/2010	LW-3	6.22	20.03	(c)	13.81	15.50	No
	6/26/2010	PZ-17	7.21	20.48		13.27	--	
	6/26/2010	LW-3	6.87	20.03	(c)	13.16	15.50	No
	7/23/2010	PZ-17	7.35	20.48		13.13	--	
	7/23/2010	LW-3	6.26	20.03	(c)	13.77	15.50	No
	8/30/2010	PZ-17	7.61	20.48		12.87	--	
	8/30/2010	LW-3	NA	19.83	(c)	NA	15.50	NA
	9/30/2010	PZ-17	7.64	20.48		12.84	--	
	9/30/2010	LW-3	6.63	19.83	(c)	13.20	15.50	No
	10/18/2010	PZ-17	7.76	20.48		12.72	--	
	10/18/2010	LW-3	5.90	19.83	(c)	13.93	15.50	No
	11/29/2010	PZ-17	7.50	20.48		12.98	--	
	11/29/2010	LW-3	NA	19.83	(c)	NA	15.50	NA
	12/25/2010	PZ-17	7.00	20.48		13.48	--	
	12/25/2010	LW-3	6.63	19.83	(c)	13.20	15.50	No
	1/29/2011	PZ-17	7.00	20.48		13.48	--	
	1/29/2011	LW-3	6.13	19.83	(c)	13.70	15.50	No
	2/20/2011	PZ-17	7.02	20.48		13.46	--	
	2/20/2011	LW-3	5.96	19.83	(c)	13.87	15.50	No
	3/24/2011	PZ-17	6.55	20.48		13.93	--	
	3/24/2011	LW-3	5.72	19.83	(c)	14.11	15.50	No
	4/23/2011	PZ-17	6.54	20.48		13.94	--	
	4/23/2011	LW-3	6.04	19.83	(c)	13.79	15.50	No
	5/30/2011	PZ-17	6.70	20.48		13.78	--	
	5/30/2011	LW-3	5.79	19.83	(c)	14.04	15.50	No
	6/26/2011	PZ-17	6.95	20.48		13.53	--	
	6/26/2011	LW-3	6.16	19.83	(c)	13.67	15.50	No
	7/30/2011	PZ-17	7.16	20.48		13.32	--	
	7/30/2011	LW-3	5.30	19.83	(c)	14.53	15.50	No
	8/8/2011	PZ-17	7.24	20.48		13.24	--	
	8/8/2011	LW-3	5.51	19.83	(c)	14.32	15.50	No
	9/24/2011	PZ-17	7.45	20.48		13.03	--	
	9/24/2011	LW-3	5.85	19.83	(c)	13.98	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	10/29/2011	PZ-17	7.63	20.48		12.85	--	
	10/29/2011	LW-3	5.98	19.83	(c)	13.85	15.50	No
	11/26/2011	PZ-17	7.04	20.48		13.44	--	
	11/26/2011	LW-3	6.83	19.83	(c)	13.00	15.50	No
	12/26/2011	PZ-17	7.63	20.48		12.85	--	
	12/26/2011	LW-3	6.10	19.83	(c)	13.73	15.50	No
	1/28/2012	PZ-17	7.14	20.48		13.34	--	
	1/28/2012	LW-3	5.18	19.83	(c)	14.65	15.50	No
	2/26/2012	PZ-17	7.09	20.48		13.39	--	
	2/26/2012	LW-3	4.70	19.83	(c)	15.13	15.50	No
	3/7/2012	PZ-17	7.22	20.48		13.26	--	
	3/7/2012	LW-3	5.17	19.83	(c)	14.66	15.50	No
	4/21/2012	PZ-17	6.72	20.48		13.76	--	
	4/21/2012	LW-3	5.63	19.83	(c)	14.20	15.50	No
	5/19/2012	PZ-17	6.88	20.48		13.60	--	
	5/19/2012	LW-3	5.12	19.83	(c)	14.71	15.50	No
	6/30/2012	PZ-17	7.08	20.48		13.40	--	
	6/30/2012	LW-3	NA	19.83	(c)	NA	15.50	NA
	7/27/2012	PZ-17	7.20	20.48		13.28	--	
	7/27/2012	LW-3	NA	19.83	(c)	NA	15.50	NA
	8/12/2012	PZ-17	7.21	20.48		13.27	--	
	8/12/2012	LW-3	5.22	19.83	(c)	14.61	15.50	No
	9/30/2012	PZ-17	7.57	20.48		12.91	--	
	9/30/2012	LW-3	NA	19.83	(c)	NA	15.50	NA
	10/24/2012	PZ-17	7.62	20.48		12.86	--	
	10/24/2012	LW-3	4.06	19.83	(c)	15.77	15.50	Yes
	11/24/2012	PZ-17	7.21	20.48		13.27	--	
	11/24/2012	LW-3	5.88	19.83	(c)	13.95	15.50	No
	12/30/2012	PZ-17	6.64	20.48		13.84	--	
	12/30/2012	LW-3	5.51	19.83	(c)	14.32	15.50	No
	1/25/2013	PZ-17	6.79	20.48		13.69	--	
	1/25/2013	LW-3	5.61	19.83	(c)	14.22	15.50	No
	2/9/2013	PZ-17	7.02	20.48		13.46	--	
	2/9/2013	LW-3	5.80	19.83	(c)	14.03	15.50	No

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CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	3/31/2013	PZ-17	7.07	20.48		13.41	--	
	3/31/2013	LW-3	5.81	19.83	(c)	14.02	15.50	No
	4/29/2013	PZ-17	7.13	20.48		13.35	--	
	4/29/2013	LW-3	6.01	19.83		13.82	15.50	No
	5/31/2013	PZ-17	NA	20.48		NA	--	
	5/31/2013	LW-3	6.24	19.83		13.59	15.50	No
	6/9/2013	PZ-17	7.23	20.48		13.25	--	
	6/9/2013	LW-3	6.18	19.83		13.65	15.50	No
	7/21/2013	PZ-17	7.31	20.48		13.17	--	
	7/21/2013	LW-3	6.26	19.83		13.57	15.50	No
	8/29/2013	PZ-17	7.52	20.48		12.96	--	
	8/29/2013	LW-3	6.35	19.83		13.48	15.50	No
	9/21/2013	PZ-17	7.52	20.48		12.96	--	
	9/21/2013	LW-3	6.44	19.83		13.39	15.50	No
	10/6/2013	PZ-17	7.17	20.48		13.31	--	
	10/6/2013	LW-3	6.37	19.83		13.46	15.50	No
	11/10/2013	PZ-17	7.49	20.48		12.99	--	
	11/10/2013	LW-3	6.30	19.83		13.53	15.50	No
	12/15/2013	PZ-17	7.71	20.48		12.77	--	
	12/15/2013	LW-3	6.54	19.83		13.29	15.50	No
	1/5/2014	PZ-17	7.76	20.48		12.72	--	
	1/5/2014	LW-3	6.54	19.83		13.29	15.50	No
	2/1/2014	PZ-17	7.62	20.48		12.86	--	
	2/1/2014	LW-3	6.42	19.83		13.41	15.50	No
	3/1/2014	PZ-17	7.20	20.48		13.28	--	
	3/1/2014	LW-3	6.18	19.83		13.65	15.50	No
	4/6/2014	PZ-17	6.88	20.48		13.60	--	
	4/6/2014	LW-3	5.95	19.83		13.88	15.50	No
	5/17/2014	PZ-17	6.55	20.48		13.93	--	
	5/17/2014	LW-3	4.98	19.83		14.85	15.50	No
	6/22/2014	PZ-17	NA	20.48		NA	--	
	6/22/2014	LW-3	6.12	19.83		13.71	15.50	NA
	7/5/2014	PZ-17	7.96	20.48		12.52	--	

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CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	7/5/2014	LW-3	6.14	19.83	13.69	15.50	No
	8/12/2014	PZ-17	9.11	20.48	11.37	--	
	8/12/2014	LW-3	6.53	19.83	13.30	15.50	No
	9/23/2014	PZ-17	9.38	20.48	11.10	--	
	9/23/2014	LW-3	6.71	19.83	13.12	15.50	No
	10/11/2014	PZ-17	8.77	20.48	11.71	--	--
	10/11/2014	LW-3	7.03	19.83	12.80	15.50	No
	11/9/2014	PZ-17	7.87	20.48	12.61	--	--
	11/10/2014	LW-3	6.73	19.83	13.10	15.50	No
	12/7/2014	PZ-17	7.77	20.48	12.71	--	--
	12/7/2014	LW-3	6.46	19.83	13.37	15.50	No
	1/3/2015	PZ-17	7.96	20.48	12.52	--	--
	1/3/2015	LW-3	6.36	19.83	13.47	15.50	No
	2/14/2015	PZ-17	8.04	20.48	12.44	--	--
	2/14/2015	LW-3	6.07	19.83	13.76	15.50	No
	3/9/2015	PZ-17	8.51	20.48	11.97	--	--
	3/9/2015	LW-3	6.07	19.83	13.76	15.50	No
3	11/8/2006	PZ-18	6.31	21.20	14.89	--	
	11/8/2006	LW-4R	7.73	22.02	14.29	15.50	No
	12/31/2006	PZ-18	7.95	21.20	13.25	--	
	12/31/2006	LW-4R	6.77	22.02	15.25	15.50	No
	3/2/2007	PZ-18	7.28	21.20	13.92	--	
	3/2/2007	LW-4R	4.91	22.02	17.11	15.50	Yes
	3/31/2007	PZ-18	9.47	21.20	11.73	--	
	3/31/2007	LW-4R	6.07	22.02	15.95	15.50	Yes
	4/23/2007	PZ-18	4.31	21.20	16.89	--	

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CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	4/23/2007	LW-4R	5.32	22.02	16.70	15.50	Yes
	5/28/2007	PZ-18	9.82	21.20	11.38	--	
	5/28/2007	LW-4R	8.12	22.02	13.90	15.50	No
	6/30/2007	PZ-18	8.85	21.20	12.35	--	
	6/30/2007	LW-4R	6.07	22.02	15.95	15.50	Yes
	8/1/2007	PZ-18	5.16	21.20	16.04	--	
	8/1/2007	LW-4R	5.21	22.02	16.81	15.50	Yes
	9/29/2007	PZ-18	4.84	21.20	16.36	--	
	9/29/2007	LW-4R	5.66	22.02	16.36	15.50	Yes
	11/22/2007	PZ-18	5.87	21.20	15.33	--	
	11/22/2007	LW-4R	6.25	22.02	15.77	15.50	Yes
	1/26/2008	PZ-18	6.42	21.20	14.78	--	
	1/26/2008	LW-4R	4.74	22.02	17.28	15.50	Yes
	2/28/2008	PZ-18	6.86	21.20	14.34	--	
	2/28/2008	LW-4R	4.92	22.02	17.10	15.50	Yes
	3/19/2008	PZ-18	7.58	21.20	13.62	--	
	3/19/2008	LW-4R	7.70	22.02	14.32	15.50	No
	4/28/2008	PZ-18	6.72	21.20	14.48	--	
	4/28/2008	LW-4R	4.85	22.02	17.17	15.50	Yes
	5/31/2008	PZ-18	7.46	21.20	13.74	--	
	5/31/2008	LW-4R	5.26	22.02	16.76	15.50	Yes
	6/30/2008	PZ-18	7.44	21.20	16.36	--	
	6/30/2008	LW-4R	5.24	22.02	16.36	15.50	Yes
	7/12/2008	PZ-18	6.52	21.20	14.68	--	
	7/12/2008	LW-4R	5.33	22.02	16.69	15.50	Yes
	8/28/2008	PZ-18	6.55	21.20	14.65	--	
	8/28/2008	LW-4R	5.67	22.02	16.35	15.50	Yes
	9/20/2008	PZ-18	6.53	21.20	14.67	--	
	9/20/2008	LW-4R	5.63	22.02	16.39	15.50	Yes
	10/12/2008	PZ-18	7.83	21.20	13.37	--	
	10/12/2008	LW-4R	6.11	22.02	15.91	15.50	Yes
	11/30/2008	PZ-18	6.52	21.20	14.68	--	
	11/30/2008	LW-4R	6.18	22.02	15.84	15.50	Yes
	12/31/2008	PZ-18	7.01	21.20	14.19	--	

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CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	12/31/2008	LW-4R	6.44	22.02	15.58	15.50	Yes
	1/31/2009	PZ-18	6.46	21.20	14.74	--	
	1/31/2009	LW-4R	6.17	22.02	15.85	15.50	Yes
	2/23/2009	PZ-18	6.26	21.20	14.94	--	
	2/23/2009	LW-4R	6.35	22.02	15.67	15.50	Yes
	3/29/2009	PZ-18	6.29	21.20	14.91	--	
	3/29/2009	LW-4R	6.42	22.02	15.60	15.50	Yes
	4/18/2009	PZ-18	6.28	21.20	14.92	--	
	4/18/2009	LW-4R	6.35	22.02	15.67	15.50	Yes
	5/16/2009	PZ-18	6.21	21.20	14.99	--	
	5/16/2009	LW-4R	6.18	22.02	15.84	15.50	Yes
	6/21/2009	PZ-18	6.66	21.20	14.54	--	
	6/21/2009	LW-4R	6.23	22.02	15.79	15.50	Yes
	7/20/2009	PZ-18	9.93	21.20	11.27	--	
	7/20/2009	LW-4R	5.81	22.02	16.21	15.50	Yes
	8/10/2009	PZ-18	6.55	21.20	14.65	--	
	8/10/2009	LW-4R	7.47	22.02	14.55	15.50	No
	9/7/2009	PZ-18	8.77	21.20	12.43	--	
	9/7/2009	LW-4R	6.10	22.02	15.92	15.50	Yes
	10/10/2009	PZ-18	6.88	21.20	14.32	--	
	10/10/2009	LW-4R	6.09	22.02	15.93	15.50	Yes
	11/28/2009	PZ-18	9.25	21.20	11.95	--	
	11/28/2009	LW-4R	7.31	22.02	14.71	15.50	No
	12/31/2009	PZ-18	7.61	21.20	13.59	--	
	12/31/2009	LW-4R	NM	22.02	--	15.50	--
	1/14/2010	PZ-18	9.21	21.20	11.99	--	
	1/14/2010	LW-4R	7.46	22.02	14.56	15.50	No
	2/21/2010	PZ-18	6.50	21.20	14.70	--	
	2/21/2010	LW-4R	6.66	22.02	15.36	15.50	No
	3/17/2010	PZ-18	6.40	21.20	14.80	--	
	3/17/2010	LW-4R	7.07	22.02	14.95	15.50	No
	4/25/2010	PZ-18	9.57	21.20	11.63	--	
	4/25/2010	LW-4R	NA	22.02	NA	15.50	NA
	5/16/2010	PZ-18	NA	21.20	NA	--	

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CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	5/16/2010	LW-4R	6.30	22.02	15.72	15.50	NA
	6/26/2010	PZ-18	9.35	21.20	11.85	--	
	6/26/2010	LW-4R	6.68	22.02	15.34	15.50	No
	7/23/2010	PZ-18	9.62	21.20	11.58	--	
	7/23/2010	LW-4R	6.73	22.02	15.29	15.50	No
	8/30/2010	PZ-18	9.43	21.20	11.77	--	
	8/30/2010	LW-4R	6.57	22.02	15.45	15.50	No
	9/30/2010	PZ-18	8.62	21.20	12.58	--	
	9/30/2010	LW-4R	6.24	22.02	15.78	15.50	Yes
	10/18/2010	PZ-18	7.37	21.20	13.83	--	
	10/18/2010	LW-4R	6.36	22.02	15.66	15.50	Yes
	11/29/2010	PZ-18	9.77	21.20	11.43	--	
	11/29/2010	LW-4R	7.06	22.02	14.96	15.50	No
	12/25/2010	PZ-18	NA	21.20	NA	--	
	12/25/2010	LW-4R	7.11	22.02	14.91	15.50	NA
	1/29/2011	PZ-18	10.14	21.20	11.06	--	
	1/29/2011	LW-4R	NA	22.02	NA	15.50	NA
	2/20/2011	PZ-18	9.44	21.20	11.76	--	
	2/20/2011	LW-4R	NA	22.02	NA	15.50	NA
	3/24/2011	PZ-18	10.24	21.20	10.96	--	
	3/24/2011	LW-4R	6.45	22.02	15.57	15.50	Yes
	4/23/2011	PZ-18	9.44	21.20	11.76	--	
	4/23/2011	LW-4R	6.62	22.02	15.40	15.50	No
	5/30/2011	PZ-18	6.86	21.20	14.34	--	
	5/30/2011	LW-4R	6.37	22.02	15.65	15.50	Yes
	6/26/2011	PZ-18	6.01	21.20	15.19	--	
	6/26/2011	LW-4R	NA	22.02	NA	15.50	NA
	7/30/2011	PZ-18	6.43	21.20	14.77	--	
	7/30/2011	LW-4R	6.91	22.02	15.11	15.50	No
	8/8/2011	PZ-18	6.11	21.20	15.09	--	
	8/8/2011	LW-4R	6.56	22.02	15.46	15.50	No
	9/24/2011	PZ-18	NA	21.20	NA	--	
	9/24/2011	LW-4R	6.75	22.02	15.27	15.50	NA
	10/29/2011	PZ-18	NA	21.20	NA	--	

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CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	10/29/2011	LW-4R	NA	22.02	NA	15.50	NA
	11/26/2011	PZ-18	NA	21.20	NA	--	
	11/26/2011	LW-4R	NA	22.02	NA	15.50	NA
	12/26/2011	PZ-18	7.21	21.20	13.99	--	
	12/26/2011	LW-4R	NA	22.02	NA	15.50	NA
	1/28/2012	PZ-18	5.91	21.20	15.29	--	
	1/28/2012	LW-4R	8.35	22.02	13.67	15.50	No
	2/26/2012	PZ-18	NA	21.20	NA	--	
	2/26/2012	LW-4R	NA	22.02	NA	15.50	NA
	3/7/2012	PZ-18	6.34	21.20	14.86	--	
	3/7/2012	LW-4R	8.40	22.02	13.62	15.50	No
	4/21/2012	PZ-18	NA	21.20	NA	--	
	4/21/2012	LW-4R	8.16	22.02	13.86	15.50	NA
	5/19/2012	PZ-18	NA	21.20	NA	--	
	5/19/2012	LW-4R	8.02	22.02	14.00	15.50	NA
	6/30/2012	PZ-18	9.62	21.2	11.58	--	
	6/30/2012	LW-4R	NA	22.02	NA	15.50	NA
	7/27/2012	PZ-18	9.62	21.2	11.58	--	
	7/27/2012	LW-4R	6.95	22.02	15.07	15.50	No
	8/12/2012	PZ-18	9.78	21.20	11.42	--	
	8/12/2012	LW-4R	NA	22.02	NA	15.50	NA
	9/30/2012	PZ-18	NA	21.20	NA	--	
	9/30/2012	LW-4R	NA	22.02	NA	15.50	NA
	10/24/2012	PZ-18	6.90	21.20	14.30	--	
	10/24/2012	LW-4R	6.99	22.02	15.03	15.50	No
	11/24/2012	PZ-18	NA	21.20	NA	--	
	11/24/2012	LW-4R	NA	22.02	NA	15.50	NA
	12/30/2012	PZ-18	8.03	21.2	13.17	--	
	12/30/2012	LW-4R	NA	22.02	NA	15.50	NA
	1/25/2013	PZ-18	7.25	21.2	13.95	--	
	1/25/2013	LW-4R	7.82	22.02	14.20	15.50	No
	2/9/2013	PZ-18	8.34	21.2	12.86	--	
	2/9/2013	LW-4R	8.26	22.02	13.76	15.50	No

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CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	3/31/2013	PZ-18	NA	21.2	NA	--	
	3/31/2013	LW-4R	8.26	22.02	13.76	15.50	No
	4/29/2013	PZ-18	NA	21.2	NA	--	
	4/29/2013	LW-4R	8.37	22.02	13.65	15.50	No
	5/31/2013	PZ-18	NA	21.2	NA	--	
	5/31/2013	LW-4R	8.53	22.02	13.49	15.50	No
	6/9/2013	PZ-18	10.11	21.2	11.09	--	
	6/9/2013	LW-4R	NA	22.02	NA	15.50	No
	7/21/2013	PZ-18	NA	21.2	NA	--	
	7/21/2013	LW-4R	NA	22.02	NA	15.50	No
	8/29/2013	PZ-18	8.91	21.2	12.29	--	
	8/29/2013	LW-4R	6.57	22.02	15.45	15.50	No
	9/21/2013	PZ-18	9.30	21.2	11.90	--	
	9/21/2013	LW-4R	6.97	22.02	15.05	15.50	No
	10/6/2013	PZ-18	8.04	21.2	13.16	--	
	10/6/2013	LW-4R	NA	22.02	NA	15.50	NA
	11/10/2013	PZ-18	8.40	21.2	12.80	--	
	11/10/2013	LW-4R	7.28	22.02	14.74	15.50	No
	12/15/2013	PZ-18	8.26	21.2	12.94	--	
	12/15/2013	LW-4R	7.72	22.02	14.30	15.50	No
	1/5/2014	PZ-18	10.28	21.2	10.92	--	
	1/5/2014	LW-4R	7.87	22.02	14.15	15.50	No
	2/1/2014	PZ-18	NA	21.2	NA	--	NA
	2/1/2014	LW-4R	7.81	22.02	14.21	15.50	No
	3/1/2014	PZ-18	10.11	21.2	11.09	--	
	3/1/2014	LW-4R	7.39	22.02	14.63	15.50	No
	4/6/2014	PZ-18	10.11	21.2	11.09	--	
	4/6/2014	LW-4R	7.39	22.02	14.63	15.50	No
	5/17/2014	PZ-18	7.53	21.2	NA	--	
	5/17/2014	LW-4R	6.61	22.02	15.41	15.50	NA
	6/22/2014	PZ-18	NA	21.2	#VALUE!	--	
	6/22/2014	LW-4R	7.35	22.02	14.67	15.50	No
	7/5/2014	PZ-18	10.29	21.2	10.91	--	
	7/5/2014	LW-4R	6.92	22.02	15.10	15.50	No

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CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	8/12/2014	PZ-18	6.25	21.2	14.95	--	
	8/12/2014	LW-4R	6.56	22.02	15.46	15.50	No
	9/23/2014	PZ-18	7.23	21.2	13.97	--	
	9/23/2014	LW-4R	6.65	22.02	15.37	15.50	No
	10/11/2014	PZ-18	9.74	21.2	11.46	--	--
	10/11/2014	LW-4R	6.68	22.02	15.34	15.50	No
	11/9/2014	PZ-18	7.86	21.2	13.34	--	--
	11/9/2014	LW-4R	6.9	22.02	15.12	15.50	No
	12/7/2014	PZ-18	7.84	21.2	13.36	--	--
	12/7/2014	LW-4R	NA	22.02	NA	15.50	NA
	1/3/2015	PZ-18	7.75	21.2	13.45	--	--
	1/3/2015	LW-4R	7.16	22.02	14.86	15.50	No
	2/14/2015	PZ-18	7.81	21.2	13.39	--	--
	2/14/2015	LW-4R	7.4	22.02	14.62	15.50	No
	3/9/2015	PZ-18	7.73	21.2	13.47	--	--
	3/9/2015	LW-4R	6.89	22.02	15.13	15.50	No
4	11/8/2006	PZ-19	12.64	23.67	11.03	--	
	11/8/2006	MW-02S	12.71	30.47	17.76	15.50	Yes
	12/31/2006	PZ-19	11.22	23.67	12.45	--	
	12/31/2006	MW-02S	11.96	30.47	18.51	15.50	Yes
	3/2/2007	PZ-19	13.81	23.67	9.86	--	
	3/2/2007	MW-02S	13.04	30.47	17.43	15.50	Yes
	3/31/2007	PZ-19	14.79	23.67	8.88	--	
	3/31/2007	MW-02S	12.93	30.47	17.54	15.50	Yes
	4/23/2007	PZ-19	12.72	23.67	10.95	--	
	4/23/2007	MW-02S	14.42	30.47	16.05	15.50	Yes
	5/28/2007	PZ-19	16.43	23.67	7.24	--	
	5/28/2007	MW-02S	15.51	30.47	14.96	15.50	No
	6/30/2007	PZ-19	16.80	23.67	6.87	--	
	6/30/2007	MW-02S	15.92	30.47	14.55	15.50	No
	8/1/2007	PZ-19	14.85	23.67	8.82	--	
	8/1/2007	MW-02S	16.02	30.47	14.45	15.50	No
	9/29/2007	PZ-19	14.17	23.67	9.50	--	

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CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	9/29/2007	MW-02S	16.89	30.47	13.58	15.50	No
	11/22/2007	PZ-19	13.95	23.67	9.72	--	
	11/22/2007	MW-02S	15.13	30.47	15.34	15.50	No
	1/26/2008	PZ-19	12.86	23.67	10.81	--	
	1/26/2008	MW-02S	13.68	30.47	16.79	15.50	Yes
	2/28/2008	PZ-19	14.95	23.67	8.72	--	
	2/28/2008	MW-02S	13.56	30.47	16.91	15.50	Yes
	3/19/2008	PZ-19	13.33	23.67	10.34	--	
	3/19/2008	MW-02S	13.92	30.47	16.55	15.50	Yes
	4/28/2008	PZ-19	14.03	23.67	9.64	--	
	4/28/2008	MW-02S	14.54	30.47	15.93	15.50	Yes
	5/31/2008	PZ-19	14.13	23.67	9.54	--	
	5/31/2008	MW-02S	15.12	30.47	15.35	15.50	No
	6/30/2008	PZ-19	13.22	23.67	9.50	--	
	6/30/2008	MW-02S	15.60	30.47	13.58	15.50	No
	7/12/2008	PZ-19	16.34	23.67	7.33	--	
	7/12/2008	MW-02S	15.73	30.47	14.74	15.50	No
	8/28/2008	PZ-19	15.77	23.67	7.90	--	
	8/28/2008	MW-02S	16.43	30.47	14.04	15.50	No
	9/20/2008	PZ-19	13.78	23.67	9.89	--	
	9/20/2008	MW-02S	NM	30.47	--	15.50	--
	10/12/2008	PZ-19	14.42	23.67	9.25	--	
	10/12/2008	MW-02S	NM	30.47	--	15.50	--
	11/30/2008	PZ-19	13.42	23.67	10.25	--	
	11/30/2008	MW-02S	NM	30.47	--	15.50	--
	12/31/2008	PZ-19	12.70	23.67	10.97	--	
	12/31/2008	MW-02S	NM	30.47	--	15.50	--
	1/31/2009	PZ-19	15.00	23.67	8.67	--	
	1/31/2009	MW-02S	16.81	32.46	15.65	15.50	Yes
	2/23/2009	PZ-19	13.63	23.67	10.04	--	
	2/23/2009	MW-02S	17.22	32.46	15.24	15.50	No
	3/29/2009	PZ-19	16.13	23.67	7.54	--	
	3/29/2009	MW-02S	17.20	32.46	15.26	15.50	No
	4/18/2009	PZ-19	14.78	23.67	8.89	--	

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CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	4/18/2009	MW-02S	17.13	32.46	15.33	15.50	No
	5/16/2009	PZ-19	14.16	23.67	9.51	--	
	5/16/2009	MW-02S	16.79	32.46	15.67	15.50	Yes
	6/21/2009	PZ-19	14.53	23.67	9.14	--	
	6/21/2009	MW-02S	17.65	32.46	14.81	15.50	No
	7/20/2009	PZ-19	12.42	23.67	11.25	--	
	7/20/2009	MW-02S	18.00	32.46	14.46	15.50	No
	8/10/2009	PZ-19	13.47	23.67	10.20	--	
	8/10/2009	MW-02S	18.37	32.46	14.09	15.50	No
	9/7/2009	PZ-19	13.74	23.67	9.93	--	
	9/7/2009	MW-02S	18.85	32.46	13.61	15.50	No
	10/10/2009	PZ-19	13.67	23.67	10.00	--	
	10/10/2009	MW-02S	19.26	32.46	13.20	15.50	No
	11/28/2009	PZ-19	14.26	23.67	9.41	--	
	11/28/2009	MW-02S	18.17	32.46	14.29	15.50	No
	12/31/2009	PZ-19	11.39	23.67	12.28	--	
	12/31/2009	MW-02S	18.02	32.46	14.44	15.50	No
	1/14/2010	PZ-19	11.61	23.67	12.06	--	
	1/14/2010	MW-02S	17.27	32.46	15.19	15.50	No
	2/21/2010	PZ-19	11.51	23.67	12.16	--	
	2/21/2010	MW-02S	16.79	32.46	15.67	15.50	Yes
	3/17/2010	PZ-19	14.65	23.67	9.02	--	
	3/17/2010	MW-02S	16.39	32.46	16.07	15.50	Yes
	4/25/2010	PZ-19	13.67	23.67	10.00	--	
	4/25/2010	MW-02S	17.23	32.46	15.23	15.50	No
	5/16/2010	PZ-19	16.69	23.67	6.98	--	
	5/16/2010	MW-02S	17.59	32.46	14.87	15.50	No
	6/26/2010	PZ-19	13.67	23.67	10.00	--	
	6/26/2010	MW-02S	18.16	32.46	14.30	15.50	No
	7/23/2010	PZ-19	16.86	23.67	6.81	--	
	7/23/2010	MW-02S	18.51	32.46	13.95	15.50	No
	8/30/2010	PZ-19	14.23	23.67	9.44	--	
	8/30/2010	MW-02S	18.04	32.46	14.42	15.50	No
	9/30/2010	PZ-19	13.67	23.67	10.00	--	

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CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
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Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	9/30/2010	MW-02S	17.27	32.46		15.19	15.50	No
	10/18/2010	PZ-19	15.84	23.67		7.83	--	
	10/18/2010	MW-02S	17.72	32.46		14.74	15.50	No
	11/29/2010	PZ-19	12.89	23.67		10.78	--	
	11/29/2010	MW-02S	17.13	32.46		15.33	15.50	No
	12/25/2010	PZ-19	10.81	23.67		12.86	--	
	12/25/2010	MW-02S	15.90	32.46		16.56	15.50	Yes
	1/29/2011	PZ-19	11.97	23.67		11.70	--	
	1/29/2011	MW-02S	16.18	32.46		16.28	15.50	Yes
	2/20/2011	PZ-19	15.01	23.67		8.66	--	
	2/20/2011	MW-02S	16.99	32.46		15.47	15.50	No
	3/24/2011	PZ-19	10.93	23.67		12.74	--	
	3/24/2011	MW-02S	15.15	32.46		17.31	15.50	Yes
	4/23/2011	PZ-19	15.81	23.67		7.86	--	
	4/23/2011	MW-02S	15.62	32.46		16.84	15.50	Yes
	5/30/2011	PZ-19	15.07	23.67		8.60	--	
	5/30/2011	MW-02S	16.23	32.46		16.23	15.50	Yes
	6/26/2011	PZ-19	13.87	23.67		9.80	--	
	6/26/2011	MW-02S	16.88	32.46		15.58	15.50	Yes
	7/30/2011	PZ-19	15.93	23.67		7.74	--	
	7/30/2011	MW-02S	17.08	32.46		15.38	15.50	No
	8/8/2011	PZ-19	16.19	23.67		7.48	--	
	8/8/2011	MW-02S	17.26	32.46		15.20	15.50	No
	9/24/2011	PZ-19	15.34	23.67		8.33	--	
	9/24/2011	MW-02S	17.52	31.96	(e)	14.44	15.50	No
	10/29/2011	PZ-19	13.66	23.67		10.01	--	
	10/29/2011	MW-02S	17.77	31.96	(e)	14.19	15.50	No
	11/26/2011	PZ-19	11.91	23.67		11.76	--	
	11/26/2011	MW-02S	16.08	31.96	(e)	15.88	15.50	Yes
	12/26/2011	PZ-19	13.50	23.67		10.17	--	
	12/26/2011	MW-02S	17.45	31.96	(e)	14.51	15.50	No
	1/28/2012	PZ-19	12.50	23.67		11.17	--	
	1/28/2012	MW-02S	15.33	31.96	(e)	16.63	15.50	Yes

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CUMULATIVE GROUNDWATER ELEVATIONS
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Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	2/26/2012	PZ-19	15.09	23.67		8.58	--	
	2/26/2012	MW-02S	15.75	31.96	(e)	16.21	15.50	Yes
	3/7/2012	PZ-19	14.88	23.67		8.79	--	
	3/7/2012	MW-02S	16.28	31.96	(e)	15.68	15.50	Yes
	4/21/2012	PZ-19	15.35	23.67		8.32	--	
	4/21/2012	MW-02S	15.85	31.96	(e)	16.11	15.50	Yes
	5/19/2012	PZ-19	13.37	23.67		10.30	--	
	5/19/2012	MW-02S	16.37	31.96	(e)	15.59	15.50	Yes
	6/30/2012	PZ-19	14.11	23.67		9.56	--	
	6/30/2012	MW-02S	16.13	31.96	(e)	15.83	15.50	Yes
	7/27/2012	PZ-19	14.18	23.67		9.49	--	
	7/27/2012	MW-02S	16.02	31.96	(e)	15.94	15.50	Yes
	8/12/2012	PZ-19	14.71	23.67		8.96	--	
	8/12/2012	MW-02S	15.80	31.96	(e)	16.16	15.50	Yes
	9/30/2012	PZ-19	14.64	23.67		9.03	--	
	9/30/2012	MW-02S	16.09	31.96	(e)	15.87	15.50	Yes
	10/24/2012	PZ-19	15.59	23.67		8.08	--	
	10/24/2012	MW-02S	16.50	31.96	(e)	15.46	15.50	No
	11/24/2012	PZ-19	12.3	23.67		11.37	--	
	11/24/2012	MW-02S	14.72	31.96	(e)	17.24	15.50	Yes
	12/30/2012	PZ-19	13.21	23.67		10.46	--	
	12/30/2012	MW-02S	15.19	31.96	(e)	16.77	15.50	Yes
	1/25/2013	PZ-19	12.46	23.67		11.21	--	
	1/25/2013	MW-02S	16.61	31.96	(e)	15.35	15.50	No
	2/9/2013	PZ-19	12.81	23.67		10.86	--	
	2/9/2013	MW-02S	16.57	31.96	(e)	15.39	15.50	No
	3/31/2013	PZ-19	15.91	23.67		7.76	--	
	3/31/2013	MW-02S	16.57	31.96	(e)	15.39	15.50	No
	4/29/2013	PZ-19	16.38	23.67		7.29	--	
	4/29/2013	MW-02S	16.71	31.96		15.25	15.50	No
	5/31/2013	PZ-19	16.38	23.67		7.29	--	
	5/31/2013	MW-02S	17.48	31.96		14.48	15.50	No
	6/9/2013	PZ-19	16.24	23.67		7.43	--	
	6/9/2013	MW-02S	17.48	31.96		14.48	15.50	No

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Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	7/21/2013	PZ-19	15.27	23.67	8.40	--	
	7/21/2013	MW-02S	18.11	31.96	13.85	15.50	No
	8/29/2013	PZ-19	15.83	23.67	7.84	--	
	8/29/2013	MW-02S	17.89	31.96	14.07	15.50	No
	9/21/2013	PZ-19	14.94	23.67	8.73	--	
	9/21/2013	MW-02S	17.63	31.96	14.33	15.50	No
	10/6/2013	PZ-19	14.58	23.67	9.09	--	
	10/6/2013	MW-02S	16.03	31.96	15.93	15.50	Yes
	11/10/2013	PZ-19	12.74	23.67	10.93	--	
	11/10/2013	MW-02S	17.11	31.96	14.85	15.50	No
	12/15/2013	PZ-19	13.08	23.67	10.59	--	
	12/15/2013	MW-02S	17.50	31.96	14.46	15.50	No
	1/5/2014	PZ-19	14.24	23.67	9.43	--	
	1/5/2014	MW-02S	17.67	31.96	14.29	15.50	No
	2/1/2014	PZ-19	14.13	23.67	9.54	--	
	2/1/2014	MW-02S	17.21	31.96	14.75	15.50	No
	3/1/2014	PZ-19	13.53	23.67	10.14	--	
	3/1/2014	MW-02S	15.96	31.96	16.00	15.50	Yes
	4/6/2014	PZ-19	13.46	23.67	10.21	--	
	4/6/2014	MW-02S	16.15	31.96	15.81	15.50	Yes
	5/17/2014	PZ-19	15.88	23.67	7.79	--	
	5/17/2014	MW-02S	16.14	31.96	15.82	15.50	Yes
	6/22/2014	PZ-19	14.82	23.67	8.85	--	
	6/22/2014	MW-02S	16.94	31.96	15.02	15.50	No
	7/5/2014	PZ-19	14.13	23.67	9.54	--	
	7/5/2014	MW-02S	17.16	31.96	14.80	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	8/12/2014	PZ-19	15.96	23.67	7.71	--	
	8/12/2014	MW-02S	17.39	31.96	14.57	15.50	No
	9/23/2014	PZ-19	13.34	23.67	10.33	--	
	9/23/2014	MW-02S	17.69	31.96	14.27	15.50	No
	10/11/2014	PZ-19	13.57	23.67	10.10	--	--
	10/11/2014	MW-02S	17.84	31.96	14.12	15.50	No
	11/9/2014	PZ-19	13.31	23.67	10.36	--	--
	11/9/2014	MW-02S	16.84	31.96	15.12	15.50	No
	12/7/2014	PZ-19	12.72	23.67	10.95	--	--
	12/7/2014	MW-02S	16.71	31.96	15.25	15.50	No
	1/3/2015	PZ-19	11.98	23.67	11.69	--	--
	1/3/2015	MW-02S	16.46	31.96	15.50	15.50	Yes
	2/14/2015	PZ-19	12.33	23.67	11.34	--	--
	2/14/2015	MW-02S	16.02	31.96	15.94	15.50	Yes
	3/9/2015	PZ-19	12.81	23.67	10.86	--	--
	3/9/2015	MW-02S	16.71	31.96	15.25	15.50	No
5	11/8/2006	MW-02S	12.74	30.47	17.76	--	
	11/8/2006	MW-02D	18.24	31.79	13.55	--	
	12/31/2006	MW-02S	11.96	30.47	18.51	--	
	12/31/2006	MW-02D	16.29	31.79	15.50	--	
	3/2/2007	MW-02S	13.04	30.47	17.43	--	
	3/2/2007	MW-02D	19.51	31.79	12.28	--	
	3/31/2007	MW-02S	12.93	30.47	17.54	--	
	3/31/2007	MW-02D	20.11	31.79	11.68	--	
	4/23/2007	MW-02S	14.42	30.47	16.05	--	
	4/23/2007	MW-02D	17.72	31.79	14.07	--	
	5/28/2007	MW-02S	15.51	30.47	14.96	--	
	5/28/2007	MW-02D	20.60	31.79	11.19	--	
	6/30/2007	MW-02S	15.92	30.47	14.55	--	
	6/30/2007	MW-02D	22.15	31.79	9.64	--	
	8/1/2007	MW-02S	16.02	30.47	14.45	--	
	8/1/2007	MW-02D	21.70	31.79	10.09	--	
	9/29/2007	MW-02S	16.89	30.47	13.58	--	
	9/29/2007	MW-02D	19.82	31.79	11.97	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
							--	
	11/22/2007	MW-02S	15.13	30.47		15.34	--	
	11/22/2007	MW-02D	17.61	31.79		14.18	--	
	1/26/2008	MW-02S	13.68	30.47		16.79	--	
	1/26/2008	MW-02D	18.57	31.79		13.22	--	
	2/28/2008	MW-02S	13.56	30.47		16.91	--	
	2/28/2008	MW-02D	21.25	31.79		10.54	--	
	3/19/2008	MW-02S	13.92	30.47		16.55	--	
	3/19/2008	MW-02D	17.87	31.79		13.92	--	
	4/28/2008	MW-02S	14.54	30.47		15.93	--	
	4/28/2008	MW-02D	19.45	31.79		12.34	--	
	5/31/2008	MW-02S	15.12	30.47		15.35	--	
	5/31/2008	MW-02D	19.16	31.79		12.63	--	
	6/30/2008	MW-02S	15.60	30.47		13.58	--	
	6/30/2008	MW-02D	17.79	31.79		11.97	--	
							--	
	7/12/2008	MW-02S	15.73	30.47		14.74	--	
	7/12/2008	MW-02D	20.75	31.79		11.04	--	
	8/28/2008	MW-02S	16.43	30.47		14.04	--	
	8/28/2008	MW-02D	22.24	31.79		9.55	--	
	9/20/2008	MW-02S	NM	30.47		--	--	
	9/20/2008	MW-02D	NM	31.79		--	--	
	10/12/2008	MW-02S	NM	30.47		--	--	
	10/12/2008	MW-02D	NM	31.79		--	--	
	11/30/2008	MW-02S	NM	30.47		--	--	
	11/30/2008	MW-02D	NM	31.79		--	--	
	12/31/2008	MW-02S	NM	30.47		--	--	
	12/31/2008	MW-02D	NM	31.79		--	--	
	1/31/2009	MW-02S	16.81	32.46	(d)	15.65	--	
	1/31/2009	MW-02D	21.38	31.90	(d)	10.52	--	
	2/23/2009	MW-02S	17.22	32.46		15.24	--	
	2/23/2009	MW-02D	18.30	31.90		13.60	--	
	3/29/2009	MW-02S	17.20	32.46		15.26	--	
	3/29/2009	MW-02D	20.02	31.90		11.88	--	
	4/18/2009	MW-02S	17.13	32.46		15.33	--	
	4/18/2009	MW-02D	19.96	31.90		11.94	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	5/16/2009	MW-02S	16.79	32.46	15.67	--	
	5/16/2009	MW-02D	19.43	31.90	12.47	--	
	6/21/2009	MW-02S	17.65	32.46	14.81	--	
	6/21/2009	MW-02D	17.62	31.90	14.28	--	
	7/20/2009	MW-02S	18.00	32.46	14.46	--	
	7/20/2009	MW-02D	18.25	31.90	13.65	--	
	8/10/2009	MW-02S	18.37	32.46	14.09	--	
	8/10/2009	MW-02D	17.91	31.90	13.99	--	
	9/7/2009	MW-02S	18.85	32.46	13.61	--	
	9/7/2009	MW-02D	19.53	31.90	12.37	--	
	10/10/2009	MW-02S	19.26	32.46	13.20	--	
	10/10/2009	MW-02D	18.87	31.90	13.03	--	
	11/28/2009	MW-02S	18.17	32.46	14.29	--	
	11/28/2009	MW-02D	18.98	31.90	12.92	--	
	12/31/2009	MW-02S	18.02	32.46	14.44	--	
	12/31/2009	MW-02D	15.98	31.90	15.92	--	
	1/14/2010	MW-02S	17.27	32.46	15.19	--	
	1/14/2010	MW-02D	17.30	31.90	14.60	--	
	2/21/2010	MW-02S	16.79	32.46	15.67	--	
	2/21/2010	MW-02D	16.63	31.90	15.27	--	
	3/17/2010	MW-02S	16.39	32.46	16.07	--	
	3/17/2010	MW-02D	18.12	31.90	13.78	--	
	4/25/2010	MW-02S	17.23	32.46	15.23	--	
	4/25/2010	MW-02D	18.31	31.90	13.59	--	
	5/16/2010	MW-02S	17.59	32.46	14.87	--	
	5/16/2010	MW-02D	20.96	31.90	10.94	--	
	6/26/2010	MW-02S	18.16	32.46	14.30	--	
	6/26/2010	MW-02D	20.48	31.90	11.42	--	
	7/23/2010	MW-02S	18.51	32.46	13.95	--	
	7/23/2010	MW-02D	21.13	31.90	10.77	--	
	8/30/2010	MW-02S	18.04	32.46	14.42	--	
	8/30/2010	MW-02D	18.14	31.90	13.76	--	
	9/30/2010	MW-02S	17.27	32.46	15.19	--	
	9/30/2010	MW-02D	18.48	31.90	13.42	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	10/18/2010	MW-02S	17.72	32.46		14.74	--	
	10/18/2010	MW-02D	21.20	31.90		10.70	--	
	11/29/2010	MW-02S	17.13	32.46		15.33	--	
	11/29/2010	MW-02D	16.71	31.90		15.19	--	
	12/25/2010	MW-02S	15.90	32.46		16.56	--	
	12/25/2010	MW-02D	15.44	31.90		16.46	--	
	1/29/2011	MW-02S	16.18	32.46		16.28	--	
	1/29/2011	MW-02D	17.61	31.90		14.29	--	
	2/20/2011	MW-02S	16.99	32.46		15.47	--	
	2/20/2011	MW-02D	19.95	31.90		11.95	--	
	3/24/2011	MW-02S	15.15	32.46		17.31	--	
	3/24/2011	MW-02D	15.34	31.90		16.56	--	
	4/23/2011	MW-02S	15.62	32.46		16.84	--	
	4/23/2011	MW-02D	21.73	31.90		10.17	--	
	5/30/2011	MW-02S	16.23	32.46		16.23	--	
	5/30/2011	MW-02D	21.58	31.90		10.32	--	
	6/26/2011	MW-02S	16.88	32.46		15.58	--	
	6/26/2011	MW-02D	18.31	31.90		13.59	--	
	7/30/2011	MW-02S	17.08	32.46		15.38	--	
	7/30/2011	MW-02D	22.39	31.90		9.51	--	
	8/8/2011	MW-02S	17.26	32.46		15.20	--	
	8/8/2011	MW-02D	21.40	31.90		10.50	--	
	9/24/2011	MW-02S	17.52	31.96	(e)	14.44	--	
	9/24/2011	MW-02D	21.44	31.81	(e)	10.37	--	
	10/29/2011	MW-02S	17.77	31.96	(e)	14.19	--	
	10/29/2011	MW-02D	17.73	31.81	(e)	14.08	--	
	11/26/2011	MW-02S	16.08	31.96	(e)	15.88	--	
	11/26/2011	MW-02D	16.43	31.81	(e)	15.38	--	
	12/26/2011	MW-02S	17.45	31.96	(e)	14.51	--	
	12/26/2011	MW-02D	19.26	31.81	(e)	12.55	--	
	1/28/2012	MW-02S	15.33	31.96	(e)	16.63	--	
	1/28/2012	MW-02D	16.61	31.81	(e)	15.20	--	
	2/26/2012	MW-02S	15.75	31.96	(e)	16.21	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	2/26/2012	MW-02D	21.30	31.81	(e)	10.51	--	
	3/7/2012	MW-02S	16.28	31.96	(e)	15.68	--	
	3/7/2012	MW-02D	20.75	31.81	(e)	11.06	--	
	4/21/2012	MW-02S	15.85	31.96	(e)	16.11	--	
	4/21/2012	MW-02D	19.86	31.81	(e)	11.95	--	
	5/19/2012	MW-02S	16.37	31.96	(e)	15.59	--	
	5/19/2012	MW-02D	20.17	31.81	(e)	11.64	--	
	6/30/2012	MW-02S	16.13	31.96	(e)	15.83	--	
	6/30/2012	MW-02D	17.29	31.81	(e)	14.52	--	
	7/27/2012	MW-02S	16.02	31.96	(e)	15.94	--	
	7/27/2012	MW-02D	18.81	31.81	(e)	13.00	--	
	8/12/2012	MW-02S	15.80	31.96	(e)	16.16	--	
	8/12/2012	MW-02D	17.99	31.81	(e)	13.82	--	
	9/30/2012	MW-02S	16.09	31.96	(e)	15.87	--	
	9/30/2012	MW-02D	17.80	31.81	(e)	14.01	--	
	10/24/2012	MW-02S	16.50	31.96	(e)	15.46	--	
	10/24/2012	MW-02D	20.12	31.81	(e)	11.69	--	
	11/24/2012	MW-02S	14.72	31.96	(e)	17.24	--	
	11/24/2012	MW-02D	16.49	31.81	(e)	15.32	--	
	12/30/2012	MW-02S	15.19	31.96	(e)	16.77	--	
	12/30/2012	MW-02D	17.87	31.81	(e)	13.94	--	
	1/25/2013	MW-02S	16.61	31.96	(e)	15.35	--	
	1/25/2013	MW-02D	16.00	31.81	(e)	15.81	--	
	2/9/2013	MW-02S	16.57	31.96	(e)	15.39	--	
	2/9/2013	MW-02D	16.54	31.81	(e)	15.27	--	
	3/31/2013	MW-02S	16.57	31.96	(e)	15.39	--	
	3/31/2013	MW-02D	21.87	31.81	(e)	9.94	--	
	4/29/2013	MW-02S	16.71	31.96		15.25	--	
	4/29/2013	MW-02D	20.14	31.81		11.67	--	
	5/31/2013	MW-02S	17.48	31.96		14.48	--	
	5/31/2013	MW-02D	20.56	31.81		11.25	--	
	6/9/2013	MW-02S	17.48	31.96		14.48	--	
	6/9/2013	MW-02D	21.93	31.81		9.88	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	7/21/2013	MW-02S	18.11	31.96	13.85	--	
	7/21/2013	MW-02D	17.62	31.81	14.19	--	
	8/29/2013	MW-02S	17.89	31.96	14.07	--	
	8/29/2013	MW-02D	20.27	31.81	11.54	--	
	9/21/2013	MW-02S	17.63	31.96	14.33	--	
	9/21/2013	MW-02D	19.31	31.81	12.50	--	
	10/6/2013	MW-02S	16.03	31.96	15.93	--	
	10/6/2013	MW-02D	18.53	31.81	13.28	--	
	11/10/2013	MW-02S	17.11	31.96	14.85	--	
	11/10/2013	MW-02D	17.69	31.81	14.12	--	
	12/15/2013	MW-02S	17.50	31.96	14.46	--	
	12/15/2013	MW-02D	17.11	31.81	14.70	--	
	1/5/2014	MW-02S	17.67	31.96	14.29	--	
	1/5/2014	MW-02D	20.33	31.81	11.48	--	
	2/1/2014	MW-02S	17.21	31.96	14.75	--	
	2/1/2014	MW-02D	18.08	31.81	13.73	--	
	3/1/2014	MW-02S	15.96	31.96	16.00	--	
	3/1/2014	MW-02D	17.19	31.81	14.62	--	
	4/6/2014	MW-02S	16.15	31.96	15.81	--	
	4/6/2014	MW-02D	19.32	31.81	12.49	--	
	5/17/2014	MW-02S	16.14	31.96	15.82	--	
	5/17/2014	MW-02D	19.21	31.81	12.60	--	
	6/22/2014	MW-02S	16.94	31.96	15.02	--	
	6/22/2014	MW-02D	18.15	31.81	13.66	--	
	7/5/2014	MW-02S	17.16	31.96	14.80	--	
	7/5/2014	MW-02D	18.99	31.81	12.82	--	
	8/12/2014	MW-02S	17.39	31.96	14.57	--	
	8/12/2014	MW-02D	21.06	31.81	10.75	--	
	9/23/2014	MW-02S	17.69	31.96	14.27	--	
	9/23/2014	MW-02D	19.11	31.81	12.70	--	
	10/11/2014	MW-02S	17.84	31.96	14.12	--	
	10/11/2014	MW-02D	19.21	31.81	12.60	--	
	11/9/2014	MW-02S	16.84	31.96	15.12	--	
	11/9/2014	MW-02D	18.71	31.81	13.10	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	12/7/2014	MW-02S	16.71	31.96	15.25	--	
	12/7/2014	MW-02D	17.29	31.81	14.52	--	
	1/3/2015	MW-02S	16.46	31.96	15.50	--	
	1/3/2015	MW-02D	16.3	31.81	15.51	--	
	2/14/2015	MW-02S	16.02	31.96	15.94	--	
	2/14/2015	MW-02D	18.19	31.81	13.62	--	
	3/9/2015	MW-02S	16.71	31.96	15.25	--	
	3/9/2015	MW-02D	17.39	31.81	14.42	--	
6	11/8/2006	MW-01S	7.51	21.64	14.13	--	
	11/8/2006	MW-01D	7.94	21.87	13.93	--	
	12/31/2006	MW-01S	5.59	21.64	16.05	--	
	12/31/2006	MW-01D	6.78	21.87	15.09	--	
	3/2/2007	MW-01S	5.81	21.64	15.83	--	
	3/2/2007	MW-01D	8.92	21.87	12.95	--	
	3/31/2007	MW-01S	5.71	21.64	15.93	--	
	3/31/2007	MW-01D	9.51	21.87	12.36	--	
	4/23/2007	MW-01S	6.17	21.64	15.47	--	
	4/23/2007	MW-01D	7.89	21.87	13.98	--	
	5/28/2007	MW-01S	6.78	21.64	14.86	--	
	5/28/2007	MW-01D	11.02	21.87	10.85	--	
	6/30/2007	MW-01S	7.12	21.64	14.52	--	
	6/30/2007	MW-01D	11.74	21.87	10.13	--	
	8/1/2007	MW-01S	7.29	21.64	14.35	--	
	8/1/2007	MW-01D	9.57	21.87	12.30	--	
	9/29/2007	MW-01S	8.03	21.64	13.61	--	
	9/29/2007	MW-01D	8.83	21.87	13.04	--	
	11/22/2007	MW-01S	7.79	21.64	13.85	--	
	11/22/2007	MW-01D	8.89	21.87	12.98	--	
	1/26/2008	MW-01S	7.69	21.64	13.95	--	
	1/26/2008	MW-01D	5.63	21.87	16.24	--	
	2/28/2008	MW-01S	5.41	21.64	16.23	--	
	2/28/2008	MW-01D	9.87	21.87	12.00	--	
	3/19/2008	MW-01S	5.76	21.64	15.88	--	
	3/19/2008	MW-01D	9.62	21.87	12.25	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	4/28/2008	MW-01S	6.06	21.64	15.58	--	
	4/28/2008	MW-01D	8.65	21.87	13.22	--	
	5/31/2008	MW-01S	6.53	21.64	15.11	--	
	5/31/2008	MW-01D	8.72	21.87	13.15	--	
	6/30/2008	MW-01S	6.74	21.64	13.61	--	
	6/30/2008	MW-01D	7.94	21.87	13.04	--	
	7/12/2008	MW-01S	6.92	21.64	14.72	--	
	7/12/2008	MW-01D	10.94	21.87	10.93	--	
	8/28/2008	MW-01S	7.62	21.64	14.02	--	
	8/28/2008	MW-01D	11.03	21.87	10.84	--	
	9/20/2008	MW-01S	7.75	21.64	13.89	--	
	9/20/2008	MW-01D	8.58	21.87	13.29	--	
	10/12/2008	MW-01S	7.76	21.64	13.88	--	
	10/12/2008	MW-01D	8.59	21.87	13.28	--	
	11/30/2008	MW-01S	6.93	21.64	14.71	--	
	11/30/2008	MW-01D	8.44	21.87	13.43	--	
	12/31/2008	MW-01S	6.86	21.64	14.78	--	
	12/31/2008	MW-01D	7.81	21.87	14.06	--	
	1/31/2009	MW-01S	6.54	21.64	15.10	--	
	1/31/2009	MW-01D	9.94	21.87	11.93	--	
	2/23/2009	MW-01S	6.73	21.64	14.91	--	
	2/23/2009	MW-01D	9.27	21.87	12.60	--	
	3/29/2009	MW-01S	6.67	21.64	14.97	--	
	3/29/2009	MW-01D	11.20	21.87	10.67	--	
	4/18/2009	MW-01S	6.61	21.64	15.03	--	
	4/18/2009	MW-01D	10.30	21.87	11.57	--	
	5/16/2009	MW-01S	6.34	21.64	15.30	--	
	5/16/2009	MW-01D	9.21	21.87	12.66	--	
	6/21/2009	MW-01S	6.81	21.64	14.83	--	
	6/21/2009	MW-01D	8.52	21.87	13.35	--	
	7/20/2009	MW-01S	7.21	21.64	14.43	--	
	7/20/2009	MW-01D	7.12	21.87	14.75	--	
	8/10/2009	MW-01S	7.40	21.64	14.24	--	
	8/10/2009	MW-01D	8.36	21.87	13.51	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	9/7/2009	MW-01S	7.79	21.64	13.85	--	
	9/7/2009	MW-01D	9.28	21.87	12.59	--	
	10/10/2009	MW-01S	8.19	21.64	13.45	--	
	10/10/2009	MW-01D	8.67	21.87	13.20	--	
	11/28/2009	MW-01S	7.48	21.64	14.16	--	
	11/28/2009	MW-01D	8.76	21.87	13.11	--	
	12/31/2009	MW-01S	7.22	21.64	14.42	--	
	12/31/2009	MW-01D	6.35	21.87	15.52	--	
	1/14/2010	MW-01S	6.96	21.64	14.68	--	
	1/14/2010	MW-01D	6.94	21.87	14.93	--	
	2/21/2010	MW-01S	6.41	21.64	15.23	--	
	2/21/2010	MW-01D	7.15	21.87	14.72	--	
	3/17/2010	MW-01S	6.28	21.64	15.36	--	
	3/17/2010	MW-01D	8.24	21.87	13.63	--	
	4/25/2010	MW-01S	6.31	21.64	15.33	--	
	4/25/2010	MW-01D	8.61	21.87	13.26	--	
	5/16/2010	MW-01S	6.52	21.64	15.12	--	
	5/16/2010	MW-01D	10.69	21.87	11.18	--	
	6/26/2010	MW-01S	6.84	21.64	14.80	--	
	6/26/2010	MW-01D	10.04	21.87	11.83	--	
	7/23/2010	MW-01S	7.03	21.64	14.61	--	
	7/23/2010	MW-01D	10.75	21.87	11.12	--	
	8/30/2010	MW-01S	7.48	21.64	14.16	--	
	8/30/2010	MW-01D	8.82	21.87	13.05	--	
	9/30/2010	MW-01S	7.26	21.64	14.38	--	
	9/30/2010	MW-01D	8.00	21.87	13.87	--	
	10/18/2010	MW-01S	7.24	21.64	14.40	--	
	10/18/2010	MW-01D	12.53	21.87	9.34	--	
	11/29/2010	MW-01S	6.84	21.64	14.80	--	
	11/29/2010	MW-01D	9.66	21.87	12.21	--	
	12/25/2010	MW-01S	6.54	21.64	15.10	--	
	12/25/2010	MW-01D	6.41	21.87	15.46	--	
	1/29/2011	MW-01S	6.49	21.64	15.15	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	1/29/2011	MW-01D	7.72	21.87		14.15	--	
	2/20/2011	MW-01S	6.48	21.64		15.16	--	
	2/20/2011	MW-01D	9.40	21.87		12.47	--	
	3/24/2011	MW-01S	5.86	21.64		15.78	--	
	3/24/2011	MW-01D	5.93	21.87		15.94	--	
	4/23/2011	MW-01S	5.98	21.64		15.66	--	
	4/23/2011	MW-01D	10.67	21.87		11.20	--	
	5/30/2011	MW-01S	6.53	21.64		15.11	--	
	5/30/2011	MW-01D	10.63	21.87		11.24	--	
	6/26/2011	MW-01S	7.01	21.64		14.63	--	
	6/26/2011	MW-01D	8.44	21.87		13.43	--	
	7/30/2011	MW-01S	7.13	21.64		14.51	--	
	7/30/2011	MW-01D	10.85	21.87		11.02	--	
	8/8/2011	MW-01S	7.20	21.64		14.44	--	
	8/8/2011	MW-01D	10.94	21.87		10.93	--	
	9/24/2011	MW-01S	7.51	21.64		14.13	--	
	9/24/2011	MW-01D	10.65	21.87		11.22	--	
	10/29/2011	MW-01S	7.74	21.64		13.90	--	
	10/29/2011	MW-01D	7.90	21.87		13.97	--	
	11/26/2011	MW-01S	7.30	21.64		14.34	--	
	11/26/2011	MW-01D	6.53	21.87		15.34	--	
	12/26/2011	MW-01S	7.62	21.64		14.02	--	
	12/26/2011	MW-01D	8.70	21.72	(f)	13.02	--	
	1/28/2012	MW-01S	6.41	21.64		15.23	--	
	1/28/2012	MW-01D	7.24	21.72	(f)	14.48	--	
	2/26/2012	MW-01S	6.41	21.64		15.23	--	
	2/26/2012	MW-01D	10.20	21.72	(f)	11.52	--	
	3/7/2012	MW-01S	6.66	21.64		14.98	--	
	3/7/2012	MW-01D	9.18	21.72	(f)	12.54	--	
	4/21/2012	MW-01S	6.67	21.64		14.97	--	
	4/21/2012	MW-01D	8.87	21.72	(f)	12.85	--	
	5/19/2012	MW-01S	6.63	21.64		15.01	--	
	5/19/2012	MW-01D	9.50	21.72	(f)	12.22	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	6/30/2012	MW-01S	6.33	21.64		15.31	--	
	6/30/2012	MW-01D	7.94	21.72	(f)	13.78	--	
	7/27/2012	MW-01S	6.20	21.64		15.44	--	
	7/27/2012	MW-01D	8.26	21.72	(f)	13.46	--	
	8/12/2012	MW-01S	6.04	21.64		15.60	--	
	8/12/2012	MW-01D	8.32	21.72	(f)	13.40	--	
	9/30/2012	MW-01S	6.11	21.64		15.53	--	
	9/30/2012	MW-01D	8.21	21.72	(f)	13.51	--	
	10/24/2012	MW-01S	6.49	21.64		15.15	--	
	10/24/2012	MW-01D	9.30	21.72	(f)	12.42	--	
	11/24/2012	MW-01S	5.81	21.64		15.83	--	
	11/24/2012	MW-01D	7.09	21.72	(f)	14.63	--	
	12/30/2012	MW-01S	5.85	21.64		15.79	--	
	12/30/2012	MW-01D	7.58	21.72	(f)	14.14	--	
	1/25/2013	MW-01S	6.37	21.64		15.27	--	
	1/25/2013	MW-01D	7.00	21.72	(f)	14.72	--	
	2/9/2013	MW-01S	6.71	21.64		14.93	--	
	2/9/2013	MW-01D	7.17	21.72	(f)	14.55	--	
	3/31/2013	MW-01S	6.96	21.64		14.68	--	
	3/31/2013	MW-01D	10.61	21.72	(f)	11.11	--	
	4/29/2013	MW-01S	7.15	21.64		14.49	--	
	4/29/2013	MW-01D	10.88	21.72		10.84	--	
	5/31/2013	MW-01S	7.42	21.64		14.22	--	
	5/31/2013	MW-01D	10.17	21.72		11.55	--	
	6/9/2013	MW-01S	7.47	21.64		14.17	--	
	6/9/2013	MW-01D	10.86	21.72		10.86	--	
	7/21/2013	MW-01S	7.68	21.64		13.96	--	
	7/21/2013	MW-01D	8.57	21.72		13.15	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	8/29/2013	MW-01S	7.99	21.64	13.65	--	
	8/29/2013	MW-01D	10.11	21.72	11.61	--	
	9/21/2013	MW-01S	7.89	21.64	13.75	--	
	9/21/2013	MW-01D	7.99	21.72	13.73	--	
	10/6/2013	MW-01S	7.42	21.64	14.22	--	
	10/6/2013	MW-01D	8.36	21.72	13.36	--	
	11/10/2013	MW-01S	7.77	21.64	13.87	--	
	11/10/2013	MW-01D	7.70	21.72	14.02	--	
	12/15/2013	MW-01S	7.93	21.64	13.71	--	
	12/15/2013	MW-01D	7.38	21.72	14.34	--	
	1/5/2014	MW-01S	9.42	21.64	12.22	--	
	1/5/2014	MW-01D	8.13	21.72	13.59	--	
	2/1/2014	MW-01S	7.93	21.64	13.71	--	
	2/1/2014	MW-01D	7.79	21.72	13.93	--	
	3/1/2014	MW-01S	7.37	21.64	14.27	--	
	3/1/2014	MW-01D	7.36	21.72	14.36	--	
	4/6/2014	MW-01S	7.05	21.64	14.59	--	
	4/6/2014	MW-01D	8.86	21.72	12.86	--	
	5/17/2014	MW-01S	6.95	21.64	14.69	--	
	5/17/2014	MW-01D	8.97	21.72	12.75	--	
	6/22/2014	MW-01S	7.42	21.64	14.22	--	
	6/22/2014	MW-01D	8.54	21.72	13.18	--	
	7/5/2014	MW-01S	7.62	21.64	14.02	--	
	7/5/2014	MW-01D	8.80	21.72	12.92	--	
	8/12/2014	MW-01S	7.97	21.64	13.67	--	
	8/12/2014	MW-01D	10.29	21.72	11.43	--	
	9/23/2014	MW-01S	8.25	21.64	13.39	--	
	9/23/2014	MW-01D	7.88	21.72	13.84	--	
	10/11/2014	MW-01S	8.46	21.64	13.18	--	
	10/11/2014	MW-01D	8.63	21.72	13.09	--	
	11/9/2014	MW-01S	7.86	21.64	13.78	--	
	11/9/2014	MW-01D	7.67	21.72	14.05	--	
	12/7/2014	MW-01S	7.74	21.64	13.90	--	
	12/7/2014	MW-01D	7.36	21.72	14.36	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	1/3/2015	MW-01S	7.49	21.64	14.15	--	
	1/3/2015	MW-01D	6.87	21.72	14.85	--	
	2/14/2015	MW-01S	7.2	21.64	14.44	--	
	2/14/2015	MW-01D	7.79	21.72	13.93	--	
	3/9/2015	MW-01S	7.48	21.64	14.16	--	
	3/9/2015	MW-01D	7.02	21.72	14.70	--	
							Yes
7	11/8/2006	MW-05S	12.29	29.25	16.96	16.50	--
	11/8/2006	MW-05D	14.36	28.10	13.74	--	
							No
	12/31/2006	MW-05S	11.07	29.25	18.18	16.50	--
	12/31/2006	MW-05D	11.96	28.10	16.14	--	
							No
	3/2/2007	MW-05S	12.53	29.25	16.72	16.50	--
	3/2/2007	MW-05D	16.18	28.10	11.92	--	
							No
	3/31/2007	MW-05S	12.19	29.25	17.06	16.50	--
	3/31/2007	MW-05D	16.22	28.10	11.88	--	
							No
	4/23/2007	MW-05S	13.63	29.25	15.62	16.50	--
	4/23/2007	MW-05D	13.93	28.10	14.17	--	
							No
	5/28/2007	MW-05S	15.03	29.25	14.22	16.50	--
	5/28/2007	MW-05D	16.01	28.10	12.09	--	
							No
	6/30/2007	MW-05S	15.12	29.25	14.13	16.50	--
	6/30/2007	MW-05D	17.80	28.10	10.30	--	
							--
	8/1/2007	MW-05S	15.15	29.25	14.10	16.50	--
	8/1/2007	MW-05D	18.67	28.10	9.43	--	
							--
	9/29/2007	MW-05S	16.55	29.25	12.70	16.50	--
	9/29/2007	MW-05D	16.50	28.10	11.60	--	
							--
	11/22/2007	MW-05S	15.04	29.25	14.21	16.50	--
	11/22/2007	MW-05D	12.63	28.10	15.47	--	
							--
	1/26/2008	MW-05S	13.25	29.25	16.00	16.50	--
	1/26/2008	MW-05D	15.45	28.10	12.65	--	
							No
	2/28/2008	MW-05S	12.56	29.25	16.69	16.50	--
	2/28/2008	MW-05D	17.81	28.10	10.29	--	
							No
	3/19/2008	MW-05S	13.44	29.25	15.81	16.50	--
	3/19/2008	MW-05D	17.97	28.10	10.13	--	
							No
	4/28/2008	MW-05S	13.79	29.25	15.46	16.50	--

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	4/28/2008	MW-05D	16.16	28.10		11.94	--	
								No
	5/31/2008	MW-05S	14.08	29.25		15.17	16.50	--
	5/31/2008	MW-05D	15.63	28.10		12.47	--	
								No
	6/30/2008	MW-05S	15.02	29.25		12.70	16.50	--
	6/30/2008	MW-05D	14.00	28.10		11.60	--	
								No
	7/12/2008	MW-05S	15.22	29.25		14.03	16.50	--
	7/12/2008	MW-05D	16.33	28.10		11.77	--	
								No
	8/28/2008	MW-05S	16.03	29.25		13.22	16.50	--
	8/28/2008	MW-05D	18.98	28.10		9.12	--	
								No
	9/20/2008	MW-05S	NM	29.25		--	16.50	--
	9/20/2008	MW-05D	NM	28.10		--	--	
								No
	10/12/2008	MW-05S	NM	29.25		--	16.50	--
	10/12/2008	MW-05D	NM	28.10		--	--	
								No
	11/30/2008	MW-05S	NM	29.25		--	16.50	--
	11/30/2008	MW-05D	NM	28.10		--	--	
								No
	12/31/2008	MW-05S	NM	29.25		--	16.50	--
	12/31/2008	MW-05D	NM	28.10		--	--	
								No
	1/31/2009	MW-05S	15.38	29.45	(d)	14.07	16.50	--
	1/31/2009	MW-05D	16.77	26.50	(d)	9.73	--	
								No
	2/23/2009	MW-05S	15.85	29.45	(d)	13.60	16.50	--
	2/23/2009	MW-05D	12.01	26.50	(d)	14.49	--	
								No
	3/29/2009	MW-05S	15.17	29.45	(d)	14.28	16.50	--
	3/29/2009	MW-05D	13.86	26.50	(d)	12.64	--	
								No
	4/18/2009	MW-05S	15.63	29.45	(d)	13.82	16.50	--
	4/18/2009	MW-05D	14.41	26.50	(d)	12.09	--	
								No
	5/16/2009	MW-05S	15.09	29.45	(d)	14.36	16.50	--
	5/16/2009	MW-05D	13.88	26.50	(d)	12.62	--	
								No
	6/21/2009	MW-05S	16.38	29.45	(d)	13.07	16.50	--
	6/21/2009	MW-05D	11.01	26.50	(d)	15.49	--	
								No
	7/20/2009	MW-05S	16.95	29.45	(d)	12.50	16.50	--
	7/20/2009	MW-05D	12.71	26.50	(d)	13.79	--	
								No
	8/10/2009	MW-05S	16.82	29.45	(d)	12.63	16.50	--
	8/10/2009	MW-05D	12.10	26.50	(d)	14.40	--	
								No
	9/7/2009	MW-05S	18.33	29.45	(d)	11.12	16.50	--

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	9/7/2009	MW-05D	14.02	26.50	(d)	12.48	--	
								No
	10/10/2009	MW-05S	19.16	29.45	(d)	10.29	16.50	--
	10/10/2009	MW-05D	13.31	26.50	(d)	13.19	--	
								No
	11/28/2009	MW-05S	17.31	29.45	(d)	12.14	16.50	--
	11/28/2009	MW-05D	13.14	26.50	(d)	13.36	--	
								No
	12/31/2009	MW-05S	16.66	29.45	(d)	12.79	16.50	--
	12/31/2009	MW-05D	9.69	26.50	(d)	16.81	--	
								No
	1/14/2010	MW-05S	14.89	29.45	(d)	14.56	16.50	--
	1/14/2010	MW-05D	11.81	26.50	(d)	14.69	--	
								No
	2/21/2010	MW-05S	14.71	29.45	(d)	14.74	16.50	--
	2/21/2010	MW-05D	10.63	26.50	(d)	15.87	--	
								No
	3/17/2010	MW-05S	13.53	29.45	(d)	15.92	16.50	--
	3/17/2010	MW-05D	11.63	26.50	(d)	14.87	--	
								No
	4/25/2010	MW-05S	16.11	29.45	(d)	13.34	16.50	--
	4/25/2010	MW-05D	12.26	26.50	(d)	14.24	--	
								Yes
	5/16/2010	MW-05S	16.14	29.45	(d)	13.31	16.50	--
	5/16/2010	MW-05D	14.97	26.50	(d)	11.53	--	
								No
	6/26/2010	MW-05S	17.07	29.45	(d)	12.38	16.50	--
	6/26/2010	MW-05D	15.20	26.50	(d)	11.30	--	
								No
	7/23/2010	MW-05S	17.73	29.45	(d)	11.72	16.50	--
	7/23/2010	MW-05D	15.31	26.50	(d)	11.19	--	
								No
	8/30/2010	MW-05S	15.58	29.45	(d)	13.87	16.50	--
	8/30/2010	MW-05D	12.01	26.50	(d)	14.49	--	
								No
	9/30/2010	MW-05S	14.32	29.45	(d)	15.13	16.50	--
	9/30/2010	MW-05D	12.83	26.50	(d)	13.67	--	
								No
	10/18/2010	MW-05S	15.52	29.45	(d)	13.93	16.50	--
	10/18/2010	MW-05D	15.58	26.50	(d)	10.92	--	
								No
	11/29/2010	MW-05S	15.14	29.45	(d)	14.31	16.50	--
	11/29/2010	MW-05D	10.32	26.50	(d)	16.18	--	
								Yes
	12/25/2010	MW-05S	13.03	29.45	(d)	16.42	16.50	--
	12/25/2010	MW-05D	9.02	26.50	(d)	17.48	--	
								No
	1/29/2011	MW-05S	13.29	29.45	(d)	16.16	16.50	--
	1/29/2011	MW-05D	11.80	26.50	(d)	14.70	--	
								No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	2/20/2011	MW-05S	13.22	29.45	(d)	16.23	16.50	--
	2/20/2011	MW-05D	14.33	26.50	(d)	12.17	--	
								Yes
	3/24/2011	MW-05S	13.15	29.45	(d)	16.30	16.50	--
	3/24/2011	MW-05D	9.11	26.50	(d)	17.39	--	
								No
	4/23/2011	MW-05S	12.78	29.45	(d)	16.67	16.50	--
	4/23/2011	MW-05D	16.44	26.50	(d)	10.06	--	
								Yes
	5/30/2011	MW-05S	13.40	29.45	(d)	16.05	16.50	--
	5/30/2011	MW-05D	16.18	26.50	(d)	10.32	--	
								No
	6/26/2011	MW-05S	13.94	29.45	(d)	15.51	16.50	--
	6/26/2011	MW-05D	12.31	26.50	(d)	14.19	--	
								No
	7/30/2011	MW-05S	14.08	29.45	(d)	15.37	16.50	--
	7/30/2011	MW-05D	17.13	26.50	(d)	9.37	--	
								No
	8/8/2011	MW-05S	14.27	29.45	(d)	15.18	16.50	--
	8/8/2011	MW-05D	15.50	26.50	(d)	11.00	--	
								Yes
	9/24/2011	MW-05S	14.42	29.45	(d)	15.03	16.50	--
	9/24/2011	MW-05D	16.02	26.50	(d)	10.48	--	
								No
	10/29/2011	MW-05S	14.62	29.45	(d)	14.83	16.50	--
	10/29/2011	MW-05D	11.59	26.50	(d)	14.91	--	
								No
	11/26/2011	MW-05S	12.74	29.45	(d)	16.71	16.50	--
	11/26/2011	MW-05D	10.19	26.50	(d)	16.31	--	
								Yes
	12/26/2011	MW-05S	14.43	29.45	(d)	15.02	16.50	--
	12/26/2011	MW-05D	13.68	26.50	(d)	12.82	--	
								Yes
	1/28/2012	MW-05S	13.28	29.45	(d)	16.17	16.50	--
	1/28/2012	MW-05D	10.15	26.50	(d)	16.35	--	
								Yes
	2/26/2012	MW-05S	12.81	29.45	(d)	16.64	16.50	--
	2/26/2012	MW-05D	15.87	26.50	(d)	10.63	--	
								Yes
	3/7/2012	MW-05S	13.30	29.45	(d)	16.15	16.50	--
	3/7/2012	MW-05D	15.35	26.50	(d)	11.15	--	
								No
	4/21/2012	MW-05S	12.79	29.45	(d)	16.66	16.50	--
	4/21/2012	MW-05D	12.84	26.50	(d)	13.66	--	
								No
	5/19/2012	MW-05S	13.54	29.45	(d)	15.91	16.50	--
	5/19/2012	MW-05D	14.39	26.50	(d)	12.11	--	
								No
	6/30/2012	MW-05S	13.20	29.45	(d)	16.25	16.50	--
	6/30/2012	MW-05D	10.74	26.50	(d)	15.76	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
								No
	7/27/2012	MW-05S	13.26	29.45	(d)	16.19	16.50	--
	7/27/2012	MW-05D	13.21	26.50	(d)	13.29	--	
								No
	8/12/2012	MW-05S	11.66	29.45	(d)	17.79	16.50	--
	8/12/2012	MW-05D	12.99	26.50	(d)	13.51	--	
								No
	9/30/2012	MW-05S	13.23	29.45	(d)	16.22	16.50	--
	9/30/2012	MW-05D	11.39	26.50	(d)	15.11	--	
								No
	10/24/2012	MW-05S	13.45	29.45	(d)	16.00	16.50	--
	10/24/2012	MW-05D	14.10	26.50	(d)	12.40	--	
								No
	11/24/2012	MW-05S	11.57	29.45	(d)	17.88	16.50	--
	11/24/2012	MW-05D	10.2	26.50	(d)	16.3	--	
								No
	12/30/2012	MW-05S	12.23	29.45	(d)	17.22	16.50	--
	12/30/2012	MW-05D	12.05	26.50	(d)	14.45	--	
								No
	1/25/2013	MW-05S	10.55	29.45	(d)	18.90	16.50	--
	1/25/2013	MW-05D	13.13	26.50	(d)	13.37	--	
								No
	2/9/2013	MW-05S	10.16	29.45	(d)	19.29	16.50	--
	2/9/2013	MW-05D	13.60	26.50	(d)	12.90	--	
								No
	3/31/2013	MW-05S	13.61	29.45	(d)	15.84	16.50	--
	3/31/2013	MW-05D	16.55	26.50	(d)	9.95	--	
								No
	4/29/2013	MW-05S	13.84	29.45		15.61	16.50	--
	4/29/2013	MW-05D	14.19	26.50		12.31	--	
								No
	5/31/2013	MW-05S	14.42	29.45		15.03	16.50	--
	5/31/2013	MW-05D	14.81	26.50		11.69	--	
								No
	6/9/2013	MW-05S	14.43	29.45		15.02	16.50	--
	6/9/2013	MW-05D	16.60	26.50		9.90	--	
								No
	7/21/2013	MW-05S	14.63	29.45		14.82	16.50	--
	7/21/2013	MW-05D	11.63	26.50		14.87	--	
								No
	8/29/2013	MW-05S	14.92	29.45		14.53	16.50	--
	8/29/2013	MW-05D	14.51	26.50		11.99	--	
								No
	9/21/2013	MW-05S	14.56	29.45		14.89	16.50	--
	9/21/2013	MW-05D	13.68	26.50		12.82	--	
								No
	10/6/2013	MW-05S	13.06	29.45		16.39	16.50	
	10/6/2013	MW-05D	12.61	26.50		13.89	--	
	11/10/2013	MW-05S	14.15	29.45		15.30	16.50	
	11/10/2013	MW-05D	11.59	26.50		14.91	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
	12/15/2013	MW-05S	14.61	29.45	14.84	16.50	
	12/15/2013	MW-05D	10.91	26.50	15.59	--	
	1/5/2014	MW-05S	14.91	29.45	14.54	16.50	
	1/5/2014	MW-05D	14.88	26.50	11.62	--	
	2/1/2014	MW-05S	14.37	29.45	15.08	16.50	
	2/1/2014	MW-05D	12.02	26.50	14.48	--	
	3/1/2014	MW-05S	13.03	29.45	16.42	16.50	
	3/1/2014	MW-05D	10.92	26.50	15.58	--	
	4/6/2014	MW-05S	13.39	29.45	16.06	16.50	
	4/6/2014	MW-05D	13.64	26.50	12.86	--	
	5/17/2014	MW-05S	13.34	29.45	16.11	16.50	
	5/17/2014	MW-05D	12.97	26.50	13.53	--	
	6/22/2014	MW-05S	14.12	29.45	15.33	16.50	
	6/22/2014	MW-05D	11.81	26.50	14.69	--	
	7/5/2014	MW-05S	14.35	29.45	15.10	16.50	
	7/5/2014	MW-05D	13.17	26.50	13.33	--	
	8/12/2014	MW-05S	14.52	29.45	14.93	16.50	
	8/12/2014	MW-05D	15.60	26.50	10.90	--	
	9/23/2014	MW-05S	14.79	29.45	14.66	16.50	
	9/23/2014	MW-05D	13.18	26.50	13.32	--	
	10/11/2014	MW-05S	14.98	29.45	14.47	16.50	No
	10/11/2014	MW-05D	13.23	26.50	13.27	--	--
	11/9/2014	MW-05S	13.53	29.45	15.92	16.50	No
	11/9/2014	MW-05D	13.27	26.50	13.23	--	--
	12/7/2014	MW-05S	13.87	29.45	15.58	16.50	No
	12/7/2014	MW-05D	11.53	26.50	14.97	--	--
	1/3/2015	MW-05S	13.58	29.45	15.87	16.50	No
	1/3/2015	MW-05D	10.05	26.50	16.45	--	--
	2/14/2015	MW-05S	13.16	29.45	16.29	16.50	No
	2/14/2015	MW-05D	11.99	26.50	14.51	--	--
	3/9/2015	MW-05S	13.94	29.45	15.51	16.50	No
	3/9/2015	MW-05D	10.95	26.50	15.55	--	--

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?

NM = Not measured.
NA = Not available.
MLLW = Mean low low water.
Groundwater elevations determined by subtracting depth to groundwater below top of casing (ft) from top of well casing elevation (MLLW, ft).

(a) Below top of PVC well casing.
(b) Short-term hydraulic control goal is 15.5 ft along the majority of the cutoff wall alignment and 16.5 ft adjacent to Budd Inlet.
(c) Well LW-3 casing modified and re-surveyed January 2009. On 7/28/10, the well casing at LW-3 was cut down 0.2 ft to make room for new well monument lid.
(d) Wells MW-02s, MW-02d, MW-05s, and MW-05d were modified during construction activities and re-surveyed February 2009.
(e) MW-02D and MW-02S inner north rim elevations modified in September 2011.
(f) On 12/8/11, the inner well casing was cut down at MW-01D by 0.15 ft. Outer casing cut down corresponding amount. New MW-01D measuring point elevation is 21.72 ft MLLW.

APPENDIX B

Laboratory Analytical Results

SPECTRA Laboratories
2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

7/1/2014

Port of Olympia
Chris Kimmel
915 Washington St. N.E.
Olympia, WA 98501

Project:	Cascade Pole
Client ID:	LW-3-20140611
Sample Matrix:	Water
Date Sampled:	6/11/2014
Date Received:	6/12/2014
Spectra Project:	2014060297
Spectra Number:	1

Analyte	Results	Units	Method
Diesel**	247**	µg/L	NWTPH-D
Oil	<500	µg/L	NWTPH-D
Gasoline*	189	µg/L	NWTPH-G
1-Methylnaphthalene--SIM	0.168	µg/L	SW846 8270D-SIM
2-Methylnaphthalene--SIM	<0.100	µg/L	SW846 8270D-SIM
Acenaphthene--SIM	<0.100	µg/L	SW846 8270D-SIM
Acenaphthylene--SIM	<0.100	µg/L	SW846 8270D-SIM
Anthracene--SIM	<0.100	µg/L	SW846 8270D-SIM
Benzo(a)Anthracene--SIM	<0.100	µg/L	SW846 8270D-SIM
Benzo(a)Pyrene--SIM	<0.100	µg/L	SW846 8270D-SIM
Benzo(b)Fluoranthene--SIM	<0.100	µg/L	SW846 8270D-SIM
Benzo(ghi)Perylene--SIM	<0.100	µg/L	SW846 8270D-SIM
Benzo(k)Fluoranthene--SIM	<0.100	µg/L	SW846 8270D-SIM
Chrysene--SIM	<0.100	µg/L	SW846 8270D-SIM
Dibenz(a,h)Anthracene--SIM	<0.100	µg/L	SW846 8270D-SIM
Fluoranthene--SIM	<0.100	µg/L	SW846 8270D-SIM
Fluorene--SIM	<0.100	µg/L	SW846 8270D-SIM
Indeno(1,2,3-cd)Pyrene--SIM	<0.100	µg/L	SW846 8270D-SIM
Naphthalene--SIM	0.539	µg/L	SW846 8270D-SIM
Pentachlorophenol--SIM	<0.100	µg/L	SW846 8270D-SIM
Phenanthrene--SIM	<0.100	µg/L	SW846 8270D-SIM
Pyrene--SIM	<0.100	µg/L	SW846 8270D-SIM

Surrogate	Recovery	Method
p-Terphenyl	131	NWTPH-D
Toluene-d8	110	NWTPH-G
Nitrobenzene-d6--SIM	96	SW846 8270D-SIM
p-Terphenyl-d14--SIM	90	SW846 8270D-SIM
4-Bromofluorobenzene	125	NWTPH-G
2-Fluorobiphenyl--SIM	69	SW846 8270D-SIM
2,4,6-Tribromophenol--SIM	83	SW846 8270D-SIM

*Gasoline-range organics do not appear to be true gasoline, but rather two distinct compounds: Toluene and Indane.

**Sample contains one distinct peak within the diesel range. GC Mass Spec analysis indicates the presense of retene, CAS# 483-65-8.

Pentachlorophenol result of <0.100 confirmed by Method SW 846-8041.

Sample analyzed by Method 8270-D in both scan and SIM modes for PAH's and Pentachlorophenol, as requested, to provide broad calibration range and lowest reporting limits.

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager

SPECTRA Laboratories
2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

June 27, 2014

Port of Olympia
915 Washington St. N.E.
Olympia, WA 98501

Spectra Project #	2014060297
Sample Spiked:	Method Blank
Date Extracted:	6/17/2014
Date Analyzed:	6/18/2014
Units:	ug/L
Applies to Spectra #'s:	#1

GCMS Semi-Volatile Organic Analysis Method 625/8270
Blank Spike (LCS) Results

Compound	Sample Conc.	Spike Added	MS Conc.	MS %Rec
Phenol	<2.50	75	52.6	70
2-Chlorophenol	<2.50	75	46.9	63
1,4-Dichlorobenzene	<2.50	50	25.0	50
N-Nitroso-Di-N-Propylamine	<2.50	50	41.3	83
1,2,4-Trichlorobenzene	<2.50	50	27.0	54
4-Chloro-3-Methylphenol	<2.50	75	62.3	83
Acenaphthene	<1.00	50	31.2	62
2,4-Dinitrotoluene	<2.50	50	30.5	61
4-Nitrophenol	<2.50	75	63.6	85
Pentachlorophenol	<2.50	75	51.5	69
Pyrene	<1.00	50	37.7	75

Surrogates	MS%Rec
2-Fluorophenol	72
Phenol-d5	86
Nitrobenzene-d5	96
2-Fluorobiphenyl	69
2,4,6-Tribromophenol	83
p-Terphenyl-d14	90

Steven G. Hibbs
Laboratory Manager

SPECTRA Laboratories
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June 27, 2014

Port of Olympia
915 Washington St. N.E.
Olympia, WA 98501

Project: Cascade Pole
Sample matrix: Water
Spectra Project: 2014060297
Method 625/8270-SIM

Date Extracted: 06/17/14
Date Analyzed: 06/19/14
Applies to Samples: 1
< = less than

POLYNUCLEAR AROMATIC HYDROCARBON ANALYSIS QUALITY CONTROL RESULTS

	Method Blank
Compound	Blank Result, ug/L
Naphthalene	<0.10
2-Methylnaphthalene	<0.10
1-Methylnaphthalene	<0.10
Acenaphthylene	<0.10
Acenaphthene	<0.10
Fluorene	<0.10
Phenanthrene	<0.10
Anthracene	<0.10
Fluoranthene	<0.10
Pyrene	<0.10
Benzo(a)Anthracene	<0.10
Chrysene	<0.10
Benzo(b)Fluoranthene	<0.10
Benzo(k)Fluoranthene	<0.10
Benzo(a)Pyrene	<0.10
Indeno(1,2,3-cd)Pyrene	<0.10
Dibenzo(a,h)Anthracene	<0.10
Benzo(g,h,i)Perylene	<0.10
Pentachlorophenol	<0.10
SURROGATE RECOVERIES	%Rec
Nitrobenzene-d5	100
2-Fluorobiphenyl	65
p-Terphenyl-d14	95
2,4,6-Tribromophenol	84

Steven G. Hibbs
Laboratory Manager

SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421
(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

SPECIAL INSTRUCTIONS/COMMENTS:
Run all samples for PCP using 8270. If result = ND, then and only then run PCP by 8041.

Return Samples: Y (N)

Page 1 of 1

CHAIN OF CUSTODY

SPECTRA PROJECT # 20140600291

STANDARD [X] RUSH [ ]

CLIENT: Port of Olympia ADDRESS: ADDRESS CHANGE [ ]

PROJECT: Cascade Pole

CONTACT: Chris Kimmel

SAMPLED BY: Siena Mott

PHONE: FAX:

e-MAIL: ckimmel@landauinc.com Prefer FAX or e-MAIL [X]

PURCHASE ORDER #

	SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX	NUMBER OF CONTAINERS	HYDROCARBONS: NWTPH-HCID	BTEX	BTEX/NWTPH-G	NWTPH-G	NWTPH-Dx	1664 SGT-HEM (TPH)	1664 HEM (FOG)	ORGANICS: 8260/624 VOA	8260 CHLOR SOLVENTS	8270-625 SEMI VOA	8270 PAH/PNA	8082/608 PCB	cPAH SIM	METALS: TOTAL METALS RCRA 8	TOTAL METALS (SPECIFY)	TCLP METALS RCRA 8	TCLP METALS (SPECIFY)	OTHER: PH 9040/9045	TX/TOX/EOX	TURBIDITY	FLASH POINT	BOD	SOLIDS (SPECIFY)	PCP (8270)	PCP (8041)
1	LW3-20140611	6/11/14	1903	H20	5				X	X						X		X											X	X
2																														
3																														
4																														
5																														
6																														
7																														
8																														
9																														
10																														

LAB USE ONLY

Shipped Via: US Mail UPS Fed Ex Courier (Client)

Shipping Container: (Cooler) Box Envelope None

Tracking # —

Custody Seals: Y N Intact: Y N

Cooler Temp. 9.3 Sample Temp. 9.2

	SIGNATURE	PRINTED NAME	COMPANY	DATE	TIME
RELINQUISHED BY	Siena Mott	Siena Mott	LAI	6/12/14	820
RECEIVED BY	Randa Rass	Randa Rass	Spectra	6/12/14	0825
RELINQUISHED BY					
RECEIVED BY					

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2% per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. *Spectra Laboratories, LLC*

Analytical Resources, Incorporated
Analytical Chemists and Consultants

October 8, 2014

Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Project: Port of Olympia, 21039.110.111
ARI Job No: ZB62

Dear Chris:

Please find enclosed the original Chain-of-Custody record (COC), sample receipt documentation, and final results for the project referenced above. Analytical Resources, Inc. accepted fifteen water samples and a trip blank in good condition on September 24, 2014.

The samples were analyzed for NWTPH-Gx, NWTPH-Dx, cPAHs by method SW8270 SIM, PAHs by method SW8270, and pentachlorophenol on select samples by method SW8041, as requested on the COC.

Please refer to the Case Narrative for details regarding requested analyses.

An electronic copy of this report and all associated ARI raw data will be kept on file with ARI. Should you have any questions or problems, please feel free to contact me at any time.

Sincerely,
ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
-For-
Kelly Bottem
Client Services Manager
(206) 695-6211

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

LANDAU ASSOCIATES

☐ Seattle/Edmonds (425) 778-0907
☒ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (503) 542-1080
☐ _____

Chain-of-Custody Record

Date 9/24/14
Page 1 of 1

Project Name Port of Olympia Project No. 21039.110.111
Project Location/Event Cascade Pole, Dry Season
Sampler's Name Sierra Mott, Ben Lee
Project Contact Chris Kimmel
Send Results To Chris Kimmel, Anne Halvorsen

Turnaround Time
☒ Standard
☐ Accelerated
☐ _____

Sample I.D.	Date	Time	Matrix	No. of Containers	TPH-Gx	NWTPH-Dx+ creosote	PAHs (8270)	cPAHs SIM	PCP (8270)	PCP (8041)	Observations/Comments
MW-025-20140923	9/23/14	1311	H2O	10	X	X	X	X	X	X	
MW-065-20140923		1135		10	X	X	X	X	X	X	
PZ-30-20140923		1141		10	X	X	X	X	X	X	
LW-3-20140923		1731		10	X	X	X	X	X	X	
LW-4R-20140923		1617		10	X	X	X	X	X	X	
PZ-17-20140923		1720		10	X	X	X	X	X	X	
PZ-18-20140923		1422		10	X	X	X	X	X	X	
CW-13-20140923		1123		10	X	X	X	X	X	X	
MW-020-20140923		1415		10	X	X	X	X	X	X	
MW-050-20140923		1231		10	X	X	X	X	X	X	
PZ-12-20140924	9/24/14	1003		10	X	X	X	X	X	X	
PZ-13-20140924		1030		10	X	X	X	X	X	X	
MW-015-20140924		1113		10	X	X	X	X	X	X	
MW-010-20140924		1136		10	X	X	X	X	X	X	
Trip Blanks	9/9/14	—		4	X						
PZ-19-20140924	9/24/14	924	H2O	10	X	X	X	X	X	X	

Observations/Comments

X Allow water samples to settle, collect aliquot from clear portion

X NWTPH-Dx - run acid wash/silica gel cleanup

___ run samples standardized to _____ product

___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt

___ Dissolved metal water samples field filtered

Other Run all samples for PCP using 8270. If results = ND, then and only then run PCP by 8041

Special Shipment/Handling or Storage Requirements: Cooler with ice

Method of Shipment: Drop off

Relinquished by	Received by	Relinquished by	Received by
Signature: Sierra Mott	Signature:	Signature:	Signature:
Printed Name: Sierra Mott	Printed Name: Tony Ter Streeter	Printed Name:	Printed Name:
Company: Landau Associates	Company: ARI	Company:	Company:
Date: 9/24/14 Time: 1352	Date: 9-24-14 Time: 1352	Date: Time:	Date: Time:

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative Rev 8/09

20000 : 29927

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau Project Name: Port of Olympia

COC No(s): _____ NA Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: ZB62 Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2 0-6.0 °C for chemistry) 3.2 4.3 5.4 3.6 1.3 3.5 2.9 3.0

Time: _____

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90875954

Cooler Accepted by: TB Date: 9-24-14 Time: 1352

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA (YES) NO

Were all bottles sealed in individual plastic bags? YES (NO)

Did all bottles arrive in good condition (unbroken)? (YES) NO

Were all bottle labels complete and legible? (YES) NO

Did the number of containers listed on COC match with the number of containers received? (YES) NO

Did all bottle labels and tags agree with custody papers? (YES) NO

Were all bottles used correct for the requested analyses? (YES) NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... (NA) YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? (YES) NO

Date VOC Trip Blank was made at ARI... NA 9-9-14

Was Sample Split by ARI : (NA) YES Date/Time:_____ Equipment:_____ Split by:_____

Samples Logged by: TB Date: 9-24-14 Time: 1415

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

PZ18 25m

TB 4pb

By: TB Date: 9-24-14

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
• • •	● ● ●	● ● ●

Small → "sm" (< 2 mm)

Peabubbles → "pb" (2 to < 4 mm)

Large → "lg" (4 to < 6 mm)

Headspace → "hs" (> 6 mm)

ANALYTICAL
RESOURCES
INCORPORATED

Case Narrative

Project: 21039.110.111
ARI Job No.: ZB62
October 8, 2014

Sample Receipt

Please find enclosed the original *Chain of Custody (COC)* record and analytical results for the project referenced above. Analytical Resources, Inc. accepted fifteen water samples and a trip blank in good condition on February 20, 2014. The samples were received at cooler temperatures between 2.0 and 5.3°C. Please see the *Cooler Receipt Form* for further details. Per Landau Associates, select samples were allowed to settle and sample volume was collected from the clear portion.

The following tests were performed on selected samples, as requested on the *Chain of Custody*.

Semivolatile Organics by method 8270D Water

The samples were extracted on 9/30/14. The samples were analyzed on 10/2/14 and 10/3/14 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate percent recovery of 2,4,6-Tribromophenol fell outside the control limits low for sample **MW-05D-20140923**. All other percent recoveries were within control limits. No corrective action was taken.

LCS/LSCD (s): The LCS and LCSD percent recoveries were within control limits.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: The continuing calibrations (CCALs) on 10/2/14 and 10/3/14 fell outside the 20% control limit low for Pentachlorophenol. All detected results for this compound have been flagged with a "Q" qualifier. No further corrective action was taken.

SIM cPAHs by method 8270-SIM Water

The samples were extracted on 9/26/14. The extracts were analyzed on 9/30/14 and 10/1/14 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate percent recoveries were within control limits.

LCS/LSCD (s): The LCS and LCSD percent recoveries were within control limits.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: The continuing calibrations were within control limits.

Case Narrative

Project: 21039.110.111
ARI Job No.: ZB62
October 8, 2014

PCP Only by method 8041

The samples were extracted on 9/27/14 and analyzed on 10/6/14 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate percent recoveries were within control limits.

LCS/LSCD (s): The LCS and LCSD percent recoveries were within control limits.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: The continuing calibrations were within control limits.

NWTPH-Dx

The samples were extracted on 9/26/14 and analyzed on 10/3/14 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate percent recoveries were within control limits.

LCS/LSCD (s): The LCS and LCSD percent recoveries were within control limits.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: The continuing calibrations were within control limits.

NWTPH-Gx

The samples were analyzed on 10/2/14, 10/3/14, and 10/6/14 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate percent recoveries were within control limits.

LCS/LSCD (s): The LCS and LCSD percent recoveries were within control limits.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: The continuing calibrations were within control limits.

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: ZB62
Client: Landau Associates, Inc.
Project Event: 21039.110.111
Project Name: Port of Olympia

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-02S-20140923	ZB62A	14-19783	Water	09/23/14 13:11	09/24/14 13:52
2.	MW-05S-20140923	ZB62B	14-19784	Water	09/23/14 11:35	09/24/14 13:52
3.	PZ-30-20140923	ZB62C	14-19785	Water	09/23/14 11:41	09/24/14 13:52
4.	LW-3-20140923	ZB62D	14-19786	Water	09/23/14 17:31	09/24/14 13:52
5.	LW-4R-20140923	ZB62E	14-19787	Water	09/23/14 16:17	09/24/14 13:52
6.	PZ-17-20140923	ZB62F	14-19788	Water	09/23/14 17:20	09/24/14 13:52
7.	PZ-18-20140923	ZB62G	14-19789	Water	09/23/14 14:22	09/24/14 13:52
8.	CW-13-20140923	ZB62H	14-19790	Water	09/23/14 11:23	09/24/14 13:52
9.	MW-02D-20140923	ZB62I	14-19791	Water	09/23/14 14:15	09/24/14 13:52
10.	MW-05D-20140923	ZB62J	14-19792	Water	09/23/14 12:31	09/24/14 13:52
11.	PZ-12-20140924	ZB62K	14-19793	Water	09/24/14 10:03	09/24/14 13:52
12.	PZ-13-20140924	ZB62L	14-19794	Water	09/24/14 10:30	09/24/14 13:52
13.	MW-01S-20140924	ZB62M	14-19795	Water	09/24/14 11:13	09/24/14 13:52
14.	MW-01D-20140924	ZB62N	14-19796	Water	09/24/14 11:36	09/24/14 13:52
15.	PZ-19-20140924	ZB62O	14-19797	Water	09/24/14 09:24	09/24/14 13:52
16.	Trip Blanks	ZB62P	14-19798	Water	09/23/14	09/24/14 13:52

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-02S-20140923
SAMPLE

Lab Sample ID: ZB62A
LIMS ID: 14-19783
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/02/14 19:25
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**1.0**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	65.2%
d14-p-Terphenyl	57.6%
2,4,6-Tribromophenol	67.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: MW-05S-20140923
SAMPLE

Lab Sample ID: ZB62B
LIMS ID: 14-19784
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/02/14 19:59
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**1.7**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**8.6**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	61.6%
d14-p-Terphenyl	57.2%
2,4,6-Tribromophenol	64.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-30-20140923
SAMPLE

Lab Sample ID: ZB62C
LIMS ID: 14-19785
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/02/14 20:32
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**1.4**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**9.4**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	65.6%
d14-p-Terphenyl	63.2%
2,4,6-Tribromophenol	72.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: LW-3-20140923
SAMPLE

Lab Sample ID: ZB62D
LIMS ID: 14-19786
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/02/14 21:06
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	68.0%
d14-p-Terphenyl	56.4%
2,4,6-Tribromophenol	83.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: LW-4R-20140923
SAMPLE

Lab Sample ID: ZB62E
LIMS ID: 14-19787
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/02/14 21:40
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	61.6%
d14-p-Terphenyl	54.4%
2,4,6-Tribromophenol	67.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C

Sample ID: PZ-17-20140923
SAMPLE

Lab Sample ID: ZB62F
LIMS ID: 14-19788
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/02/14 22:14
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	66.8%
d14-p-Terphenyl	74.4%
2,4,6-Tribromophenol	69.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: PZ-18-20140923
SAMPLE

Lab Sample ID: ZB62G
LIMS ID: 14-19789
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/02/14 22:47
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	63.2%
d14-p-Terphenyl	67.6%
2,4,6-Tribromophenol	72.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: CW-13-20140923
SAMPLE

Lab Sample ID: ZB62H
LIMS ID: 14-19790
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/02/14 23:21
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	54.4%
d14-p-Terphenyl	54.4%
2,4,6-Tribromophenol	63.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: MW-02D-20140923
SAMPLE

Lab Sample ID: ZB62I
LIMS ID: 14-19791
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/03/14 12:47
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	**Acenaphthylene**	**1.0**	**2.3**
83-32-9	**Acenaphthene**	**1.0**	**3.8**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	**Fluorene**	**1.0**	**1.0**
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	**Carbazole**	**1.0**	**4.0**
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	55.6%
d14-p-Terphenyl	68.8%
2,4,6-Tribromophenol	62.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-05D-20140923
SAMPLE

Lab Sample ID: ZB62J
LIMS ID: 14-19792
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/03/14 13:22
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**1.1**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**2.5**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	54.4%
d14-p-Terphenyl	73.6%
2,4,6-Tribromophenol	46.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-12-20140924
SAMPLE

Lab Sample ID: ZB62K
LIMS ID: 14-19793
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/03/14 13:56
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**2.7**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	55.2%
d14-p-Terphenyl	55.6%
2,4,6-Tribromophenol	59.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-13-20140924
SAMPLE

Lab Sample ID: ZB62L
LIMS ID: 14-19794
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/03/14 14:31
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**5.9**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	63.2%
d14-p-Terphenyl	70.4%
2,4,6-Tribromophenol	54.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: MW-01S-20140924
SAMPLE

Lab Sample ID: ZB62M
LIMS ID: 14-19795
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/03/14 16:13
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 10.0

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**10**	**3,100 ES**
91-57-6	**2-Methylnaphthalene**	**10**	**550**
208-96-8	Acenaphthylene	10	< 10 U
83-32-9	**Acenaphthene**	**10**	**240**
132-64-9	**Dibenzofuran**	**10**	**71**
86-73-7	**Fluorene**	**10**	**66**
87-86-5	**Pentachlorophenol**	**100**	**6,000 ESQ**
85-01-8	**Phenanthrene**	**10**	**68**
86-74-8	**Carbazole**	**10**	**100**
120-12-7	**Anthracene**	**10**	**17**
206-44-0	Fluoranthene	10	< 10 U
129-00-0	Pyrene	10	< 10 U
56-55-3	Benzo(a)anthracene	10	< 10 U
218-01-9	Chrysene	10	< 10 U
50-32-8	Benzo(a)pyrene	10	< 10 U
193-39-5	Indeno(1,2,3-cd)pyrene	10	< 10 U
53-70-3	Dibenz(a,h)anthracene	10	< 10 U
191-24-2	Benzo(g,h,i)perylene	10	< 10 U
90-12-0	**1-Methylnaphthalene**	**10**	**450**
TOTBFA	Total Benzofluoranthenes	20	< 20 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	65.2%
d14-p-Terphenyl	55.6%
2,4,6-Tribromophenol	74.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: MW-01S-20140924
DILUTION

Lab Sample ID: ZB62M
LIMS ID: 14-19795
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/03/14 16:54
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 100

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**100**	**8,200 E**
91-57-6	**2-Methylnaphthalene**	**100**	**600**
208-96-8	Acenaphthylene	100	< 100 U
83-32-9	**Acenaphthene**	**100**	**240**
132-64-9	Dibenzofuran	100	< 100 U
86-73-7	Fluorene	100	< 100 U
87-86-5	**Pentachlorophenol**	**1,000**	**4,900 Q**
85-01-8	Phenanthrene	100	< 100 U
86-74-8	**Carbazole**	**100**	**110**
120-12-7	Anthracene	100	< 100 U
206-44-0	Fluoranthene	100	< 100 U
129-00-0	Pyrene	100	< 100 U
56-55-3	Benzo(a)anthracene	100	< 100 U
218-01-9	Chrysene	100	< 100 U
50-32-8	Benzo(a)pyrene	100	< 100 U
193-39-5	Indeno(1,2,3-cd)pyrene	100	< 100 U
53-70-3	Dibenz(a,h)anthracene	100	< 100 U
191-24-2	Benzo(g,h,i)perylene	100	< 100 U
90-12-0	**1-Methylnaphthalene**	**100**	**480**
TOTBFA	Total Benzofluoranthenes	200	< 200 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	D
d14-p-Terphenyl	D
2,4,6-Tribromophenol	D

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: MW-01S-20140924
DILUTION2

Lab Sample ID: ZB62M
LIMS ID: 14-19795
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/03/14 17:28
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 300

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**300**	**10,000**
91-57-6	**2-Methylnaphthalene**	**300**	**640**
208-96-8	Acenaphthylene	300	< 300 U
83-32-9	Acenaphthene	300	< 300 U
132-64-9	Dibenzofuran	300	< 300 U
86-73-7	Fluorene	300	< 300 U
87-86-5	**Pentachlorophenol**	**3,000**	**5,300 Q**
85-01-8	Phenanthrene	300	< 300 U
86-74-8	Carbazole	300	< 300 U
120-12-7	Anthracene	300	< 300 U
206-44-0	Fluoranthene	300	< 300 U
129-00-0	Pyrene	300	< 300 U
56-55-3	Benzo(a)anthracene	300	< 300 U
218-01-9	Chrysene	300	< 300 U
50-32-8	Benzo(a)pyrene	300	< 300 U
193-39-5	Indeno(1,2,3-cd)pyrene	300	< 300 U
53-70-3	Dibenz(a,h)anthracene	300	< 300 U
191-24-2	Benzo(g,h,i)perylene	300	< 300 U
90-12-0	**1-Methylnaphthalene**	**300**	**510**
TOTBFA	Total Benzofluoranthenes	600	< 600 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	D
d14-p-Terphenyl	D
2,4,6-Tribromophenol	D

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: MW-01D-20140924
SAMPLE

Lab Sample ID: ZB62N
LIMS ID: 14-19796
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/03/14 15:05
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**1.9**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	70.0%
d14-p-Terphenyl	76.8%
2,4,6-Tribromophenol	68.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-19-20140924
SAMPLE

Lab Sample ID: ZB620
LIMS ID: 14-19797
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/30/14
Date Analyzed: 10/03/14 15:39
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**3.8**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	52.8%
d14-p-Terphenyl	73.2%
2,4,6-Tribromophenol	58.9%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111

Client ID	FBP	TPH	TBP	TOT OUT
MB-093014	58.8%	76.8%	57.1%	0
LCS-093014	73.6%	78.8%	83.2%	0
LCSD-093014	69.6%	77.2%	80.0%	0
MW-02S-20140923	65.2%	57.6%	67.5%	0
MW-05S-20140923	61.6%	57.2%	64.3%	0
PZ-30-20140923	65.6%	63.2%	72.8%	0
LW-3-20140923	68.0%	56.4%	83.7%	0
LW-4R-20140923	61.6%	54.4%	67.7%	0
PZ-17-20140923	66.8%	74.4%	69.3%	0
PZ-18-20140923	63.2%	67.6%	72.3%	0
CW-13-20140923	54.4%	54.4%	63.2%	0
MW-02D-20140923	55.6%	68.8%	62.9%	0
MW-05D-20140923	54.4%	73.6%	46.1%*	1
PZ-12-20140924	55.2%	55.6%	59.5%	0
PZ-13-20140924	63.2%	70.4%	54.7%	0
MW-01S-20140924	65.2%	55.6%	74.9%	0
MW-01S-20140924 DL	D	D	D	0
MW-01S-20140924 RE	D	D	D	0
MW-01D-20140924	70.0%	76.8%	68.5%	0
PZ-19-20140924	52.8%	73.2%	58.9%	0

	LCS/MB LIMITS	QC LIMITS
(FBP) = 2-Fluorobiphenyl	(33-120)	(33-120)
(TPH) = d14-p-Terphenyl	(28-130)	(28-130)
(TBP) = 2,4,6-Tribromophenol	(52-131)	(52-131)

Prep Method: SW3520C
Log Number Range: 14-19783 to 14-19797

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: LCS-093014
LCS/LCSD

Lab Sample ID: LCS-093014
LIMS ID: 14-19783
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted LCS/LCSD: 09/30/14

Date Analyzed LCS: 10/02/14 13:10
LCSD: 10/02/14 13:44
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

GPC Cleanup: NO

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	20.1	25.0	80.4%	20.2	25.0	80.8%	0.5%
2-Methylnaphthalene	14.4	25.0	57.6%	13.7	25.0	54.8%	5.0%
Acenaphthylene	20.7	25.0	82.8%	21.4	25.0	85.6%	3.3%
Acenaphthene	22.3	25.0	89.2%	21.3	25.0	85.2%	4.6%
Dibenzofuran	16.3	25.0	65.2%	15.2	25.0	60.8%	7.0%
Fluorene	22.6	25.0	90.4%	22.1	25.0	88.4%	2.2%
Pentachlorophenol	61.4 Q	75.0	81.9%	68.6 Q	75.0	91.5%	11.1%
Phenanthrene	24.0	25.0	96.0%	24.5	25.0	98.0%	2.1%
Carbazole	25.4	25.0	102%	24.0	25.0	96.0%	5.7%
Anthracene	22.0	25.0	88.0%	24.0	25.0	96.0%	8.7%
Fluoranthene	22.6	25.0	90.4%	26.2	25.0	105%	14.8%
Pyrene	21.9	25.0	87.6%	22.3	25.0	89.2%	1.8%
Benzo(a)anthracene	24.2	25.0	96.8%	23.7	25.0	94.8%	2.1%
Chrysene	23.2	25.0	92.8%	23.7	25.0	94.8%	2.1%
Benzo(a)pyrene	26.2	25.0	105%	25.7	25.0	103%	1.9%
Indeno(1,2,3-cd)pyrene	24.4	25.0	97.6%	21.6	25.0	86.4%	12.2%
Dibenz(a,h)anthracene	26.5	25.0	106%	23.0	25.0	92.0%	14.1%
Benzo(g,h,i)perylene	21.0	25.0	84.0%	19.5	25.0	78.0%	7.4%
1-Methylnaphthalene	21.6	25.0	86.4%	21.4	25.0	85.6%	0.9%
Total Benzofluoranthenes	53.8	50.0	108%	52.5	50.0	105%	2.4%

Semivolatile Surrogate Recovery

	LCS	LCSD
2-Fluorobiphenyl	73.6%	69.6%
d14-p-Terphenyl	78.8%	77.2%
2,4,6-Tribromophenol	83.2%	80.0%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MB-093014
METHOD BLANK

Lab Sample ID: MB-093014
LIMS ID: 14-19783
Matrix: Water
Data Release Authorized:
Reported: 10/06/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: NA
Date Received: NA

Date Extracted: 09/30/14
Date Analyzed: 10/02/14 12:36
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	58.8%
d14-p-Terphenyl	76.8%
2,4,6-Tribromophenol	57.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: MW-02S-20140923
SAMPLE

Lab Sample ID: ZB62A
LIMS ID: 14-19783
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/26/14
Date Analyzed: 09/30/14 18:02
Instrument/Analyst: NT8/JZ

Sample Amount: 450 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.11	< 0.11 U
218-01-9	Chrysene	0.11	< 0.11 U
50-32-8	Benzo(a)pyrene	0.11	< 0.11 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.11	< 0.11 U
53-70-3	Dibenz(a,h)anthracene	0.11	< 0.11 U
TOTBFA	Total Benzofluoranthenes	0.11	< 0.11 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	63.0%
d14-Dibenzo(a,h)anthracene	32.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-05S-20140923
SAMPLE

Lab Sample ID: ZB62B
LIMS ID: 14-19784
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/26/14
Date Analyzed: 09/30/14 18:29
Instrument/Analyst: NT8/JZ

Sample Amount: 450 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.11	< 0.11 U
218-01-9	Chrysene	0.11	< 0.11 U
50-32-8	Benzo(a)pyrene	0.11	< 0.11 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.11	< 0.11 U
53-70-3	Dibenz(a,h)anthracene	0.11	< 0.11 U
TOTBFA	Total Benzofluoranthenes	0.11	< 0.11 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	61.7%
d14-Dibenzo(a,h)anthracene	52.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-30-20140923
SAMPLE

Lab Sample ID: ZB62C
LIMS ID: 14-19785
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/26/14
Date Analyzed: 09/30/14 18:57
Instrument/Analyst: NT8/JZ

Sample Amount: 420 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.12	< 0.12 U
218-01-9	Chrysene	0.12	< 0.12 U
50-32-8	Benzo(a)pyrene	0.12	< 0.12 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.12	< 0.12 U
53-70-3	Dibenz(a,h)anthracene	0.12	< 0.12 U
TOTBFA	Total Benzofluoranthenes	0.12	< 0.12 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	63.7%
d14-Dibenzo(a,h)anthracene	63.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: LW-3-20140923
SAMPLE

Lab Sample ID: ZB62D
LIMS ID: 14-19786
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/26/14
Date Analyzed: 09/30/14 19:25
Instrument/Analyst: NT8/JZ

Sample Amount: 400 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.12	< 0.12 U
218-01-9	Chrysene	0.12	< 0.12 U
50-32-8	Benzo(a)pyrene	0.12	< 0.12 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.12	< 0.12 U
53-70-3	Dibenz(a,h)anthracene	0.12	< 0.12 U
TOTBFA	Total Benzofluoranthenes	0.12	< 0.12 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	69.7%
d14-Dibenzo(a,h)anthracene	27.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: LW-4R-20140923
SAMPLE

Lab Sample ID: ZB62E
LIMS ID: 14-19787
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/26/14
Date Analyzed: 09/30/14 19:53
Instrument/Analyst: NT8/JZ

Sample Amount: 450 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.11	< 0.11 U
218-01-9	Chrysene	0.11	< 0.11 U
50-32-8	Benzo(a)pyrene	0.11	< 0.11 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.11	< 0.11 U
53-70-3	Dibenz(a,h)anthracene	0.11	< 0.11 U
TOTBFA	Total Benzofluoranthenes	0.11	< 0.11 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	68.7%
d14-Dibenzo(a,h)anthracene	64.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C

Sample ID: PZ-17-20140923
SAMPLE

Lab Sample ID: ZB62F
LIMS ID: 14-19788
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/26/14
Date Analyzed: 09/30/14 20:21
Instrument/Analyst: NT8/JZ

Sample Amount: 450 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.11	< 0.11 U
218-01-9	Chrysene	0.11	< 0.11 U
50-32-8	Benzo(a)pyrene	0.11	< 0.11 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.11	< 0.11 U
53-70-3	Dibenz(a,h)anthracene	0.11	< 0.11 U
TOTBFA	Total Benzofluoranthenes	0.11	< 0.11 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	61.3%
d14-Dibenzo(a,h)anthracene	78.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: PZ-18-20140923
SAMPLE

Lab Sample ID: ZB62G
LIMS ID: 14-19789
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/26/14
Date Analyzed: 09/30/14 20:49
Instrument/Analyst: NT8/JZ

Sample Amount: 450 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.11	< 0.11 U
218-01-9	Chrysene	0.11	< 0.11 U
50-32-8	Benzo(a)pyrene	0.11	< 0.11 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.11	< 0.11 U
53-70-3	Dibenz(a,h)anthracene	0.11	< 0.11 U
TOTBFA	Total Benzofluoranthenes	0.11	< 0.11 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	67.3%
d14-Dibenzo(a,h)anthracene	64.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C

Sample ID: CW-13-20140923
SAMPLE

Lab Sample ID: ZB62H
LIMS ID: 14-19790
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/26/14
Date Analyzed: 09/30/14 21:17
Instrument/Analyst: NT8/JZ

Sample Amount: 460 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.11	< 0.11 U
218-01-9	Chrysene	0.11	< 0.11 U
50-32-8	Benzo(a)pyrene	0.11	< 0.11 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.11	< 0.11 U
53-70-3	Dibenz(a,h)anthracene	0.11	< 0.11 U
TOTBFA	Total Benzofluoranthenes	0.11	< 0.11 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	62.7%
d14-Dibenzo(a,h)anthracene	73.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: MW-02D-20140923
SAMPLE

Lab Sample ID: ZB62I
LIMS ID: 14-19791
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/26/14
Date Analyzed: 09/30/14 21:45
Instrument/Analyst: NT8/JZ

Sample Amount: 450 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.11	< 0.11 U
218-01-9	Chrysene	0.11	< 0.11 U
50-32-8	Benzo(a)pyrene	0.11	< 0.11 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.11	< 0.11 U
53-70-3	Dibenz(a,h)anthracene	0.11	< 0.11 U
TOTBFA	Total Benzofluoranthenes	0.11	< 0.11 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	61.7%
d14-Dibenzo(a,h)anthracene	74.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-05D-20140923
SAMPLE

Lab Sample ID: ZB62J
LIMS ID: 14-19792
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/26/14
Date Analyzed: 09/30/14 22:13
Instrument/Analyst: NT8/JZ

Sample Amount: 460 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.11	< 0.11 U
218-01-9	Chrysene	0.11	< 0.11 U
50-32-8	Benzo(a)pyrene	0.11	< 0.11 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.11	< 0.11 U
53-70-3	Dibenz(a,h)anthracene	0.11	< 0.11 U
TOTBFA	Total Benzofluoranthenes	0.11	< 0.11 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	65.7%
d14-Dibenzo(a,h)anthracene	79.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C

Sample ID: PZ-12-20140924
SAMPLE

Lab Sample ID: ZB62K
LIMS ID: 14-19793
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/26/14
Date Analyzed: 09/30/14 22:41
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	66.7%
d14-Dibenzo(a,h)anthracene	74.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: PZ-13-20140924
SAMPLE

Lab Sample ID: ZB62L
LIMS ID: 14-19794
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/26/14
Date Analyzed: 09/30/14 23:09
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	62.0%
d14-Dibenzo(a,h)anthracene	65.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C

Sample ID: MW-01S-20140924
SAMPLE

Lab Sample ID: ZB62M
LIMS ID: 14-19795
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/26/14
Date Analyzed: 09/30/14 23:36
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 3.00

CAS Number	Analyte	LOQ	Result
56-55-3	**Benzo(a)anthracene**	**0.30**	**0.83**
218-01-9	**Chrysene**	**0.30**	**0.82**
50-32-8	Benzo(a)pyrene	0.30	< 0.30 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.30	< 0.30 U
53-70-3	Dibenz(a,h)anthracene	0.30	< 0.30 U
TOTBFA	**Total Benzofluoranthenes**	**0.30**	**0.55**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	39.0%
d14-Dibenzo(a,h)anthracene	27.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: MW-01D-20140924
SAMPLE

Lab Sample ID: ZB62N
LIMS ID: 14-19796
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/26/14
Date Analyzed: 10/01/14 00:04
Instrument/Analyst: NT8/JZ

Sample Amount: 460 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.11	< 0.11 U
218-01-9	Chrysene	0.11	< 0.11 U
50-32-8	Benzo(a)pyrene	0.11	< 0.11 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.11	< 0.11 U
53-70-3	Dibenz(a,h)anthracene	0.11	< 0.11 U
TOTBFA	Total Benzofluoranthenes	0.11	< 0.11 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	69.7%
d14-Dibenzo(a,h)anthracene	68.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-19-20140924
SAMPLE

Lab Sample ID: ZB620
LIMS ID: 14-19797
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/26/14
Date Analyzed: 10/01/14 00:32
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	72.0%
d14-Dibenzo(a,h)anthracene	82.3%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111

Client ID	MNP	DBA	TOT OUT
MB-092614	62.7%	92.3%	0
LCS-092614	67.3%	87.3%	0
LCSD-092614	68.3%	84.0%	0
MW-02S-20140923	63.0%	32.7%	0
MW-05S-20140923	61.7%	52.3%	0
PZ-30-20140923	63.7%	63.7%	0
LW-3-20140923	69.7%	27.3%	0
LW-4R-20140923	68.7%	64.3%	0
PZ-17-20140923	61.3%	78.0%	0
PZ-18-20140923	67.3%	64.0%	0
CW-13-20140923	62.7%	73.7%	0
MW-02D-20140923	61.7%	74.3%	0
MW-05D-20140923	65.7%	79.3%	0
PZ-12-20140924	66.7%	74.0%	0
PZ-13-20140924	62.0%	65.7%	0
MW-01S-20140924	39.0%	27.0%	0
MW-01D-20140924	69.7%	68.0%	0
PZ-19-20140924	72.0%	82.3%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(31-120)	(31-120)
(DBA) = d14-Dibenzo(a,h)anthracene	(10-125)	(10-125)

Prep Method: SW3520C
Log Number Range: 14-19783 to 14-19797

FORM-II SIM SW8270

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS

Sample ID: LCS-092614
LAB CONTROL SAMPLE

Lab Sample ID: LCS-092614
LIMS ID: 14-19783
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 09/26/14
Date Analyzed LCS: 09/30/14 16:10
LCSD: 09/30/14 16:38
Instrument/Analyst LCS: NT8/JZ
LCSD: NT8/JZ

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	2.76	3.00	92.0%	2.77	3.00	92.3%	0.4%
Chrysene	2.74	3.00	91.3%	2.72	3.00	90.7%	0.7%
Benzo(a)pyrene	2.51	3.00	83.7%	2.68	3.00	89.3%	6.6%
Indeno(1,2,3-cd)pyrene	2.79	3.00	93.0%	2.89	3.00	96.3%	3.5%
Dibenz(a,h)anthracene	2.73	3.00	91.0%	2.80	3.00	93.3%	2.5%
Total Benzofluoranthenes	8.87	9.00	98.6%	8.94	9.00	99.3%	0.8%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	67.3%	68.3%
d14-Dibenzo(a,h)anthracene	87.3%	84.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MB-092614
METHOD BLANK

Lab Sample ID: MB-092614
LIMS ID: 14-19783
Matrix: Water
Data Release Authorized:
Reported: 10/01/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: NA
Date Received: NA

Date Extracted: 09/26/14
Date Analyzed: 09/30/14 15:42
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	62.7%
d14-Dibenzo(a,h)anthracene	92.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: MW-02S-20140923
SAMPLE

Lab Sample ID: ZB62A
LIMS ID: 14-19783
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/27/14
Date Analyzed: 10/06/14 15:04
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	0.83

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	81.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: MW-05S-20140923
SAMPLE

Lab Sample ID: ZB62B
LIMS ID: 14-19784
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/27/14
Date Analyzed: 10/06/14 15:40
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	87.2%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: PZ-30-20140923
SAMPLE

Lab Sample ID: ZB62C
LIMS ID: 14-19785
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/27/14
Date Analyzed: 10/06/14 16:15
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	80.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: LW-3-20140923
SAMPLE

Lab Sample ID: ZB62D
LIMS ID: 14-19786
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/27/14
Date Analyzed: 10/06/14 16:51
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	85.2%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: LW-4R-20140923
SAMPLE

Lab Sample ID: ZB62E
LIMS ID: 14-19787
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/27/14
Date Analyzed: 10/06/14 17:26
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	76.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: PZ-17-20140923
SAMPLE

Lab Sample ID: ZB62F
LIMS ID: 14-19788
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/27/14
Date Analyzed: 10/06/14 18:01
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	84.4%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: PZ-18-20140923
SAMPLE

Lab Sample ID: ZB62G
LIMS ID: 14-19789
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/27/14
Date Analyzed: 10/06/14 18:37
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	87.6%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: CW-13-20140923
SAMPLE

Lab Sample ID: ZB62H
LIMS ID: 14-19790
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/27/14
Date Analyzed: 10/06/14 19:12
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	83.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: MW-02D-20140923
SAMPLE

Lab Sample ID: ZB62I
LIMS ID: 14-19791
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/27/14
Date Analyzed: 10/06/14 19:48
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	91.2%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: MW-05D-20140923
SAMPLE

Lab Sample ID: ZB62J
LIMS ID: 14-19792
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted: 09/27/14
Date Analyzed: 10/06/14 20:23
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	82.0%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: PZ-12-20140924
SAMPLE

Lab Sample ID: ZB62K
LIMS ID: 14-19793
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/27/14
Date Analyzed: 10/06/14 21:34
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	87.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: PZ-13-20140924
SAMPLE

Lab Sample ID: ZB62L
LIMS ID: 14-19794
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/27/14
Date Analyzed: 10/06/14 22:09
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	88.0%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: MW-01D-20140924
SAMPLE

Lab Sample ID: ZB62N
LIMS ID: 14-19796
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/27/14
Date Analyzed: 10/06/14 22:45
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	83.2%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: PZ-19-20140924
SAMPLE

Lab Sample ID: ZB62O
LIMS ID: 14-19797
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/24/14
Date Received: 09/24/14

Date Extracted: 09/27/14
Date Analyzed: 10/06/14 23:20
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	82.4%

ANALYTICAL RESOURCES INCORPORATED

SW8041 CHLOROPHENOLICS SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111

Client ID	TBP	TOT OUT
MB-092714	50.4%	0
LCS-092714	80.8%	0
LCSD-092714	86.0%	0
MW-02S-20140923	81.2%	0
MW-05S-20140923	87.2%	0
PZ-30-20140923	80.8%	0
LW-3-20140923	85.2%	0
LW-4R-20140923	76.0%	0
PZ-17-20140923	84.4%	0
PZ-18-20140923	87.6%	0
CW-13-20140923	83.6%	0
MW-02D-20140923	91.2%	0
MW-05D-20140923	82.0%	0
PZ-12-20140924	87.6%	0
PZ-13-20140924	88.0%	0
MW-01D-20140924	83.2%	0
PZ-19-20140924	82.4%	0

	QC LIMITS
(TBP) = 2,4,6-Tribromophenol	(26-120)

Prep Method: SW3510C
Log Number Range: 14-19783 to 14-19797

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Page 1 of 1

Sample ID: LCS-092714
LCS/LCSD

Lab Sample ID: LCS-092714
LIMS ID: 14-19783
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: 09/23/14
Date Received: 09/24/14

Date Extracted LCS/LCSD: 09/27/14
Date Analyzed LCS: 10/06/14 13:53
LCSD: 10/06/14 14:29
Instrument/Analyst LCS: ECD8/YZ
LCSD: ECD8/YZ

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 50 mL
LCSD: 50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Pentachlorophenol	1.14	2.50	45.6%	1.26	2.50	50.4%	10.0%

Chlorophenols Surrogate Recovery

	LCS	LCSD
2,4,6-Tribromophenol	80.8%	86.0%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MB-092714
METHOD BLANK

Lab Sample ID: MB-092714
LIMS ID: 14-19783
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111
Date Sampled: NA
Date Received: NA

Date Extracted: 09/27/14
Date Analyzed: 10/06/14 13:18
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	50.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method:

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111

Matrix: Water
Data Release Authorized:
Reported: 10/06/14

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-092614	Method Blank	09/26/14	10/03/14	1.00	Diesel Range	100	< 100 U
14-19783	HC ID: ---		FID3B	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		86.3%
ZB62A	MW-02S-20140923	09/26/14	10/03/14	1.00	Diesel Range	100	< 100 U
14-19783	HC ID: ---		FID3B	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		110%
ZB62B	MW-05S-20140923	09/26/14	10/03/14	1.00	Diesel Range	100	< 100 U
14-19784	HC ID: **DRO**		FID3B	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**100**
					o-Terphenyl		76.5%
ZB62C	PZ-30-20140923	09/26/14	10/03/14	1.00	Diesel Range	100	< 100 U
14-19785	HC ID: **DRO**		FID3B	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**130**
					o-Terphenyl		105%
ZB62D	LW-3-20140923	09/26/14	10/03/14	1.00	Diesel Range	100	< 100 U
14-19786	HC ID: **DRO**		FID3B	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**270**
					o-Terphenyl		115%
ZB62E	LW-4R-20140923	09/26/14	10/03/14	1.00	Diesel Range	100	< 100 U
14-19787	HC ID: ---		FID3B	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		108%
ZB62F	PZ-17-20140923	09/26/14	10/03/14	1.00	**Diesel Range**	**100**	**110**
14-19788	HC ID: **DRO/MOTOR OIL**		FID3B	1.0	**Motor Oil Range**	**200**	**640**
					Creosote Range	**100**	**310**
					o-Terphenyl		99.9%
ZB62G	PZ-18-20140923	09/26/14	10/03/14	1.00	Diesel Range	100	< 100 U
14-19789	HC ID: ---		FID3B	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		110%
ZB62H	CW-13-20140923	09/26/14	10/03/14	1.00	Diesel Range	100	< 100 U
14-19790	HC ID: ---		FID3B	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		113%
ZB62I	MW-02D-20140923	09/26/14	10/03/14	1.00	Diesel Range	100	< 100 U
14-19791	HC ID: **DRO**		FID3B	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**130**
					o-Terphenyl		115%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method:
Page 2 of 2

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111

Matrix: Water
Data Release Authorized:
Reported: 10/06/14

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
ZB62J	MW-05D-20140923	09/26/14	10/03/14	1.00	Diesel Range	100	< 100 U
14-19792	HC ID: ---		FID3B	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		95.2%
ZB62K	PZ-12-20140924	09/26/14	10/03/14	1.00	Diesel Range	100	< 100 U
14-19793	HC ID: ---		FID3B	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		75.3%
ZB62L	PZ-13-20140924	09/26/14	10/03/14	1.00	Diesel Range	100	< 100 U
14-19794	HC ID: ---		FID3B	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		109%
ZB62M	MW-01S-20140924	09/26/14	10/04/14	1.00	**Diesel Range**	**100**	**10000 E**
14-19795	HC ID: **CREOSOTE/RRO**		FID3B	1.0	**Motor Oil Range**	**200**	**690**
					Creosote Range	**100**	**54000 E**
					o-Terphenyl		120%
ZB62M DIL	MW-01S-20140924	09/26/14	10/06/14	1.00	**Diesel Range**	**5000**	**11000**
14-19795	HC ID: **CREOSOTE**		FID3B	50	Motor Oil Range	10000	< 10000 U
					Creosote Range	**5000**	**59000**
					o-Terphenyl		D
ZB62N	MW-01D-20140924	09/26/14	10/04/14	1.00	Diesel Range	100	< 100 U
14-19796	HC ID: **DRO/MOTOR OIL**		FID3B	1.0	**Motor Oil Range**	**200**	**400**
					Creosote Range	**100**	**290**
					o-Terphenyl		83.6%
ZB62O	PZ-19-20140924	09/26/14	10/04/14	1.00	Diesel Range	100	< 100 U
14-19797	HC ID: ---		FID3B	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		106%

Reported in ug/L (ppb)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
Creosote range quantitation on total peaks in the range from C8 to C22.
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
21039.110.111

Client ID	OTER	TOT OUT
MB-092614	86.3%	0
LCS-092614	106%	0
LCSD-092614	107%	0
MW-02S-20140923	110%	0
MW-05S-20140923	76.5%	0
PZ-30-20140923	105%	0
LW-3-20140923	115%	0
LW-4R-20140923	108%	0
PZ-17-20140923	99.9%	0
PZ-18-20140923	110%	0
CW-13-20140923	113%	0
MW-02D-20140923	115%	0
MW-05D-20140923	95.2%	0
PZ-12-20140924	75.3%	0
PZ-13-20140924	109%	0
MW-01S-20140924	120%	0
MW-01S-20140924 DL	D	0
MW-01D-20140924	83.6%	0
PZ-19-20140924	106%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 14-19783 to 14-19797

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-092614**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-092614 QC Report No: ZB62-Landau Associates, Inc.
LIMS ID: 14-19783 Project: Port of Olympia
Matrix: Water 21039.110.111
Data Release Authorized: Date Sampled: 09/23/14
Reported: 10/06/14 Date Received: 09/24/14

Date Extracted LCS/LCSD: 09/26/14 Sample Amount LCS: 500 mL
LCSD: 500 mL
Date Analyzed LCS: 10/03/14 17:09 Final Extract Volume LCS: 1.0 mL
LCSD: 10/03/14 17:34 LCSD: 1.0 mL
Instrument/Analyst LCS: FID/JLW Dilution Factor LCS: 1.00
LCSD: FID/JLW LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2300	3000	76.7%	2340	3000	78.0%	1.7%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	106%	107%

Results reported in ug/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: ZB62
Matrix: Water Project: Port of Olympia
Date Received: 09/24/14 21039.110.111

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
14-19783-092614MB1	Method Blank	500 mL	1.00 mL	09/26/14
14-19783-092614LCS1	Lab Control	500 mL	1.00 mL	09/26/14
14-19783-092614LCSD1	Lab Control Dup	500 mL	1.00 mL	09/26/14
14-19783-ZB62A	MW-02S-20140923	500 mL	1.00 mL	09/26/14
14-19784-ZB62B	MW-05S-20140923	500 mL	1.00 mL	09/26/14
14-19785-ZB62C	PZ-30-20140923	500 mL	1.00 mL	09/26/14
14-19786-ZB62D	LW-3-20140923	500 mL	1.00 mL	09/26/14
14-19787-ZB62E	LW-4R-20140923	500 mL	1.00 mL	09/26/14
14-19788-ZB62F	PZ-17-20140923	500 mL	1.00 mL	09/26/14
14-19789-ZB62G	PZ-18-20140923	500 mL	1.00 mL	09/26/14
14-19790-ZB62H	CW-13-20140923	500 mL	1.00 mL	09/26/14
14-19791-ZB62I	MW-02D-20140923	500 mL	1.00 mL	09/26/14
14-19792-ZB62J	MW-05D-20140923	500 mL	1.00 mL	09/26/14
14-19793-ZB62K	PZ-12-20140924	500 mL	1.00 mL	09/26/14
14-19794-ZB62L	PZ-13-20140924	500 mL	1.00 mL	09/26/14
14-19795-ZB62M	MW-01S-20140924	500 mL	1.00 mL	09/26/14
14-19796-ZB62N	MW-01D-20140924	500 mL	1.00 mL	09/26/14
14-19797-ZB62O	PZ-19-20140924	500 mL	1.00 mL	09/26/14

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111

Data Release Authorized:
Reported: 10/07/14

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-100214	Method Blank	10/02/14	1.0	Gasoline	< 250 U
14-19783		PID1		HC ID	---
				Trifluorotoluene	96.2%
				Bromobenzene	97.2%
ZB62A	MW-02S-20140923	10/02/14	1.0	Gasoline	< 250 U
14-19783		PID1		HC ID	---
				Trifluorotoluene	97.6%
				Bromobenzene	98.3%
ZB62B	MW-05S-20140923	10/02/14	1.0	Gasoline	< 250 U
14-19784		PID1		HC ID	---
				Trifluorotoluene	98.4%
				Bromobenzene	97.6%
ZB62C	PZ-30-20140923	10/02/14	1.0	Gasoline	< 250 U
14-19785		PID1		HC ID	---
				Trifluorotoluene	95.6%
				Bromobenzene	96.8%
ZB62D	LW-3-20140923	10/02/14	1.0	Gasoline	< 250 U
14-19786		PID1		HC ID	---
				Trifluorotoluene	95.8%
				Bromobenzene	96.2%
ZB62E	LW-4R-20140923	10/02/14	1.0	Gasoline	< 250 U
14-19787		PID1		HC ID	---
				Trifluorotoluene	96.8%
				Bromobenzene	97.8%
ZB62F	PZ-17-20140923	10/02/14	1.0	Gasoline	< 250 U
14-19788		PID1		HC ID	---
				Trifluorotoluene	96.2%
				Bromobenzene	95.1%
ZB62G	PZ-18-20140923	10/02/14	1.0	Gasoline	< 250 U
14-19789		PID1		HC ID	---
				Trifluorotoluene	92.6%
				Bromobenzene	93.4%
ZB62H	CW-13-20140923	10/02/14	1.0	Gasoline	< 250 U
14-19790		PID1		HC ID	---
				Trifluorotoluene	93.1%
				Bromobenzene	92.3%
ZB62I	MW-02D-20140923	10/03/14	1.0	Gasoline	< 250 U
14-19791		PID1		HC ID	---
				Trifluorotoluene	96.2%
				Bromobenzene	96.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111

Data Release Authorized:
Reported: 10/07/14

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-100314	Method Blank	10/03/14	1.0	Gasoline	< 250 U
14-19792		PID1		HC ID	---
				Trifluorotoluene	95.1%
				Bromobenzene	94.8%
ZB62J	MW-05D-20140923	10/03/14	1.0	Gasoline	< 250 U
14-19792		PID1		HC ID	---
				Trifluorotoluene	94.9%
				Bromobenzene	94.6%
ZB62K	PZ-12-20140924	10/03/14	1.0	Gasoline	< 250 U
14-19793		PID1		HC ID	---
				Trifluorotoluene	87.6%
				Bromobenzene	87.8%
ZB62L	PZ-13-20140924	10/03/14	1.0	Gasoline	< 250 U
14-19794		PID1		HC ID	---
				Trifluorotoluene	93.0%
				Bromobenzene	93.0%
MB-100614	Method Blank	10/06/14	1.0	Gasoline	< 250 U
14-19795		PID1		HC ID	---
				Trifluorotoluene	96.7%
				Bromobenzene	95.8%
ZB62M	MW-01S-20140924	10/06/14	20	**Gasoline**	**52000**
14-19795		PID1		HC ID	GRO
				Trifluorotoluene	102%
				Bromobenzene	101%
ZB62N	MW-01D-20140924	10/06/14	1.0	Gasoline	< 250 U
14-19796		PID1		HC ID	---
				Trifluorotoluene	100%
				Bromobenzene	99.8%
ZB62O	PZ-19-20140924	10/06/14	1.0	Gasoline	< 250 U
14-19797		PID1		HC ID	---
				Trifluorotoluene	102%
				Bromobenzene	99.8%
ZB62P	Trip Blanks	10/03/14	1.0	Gasoline	< 250 U
14-19798		PID1		HC ID	---
				Trifluorotoluene	97.8%
				Bromobenzene	97.4%

Gasoline values reported in µg/L (ppb)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

ANALYTICAL RESOURCES INCORPORATED

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: ZB62
Matrix: Water

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111

Client ID	TFT	BBZ	TOT OUT
MB-100214	96.2%	97.2%	0
LCS-100214	97.7%	98.1%	0
LCSD-100214	92.7%	92.3%	0
MW-02S-20140923	97.6%	98.3%	0
MW-05S-20140923	98.4%	97.6%	0
PZ-30-20140923	95.6%	96.8%	0
LW-3-20140923	95.8%	96.2%	0
LW-4R-20140923	96.8%	97.8%	0
PZ-17-20140923	96.2%	95.1%	0
PZ-18-20140923	92.6%	93.4%	0
CW-13-20140923	93.1%	92.3%	0
MW-02D-20140923	96.2%	96.5%	0
MB-100314	95.1%	94.8%	0
LCS-100314	98.0%	97.0%	0
LCSD-100314	94.2%	94.4%	0
MW-05D-20140923	94.9%	94.6%	0
PZ-12-20140924	87.6%	87.8%	0
PZ-13-20140924	93.0%	93.0%	0
MB-100614	96.7%	95.8%	0
LCS-100614	103%	102%	0
LCSD-100614	100%	99.4%	0
MW-01S-20140924	102%	101%	0
MW-01D-20140924	100%	99.8%	0
PZ-19-20140924	102%	99.8%	0
Trip Blanks	97.8%	97.4%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 14-19783 to 14-19798

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-100214
LAB CONTROL SAMPLE

Lab Sample ID: LCS-100214
LIMS ID: 14-19783
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 10/02/14 10:47
LCSD: 10/02/14 11:16
Instrument/Analyst LCS: PID1/PKC
LCSD: PID1/PKC

Purge Volume: 5.0 mL
Dilution Factor LCS: 1.0
LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	1010	1000	101%	930	1000	93.0%	8.2%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	97.7%	92.7%
Bromobenzene	98.1%	92.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-100314
LAB CONTROL SAMPLE

Lab Sample ID: LCS-100314
LIMS ID: 14-19792
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 10/03/14 11:14
LCSD: 10/03/14 11:44
Instrument/Analyst LCS: PID1/PKC
LCSD: PID1/PKC

Purge Volume: 5.0 mL
Dilution Factor LCS: 1.0
LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	960	1000	96.0%	900	1000	90.0%	6.5%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	98.0%	94.2%
Bromobenzene	97.0%	94.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-100614
LAB CONTROL SAMPLE

Lab Sample ID: LCS-100614
LIMS ID: 14-19795
Matrix: Water
Data Release Authorized:
Reported: 10/07/14

QC Report No: ZB62-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.110.111
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 10/06/14 10:41
LCSD: 10/06/14 11:10
Instrument/Analyst LCS: PID1/PKC
LCSD: PID1/PKC

Purge Volume: 5.0 mL
Dilution Factor LCS: 1.0
LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	1040	1000	104%	1020	1000	102%	1.9%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	103%	100%
Bromobenzene	102%	99.4%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

October 21, 2014

Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Project: Port of Olympia, 21039.110.111
ARI Job No: ZF85

Dear Chris:

Please find enclosed the original Chain-of-Custody record (COC), sample receipt documentation, and final results for the project referenced above. Analytical Resources, Inc. accepted one water sample in good condition on October 17, 2014.

The sample was analyzed for NWTPH-Dx, as requested on the COC.

Please refer to the Case Narrative for details regarding requested analyses.

An electronic copy of this report and all associated ARI raw data will be kept on file with ARI. Should you have any questions or problems, please feel free to contact me at any time.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
(206) 695-6211

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: ZF85	Turn-around Requested: Standard 2-week	Page: 1 of 1	
ARI Client Company: Landau	Phone: 425-778-0907	Date: 10/16/14	Ice Present?
Client Contact: Chris Kimmel		No. of Coolers:	Cooler Temps:
Client Project Name: Cascade Pole			
Client Project #: 21039 110.111	Samplers: Sierra Mott		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No Containers	Analysis Requested: NWTPH-Dx + Creosote	Notes/Comments
P2-17-20141016	10/16/14	1657	H2O	2	X	Please bill Don Bache at Port of Olympia

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
In cooler, on ice. Courier to pick up.	Sierra Mott	Bethanie Roberts	Bethanie Roberts	Rick Madsen
	Printed Name: Sierra Mott	Printed Name: Bethanie Roberts	Printed Name: Bethanie Roberts	Printed Name: Rick Madsen
	Company: LAI	Company: Landau Associates	Company: LAI	Company: ARI
	Date & Time: 10/17/14 802	Date & Time: 10/17/14 8:02	Date & Time: 10/17/14 10:45	Date & Time: 10/17/14 1045

ZF85:00002

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: ZF85
Client: Landau Associates, Inc.
Project Event: 21039.110.111
Project Name: Cascade Pole

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	PZ-17-20141016	ZF85A	14-22178	Water	10/16/14 16:57	10/17/14 10:45

ZF85: 3R BC 10/23/14

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau Project Name: Cascade, Polo

COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: ZF85 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? (YES) NO

Were custody papers included with the cooler? (YES) NO

Were custody papers properly filled out (ink, signed, etc.) (YES) NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 5.5

Time: 1120

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90877952

Cooler Accepted by: _____ Date: 10/17/14 Time: 1045

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA (YES) NO

Were all bottles sealed in individual plastic bags? YES (NO)

Did all bottles arrive in good condition (unbroken)? (YES) NO

Were all bottle labels complete and legible? (YES) NO

Did the number of containers listed on COC match with the number of containers received? (YES) NO

Did all bottle labels and tags agree with custody papers? (YES) NO

Were all bottles used correct for the requested analyses? (YES) NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... (NA) YES NO

Were all VOC vials free of air bubbles? (NA) YES NO

Was sufficient amount of sample sent in each bottle? (YES) NO

Date VOC Trip Blank was made at ARI (NA) _____

Was Sample Split by ARI (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

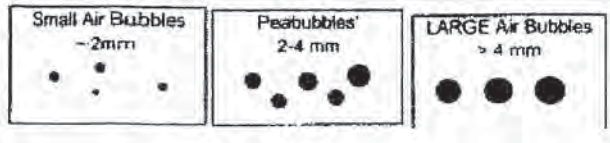
Samples Logged by: JM Date: 10/17/14 Time: 1252

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

ANALYTICAL
RESOURCES
INCORPORATED

Case Narrative

Project: 21039.110.111
ARI Job No.: ZF85
October 21, 2014

Sample Receipt

Please find enclosed the original *Chain of Custody (COC)* record and analytical results for the project referenced above. Analytical Resources, Inc. accepted one water sample in good condition on October 17, 2014. The samples were received at a cooler temperature of 5.5°C. Please see the *Cooler Receipt Form* for further details. Per Landau Associates, select samples were allowed to settle and sample volume was collected from the clear portion.

The following tests were performed on selected samples, as requested on the *Chain of Custody*.

NWTPH-Dx

The samples were extracted on 10/17/14 and analyzed on 10/21/14 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate percent recoveries were within control limits.

LCS/LSCD (s): The LCS and LCSD percent recoveries were within control limits.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: The continuing calibrations were within control limits.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method:
Page 1 of 1

QC Report No: ZF85-Landau Associates, Inc.
Project: Cascade Pole
21039.110.111

Matrix: Water
Data Release Authorized: VD
Reported: 10/23/14

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-101714	Method Blank	10/17/14	10/21/14	1.00	Diesel Range	100	< 100 U
14-22178	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		91.3%
ZF85A	PZ-17-20141016	10/17/14	10/21/14	1.00	Diesel Range	100	< 100 U
14-22178	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		89.9%

Reported in ug/L (ppb)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
Creosote range quantitation on total peaks in the range from C12 to C22.
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

ZF85:6R BC 10/23/14

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZF85-Landau Associates, Inc.
Project: Cascade Pole
21039.110.111

Client ID	OTER	TOT OUT
MB-101714	91.3%	0
LCS-101714	90.5%	0
LCSD-101714	94.4%	0
PZ-17-20141016	89.9%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 14-22178 to 14-22178

ZF 85: JR BC 11/23/14

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-101714**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-101714 QC Report No: ZF85-Landau Associates, Inc.
LIMS ID: 14-22178 Project: Cascade Pole
Matrix: Water 21039.110.111
Data Release Authorized: Date Sampled: 10/16/14
Reported: 10/21/14 Date Received: 10/17/14

Date Extracted LCS/LCSD: 10/17/14 Sample Amount LCS: 500 mL
LCSD: 500 mL
Date Analyzed LCS: 10/21/14 11:41 Final Extract Volume LCS: 1.0 mL
LCSD: 10/21/14 12:02 LCSD: 1.0 mL
Instrument/Analyst LCS: FID/JLW Dilution Factor LCS: 1.00
LCSD: FID/JLW LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2380	3000	79.3%	2620	3000	87.3%	9.6%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	90.5%	94.4%

Results reported in ug/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Water
Date Received: 10/17/14

ARI Job: ZF85
Project: Cascade Pole
21039.110.111

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
14-22178-101714MB1	Method Blank	500 mL	1.00 mL	10/17/14
14-22178-101714LCS1	Lab Control	500 mL	1.00 mL	10/17/14
14-22178-101714LCSD1	Lab Control Dup	500 mL	1.00 mL	10/17/14
14-22178-ZF85A	PZ-17-20141016	500 mL	1.00 mL	10/17/14

ZF85: QR BC 10/23/14

Analytical Resources, Incorporated
Analytical Chemists and Consultants

April 8, 2015

Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Project: Port of Olympia, 21039.120.121
ARI Job No: ZZ61

Dear Chris:

Please find enclosed the original Chain-of-Custody record (COC), sample receipt documentation, and final results for the project referenced above. Analytical Resources, Inc. accepted fifteen water samples and a trip blank in good condition on March 10, 2015.

Please refer to the Case Narrative for details regarding requested analyses.

An electronic copy of this report and all associated ARI raw data will be kept on file with ARI. Should you have any questions or problems, please feel free to contact me at any time.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
(206) 695-6211

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

LANDAU ASSOCIATES

- ☐ **Seattle/Edmonds** (425) 778-0907
- ☒ **Tacoma** (253) 926-2493
- ☐ **Spokane** (509) 327-9737
- ☐ **Portland** (503) 542-1080
- ☐ ______

Chain-of-Custody Record

Date 3/10/15
Page 1 of 1

Project Name Port of Olympia Project No. 21039.120.121
Project Location/Event Cascade Pole, Wet Season
Sampler's Name Sierra Mott, Nick Dosch
Project Contact Chris Kimmel
Send Results To Chris Kimmel, Anne Halvorsen

Turnaround Time
- ☒ Standard
- ☐ Accelerated
- ☐ ______

Testing Parameters

Sample I.D.	Date	Time	Matrix	No. of Containers	TPH-Gx	TPH-Dx + creosote	PAHs (8270)	cPAHs SIM	PCP (8270)	PCP (8041)
PZ-12-20150309	3/9/15	955	H2O	10	X	X	X	X	X	X
PZ-13-20150309	3/9/15	958		10	X	X	X	X	X	X
PZ-30-20150309	3/9/15	1337		10	X	X	X	X	X	X
MW-05S-20150309	3/9/15	1333		10	X	X	X	X	X	X
CW-13-20150309	3/9/15	1336		10	X	X	X	X	X	X
MW-05D-20150309	3/9/15	1446		10	X	X	X	X	X	X
PZ-18-20150309	3/9/15	1716		10	X	X	X	X	X	X
PZ-17-20150309	3/9/15	1620		10	X	X	X	X	X	X
MW-02S-20150309	3/9/15	1505		10	X	X	X	X	X	X
LW-3-20150309	3/9/15	1615		10	X	X	X	X	X	X
LW4R-20150309	3/9/15	1709		10	X	X	X	X	X	X
PZ-19-20150309	3/10/15	920		10	X	X	X	X	X	X
MW02D-20150309	3/10/15	1024		10	X	X	X	X	X	X
MW-01S-20150309	3/10/15	1019		10	X	X	X	X	X	X
MW-01D-20150309	3/10/15	1134		10	X	X	X	X	X	X
Trip Blanks	2/27/15	—		4	X					

Observations/Comments

- X Allow water samples to settle, collect aliquot from clear portion
- X NWTPH-Dx - run acid wash silica gel cleanup
- __ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
- __ non-preserved
- __ preserved w/methanol
- __ preserved w/sodium bisulfate
- __ Freeze upon receipt
- __ Dissolved metal water samples field filtered

Other Run all samples for PCP using 8270. If results = ND, then and only then run PCP by 8041.

Special Shipment/Handling or Storage Requirements: Cooler w/ ice

Method of Shipment: drop off

Relinquished by	Received by	Relinquished by	Received by
Signature [signature]	Signature [signature]	Signature	Signature
Printed Name Nicholas Dosch	Printed Name Chris Atwell	Printed Name	Printed Name
Company Landau Associates Inc.	Company ARI	Company	Company
Date 3/10/15 Time 3:58pm	Date 3-10-15 Time 1558	Date Time	Date Time

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau

Project Name: Port of Olympia

COC No(s). _____ (NA)

Delivered by: Fed-Ex UPS Courier (Hand Delivered) Other: _____

Assigned ARI Job No: ZZ61

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry): 5.5 4.4 3.6 3.8 2.3 3.1 3.4, 4.1

Time: 1558

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90877952

Cooler Accepted by: CA Date: 3-10-15 Time: 1558

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other: _____		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		YES	(NO)
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	(NA)	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	(NO)
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	2/27/15	

Was Sample Split by ARI : (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JM Date: 3/11/15 Time: 1000

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

Trip Blank has 6 containers

PZ-17 = sm in 1062
PZ-18 = sm in 1062
LW-3 = sm in 1062
MW-015 = sm in 1062

Trip Blanks = sm in 1066

By: JM Date: 3/11/15

Small Air Bubbles ~ 2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
• • •	• • •	● ● ●

Small → "sm" (< 2 mm)	
Peabubbles → "pb" (2 to < 4 mm)	
Large → "lg" (4 to < 6 mm)	
Headspace → "hs" (> 6 mm)	

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: ZZ61
Client: Landau Associates, Inc.
Project Event: 21039.120.121
Project Name: Port of Olympia

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	PZ-12-20150309	ZZ61A	15-4425	Water	03/09/15 09:55	03/10/15 15:58
2.	PZ-13-20150309	ZZ61B	15-4426	Water	03/09/15 09:58	03/10/15 15:58
3.	PZ-30-20150309	ZZ61C	15-4427	Water	03/09/15 13:37	03/10/15 15:58
4.	MW-05S-20150309	ZZ61D	15-4428	Water	03/09/15 13:33	03/10/15 15:58
5.	CW-13-20150309	ZZ61E	15-4429	Water	03/09/15 13:36	03/10/15 15:58
6.	MW-05D-20150309	ZZ61F	15-4430	Water	03/09/15 14:46	03/10/15 15:58
7.	PZ-18-20150309	ZZ61G	15-4431	Water	03/09/15 17:16	03/10/15 15:58
8.	PZ-17-20150309	ZZ61H	15-4432	Water	03/09/15 16:20	03/10/15 15:58
9.	MW-02S-20150309	ZZ61I	15-4433	Water	03/09/15 15:05	03/10/15 15:58
10.	LW-3-20150309	ZZ61J	15-4434	Water	03/09/15 16:15	03/10/15 15:58
11.	LW4R-20150309	ZZ61K	15-4435	Water	03/09/15 17:09	03/10/15 15:58
12.	PZ-19-20150309	ZZ61L	15-4436	Water	03/10/15 09:20	03/10/15 15:58
13.	MW02D-20150309	ZZ61M	15-4437	Water	03/10/15 10:24	03/10/15 15:58
14.	MW-01S-20150309	ZZ61N	15-4438	Water	03/10/15 10:19	03/10/15 15:58
15.	MW-01D-20150309	ZZ61O	15-4439	Water	03/10/15 11:34	03/10/15 15:58
16.	Trip Blanks	ZZ61P	15-4440	Water	03/09/15	03/10/15 15:58

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Duplicate RPD is not within established control limits

B — Reported value is less than the CRDL but ≥ the Reporting Limit

N — Matrix Spike recovery not within established control limits

NA — Not Applicable, analyte not spiked

H — The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L — Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Flagged value is not within established control limits

B — Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J — Estimated concentration when the value is less than ARI's established reporting limits

D — The spiked compound was not detected due to sample extract dilution

E — Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

Q — Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

Geotechnical Data

A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.

F Samples were frozen prior to particle size determination

SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations

SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis

W Weight of sample in some pipette aliquots was below the level required for accurate weighting

ANALYTICAL
RESOURCES
INCORPORATED

Case Narrative

Project: 21039.120.121
ARI Job No.: ZZ61
April 8, 2015

Sample Receipt

Please find enclosed the original *Chain of Custody (COC)* record and analytical results for the project referenced above. Analytical Resources, Inc. accepted fifteen water samples and a trip blank in good condition on March 10, 2015. The samples were received at cooler temperatures between 2.3 and 5.5°C. Please see the *Cooler Receipt Form* for further details. Per Landau Associates, select samples were allowed to settle and sample volume was collected from the clear portion.

The following tests were performed on selected samples, as requested on the *Chain of Custody*.

Semivolatile Organics by method 8270D Water

The samples were extracted on 3/16/15. The samples were analyzed between 3/30/15 and 4/2/15 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate percent recovery of 2,4,6-Tribromophenol is outside the control limits high for samples **MW-02S-20150309 and PZ-30-20150309**. All other percent recoveries were within control limits. No corrective action was taken.

LCS/LSCD (s): The LCS and LCSD percent recoveries were within control limits.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: The continuing calibrations (CCALs) fell outside the 20% control limit low for Pentachlorophenol. All detected results for this compound have been flagged with a "Q" qualifier. No further corrective action was taken.

SIM cPAHs by method 8270-SIM Water

The samples were extracted on 3/16/15. The extracts were analyzed on 4/1/15 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate percent recoveries were within control limits.

LCS/LSCD (s): The LCS and LCSD percent recoveries were within control limits.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: The continuing calibrations were within control limits.

ZZ61: SR BC 4/21/15

Case Narrative

Project: 21039.120.121
ARI Job No.: ZZ61
April 8, 2015

PCP Only by method 8041

The samples were extracted on 3/16/15 and analyzed on 3/28/15 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate percent recoveries were within control limits.

LCS/LSCD (s): The LCS and LCSD percent recoveries were within control limits.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: The continuing calibrations were within control limits.

NWTPH-Dx

The samples were originally extracted on 3/14/15 and analyzed on 3/28/15 and 3/29/15 - within the method recommended holding time. At the request of Landau Associates, samples PZ-30-201503209 and MW-05S-20150309 were re-extracted outside of the method recommended holding time as the data reported did not match historical data. Both sets of data have been reported.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate percent recoveries were within control limits.

LCS/LSCD (s): The LCS and LCSD percent recoveries were within control limits.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: The continuing calibrations were within control limits.

NWTPH-Gx

The samples were analyzed on 3/14/15 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate percent recoveries were within control limits.

LCS/LSCD (s): The LCS and LCSD percent recoveries were within control limits.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: The continuing calibrations were within control limits.

2761: 9R BC 4/24/15

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: PZ-12-20150309
SAMPLE

Lab Sample ID: ZZ61A
LIMS ID: 15-4425
Matrix: Water
Data Release Authorized: VJ
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/30/15 21:22
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	80.0%
d14-p-Terphenyl	92.0%
2,4,6-Tribromophenol	108%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MB-031615
METHOD BLANK

Lab Sample ID: MB-031615
LIMS ID: 15-4426
Matrix: Water
Data Release Authorized: VD
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: NA
Date Received: NA

Date Extracted: 03/16/15
Date Analyzed: 03/30/15 19:43
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	88.0%
d14-p-Terphenyl	112%
2,4,6-Tribromophenol	113%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-13-20150309
SAMPLE

Lab Sample ID: ZZ61B
LIMS ID: 15-4426
Matrix: Water
Data Release Authorized: VV
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/30/15 21:56
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	86.4%
d14-p-Terphenyl	99.2%
2,4,6-Tribromophenol	115%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: PZ-30-20150309
SAMPLE

Lab Sample ID: ZZ61C
LIMS ID: 15-4427
Matrix: Water
Data Release Authorized:
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/31/15 11:05
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**1.4**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**7.1**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	90.8%
d14-p-Terphenyl	66.0%
2,4,6-Tribromophenol	134%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-05S-20150309
SAMPLE

Lab Sample ID: ZZ61D
LIMS ID: 15-4428
Matrix: Water
Data Release Authorized: VD
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/31/15 11:39
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**1.4**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**6.5**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	86.4%
d14-p-Terphenyl	64.0%
2,4,6-Tribromophenol	116%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: CW-13-20150309
SAMPLE

Lab Sample ID: ZZ61E
LIMS ID: 15-4429
Matrix: Water
Data Release Authorized: VD
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/31/15 12:12
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	81.2%
d14-p-Terphenyl	98.0%
2,4,6-Tribromophenol	108%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: MW-05D-20150309
SAMPLE

Lab Sample ID: ZZ61F
LIMS ID: 15-4430
Matrix: Water
Data Release Authorized: VD
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/31/15 12:45
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	88.0%
d14-p-Terphenyl	102%
2,4,6-Tribromophenol	109%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-18-20150309
SAMPLE

Lab Sample ID: ZZ61G
LIMS ID: 15-4431
Matrix: Water
Data Release Authorized: VD
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/31/15 13:18
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	93.2%
d14-p-Terphenyl	94.4%
2,4,6-Tribromophenol	126%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-17-20150309
SAMPLE

Lab Sample ID: ZZ61H
LIMS ID: 15-4432
Matrix: Water
Data Release Authorized: VD
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/31/15 13:52
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	55.2%
d14-p-Terphenyl	94.0%
2,4,6-Tribromophenol	94.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-02S-20150309
SAMPLE

Lab Sample ID: ZZ61I
LIMS ID: 15-4433
Matrix: Water
Data Release Authorized: VD
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/31/15 14:25
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	104%
d14-p-Terphenyl	92.4%
2,4,6-Tribromophenol	139%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: LW-3-20150309
SAMPLE

Lab Sample ID: ZZ61J
LIMS ID: 15-4434
Matrix: Water
Data Release Authorized: VD
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/31/15 14:58
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	86.8%
d14-p-Terphenyl	62.8%
2,4,6-Tribromophenol	116%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: LW4R-20150309
SAMPLE

Lab Sample ID: ZZ61K
LIMS ID: 15-4435
Matrix: Water
Data Release Authorized: VT
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/31/15 15:31
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	73.6%
d14-p-Terphenyl	104%
2,4,6-Tribromophenol	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: PZ-19-20150309
SAMPLE

Lab Sample ID: ZZ61L
LIMS ID: 15-4436
Matrix: Water
Data Release Authorized:
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/10/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/31/15 16:04
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**3.3**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	104%
d14-p-Terphenyl	112%
2,4,6-Tribromophenol	127%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW02D-20150309
SAMPLE

Lab Sample ID: ZZ61M
LIMS ID: 15-4437
Matrix: Water
Data Release Authorized: VD
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/10/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/31/15 16:38
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**6.0**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**3.8**
132-64-9	**Dibenzofuran**	**1.0**	**1.2**
86-73-7	**Fluorene**	**1.0**	**1.9**
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	**Phenanthrene**	**1.0**	**1.4**
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	**1-Methylnaphthalene**	**1.0**	**1.2**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	87.6%
d14-p-Terphenyl	108%
2,4,6-Tribromophenol	112%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-01S-20150309
SAMPLE

Lab Sample ID: ZZ61N
LIMS ID: 15-4438
Matrix: Water
Data Release Authorized: VD
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/10/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/02/15 13:52
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 10.0

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**10**	**4,700 ES**
91-57-6	**2-Methylnaphthalene**	**10**	**820 E**
208-96-8	Acenaphthylene	10	< 10 U
83-32-9	**Acenaphthene**	**10**	**280**
132-64-9	**Dibenzofuran**	**10**	**110**
86-73-7	**Fluorene**	**10**	**73**
87-86-5	**Pentachlorophenol**	**100**	**8,300 EQ**
85-01-8	**Phenanthrene**	**10**	**69**
86-74-8	**Carbazole**	**10**	**53**
120-12-7	**Anthracene**	**10**	**16**
206-44-0	Fluoranthene	10	< 10 U
129-00-0	Pyrene	10	< 10 U
56-55-3	Benzo(a)anthracene	10	< 10 U
218-01-9	Chrysene	10	< 10 U
50-32-8	Benzo(a)pyrene	10	< 10 U
193-39-5	Indeno(1,2,3-cd)pyrene	10	< 10 U
53-70-3	Dibenz(a,h)anthracene	10	< 10 U
191-24-2	Benzo(g,h,i)perylene	10	< 10 U
90-12-0	**1-Methylnaphthalene**	**10**	**420**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	94.4%
d14-p-Terphenyl	78.8%
2,4,6-Tribromophenol	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-01S-20150309
DILUTION

Lab Sample ID: ZZ61N
LIMS ID: 15-4438
Matrix: Water
Data Release Authorized: VD
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/10/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/02/15 20:29
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 200

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**200**	**8,000**
91-57-6	**2-Methylnaphthalene**	**200**	**720**
208-96-8	Acenaphthylene	200	< 200 U
83-32-9	Acenaphthene	200	< 200 U
132-64-9	Dibenzofuran	200	< 200 U
86-73-7	Fluorene	200	< 200 U
87-86-5	**Pentachlorophenol**	**2,000**	**2,900 Q**
85-01-8	Phenanthrene	200	< 200 U
86-74-8	Carbazole	200	< 200 U
120-12-7	Anthracene	200	< 200 U
206-44-0	Fluoranthene	200	< 200 U
129-00-0	Pyrene	200	< 200 U
56-55-3	Benzo(a)anthracene	200	< 200 U
218-01-9	Chrysene	200	< 200 U
50-32-8	Benzo(a)pyrene	200	< 200 U
193-39-5	Indeno(1,2,3-cd)pyrene	200	< 200 U
53-70-3	Dibenz(a,h)anthracene	200	< 200 U
191-24-2	Benzo(g,h,i)perylene	200	< 200 U
90-12-0	**1-Methylnaphthalene**	**200**	**430**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	D
d14-p-Terphenyl	D
2,4,6-Tribromophenol	D

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: MW-01D-20150309
SAMPLE

Lab Sample ID: ZZ610
LIMS ID: 15-4439
Matrix: Water
Data Release Authorized: VD
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/10/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/31/15 17:44
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**2.7**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	82.8%
d14-p-Terphenyl	100%
2,4,6-Tribromophenol	106%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121

Client ID	FBP	TPH	TBP	TOT OUT
PZ-12-20150309	80.0%	92.0%	108%	0
MB-031615	88.0%	112%	113%	0
LCS-031615	78.8%	78.8%	106%	0
LCSD-031615	71.6%	74.0%	100%	0
PZ-13-20150309	86.4%	99.2%	115%	0
PZ-30-20150309	90.8%	66.0%	134%*	1
MW-05S-20150309	86.4%	64.0%	116%	0
CW-13-20150309	81.2%	98.0%	108%	0
MW-05D-20150309	88.0%	102%	109%	0
PZ-18-20150309	93.2%	94.4%	126%	0
PZ-17-20150309	55.2%	94.0%	94.1%	0
MW-02S-20150309	104%	92.4%	139%*	1
LW-3-20150309	86.8%	62.8%	116%	0
LW4R-20150309	73.6%	104%	101%	0
PZ-19-20150309	104%	112%	127%	0
MW02D-20150309	87.6%	108%	112%	0
MW-01S-20150309	94.4%	78.8%	101%	0
MW-01S-20150309 DL	D	D	D	0
MW-01D-20150309	82.8%	100%	106%	0

	LCS/MB LIMITS	QC LIMITS
(FBP) = 2-Fluorobiphenyl	(33-120)	(33-120)
(TPH) = d14-p-Terphenyl	(28-130)	(28-130)
(TBP) = 2,4,6-Tribromophenol	(52-131)	(52-131)

Prep Method: SW3520C
Log Number Range: 15-4425 to 15-4439

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
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Sample ID: LCS-031615
LCS/LCSD

Lab Sample ID: LCS-031615
LIMS ID: 15-4426
Matrix: Water
Data Release Authorized: VD
Reported: 04/04/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted LCS/LCSD: 03/16/15

Date Analyzed LCS: 03/30/15 20:16
LCSD: 03/30/15 20:49
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ
GPC Cleanup: NO

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	14.0	25.0	56.0%	14.2	25.0	56.8%	1.4%
2-Methylnaphthalene	14.2	25.0	56.8%	14.4	25.0	57.6%	1.4%
Acenaphthylene	14.8	25.0	59.2%	14.1	25.0	56.4%	4.8%
Acenaphthene	15.1	25.0	60.4%	14.6	25.0	58.4%	3.4%
Dibenzofuran	15.9	25.0	63.6%	15.2	25.0	60.8%	4.5%
Fluorene	16.2	25.0	64.8%	15.8	25.0	63.2%	2.5%
Pentachlorophenol	58.3 Q	75.0	77.7%	59.0 Q	75.0	78.7%	1.2%
Phenanthrene	19.6	25.0	78.4%	19.3	25.0	77.2%	1.5%
Carbazole	16.6	25.0	66.4%	17.1	25.0	68.4%	3.0%
Anthracene	18.7	25.0	74.8%	18.7	25.0	74.8%	0.0%
Fluoranthene	21.2	25.0	84.8%	21.9	25.0	87.6%	3.2%
Pyrene	15.1	25.0	60.4%	15.4	25.0	61.6%	2.0%
Benzo(a)anthracene	17.2	25.0	68.8%	17.7	25.0	70.8%	2.9%
Chrysene	15.3	25.0	61.2%	16.2	25.0	64.8%	5.7%
Benzo(a)pyrene	19.4	25.0	77.6%	19.3	25.0	77.2%	0.5%
Indeno(1,2,3-cd)pyrene	19.6	25.0	78.4%	19.7	25.0	78.8%	0.5%
Dibenz(a,h)anthracene	20.1	25.0	80.4%	20.1	25.0	80.4%	0.0%
Benzo(g,h,i)perylene	19.1	25.0	76.4%	19.1	25.0	76.4%	0.0%
1-Methylnaphthalene	15.8	25.0	63.2%	15.4	25.0	61.6%	2.6%

Semivolatile Surrogate Recovery

	LCS	LCSD
2-Fluorobiphenyl	78.8%	71.6%
d14-p-Terphenyl	78.8%	74.0%
2,4,6-Tribromophenol	106%	100%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C
Page 1 of 1

Sample ID: PZ-12-20150309
SAMPLE

Lab Sample ID: ZZ61A
LIMS ID: 15-4425
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 10:22
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	77.0%
d14-Dibenzo(a,h)anthracene	112%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C

Sample ID: PZ-13-20150309
SAMPLE

Lab Sample ID: ZZ61B
LIMS ID: 15-4426
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 10:47
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	73.3%
d14-Dibenzo(a,h)anthracene	107%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C

Sample ID: PZ-30-20150309
SAMPLE

Lab Sample ID: ZZ61C
LIMS ID: 15-4427
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 11:11
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	70.3%
d14-Dibenzo(a,h)anthracene	103%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C

Sample ID: MW-05S-20150309
SAMPLE

Lab Sample ID: ZZ61D
LIMS ID: 15-4428
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 11:35
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	73.3%
d14-Dibenzo(a,h)anthracene	102%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C
Page 1 of 1

Sample ID: CW-13-20150309
SAMPLE

Lab Sample ID: ZZ61E
LIMS ID: 15-4429
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 11:59
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	78.7%
d14-Dibenzo(a,h)anthracene	115%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C

Sample ID: MW-05D-20150309
SAMPLE

Lab Sample ID: ZZ61F
LIMS ID: 15-4430
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 12:23
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	41.3%
d14-Dibenzo(a,h)anthracene	57.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C

Sample ID: PZ-18-20150309
SAMPLE

Lab Sample ID: ZZ61G
LIMS ID: 15-4431
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 12:47
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	50.7%
d14-Dibenzo(a,h)anthracene	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C

Sample ID: PZ-17-20150309
SAMPLE

Lab Sample ID: ZZ61H
LIMS ID: 15-4432
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 13:11
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	64.0%
d14-Dibenzo(a,h)anthracene	110%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MW-02S-20150309
SAMPLE

Lab Sample ID: ZZ61I
LIMS ID: 15-4433
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 13:36
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	68.3%
d14-Dibenzo(a,h)anthracene	103%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C

Sample ID: LW-3-20150309
SAMPLE

Lab Sample ID: ZZ61J
LIMS ID: 15-4434
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 14:00
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	59.7%
d14-Dibenzo(a,h)anthracene	83.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C
Page 1 of 1

Sample ID: LW4R-20150309
SAMPLE

Lab Sample ID: ZZ61K
LIMS ID: 15-4435
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 14:24
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	61.7%
d14-Dibenzo(a,h)anthracene	95.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C

Sample ID: PZ-19-20150309
SAMPLE

Lab Sample ID: ZZ61L
LIMS ID: 15-4436
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: 03/10/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 14:48
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	70.7%
d14-Dibenzo(a,h)anthracene	106%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C

Sample ID: MW02D-20150309
SAMPLE

Lab Sample ID: ZZ61M
LIMS ID: 15-4437
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: 03/10/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 15:12
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	65.0%
d14-Dibenzo(a,h)anthracene	105%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C
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Sample ID: MW-01S-20150309
SAMPLE

Lab Sample ID: ZZ61N
LIMS ID: 15-4438
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: 03/10/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 15:36
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	**Benzo(a)anthracene**	**0.10**	**1.5**
218-01-9	**Chrysene**	**0.10**	**1.6**
50-32-8	**Benzo(a)pyrene**	**0.10**	**0.54**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**0.10**	**0.13**
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	**Total Benzofluoranthenes**	**0.20**	**1.1**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	40.0%
d14-Dibenzo(a,h)anthracene	93.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C

Sample ID: MW-01D-20150309
SAMPLE

Lab Sample ID: ZZ61O
LIMS ID: 15-4439
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: 03/10/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 16:00
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	64.3%
d14-Dibenzo(a,h)anthracene	97.7%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121

Client ID	MNP	DBA	TOT OUT
MB-031615	73.7%	99.7%	0
LCS-031615	69.3%	115%	0
LCSD-031615	71.0%	119%	0
PZ-12-20150309	77.0%	112%	0
PZ-13-20150309	73.3%	107%	0
PZ-30-20150309	70.3%	103%	0
MW-05S-20150309	73.3%	102%	0
CW-13-20150309	78.7%	115%	0
MW-05D-20150309	41.3%	57.3%	0
PZ-18-20150309	50.7%	104%	0
PZ-17-20150309	64.0%	110%	0
MW-02S-20150309	68.3%	103%	0
LW-3-20150309	59.7%	83.3%	0
LW4R-20150309	61.7%	95.7%	0
PZ-19-20150309	70.7%	106%	0
MW02D-20150309	65.0%	105%	0
MW-01S-20150309	40.0%	93.0%	0
MW-01D-20150309	64.3%	97.7%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(31-120)	(31-120)
(DBA) = d14-Dibenzo(a,h)anthracene	(10-125)	(10-125)

Prep Method: SW3510C
Log Number Range: 15-4425 to 15-4439

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3510C

Sample ID: MB-031615
METHOD BLANK

Lab Sample ID: MB-031615
LIMS ID: 15-4425
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: NA
Date Received: NA

Date Extracted: 03/16/15
Date Analyzed: 04/01/15 09:10
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	73.7%
d14-Dibenzo(a,h)anthracene	99.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS

Sample ID: LCS-031615
LAB CONTROL SAMPLE

Lab Sample ID: LCS-031615
LIMS ID: 15-4425
Matrix: Water
Data Release Authorized:
Reported: 04/06/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 03/16/15

Date Analyzed LCS: 04/01/15 09:34
LCSD: 04/01/15 09:58
Instrument/Analyst LCS: NT8/JZ
LCSD: NT8/JZ

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	2.47	3.00	82.3%	2.54	3.00	84.7%	2.8%
Chrysene	2.48	3.00	82.7%	2.46	3.00	82.0%	0.8%
Benzo(a)pyrene	2.39	3.00	79.7%	2.56	3.00	85.3%	6.9%
Indeno(1,2,3-cd)pyrene	2.75	3.00	91.7%	2.88	3.00	96.0%	4.6%
Dibenz(a,h)anthracene	2.85	3.00	95.0%	2.97	3.00	99.0%	4.1%
Total Benzofluoranthenes	7.86	9.00	87.3%	8.09	9.00	89.9%	2.9%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	69.3%	71.0%
d14-Dibenzo(a,h)anthracene	115%	119%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: PZ-12-20150309
SAMPLE

Lab Sample ID: ZZ61A
LIMS ID: 15-4425
Matrix: Water
Data Release Authorized: MW
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/28/15 18:13
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	90.4%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: PZ-13-20150309
SAMPLE

Lab Sample ID: ZZ61B
LIMS ID: 15-4426
Matrix: Water
Data Release Authorized: MW
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/28/15 18:48
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	96.4%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C

Sample ID: PZ-30-20150309
SAMPLE

Lab Sample ID: ZZ61C
LIMS ID: 15-4427
Matrix: Water
Data Release Authorized: MW
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/28/15 19:24
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	94.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C

Sample ID: MW-05S-20150309
SAMPLE

Lab Sample ID: ZZ61D
LIMS ID: 15-4428
Matrix: Water
Data Release Authorized: MW
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/28/15 19:59
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	97.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: CW-13-20150309
SAMPLE

Lab Sample ID: ZZ61E
LIMS ID: 15-4429
Matrix: Water
Data Release Authorized: NW
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/28/15 20:34
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	90.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MW-05D-20150309
SAMPLE

Lab Sample ID: ZZ61F
LIMS ID: 15-4430
Matrix: Water
Data Release Authorized: MW
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/28/15 21:45
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	93.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C

Sample ID: PZ-18-20150309
SAMPLE

Lab Sample ID: ZZ61G
LIMS ID: 15-4431
Matrix: Water
Data Release Authorized: MW
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/28/15 22:20
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	92.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C

Sample ID: PZ-17-20150309
SAMPLE

Lab Sample ID: ZZ61H
LIMS ID: 15-4432
Matrix: Water
Data Release Authorized:
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/28/15 22:55
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	93.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C

Sample ID: MW-02S-20150309
SAMPLE

Lab Sample ID: ZZ61I
LIMS ID: 15-4433
Matrix: Water
Data Release Authorized: MW
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/29/15 23:31
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	98.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: LW-3-20150309
SAMPLE

Lab Sample ID: ZZ61J
LIMS ID: 15-4434
Matrix: Water
Data Release Authorized:
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/29/15 00:06
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	84.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C

Sample ID: LW4R-20150309
SAMPLE

Lab Sample ID: ZZ61K
LIMS ID: 15-4435
Matrix: Water
Data Release Authorized: MW
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/29/15 00:41
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	86.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C

Sample ID: PZ-19-20150309
SAMPLE

Lab Sample ID: ZZ61L
LIMS ID: 15-4436
Matrix: Water
Data Release Authorized: MW
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/10/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/29/15 01:16
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	78.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C

Sample ID: MW02D-20150309
SAMPLE

Lab Sample ID: ZZ61M
LIMS ID: 15-4437
Matrix: Water
Data Release Authorized: MW
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/10/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/29/15 01:52
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	93.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MW-01D-20150309
SAMPLE

Lab Sample ID: ZZ610
LIMS ID: 15-4439
Matrix: Water
Data Release Authorized:
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/10/15
Date Received: 03/10/15

Date Extracted: 03/16/15
Date Analyzed: 03/29/15 03:02
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	**Pentachlorophenol**	**0.25**	**1.7**

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	95.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C

Sample ID: MB-031615
METHOD BLANK

Lab Sample ID: MB-031615
LIMS ID: 15-4425
Matrix: Water
Data Release Authorized: MW
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: NA
Date Received: NA

Date Extracted: 03/16/15
Date Analyzed: 03/28/15 16:27
Instrument/Analyst: ECD8/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	74.4%

ANALYTICAL RESOURCES INCORPORATED

SW8041 CHLOROPHENOLICS SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121

Client ID	TBP	TOT OUT
MB-031615	74.4%	0
LCS-031615	91.2%	0
LCSD-031615	93.6%	0
PZ-12-20150309	90.4%	0
PZ-13-20150309	96.4%	0
PZ-30-20150309	94.0%	0
MW-05S-20150309	97.6%	0
CW-13-20150309	90.8%	0
MW-05D-20150309	93.6%	0
PZ-18-20150309	92.8%	0
PZ-17-20150309	93.2%	0
MW-02S-20150309	98.0%	0
LW-3-20150309	84.0%	0
LW4R-20150309	86.4%	0
PZ-19-20150309	78.4%	0
MW02D-20150309	93.6%	0
MW-01D-20150309	95.6%	0

	QC LIMITS
(TBP) = 2,4,6-Tribromophenol	(26-120)

Prep Method: SW3510C
Log Number Range: 15-4425 to 15-4439

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: LCS-031615
LCS/LCSD

Lab Sample ID: LCS-031615
LIMS ID: 15-4425
Matrix: Water
Data Release Authorized:
Reported: 04/02/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted LCS/LCSD: 03/16/15

Date Analyzed LCS: 03/28/15 17:03
LCSD: 03/28/15 17:38
Instrument/Analyst LCS: ECD8/YZ
LCSD: ECD8/YZ

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 50 mL
LCSD: 50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Pentachlorophenol	1.72	2.50	68.8%	1.85	2.50	74.0%	7.3%

Chlorophenols Surrogate Recovery

	LCS	LCSD
2,4,6-Tribromophenol	91.2%	93.6%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method:

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121

Matrix: Water
Data Release Authorized:
Reported: 04/21/15

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-041415	Method Blank	04/14/15	04/14/15	1.00	Diesel Range	100	< 100 U
15-4427	HC ID: ---		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		87.8%
ZZ61C	PZ-30-20150309	03/14/15	03/29/15	1.00	Diesel Range	110	< 110 U
15-4427	HC ID: ---		FID4A	1.0	Motor Oil Range	220	< 220 U
					Creosote Range	110	< 110 U
					o-Terphenyl		100%
ZZ61C RE	PZ-30-20150309	04/14/15	04/14/15	1.00	Diesel Range	100	< 100 U
15-4427	HC ID: **MOTOR OIL**		FID4A	1.0	**Motor Oil Range**	**200**	**240**
					Creosote Range	**100**	**110**
					o-Terphenyl		94.7%
ZZ61D	MW-05S-20150309	03/14/15	03/29/15	1.00	**Diesel Range**	**100**	**200**
15-4428	HC ID: **DRO/MOTOR OIL**		FID4A	1.0	**Motor Oil Range**	**200**	**1200**
					Creosote Range	**100**	**390**
					o-Terphenyl		87.2%
ZZ61D RE	MW-05S-20150309	04/14/15	04/14/15	1.00	Diesel Range	100	< 100 U
15-4428	HC ID: ---		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		84.4%
ZZ61E	CW-13-20150309	03/14/15	03/29/15	1.00	Diesel Range	100	< 100 U
15-4429	HC ID: ---		FID4A	1.0	Motor Oil Range	210	< 210 U
					Creosote Range	100	< 100 U
					o-Terphenyl		94.4%
ZZ61F	MW-05D-20150309	03/14/15	03/29/15	1.00	Diesel Range	110	< 110 U
15-4430	HC ID: ---		FID4A	1.0	Motor Oil Range	220	< 220 U
					Creosote Range	110	< 110 U
					o-Terphenyl		96.5%
ZZ61G	PZ-18-20150309	03/14/15	03/29/15	1.00	Diesel Range	110	< 110 U
15-4431	HC ID: ---		FID4A	1.0	Motor Oil Range	220	< 220 U
					Creosote Range	110	< 110 U
					o-Terphenyl		97.6%
ZZ61H	PZ-17-20150309	03/14/15	03/29/15	1.00	Diesel Range	100	< 100 U
15-4432	HC ID: ---		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		90.2%
ZZ61I	MW-02S-20150309	03/14/15	03/29/15	1.00	Diesel Range	120	< 120 U
15-4433	HC ID: ---		FID4A	1.0	Motor Oil Range	230	< 230 U
					Creosote Range	120	< 120 U
					o-Terphenyl		86.8%

ZZ61:64R BC 4/24/15

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method:

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121

Matrix: Water
Data Release Authorized:
Reported: 04/21/15

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
ZZ61J	LW-3-20150309	03/14/15	03/29/15	1.00	Diesel Range	120	< 120 U
15-4434	HC ID: ---		FID4A	1.0	Motor Oil Range	230	< 230 U
					Creosote Range	120	< 120 U
					o-Terphenyl		100%
ZZ61K	LW4R-20150309	03/14/15	03/29/15	1.00	Diesel Range	120	< 120 U
15-4435	HC ID: ---		FID4A	1.0	Motor Oil Range	240	< 240 U
					Creosote Range	120	< 120 U
					o-Terphenyl		97.1%
ZZ61L	PZ-19-20150309	03/14/15	03/29/15	1.00	Diesel Range	100	< 100 U
15-4436	HC ID: ---		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		94.8%
ZZ61M	MW02D-20150309	03/14/15	03/29/15	1.00	Diesel Range	120	< 120 U
15-4437	HC ID: ---		FID4A	1.0	Motor Oil Range	230	< 230 U
					Creosote Range	120	< 120 U
					o-Terphenyl		101%
ZZ61N	MW-01S-20150309	03/14/15	03/29/15	1.00	**Diesel Range**	**100**	**8000 E**
15-4438	HC ID: **CREOSOTE**		FID4A	1.0	**Motor Oil Range**	**200**	**300**
					Creosote Range	**100**	**34000 E**
					o-Terphenyl		92.8%
ZZ61N DIL	MW-01S-20150309	03/14/15	03/31/15	1.00	**Diesel Range**	**1000**	**3700**
15-4438	HC ID: **CREOSOTE**		FID4A	10	Motor Oil Range	2000	< 2000 U
					Creosote Range	**1000**	**16000**
					o-Terphenyl		65.3%
ZZ61O	MW-01D-20150309	03/14/15	03/29/15	1.00	Diesel Range	110	< 110 U
15-4439	HC ID: **MOTOR OIL**		FID4A	1.0	**Motor Oil Range**	**220**	**330**
					Creosote Range	**110**	**140**
					o-Terphenyl		88.5%

Reported in ug/L (ppb)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
Creosote range quantitation on total peaks in the range from C12 to C22.
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

ZZ61: GSR DC 4/21/15

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121

Client ID	OTER	TOT OUT
MB-041415	87.8%	0
LCS-041415	87.2%	0
PZ-30-20150309	100%	0
PZ-30-20150309 RE	94.7%	0
MW-05S-20150309	87.2%	0
MW-05S-20150309 RE	84.4%	0
CW-13-20150309	94.4%	0
MW-05D-20150309	96.5%	0
PZ-18-20150309	97.6%	0
PZ-17-20150309	90.2%	0
MW-02S-20150309	86.8%	0
LW-3-20150309	100%	0
LW4R-20150309	97.1%	0
PZ-19-20150309	94.8%	0
MW02D-20150309	101%	0
MW-01S-20150309	92.8%	0
MW-01S-20150309 DL	65.3%	0
MW-01D-20150309	88.5%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 15-4427 to 15-4439

FORM-II TPHD

ZZ61:66A BC 4/24/15

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Water
Date Received: 03/10/15

ARI Job: ZZ61
Project: Port of Olympia
21039.120.121

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
15-4427-041415MB1	Method Blank	500 mL	1.00 mL	04/14/15
15-4427-041415LCS1	Lab Control	500 mL	1.00 mL	04/14/15
15-4427-ZZ61C	PZ-30-20150309	465 mL	1.00 mL	03/14/15
15-4427-ZZ61CRE	PZ-30-20150309	500 mL	1.00 mL	04/14/15
15-4428-ZZ61D	MW-05S-20150309	500 mL	1.00 mL	03/14/15
15-4428-ZZ61DRE	MW-05S-20150309	500 mL	1.00 mL	04/14/15
15-4429-ZZ61E	CW-13-20150309	480 mL	1.00 mL	03/14/15
15-4430-ZZ61F	MW-05D-20150309	465 mL	1.00 mL	03/14/15
15-4431-ZZ61G	PZ-18-20150309	455 mL	1.00 mL	03/14/15
15-4432-ZZ61H	PZ-17-20150309	500 mL	1.00 mL	03/14/15
15-4433-ZZ61I	MW-02S-20150309	430 mL	1.00 mL	03/14/15
15-4434-ZZ61J	LW-3-20150309	430 mL	1.00 mL	03/14/15
15-4435-ZZ61K	LW4R-20150309	410 mL	1.00 mL	03/14/15
15-4436-ZZ61L	PZ-19-20150309	500 mL	1.00 mL	03/14/15
15-4437-ZZ61M	MW02D-20150309	430 mL	1.00 mL	03/14/15
15-4438-ZZ61N	MW-01S-20150309	500 mL	1.00 mL	03/14/15
15-4439-ZZ61O	MW-01D-20150309	450 mL	1.00 mL	03/14/15

ZZ61:67R BL 4/24/15

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-031415**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-031415 QC Report No: ZZ61-Landau Associates, Inc.
LIMS ID: 15-4425 Project: Port of Olympia
Matrix: Water 21039.120.121
Data Release Authorized: Date Sampled: 03/09/15
Reported: 04/01/15 Date Received: 03/10/15

Date Extracted LCS/LCSD: 03/14/15 Sample Amount LCS: 500 mL
LCSD: 500 mL
Date Analyzed LCS: 03/28/15 23:54 Final Extract Volume LCS: 1.0 mL
LCSD: 03/29/15 00:18 LCSD: 1.0 mL
Instrument/Analyst LCS: FID/JGR Dilution Factor LCS: 1.00
LCSD: FID/JGR LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2140	3000	71.3%	2340	3000	78.0%	8.9%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	93.6%	104%

Results reported in ug/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-041415**
Page 1 of 1 **LAB CONTROL**

Lab Sample ID: LCS-041415
LIMS ID: 15-4427
Matrix: Water
Data Release Authorized:
Reported: 04/21/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
21039.120.121
Date Sampled: 03/09/15
Date Received: 03/10/15

Date Extracted: 04/14/15
Date Analyzed: 04/14/15 21:11
Instrument/Analyst: FID/ML

Sample Amount: 500 mL
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00

Range	Lab Control	Spike Added	Recovery
Diesel	2530	3000	84.3%

TPHD Surrogate Recovery

o-Terphenyl	87.2%

Results reported in ug/L

FORM III

ZZ61: 68-A

BC 4/21/15

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121

Data Release Authorized:
Reported: 03/20/15

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-031415	Method Blank	03/14/15	1.0	Gasoline	< 250 U
15-4425		PID3		HC ID	---
				Trifluorotoluene	98.6%
				Bromobenzene	99.0%
ZZ61A	PZ-12-20150309	03/14/15	1.0	Gasoline	< 250 U
15-4425		PID3		HC ID	---
				Trifluorotoluene	94.1%
				Bromobenzene	89.0%
ZZ61B	PZ-13-20150309	03/14/15	1.0	Gasoline	< 250 U
15-4426		PID3		HC ID	---
				Trifluorotoluene	96.7%
				Bromobenzene	95.1%
ZZ61C	PZ-30-20150309	03/14/15	1.0	Gasoline	< 250 U
15-4427		PID3		HC ID	---
				Trifluorotoluene	98.0%
				Bromobenzene	97.0%
ZZ61D	MW-05S-20150309	03/14/15	1.0	Gasoline	< 250 U
15-4428		PID3		HC ID	---
				Trifluorotoluene	97.9%
				Bromobenzene	98.3%
ZZ61E	CW-13-20150309	03/14/15	1.0	Gasoline	< 250 U
15-4429		PID3		HC ID	---
				Trifluorotoluene	97.1%
				Bromobenzene	97.8%
ZZ61F	MW-05D-20150309	03/14/15	1.0	Gasoline	< 250 U
15-4430		PID3		HC ID	---
				Trifluorotoluene	96.5%
				Bromobenzene	97.7%
ZZ61G	PZ-18-20150309	03/14/15	1.0	Gasoline	< 250 U
15-4431		PID3		HC ID	---
				Trifluorotoluene	96.1%
				Bromobenzene	96.6%
ZZ61H	PZ-17-20150309	03/14/15	1.0	Gasoline	< 250 U
15-4432		PID3		HC ID	---
				Trifluorotoluene	96.3%
				Bromobenzene	98.2%
ZZ61I	MW-02S-20150309	03/14/15	1.0	Gasoline	< 250 U
15-4433		PID3		HC ID	---
				Trifluorotoluene	95.1%
				Bromobenzene	96.6%

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ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

QC Report No: ZZ61-Landau Associates, Inc.
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Event: 21039.120.121

Data Release Authorized:
Reported: 03/20/15

ARI ID	Client ID	Analysis Date	DL	Range	Result
ZZ61J	LW-3-20150309	03/14/15	1.0	Gasoline	< 250 U
15-4434		PID3		HC ID	---
				Trifluorotoluene	95.7%
				Bromobenzene	96.6%
ZZ61K	LW4R-20150309	03/14/15	1.0	Gasoline	< 250 U
15-4435		PID3		HC ID	---
				Trifluorotoluene	95.2%
				Bromobenzene	96.7%
ZZ61L	PZ-19-20150309	03/14/15	1.0	Gasoline	< 250 U
15-4436		PID3		HC ID	---
				Trifluorotoluene	95.5%
				Bromobenzene	97.8%
ZZ61M	MW02D-20150309	03/14/15	1.0	Gasoline	< 250 U
15-4437		PID3		HC ID	---
				Trifluorotoluene	92.4%
				Bromobenzene	94.3%
ZZ61N	MW-01S-20150309	03/14/15	10	**Gasoline**	**44000**
15-4438		PID3		HC ID	GRO
				Trifluorotoluene	88.4%
				Bromobenzene	95.1%
ZZ61O	MW-01D-20150309	03/14/15	1.0	Gasoline	< 250 U
15-4439		PID3		HC ID	---
				Trifluorotoluene	95.6%
				Bromobenzene	98.8%
ZZ61P	Trip Blanks	03/14/15	1.0	Gasoline	< 250 U
15-4440		PID3		HC ID	---
				Trifluorotoluene	95.1%
				Bromobenzene	97.5%

Gasoline values reported in µg/L (ppb)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

ANALYTICAL RESOURCES INCORPORATED

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: ZZ61
Matrix: Water

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121

Client ID	TFT	BBZ	TOT OUT
MB-031415	98.6%	99.0%	0
LCS-031415	94.3%	92.8%	0
LCSD-031415	88.8%	88.8%	0
PZ-12-20150309	94.1%	89.0%	0
PZ-13-20150309	96.7%	95.1%	0
PZ-30-20150309	98.0%	97.0%	0
MW-05S-20150309	97.9%	98.3%	0
CW-13-20150309	97.1%	97.8%	0
MW-05D-20150309	96.5%	97.7%	0
PZ-18-20150309	96.1%	96.6%	0
PZ-17-20150309	96.3%	98.2%	0
MW-02S-20150309	95.1%	96.6%	0
LW-3-20150309	95.7%	96.6%	0
LW4R-20150309	95.2%	96.7%	0
PZ-19-20150309	95.5%	97.8%	0
MW02D-20150309	92.4%	94.3%	0
MW-01S-20150309	88.4%	95.1%	0
MW-01D-20150309	95.6%	98.8%	0
Trip Blanks	95.1%	97.5%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 15-4425 to 15-4440

FORM II TPHG

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
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Sample ID: LCS-031415
LAB CONTROL SAMPLE

Lab Sample ID: LCS-031415
LIMS ID: 15-4425
Matrix: Water
Data Release Authorized:
Reported: 03/20/15

QC Report No: ZZ61-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.120.121
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 03/14/15 12:00
LCSD: 03/14/15 12:28
Instrument/Analyst LCS: PID3/PKC
LCSD: PID3/PKC

Purge Volume: 5.0 mL

Dilution Factor LCS: 1.0
LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	920	1000	92.0%	940	1000	94.0%	2.2%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	94.3%	88.8%
Bromobenzene	92.8%	88.8%