Groundwater Monitoring Report
April 2012 through March 2013
Cascade Pole Site
Olympia, Washington

October 3, 2013

Prepared for

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1.0 INTRODUCTION

This report summarizes groundwater monitoring activities conducted between April 1, 2012 and March 31, 2013 at the Cascade Pole Site (Site), in Olympia, Washington. This report is the sixth 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 of 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 the 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

Both short-term and long-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 and the treatment system has been designed to achieve the long-term hydraulic controls, at which time the long-term goals will be implemented. Data for this report will be evaluated for short-term goals.

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 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 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 5.0 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 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 groundwater quality monitoring events were conducted at the Site during this reporting period (October 2012 and February 2013). In addition, monthly groundwater elevation data have been collected to evaluate system hydraulic control measures in accordance with the CMP (Landau Associates 2007). The following sections describe the collection of water level measurements and groundwater sampling methods.

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 2012 through March 2013). The groundwater level was not able to be measured at the following wells due to ongoing log storage activities and well lid repair issues (PZ-18 only): LW-4R (June, August, September, Novermber, and December 2012), PZ-18 (April, May, September, November 2012 and March 2013), and LW-3 (June, July, and September 2012). The top elevations of well pair MW-02S and MW-02D were modified in September 2011 to allow for site capping activities.

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 October 2012 during a time of low groundwater elevations, which corresponded to a typical “dry season”, and in February 2012 at a time when high groundwater elevations corresponded to a typical “wet season.” 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 non-dedicated peristaltic pumps. 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 PAHs using EPA Method 8270 with selected ion monitoring (SIM); gasoline-range petroleum hydrocarbons (TPH-G) using Method NWTPH-G; diesel- and oil-range petroleum hydrocarbons (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.

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 October 2012 and February 2013 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 was consistently met at well pair PZ-12 and PZ-13 (northwest portion of the Site), and at well pair LW-4R and PZ-18 (southern portion of the site). However, the short-term groundwater elevation criteria were exceeded during the reporting period at the following times and locations:

- Groundwater elevations observed at perimeter well LW-3 exceeded the short-term goal for one (October 2012) of the nine measurements collected between April 2012 and March 2013.
- Groundwater elevations observed at perimeter well MW-02S exceeded the short-term goal nine out of the twelve measurements collected between April 2012 and March 2013. The goal exceedances occurred between April and September 2012, November and December, and January 2013.
- Groundwater elevations observed at perimeter well MW-05S exceeded the short-term goal for six of the twelve measurements collected between April 2011 and March 2012. The goal exceedances occurred in April 2012, August 2012, November and December 2012, and January and February 2013.

3.2 ANALYTICAL RESULTS

The groundwater analytical results for the two semiannual sampling events (October 2012 and February 2013) 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

The results for the groundwater sampling events indicate no concentrations of the tested analytes were above the cleanup screening levels for wells located outside the slurry wall. Low levels of creosote were detected in February 2013 samples from exterior wells PZ-13 (170 µg/L), PZ-17 (150 µg/L), PZ-18 (140 µg/L), and PZ-19 (140 µg/L). The February 2013 low-level detections of creosote were the first time detections for four above wells, with the exception of PZ-18 which had two previous detections (140 µg/L in March 2006, and 470 µg/L in March 2012) which were below the cleanup screening levels. Low-levels of PCP were detected in the February 2013 sample from exterior well PZ-18 (0.48 µg/L). PCP has been reported at PZ-18 four times out of the 18 total samples collected with concentrations ranging from 0.41 to 1.8 µg/L. Low levels of naphthalene were detected in the February 2013 sample from exterior well PZ-19 (3.8 µg/L), which has historically been reported two other times with concentrations ranging from 0.13 to 2.8 µg/L. These detected concentrations are below the screening levels for creosote, pentachlorophenol, and naphthalene (3 µg/L, 500 µg/L, and 4900 µg/L, respectively).

A number of analytes were detected above the screening levels in the groundwater samples collected from shallow interiors wells MW-01S and LW-3 as shown on Figure 3.

- Samples from MW-01S indicate naphthalene concentrations ranged from 4,600 to 7,100 µg/L during the October 2012 and February 2013 sampling events, compared to the cleanup screening level of 4,900 µg/L. PCP concentrations ranged from 4,300 to 4,700 µg/L during the reporting timeframe, compared to the cleanup screening level of 3 µg/L. The TEQ calculated values for cPAHs were reported from 1.2 to 0.89 for the October 2012 and February 2013 sampling events, 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 ranging from 34,000 to 38,000 µg/L (October 2012 February 2013, respectively). During the October 2012 and February 2013 TPH-D concentrations ranged from 6,200 and 5,500 µg/L, creosote concentrations ranged from 44,000 and 40,000 µg/L, and motor oil concentrations ranged from 890 µg/L to non-detect at a raised reporting limit (5,000 µg/L).
- Samples collected from well LW-3 indicate a TPH-G concentration of 4,100 µg/L (October 2012), which is above the screening level (1,000 µg/L). During the February 2013 event, TPH-D and motor oil concentrations (1,600 and 860 µg/L, respectively) were above the cleanup screening level (500 µg/L). Creosote concentrations ranged from 2,800 to 12,000 µg/L in October 2012 and February 2013, respectively, which were above the screening level (500 µg/L).

Exceedance of the cleanup screening levels at wells MW-01S and LW-3 are not a compliance issue because the wells are located within the groundwater containment area and represents shallow groundwater conditions.

The analytical results for other shallow wells (PZ-12, LW4R, MW-02S, MW-05S, and CW-13) located inside the slurry wall indicate no exceedances of the cleanup screening levels. Low-level naphthalene concentrations were reported at interior shallow wells MW-02S (1.9 µg/L during February 2013) and MW-05S (1.6 µg/L during February 2013). Low-level PCP concentrations were reported for

samples collected at interior shallow wells PZ-12 (0.31 µg/L during October 2012) and LW-4R (0.85 µg/L during February 2013). Low-level motor oil concentrations were reported at LW-4R (400 µg/L during February 2013). Low-level creosote concentrations were reported at shallow wells LW-4R (200 µg/L in February 2013), MW-02S (110 µg/L during October 2012 and 210 µg/L during February 2013), and MW-05S (170 to 230 µg/L during October 2012 and February 2013, resepectively).

3.2.2 DEEP WELLS

The analytical results from the sampling events indicate that concentrations of creosote at MW-02D (910 µg/L during October 2012) exceed the cleanup screening level (500 µg/L). Historical creosote concentrations at MW-02D have ranged from non detect at a raised reporting limit (500 µg/L) to 4,200 µ/L in March 2008. No other analytical results exceed the respective cleanup screening levels for the three deep interior wells during this reporting period. Low-level naphthalene concentrations were detected at wells MW-01D at 1.8 µg/L (February 2013), MW-02D at 43 to 1.0 µg/L (October 2012 and February 2013, respectively), and at well MW-05D at 1.3 to 2.9 µg/L (October 2012 and February 2013, respectively), which are well below the naphthalene cleanup screening level (4,900 µg/L). Low-level PCP concentrations were detected at MW-01D at 2.0 µg/L (February 2013) and at MW-05D at 2.2 µg/L (February 2013), which are below the cleanup screening level (3.0 µg/L). A low-level TPH-G concentration (510 µg/L;October 2012) was reported at MW-02D, which is below the cleanup screening level of 1,000 µg/L. Low level TPH-D concentrations were reported at MW-02D during the October 2012 event (130 µg/L) and low level creosote concentrations were reported from samples collected at wells MW-01D (160 µg/L; February 2013), MW-02D (270 µg/L; February 2013), MW-05D (210 µg/L; February 2013), and CW-13 (110 µg/L; October 2012).

4.0 CONCLUSIONS AND RECOMMENDATIONS

Evaluations of groundwater elevations for shallow monitoring wells located along the perimeter of the bentonite slurry wall indicate that the hydraulic control system is generally preventing groundwater inside of the containment area from exceeding the short-term hydraulic containment goals, with the exceptions of well pair MW-02S/PZ-19, and MW-05S, which exceeded the goal at various times during this reporting period

Analytical results indicate no exceedances of the groundwater cleanup screening levels in shallow wells located outside of the slurry wall (PZ-13, PZ-17, PZ-18, and PZ-19) along with interior 7 wells (PZ-12, LW-4R, MW-2S, MW-05S, CW-13, MW-01D, and MW-05D). Groundwater cleanup screening levels were exceeded for a number of constituents in samples collected from interior shallow wells MW-01S and LW-3, but these exceedances are not of concern because the well is located inside the containment system perimeter. Creosote results for the October 2012 sampling event for deep well MW-02D were above the cleanup screening level; however, the concentration (910 µg/L) was below the historical maximum concentration (4,200 µg/L).

The next semiannual sampling event is currently scheduled for August 2013, to coincide with typical low groundwater elevations representative of a "dry season" event. The "wet season" event will be conducted in February or March 2014, depending on precipitation rates. Results of these sampling events will be reported following completion of the 2014 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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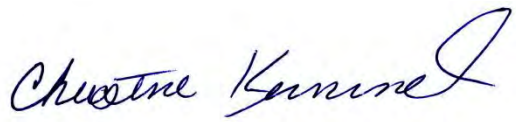

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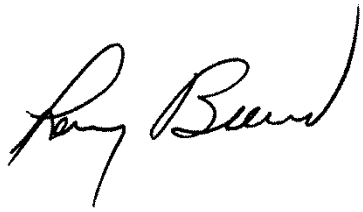


Lawrence D. Beard, P.E.
Principal

6.0 REFERENCES

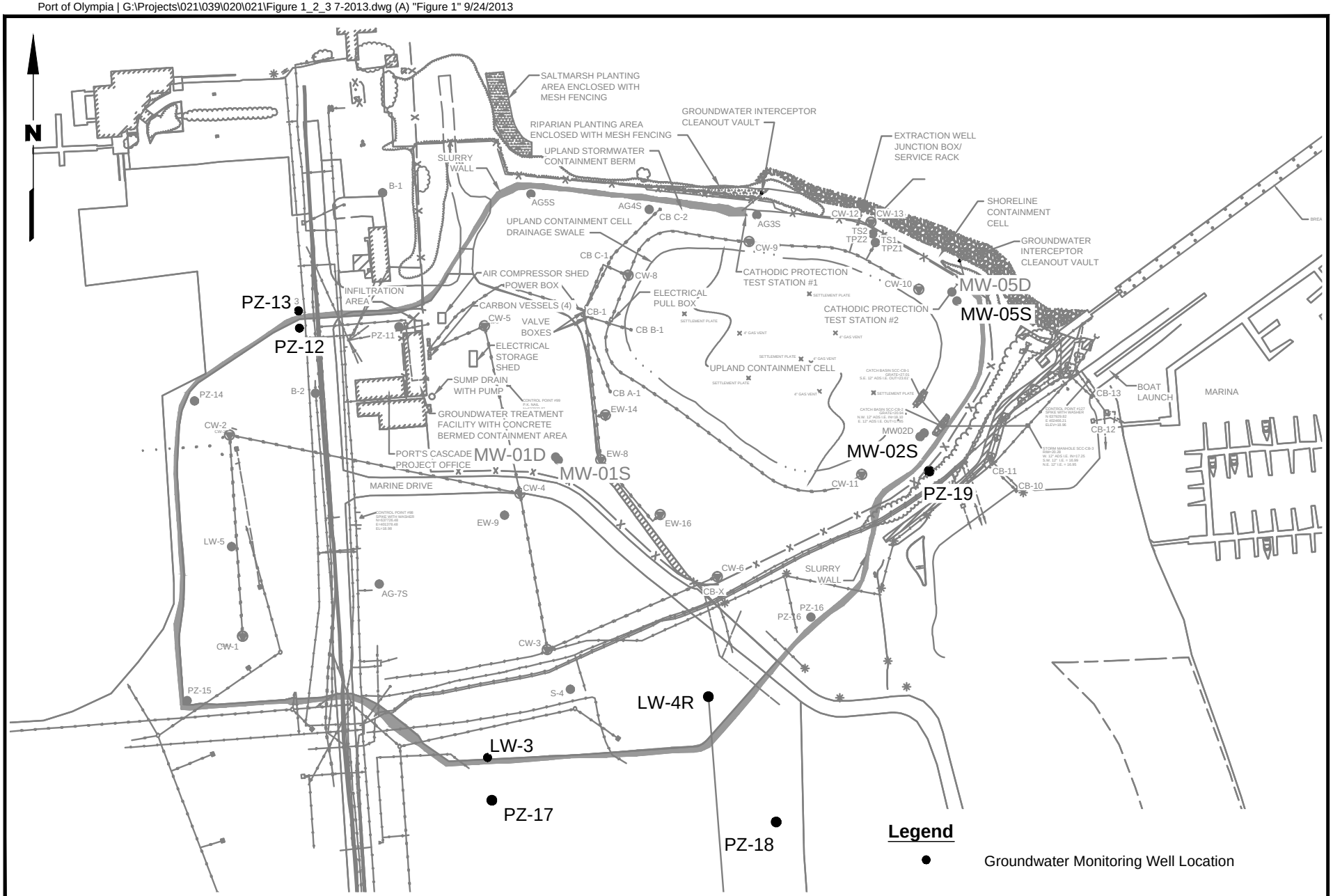
Ecology. 2007. *Long-Term Groundwater Monitoring, Amendment No. One to Agreed Order No. DE 00TCPSR-753.* December 20.

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

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



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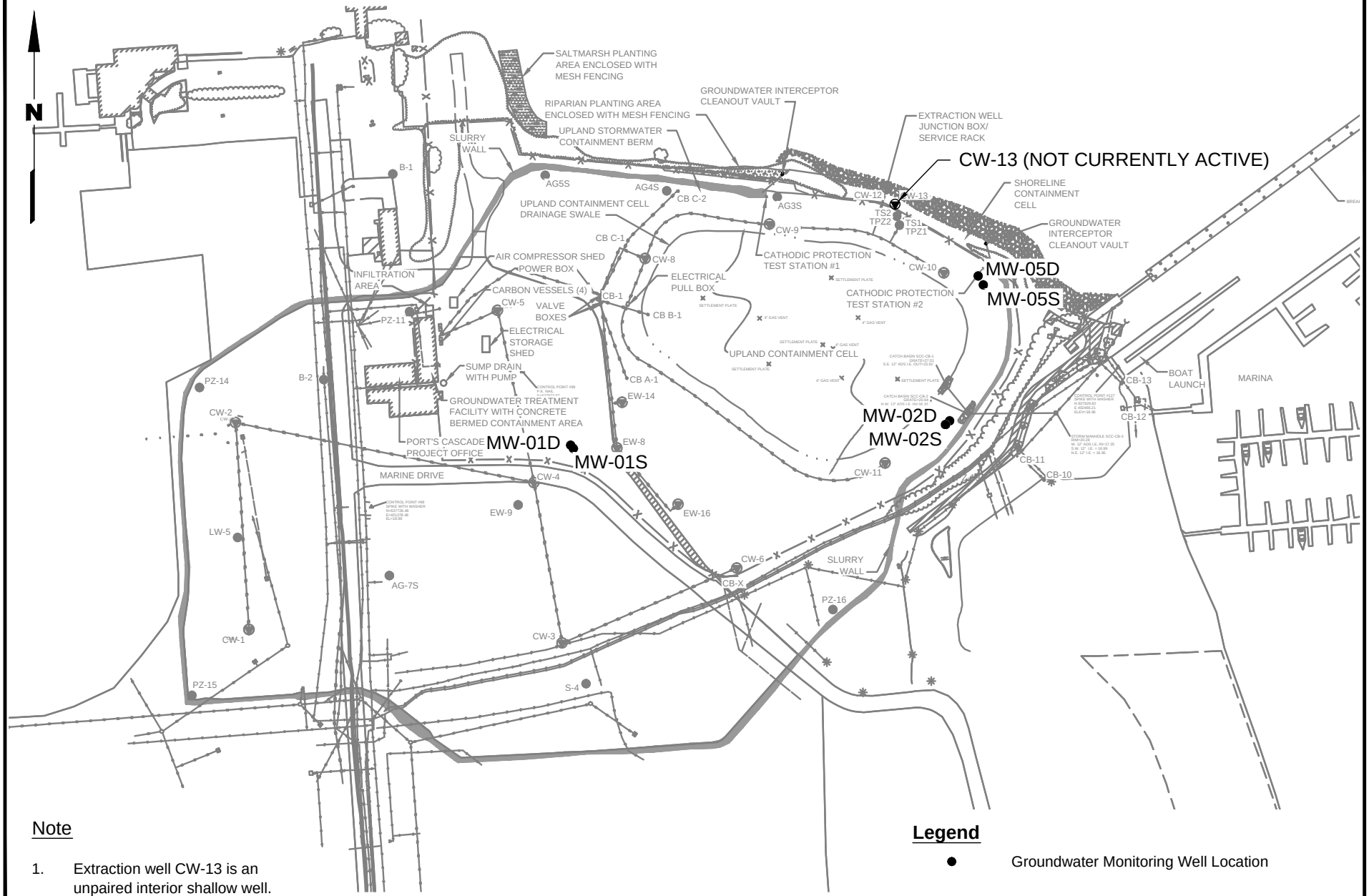
Port of Olympia Olympia, Washington	**Paired Shallow Groundwater Monitoring Network Well Locations**	Figure 1



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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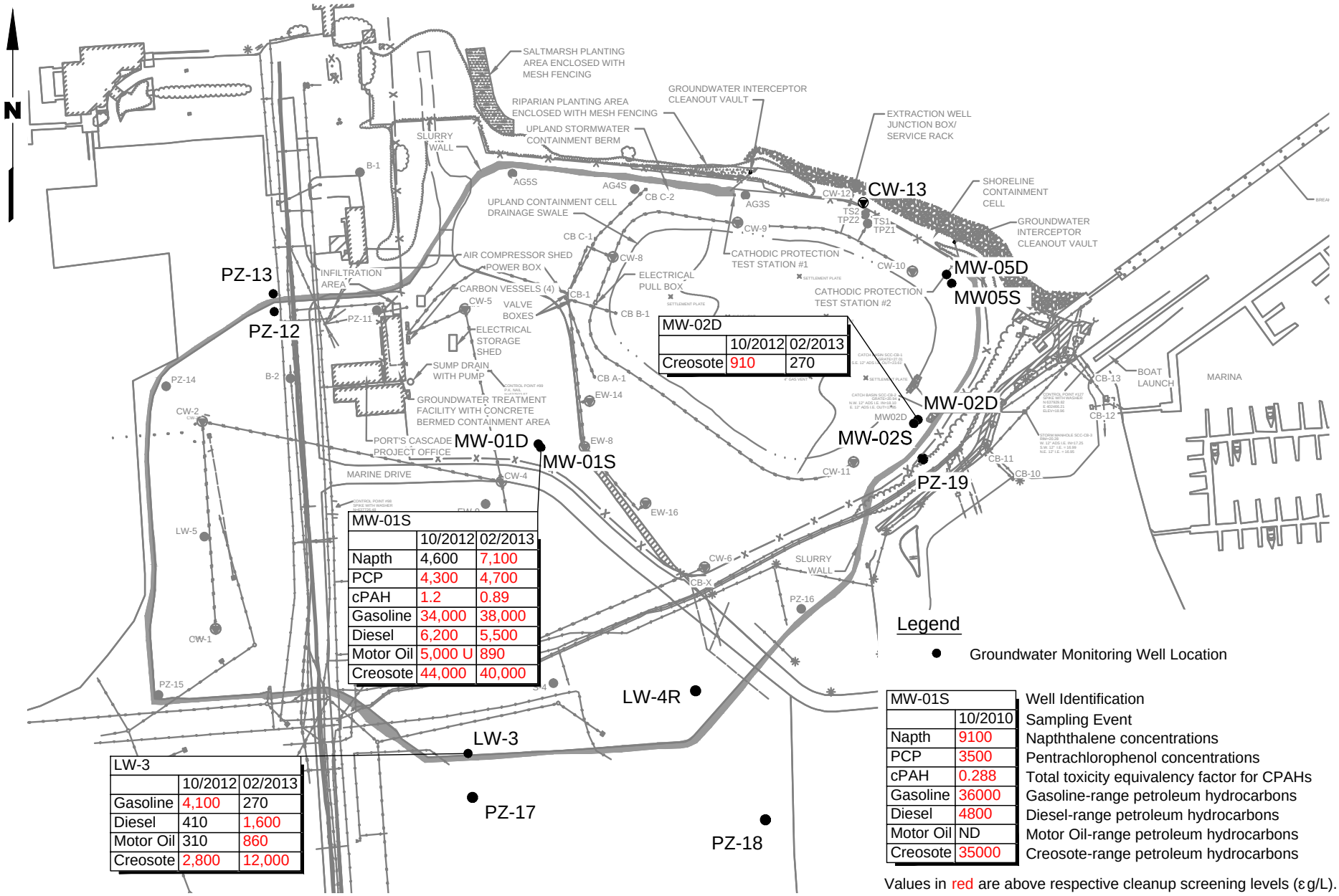
Deep and Shallow Groundwater Monitoring Well Pairs

Figure 2



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Port of Olympia
Olympia, Washington

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?
4/21/2012	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
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	NA
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

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?
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
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
4/21/2012	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

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?
10/24/2012	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
3/31/2013	PZ-18	NA	21.2		NA	--	
3/31/2013	LW-4R	8.26	22.02		13.76	15.50	No
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		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		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		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		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		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		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		16.77	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?
1/25/2013	PZ-19	12.46	23.67		11.21	--	
1/25/2013	MW-02S	16.00	31.96		15.96	15.50	Yes
2/9/2013	PZ-19	12.81	23.67		10.86	--	
2/9/2013	MW-02S	16.57	31.96		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		15.39	15.50	No
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	16.54	31.96	(e)	15.42	--	
2/9/2013	MW-02D	16.57	31.81	(e)	15.24	--	
3/31/2013	MW-02S	16.57	31.96	(e)	15.39	--	
3/31/2013	MW-02D	21.87	31.81	(e)	9.94	--	

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?
4/21/2012	MW-01S	6.67	21.64		14.97	--	
4/21/2012	MW-01D	8.87	21.72	(f)	12.85	--	
5/19/2001	MW-01S	6.63	21.64		15.01	--	
5/19/2001	MW-01D	9.50	21.72	(f)	12.22	--	
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	--	
4/21/2012	MW-05S	12.79	29.45		16.66	16.50	Yes
4/21/2012	MW-05D	12.84	26.50		13.66	--	--
5/19/2012	MW-05S	13.54	29.45		15.91	16.50	No
5/19/2012	MW-05D	14.39	26.50		12.11	--	--
6/30/2012	MW-05S	13.20	29.45		16.25	16.50	No
6/30/2012	MW-05D	10.74	26.50		15.76	--	--

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?
7/27/2012	MW-05S	13.26	29.45	16.19	16.50	No
7/27/2012	MW-05D	13.21	26.50	13.29	--	--
8/12/2012	MW-05S	11.66	29.45	17.79	16.50	Yes
8/12/2012	MW-05D	12.99	26.50	13.51	--	--
9/30/2012	MW-05S	13.23	29.45	16.22	16.50	No
9/30/2012	MW-05D	11.39	26.50	15.11	--	--
10/24/2012	MW-05S	13.45	29.45	16.00	16.50	No
10/24/2012	MW-05D	14.10	26.50	12.40	--	--
11/24/2012	MW-05S	11.57	29.45	17.88	16.50	Yes
11/24/2012	MW-05D	10.2	26.50	16.3	--	--
12/30/2012	MW-05S	12.23	29.45	17.22	16.50	Yes
12/30/2012	MW-05D	12.05	26.50	14.45	--	--
1/25/2013	MW-05S	10.55	29.45	18.90	16.50	Yes
1/25/2013	MW-05D	13.13	26.50	13.37	--	--
2/9/2013	MW-05S	10.16	29.45	19.29	16.50	Yes
2/9/2013	MW-05D	13.60	26.50	12.90	--	--
3/31/2013	MW-05S	13.61	29.45	15.84	16.50	No
3/31/2013	MW-05D	16.55	26.50	9.95	--	--

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 cut down 0.2 ft to make room for new well monument lid. Elevation was adjusted from 20.03 to 19.83.

(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'. Outer casing cut down corresponding amount. New MW-01D measuring point elevation is 21.72' MLLW.

NM = Not measured.

NA = Not available.

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

	Cleanup Screening Levels (a)	PZ-12 VP53F 10/25/2012	PZ-12 WF57A 02/27/2013	PZ-13 VP53A 10/25/2012	PZ-13 WF57B 02/27/2013	PZ-17 VP53G 10/26/2012	PZ-17 WF57G 02/27/2013	PZ-18 VP10B 10/24/2012	PZ-18 WF72G 02/28/2013	PZ-19 VP10C 10/24/2012	PZ-19 WF72C 02/28/2013
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)											
EPA Method 8270D / 8270D-SIM											
Naphthalene	4900	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**3.8**
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
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
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	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	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	1.0 U	1.0 U
Pentachlorophenol	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 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
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	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
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
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
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
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
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
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
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-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
Total Benzofluoranthenes		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 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
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	0.076
PENTACHLOROPHENOL (µg/L)											
EPA Method 8041											
Pentachlorophenol	3	**0.31**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	**0.48**	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	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
Motor Oil	500	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	100 U	200 U
Creosote Oil	500	100 U	**100**	100 U	**170**	100 U	**150**	100 U	**140**	200 U	**140**

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

	Cleanup Screening Levels (a)	LW-3 VP53H 10/26/2012	LW-3 WF57H 02/27/2013	LW-4R VP10F 10/24/2012	LW-4R WF72F 02/28/2013	MW-01S VP53D 10/25/2012	MW-01S WF72D 02/28/2013	MW-02S VP10H 10/24/2012	MW-02S WF72B 02/28/2013	MW-05S VP10E 10/24/2012	Dup of MW-05S PZ-30 VP10D 10/24/2012
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)											
EPA Method 8270D / 8270D-SIM											
Naphthalene	4900	1.0 U	1.0 U	1.0 U	1.0 U	**4,600**	**7,100**	1.0 U	**1.9**	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	**710**	**1000**	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	**10**	100 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	**220**	**320**	1.0 U	**1.1**	**8.2**	**10**
Dibenzofuran		1.0 U	1.0 U	1.0 U	1.0 U	**110**	**140**	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	**90**	**110**	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	10 U	10 U	10 U	10 U	**4,300**	**4,700**	10 U	10 U	10 U	10 U
Phenanthrene		1.0 U	1.0 U	1.0 U	1.0 U	**82**	**94** J	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	**21**	100 U	1.0 U	**1.0**	**1.0**	**1.2**
Fluoranthene		1.0 U	1.0 U	1.0 U	1.0 U	**18**	100 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	**8.9**	100 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	**2.5**	**1.7**	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	**2.4**	**1.6**	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	**0.76**	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	**0.11**	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	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	1.0 U	3.0 U	100 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	**560**	**580**	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes		0.20 U	0.20 U	0.20 U	0.20 U	**1.5**	2.0 U	0.20 U	0.20 U	0.20 U	0.20 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	**1.2**	**0.186**	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.076	0.076	**1.2**	**0.886**	0.076	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)											
EPA Method 8041											
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	**0.85**	NA	NA	0.25 U	0.25 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS											
Method NWTPH-G (µg/L)											
Gasoline	1,000	**4,100**	**270**	250 U	250 U	**34,000**	**38000**	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)											
Diesel	500	**410**	**1,600**	100 U	100 U	**6,200**	**5,500**	100 U	100 U	100 U	100 U
Motor Oil	500	**310**	**860**	100 U	**400**	5000 U	**890**	200 U	210 U	200 U	200 U
Creosote Oil	500	**2,800**	**12,000**	200 U	**200**	**44,000**	**40,000**	**110**	**210**	**170**	**170**

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

	Cleanup Screening Levels (a)	MW-05S WF57E 02/27/2013	Dup of MW-05S PZ-30 WF57F 02/27/2013	MW-01D VP53C 10/25/2012	MW-01D WF72E 02/28/2013	MW-02D VP10A 10/24/2012	MW-02D WF72A 02/28/2013	MW-05D VP53E 10/25/2012	MW-05D WF57D 02/27/2013	CW-13 VP53B 10/25/2012	CW-13 WF57C 2/27/2013
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)											
EPA Method 8270D / 8270D-SIM											
Naphthalene	4900	**1.6**	**1.6**	1.0 U	**1.8**	**43**	**1.0**	**1.3**	**2.9**	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	**11**	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	**1.1**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		**10**	**11**	1.0 U	1.0 U	**26**	**7.2**	**5.6**	**4.0**	**5.2**	1.0 U
Dibenzofuran		1.0 U	1.0 U	1.0 U	1.0 U	**11**	**2.8**	1.0 U	1.0 U	**2.5**	1.0 U
Fluorene		1.0 U	1.0 U	1.0 U	1.0 U	**13**	**4.7**	**1.3**	**1.6**	**2.0**	1.0 U
Pentachlorophenol	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenanthrene		1.0 U	1.0 U	1.0 U	1.0 U	**8.3**	**2.2**	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 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	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
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
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
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
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
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
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-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	**19**	**1.9**	1.0 U	**1.4**	1.0 U	1.0 U
Total Benzofluoranthenes		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 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
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	0.076
PENTACHLOROPHENOL (µg/L)											
EPA Method 8041											
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	**2.0**	0.25 U	0.25 U	**2.2**	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	**510**	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	**130**	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	200 U	200 U
Creosote Oil	500	**230**	**210**	100 U	**160**	**910**	**270**	100 U	**210**	100 U	**110**

NA = Not Analyzed.
ND = Not Detected.
U = Indicates the compound was undetected at the given reporting limit.
UJ = The analyte was not detected in the sample; the reported sample detection limit is an estimate.
J = Indicates the analyte was positively identified; the associated value is approximate.
Bold indicates detected compound.
Box indicates exceedance of screening level.

(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.

Note: Beginning with October 2010 data, lab no longer reports benzo(b)fluoranthenes or benzo(k)fluoranthenes, but does report total benzofluoranthenes.

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 3/20/2008	PZ-12 NH92A 7/29/2008	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-13 2005060392-01 6/27/2005
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-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	0.10 U
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	NA
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	0.10 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	0.10 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	NA
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	0.10 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	NA
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	0.10 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	0.10 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	0.10 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	0.10 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	0.10 U
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	0.10 U
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	0.10 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	NA
Total Benzofluoranthenes											0.10 U	0.10 U	0.10 U	0.10 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 8041/8270C,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	10 U
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	50 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	500 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**	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)	PZ-13 2006030241-01 3/19/2006	PZ-13 2006110182-01 11/11/2006	PZ-13 LS10A 9/30/2007	PZ-13 MO26H 3/19/2008	PZ-13 NH92B 7/29/2008	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	PZ-13 UL19F 3/7/2012	PZ-13 VP53A 10/25/2012	PZ-13 WF57B 2/27/2013	PZ-17 2005060439-04 6/28/2005
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	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	1.0 U	1.0 U	1.0 U	0.10 U
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	NA
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	0.10 U
Acenaphthene		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	1.0 U	1.0 U	1.0 U	0.10 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	NA
Fluorene		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	0.10 U
Pentachlorophenol	3	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	5.0 U	10 U	10 U	NA
Phenanthrene		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	0.10 U
Carbazole		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	1.0 U	1.0 U	NA	NA
Anthracene		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	0.10 U
Fluoranthene		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	0.10 U
Pyrene	2600	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	0.10 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	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
Chrysene		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	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	1.0 U	0.10 U	NA	NA	NA	NA	NA	NA	0.10 U
Benzo(k)Fluoranthene		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	NA	NA	NA	0.10 U
Benzo(a)Pyrene		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	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	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
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	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
Benzo(g,h,i)Perylene		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	1.0 U	1.0 U	1.0 U	0.10 U
1-Methylnaphthalene		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	1.0 U	1.0 U	1.0 U	NA
Total Benzofluoranthenes											0.10 U	0.10 U	0.10 U	0.10 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	0.76	0.076	0.071	0.071	0.071	0.071	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	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	0.25 U	0.25 U	0.25 U	10 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	50 U	**112**	250 U	250 U	250 U	250 U	**1,900**	**310**	250 U	250 U	250 U	250 U	**250**	250 U	250 U	50 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
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	500 U	250 U		500 U	200 U	200 U	200 U	200 U	200 U	200 U	500 U
Creosote Oil	500	NA	NA	NA	250 U	500 U	250 U	500 U		250 U	100 U	200 U	200 U	200 U	100 U	**170**	NA
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	**56**	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	1 U	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 2006030253-02 3/20/2006	PZ-17 2006110200-01 11/13/2006	PZ-17 LS10E 10/1/2007	PZ-17 MO07B 3/19/2008	PZ-17 NH70B 7/28/2008	PZ-17 OH11C 1/8/2009	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-18 2005060439-01 6/29/2005	PZ-18 2006030261-01 3/21/2006
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	NA	**0.11**	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	**3.2**	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA
2-Methylnaphthalene		NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA
Acenaphthylene		NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2 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
Acenaphthene		NA	**0.23**	1.0 U	1.0 U	1.0 U	1.0 U	1.2 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
Dibenzofuran		NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA
Fluorene		NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2 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
Pentachlorophenol	3	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.9 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	NA	NA
Phenanthrene		NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2 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
Carbazole		NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA
Anthracene		NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2 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
Fluoranthene		NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2 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
Pyrene	2600	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2 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
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	0.11 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	0.11 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	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U
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 U	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 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
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	0.11 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	0.10 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	0.10 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	1.2 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
1-Methylnaphthalene		NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	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		
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	0.071	0.078	0.071	0.071	0.076	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	0.10 U	0.10 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	0.25 U	0.25 U	0.25 U	0.25 U	10 U	0.10 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	50 U	50 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	110 U	100 U	100 U	100 U	100 UJ	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	220 U	200 U	200 U	200 U	500 UJ	500 U
Creosote Oil	500	NA	NA	NA	250 U	500 U	250 U	250 U	250 U	100 U	200 U	220 U	200 U	100 U	**150**	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	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 2006110239-01 11/14/2006	PZ-18 LS10C 10/1/2007	PZ-18 MO07C 3/19/2008	PZ-18 NH70C 7/28/2008	PZ-18 NM64A 8/28/2008	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	PZ-19 2005060439-03 6/29/2005
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																		
EPA Method 8270D / 8270D-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	**0.13**
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	NA
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	0.10 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	0.10 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	NA
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	0.10 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	NA
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	0.10 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	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	0.10 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	0.10 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	0.10 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	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	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	0.10 U
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	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	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	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	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	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	0.10 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	NA
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	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	0.076
PENTACHLOROPHENOL (µg/L)																		
EPA Method 8041/8270C,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**	10 U
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	50 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	**106**
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	500 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**	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	NA
Toluene	1,000	NA	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	NA
m, p-Xylene	1,000	NA	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	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 2006030294-04 3/22/2006	PZ-19 2006110239-04 11/14/2006	PZ-19 LS21E 10/2/2007	PZ-19 MO26B 3/20/2008	PZ-19 NH70E 7/28/2008	PZ-19 NM64B 8/28/2008	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	PZ-19 TI17B 8/9/2011	PZ-19 UL56G 3/8/2012	PZ-19 VP10C 10/24/2012	PZ-19 WF72C 2/28/2013	LW-3 2005060439-05 6/28/2005
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	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	1.0 U	**2.8**	1.0 U	**3.8**	**0.21**
2-Methylnaphthalene		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	1.0 U	1.0 U	1.0 U	1.0 U	NA
Acenaphthylene		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	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U
Acenaphthene		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	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U
Dibenzofuran		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	1.0 U	1.0 U	1.0 U	1.0 U	NA
Fluorene		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	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U
Pentachlorophenol	3	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	5.0 U	5.0 U	10 U	10 U	NA
Phenanthrene		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	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U
Carbazole		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	1.0 U	1.0 U	1.0 U	NA	NA
Anthracene		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	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U
Fluoranthene		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	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U
Pyrene	2600	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	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U
Benzo(a)Anthracene		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	0.11 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	NA	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
Benzo(b)Fluoranthene		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	NA	NA	NA	NA	0.10 U
Benzo(k)Fluoranthene		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	NA	NA	NA	NA	0.10 U
Benzo(a)Pyrene		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	0.11 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	NA	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
Dibenz(a,h)Anthracene		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	0.11 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	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	0.10 U
1-Methylnaphthalene		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	1.0 U	1.0 U	1.0 U	1.0 U	NA
Total Benzofluoranthenes											0.10 U	0.10 U	0.11 U	0.10 U	0.20 U	0.20 U	
cPAH TEQ (b)	0.1 (c)	ND	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)	0.076	0.076	0.076	0.076	0.076	NA	0.076	0.076	0.076	0.071	0.071	0.078	0.071	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	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	0.25 U	0.25 U	0.25 U	0.25 U	10 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	50 U	50 U	250 U	250 U	250 U	NA	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	**1,750** (e)
Method NWTPH-Dx (µg/L)																	
Diesel	500	100 U	100 U	250 U	250 U	250 U	NA	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	NA	500 U	250 U	500 U	200 U	230 U	200 U	200 U	100 U	200 U	500 U
Creosote Oil	500	NA	NA	NA	250 U	500 U	NA	250 U	500 U	250 U	100 U	230 U	200 U	200 U	200 U	**140**	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-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 3/19/2008	LW-3 NH70A 7/28/2008	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 03/24/2011	LW-3 TH68D 08/08/2011	LW-3 UL19D 03/07/2012	LW-3 VP53H 10/26/2012	LW-3 WF57H 02/27/2013	LW-4R 2005060439-02 6/29/2005
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	NA	**0.12**	**0.13**	1.0 U	1.0 U	1.0 U	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	0.10 U
2-Methylnaphthalene		NA	NA	NA	1.0 U	1.0 U	1.0 U	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	NA
Acenaphthylene		NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U	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	0.10 U
Acenaphthene		NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U	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	0.10 U
Dibenzofuran		NA	NA	NA	1.0 U	1.0 U	1.0 U	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	NA
Fluorene		NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U	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	0.10 U
Pentachlorophenol	3	NA	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	10 UJ	5.0 U	15 U	5.0 U	5.0 U	15 U	10 U	10 U	NA
Phenanthrene		NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U	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	0.10 U
Carbazole		NA	NA	NA	1.0 U	1.0 U	1.0 U	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
Anthracene		NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U	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	0.10 U
Fluoranthene		NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U	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	0.10 U
Pyrene	2600	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U	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	0.10 U
Benzo(a)Anthracene		0.10 UJ	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	0.10 U
Chrysene		0.10 UJ	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	0.10 U
Benzo(b)Fluoranthene		0.10 UJ	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	0.10 U
Benzo(k)Fluoranthene		0.10 UJ	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	0.10 U
Benzo(a)Pyrene		0.10 UJ	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	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 UJ	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	0.10 U
Dibenz(a,h)Anthracene		0.10 UJ	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	0.10 U
Benzo(g,h,i)Perylene		NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U	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	0.10 U
1-Methylnaphthalene		NA	NA	NA	1.0 U	1.0 U	1.0 U	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	NA
Total Benzofluoranthenes											0.10 U	1.0 U	0.10 U	0.10 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	0.71 U	0.071	0.071	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	0.10 U	0.10 U	0.10 U	**3.6** J	0.25 U	**0.57**	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	10 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	**53**	50 U	50 U	250 U	250 U	250 U	250 U	**20,000**	**1,800**	250 U	250 U	**1,400**	**1,300**	**4,100**	**270**	50 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	100 U	100 U	100 U	250 U	250 U	250 U	250 U	**770**	**1,200**	100 U	120 U	**170**	**620**	**410**	**1,600**	100 U
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	500 U	500 U	**1,300**	**1,200**	200 U	250 U	220 U	**1,200**	**310**	**860**	500 U
Creosote Oil	500	NA	NA	NA	NA	250 U	500 U	250 U	**2,000**	**4,400**	**170**	250 U	**390**	**2,100**	**2,800**	**12,000**	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 2006030316-01 3/23/2006	LW-4R 2006110239-02 11/14/2006	LW-4R LS10D 10/1/2007	LW-4R MO07D 3/19/2008	LW-4R NH70D 7/28/2008	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 03/24/2011	LW-4R TH68E 08/08/2011	LW-4R UL19A 03/07/2012	LW-4R VP10F 10/24/2012	LW-4R WF72F 02/28/2013	MW-01S 2005070010-01 6/30/2005	MW-01S 2006030261-04 3/21/2006
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	NA	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	**5,130**	NA
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	NA	NA
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	**860**	NA
Acenaphthene		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	10 U	NA
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	NA	NA
Fluorene		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	**380**	NA
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	NA	NA
Phenanthrene		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	**23**	NA
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	0.10 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	**17**	NA
Fluoranthene		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	10 U	NA
Pyrene	2600	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	**12**	NA
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	10 U	**0.84**
Chrysene		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	0.10 U	0.10 U	0.10 U	0.10 U	10 U	**0.55**
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	10 U	**0.98**
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	10 U	**0.55**
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	0.10 U	0.10 U	0.10 U	0.10 U	10 U	**0.74**
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	0.10 U	0.10 U	0.10 U	0.10 U	10 U	**0.22**
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	0.10 U	0.10 U	0.10 U	0.10 U	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	10 U	NA
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	NA	NA
Total Benzofluoranthenes										0.10 U	0.10 U	0.10 U	0.10 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	**1.00**
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	0.083	0.071	0.071	0.071	0.071	0.076	0.076	0.076	**1.01**
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	0.10 U	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**	**7,470**	**3,440**
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	**5,830** (f)	**9,620**
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	130 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	500 U	200 U	260 U	220 U	200 U	100 U	**400**	500 U	500 U
Creosote Oil	500	NA	NA	NA	250 U	500 U	250 U	250 U	250 U	100 U	260 U	220 U	200 U	200 U	**200**	**13,000**	**6530** J
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)	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 3/19/2008	MW-01S NH92C 7/29/2008	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 03/25/2011	MW-01S TI17G 08/09/2011	MW-01S UL56H 03/08/2012	MW-01S VP53D 10/25/2012	MW-01S WF72D 02/28/2013	MW-02S 2005070010-05 7/1/2005	MW-02S 2006030294-01 3/22/2006
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	NA	**3,120**	**11,000**	**7,100**	**11,000**	**9,000**	**9,100**	**5,000**	**9,100**	**5,400**	**6,900**	**5,000**	**4600**	**7,100**	**0.29**	NA
2-Methylnaphthalene		NA	NA	**920**	**1,000**	**810**	**1,000**	**890**	**900**	**750**	**740**	**680**	**1100**	**710**	**1000**	NA	NA
Acenaphthylene		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**	100 U	**0.10**	NA
Acenaphthene		NA	**398**	**210**	**290**	**200**	**290**	**250**	**270**	**190**	**200**	**190**	**340**	**220**	**320**	**0.92**	NA
Dibenzofuran		NA	NA	**73**	**130**	**98**	**110**	**99**	**120**	100 U	**64**	**79**	**79**	**110**	**140**	NA	NA
Fluorene		NA	**112**	**59**	**100**	**63**	**86**	**72**	100 U	100 U	**47**	**47**	**69**	**90**	**110**	0.10 U	NA
Pentachlorophenol	3	NA	NA	**8,300**	**4,100**	**2,000**	**1,600**	**3,900**	**4,400**	**3,500**	**4,200**	**4,200**	**3,200**	**4,300**	**4,700**	NA	NA
Phenanthrene		NA	**132**	**46**	**98**	**53**	**76**	**44**	100 U	100 U	**44**	**34**	**65**	**82**	**94** J	0.10 U	NA
Carbazole		NA	NA	**120**	**120**	**69**	**80**	**86**	100 U	100 UJ	**57**	**24**	**53**	**52**	NA	NA	NA
Anthracene		NA	**96**	**14**	**26**	**14**	**17**	**40**	100 U	100 U	**12**	**10**	**18**	**21**	100 U	**1.19** E	NA
Fluoranthene		NA	**172**	**6.3**	**30**	**11**	**13**	**14**	100 U	100 U	**7.8**	**2.0**	**19**	**18**	100 U	**0.28**	NA
Pyrene	2600	NA	**24**	**7.8**	**15**	**5.2**	**11**	**7.4**	100 U	100 U	**3.9**	**1.7**	**14**	**8.9**	100 U	**0.18**	NA
Benzo(a)Anthracene		**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**	**1.7**	0.10 U	0.10 U
Chrysene		**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**	**1.6**	0.10 U	0.10 U
Benzo(b)Fluoranthene		**1.05**	10 U	**0.88**	**1.1**	5.0 U	1.0 U	**1.0**	**1.3**	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U
Benzo(k)Fluoranthene		**0.59**	10 U	**0.32**	1.0 U	5.0 U	1.0 U	**1.0**	**1.3**	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U
Benzo(a)Pyrene		**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**	1.0 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		**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**	1.0 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		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	1.0 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		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	100 U	0.10 U	NA
1-Methylnaphthalene		NA	NA	**470**	**640**	**570**	**610**	**520**	**520**	**400**	**380**	**390**	**770**	**560**	**580**	NA	NA
Total Benzofluoranthenes										**0.35**	1.0 U	**0.76**	**1.4**	**1.5**	2.0 U		
cPAH TEQ (b)	0.1 (c)	**1.08**	ND	**0.839**	**0.342**	ND	**0.166**	**1.95**	**2.38**	**0.278**	ND	**0.517**	**1.0**	**1.2**	**0.186**	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	**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**	**0.886**	0.076	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	**3,330**	**9,120**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.50 U	0.10 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	**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**	**38,000**	50 U	50 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	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**	**5,500**	100 U	100 U
Motor Oil	500	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	**890**	500 U	500 U
Creosote Oil	500	**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**	**40,000**	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)	MW-02S 2006110251-04 11/15/2006	MW-02S LS21A 10/2/2007	MW-02S MO26E 3/20/2008	MW-02S NH70G 7/28/2008	MW-02S OG76B 1/7/2009	Dup of MW-02S MW30 1/7/2009	MW-02S OG76A 1/7/2009	MW-02S PK28C 8/11/2009	MW-02S QG15B 1/18/2010	MW-02S RS33E 10/18/2010	MW-02S SO90I 03/25/2011	MW-02S TI17E 08/09/2011	MW-02S UL56D 3/8/2012	MW-02S VP10H 10/24/2012	MW-02S WF72B 2/28/2013	MW-05S 2005070010-03 6/30/2005	Dup of MW-05S PZ30 2005070010-04 6/30/2005
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																			
EPA Method 8270D / 8270D-SIM																			
Naphthalene	4900	**44.1**	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	1.0 U	1.0 U	**1.9**	**10.8** E	**11.8** E
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	NA	NA
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	**0.29**	**0.27**
Acenaphthene		**0.36**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.1**	**5.25** E	**5.13** E
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	NA	NA
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	**2.26** E	**2.26** E
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	5.0 U	5.0 U	10 U	10 U	NA	NA
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	**1.45** E	**1.76** E
Carbazole		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 UJ	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA
Anthracene		**1.65**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.1**	1.0 U	1.0 U	**1.0**	**1.23** E	**1.25** E
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	**1.71** E	**1.75** E
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	**1.64** E	**1.71** E
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	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	**0.28**	**0.33**
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	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	**0.20**	**0.22**
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	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U
Benzo(k)Fluoranthene		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	0.10 U	0.10 U
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	0.12 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	0.12 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	0.12 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	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	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
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	NA	NA
Total Benzofluoranthenes											0.10 U	0.12 U	0.10 U	0.10 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	**0.030**	**0.035**
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	0.071	0.085	0.071	0.071	0.076	0.076		**0.039**	**0.044**
PENTACHLOROPHENOL (µg/L)																		
EPA Method 8041/8270C,D																		
Pentachlorophenol	3	**0.63**	0.21 U	0.25 U	**1.0**	0.25 U	0.25 U	0.26 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	0.10 U	0.50 U
PETROLEUM HYDROCARBONS																		
Method NWTPH-G (µg/L)																		
Gasoline	1,000	**99**	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	**480**	250 U	250 U	250 U	50 U	50 U
Method NWTPH-Dx (µg/L)																		
Diesel	500	100 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	100 U	120 U	**130**	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	250 U	500 U	200 U	240 U	**990**	200 U	200 U	210 U	500 U	500 U	500 U
Creosote Oil	500	NA	NA	250 U	500 U	250 U	250 U	500 U	250 U	100 U	240 U	200 U	200 U	**110**	**210**	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	NA
Toluene	1,000	NA	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	NA
m, p-Xylene	1,000	NA	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	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 2006030294-07 3/22/2006	MW-05S 2006110275-01 11/16/2006	MW-05S LS21C 10/2/2007	MW-05S MO26C 3/20/2008	Dup of MW-05S PZ30 MO26A 3/20/2008	MW-05S NH92E 7/29/2008	Dup of MW-05S PZ30 NH92F 7/29/2008	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 03/25/2011	Dup of MW-05S Duplicate SO90B 03/25/2011
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	NA	**29.1**	**92**	**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
2-Methylnaphthalene		NA	NA	**2.5**	**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
Acenaphthylene		NA	**0.14**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	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	**5.91**	**9.2**	**8.8**	**7.6**	**8.3**	**7.3**	**6.6**	**4.3**	**4.4**	**13**	**11**	**9.0**	**8.3**	**6.0**	**6.1**
Dibenzofuran		NA	NA	**3.2**	**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
Fluorene		NA	**1.00**	**2.8**	**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
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	5.0 U	5.0 U	5.0 U	5.0 U
Phenanthrene		NA	**1.18**	**1.9**	**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
Carbazole		NA	NA	**1.9**	**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
Anthracene		NA	**1.02**	1.0 U	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**
Fluoranthene		NA	**0.90**	1.0 U	**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
Pyrene	2600	NA	**0.41**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	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	**0.18**	0.10 U	**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
Chrysene		0.10 U	0.10 U	0.10 U	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
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	0.10 U	0.10 U	0.10 U	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 U	0.10 UJ	0.10 UJ	0.10 U	0.10 U	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	**0.12**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.12 U
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	0.12 U	0.12 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	0.12 U	0.12 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	**5.2**	**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
Total Benzofluoranthenes														0.10 U	0.10 U	0.12 U	0.12 U
cPAH TEQ (b)	0.1 (c)	ND	**0.018**	ND	0.010	0.010	0.011	ND	**0.134**	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	**0.089**	0.076	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
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	0.10 U	0.10 U	0.25 U	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
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	50 U	50 U	**530**	**320**	250 U	**270**	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	**430**	100 U	250 U	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
Motor Oil	500	500 U	500 U	500 U	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
Creosote Oil	500	NA	NA	NA	**410**	**390**	500 U	NA	250 U	500 U	500 U	250 U	250 U	100 U	100 U	250 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)	MW-05S TI17C 08/09/2011	Dup of MW-05S Duplicate TI17A 08/09/2011	MW-05S UL56E 03/08/2012	Dup of MW-05S PZ-30 UL56F 03/08/2012	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 02/27/2013	MW-01D 10/7/1998	MW-01D 2006030261-02 3/21/2006	MW-01D 2006110251-02 11/15/2006	MW-01D LS10H 10/1/2007	MW-01D MO07E 3/19/2008	MW-01D NH92D 7/29/2008	MW-01D OH25D 1/9/2009	MW-01D PJ99E 8/10/2009
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	1.0 U	1.0 U	**1.1**	**2.0**	1.0 U	1.0 U	**1.6**	**1.6**	**91**	NA	**1.24**	1.0 U	1.0 U	**2.2**	**0.7** J	**1.8**
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	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	0.2 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		**7.6**	**8.1**	**7.5**	**8.2**	**8.2**	**10**	**10**	**11**	**58**	NA	**0.48**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibenzofuran		1.0 U	**1.0**	1.0 U	1.0 U	1.0 U	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
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	**30**	NA	**0.31**	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	10 U	10 U	10 U	10 U	NA	NA	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	1.0 U	1.0 U	1.0 U	1.0 U	**56**	NA	**1.42**	1.0 U	1.0 U	1.0 U	**0.6** J	1.0 U
Carbazole		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Anthracene		**1.1**	**1.3**	1.0 U	1.0 U	**1.0**	**1.2**	1.0 U	1.0 U	**8.7**	NA	**0.39**	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	**9.4**	NA	**0.89**	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	**7.6**	NA	**0.39**	1.0 U	1.0 U	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	0.10 U	**1.0**	0.10 U	0.10 U	**0.11**	0.10 U	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	0.10 U	**1.2**	0.10 U	0.10 U	**0.11**	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	NA	**0.3**	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	**0.3**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(a)Pyrene		0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.2 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	0.10 U	0.2 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	0.10 U	0.2 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	0.2 U	NA	0.10 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	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes		0.12 U	0.11 U	0.10 U	0.10 U	0.20 U	0.20 U	0.20 U	0.20 U								
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	**0.172**	ND	ND	**0.0121**	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.085	0.078	0.071	0.071	0.076	0.076	0.076	0.076	**0.292**	0.076	0.076	**0.082**	0.076	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	0.28 U	0.28 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	**18**	0.10 U	0.10 U	**0.2** UJ	0.25 U	0.25 UJ	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	NA	50 U	50 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	100 U	**110**	100 U	100 U	100 U	100 U	100 U	100 U	**2,500**	100 U	100 U	250 U	250 U	250 U	250 U	250 U
Motor Oil	500	200 UJ	**500** J	200 U	200 U	200 U	200 U	200 U	200 U	**2,800**	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Creosote Oil	500	200 U	200 U	200 U	200 U	**170**	**170**	**230**	**210**	NA	**106**	NA	NA	250 U	500 U	250 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	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 QF84I 1/15/2010	MW-01D RS33O 10/19/2010	MW-01D SO90J 03/25/2011	MW-01D TI17F 08/09/2011	MW-01D UL56I 03/08/2012	MW-01D VP53C 10/25/2012	MW-01D WF72E 02/28/2013	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 3/19/2008	MW-02D NH92H 7/29/2008	MW-02D OH25A 1/9/2009	MW-02D PK28D 8/11/2009
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.8**	**600**	NA	**143**	**680** J	**500** J	**380**	1.1 U	**210**	**230**
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	**120**	**85**	**94**	1.1 U	**26**	**38**
Acenaphthylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	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
Acenaphthene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**54**	NA	**96**	**86** J	**67** J	**70**	1.1 U	**26**	**35**
Dibenzofuran		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	**35**	**26**	**30**	1.1 U	**8.1**	**12**
Fluorene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**18**	NA	**40**	**37** J	**28** J	**30**	1.1 U	**9.3**	**12**
Pentachlorophenol	3	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	NA	NA	NA	5.0 U	5.0 U	5.0 U	5.5 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	**7.1**	NA	**27**	**23** J	**18** J	**22**	1.1 U	**6.0**	**7.2**
Carbazole		1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	**23**	**16**	**21**	**1.5**	**8.0**	**9.0**
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	NA	**0.50**	1.0 U	1.0 U	**1.0**	1.1 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	**2.0**	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.1 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	**1.7**	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.11 U	0.10 U	0.10 U	0.12 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	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.11 U	0.10 U	0.10 U	0.12 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	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		0.11 U	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
Benzo(k)Fluoranthene		0.11 U	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 UJ
Benzo(a)Pyrene		0.11 U	0.10 U	0.10 U	0.12 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	0.10 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	0.12 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	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.11 U	0.10 U	0.10 U	0.12 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	0.10 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	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.1 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	NA	NA	NA	**77**	**68**	**66**	1.1 U	**22**	**32**
Total Benzofluoranthenes			0.10 U	0.10 U	0.12 U	0.10 U	0.20 U	0.20 U									
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	**15**	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.083	0.071	0.071	0.085	0.071	0.076	0.076	ND	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	0.29 U	**0.85**	0.25 U	**2.0**	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
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	250 U	250 U	250 U	250 U	250 U	250 U	250 U	NA	**495**	**830**	**3,100**	**2,900**	**1,700**	**980**	**760**	**790**
Method NWTPH-Dx (µg/L)																	
Diesel	500	250 U	100 U	100 U	100 U	100 U	100 U	100 U	**1,800**	100 U	100 U	**290**	**280**	**540**	250 U	250 U	250 U
Motor Oil	500	500 U	200 U	200 U	200 U	200 U	200 U	200 U	**5,200**	500 U	500 U	500 U	500 U	500 U	500 U	500 U	250 U
Creosote Oil	500	250 U	100 U	200 U	200 U	200 U	100 U	**160**	NA	**790**	**1,710**	NA	NA	**4,200**	500 U	**990**	**600**
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 QG15A 1/18/2010	MW-02D RS33F 10/18/2010	MW-02D SO90G 03/25/2011	MW-02D TI17D 08/09/2011	MW-02D UL56A 03/08/2012	MW-02D VP10A 10/24/2012	MW-02D WF72A 02/28/2013	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 3/20/2008	MW-05D NH92G 7/29/2008	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 8270D / 8270D-SIM																		
Naphthalene	4900	**180**	1.0 U	**76**	**110**	**19**	**43**	**1.0**	**4.0**	NA	**21.0**	**28**	**27**	**2.2**	**1.2**	**3.4**	1.0 U	1.0 U
2-Methylnaphthalene		**36**	1.0 U	**13**	**9.4**	**1.5**	**11**	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		1.0 U	**1.9**	1.0 U	1.0 U	1.0 U	**1.1**	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		**34**	**8.8**	**21**	**18**	**9.3**	**26**	**7.2**	**15**	NA	**6.39**	**5.8**	**6.7**	**3.9**	**0.6** J	**3.7**	1.0 U	**4.2**
Dibenzofuran		**14**	**3.0**	**7.9**	**6.1**	**3.2**	**11**	**2.8**	NA	NA	NA	**2.2**	**2.5**	**1.4**	1.0 U	**1.1**	1.0 U	1.0 U
Fluorene		**15**	**11**	**8.4**	**5.8**	**3.8**	**13**	**4.7**	**5.0**	NA	**2.60**	**1.8**	**2.3**	**1.0**	1.0 U	**1.2**	1.0 U	1.0 U
Pentachlorophenol	3	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	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		**9.1**	**5.0**	**5.1**	**3.9**	**2.3**	**8.3**	**2.2**	**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		**9.1**	**8.3** J	**5.7**	**4.9**	**1.4**	**9.0**	NA	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	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	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	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	0.10 U	0.10 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	0.10 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	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		0.10 U	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		0.10 U	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	0.10 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	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	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	0.10 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	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	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		**30**	1.0 U	**15**	**13**	**5.1**	**19**	**1.9**	NA	NA	NA	**2.8**	**3.1**	1.0 U	1.0 U	**1.0**	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										0.10 U
cPAH TEQ (b)	0.1 (c)	ND	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	0.071	0.071	0.071	0.071	0.076	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 8041/8270C,D																		
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	0.26 U	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	**600**	**420**	**620**	250 U	250 U	**510**	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	250 U	100 U	120 U	**140**	100 U	**130**	100 U	**440**	100 U	100 U	250 U	250 U	250 U	250 U	250 U	250 U	100 U
Motor Oil	500	500 U	200 U	230 U	200 U	**210**	200 U	200 U	**520**	500 U	500 U	500 U	500 U	500 U	500 U	250 U	500 U	200 U
Creosote Oil	500	**700**	**270**	**280**	**440**	200 U	**910**	**270**	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	NA
Toluene	1,000	NA	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	NA
m, p-Xylene	1,000	NA	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	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 03/25/2011	MW05D TI17I 08/09/2011	MW-05D UL56C 03/08/2012	MW-05D VP53E 10/25/2012	MW-05D WF57D 2/27/2013	CW-13 2006110275-04 11/16/2006	CW-13 LS22A 10/2/2007	CW-13 MO26D 3/20/2008	CW-13 NH70F 7/28/2008	CW-13 PK28F 8/11/2009	CW-13 QF84D 1/14/2010	CW-13 RS33G 10/19/2010	CW-13 SO90K 03/25/2011	CW-13 TI17H 08/09/2011	CW-13 UL56B 03/08/2012	CW-13 VP53B 10/25/2012	CW-13 WF57C 2/27/2013
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																		
EPA Method 8270D / 8270D-SIM																		
Naphthalene	4900	1.0 U	**2.1**	1.0 U	**1.3**	**2.9**	**1.54**	**8.7**	**11**	**30**	**4.8**	1.0 U	1.0 U	1.0 U	**5.2**	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	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
Acenaphthylene		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	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**	**50.0**	**64**	**44**	**51**	**25**	1.0 U	**5.4**	1.0 U	**4.3**	1.0 U	**5.2**	1.0 U
Dibenzofuran		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**	1.0 U	1.0 U	1.0 U	**2.5**	1.0 U
Fluorene		1.0 U	**1.2**	1.0 U	**1.3**	**1.6**	**20.7**	**25**	**16**	**21**	**8.7**	1.0 U	**2.4**	1.0 U	1.0 U	1.0 U	**2.0**	1.0 U
Pentachlorophenol	3	5.0 U	5.0 U	5.0 U	10 U	10 U	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	10 U	10 U
Phenanthrene		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**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbazole		1.0 U	1.0 U	**1.1**	**2.2**	NA	NA	**14**	**11**	**13**	**3.0**	1.0 U	1.0 UJ	1.0 U	**1.4**	1.0 U	1.0 U	NA
Anthracene		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	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	**5.47**	**5.9**	**1.8**	**3.2**	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	**2.44**	**2.2**	1.0 U	**1.4**	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		0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	**0.37**	**0.24**	**0.14**	**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
Chrysene		0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	**0.25**	**0.24**	**0.10**	**0.12**	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	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene		NA	NA	NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	NA	NA	NA	NA	NA	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	0.10 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		0.12 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	0.10 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	0.10 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	1.0 U	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 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**	NA	**34**	**27**	**34**	**12**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes		0.12 U	0.11 U	0.10 U	0.20 U	0.20 U							0.10 U	0.10 U	0.10 U	0.10 U	0.20 U	0.20 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	**0.040**	**0.0264**	**0.015**	**0.014**	ND	ND	ND	ND	ND	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	**0.110**	**0.096**	**0.085**	**0.084**	0.076	0.076	0.071	0.071	0.071	0.071	0.076	0.076
PENTACHLOROPHENOL (µg/L)																		
EPA Method 8041/8270C,D																		
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	**2.2**	0.25 U	0.10 U	0.22 U	0.25 U	**2.9**	0.26 U	0.25 U	0.25 U	0.25 U	**1.0**	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	**83**	**750**	**630**	**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	110 U	100 U	100 U	100 U	100 U	100 U	250 U	**290**	**270**	250 U	250 U	100 U	100 U	100 U	100 U	100 U	100 U
Motor Oil	500	220 U	200 U	200 U	200 U	200 U	500 U	500 U	500 U	500 U	250 U	500 U	200 U	200 U	200 U	200 U	200 U	200 U
Creosote Oil	500	220 U	200 U	200 U	100 U	**210**	**471**	NA	**1,100**	**960**	500 U	250 U	100 U	200 U	200 U	200 U	100 U	**110**
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	NA
Toluene	1,000	NA	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	NA
m, p-Xylene	1,000	NA	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	NA

U = Indicates the compound was undetected at the given reporting limit.
UJ = The analyte was not detected in the sample; the reported sample detection limit is an estimate.
J = Indicates the analyte was positively identified; the associated value is approximate.
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 level.

(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 C 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	--	19.00	--	15.50	--
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
	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

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?
	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
	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

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?
	8/10/2009	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
	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

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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?
	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
	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

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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?	
	6/30/2012	PZ-17	7.08	20.48		13.40	--		
	6/30/2012	LW-3	NA	19.83	(c)	NA	15.50	NA	Lid stuck.
	7/27/2012	PZ-17	7.20	20.48		13.28	--		
	7/27/2012	LW-3	NA	19.83	(c)	NA	15.50	NA	Well covered
	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	
	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	
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	--		
	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	

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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?
	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	--	
	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

TABLE A-2
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?
	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	--	
	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

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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?
	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	--	
	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

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?	
	12/26/2011	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	Covered in b
	7/27/2012	PZ-18	9.62	21.2	11.58	--		Well coverec
	7/27/2012	LW-4R	6.95	22.02	15.07	15.50	No	Pressure on
	8/12/2012	PZ-18	9.78	21.20	11.42	--		Pressure on
	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	--		Lid stuck
	11/24/2012	LW-4R	NA	22.02	NA	15.50	NA	Bark pile
	12/30/2012	PZ-18	8.03	21.2	13.17	--		
	12/30/2012	LW-4R	NA	22.02	NA	15.50	NA	Bark pile
	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	
	3/31/2013	PZ-18	NA	21.2	NA	--		
	3/31/2013	LW-4R	8.26	22.02	13.76	15.50	No	logs over we

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	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	--	
	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

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-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	--	
	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

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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?
	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	--	
	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

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-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
	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

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-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	16.00	31.96	(e)	15.96	15.50	Yes
	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
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	--	
							--	
	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	--	

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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?
	3/19/2008	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	--	
	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	--	

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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?
	8/10/2009	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	--	
	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	--	

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-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	--	
	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	--	

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-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	16.54	31.96	(e)	15.42	--	
	2/9/2013	MW-02D	16.57	31.81	(e)	15.24	--	
	3/31/2013	MW-02S	16.57	31.96	(e)	15.39	--	
	3/31/2013	MW-02D	21.87	31.81	(e)	9.94	--	
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	--	

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?
	6/30/2007	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	--	
	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	--	

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?
	2/23/2009	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	--	
	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	--	

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?
	7/23/2010	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	--	
	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	--	

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?
	12/26/2011	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	--	
	5/19/2001	MW-01S	6.63	21.64		15.01	--	
	5/19/2001	MW-01D	9.50	21.72	(f)	12.22	--	
	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	--	

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	11/8/2006	MW-05S	12.29	29.25	16.96	16.50	Yes
	11/8/2006	MW-05D	14.36	28.10	13.74	--	--
	12/31/2006	MW-05S	11.07	29.25	18.18	16.50	Yes
	12/31/2006	MW-05D	11.96	28.10	16.14	--	--
	3/2/2007	MW-05S	12.53	29.25	16.72	16.50	Yes
	3/2/2007	MW-05D	16.18	28.10	11.92	--	--
	3/31/2007	MW-05S	12.19	29.25	17.06	16.50	Yes
	3/31/2007	MW-05D	16.22	28.10	11.88	--	--
	4/23/2007	MW-05S	13.63	29.25	15.62	16.50	No
	4/23/2007	MW-05D	13.93	28.10	14.17	--	--
	5/28/2007	MW-05S	15.03	29.25	14.22	16.50	No
	5/28/2007	MW-05D	16.01	28.10	12.09	--	--
	6/30/2007	MW-05S	15.12	29.25	14.13	16.50	No
	6/30/2007	MW-05D	17.80	28.10	10.30	--	--
	8/1/2007	MW-05S	15.15	29.25	14.10	16.50	No
	8/1/2007	MW-05D	18.67	28.10	9.43	--	--
	9/29/2007	MW-05S	16.55	29.25	12.70	16.50	No
	9/29/2007	MW-05D	16.50	28.10	11.60	--	--
	11/22/2007	MW-05S	15.04	29.25	14.21	16.50	No
	11/22/2007	MW-05D	12.63	28.10	15.47	--	--
	1/26/2008	MW-05S	13.25	29.25	16.00	16.50	No
	1/26/2008	MW-05D	15.45	28.10	12.65	--	
	2/28/2008	MW-05S	12.56	29.25	16.69	16.50	Yes
	2/28/2008	MW-05D	17.81	28.10	10.29	--	--
	3/19/2008	MW-05S	13.44	29.25	15.81	16.50	No
	3/19/2008	MW-05D	17.97	28.10	10.13	--	--
	4/28/2008	MW-05S	13.79	29.25	15.46	16.50	No
	4/28/2008	MW-05D	16.16	28.10	11.94	--	--
	5/31/2008	MW-05S	14.08	29.25	15.17	16.50	No
	5/31/2008	MW-05D	15.63	28.10	12.47	--	--
	6/30/2008	MW-05S	15.02	29.25	12.70	16.50	No
	6/30/2008	MW-05D	14.00	28.10	11.60	--	--
	7/12/2008	MW-05S	15.22	29.25	14.03	16.50	No
	7/12/2008	MW-05D	16.33	28.10	11.77	--	--

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	MW-05S	16.03	29.25		13.22	16.50	No
	8/28/2008	MW-05D	18.98	28.10		9.12	--	--
	9/20/2008	MW-05S	NM	29.25		--	16.50	--
	9/20/2008	MW-05D	NM	28.10		--	--	--
	10/12/2008	MW-05S	NM	29.25		--	16.50	--
	10/12/2008	MW-05D	NM	28.10		--	--	--
	11/30/2008	MW-05S	NM	29.25		--	16.50	--
	11/30/2008	MW-05D	NM	28.10		--	--	--
	12/31/2008	MW-05S	NM	29.25		--	16.50	--
	12/31/2008	MW-05D	NM	28.10		--	--	--
	1/31/2009	MW-05S	15.38	29.45	(d)	14.07	16.50	No
	1/31/2009	MW-05D	16.77	26.50	(d)	9.73	--	--
	2/23/2009	MW-05S	15.85	29.45	(d)	13.60	16.50	No
	2/23/2009	MW-05D	12.01	26.50	(d)	14.49	--	--
	3/29/2009	MW-05S	15.17	29.45	(d)	14.28	16.50	No
	3/29/2009	MW-05D	13.86	26.50	(d)	12.64	--	--
	4/18/2009	MW-05S	15.63	29.45	(d)	13.82	16.50	No
	4/18/2009	MW-05D	14.41	26.50	(d)	12.09	--	--
	5/16/2009	MW-05S	15.09	29.45	(d)	14.36	16.50	No
	5/16/2009	MW-05D	13.88	26.50	(d)	12.62	--	--
	6/21/2009	MW-05S	16.38	29.45	(d)	13.07	16.50	No
	6/21/2009	MW-05D	11.01	26.50	(d)	15.49	--	--
	7/20/2009	MW-05S	16.95	29.45	(d)	12.50	16.50	No
	7/20/2009	MW-05D	12.71	26.50	(d)	13.79	--	--
	8/10/2009	MW-05S	16.82	29.45	(d)	12.63	16.50	No
	8/10/2009	MW-05D	12.10	26.50	(d)	14.40	--	--
	9/7/2009	MW-05S	18.33	29.45	(d)	11.12	16.50	No
	9/7/2009	MW-05D	14.02	26.50	(d)	12.48	--	--
	10/10/2009	MW-05S	19.16	29.45	(d)	10.29	16.50	No
	10/10/2009	MW-05D	13.31	26.50	(d)	13.19	--	--
	11/28/2009	MW-05S	17.31	29.45	(d)	12.14	16.50	No
	11/28/2009	MW-05D	13.14	26.50	(d)	13.36	--	--
	12/31/2009	MW-05S	16.66	29.45	(d)	12.79	16.50	No
	12/31/2009	MW-05D	9.69	26.50	(d)	16.81	--	--

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	MW-05S	14.89	29.45	(d)	14.56	16.50	No
	1/14/2010	MW-05D	11.81	26.50	(d)	14.69	--	--
	2/21/2010	MW-05S	14.71	29.45	(d)	14.74	16.50	No
	2/21/2010	MW-05D	10.63	26.50	(d)	15.87	--	--
	3/17/2010	MW-05S	13.53	29.45	(d)	15.92	16.50	No
	3/17/2010	MW-05D	11.63	26.50	(d)	14.87	--	--
	4/25/2010	MW-05S	16.11	29.45	(d)	13.34	16.50	No
	4/25/2010	MW-05D	12.26	26.50	(d)	14.24	--	--
	5/16/2010	MW-05S	16.14	29.45	(d)	13.31	16.50	No
	5/16/2010	MW-05D	14.97	26.50	(d)	11.53	--	--
	6/26/2010	MW-05S	17.07	29.45	(d)	12.38	16.50	No
	6/26/2010	MW-05D	15.20	26.50	(d)	11.30	--	--
	7/23/2010	MW-05S	17.73	29.45	(d)	11.72	16.50	No
	7/23/2010	MW-05D	15.31	26.50	(d)	11.19	--	--
	8/30/2010	MW-05S	15.58	29.45	(d)	13.87	16.50	No
	8/30/2010	MW-05D	12.01	26.50	(d)	14.49	--	--
	9/30/2010	MW-05S	14.32	29.45	(d)	15.13	16.50	No
	9/30/2010	MW-05D	12.83	26.50	(d)	13.67	--	--
	10/18/2010	MW-05S	15.52	29.45	(d)	13.93	16.50	No
	10/18/2010	MW-05D	15.58	26.50	(d)	10.92	--	--
	11/29/2010	MW-05S	15.14	29.45	(d)	14.31	16.50	No
	11/29/2010	MW-05D	10.32	26.50	(d)	16.18	--	--
	12/25/2010	MW-05S	13.03	29.45	(d)	16.42	16.50	No
	12/25/2010	MW-05D	9.02	26.50	(d)	17.48	--	--
	1/29/2011	MW-05S	13.29	29.45	(d)	16.16	16.50	No
	1/29/2011	MW-05D	11.80	26.50	(d)	14.70	--	--
	2/20/2011	MW-05S	13.22	29.45	(d)	16.23	16.50	No
	2/20/2011	MW-05D	14.33	26.50	(d)	12.17	--	--
	3/24/2011	MW-05S	13.15	29.45	(d)	16.30	16.50	No
	3/24/2011	MW-05D	9.11	26.50	(d)	17.39	--	--
	4/23/2011	MW-05S	12.78	29.45	(d)	16.67	16.50	Yes
	4/23/2011	MW-05D	16.44	26.50	(d)	10.06	--	--
	5/30/2011	MW-05S	13.40	29.45	(d)	16.05	16.50	No
	5/30/2011	MW-05D	16.18	26.50	(d)	10.32	--	--

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	MW-05S	13.94	29.45	(d)	15.51	16.50	No
	6/26/2011	MW-05D	12.31	26.50	(d)	14.19	--	--
	7/30/2011	MW-05S	14.08	29.45	(d)	15.37	16.50	No
	7/30/2011	MW-05D	17.13	26.50	(d)	9.37	--	--
	8/8/2011	MW-05S	14.27	29.45	(d)	15.18	16.50	No
	8/8/2011	MW-05D	15.50	26.50	(d)	11.00	--	--
	9/24/2011	MW-05S	14.42	29.45	(d)	15.03	16.50	No
	9/24/2011	MW-05D	16.02	26.50	(d)	10.48	--	--
	10/29/2011	MW-05S	14.62	29.45	(d)	14.83	16.50	No
	10/29/2011	MW-05D	11.59	26.50	(d)	14.91	--	--
	11/26/2011	MW-05S	12.74	29.45	(d)	16.71	16.50	Yes
	11/26/2011	MW-05D	10.19	26.50	(d)	16.31	--	--
	12/26/2011	MW-05S	14.43	29.45	(d)	15.02	16.50	No
	12/26/2011	MW-05D	13.68	26.50	(d)	12.82	--	--
	1/28/2012	MW-05S	13.28	29.45	(d)	16.17	16.50	No
	1/28/2012	MW-05D	10.15	26.50	(d)	16.35	--	--
	2/26/2012	MW-05S	12.81	29.45	(d)	16.64	16.50	Yes
	2/26/2012	MW-05D	15.87	26.50	(d)	10.63	--	--
	3/7/2012	MW-05S	13.30	29.45	(d)	16.15	16.50	No
	3/7/2012	MW-05D	15.35	26.50	(d)	11.15	--	--
	4/21/2012	MW-05S	12.79	29.45	(d)	16.66	16.50	Yes
	4/21/2012	MW-05D	12.84	26.50	(d)	13.66	--	--
	5/19/2012	MW-05S	13.54	29.45	(d)	15.91	16.50	No
	5/19/2012	MW-05D	14.39	26.50	(d)	12.11	--	--
	6/30/2012	MW-05S	13.20	29.45	(d)	16.25	16.50	No
	6/30/2012	MW-05D	10.74	26.50	(d)	15.76	--	--
	7/27/2012	MW-05S	13.26	29.45	(d)	16.19	16.50	No
	7/27/2012	MW-05D	13.21	26.50	(d)	13.29	--	--
	8/12/2012	MW-05S	11.66	29.45	(d)	17.79	16.50	Yes
	8/12/2012	MW-05D	12.99	26.50	(d)	13.51	--	--
	9/30/2012	MW-05S	13.23	29.45	(d)	16.22	16.50	No
	9/30/2012	MW-05D	11.39	26.50	(d)	15.11	--	--
	10/24/2012	MW-05S	13.45	29.45	(d)	16.00	16.50	No
	10/24/2012	MW-05D	14.10	26.50	(d)	12.40	--	--

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	MW-05S	11.57	29.45	(d)	17.88	16.50	Yes
	11/24/2012	MW-05D	10.2	26.50	(d)	16.3	--	--
	12/30/2012	MW-05S	12.23	29.45	(d)	17.22	16.50	Yes
	12/30/2012	MW-05D	12.05	26.50	(d)	14.45	--	--
	1/25/2013	MW-05S	10.55	29.45	(d)	18.90	16.50	Yes
	1/25/2013	MW-05D	13.13	26.50	(d)	13.37	--	--
	2/9/2013	MW-05S	10.16	29.45	(d)	19.29	16.50	Yes
	2/9/2013	MW-05D	13.60	26.50	(d)	12.90	--	--
	3/31/2013	MW-05S	13.61	29.45	(d)	15.84	16.50	No
	3/31/2013	MW-05D	16.55	26.50	(d)	9.95	--	--

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 cut down 0.2 ft to make room for new well monument lid. Elevation was adjusted from 20.03 to 19.83.
(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'. Outer casing cut down corresponding amount. New MW-01D measuring point elevation is 21.72' MLLW.

NM = Not measured.
NA = Not available.

APPENDIX B

Laboratory Analytical Results

Analytical Resources, Incorporated
Analytical Chemists and Consultants

November 10, 2012

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

RE: Project: Port of Olympia
ARI Job No: VP10

Dear Chris:

Please find enclosed the original *Chain of Custody*, sample receipt documentation, and final results for the project referenced above. Analytical Resources, Inc. accepted seven water samples and a trip blank in good condition on October 25, 2012.

The samples were analyzed for NWTPH-Gx, NWTPH-Dx, cPAHs by method 8270 SIM, PAHs by method 8270 and PCP on select samples by method 8041, as requested on the *Chain of Custody*.

Please refer to the *Case Narrative* for analytical details regarding the sample.

A 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

vPQ9

Date 10/24/12
Page 1 of 1

Project Name Cascade Pole Project No. 21039.060.061
Project Location/Event Port of Olympia / Dry Season
Sampler's Name Sarah Weeks, Sierra Mott, Jordan Thomas
Project Contact Chris Kimmel
Send Results To Chris Kimmel, Jessica Stone, Anne Halvorson

Turnaround Time
☒ Standard
☐ Accelerated
☐ _____

Sample I.D.	Date	Time	Matrix	No. of Containers	NWTPH-Gx	NWTPH-Dx (Acid/Silica Gel)	PAHs (8270C SIM)	PCP (8270C)	PCP (8041)	Observations/Comments
MW-02D-20121024	10/24/12	1319	H_2O	10	X	X	X	X	X	X Allow water samples to settle, collect aliquot from clear portion
PZ-18-20121024	10/24/12	1550	H_2O	10	X	X	X	X	X	X NWTPH-Dx - run acid wash/silica gel cleanup
PZ-19-20121024	10/24/12	1449	H_2O	10	X	X	X	X	X	___ run samples standardized to _____ product
PZ-30-20121024	10/24/12	1420	H_2O	10	X	X	X	X	X	___ Analyze for EPH if no specific product identified
MW-05S-20121024	10/24/12	1426	H_2O	10	X	X	X	X	X	VOC/BTEX/VPH (soil):
LW-4R-20121024	10/24/12	1432	H_2O	10	X	X	X	X	X	___ non-preserved
MW-02S-20121024	10/24/12	1326	H_2O	10	X	X	X	X	X	___ preserved w/methanol
Trip Blank	10/23/12	—	H_2O	2	X					___ 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 4 coolers w/ ice

Method of Shipment Delivery

Relinquished by	Received by	Relinquished by	Received by
Signature Sarah Weeks	Signature	Signature	Signature
Printed Name Sarah Weeks	Printed Name Taylor Stratton	Printed Name	Printed Name
Company Landau Associates, Inc	Company ARI	Company	Company
Date 10/24/12 Time 1945	Date 10-25-12 Time 600	Date _____ Time _____	Date _____ Time _____

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

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: VP10
Client: Landau Associates, Inc.
Project Event: 20139.060.061
Project Name: Cascade Pole

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-02D-20121024	VP10A	12-21136	Water	10/24/12 13:19	10/25/12 09:00
2.	PZ-18-20121024	VP10B	12-21137	Water	10/24/12 15:50	10/25/12 09:00
3.	PZ-19-20121024	VP10C	12-21138	Water	10/24/12 14:49	10/25/12 09:00
4.	PZ-30-20121024	VP10D	12-21139	Water	10/24/12 14:20	10/25/12 09:00
5.	MW-05S-20121024	VP10E	12-21140	Water	10/24/12 14:26	10/25/12 09:00
6.	LW-4R-20121024	VP10F	12-21141	Water	10/24/12 14:32	10/25/12 09:00
7.	MW-02S-20121024	VP10H	12-21142	Water	10/24/12 13:26	10/25/12 09:00
8.	Trip Blanks	VP10I	12-21143	Water	10/24/12	10/25/12 09:00

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau Project Name: Cascade Pole

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

Assigned ARI Job No: VP10 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) 4.3 2.6 0.3 1.7

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

Cooler Accepted by: TB Date: 10-25-12 Time: 960

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 10-23-12

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

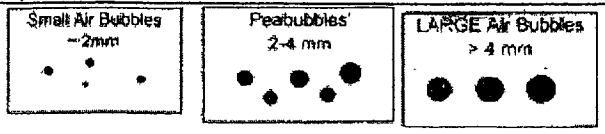
Samples Logged by: TB Date: 10-25-12 Time: 1125

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

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

Additional Notes, Discrepancies, & Resolutions:

By _____ Date _____



Small → "sm"	
Peabubbles → "pb"	
Large → "lg"	
Headspace → "hs"	

Case Narrative

Project: 0021039.060.061
ARI Job No.: VP10
November 10, 2012

Sample Receipt

Please find enclosed the original *Chain of Custody (COC)* record and analytical results for the project referenced above. Analytical Resources, Inc. accepted seven water samples and a trip blank in good condition on October 25, 2012. The samples were received at cooler temperatures between 0.3 and 4.3°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 10/29/12. The samples were analyzed between 10/31/12 and 11/1/12 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate TBP is out of control high in association with the LCSD. The LCSD spike recoveries are in control and no further corrective action was taken.

LCS/LSCD (s): Are in control.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

SIM PNA by method 8270-SIM Water

The samples were extracted on 10/26/12 and analyzed on 11/1/12 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: Are in control.

LCS/LSCD (s): All percent recoveries and other RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

PCP Only by method 8041

The samples were extracted on 10/29/12 and analyzed on 11/04/12 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Case Narrative

Project: 0021039.060.061
ARI Job No.: VP10
November 10, 2012
Page 2 of 2

Surrogates: The surrogate TBP is out of control high in association with the LCSD. The LCSD spike recoveries are in control and no further corrective action was taken.

LCS/LSCD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Gx

The samples were analyzed on 10/26/12 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were in control.

LCS/LCSD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Dx

The samples were extracted on 10/29/12 and analyzed on 11/2/12 - within the method recommended holding time.

Surrogates: All surrogate recoveries were in control.

Samples: There were no anomalies associated with these samples.

LCS/LCSD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS **Sample ID: MW-02D-20121024**
Extraction Method: SW3520C **SAMPLE**

Lab Sample ID: VP10A
LIMS ID: 12-21136
Matrix: Water
Data Release Authorized:
Reported: 11/06/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
Event: 20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/26/12
Date Analyzed: 11/01/12 18:01
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	49.6%
d14-Dibenzo(a,h)anthracene	40.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS **Sample ID: PZ-18-20121024**
Extraction Method: SW3520C **SAMPLE**

Lab Sample ID: VP10B
LIMS ID: 12-21137
Matrix: Water
Data Release Authorized:
Reported: 11/06/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
Event: 20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/26/12
Date Analyzed: 11/01/12 18:29
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	44.5%
d14-Dibenzo(a,h)anthracene	23.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS **Sample ID: PZ-19-20121024**
Extraction Method: SW3520C **SAMPLE**

Lab Sample ID: VP10C
LIMS ID: 12-21138
Matrix: Water
Data Release Authorized:
Reported: 11/06/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
Event: 20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/26/12
Date Analyzed: 11/01/12 18:57
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	42.9%
d14-Dibenzo(a,h)anthracene	35.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS **Sample ID: PZ-30-20121024**
Extraction Method: SW3520C **SAMPLE**

Lab Sample ID: VP10D
LIMS ID: 12-21139
Matrix: Water
Data Release Authorized: MW
Reported: 11/06/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
Event: 20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/26/12
Date Analyzed: 11/01/12 19:26
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	53.1%
d14-Dibenzo(a,h)anthracene	18.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS **Sample ID: MW-05S-20121024**
Extraction Method: SW3520C **SAMPLE**

Lab Sample ID: VP10E
LIMS ID: 12-21140
Matrix: Water
Data Release Authorized: [signature]
Reported: 11/06/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
Event: 20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/26/12
Date Analyzed: 11/01/12 19:54
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	48.3%
d14-Dibenzo(a,h)anthracene	22.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS **Sample ID: LW-4R-20121024**
Extraction Method: SW3520C **SAMPLE**

Lab Sample ID: VP10F
LIMS ID: 12-21141
Matrix: Water
Data Release Authorized:
Reported: 11/06/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
Event: 20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/26/12
Date Analyzed: 11/01/12 20:22
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	46.1%
d14-Dibenzo(a,h)anthracene	33.9%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-02S-20121024
SAMPLE

Lab Sample ID: VP10H
LIMS ID: 12-21142
Matrix: Water
Data Release Authorized: MDB
Reported: 11/12/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
Event: 20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/26/12
Date Analyzed: 11/05/12 16:00
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	86.1%
d14-Dibenzo(a,h)anthracene	20.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS **Sample ID: MB-102612**
Extraction Method: SW3520C **METHOD BLANK**

Lab Sample ID: MB-102612
LIMS ID: 12-21136
Matrix: Water
Data Release Authorized: MW
Reported: 11/06/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
Event: 20139.060.061
Date Sampled: NA
Date Received: NA

Date Extracted: 10/26/12
Date Analyzed: 11/01/12 14:42
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	60.7%
d14-Dibenzo(a,h)anthracene	46.0%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061

Client ID	MNP	DBA	TOT OUT
MB-102612	60.7%	46.0%	0
LCS-102612	59.0%	42.3%	0
LCSD-102612	61.7%	49.0%	0
MW-02D-20121024	49.6%	40.5%	0
PZ-18-20121024	44.5%	23.2%	0
PZ-19-20121024	42.9%	35.5%	0
PZ-30-20121024	53.1%	18.9%	0
MW-05S-20121024	48.3%	22.1%	0
LW-4R-20121024	46.1%	33.9%	0
MW-02S-20121024	86.1%	20.3%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(40-110)	(33-107)
(DBA) = d14-Dibenzo(a,h)anthracene	(33-140)	(10-142)

Prep Method: SW3520C
Log Number Range: 12-21136 to 12-21142

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-102612
LAB CONTROL SAMPLE

Lab Sample ID: LCS-102612
LIMS ID: 12-21136
Matrix: Water
Data Release Authorized:
Reported: 11/06/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
Event: 20139.060.061
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 10/26/12

Date Analyzed LCS: 11/01/12 15:11
LCSD: 11/01/12 15:39
Instrument/Analyst LCS: NT4/JZ
LCSD: NT4/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	1.95	3.00	65.0%	1.96	3.00	65.3%	0.5%
Chrysene	2.22	3.00	74.0%	2.32	3.00	77.3%	4.4%
Benzo(a)pyrene	1.67	3.00	55.7%	1.77	3.00	59.0%	5.8%
Indeno(1,2,3-cd)pyrene	2.01	3.00	67.0%	2.22	3.00	74.0%	9.9%
Dibenz(a,h)anthracene	1.66	3.00	55.3%	2.12	3.00	70.7%	24.3%
Total Benzofluoranthenes	8.30	9.00	92.2%	8.21	9.00	91.2%	1.1%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	59.0%	61.7%
d14-Dibenzo(a,h)anthracene	42.3%	49.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-02D-20121024
SAMPLE

Lab Sample ID: VP10A
LIMS ID: 12-21136
Matrix: Water
Data Release Authorized:
Reported: 11/09/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/29/12
Date Analyzed: 11/04/12 02:03
Instrument/Analyst: ECD1/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	99.6%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-18-20121024
SAMPLE

Lab Sample ID: VP10B
LIMS ID: 12-21137
Matrix: Water
Data Release Authorized:
Reported: 11/09/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/29/12
Date Analyzed: 11/04/12 02:39
Instrument/Analyst: ECD1/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	82.8%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-19-20121024
SAMPLE

Lab Sample ID: VP10C
LIMS ID: 12-21138
Matrix: Water
Data Release Authorized:
Reported: 11/09/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/29/12
Date Analyzed: 11/04/12 03:15
Instrument/Analyst: ECD1/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%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-30-20121024
SAMPLE

Lab Sample ID: VP10D
LIMS ID: 12-21139
Matrix: Water
Data Release Authorized:
Reported: 11/09/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/29/12
Date Analyzed: 11/04/12 03:51
Instrument/Analyst: ECD1/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
Page 1 of 1

Sample ID: MW-05S-20121024
SAMPLE

Lab Sample ID: VP10E
LIMS ID: 12-21140
Matrix: Water
Data Release Authorized:
Reported: 11/09/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/29/12
Date Analyzed: 11/04/12 04:28
Instrument/Analyst: ECD1/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
Page 1 of 1

Sample ID: LW-4R-20121024
SAMPLE

Lab Sample ID: VP10F
LIMS ID: 12-21141
Matrix: Water
Data Release Authorized:
Reported: 11/09/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/29/12
Date Analyzed: 11/04/12 05:04
Instrument/Analyst: ECD1/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
Page 1 of 1

Sample ID: MW-02S-20121024
SAMPLE

Lab Sample ID: VP10H
LIMS ID: 12-21142
Matrix: Water
Data Release Authorized: 
Reported: 11/09/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/29/12
Date Analyzed: 11/04/12 05:40
Instrument/Analyst: ECD1/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 **Sample ID: MB-102912**
Extraction Method: SW3510C **METHOD BLANK**

Lab Sample ID: MB-102912
LIMS ID: 12-21136
Matrix: Water
Data Release Authorized:
Reported: 11/09/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: NA
Date Received: NA

Date Extracted: 10/29/12
Date Analyzed: 11/03/12 18:48
Instrument/Analyst: ECD1/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	89.6%

ANALYTICAL RESOURCES INCORPORATED

SW8041 CHLOROPHENOLICS SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061

Client ID	TBP	TOT OUT
MB-102912	89.6%	0
LCS-102912	96.6%	0
LCSD-102912	104%*	1
MW-02D-20121024	99.6%	0
PZ-18-20121024	82.8%	0
PZ-19-20121024	90.4%	0
PZ-30-20121024	86.4%	0
MW-05S-20121024	92.8%	0
LW-4R-20121024	84.0%	0
MW-02S-20121024	80.8%	0

	LCS/MB LIMITS	QC LIMITS
(TBP) = 2,4,6-Tribromophenol	(41-98)	(26-113)

Prep Method: SW3510C
Log Number Range: 12-21136 to 12-21142

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041 **Sample ID: LCS-102912**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-102912 QC Report No: VP10-Landau Associates, Inc.
LIMS ID: 12-21136 Project: Cascade Pole
Matrix: Water 20139.060.061
Data Release Authorized: Date Sampled: 10/24/12
Reported: 11/09/12 Date Received: 10/25/12

Date Extracted LCS/LCSD: 10/29/12 Sample Amount LCS: 500 mL
LCSD: 500 mL
Date Analyzed LCS: 11/03/12 19:24 Final Extract Volume LCS: 50 mL
LCSD: 11/03/12 20:00 LCSD: 50 mL
Instrument/Analyst LCS: ECD1/YZ Dilution Factor LCS: 1.00
LCSD: ECD1/YZ LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Pentachlorophenol	2.40	2.50	96.0%	2.46	2.50	98.4%	2.5%

Chlorophenols Surrogate Recovery

	LCS	LCSD
2,4,6-Tribromophenol	96.6%	104%

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: MW-02D-20121024
SAMPLE

Lab Sample ID: VP10A
LIMS ID: 12-21136
Matrix: Water
Data Release Authorized:
Reported: 11/02/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/29/12
Date Analyzed: 10/31/12 23:39
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**	**43**
91-57-6	**2-Methylnaphthalene**	**1.0**	**11**
208-96-8	**Acenaphthylene**	**1.0**	**1.1**
83-32-9	**Acenaphthene**	**1.0**	**26**
132-64-9	**Dibenzofuran**	**1.0**	**11**
86-73-7	**Fluorene**	**1.0**	**13**
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	**Phenanthrene**	**1.0**	**8.3**
86-74-8	**Carbazole**	**1.0**	**9.0**
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**	**19**
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	49.2%
d14-p-Terphenyl	73.2%
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-18-20121024
SAMPLE

Lab Sample ID: VP10B
LIMS ID: 12-21137
Matrix: Water
Data Release Authorized:
Reported: 11/02/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/29/12
Date Analyzed: 11/01/12 19:22
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
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	43.2%
d14-p-Terphenyl	56.4%
2,4,6-Tribromophenol	77.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: PZ-19-20121024**
Extraction Method: SW3520C **SAMPLE**

Lab Sample ID: VP10C
LIMS ID: 12-21138
Matrix: Water
Data Release Authorized:
Reported: 11/02/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/29/12
Date Analyzed: 11/01/12 00:48
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	50.8%
d14-p-Terphenyl	77.6%
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-30-20121024
SAMPLE

Lab Sample ID: VP10D
LIMS ID: 12-21139
Matrix: Water
Data Release Authorized:
Reported: 11/02/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/29/12
Date Analyzed: 11/01/12 01:22
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**	**10**
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**	**1.2**
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	68.4%
d14-p-Terphenyl	62.8%
2,4,6-Tribromophenol	118%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-05S-20121024
SAMPLE

Lab Sample ID: VP10E
LIMS ID: 12-21140
Matrix: Water
Data Release Authorized:
Reported: 11/02/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/29/12
Date Analyzed: 11/01/12 01:56
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**	**8.2**
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**
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	50.8%
d14-p-Terphenyl	59.6%
2,4,6-Tribromophenol	102%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LW-4R-20121024
SAMPLE

Lab Sample ID: VP10F
LIMS ID: 12-21141
Matrix: Water
Data Release Authorized:
Reported: 11/02/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/29/12
Date Analyzed: 11/01/12 14:49
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	57.6%
d14-p-Terphenyl	86.8%
2,4,6-Tribromophenol	104%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-02S-20121024
SAMPLE

Lab Sample ID: VP10H
LIMS ID: 12-21142
Matrix: Water
Data Release Authorized:
Reported: 11/02/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted: 10/29/12
Date Analyzed: 11/01/12 15:23
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	66.0%
d14-p-Terphenyl	66.8%
2,4,6-Tribromophenol	95.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: MB-102912**
Extraction Method: SW3520C **METHOD BLANK**

Lab Sample ID: MB-102912
LIMS ID: 12-21136
Matrix: Water
Data Release Authorized:
Reported: 11/02/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: NA
Date Received: NA

Date Extracted: 10/29/12
Date Analyzed: 10/31/12 20:14
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	59.6%
d14-p-Terphenyl	76.0%
2,4,6-Tribromophenol	83.5%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061

Client ID	FBP	TPH	TBP	TOT OUT
MB-102912	59.6%	76.0%	83.5%	0
LCS-102912	73.6%	85.2%	123%	0
LCSD-102912	98.4%	113%	168%*	1
MW-02D-20121024	49.2%	73.2%	101%	0
PZ-18-20121024	43.2%	56.4%	77.1%	0
PZ-19-20121024	50.8%	77.6%	101%	0
PZ-30-20121024	68.4%	62.8%	118%	0
MW-05S-20121024	50.8%	59.6%	102%	0
LW-4R-20121024	57.6%	86.8%	104%	0
MW-02S-20121024	66.0%	66.8%	95.5%	0

	LCS/MB LIMITS	QC LIMITS
(FBP) = 2-Fluorobiphenyl	(51-100)	(38-100)
(TPH) = d14-p-Terphenyl	(54-117)	(27-122)
(TBP) = 2,4,6-Tribromophenol	(46-125)	(31-128)

Prep Method: SW3520C
Log Number Range: 12-21136 to 12-21142

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
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Sample ID: LCS-102912
LCS/LCSD

Lab Sample ID: LCS-102912
LIMS ID: 12-21136
Matrix: Water
Data Release Authorized:
Reported: 11/02/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted LCS/LCSD: 10/29/12

Date Analyzed LCS: 10/31/12 20:49
LCSD: 10/31/12 21:23
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	15.0	25.0	60.0%	14.9	25.0	59.6%	0.7%
2-Methylnaphthalene	14.7	25.0	58.8%	14.7	25.0	58.8%	0.0%
Acenaphthylene	18.2	25.0	72.8%	18.0	25.0	72.0%	1.1%
Acenaphthene	17.8	25.0	71.2%	17.7	25.0	70.8%	0.6%
Dibenzofuran	17.1	25.0	68.4%	17.0	25.0	68.0%	0.6%
Fluorene	19.6	25.0	78.4%	19.5	25.0	78.0%	0.5%
Pentachlorophenol	67.3	75.0	89.7%	69.6	75.0	92.8%	3.4%
Phenanthrene	19.4	25.0	77.6%	19.5	25.0	78.0%	0.5%
Carbazole	22.1	25.0	88.4%	21.7	25.0	86.8%	1.8%
Anthracene	18.5	25.0	74.0%	18.5	25.0	74.0%	0.0%
Fluoranthene	22.4	25.0	89.6%	21.7	25.0	86.8%	3.2%
Pyrene	17.4	25.0	69.6%	18.0	25.0	72.0%	3.4%
Benzo(a)anthracene	19.3	25.0	77.2%	19.1	25.0	76.4%	1.0%
Chrysene	19.4	25.0	77.6%	19.8	25.0	79.2%	2.0%
Benzo(a)pyrene	17.8	25.0	71.2%	17.5	25.0	70.0%	1.7%
Indeno(1,2,3-cd)pyrene	10.2	25.0	40.8%	10.9	25.0	43.6%	6.6%
Dibenz(a,h)anthracene	10.9	25.0	43.6%	11.8	25.0	47.2%	7.9%
Benzo(g,h,i)perylene	8.9	25.0	35.6%	10.1	25.0	40.4%	12.6%
1-Methylnaphthalene	20.6	25.0	82.4%	20.6	25.0	82.4%	0.0%
Total Benzofluoranthenes	42.5	50.0	85.0%	41.4	50.0	82.8%	2.6%

Semivolatile Surrogate Recovery

	LCS	LCSD
2-Fluorobiphenyl	73.6%	98.4%
d14-p-Terphenyl	85.2%	113%
2,4,6-Tribromophenol	123%	168%

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

Data Release Authorized:
Reported: 11/12/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
Event: 20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-102612	Method Blank	10/26/12	1.0	Gasoline	< 250 U
12-21136		PID1		HC ID	---
				Trifluorotoluene	99.1%
				Bromobenzene	97.9%
VP10A	MW-02D-20121024	10/26/12	1.0	**Gasoline**	**510**
12-21136		PID1		HC ID	GRO
				Trifluorotoluene	98.5%
				Bromobenzene	99.4%
VP10B	PZ-18-20121024	10/26/12	1.0	Gasoline	< 250 U
12-21137		PID1		HC ID	---
				Trifluorotoluene	96.5%
				Bromobenzene	99.4%
VP10C	PZ-19-20121024	10/26/12	1.0	Gasoline	< 250 U
12-21138		PID1		HC ID	---
				Trifluorotoluene	96.5%
				Bromobenzene	100%
VP10D	PZ-30-20121024	10/26/12	1.0	Gasoline	< 250 U
12-21139		PID1		HC ID	---
				Trifluorotoluene	99.1%
				Bromobenzene	101%
VP10E	MW-05S-20121024	10/26/12	1.0	Gasoline	< 250 U
12-21140		PID1		HC ID	---
				Trifluorotoluene	96.5%
				Bromobenzene	99.5%
VP10F	LW-4R-20121024	10/26/12	1.0	Gasoline	< 250 U
12-21141		PID1		HC ID	---
				Trifluorotoluene	93.8%
				Bromobenzene	98.9%
VP10H	MW-02S-20121024	10/26/12	1.0	Gasoline	< 250 U
12-21142		PID1		HC ID	---
				Trifluorotoluene	91.8%
				Bromobenzene	94.8%
VP10I	Trip Blanks	10/26/12	1.0	Gasoline	< 250 U
12-21143		PID1		HC ID	---
				Trifluorotoluene	98.3%
				Bromobenzene	98.5%

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: VP10
Matrix: Water

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
Event: 20139.060.061

Client ID	TFT	BBZ	TOT OUT
MB-102612	99.1%	97.9%	0
LCS-102612	103%	99.5%	0
LCSD-102612	104%	102%	0
MW-02D-20121024	98.5%	99.4%	0
PZ-18-20121024	96.5%	99.4%	0
PZ-19-20121024	96.5%	100%	0
PZ-30-20121024	99.1%	101%	0
MW-05S-20121024	96.5%	99.5%	0
LW-4R-20121024	93.8%	98.9%	0
MW-02S-20121024	91.8%	94.8%	0
Trip Blanks	98.3%	98.5%	0

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

Log Number Range: 12-21136 to 12-21143

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-102612
LAB CONTROL SAMPLE

Lab Sample ID: LCS-102612
LIMS ID: 12-21136
Matrix: Water
Data Release Authorized:
Reported: 11/12/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
Event: 20139.060.061
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 10/26/12 11:11
LCSD: 10/26/12 11:40
Instrument/Analyst LCS: PID1/JLW
LCSD: PID1/JLW

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	1100	1000	110%	1040	1000	104%	5.6%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	103%	104%
Bromobenzene	99.5%	102%

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: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061

Matrix: Water
Data Release Authorized:
Reported: 11/12/12

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	RL	Result
MB-102912	Method Blank	10/29/12	11/02/12	1.00	Diesel Range	100	< 100 U
12-21136	HC ID: ---		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		86.4%
VP10A	MW-02D-20121024	10/29/12	11/02/12	1.00	**Diesel Range**	**100**	**130**
12-21136	HC ID: **CREOSOTE**		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**910**
					o-Terphenyl		80.2%
VP10B	PZ-18-20121024	10/29/12	11/02/12	1.00	Diesel Range	100	< 100 U
12-21137	HC ID: ---		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		84.1%
VP10C	PZ-19-20121024	10/29/12	11/02/12	1.00	Diesel Range	100	< 100 U
12-21138	HC ID: ---		FID4A	1.0	Creosote Range	200	< 200 U
					Motor Oil Range	100	< 100 U
					o-Terphenyl		91.3%
VP10D	PZ-30-20121024	10/29/12	11/02/12	1.00	Diesel Range	100	< 100 U
12-21139	HC ID: **DRO**		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**170**
					o-Terphenyl		89.2%
VP10E	MW-05S-20121024	10/29/12	11/02/12	1.00	Diesel Range	100	< 100 U
12-21140	HC ID: **DRO**		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**170**
					o-Terphenyl		89.8%
VP10F	LW-4R-20121024	10/29/12	11/02/12	1.00	Diesel Range	100	< 100 U
12-21141	HC ID: ---		FID4A	1.0	Creosote Range	200	< 200 U
					Motor Oil Range	100	< 100 U
					o-Terphenyl		83.6%
VP10H	MW-02S-20121024	10/29/12	11/02/12	1.00	Diesel Range	100	< 100 U
12-21142	HC ID: **DRO**		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**110**
					o-Terphenyl		86.9%

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.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-102912**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-102912
LIMS ID: 12-21136
Matrix: Water
Data Release Authorized:
Reported: 11/12/12

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061
Date Sampled: 10/24/12
Date Received: 10/25/12

Date Extracted LCS/LCSD: 10/29/12

Date Analyzed LCS: 11/02/12 00:52
LCSD: 11/02/12 01:13
Instrument/Analyst LCS: FID/JGR
LCSD: FID/JGR

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2290	3000	76.3%	2320	3000	77.3%	1.3%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	71.6%	89.6%

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

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: VP10-Landau Associates, Inc.
Project: Cascade Pole
20139.060.061

Client ID	OTER	TOT OUT
MB-102912	86.4%	0
LCS-102912	71.6%	0
LCSD-102912	89.6%	0
MW-02D-20121024	80.2%	0
PZ-18-20121024	84.1%	0
PZ-19-20121024	91.3%	0
PZ-30-20121024	89.2%	0
MW-05S-20121024	89.8%	0
LW-4R-20121024	83.6%	0
MW-02S-20121024	86.9%	0

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

Prep Method: SW3510C
Log Number Range: 12-21136 to 12-21142

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: VP10
Matrix: Water Project: Cascade Pole
Date Received: 10/25/12 20139.060.061

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
12-21136-102912MB1	Method Blank	500 mL	1.00 mL	10/29/12
12-21136-102912LCS1	Lab Control	500 mL	1.00 mL	10/29/12
12-21136-102912LCSD1	Lab Control Dup	500 mL	1.00 mL	10/29/12
12-21136-VP10A	MW-02D-20121024	500 mL	1.00 mL	10/29/12
12-21137-VP10B	PZ-18-20121024	500 mL	1.00 mL	10/29/12
12-21138-VP10C	PZ-19-20121024	500 mL	1.00 mL	10/29/12
12-21139-VP10D	PZ-30-20121024	500 mL	1.00 mL	10/29/12
12-21140-VP10E	MW-05S-20121024	500 mL	1.00 mL	10/29/12
12-21141-VP10F	LW-4R-20121024	500 mL	1.00 mL	10/29/12
12-21142-VP10H	MW-02S-20121024	500 mL	1.00 mL	10/29/12

Analytical Resources, Incorporated
Analytical Chemists and Consultants

November 14, 2012

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

RE: Project: Port of Olympia
ARI Job No: VP53

Dear Chris:

Please find enclosed the original *Chain of Custody*, sample receipt documentation, and final results for the project referenced above. Analytical Resources, Inc. accepted eight water samples and a trip blank in good condition on October 26, 2012.

The samples were analyzed for NWTPH-Gx, NWTPH-Dx, cPAHs by method 8270 SIM, PAHs by method 8270 and PCP on select samples by method 8041, as requested on the *Chain of Custody*.

Please refer to the *Case Narrative* for analytical details regarding the sample.

A 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

VY53

Date 10/25/12
Page 1 of 1

Project Name Port of Olympia Project No. 21031.006.001
Project Location/Event Cascade Pole, Dry Season
Sampler's Name Sarah Wiggins, Steven Mott
Project Contact Chris Kimmel
Send Results To Chris Kimmel Landau Associates

Turnaround Time
☒ Standard
☐ Accelerated
☐ _____

Testing Parameters

Sample I.D.	Date	Time	Matrix	No. of Containers	Observations/Comments
PZ-15-20121025	10/25/12	1243	H2O	10	
CW-13-20121025		1407			
MW-01D-20121025		1541			
MW-01S-20121025		1637			
MW-05D-20121025		1403			
PZ-12-20121025		2[illegible]			
Trip Blank	10/25/12	—		2	
PZ-17-20121026	10/26/12	0507		10	
LW-3-20121026	10/26/12	0609		10	

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. HOLD Sample LW-3-20121026 Do not run - wait for communication from project manager

Oh 10 run 10/26/12

Special Shipment/Handling or Storage Requirements 4 coolers + Ice

Method of Shipment Courier

Relinquished by	Received by	Relinquished by	Received by
Signature [signature]	Signature [signature]	Signature [signature]	Signature [signature]
Printed Name Steven Mott	Printed Name Julianne Cooley	Printed Name Julianne Cooley	Printed Name [illegible]
Company Landau Associates	Company Landau Associates	Company Landau Associates	Company [illegible]
Date 10/26/12 Time 0932	Date 10/26/12 Time 09:32	Date 10/26/12 Time 2:55pm	Date 10/26/12 Time 1658

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

Rev 8/09

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau Tacoma | Edmonds Project Name: Port of Olympia

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

Assigned ARI Job No: UP53 Tracking No: _____ NA

Preliminary Examination Phase:

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

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)..... 3.8 3.5 3.2 3.8

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

Cooler Accepted by: _____ Date: 10-26-12 Time: 1658

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 10-23-12

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

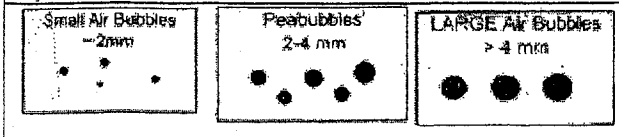
Samples Logged by: TS Date: 10-27-12 Time: 1138

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

LANDAU ASSOCIATES

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

Date 10/25/12

Page 1 of 1

Chain-of-Custody Record

Project Name Port of Olympia   Project No. 21039.060.061

Project Location/Event Cascade Pole, Dry Season

Sampler's Name Sarah Weeks, Sierra Mott

Project Contact Chris Kimmel

Send Results To Chris Kimmel, Jessica Stone, Anne Halvorsen

Turnaround Time
- ☒ Standard
- ☐ Accelerated
- ☐

Testing Parameters

Sample I.D.	Date	Time	Matrix	No. of Containers	TPH-Gx	TPH-Dx	cPAHs (8270)	cPAHs SIM	PCP (8270)	PCP (8041)
PZ-13-20121025	10/23/12	1243	H2O	10	X	X	X	X	X	X
CW-13-20121025	|	1407	|	|	X	X	X	X	X	X
MW-01D-20121025	|	1541	|	|	X	X	X	X	X	X
MW-01S-20121025	|	1637	|	|	X	X	X	X	X	X
MW-05D-20121025	|	1408	|	|	X	X	X	X	X	X
PZ-12-20121025	|	1254	|	|	X	X	X	X	X	X
Trip Blank	10/23/12	—	|	+2	X					
PZ-17-20121026	10/24/12	0807	|	10	X	X	X	X	X	X
LW-3-20121026	10/24/12	0809	|	10	X	X	X	X	X	X

REVISION: Run LW-3-20121026 Allow sample to settle 24hrs prior to extraction, collect aliquot from clear portion SW 10/29/12

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

HOLD sample LW-3-20121026 before run [illegible] for [illegible] from project manager

Special Shipment/Handling or Storage Requirements 4 coolers + Ice

Method of Shipment Courier

Relinquished by	Received by	Relinquished by	Received by
Signature: Sierra Mott	Signature: Julianna Conley	Signature: Julianna Conley	Signature: [illegible]
Printed Name: Sierra Mott	Printed Name: Julianna Conley	Printed Name: Julianna Conley	Printed Name: [illegible]
Company: Landau Associates	Company: Landau Associates	Company: Landau Associates	Company:
Date: ~~10/25/12~~ 10/26/12 Time: 0932	Date: 10/26/12 Time: 9:32	Date: 10/26/12 Time: 4:55pm	Date: [illegible] Time: 1658

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: VP53
Client: Landau Associates, Inc.
Project Event: 20139.060.061
Project Name: Port of Olympia

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	PZ-13-20121025	VP53A	12-21327	Water	10/25/12 12:43	10/26/12 16:58
2.	CW-13-20121025	VP53B	12-21328	Water	10/25/12 14:07	10/26/12 16:58
3.	MW-01D-20121025	VP53C	12-21329	Water	10/25/12 15:41	10/26/12 16:58
4.	MW-01S-20121025	VP53D	12-21330	Water	10/25/12 16:37	10/26/12 16:58
5.	MW-05D-20121025	VP53E	12-21331	Water	10/25/12 14:08	10/26/12 16:58
6.	PZ-12-20121025	VP53F	12-21332	Water	10/25/12 12:54	10/26/12 16:58
7.	PZ-17-20121026	VP53G	12-21333	Water	10/26/12 05:07	10/26/12 16:58
8.	LW-3-20121026	VP53H	12-21334	Water	10/26/12 06:09	10/26/12 16:58
9.	Trip Blanks	VP53I	12-21335	Water	10/25/12	10/26/12 16:58

Case Narrative

Project: 0021039.060.061
ARI Job No.: VP53
November 14, 2012

Sample Receipt

Please find enclosed the original *Chain of Custody (COC)* record and analytical results for the project referenced above. Analytical Resources, Inc. accepted eight water samples and a trip blank in good condition on October 26, 2012. The samples were received at cooler temperatures between 3.2 and 3.8°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 10/31/12. The samples were analyzed between 11/5/12 and 11/6/12 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: Are in control.

LCS/LSCD (s): Are in control.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

SIM PNA by method 8270-SIM Water

The samples were extracted on 10/31/12 and analyzed on 11/8/12 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate MNP is out of control low in association with sample MW-01S-20121025. All other surrogate recoveries are in control and no further corrective action was taken.

LCS/LSCD (s): All percent recoveries and other RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

PCP Only by method 8041

The samples were extracted on 10/31/12 and analyzed on 11/09/12 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Case Narrative

Project: 0021039.060.061
ARI Job No.: VP53
November 14, 2012

Surrogates: The surrogate TBP is out of control high in association with the LCSD. The LCSD spike recoveries are in control and no further corrective action was taken.

LCS/LSCD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Gx

The samples were analyzed on 10/29/12 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were in control.

LCS/LCSD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Dx

The samples were extracted on 10/30/12 and analyzed on 11/1/12 and 11/2/12 - within the method recommended holding time.

Surrogates: All surrogate recoveries were in control.

Samples: There were no anomalies associated with these samples.

LCS/LCSD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-13-20121025
SAMPLE

Lab Sample ID: VP53A
LIMS ID: 12-21327
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/08/12 14:10
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	47.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: CW-13-20121025
SAMPLE

Lab Sample ID: VP53B
LIMS ID: 12-21328
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/08/12 15:42
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	50.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-01D-20121025
SAMPLE

Lab Sample ID: VP53C
LIMS ID: 12-21329
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/08/12 16:10
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	58.3%
d14-Dibenzo(a,h)anthracene	49.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-01S-20121025
SAMPLE

Lab Sample ID: VP53D
LIMS ID: 12-21330
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/08/12 16:38
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	Result
56-55-3	**Benzo(a)anthracene**	**0.10**	**2.5**
218-01-9	**Chrysene**	**0.10**	**2.4**
50-32-8	**Benzo(a)pyrene**	**0.10**	**0.76**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**0.10**	**0.11**
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	**Total Benzofluoranthenes**	**0.20**	**1.5**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	23.0%
d14-Dibenzo(a,h)anthracene	30.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: MW-05D-20121025
SAMPLE

Lab Sample ID: VP53E
LIMS ID: 12-21331
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/08/12 17:07
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	58.7%
d14-Dibenzo(a,h)anthracene	54.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-12-20121025
SAMPLE

Lab Sample ID: VP53F
LIMS ID: 12-21332
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/08/12 17:35
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	60.7%
d14-Dibenzo(a,h)anthracene	51.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-17-20121026
SAMPLE

Lab Sample ID: VP53G
LIMS ID: 12-21333
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061
Date Sampled: 10/26/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/08/12 18:03
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	51.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LW-3-20121026
SAMPLE

Lab Sample ID: VP53H
LIMS ID: 12-21334
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061
Date Sampled: 10/26/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/08/12 18:32
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	63.0%
d14-Dibenzo(a,h)anthracene	23.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-103112
METHOD BLANK

Lab Sample ID: MB-103112
LIMS ID: 12-21327
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061
Date Sampled: NA
Date Received: NA

Date Extracted: 10/31/12
Date Analyzed: 11/08/12 12:45
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	54.7%
d14-Dibenzo(a,h)anthracene	50.3%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061

Client ID	MNP	DBA	TOT OUT
MB-103112	54.7%	50.3%	0
LCS-103112	57.0%	54.7%	0
LCSD-103112	50.7%	61.0%	0
PZ-13-20121025	65.0%	47.3%	0
CW-13-20121025	61.7%	50.0%	0
MW-01D-20121025	58.3%	49.0%	0
MW-01S-20121025	23.0%*	30.3%	1
MW-05D-20121025	58.7%	54.7%	0
PZ-12-20121025	60.7%	51.0%	0
PZ-17-20121026	68.3%	51.3%	0
LW-3-20121026	63.0%	23.7%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(40-110)	(33-107)
(DBA) = d14-Dibenzo(a,h)anthracene	(33-140)	(10-142)

Prep Method: SW3520C
Log Number Range: 12-21327 to 12-21334

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-103112
LAB CONTROL SAMPLE

Lab Sample ID: LCS-103112
LIMS ID: 12-21327
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 10/31/12

Date Analyzed LCS: 11/08/12 13:13
LCSD: 11/08/12 13:42
Instrument/Analyst LCS: NT4/JZ
LCSD: NT4/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	2.55	3.00	85.0%	2.75	3.00	91.7%	7.5%
Chrysene	2.84	3.00	94.7%	2.88	3.00	96.0%	1.4%
Benzo(a)pyrene	1.90	3.00	63.3%	2.24	3.00	74.7%	16.4%
Indeno(1,2,3-cd)pyrene	2.31	3.00	77.0%	2.47	3.00	82.3%	6.7%
Dibenz(a,h)anthracene	2.25	3.00	75.0%	2.28	3.00	76.0%	1.3%
Total Benzofluoranthenes	9.19	9.00	102%	9.06	9.00	101%	1.4%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	57.0%	50.7%
d14-Dibenzo(a,h)anthracene	54.7%	61.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-102912	Method Blank	10/29/12	1.0	Gasoline	< 250 U
12-21327		PID1		HC ID	---
				Trifluorotoluene	97.9%
				Bromobenzene	99.0%
VP53A	PZ-13-20121025	10/29/12	1.0	Gasoline	< 250 U
12-21327		PID1		HC ID	---
				Trifluorotoluene	97.9%
				Bromobenzene	99.2%
VP53B	CW-13-20121025	10/29/12	1.0	Gasoline	< 250 U
12-21328		PID1		HC ID	---
				Trifluorotoluene	96.1%
				Bromobenzene	97.8%
VP53C	MW-01D-20121025	10/29/12	1.0	Gasoline	< 250 U
12-21329		PID1		HC ID	---
				Trifluorotoluene	95.5%
				Bromobenzene	96.9%
VP53D	MW-01S-20121025	10/29/12	1.0	**Gasoline**	**19000 E**
12-21330		PID1		HC ID	GAS/GRO
				Trifluorotoluene	97.1%
				Bromobenzene	98.3%
VP53D DL	MW-01S-20121025	10/30/12	10	**Gasoline**	**34000**
12-21330		PID2		HC ID	GAS/GRO
				Trifluorotoluene	97.6%
				Bromobenzene	97.9%
MB-110612	Method Blank	11/06/12	1.0	Gasoline	< 250 U
12-21331		PID1		HC ID	---
				Trifluorotoluene	96.1%
				Bromobenzene	99.3%
VP53E	MW-05D-20121025	11/06/12	1.0	Gasoline	< 250 U
12-21331		PID1		HC ID	---
				Trifluorotoluene	99.6%
				Bromobenzene	99.7%
MB-103012	Method Blank	10/30/12	1.0	Gasoline	< 250 U
12-21332		PID2		HC ID	---
				Trifluorotoluene	97.7%
				Bromobenzene	97.8%
VP53F	PZ-12-20121025	10/30/12	1.0	Gasoline	< 250 U
12-21332		PID2		HC ID	---
				Trifluorotoluene	96.6%
				Bromobenzene	95.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061
Date Sampled: 10/26/12
Date Received: 10/26/12

ARI ID	Client ID	Analysis Date	DL	Range	Result
VP53G	PZ-17-20121026	10/30/12	1.0	Gasoline	< 250 U
12-21333		PID2		HC ID	---
				Trifluorotoluene	95.7%
				Bromobenzene	94.4%
VP53H	LW-3-20121026	10/30/12	1.0	**Gasoline**	**4100**
12-21334		PID1		HC ID	TOLUENE
				Trifluorotoluene	96.7%
				Bromobenzene	101%
VP53I	Trip Blanks	10/29/12	1.0	Gasoline	< 250 U
12-21335		PID1		HC ID	---
				Trifluorotoluene	96.7%
				Bromobenzene	97.2%

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: VP53
Matrix: Water

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061

Client ID	TFT	BBZ	TOT OUT
MB-102912	97.9%	99.0%	0
LCS-102912	101%	99.7%	0
LCSD-102912	104%	103%	0
PZ-13-20121025	97.9%	99.2%	0
CW-13-20121025	96.1%	97.8%	0
MW-01D-20121025	95.5%	96.9%	0
MW-01S-20121025	97.1%	98.3%	0
MW-01S-20121025 DL	97.6%	97.9%	0
MB-110612	96.1%	99.3%	0
LCS-110612	99.5%	97.9%	0
LCSD-110612	101%	100%	0
MW-05D-20121025	99.6%	99.7%	0
MB-103012	97.7%	97.8%	0
LCS-103012	100%	98.2%	0
LCSD-103012	101%	98.2%	0
PZ-12-20121025	96.6%	95.5%	0
PZ-17-20121026	95.7%	94.4%	0
LW-3-20121026	96.7%	101%	0
Trip Blanks	96.7%	97.2%	0

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

Log Number Range: 12-21327 to 12-21335

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-102912
LAB CONTROL SAMPLE

Lab Sample ID: LCS-102912
LIMS ID: 12-21327
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 10/29/12 13:25
LCSD: 10/29/12 13:55
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	1070	1000	107%	1060	1000	106%	0.9%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	101%	104%
Bromobenzene	99.7%	103%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-103012
LAB CONTROL SAMPLE

Lab Sample ID: LCS-103012
LIMS ID: 12-21332
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 10/30/12 10:48
LCSD: 10/30/12 11:16
Instrument/Analyst LCS: PID2/PKC
LCSD: PID2/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	1100	1000	110%	1070	1000	107%	2.8%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	100%	101%
Bromobenzene	98.2%	98.2%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-110612
LAB CONTROL SAMPLE

Lab Sample ID: LCS-110612
LIMS ID: 12-21331
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
Event: 20139.060.061
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 11/06/12 11:21
LCSD: 11/06/12 11:50
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	1020	1000	102%	950	1000	95.0%	7.1%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	99.5%	101%
Bromobenzene	97.9%	100%

ANALYTICAL RESOURCES INCORPORATED

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

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061

Matrix: Water
Data Release Authorized: MW
Reported: 11/05/12

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	RL	Result
MB-103012	Method Blank	10/30/12	11/01/12	1.00	Diesel Range	100	< 100 U
12-21327	HC ID: ---		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		84.6%
PZ-13-20121	PZ-13-20121025	10/30/12	11/01/12	1.00	Diesel Range	100	< 100 U
12-21327	HC ID: ---		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		80.8%
CW-13-20121	CW-13-20121025	10/30/12	11/01/12	1.00	Diesel Range	100	< 100 U
12-21328	HC ID: ---		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		84.4%
MW-01D-2012	MW-01D-20121025	10/30/12	11/01/12	1.00	Diesel Range	100	< 100 U
12-21329	HC ID: ---		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		85.6%
MW-01S-2012	MW-01S-20121025	10/30/12	11/02/12	1.00	**Diesel Range**	**2500**	**6200**
12-21330	HC ID: **CREOSOTE**		FID4A	25	Motor Oil Range	5000	< 5000 U
					Creosote Range	**2500**	**44000**
					o-Terphenyl		D
MW-05D-2012	MW-05D-20121025	10/30/12	11/01/12	1.00	Diesel Range	100	< 100 U
12-21331	HC ID: ---		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		82.2%
PZ-12-20121	PZ-12-20121025	10/30/12	11/01/12	1.00	Diesel Range	100	< 100 U
12-21332	HC ID: ---		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		89.3%
PZ-17-20121	PZ-17-20121026	10/30/12	11/01/12	1.00	Diesel Range	100	< 100 U
12-21333	HC ID: ---		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		87.5%
LW-3-201210	LW-3-20121026	10/30/12	11/02/12	1.00	**Diesel Range**	**100**	**410**
12-21334	HC ID: **DRO/MOTOR OIL**		FID4A	1.0	**Motor Oil Range**	**200**	**310**
					Creosote Range	**100**	**2800**
					o-Terphenyl		88.1%

ANALYTICAL RESOURCES INCORPORATED

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

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061

Matrix: Water
Data Release Authorized: MW
Reported: 11/05/12

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	RL	Result

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.

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061

Client ID	OTER	TOT OUT
MB-103012	84.6%	0
LCS-103012	82.3%	0
LCSD-103012	80.9%	0
PZ-13-20121025	80.8%	0
CW-13-20121025	84.4%	0
MW-01D-20121025	85.6%	0
MW-01S-20121025	D	0
MW-05D-20121025	82.2%	0
PZ-12-20121025	89.3%	0
PZ-17-20121026	87.5%	0
LW-3-20121026	88.1%	0

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

Prep Method: SW3510C
Log Number Range: 12-21327 to 12-21334

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-103012**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-103012
LIMS ID: 12-21327
Matrix: Water
Data Release Authorized: MW
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted LCS/LCSD: 10/30/12
Date Analyzed LCS: 11/01/12 19:50
LCSD: 11/01/12 20:12
Instrument/Analyst LCS: FID/JGR
LCSD: FID/JGR

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2070	3000	69.0%	2100	3000	70.0%	1.4%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	82.3%	80.9%

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

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: VP53
Matrix: Water Project: Port of Olympia
Date Received: 10/26/12 20139.060.061

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
12-21327-103012MB1	Method Blank	500 mL	1.00 mL	10/30/12
12-21327-103012LCS1	Lab Control	500 mL	1.00 mL	10/30/12
12-21327-103012LCSD1	Lab Control Dup	500 mL	1.00 mL	10/30/12
12-21327-VP53A	PZ-13-20121025	500 mL	1.00 mL	10/30/12
12-21328-VP53B	CW-13-20121025	500 mL	1.00 mL	10/30/12
12-21329-VP53C	MW-01D-20121025	500 mL	1.00 mL	10/30/12
12-21330-VP53D	MW-01S-20121025	500 mL	1.00 mL	10/30/12
12-21331-VP53E	MW-05D-20121025	500 mL	1.00 mL	10/30/12
12-21332-VP53F	PZ-12-20121025	500 mL	1.00 mL	10/30/12
12-21333-VP53G	PZ-17-20121026	500 mL	1.00 mL	10/30/12
12-21334-VP53H	LW-3-20121026	500 mL	1.00 mL	10/30/12

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-13-20121025
SAMPLE

Lab Sample ID: VP53A
LIMS ID: 12-21327
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/05/12 18:43
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
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	84.0%
d14-p-Terphenyl	90.8%
2,4,6-Tribromophenol	98.1%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: CW-13-20121025
SAMPLE

Lab Sample ID: VP53B
LIMS ID: 12-21328
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/05/12 23:49
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**	**5.2**
132-64-9	**Dibenzofuran**	**1.0**	**2.5**
86-73-7	**Fluorene**	**1.0**	**2.0**
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	65.2%
d14-p-Terphenyl	80.0%
2,4,6-Tribromophenol	86.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-01D-20121025
SAMPLE

Lab Sample ID: VP53C
LIMS ID: 12-21329
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/06/12 00:23
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	54.0%
d14-p-Terphenyl	64.4%
2,4,6-Tribromophenol	64.8%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-01S-20121025
SAMPLE

Lab Sample ID: VP53D
LIMS ID: 12-21330
Matrix: Water
Data Release Authorized: MW
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/06/12 00:57
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 3.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**3.0**	**970 ES**
91-57-6	**2-Methylnaphthalene**	**3.0**	**560 ES**
208-96-8	**Acenaphthylene**	**3.0**	**10**
83-32-9	**Acenaphthene**	**3.0**	**220**
132-64-9	**Dibenzofuran**	**3.0**	**110**
86-73-7	**Fluorene**	**3.0**	**90**
87-86-5	**Pentachlorophenol**	**30**	**4,700 ES**
85-01-8	**Phenanthrene**	**3.0**	**82**
86-74-8	**Carbazole**	**3.0**	**52**
120-12-7	**Anthracene**	**3.0**	**21**
206-44-0	**Fluoranthene**	**3.0**	**18**
129-00-0	**Pyrene**	**3.0**	**8.9**
56-55-3	Benzo(a)anthracene	3.0	< 3.0 U
218-01-9	Chrysene	3.0	< 3.0 U
50-32-8	Benzo(a)pyrene	3.0	< 3.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	3.0	< 3.0 U
53-70-3	Dibenz(a,h)anthracene	3.0	< 3.0 U
191-24-2	Benzo(g,h,i)perylene	3.0	< 3.0 U
90-12-0	**1-Methylnaphthalene**	**3.0**	**530 ES**
TOTBFA	Total Benzofluoranthenes	15	< 15 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	94.7%
d14-p-Terphenyl	68.9%
2,4,6-Tribromophenol	106%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-01S-20121025
DILUTION

Lab Sample ID: VP53D
LIMS ID: 12-21330
Matrix: Water
Data Release Authorized: MW
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/06/12 12:42
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**	**4,600**
91-57-6	**2-Methylnaphthalene**	**100**	**710**
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**	**4,300**
85-01-8	Phenanthrene	100	< 100 U
86-74-8	Carbazole	100	< 100 U
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**	**560**
TOTBFA	Total Benzofluoranthenes	500	< 500 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
Page 1 of 1

Sample ID: MW-05D-20121025
SAMPLE

Lab Sample ID: VP53E
LIMS ID: 12-21331
Matrix: Water
Data Release Authorized: MW
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/06/12 01:31
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**	**1.3**
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**	**5.6**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	**Fluorene**	**1.0**	**1.3**
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	**Carbazole**	**1.0**	**2.2**
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	72.8%
d14-p-Terphenyl	90.8%
2,4,6-Tribromophenol	86.1%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-12-20121025
SAMPLE

Lab Sample ID: VP53F
LIMS ID: 12-21332
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/06/12 02:05
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	< 1.0 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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	60.8%
d14-p-Terphenyl	72.4%
2,4,6-Tribromophenol	77.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-17-20121026
SAMPLE

Lab Sample ID: VP53G
LIMS ID: 12-21333
Matrix: Water
Data Release Authorized: MW
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/26/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/06/12 02:39
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	< 1.0 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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	56.8%
d14-p-Terphenyl	71.2%
2,4,6-Tribromophenol	79.2%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LW-3-20121026
SAMPLE

Lab Sample ID: VP53H
LIMS ID: 12-21334
Matrix: Water
Data Release Authorized: MW
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/26/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/06/12 03:13
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	61.2%
d14-p-Terphenyl	64.8%
2,4,6-Tribromophenol	88.5%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-103112
METHOD BLANK

Lab Sample ID: MB-103112
LIMS ID: 12-21327
Matrix: Water
Data Release Authorized: MW
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: NA
Date Received: NA

Date Extracted: 10/31/12
Date Analyzed: 11/05/12 17:01
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	72.0%
d14-p-Terphenyl	87.6%
2,4,6-Tribromophenol	77.3%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061

Client ID	FBP	TPH	TBP	TOT OUT
MB-102112	72.0%	87.6%	77.3%	0
LCS-102112	77.2%	92.4%	97.9%	0
LCSD-102112	77.6%	93.6%	101%	0
PZ-13-20121025	84.0%	90.8%	98.1%	0
CW-13-20121025	65.2%	80.0%	86.7%	0
MW-01D-20121025	54.0%	64.4%	64.8%	0
MW-01S-20121025	94.7%	68.9%	106%	0
MW-01S-20121025 DL	D	D	D	0
MW-05D-20121025	72.8%	90.8%	86.1%	0
PZ-12-20121025	60.8%	72.4%	77.3%	0
PZ-17-20121026	56.8%	71.2%	79.2%	0
LW-3-20121026	61.2%	64.8%	88.5%	0

	LCS/MB LIMITS	QC LIMITS
(FBP) = 2-Fluorobiphenyl	(51-100)	(38-100)
(TPH) = d14-p-Terphenyl	(54-117)	(27-122)
(TBP) = 2,4,6-Tribromophenol	(46-125)	(31-128)

Prep Method: SW3520C
Log Number Range: 12-21327 to 12-21334

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: LCS-103112
LCS/LCSD

Lab Sample ID: LCS-103112
LIMS ID: 12-21327
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted LCS/LCSD: 10/31/12

Date Analyzed LCS: 11/05/12 17:35
LCSD: 11/05/12 18:09
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	16.1	25.0	64.4%	16.1	25.0	64.4%	0.0%
2-Methylnaphthalene	15.2	25.0	60.8%	15.5	25.0	62.0%	2.0%
Acenaphthylene	17.7	25.0	70.8%	18.2	25.0	72.8%	2.8%
Acenaphthene	17.2	25.0	68.8%	18.2	25.0	72.8%	5.6%
Dibenzofuran	16.2	25.0	64.8%	17.2	25.0	68.8%	6.0%
Fluorene	18.3	25.0	73.2%	19.6	25.0	78.4%	6.9%
Pentachlorophenol	64.0	75.0	85.3%	67.4	75.0	89.9%	5.2%
Phenanthrene	18.7	25.0	74.8%	19.3	25.0	77.2%	3.2%
Carbazole	20.8	25.0	83.2%	21.7	25.0	86.8%	4.2%
Anthracene	17.8	25.0	71.2%	18.2	25.0	72.8%	2.2%
Fluoranthene	19.7	25.0	78.8%	20.9	25.0	83.6%	5.9%
Pyrene	18.6	25.0	74.4%	18.9	25.0	75.6%	1.6%
Benzo(a)anthracene	19.0	25.0	76.0%	19.7	25.0	78.8%	3.6%
Chrysene	19.2	25.0	76.8%	19.9	25.0	79.6%	3.6%
Benzo(a)pyrene	17.5	25.0	70.0%	18.0	25.0	72.0%	2.8%
Indeno(1,2,3-cd)pyrene	16.1	25.0	64.4%	17.0	25.0	68.0%	5.4%
Dibenz(a,h)anthracene	16.8	25.0	67.2%	17.7	25.0	70.8%	5.2%
Benzo(g,h,i)perylene	16.7	25.0	66.8%	17.6	25.0	70.4%	5.2%
1-Methylnaphthalene	21.4	25.0	85.6%	21.7	25.0	86.8%	1.4%
Total Benzofluoranthenes	39.4	50.0	78.8%	40.4	50.0	80.8%	2.5%

Semivolatile Surrogate Recovery

	LCS	LCSD
2-Fluorobiphenyl	77.2%	77.6%
d14-p-Terphenyl	92.4%	93.6%
2,4,6-Tribromophenol	97.9%	101%

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

Sample ID: PZ-13-20121025
SAMPLE

Lab Sample ID: VP53A
LIMS ID: 12-21327
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/09/12 19:55
Instrument/Analyst: ECD1/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	85.6%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: CW-13-20121025
SAMPLE

Lab Sample ID: VP53B
LIMS ID: 12-21328
Matrix: Water
Data Release Authorized:
Reported: 11/13/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/25/12
Date Received: 10/27/12

Date Extracted: 10/31/12
Date Analyzed: 11/09/12 20:31
Instrument/Analyst: ECD1/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%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-01D-20121025
SAMPLE

Lab Sample ID: VP53C
LIMS ID: 12-21329
Matrix: Water
Data Release Authorized:
Reported: 11/13/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/25/12
Date Received: 10/27/12

Date Extracted: 10/31/12
Date Analyzed: 11/09/12 21:07
Instrument/Analyst: ECD1/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	88.4%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-05D-20121025
SAMPLE

Lab Sample ID: VP53E
LIMS ID: 12-21331
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/09/12 22:20
Instrument/Analyst: ECD1/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**	**2.2**

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

Sample ID: PZ-12-20121025
SAMPLE

Lab Sample ID: VP53F
LIMS ID: 12-21332
Matrix: Water
Data Release Authorized:
Reported: 11/14/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/25/12
Date Received: 10/26/12

Date Extracted: 10/31/12
Date Analyzed: 11/09/12 22:56
Instrument/Analyst: ECD1/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**	**0.31**

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	89.6%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-17-20121026
SAMPLE

Lab Sample ID: VP53G
LIMS ID: 12-21333
Matrix: Water
Data Release Authorized:
Reported: 11/13/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/26/12
Date Received: 10/27/12

Date Extracted: 10/31/12
Date Analyzed: 11/09/12 23:32
Instrument/Analyst: ECD1/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
Page 1 of 1

Sample ID: LW-3-20121026
SAMPLE

Lab Sample ID: VP53H
LIMS ID: 12-21334
Matrix: Water
Data Release Authorized:
Reported: 11/13/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/26/12
Date Received: 10/27/12

Date Extracted: 10/31/12
Date Analyzed: 11/09/12 00:08
Instrument/Analyst: ECD1/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: MB-103112
METHOD BLANK

Lab Sample ID: MB-103112
LIMS ID: 12-21327
Matrix: Water
Data Release Authorized:
Reported: 11/13/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: NA
Date Received: NA

Date Extracted: 10/31/12
Date Analyzed: 11/09/12 18:06
Instrument/Analyst: ECD1/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

SW8041 CHLOROPHENOLICS SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061

Client ID	TBP	TOT OUT
MB-103112	93.6%	0
LCS-103112	105%*	1
LCSD-103112	115%*	1
PZ-13-20121025	85.6%	0
CW-13-20121025	83.2%	0
MW-01D-20121025	88.4%	0
MW-05D-20121025	81.2%	0
PZ-12-20121025	89.6%	0
PZ-17-20121026	83.6%	0
LW-3-20121026	84.0%	0

	LCS/MB LIMITS	QC LIMITS
(TBP) = 2,4,6-Tribromophenol	(41-98)	(26-113)

Prep Method: SW3510C
Log Number Range: 12-21327 to 12-21334

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: LCS-103112
LCS/LCSD

Lab Sample ID: LCS-103112
LIMS ID: 12-21327
Matrix: Water
Data Release Authorized:
Reported: 11/13/12

QC Report No: VP53-Landau Associates, Inc.
Project: Port of Olympia
20139.060.061
Date Sampled: 10/25/12
Date Received: 10/27/12

Date Extracted LCS/LCSD: 10/31/12

Date Analyzed LCS: 11/09/12 18:42
LCSD: 11/09/12 19:19
Instrument/Analyst LCS: ECD1/YZ
LCSD: ECD1/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	2.68	2.50	107%	2.96	2.50	118%	9.9%

Chlorophenols Surrogate Recovery

	LCS	LCSD
2,4,6-Tribromophenol	105%	115%

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

Analytical Resources, Incorporated
Analytical Chemists and Consultants

March 13, 2013

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

RE: Project: Port of Olympia
ARI Job No: WF57

Dear Chris:

Please find enclosed the original *Chain of Custody*, sample receipt documentation, and final results for the project referenced above. Analytical Resources, Inc. accepted eight water samples and a trip blank in good condition on February 28, 2013.

The samples were analyzed for NWTPH-Gx, NWTPH-Dx, cPAHs by method 8270 SIM, PAHs by method 8270 and PCP on select samples by method 8041, as requested on the *Chain of Custody*.

Please refer to the *Case Narrative* for analytical details regarding the sample.

A 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
☐ _____

WF57

Chain-of-Custody Record

Date 2/27/13

Page 1 of 1

Project Name Port of Olympia Project No. 21039.060.061

Project Location/Event Cascade Pole, Wet Season

Sampler's Name Sarah Weeks, Sierra Mott

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	TPH - Dx+creosote	PAHs (8270)	cPAHs SIM	PCP (8270)	PCP (8041)	Observations/Comments
PZ-12-20130227	2/27/13	1057	H_2O	10	X	X	X	X	X	X	
PZ-13-20130227	2/27/13	1106			X	X	X	X	X	X	
CW-13-20130227	2/27/13	1308			X	X	X	X	X	X	
MW-05D-20130227	2/27/13	1418			X	X	X	X	X	X	
MW-05S-20130227	2/27/13	1303			X	X	X	X	X	X	
PZ-30-20130227	2/27/13	1307			X	X	X	X	X	X	
Trip Blanks	2/22/13	—	H_2O	2	X						
PZ-17-20130227	2/27/13	1650		10	X	X	X	X	X	X	
LW-3-20130227	2/27/13	1647		10	X	X	X	X	X	X	

Testing Parameters

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 4 coolers + ice

Method of Shipment Courier

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Sarah Weeks	Lauren K. Knickrehm	Lauren K. Knickrehm	Rich Hudson
Printed Name	Printed Name	Printed Name	Printed Name
Landau Associates, Inc	Landau Associates, Inc.	Landau Associates	LKI
Company	Company	Company	Company
Date 2/27/293 Time 1900	Date 2/27/2013 Time 1900	Date 2/28/2013 Time 2:00pm	Date 2/28/13 Time 1400

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

29060 : 15 4th

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: WF57 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): ___ ___ 5.3 5.1 3.2 4.6

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

Cooler Accepted by: _____ Date: 2/28/13 Time: 1445

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 2/22/13

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

Samples Logged by: AV Date: 2/22/13 Time: 1635

***** 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:

LW-3 = 2 PD

By: AV Date: 2/28/13

Small → "sm"

Peabubbles → "pb"

Large → "lg"

Headspace → "hs"

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: WF57
Client: Landau Associates, Inc.
Project Event: 21039.060.061
Project Name: Port of Olympia

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	PZ-12-20130227	WF57A	13-3929	Water	02/27/13 10:57	02/28/13 14:00
2.	PZ-13-20130227	WF57B	13-3930	Water	02/27/13 11:06	02/28/13 14:00
3.	CW-13-20130227	WF57C	13-3931	Water	02/27/13 13:08	02/28/13 14:00
4.	MW-05D-20130227	WF57D	13-3932	Water	02/27/13 14:18	02/28/13 14:00
5.	MW-05S-20130227	WF57E	13-3933	Water	02/27/13 13:03	02/28/13 14:00
6.	PZ-30-20130227	WF57F	13-3934	Water	02/27/13 13:07	02/28/13 14:00
7.	PZ-17-20130227	WF57G	13-3935	Water	02/27/13 16:50	02/28/13 14:00
8.	LW-3-20130227	WF57H	13-3936	Water	02/27/13 16:47	02/28/13 14:00
9.	Trip Blanks	WF57I	13-3937	Water	02/27/13	02/28/13 14:00

Case Narrative

Project: 0021039.060.061
ARI Job No.: WF57
March 13, 2013

Sample Receipt

Please find enclosed the original *Chain of Custody (COC)* record and analytical results for the project referenced above. Analytical Resources, Inc. accepted eight water samples and a trip blank in good condition on February 28, 2013. The samples were received at cooler temperatures between 3.2 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 3/4/13. The samples were analyzed between 3/7/13 and 3/8/13 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were in control.

LCS/LSCD (s): Are in control.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

SIM PNA by method 8270-SIM Water

The samples were extracted on 3/5/13 and analyzed on 3/8/13 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: Are in control.

LCS/LSCD (s): All percent recoveries and other RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

PCP Only by method 8041

The samples were extracted on 3/4/13 and analyzed on 3/8/13 and 3/9/13 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Case Narrative

Project: 0021039.060.061
ARI Job No.: WF57
March 13, 2013
Page 2 of 2

Surrogates: The LCS and LCSD surrogate is out of control high. The spike recoveries are in control and no further corrective action was taken.

LCS/LSCD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Gx

The samples were analyzed on 3/1/13 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were in control.

LCS/LCSD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Dx

The samples were extracted on 3/4/13 and analyzed on 3/6/13 - within the method recommended holding time.

Surrogates: All surrogate recoveries were in control.

Samples: There were no anomalies associated with these samples.

LCS/LCSD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-12-20130227
SAMPLE

Lab Sample ID: WF57A
LIMS ID: 13-3929
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/07/13 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	< 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
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	79.6%
d14-p-Terphenyl	93.2%
2,4,6-Tribromophenol	83.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-13-20130227
SAMPLE

Lab Sample ID: WF57B
LIMS ID: 13-3930
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/07/13 17:13
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
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	80.8%
d14-p-Terphenyl	93.6%
2,4,6-Tribromophenol	96.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: CW-13-20130227
SAMPLE

Lab Sample ID: WF57C
LIMS ID: 13-3931
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/07/13 17:47
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
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	90.8%
d14-p-Terphenyl	102%
2,4,6-Tribromophenol	89.9%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-05D-20130227
SAMPLE

Lab Sample ID: WF57D
LIMS ID: 13-3932
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/07/13 18:21
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**	**2.9**
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**	**4.0**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	**Fluorene**	**1.0**	**1.6**
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	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**	**1.4**
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	78.0%
d14-p-Terphenyl	92.4%
2,4,6-Tribromophenol	79.5%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-05S-20130227
SAMPLE

Lab Sample ID: WF57E
LIMS ID: 13-3933
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/07/13 18:56
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**	**1.6**
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**	**10**
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
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	79.6%
d14-p-Terphenyl	86.4%
2,4,6-Tribromophenol	84.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: PZ-30-20130227**
Extraction Method: SW3520C **SAMPLE**

Lab Sample ID: WF57F
LIMS ID: 13-3934
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/07/13 19:30
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**	**1.6**
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**	**11**
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
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	81.6%
d14-p-Terphenyl	84.8%
2,4,6-Tribromophenol	90.1%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-17-20130227
SAMPLE

Lab Sample ID: WF57G
LIMS ID: 13-3935
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/07/13 20:03
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
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	82.4%
d14-p-Terphenyl	91.6%
2,4,6-Tribromophenol	89.9%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LW-3-20130227
SAMPLE

Lab Sample ID: WF57H
LIMS ID: 13-3936
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/07/13 20:37
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
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	90.0%
d14-p-Terphenyl	76.0%
2,4,6-Tribromophenol	102%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-030413
METHOD BLANK

Lab Sample ID: MB-030413
LIMS ID: 13-3929
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: NA
Date Received: NA

Date Extracted: 03/04/13
Date Analyzed: 03/07/13 14:54
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
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	86.8%
d14-p-Terphenyl	102%
2,4,6-Tribromophenol	78.1%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061

Client ID	FBP	TPH	TBP	TOT OUT
MB-030413	86.8%	102%	78.1%	0
LCS-030413	90.4%	105%	94.9%	0
LCSD-030413	85.2%	104%	92.3%	0
PZ-12-20130227	79.6%	93.2%	83.7%	0
PZ-13-20130227	80.8%	93.6%	96.0%	0
CW-13-20130227	90.8%	102%	89.9%	0
MW-05D-20130227	78.0%	92.4%	79.5%	0
MW-05S-20130227	79.6%	86.4%	84.8%	0
PZ-30-20130227	81.6%	84.8%	90.1%	0
PZ-17-20130227	82.4%	91.6%	89.9%	0
LW-3-20130227	90.0%	76.0%	102%	0

	LCS/MB LIMITS	QC LIMITS
(FBP) = 2-Fluorobiphenyl	(51-100)	(38-100)
(TPH) = d14-p-Terphenyl	(54-117)	(27-122)
(TBP) = 2,4,6-Tribromophenol	(46-125)	(31-128)

Prep Method: SW3520C
Log Number Range: 13-3929 to 13-3936

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-030413
LCS/LCSD

Lab Sample ID: LCS-030413
LIMS ID: 13-3929
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted LCS/LCSD: 03/04/13

Date Analyzed LCS: 03/07/13 15:29
LCSD: 03/07/13 16:04
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	19.0	25.0	76.0%	17.5	25.0	70.0%	8.2%
2-Methylnaphthalene	20.1	25.0	80.4%	18.8	25.0	75.2%	6.7%
Acenaphthylene	19.7	25.0	78.8%	18.9	25.0	75.6%	4.1%
Acenaphthene	20.7	25.0	82.8%	19.7	25.0	78.8%	5.0%
Dibenzofuran	22.5	25.0	90.0%	21.6	25.0	86.4%	4.1%
Fluorene	23.6	25.0	94.4%	22.6	25.0	90.4%	4.3%
Pentachlorophenol	61.4	75.0	81.9%	64.0	75.0	85.3%	4.1%
Phenanthrene	20.4	25.0	81.6%	20.5	25.0	82.0%	0.5%
Anthracene	19.7	25.0	78.8%	20.1	25.0	80.4%	2.0%
Fluoranthene	21.8	25.0	87.2%	22.1	25.0	88.4%	1.4%
Pyrene	22.6	25.0	90.4%	23.1	25.0	92.4%	2.2%
Benzo(a)anthracene	20.8	25.0	83.2%	20.8	25.0	83.2%	0.0%
Chrysene	21.5	25.0	86.0%	22.2	25.0	88.8%	3.2%
Benzo(a)pyrene	20.4	25.0	81.6%	19.8	25.0	79.2%	3.0%
Indeno(1,2,3-cd)pyrene	20.9	25.0	83.6%	21.0	25.0	84.0%	0.5%
Dibenz(a,h)anthracene	21.2	25.0	84.8%	21.4	25.0	85.6%	0.9%
Benzo(g,h,i)perylene	20.5	25.0	82.0%	20.5	25.0	82.0%	0.0%
1-Methylnaphthalene	20.0	25.0	80.0%	18.7	25.0	74.8%	6.7%
Total Benzofluoranthenes	42.5	50.0	85.0%	42.3	50.0	84.6%	0.5%

Semivolatile Surrogate Recovery

	LCS	LCSD
2-Fluorobiphenyl	90.4%	85.2%
d14-p-Terphenyl	105%	104%
2,4,6-Tribromophenol	94.9%	92.3%

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: SW3520C
Page 1 of 1

Sample ID: PZ-12-20130227
SAMPLE

Lab Sample ID: WF57A
LIMS ID: 13-3929
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 16:37
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	71.3%
d14-Dibenzo(a,h)anthracene	71.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-13-20130227
SAMPLE

Lab Sample ID: WF57B
LIMS ID: 13-3930
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 17:04
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	68.0%
d14-Dibenzo(a,h)anthracene	79.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: CW-13-20130227
SAMPLE

Lab Sample ID: WF57C
LIMS ID: 13-3931
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 17:32
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	69.7%
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-20130227
SAMPLE

Lab Sample ID: WF57D
LIMS ID: 13-3932
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 17:59
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	80.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-05S-20130227
SAMPLE

Lab Sample ID: WF57E
LIMS ID: 13-3933
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 18:27
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	59.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-30-20130227
SAMPLE

Lab Sample ID: WF57F
LIMS ID: 13-3934
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 18:55
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	67.0%
d14-Dibenzo(a,h)anthracene	52.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-17-20130227
SAMPLE

Lab Sample ID: WF57G
LIMS ID: 13-3935
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 19:22
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	66.0%
d14-Dibenzo(a,h)anthracene	73.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LW-3-20130227
SAMPLE

Lab Sample ID: WF57H
LIMS ID: 13-3936
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 19:50
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	29.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-030513
METHOD BLANK

Lab Sample ID: MB-030513
LIMS ID: 13-3930
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: NA
Date Received: NA

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 15:14
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	66.0%
d14-Dibenzo(a,h)anthracene	73.3%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061

Client ID	MNP	DBA	TOT OUT
PZ-12-20130227	71.3%	71.7%	0
MB-030513	66.0%	73.3%	0
LCS-030513	69.7%	80.0%	0
LCSD-030513	69.3%	81.7%	0
PZ-13-20130227	68.0%	79.3%	0
CW-13-20130227	69.7%	74.3%	0
MW-05D-20130227	64.3%	80.3%	0
MW-05S-20130227	65.0%	59.0%	0
PZ-30-20130227	67.0%	52.7%	0
PZ-17-20130227	66.0%	73.0%	0
LW-3-20130227	70.7%	29.3%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(40-110)	(33-107)
(DBA) = d14-Dibenzo(a,h)anthracene	(33-140)	(10-142)

Prep Method: SW3520C
Log Number Range: 13-3929 to 13-3936

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-030513
LAB CONTROL SAMPLE

Lab Sample ID: LCS-030513
LIMS ID: 13-3930
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 03/05/13

Date Analyzed LCS: 03/08/13 15:41
LCSD: 03/08/13 16:09
Instrument/Analyst LCS: NT4/JZ
LCSD: NT4/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	2.04	3.00	68.0%	2.12	3.00	70.7%	3.8%
Chrysene	1.96	3.00	65.3%	2.03	3.00	67.7%	3.5%
Benzo(a)pyrene	1.83	3.00	61.0%	1.96	3.00	65.3%	6.9%
Indeno(1,2,3-cd)pyrene	1.90	3.00	63.3%	1.90	3.00	63.3%	0.0%
Dibenz(a,h)anthracene	1.87	3.00	62.3%	1.90	3.00	63.3%	1.6%
Total Benzofluoranthenes	6.23	9.00	69.2%	6.00	9.00	66.7%	3.8%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	69.7%	69.3%
d14-Dibenzo(a,h)anthracene	80.0%	81.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-12-20130227
SAMPLE

Lab Sample ID: WF57A
LIMS ID: 13-3929
Matrix: Water
Data Release Authorized: MW
Reported: 03/12/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/08/13 20:30
Instrument/Analyst: ECD1/JGR

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	101%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041 **Sample ID: PZ-13-20130227**
Extraction Method: SW3510C **SAMPLE**

Lab Sample ID: WF57B
LIMS ID: 13-3930
Matrix: Water
Data Release Authorized:
Reported: 03/12/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/08/13 21:06
Instrument/Analyst: ECD1/JGR

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	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041 **Sample ID: CW-13-20130227**
Extraction Method: SW3510C **SAMPLE**

Lab Sample ID: WF57C
LIMS ID: 13-3931
Matrix: Water
Data Release Authorized: MW
Reported: 03/12/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/08/13 21:42
Instrument/Analyst: ECD1/JGR

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	99.2%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-05D-20130227
SAMPLE

Lab Sample ID: WF57D
LIMS ID: 13-3932
Matrix: Water
Data Release Authorized:
Reported: 03/12/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/08/13 22:18
Instrument/Analyst: ECD1/JGR

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%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041 **Sample ID: MW-05S-20130227**
Extraction Method: SW3510C **SAMPLE**

Lab Sample ID: WF57E
LIMS ID: 13-3933
Matrix: Water
Data Release Authorized: MW
Reported: 03/12/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/08/13 22:54
Instrument/Analyst: ECD1/JGR

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
Page 1 of 1

Sample ID: PZ-30-20130227
SAMPLE

Lab Sample ID: WF57F
LIMS ID: 13-3934
Matrix: Water
Data Release Authorized: MW
Reported: 03/12/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/08/13 23:30
Instrument/Analyst: ECD1/JGR

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	91.6%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-17-20130227
SAMPLE

Lab Sample ID: WF57G
LIMS ID: 13-3935
Matrix: Water
Data Release Authorized: MW
Reported: 03/12/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/09/13 00:43
Instrument/Analyst: ECD1/JGR

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	89.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041 **Sample ID: LW-3-20130227**
Extraction Method: SW3510C **SAMPLE**

Lab Sample ID: WF57H
LIMS ID: 13-3936
Matrix: Water
Data Release Authorized: MW
Reported: 03/12/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted: 03/04/13
Date Analyzed: 03/09/13 01:19
Instrument/Analyst: ECD1/JGR

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

Sample ID: MB-030413
METHOD BLANK

Lab Sample ID: MB-030413
LIMS ID: 13-3929
Matrix: Water
Data Release Authorized: MW
Reported: 03/12/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: NA
Date Received: NA

Date Extracted: 03/04/13
Date Analyzed: 03/08/13 18:05
Instrument/Analyst: ECD1/JGR

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

SW8041 CHLOROPHENOLICS SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061

Client ID	TBP	TOT OUT
MB-030413	97.6%	0
LCS-030413	105%*	1
LCSD-030413	102%*	1
PZ-12-20130227	101%	0
PZ-13-20130227	104%	0
CW-13-20130227	99.2%	0
MW-05D-20130227	93.6%	0
MW-05S-20130227	92.8%	0
PZ-30-20130227	91.6%	0
PZ-17-20130227	89.6%	0
LW-3-20130227	87.6%	0

	LCS/MB LIMITS	QC LIMITS
(TBP) = 2,4,6-Tribromophenol	(41-98)	(26-113)

Prep Method: SW3510C
Log Number Range: 13-3929 to 13-3936

FORM-II SW8041

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041 **Sample ID: LCS-030413**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-030413 QC Report No: WF57-Landau Associates, Inc.
LIMS ID: 13-3929 Project: Port of Olympia
Matrix: Water 21039.060.061
Data Release Authorized: MW Date Sampled: 02/27/13
Reported: 03/12/13 Date Received: 02/28/13

Date Extracted LCS/LCSD: 03/04/13 Sample Amount LCS: 500 mL
LCSD: 500 mL
Date Analyzed LCS: 03/08/13 18:41 Final Extract Volume LCS: 50 mL
LCSD: 03/08/13 19:17 LCSD: 50 mL
Instrument/Analyst LCS: ECD1/JGR Dilution Factor LCS: 1.00
LCSD: ECD1/JGR LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Pentachlorophenol	2.38	2.50	95.2%	2.32	2.50	92.8%	2.6%

Chlorophenols Surrogate Recovery

	LCS	LCSD
2,4,6-Tribromophenol	105%	102%

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061

Data Release Authorized:
Reported: 03/04/13

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-030113	Method Blank	03/01/13	1.0	Gasoline	< 250 U
13-3929		PID1		HC ID	---
				Trifluorotoluene	100%
				Bromobenzene	99.0%
WF57A	PZ-12-20130227	03/01/13	1.0	Gasoline	< 250 U
13-3929		PID1		HC ID	---
				Trifluorotoluene	101%
				Bromobenzene	99.9%
WF57B	PZ-13-20130227	03/01/13	1.0	Gasoline	< 250 U
13-3930		PID1		HC ID	---
				Trifluorotoluene	102%
				Bromobenzene	102%
WF57C	CW-13-20130227	03/01/13	1.0	Gasoline	< 250 U
13-3931		PID1		HC ID	---
				Trifluorotoluene	100%
				Bromobenzene	101%
WF57D	MW-05D-20130227	03/01/13	1.0	Gasoline	< 250 U
13-3932		PID1		HC ID	---
				Trifluorotoluene	101%
				Bromobenzene	99.6%
WF57E	MW-05S-20130227	03/01/13	1.0	Gasoline	< 250 U
13-3933		PID1		HC ID	---
				Trifluorotoluene	101%
				Bromobenzene	100%
WF57F	PZ-30-20130227	03/01/13	1.0	Gasoline	< 250 U
13-3934		PID1		HC ID	---
				Trifluorotoluene	100%
				Bromobenzene	102%
WF57G	PZ-17-20130227	03/01/13	1.0	Gasoline	< 250 U
13-3935		PID1		HC ID	---
				Trifluorotoluene	99.7%
				Bromobenzene	101%
WF57H	LW-3-20130227	03/01/13	1.0	**Gasoline**	**270**
13-3936		PID1		HC ID	GRO
				Trifluorotoluene	91.6%
				Bromobenzene	88.5%
WF57I	Trip Blanks	03/01/13	1.0	Gasoline	< 250 U
13-3937		PID1		HC ID	---
				Trifluorotoluene	104%
				Bromobenzene	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061

Data Release Authorized: MW
Reported: 03/04/13

ARI ID	Client ID	Analysis Date	DL	Range	Result

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: WF57
Matrix: Water

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061

Client ID	TFT	BBZ	TOT OUT
MB-030113	100%	99.0%	0
LCS-030113	106%	101%	0
LCSD-030113	108%	104%	0
PZ-12-20130227	101%	99.9%	0
PZ-13-20130227	102%	102%	0
CW-13-20130227	100%	101%	0
MW-05D-20130227	101%	99.6%	0
MW-05S-20130227	101%	100%	0
PZ-30-20130227	100%	102%	0
PZ-17-20130227	99.7%	101%	0
LW-3-20130227	91.6%	88.5%	0
Trip Blanks	104%	101%	0

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

Log Number Range: 13-3929 to 13-3937

FORM II TPHG

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG **Sample ID: LCS-030113**
Page 1 of 1 **LAB CONTROL SAMPLE**

Lab Sample ID: LCS-030113 QC Report No: WF57-Landau Associates, Inc.
LIMS ID: 13-3929 Project: Port of Olympia
Matrix: Water Event: 21039.060.061
Data Release Authorized: MW Date Sampled: NA
Reported: 03/04/13 Date Received: NA

Date Analyzed LCS: 03/01/13 11:38 Purge Volume: 5.0 mL
LCSD: 03/01/13 12:07
Instrument/Analyst LCS: PID1/PKC Dilution Factor LCS: 1.0
LCSD: PID1/PKC LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	940	1000	94.0%	980	1000	98.0%	4.2%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	106%	108%
Bromobenzene	101%	104%

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS

ANALYTICAL RESOURCES INCORPORATED

NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method:

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061

Matrix: Water
Data Release Authorized:
Reported: 03/08/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-030413	Method Blank	03/04/13	03/06/13	1.00	Diesel Range	100	< 100 U
13-3929	HC ID: ---		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		99.5%
WF57A	PZ-12-20130227	03/04/13	03/06/13	1.00	Diesel Range	100	< 100 U
13-3929	HC ID: **DRO**		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**100**
					o-Terphenyl		87.4%
WF57B	PZ-13-20130227	03/04/13	03/06/13	1.00	Diesel Range	100	< 100 U
13-3930	HC ID: **DRO**		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**170**
					o-Terphenyl		90.3%
WF57C	CW-13-20130227	03/04/13	03/06/13	1.00	Diesel Range	100	< 100 U
13-3931	HC ID: **DRO**		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**110**
					o-Terphenyl		93.2%
WF57D	MW-05D-20130227	03/04/13	03/06/13	1.00	Diesel Range	100	< 100 U
13-3932	HC ID: **DRO**		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**210**
					o-Terphenyl		91.9%
WF57E	MW-05S-20130227	03/04/13	03/06/13	1.00	Diesel Range	100	< 100 U
13-3933	HC ID: **DRO**		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**230**
					o-Terphenyl		95.9%
WF57F	PZ-30-20130227	03/04/13	03/06/13	1.00	Diesel Range	100	< 100 U
13-3934	HC ID: **DRO**		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**210**
					o-Terphenyl		80.1%
WF57G	PZ-17-20130227	03/04/13	03/06/13	1.00	Diesel Range	100	< 100 U
13-3935	HC ID: **DRO**		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**150**
					o-Terphenyl		90.2%
WF57H	LW-3-20130227	03/04/13	03/06/13	1.00	**Diesel Range**	**100**	**1600**
13-3936	HC ID: **DRO/MOTOR OIL**		FID4A	1.0	**Motor Oil Range**	**200**	**860**
					Creosote Range	**100**	**11000 E**
					o-Terphenyl		76.6%
WF57H DIL	LW-3-20130227	03/04/13	03/07/13	1.00	**Diesel Range**	**500**	**1600**
13-3936	HC ID: **DRO**		FID4A	5.0	Motor Oil Range	1000	< 1000 U
					Creosote Range	**500**	**12000**
					o-Terphenyl		77.2%

ANALYTICAL RESOURCES INCORPORATED

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

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061

Matrix: Water
Data Release Authorized:
Reported: 03/08/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result

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.

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061

Client ID	OTER	TOT OUT
MB-030413	99.5%	0
LCS-030413	84.7%	0
LCSD-030413	84.9%	0
PZ-12-20130227	87.4%	0
PZ-13-20130227	90.3%	0
CW-13-20130227	93.2%	0
MW-05D-20130227	91.9%	0
MW-05S-20130227	95.9%	0
PZ-30-20130227	80.1%	0
PZ-17-20130227	90.2%	0
LW-3-20130227	76.6%	0
LW-3-20130227 DL	77.2%	0

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

Prep Method: SW3510C
Log Number Range: 13-3929 to 13-3936

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-030413**
 LCS/LCSD

Lab Sample ID: LCS-030413
LIMS ID: 13-3929
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF57-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/27/13
Date Received: 02/28/13

Date Extracted LCS/LCSD: 03/04/13
Date Analyzed LCS: 03/06/13 18:38
LCSD: 03/06/13 18:58
Instrument/Analyst LCS: FID/JLW
LCSD: FID/JLW

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2270	3000	75.7%	2230	3000	74.3%	1.8%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	84.7%	84.9%

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: 02/28/13

ARI Job: WF57
Project: Port of Olympia
21039.060.061

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
13-3929-030413MB1	Method Blank	500 mL	1.00 mL	03/04/13
13-3929-030413LCS1	Lab Control	500 mL	1.00 mL	03/04/13
13-3929-030413LCSD1	Lab Control Dup	500 mL	1.00 mL	03/04/13
13-3929-WF57A	PZ-12-20130227	500 mL	1.00 mL	03/04/13
13-3930-WF57B	PZ-13-20130227	500 mL	1.00 mL	03/04/13
13-3931-WF57C	CW-13-20130227	500 mL	1.00 mL	03/04/13
13-3932-WF57D	MW-05D-20130227	500 mL	1.00 mL	03/04/13
13-3933-WF57E	MW-05S-20130227	500 mL	1.00 mL	03/04/13
13-3934-WF57F	PZ-30-20130227	500 mL	1.00 mL	03/04/13
13-3935-WF57G	PZ-17-20130227	500 mL	1.00 mL	03/04/13
13-3936-WF57H	LW-3-20130227	500 mL	1.00 mL	03/04/13

Analytical Resources, Incorporated
Analytical Chemists and Consultants

March 13, 2013

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

RE: Project: Port of Olympia
ARI Job No: WF72

Dear Chris:

Please find enclosed the original *Chain of Custody*, sample receipt documentation, and final results for the project referenced above. Analytical Resources, Inc. accepted seven water samples and a trip blank in good condition on March 1, 2013.

The samples were analyzed for NWTPH-Gx, NWTPH-Dx, cPAHs by method 8270 SIM, PAHs by method 8270 and PCP on select samples by method 8041, as requested on the *Chain of Custody*.

Please refer to the *Case Narrative* for analytical details regarding the sample.

A 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 2/28/2013
Page 1 of 1

Project Name Port of Olympia Project No. 21037.060.001
Project Location/Event Cascade Pole, Wet Season
Sampler's Name Sarah Weeks, Sierra Mott
Project Contact Chris Kimmel
Send Results To Chris Kimmel, Anne Halvorson

Turnaround Time
☒ Standard
☐ Accelerated
☐ _____

Sample I.D.	Date	Time	Matrix	No. of Containers	TPH-Gx	TPH-Dx+Creosote	PAHs (8270)	cPAHs SIM	PCP (8270)	PCP (8041)	Observations/Comments
MW-02D-20130228	2/28/13	0912	H_2O	10	X	X	X	X	X	X	
MW-02S-20130228	2/28/13	0909	H_2O	10	X	X	X	X	X	X	
PZ-19-20130228	2/28/13	1012	H_2O	10	X	X	X	X	X	X	
MW-01S-20130228	2/28/13	1237	H_2O	10	X	X	X	X	X	X	
Trip Blanks	2/22/13	-	H_2O	2	X						
MW-01D-20130228	2/28/13	1250	H_2O	10	X	X	X	X	X	X	
LW-4R-20130228	2/28/13	1131	H_2O	10	X	X	X	X	X	X	
PZ-18-20130228	2/28/13	1136	H_2O	10	X	X	X	X	X	X	

Testing Parameters

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 4 coolers + ice

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature Sarah Weeks	Signature Sierra Mott	Signature Sierra Mott	Signature Rich Hudson
Printed Name Sarah Weeks	Printed Name Sierra Mott	Printed Name LAI	Printed Name ARI
Company Landau Associates, Inc	Company Landau Associates	Company	Company
Date 2/28/13 Time 1630	Date 3/1/13 Time ~~0550~~ 1025	Date 3/1/13 Time 1025	Date 3/1/13 Time 1025

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

Rev 8/09

25595.21.14

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: WF72 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) 3.1 5.3 3.5 2.4

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

Cooler Accepted by: _____ Date: 3/1/13 Time: 1120

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 2/22/13

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

Samples Logged by: JM Date: 3/1/13 Time: 1306

*** 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:

MW-02S-20130228= pb in 2062

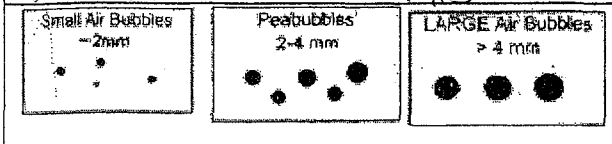
MW-10I3-20130228= pb in 2062

MW-01D-20130228= 1 sm, 1 lg

LW-4R-20130228= sm in 2062

PZ-18-20130228= sm in 1062

By: JM Date: 3/1/13



Small → "sm"	
Peabubbles → "pb"	
Large → "lg"	
Headspace → "hs"	

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: WF72
Client: Landau Associates, Inc.
Project Event: 21039.060.061
Project Name: Port of Olympia

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-02D-20130228	WF72A	13-4010	Water	02/28/13 09:12	03/01/13 10:25
2.	MW-02S-20130228	WF72B	13-4011	Water	02/28/13 09:09	03/01/13 10:25
3.	PZ-19-20130228	WF72C	13-4012	Water	02/28/13 10:12	03/01/13 10:25
4.	MW-01S-20130228	WF72D	13-4013	Water	02/28/13 12:37	03/01/13 10:25
5.	MW-01D-20130228	WF72E	13-4014	Water	02/28/13 12:50	03/01/13 10:25
6.	LW-4R-20130228	WF72F	13-4015	Water	02/28/13 11:31	03/01/13 10:25
7.	PZ-18-20130228	WF72G	13-4016	Water	02/28/13 11:36	03/01/13 10:25
8.	Trip Blanks	WF72H	13-4017	Water	02/28/13	03/01/13 10:25

ANALYTICAL
RESOURCES
INCORPORATED

Case Narrative

Project: 0021039.060.061
ARI Job No.: WF72
March 13, 2013
Page 1 of 2

Sample Receipt

Please find enclosed the original *Chain of Custody (COC)* record and analytical results for the project referenced above. Analytical Resources, Inc. accepted seven water samples and a trip blank in good condition on March 1, 2013. The samples were received at cooler temperatures between 2.4 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 3/4/13. The samples were analyzed between 3/7/13 and 3/8/13 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were in control.

LCS/LSCD (s): Are in control.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

SIM PNA by method 8270-SIM Water

The samples were extracted on 3/5/13 and analyzed on 3/8/13 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: Are in control.

LCS/LSCD (s): All percent recoveries and other RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

PCP Only by method 8041

The samples were extracted on 3/4/13 and analyzed on 3/12/13 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Case Narrative

Project: 0021039.060.061
ARI Job No.: WF72
March 13, 2013
Page 2 of 2

Surrogates: All surrogate recoveries were in control.

LCS/LSCD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Gx

The samples were analyzed on 3/4/13 and 3/5/13 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were in control.

LCS/LCSD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Dx

The samples were extracted on 3/4/13 and analyzed on 3/6/13 and 3/7/13 - within the method recommended holding time.

Surrogates: All surrogate recoveries were in control.

Samples: There were no anomalies associated with these samples.

LCS/LCSD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-02D-20130228
SAMPLE

Lab Sample ID: WF72A
LIMS ID: 13-4010
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 20:17
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	69.0%
d14-Dibenzo(a,h)anthracene	82.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-02S-20130228
SAMPLE

Lab Sample ID: WF72B
LIMS ID: 13-4011
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 20:45
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	69.0%
d14-Dibenzo(a,h)anthracene	33.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-19-20130228
SAMPLE

Lab Sample ID: WF72C
LIMS ID: 13-4012
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 21:12
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	81.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-01S-20130228
SAMPLE

Lab Sample ID: WF72D
LIMS ID: 13-4013
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 23:03
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 10.0

CAS Number	Analyte	RL	Result
56-55-3	**Benzo(a)anthracene**	**1.0**	**1.7**
218-01-9	**Chrysene**	**1.0**	**1.6**
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
TOTBFA	Total Benzofluoranthenes	2.0	< 2.0 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	70.0%
d14-Dibenzo(a,h)anthracene	30.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-01D-20130228
SAMPLE

Lab Sample ID: WF72E
LIMS ID: 13-4014
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 21:40
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	84.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: LW-4R-20130228
SAMPLE

Lab Sample ID: WF72F
LIMS ID: 13-4015
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 22:07
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	81.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-18-20130228
SAMPLE

Lab Sample ID: WF72G
LIMS ID: 13-4016
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 22:35
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	67.3%
d14-Dibenzo(a,h)anthracene	77.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-030513
METHOD BLANK

Lab Sample ID: MB-030513
LIMS ID: 13-4011
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: NA
Date Received: NA

Date Extracted: 03/05/13
Date Analyzed: 03/08/13 15:14
Instrument/Analyst: NT4/JZ

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

CAS Number	Analyte	RL	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	66.0%
d14-Dibenzo(a,h)anthracene	73.3%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061

Client ID	MNP	DBA	TOT OUT
MW-02D-20130228	69.0%	82.0%	0
MB-030513	66.0%	73.3%	0
LCS-030513	69.7%	80.0%	0
LCSD-030513	69.3%	81.7%	0
MW-02S-20130228	69.0%	33.3%	0
PZ-19-20130228	70.3%	81.0%	0
MW-01S-20130228	70.0%	30.0%	0
MW-01D-20130228	73.7%	84.7%	0
LW-4R-20130228	68.3%	81.7%	0
PZ-18-20130228	67.3%	77.3%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(40-110)	(33-107)
(DBA) = d14-Dibenzo(a,h)anthracene	(33-140)	(10-142)

Prep Method: SW3520C
Log Number Range: 13-4010 to 13-4016

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-030513
LAB CONTROL SAMPLE

Lab Sample ID: LCS-030513
LIMS ID: 13-4011
Matrix: Water
Data Release Authorized:
Reported: 03/11/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 03/05/13

Date Analyzed LCS: 03/08/13 15:41
LCSD: 03/08/13 16:09
Instrument/Analyst LCS: NT4/JZ
LCSD: NT4/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	2.04	3.00	68.0%	2.12	3.00	70.7%	3.8%
Chrysene	1.96	3.00	65.3%	2.03	3.00	67.7%	3.5%
Benzo(a)pyrene	1.83	3.00	61.0%	1.96	3.00	65.3%	6.9%
Indeno(1,2,3-cd)pyrene	1.90	3.00	63.3%	1.90	3.00	63.3%	0.0%
Dibenz(a,h)anthracene	1.87	3.00	62.3%	1.90	3.00	63.3%	1.6%
Total Benzofluoranthenes	6.23	9.00	69.2%	6.00	9.00	66.7%	3.8%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	69.7%	69.3%
d14-Dibenzo(a,h)anthracene	80.0%	81.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061

Data Release Authorized:
Reported: 03/07/13

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-030413	Method Blank	03/04/13	1.0	Gasoline	< 250 U
13-4010		PID1		HC ID	---
				Trifluorotoluene	100%
				Bromobenzene	100%
WF72A	MW-02D-20130228	03/04/13	1.0	Gasoline	< 250 U
13-4010		PID1		HC ID	---
				Trifluorotoluene	105%
				Bromobenzene	107%
WF72B	MW-02S-20130228	03/04/13	1.0	Gasoline	< 250 U
13-4011		PID1		HC ID	---
				Trifluorotoluene	98.2%
				Bromobenzene	102%
WF72C	PZ-19-20130228	03/04/13	1.0	Gasoline	< 250 U
13-4012		PID1		HC ID	---
				Trifluorotoluene	103%
				Bromobenzene	105%
MB-030513	Method Blank	03/05/13	1.0	Gasoline	< 250 U
13-4013		PID1		HC ID	---
				Trifluorotoluene	106%
				Bromobenzene	108%
WF72D	MW-01S-20130228	03/05/13	20	**Gasoline**	**38000**
13-4013		PID1		HC ID	GAS/GRO
				Trifluorotoluene	110%
				Bromobenzene	108%
WF72E	MW-01D-20130228	03/05/13	1.0	Gasoline	< 250 U
13-4014		PID1		HC ID	---
				Trifluorotoluene	106%
				Bromobenzene	106%
WF72F	LW-4R-20130228	03/05/13	1.0	Gasoline	< 250 U
13-4015		PID1		HC ID	---
				Trifluorotoluene	102%
				Bromobenzene	106%
WF72G	PZ-18-20130228	03/04/13	1.0	Gasoline	< 250 U
13-4016		PID1		HC ID	---
				Trifluorotoluene	99.0%
				Bromobenzene	102%
WF72H	Trip Blanks	03/04/13	1.0	Gasoline	< 250 U
13-4017		PID1		HC ID	---
				Trifluorotoluene	106%
				Bromobenzene	105%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061

Data Release Authorized:
Reported: 03/07/13

ARI ID	Client ID	Analysis Date	DL	Range	Result

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: WF72
Matrix: Water

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061

Client ID	TFT	BBZ	TOT OUT
MB-030413	100%	100%	0
LCS-030413	107%	104%	0
LCSD-030413	106%	102%	0
MW-02D-20130228	105%	107%	0
MW-02S-20130228	98.2%	102%	0
PZ-19-20130228	103%	105%	0
MB-030513	106%	108%	0
LCS-030513	106%	105%	0
LCSD-030513	110%	108%	0
MW-01S-20130228	110%	108%	0
MW-01D-20130228	106%	106%	0
LW-4R-20130228	102%	106%	0
PZ-18-20130228	99.0%	102%	0
Trip Blanks	106%	105%	0

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

Log Number Range: 13-4010 to 13-4017

FORM II TPHG

WF72:00019

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG

Sample ID: LCS-030413
LAB CONTROL SAMPLE

Lab Sample ID: LCS-030413
LIMS ID: 13-4010
Matrix: Water
Data Release Authorized:
Reported: 03/07/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 03/04/13 10:47
LCSD: 03/04/13 11:16
Instrument/Analyst LCS: PID1/LH
LCSD: PID1/LH

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%	990	1000	99.0%	4.9%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	107%	106%
Bromobenzene	104%	102%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-030513
LAB CONTROL SAMPLE

Lab Sample ID: LCS-030513
LIMS ID: 13-4013
Matrix: Water
Data Release Authorized:
Reported: 03/07/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.060.061
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 03/05/13 10:44
LCSD: 03/05/13 11:13
Instrument/Analyst LCS: PID1/LH
LCSD: PID1/LH

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	1060	1000	106%	1050	1000	105%	0.9%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	106%	110%
Bromobenzene	105%	108%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-02D-20130228
SAMPLE

Lab Sample ID: WF72A
LIMS ID: 13-4010
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/04/13
Date Analyzed: 03/07/13 21:11
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**
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**	**7.2**
132-64-9	**Dibenzofuran**	**1.0**	**2.8**
86-73-7	**Fluorene**	**1.0**	**4.7**
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	**Phenanthrene**	**1.0**	**2.2**
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**	**1.9**
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	76.8%
d14-p-Terphenyl	92.0%
2,4,6-Tribromophenol	84.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-02S-20130228
SAMPLE

Lab Sample ID: WF72B
LIMS ID: 13-4011
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/04/13
Date Analyzed: 03/07/13 21:45
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**	**1.9**
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**	**1.1**
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
120-12-7	**Anthracene**	**1.0**	**1.0**
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	80.8%
d14-p-Terphenyl	77.6%
2,4,6-Tribromophenol	91.2%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-19-20130228
SAMPLE

Lab Sample ID: WF72C
LIMS ID: 13-4012
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/04/13
Date Analyzed: 03/07/13 22:18
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**	**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
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	79.6%
d14-p-Terphenyl	93.2%
2,4,6-Tribromophenol	87.5%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-01S-20130228
SAMPLE

Lab Sample ID: WF72D
LIMS ID: 13-4013
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/04/13
Date Analyzed: 03/08/13 11:16
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**	**7,100**
91-57-6	**2-Methylnaphthalene**	**100**	**1,000**
208-96-8	Acenaphthylene	100	< 100 U
83-32-9	**Acenaphthene**	**100**	**320**
132-64-9	**Dibenzofuran**	**100**	**140**
86-73-7	**Fluorene**	**100**	**110**
87-86-5	**Pentachlorophenol**	**1,000**	**4,700**
85-01-8	**Phenanthrene**	**100**	**94 J**
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**	**580**
TOTBFA	Total Benzofluoranthenes	500	< 500 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
Page 1 of 1

Sample ID: MW-01D-20130228
SAMPLE

Lab Sample ID: WF72E
LIMS ID: 13-4014
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/04/13
Date Analyzed: 03/07/13 23:26
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**	**1.8**
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
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	85.2%
d14-p-Terphenyl	96.0%
2,4,6-Tribromophenol	93.1%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LW-4R-20130228
SAMPLE

Lab Sample ID: WF72F
LIMS ID: 13-4015
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/04/13
Date Analyzed: 03/08/13 00:00
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
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	78.0%
d14-p-Terphenyl	92.4%
2,4,6-Tribromophenol	89.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-18-20130228
SAMPLE

Lab Sample ID: WF72G
LIMS ID: 13-4016
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/04/13
Date Analyzed: 03/08/13 00:34
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
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	80.4%
d14-p-Terphenyl	90.8%
2,4,6-Tribromophenol	89.6%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-030413
METHOD BLANK

Lab Sample ID: MB-030413
LIMS ID: 13-4010
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: NA
Date Received: NA

Date Extracted: 03/04/13
Date Analyzed: 03/07/13 14:54
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
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	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	86.8%
d14-p-Terphenyl	102%
2,4,6-Tribromophenol	78.1%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061

Client ID	FBP	TPH	TBP	TOT OUT
MB-030413	86.8%	102%	78.1%	0
LCS-030413	90.4%	105%	94.9%	0
LCSD-030413	85.2%	104%	92.3%	0
MW-02D-20130228	76.8%	92.0%	84.0%	0
MW-02S-20130228	80.8%	77.6%	91.2%	0
PZ-19-20130228	79.6%	93.2%	87.5%	0
MW-01S-20130228	D	D	D	0
MW-01D-20130228	85.2%	96.0%	93.1%	0
LW-4R-20130228	78.0%	92.4%	89.3%	0
PZ-18-20130228	80.4%	90.8%	89.6%	0

	LCS/MB LIMITS	QC LIMITS
(FBP) = 2-Fluorobiphenyl	(51-100)	(38-100)
(TPH) = d14-p-Terphenyl	(54-117)	(27-122)
(TBP) = 2,4,6-Tribromophenol	(46-125)	(31-128)

Prep Method: SW3520C
Log Number Range: 13-4010 to 13-4016

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-030413
LCS/LCSD

Lab Sample ID: LCS-030413
LIMS ID: 13-4010
Matrix: Water
Data Release Authorized:
Reported: 03/08/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted LCS/LCSD: 03/04/13

Date Analyzed LCS: 03/07/13 15:29
LCSD: 03/07/13 16:04
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	19.0	25.0	76.0%	17.5	25.0	70.0%	8.2%
2-Methylnaphthalene	20.1	25.0	80.4%	18.8	25.0	75.2%	6.7%
Acenaphthylene	19.7	25.0	78.8%	18.9	25.0	75.6%	4.1%
Acenaphthene	20.7	25.0	82.8%	19.7	25.0	78.8%	5.0%
Dibenzofuran	22.5	25.0	90.0%	21.6	25.0	86.4%	4.1%
Fluorene	23.6	25.0	94.4%	22.6	25.0	90.4%	4.3%
Pentachlorophenol	61.4	75.0	81.9%	64.0	75.0	85.3%	4.1%
Phenanthrene	20.4	25.0	81.6%	20.5	25.0	82.0%	0.5%
Anthracene	19.7	25.0	78.8%	20.1	25.0	80.4%	2.0%
Fluoranthene	21.8	25.0	87.2%	22.1	25.0	88.4%	1.4%
Pyrene	22.6	25.0	90.4%	23.1	25.0	92.4%	2.2%
Benzo(a)anthracene	20.8	25.0	83.2%	20.8	25.0	83.2%	0.0%
Chrysene	21.5	25.0	86.0%	22.2	25.0	88.8%	3.2%
Benzo(a)pyrene	20.4	25.0	81.6%	19.8	25.0	79.2%	3.0%
Indeno(1,2,3-cd)pyrene	20.9	25.0	83.6%	21.0	25.0	84.0%	0.5%
Dibenz(a,h)anthracene	21.2	25.0	84.8%	21.4	25.0	85.6%	0.9%
Benzo(g,h,i)perylene	20.5	25.0	82.0%	20.5	25.0	82.0%	0.0%
1-Methylnaphthalene	20.0	25.0	80.0%	18.7	25.0	74.8%	6.7%
Total Benzofluoranthenes	42.5	50.0	85.0%	42.3	50.0	84.6%	0.5%

Semivolatile Surrogate Recovery

	LCS	LCSD
2-Fluorobiphenyl	90.4%	85.2%
d14-p-Terphenyl	105%	104%
2,4,6-Tribromophenol	94.9%	92.3%

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
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Sample ID: MW-02D-20130228
SAMPLE

Lab Sample ID: WF72A
LIMS ID: 13-4010
Matrix: Water
Data Release Authorized:
Reported: 03/12/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/04/13
Date Analyzed: 03/12/13 03:40
Instrument/Analyst: ECD1/JGR

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	104%

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-02S-20130228
SAMPLE

Lab Sample ID: WF72B
LIMS ID: 13-4011
Matrix: Water
Data Release Authorized:
Reported: 03/12/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/04/13
Date Analyzed: 03/12/13 04:16
Instrument/Analyst: ECD1/JGR

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	85.6%

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-19-20130228
SAMPLE

Lab Sample ID: WF72C
LIMS ID: 13-4012
Matrix: Water
Data Release Authorized:
Reported: 03/12/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/04/13
Date Analyzed: 03/12/13 04:53
Instrument/Analyst: ECD1/JGR

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
Page 1 of 1

Sample ID: MW-01D-20130228
SAMPLE

Lab Sample ID: WF72E
LIMS ID: 13-4014
Matrix: Water
Data Release Authorized:
Reported: 03/12/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/04/13
Date Analyzed: 03/12/13 05:29
Instrument/Analyst: ECD1/JGR

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

CAS Number	Analyte	RL	Result
87-86-5	**Pentachlorophenol**	**0.25**	**2.0**

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: LW-4R-20130228
SAMPLE

Lab Sample ID: WF72F
LIMS ID: 13-4015
Matrix: Water
Data Release Authorized:
Reported: 03/12/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/04/13
Date Analyzed: 03/12/13 06:05
Instrument/Analyst: ECD1/JGR

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

CAS Number	Analyte	RL	Result
87-86-5	**Pentachlorophenol**	**0.25**	**0.85**

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	102%

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-18-20130228
SAMPLE

Lab Sample ID: WF72G
LIMS ID: 13-4016
Matrix: Water
Data Release Authorized:
Reported: 03/12/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted: 03/04/13
Date Analyzed: 03/12/13 06:41
Instrument/Analyst: ECD1/JGR

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

CAS Number	Analyte	RL	Result
87-86-5	**Pentachlorophenol**	**0.25**	**0.48**

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	98.4%

FORM I

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-030413
METHOD BLANK

Lab Sample ID: MB-030413
LIMS ID: 13-4010
Matrix: Water
Data Release Authorized:
Reported: 03/12/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: NA
Date Received: NA

Date Extracted: 03/04/13
Date Analyzed: 03/12/13 01:52
Instrument/Analyst: ECD1/JGR

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

SW8041 CHLOROPHENOLICS SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061

Client ID	TBP	TOT OUT
MB-030413	85.2%	0
LCS-030413	91.6%	0
LCSD-030413	90.2%	0
MW-02D-20130228	104%	0
MW-02S-20130228	85.6%	0
PZ-19-20130228	88.0%	0
MW-01D-20130228	90.8%	0
LW-4R-20130228	102%	0
PZ-18-20130228	98.4%	0

	LCS/MB LIMITS	QC LIMITS
(TBP) = 2,4,6-Tribromophenol	(41-98)	(26-113)

Prep Method: SW3510C
Log Number Range: 13-4010 to 13-4016

FORM-II SW8041

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-030413
LCS/LCSD

Lab Sample ID: LCS-030413
LIMS ID: 13-4010
Matrix: Water
Data Release Authorized:
Reported: 03/12/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted LCS/LCSD: 03/04/13

Date Analyzed LCS: 03/12/13 02:28
LCSD: 03/12/13 03:04
Instrument/Analyst LCS: ECD1/JGR
LCSD: ECD1/JGR

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	2.09	2.50	83.6%	2.09	2.50	83.6%	0.0%

Chlorophenols Surrogate Recovery

	LCS	LCSD
2,4,6-Tribromophenol	91.6%	90.2%

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: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061

Matrix: Water
Data Release Authorized:
Reported: 03/08/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-030413	Method Blank	03/04/13	03/06/13	1.00	Diesel Range	100	< 100 U
13-4010	HC ID: ---		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		99.5%
WF72A	MW-02D-20130228	03/04/13	03/06/13	1.00	Diesel Range	100	< 100 U
13-4010	HC ID: **DRO**		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**270**
					o-Terphenyl		95.6%
WF72B	MW-02S-20130228	03/04/13	03/06/13	1.00	Diesel Range	100	< 100 U
13-4011	HC ID: **DRO**		FID4A	1.0	Motor Oil Range	210	< 210 U
					Creosote Range	**110**	**210**
					o-Terphenyl		92.2%
WF72C	PZ-19-20130228	03/04/13	03/06/13	1.00	Diesel Range	100	< 100 U
13-4012	HC ID: **DRO**		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**140**
					o-Terphenyl		98.3%
WF72D	MW-01S-20130228	03/04/13	03/07/13	1.00	**Diesel Range**	**100**	**6600 E**
13-4013	HC ID: **CREOSOTE**		FID4A	1.0	**Motor Oil Range**	**200**	**890**
					Creosote Range	**100**	**49000 E**
					o-Terphenyl		87.5%
WF72D DIL	MW-01S-20130228	03/04/13	03/07/13	1.00	**Diesel Range**	**5000**	**5500**
13-4013	HC ID: **CREOSOTE**		FID4A	50	Motor Oil Range	10000	< 10000 U
					Creosote Range	**5000**	**40000**
					o-Terphenyl		D
WF72E	MW-01D-20130228	03/04/13	03/07/13	1.00	Diesel Range	100	< 100 U
13-4014	HC ID: **DRO**		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**160**
					o-Terphenyl		81.8%
WF72F	LW-4R-20130228	03/04/13	03/07/13	1.00	Diesel Range	100	< 100 U
13-4015	HC ID: **DRO/MOTOR OIL**		FID4A	1.0	**Motor Oil Range**	**200**	**400**
					Creosote Range	**100**	**200**
					o-Terphenyl		94.0%
WF72G	PZ-18-20130228	03/04/13	03/07/13	1.00	Diesel Range	100	< 100 U
13-4016	HC ID: **DRO**		FID4A	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	**100**	**140**
					o-Terphenyl		92.8%

ANALYTICAL RESOURCES INCORPORATED

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

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061

Matrix: Water
Data Release Authorized:
Reported: 03/08/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result

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.

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061

Client ID	OTER	TOT OUT
MB-030413	99.5%	0
LCS-030413	84.7%	0
LCSD-030413	84.9%	0
MW-02D-20130228	95.6%	0
MW-02S-20130228	92.2%	0
PZ-19-20130228	98.3%	0
MW-01S-20130228	87.5%	0
MW-01S-20130228 DL	D	0
MW-01D-20130228	81.8%	0
LW-4R-20130228	94.0%	0
PZ-18-20130228	92.8%	0

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

Prep Method: SW3510C
Log Number Range: 13-4010 to 13-4016

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-030413**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-030413
LIMS ID: 13-4010
Matrix: Water
Data Release Authorized: B
Reported: 03/08/13

QC Report No: WF72-Landau Associates, Inc.
Project: Port of Olympia
21039.060.061
Date Sampled: 02/28/13
Date Received: 03/01/13

Date Extracted LCS/LCSD: 03/04/13

Date Analyzed LCS: 03/06/13 18:38
LCSD: 03/06/13 18:58
Instrument/Analyst LCS: FID/JLW
LCSD: FID/JLW

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2270	3000	75.7%	2230	3000	74.3%	1.8%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	84.7%	84.9%

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

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: WF72
Matrix: Water Project: Port of Olympia
Date Received: 03/01/13 21039.060.061

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
13-4010-030413MB1	Method Blank	500 mL	1.00 mL	03/04/13
13-4010-030413LCS1	Lab Control	500 mL	1.00 mL	03/04/13
13-4010-030413LCSD1	Lab Control Dup	500 mL	1.00 mL	03/04/13
13-4010-WF72A	MW-02D-20130228	500 mL	1.00 mL	03/04/13
13-4011-WF72B	MW-02S-20130228	475 mL	1.00 mL	03/04/13
13-4012-WF72C	PZ-19-20130228	500 mL	1.00 mL	03/04/13
13-4013-WF72D	MW-01S-20130228	500 mL	1.00 mL	03/04/13
13-4014-WF72E	MW-01D-20130228	500 mL	1.00 mL	03/04/13
13-4015-WF72F	LW-4R-20130228	500 mL	1.00 mL	03/04/13
13-4016-WF72G	PZ-18-20130228	500 mL	1.00 mL	03/04/13