

April 23, 2004
10077.004

Oregon Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue
Suite 400
Portland, Oregon 97201-4987

VIA Email/First Class

Attention: Anna Coates

**Subject: Technical Memorandum
QUARTERLY GROUND-WATER MONITORING
FIRST QUARTER 2004 – 2nd ROUND
Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon
DEQ ECSI File #2277**

Dear Ms. Coates:

This technical memorandum presents the results of the First Quarter 2004 ground-water monitoring completed in January 2004 for the Remedial Investigation/Feasibility Study (RI/FS) at the Astoria Area-Wide Petroleum Site. The ground-water sampling was performed at the site by *EnviroLogic Resources, Inc.*, from January 11 through January 20, 2004, in accordance with the Work Plan Addendum, Phase 1 Ground Water Assessment (*EnviroLogic Resources*, 2003b). This technical memorandum presents the analytical results of the second ground-water sampling event (First Quarter 2004). The site location is shown on Figure 1 and a site plan is shown on Figure 2.

Ground-water samples were collected and analyzed for all constituents of interest (COIs) from 37 ground-water monitoring wells during the sampling event. Ten monitoring wells containing free-phase hydrocarbons were not sampled. A total of 45 samples from 37 wells, including MW-2(M), MW-6(M), MW-7(M), MW-10(M), MW-11(M), MW-12(A) through MW-14(A), MW-16(A) through MW-24(A), MW-26(A) through MW-36(A), MW-38(A) through MW-40(A), MW-43(A), MW-45(A) through MW-48(A), and MW-1(F) were collected for laboratory analysis. Sampling methods, containers, preservatives, and holding times for each analytical method are provided in the Field Sampling Plan (Appendix A of the RI/FS Work Plan [*EnviroLogic Resources*, 2002b]). In addition, specific procedures used during the sampling event are presented in Appendix A of this document. No significant modifications were made to these methods and procedures. The locations of the monitoring wells and recovery wells are shown on Figure 3.

The following field parameters were measured as part of the quarterly monitoring event: pH, temperature, specific conductance, oxidation-reduction potential (ORP), and dissolved oxygen (DO). Ground-water sampling logs are presented in Appendix B.

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Ground-water level measurements in the near-shore monitoring wells and from the Pier 2 monitoring point were performed over as short a period of time as possible. The water level in Slip No. 2 was measured to be about 1.97 feet lower than the lowest elevation measured in the near-shore wells when a correction for tides is applied. Tide stages from Tongue Point, a few miles upstream on the Columbia River, were used to make the correction.

SUMMARY OF THE FIRST QUARTER 2004 SAMPLING EVENT

The measured potentiometric surface and chemical concentration data representing the key or indicator COIs for the ground-water samples collected during the quarterly sampling event are presented in the following sections.

The ground-water flow direction at the Astoria Area-Wide site continues to be generally to the northwest and toward Pier 2. The potentiometric surface is presented on Figure 3. The ground-water elevation data are presented in Table 1. Ground-water elevations have been corrected for the presence of free product using either the measured specific gravity of the hydrocarbon in the well, or 0.87 where no well-specific density has been measured.

A total of 45 water samples were submitted for chemical analysis during this second round of sampling. This included 37 field samples, 2 field duplicates, 2 equipment blanks, and 4 trip blanks. Table 2 shows the chemicals detected and the range of concentrations observed in monitoring wells during the sampling event. Ground-water analytical results from the First Quarter 2004 round of sampling are summarized in Tables 4 through 9. Figures 4 through 6 show the monitoring well locations along with detected concentrations of select petroleum constituents. Laboratory analytical data sheets, QA/QC data, the data validation report, and chain-of-custody forms for this ground-water sampling event are presented in Appendix C. Data have been qualified where detections in blanks (e.g., laboratory method blanks or equipment blanks) affect the reported analytical result. No data were rejected as a result of the data validation.

The depth to product, product thickness, and depth to water are measured monthly using an interface probe. The free-phase product measurement data through the First Quarter 2004 is included in Table 1. Monitoring-wells MW-1(M), MW-3(M), MW-4(M), MW-8(M), MW-9(M), MW-15(A), MW-37(A), MW-41(A), MW-42(A), and MW-44(A) contain measurable product. The product thickness in the wells varies month to month and product is pumped out of these wells on a monthly basis. The volume of product recovered from these monitoring wells through February 2004 is presented in Table 10.

NEXT MONITORING EVENT

In accordance with the approved ground-water monitoring program, the next (3rd Round) quarterly ground-water monitoring event is scheduled to be performed in April 2004. The analytical program will include analyses for total petroleum hydrocarbons, RBDM VOCs and SVOCs, and lead.

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CLOSING COMMENTS

Please call me at (503)768-5121 if you have any questions or comments regarding this quarterly monitoring report.

Sincerely,
EnviroLogic Resources, Inc.

Thomas J. Calabrese, RG, CWRE
Principal/Hydrogeologist
Project Manager

cc: Distribution list attached

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APPENDICES

Appendix A	Methods and Procedures
Appendix B	Ground-Water Sampling Logs
Appendix C	Laboratory Analytical Reports with Data Validation Reports

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REFERENCES

- EnviroLogic Resources, Inc.*, 2002a, RI/FS and IRAM Development Proposal, Remedial Investigation/Feasibility Study, Astoria Area-Wide Petroleum Site, Astoria, Oregon: consultant report dated January 21, 2002.
- EnviroLogic Resources, Inc.*, 2002b, RI/FS and IRAM Development Work Plan, Phase 1, Remedial Investigation/Feasibility Study, Astoria Area-Wide Petroleum Site, Astoria, Oregon: consultant report dated July 15, 2002.
- EnviroLogic Resources, Inc.*, 2003a, Phase 1 Soil Technical Memorandum, Remedial Investigation/Feasibility Study, Astoria Area-Wide Petroleum Site, Astoria, Oregon: consultant report dated January 30, 2003.
- EnviroLogic Resources, Inc.*, 2003b, Work Plan Addendum, Phase 1 Ground Water Assessment, Remedial Investigation/Feasibility Study, Astoria Area-Wide Petroleum Site, Astoria, Oregon: consultant report dated July 2, 2003.
- EnviroLogic Resources, Inc.*, 2003c, Work Plan Addendum, Phase 2 Soil Characterization, Remedial Investigation/Feasibility Study, Astoria Area-Wide Petroleum Site, Astoria, Oregon: consultant report dated July 28, 2003.
- Oregon Department of Environmental Quality, 2003, Risk-based decision making for the remediation of petroleum contaminated sites: DEQ Guidance issued September 22, 2003.

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**ASTORIA AREA-WIDE PETROLEUM SITE
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TABLES

TABLE 1

GROUND-WATER ELEVATIONS

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Date	Time	Observed Tide Levels (Tongue Pt)	Top of Casing (feet MSL)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Corrected Water Elevation (feet)	Depth to Bottom (feet)	Slip 2 Seep Observations
MW-1(F)	10/13/2003	1142	1.5	31.71	np	23.44	0	8.27		
MW-1(F)	10/22/2003	820	0.62	31.71	np	23.87	0	7.84		
MW-1(F)	11/12/2003	1130	0.56	31.71	np	23.03	0	8.68		Iron
MW-1(F)	12/16/2003	1358	0.34	31.71	np	17.25	0	14.46		
MW-1(F)	1/11/2004	1628	4.26	31.71	np	16.33	0	15.38		Iron
MW-1(F)	1/15/2004	800	3.86	31.71	np	16.21	0	15.50		Iron
MW-1(F)	2/12/2004	945	-2.53	31.71	np	15.61	0	16.10		Iron
MW-1(M)	8/28/2002	1151	-1.99	14.53	9.61	10.08	0.47	4.86	18.27	
MW-1(M)	9/12/2002	1029	-2.84	14.53	9.34	9.88	0.54	5.12		
MW-1(M)	9/13/2002	1536	1.12	14.53	9.13	9.34	0.21	5.37		
MW-1(M)	10/11/2002	1141	-1.52	14.53	9.49	9.92	0.43	4.98	19.41	
MW-1(M)	11/15/2002	1118	3.51	14.53	7.11	7.19	0.08	7.41		
MW-1(M)	12/13/2002	841	4.39	14.53	6.54	6.57	0.03	7.99		
MW-1(M)	1/14/2003	1117	3.45	14.53	6.79	6.81	0.02	7.74		
MW-1(M)	2/12/2003	1126	2.12	14.53	7.55	7.56	0.01	6.98		
MW-1(M)	3/13/2003	1018	3.86	14.53	6.37	6.45	0.08	8.15		
MW-1(M)	4/14/2003	1147	4.17	14.53	np	6.57	0	7.96		Product seep visible
MW-1(M)	5/14/2003	1054	2.59	14.53	8.67	8.7	0.03	5.86		Product seep visible
MW-1(M)	6/17/2003	1431	2.05	14.53	9.19	9.25	0.06	5.33		Product seep visible
MW-1(M)	7/14/2003	1215	0.11	14.53	9.56	9.71	0.15	4.95		Product seep visible
MW-1(M)	8/13/2003	1350	3	14.53	9.31	9.32	0.01	5.22		Product seep visible
MW-1(M)	9/12/2003	1432	3.21	14.53	np	8.10	0	6.43		Product seep visible
MW-1(M)	10/13/2003	846	-2.52	14.53	9.31	9.33	0.02	5.22		Product seep visible
MW-1(M)	11/12/2003	1445	3.39	14.53	np	6.96	0	7.57		Product seep visible
MW-1(M)	12/16/2003	943	1.46	14.53	7.58	7.59	0.01	6.95		Product seep visible
MW-1(M)	1/11/2004	1350	4.01	14.53	np	6.58	0	7.95	Product globu	Product seep visible
MW-1(M)	2/12/2004	1423	-2.19	14.53	8.64	8.65	0.01	5.89		Product seep visible
MW-2(M)	8/28/2002	1122	-3.21	15.00	np	8.65	0	6.35	17.9	

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Locator ID	Date	Time	Observed Tide Levels (Tongue Pt)	Top of Casing (feet MSL)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Corrected Water Elevation (feet)	Depth to Bottom (feet)	Slip 2 Seep Observations
MW-2(M)	9/12/2002	1015	-2.84	15.00	np	8.69	0	6.31		
MW-2(M)	9/13/2002	1520	1.12	15.00	np	9.7	0	5.30		
MW-2(M)	10/11/2002	1036	-2.45	15.00	np	8.95	0	6.05	19.03	
MW-2(M)	11/15/2002	930	2.73	15.00	np	8.55	0	6.45		
MW-2(M)	12/13/2002	814	4.26	15.00	np	8.08	0	6.92		
MW-2(M)	1/14/2003	1039	3.45	15.00	np	6.58	0	8.42		
MW-2(M)	2/12/2003	1042	2.12	15.00	np	6.47	0	8.53		
MW-2(M)	3/13/2003	940	3.86	15.00	np	5.91	0	9.09		
MW-2(M)	4/14/2003	1103	4.35	15.00	np	6.02	0	8.98		
MW-2(M)	5/14/2003	1008	1.15	15.00	np	6.91	0	8.09		
MW-2(M)	6/17/2003	1354	0.45	15.00	np	7.51	0	7.49		
MW-2(M)	7/14/2003	1132	0.11	15.00	np	8.02	0	6.98		
MW-2(M)	8/13/2003	1324	1.76	15.00	np	8.34	0	6.66		
MW-2(M)	9/12/2003	1318	2.26	15.00	np	8.58	0	6.42		
MW-2(M)	10/13/2003	852	-2.52	15.00	np	8.62	0	6.38		
MW-2(M)	10/15/2003	1300	2.26	15.00	np	8.62	0	6.38		
MW-2(M)	11/12/2003	1432	3.39	15.00	np	8.29	0	6.71		
MW-2(M)	12/16/2003	910	2.67	15.00	np	6.86	0	8.14		
MW-2(M)	1/11/2004	1348	4.01	15.00	np	6.27	0	8.73		
MW-2(M)	1/12/2004	1200	-0.09	15.00	np	6.39	0	8.61		
MW-2(M)	2/12/2004	1418	-2.19	15.00	np	6.14	0	8.86		
MW-3(M)	8/28/2002	1345	1.05	15.42	9.45	10.17	0.72	5.87	17.51	
MW-3(M)	9/12/2002	1025	-2.84	15.42	9.42	10.12	0.7	5.90		
MW-3(M)	9/13/2002	1547	2.52	15.42	9.51	9.88	0.37	5.86		
MW-3(M)	10/11/2002	1155	-1.52	15.42	9.61	10.67	1.06	5.66	18.44	
MW-3(M)	11/15/2002	1134	3.51	15.42	9.07	9.7	0.63	6.26		
MW-3(M)	12/13/2002	906	4.39	15.42	8.68	9.02	0.34	6.69		
MW-3(M)	1/14/2003	1130	2.16	15.42	7.54	8.15	0.61	7.80		
MW-3(M)	2/12/2003	1142	0.66	15.42	7.61	8.18	0.57	7.73		
MW-3(M)	3/13/2003	1037	2.91	15.42	7.01	7.91	0.9	8.29		

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MW-3(M)	4/14/2003	1207	4.17	15.42	7.06	8.29	1.23	8.19		
MW-3(M)	5/14/2003	1101	2.59	15.42	7.78	8.94	1.16	7.48		
MW-3(M)	6/17/2003	1500	2.05	15.42	8.42	9.15	0.73	6.90		
MW-3(M)	7/14/2003	1226	0.11	15.42	8.86	9.57	0.71	6.46		
MW-3(M)	8/13/2003	1403	3	15.42	9.06	9.64	0.58	6.28		
MW-3(M)	9/12/2003	1449	3.21	15.42	9.26	9.59	0.33	6.11		
MW-3(M)	10/13/2003	921	-2.52	15.42	9.35	9.79	0.44	6.01		
MW-3(M)	10/23/2003	939	2.62	15.42	9.15	9.6	0.45	6.21		
MW-3(M)	11/12/2003	1438	3.39	15.42	8.99	9.16	0.17	6.41		
MW-3(M)	12/16/2003	1003	1.46	15.42	7.76	8.21	0.45	7.60		
MW-3(M)	1/11/2004	1359	4.01	15.42	7.19	8.09	0.9	8.11		
MW-3(M)	2/12/2004	1437	-0.76	15.42	7.32	8.79	1.47	7.90		
MW-4(M)	8/28/2002	1302	-0.5	15.5	9.16	9.45	0.29	6.30	20.59	
MW-4(M)	9/12/2002	1042	-3.1	15.5	9.21	9.58	0.37	6.24		
MW-4(M)	9/13/2002	1544	1.12	15.5	9.26	9.39	0.13	6.22		
MW-4(M)	10/11/2002	1122	-2.45	15.5	9.46	9.77	0.31	6.00	21.11	
MW-4(M)	11/15/2002	1108	3.51	15.5	9.08	9.12	0.04	6.41		
MW-4(M)	12/13/2002	850	4.39	15.5	np	8.66	0	6.84		
MW-4(M)	1/14/2003	1106	3.45	15.5	np	7.18	0	8.32		
MW-4(M)	2/12/2003	1112	2.12	15.5	6.95	7.92	0.97	8.42		
MW-4(M)	3/13/2003	1007	3.86	15.5	6.46	7.49	1.03	8.91		
MW-4(M)	4/14/2003	1137	4.17	15.5	6.28	8.89	2.61	8.88		
MW-4(M)	5/14/2003	1126	2.59	15.5	7.18	9.48	2.3	8.02		
MW-4(M)	6/17/2003	1452	2.05	15.5	7.98	8.78	0.8	7.42		
MW-4(M)	7/14/2003	1232	1.8	15.5	8.53	8.79	0.26	6.94		
MW-4(M)	8/13/2003	1303	1.76	15.5	8.87	9.14	0.27	6.59		
MW-4(M)	9/12/2003	1445	3.21	15.5	9.07	9.28	0.21	6.40		
MW-4(M)	10/13/2003	914	-2.52	15.5	9.17	9.32	0.15	6.31		
MW-4(M)	10/23/2003	918	1.04	15.5	8.95	9.05	0.1	6.54		
MW-4(M)	11/12/2003	1501	3.39	15.5	np	8.85	0	6.65		

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MW-4(M)	12/16/2003	918	2.67	15.5	np	7.45	0	8.05		
MW-4(M)	1/11/2004	1344	4.01	15.5	np	6.86	0	8.64		Product globules in baile
MW-4(M)	2/12/2004	1408	-2.19	15.5	6.45	8.69	2.24	8.76		Odor
MW-5(M)	8/28/2002						0			
MW-6(M)	8/28/2002	1140	-1.99	13.78	np	7.71	0	6.07	18.47	
MW-6(M)	9/12/2002	926	-1.83	13.78	np	8.25	0	5.53		
MW-6(M)	9/13/2002	1515	1.12	13.78	np	7.71	0	6.07		
MW-6(M)	10/11/2002	1012	-2.51	13.78	np	7.92	0	5.86	19.06	
MW-6(M)	11/15/2002	921	2.73	13.78	np	7.41	0	6.37		
MW-6(M)	12/13/2002	802	4.26	13.78	np	8.85	0	4.93		
MW-6(M)	1/14/2003	1028	3.99	13.78	np	7.01	0	6.77		
MW-6(M)	2/12/2003	1031	2.12	13.78	np	6.61	0	7.17		
MW-6(M)	3/13/2003	930	4.37	13.78	np	6.93	0	6.85		
MW-6(M)	4/14/2003	1053	4.35	13.78	np	6.95	0	6.83		
MW-6(M)	5/14/2003	956	1.15	13.78	np	7.14	0	6.64		
MW-6(M)	6/17/2003	1402	0.45	13.78	np	7.12	0	6.66		
MW-6(M)	7/14/2003	1050	-1.9	13.78	np	7.47	0	6.31		
MW-6(M)	8/13/2003	1316	1.76	13.78	np	7.48	0	6.30		
MW-6(M)	9/12/2003	1312	2.26	13.78	np	7.56	0	6.22		
MW-6(M)	10/22/2003	1530	-2.21	13.78	np	7.00	0	6.78		
MW-6(M)	11/12/2003	1348	3.65	13.78	np	8.27	0	5.51		Pressure release
MW-6(M)	12/16/2003	857	2.67	13.78	np	5.86	0	7.92		
MW-6(M)	1/11/2004	1332	4.01	13.78	np	5.41	0	8.37		
MW-6(M)	1/12/2004	814	0.52	13.78	np	5.58	0	8.20		
MW-6(M)	2/12/2004	1328	-3.4	13.78	np	5.69	0	8.09		
MW-7(M)	8/28/2002	1102	-3.21	14.86	np	8.31	0	6.55	18.64	
MW-7(M)	9/12/2002	900	-1.83	14.86	np	8.36	0	6.50		
MW-7(M)	9/13/2002	1455	1.12	14.86	np	8.43	0	6.43		

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 Astoria, Oregon

Locator ID	Date	Time	Observed Tide Levels (Tongue Pt)	Top of Casing (feet MSL)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Corrected Water Elevation (feet)	Depth to Bottom (feet)	Slip 2 Seep Observations
MW-7(M)	10/11/2002	957	-2.51	14.86	np	8.58	0	6.28	18.93	
MW-7(M)	11/15/2002	914	2.73	14.86	np	8.57	0	6.29		
MW-7(M)	12/13/2002	754	4.26	14.86	np	7.7	0	7.16		
MW-7(M)	1/14/2003	1017	3.99	14.86	np	6.01	0	8.85		
MW-7(M)	2/12/2003	1021	3.06	14.86	np	5.96	0	8.90		
MW-7(M)	3/13/2003	920	4.37	14.86	np	5.3	0	9.56		
MW-7(M)	4/14/2003	1044	4.35	14.86	np	5.5	0	9.36		
MW-7(M)	5/14/2003	947	1.15	14.86	np	6.42	0	8.44		
MW-7(M)	6/17/2003	1347	0.45	14.86	np	7.13	0	7.73		
MW-7(M)	7/14/2003	1124	-1.9	14.86	np	7.66	0	7.20		
MW-7(M)	8/13/2003	1311	1.76	14.86	np	8.03	0	6.83		
MW-7(M)	9/12/2003	1307	2.26	14.86	np	8.27	0	6.59		
MW-7(M)	10/13/2003	852	-2.52	14.86	np	8.30	0	6.56		
MW-7(M)	10/13/2003	1547	2.54	14.86	np	8.27	0	6.59		
MW-7(M)	11/12/2003	1356	3.65	14.86	np	7.96	0	6.90		
MW-7(M)	12/16/2003	903	2.67	14.86	np	6.41	0	8.45		
MW-7(M)	1/11/2004	1335	4.01	14.86	np	5.77	0	9.09		
MW-7(M)	1/12/2004	940	-1.27	14.86	np	5.81	0	9.05		
MW-7(M)	2/12/2004	1333	-3.4	14.86	np	5.53	0	9.33		
MW-8(M)	8/28/2002	1326	-0.5	15.23	9.69	11.08	1.39	5.37	18.89	
MW-8(M)	9/12/2002	1036	-3.1	15.23	9.6	10.85	1.25	5.48		
MW-8(M)	9/13/2002	1540	1.12	15.23	9.7	10.41	0.71	5.44		
MW-8(M)	10/11/2002	1211	-1.52	15.23	9.89	10.91	1.02	5.22	18.74	
MW-8(M)	11/15/2002	1126	3.51	15.23	8.57	9.26	0.69	6.58		
MW-8(M)	12/13/2002	859	4.39	15.23	8.04	8.81	0.77	7.10		
MW-8(M)	1/14/2003	1123	3.45	15.23	8.2	8.53	0.33	6.99		
MW-8(M)	2/12/2003	1133	0.66	15.23	8.27	8.75	0.48	6.90		
MW-8(M)	3/13/2003	1029	3.86	15.23	np	8.22	0	7.01		
MW-8(M)	4/14/2003	1158	4.17	15.23	np	7.72	0	7.51		
MW-8(M)	5/14/2003	1042	2.59	15.23	8.71	9.45	0.74	6.43		

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 Astoria, Oregon

Locator ID	Date	Time	Observed Tide Levels (Tongue Pt)	Top of Casing (feet MSL)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Corrected Water Elevation (feet)	Depth to Bottom (feet)	Slip 2 Seep Observations
MW-8(M)	6/17/2003	1440	2.05	15.23	8.91	9.77	0.86	6.22		
MW-8(M)	7/14/2003	1221	0.11	15.23	9.32	9.79	0.47	5.85		
MW-8(M)	8/13/2003	1357	3	15.23	9.36	9.63	0.27	5.84		
MW-8(M)	9/12/2003	1437	3.21	15.23	9.19	9.41	0.22	6.01		
MW-8(M)	10/13/2003	932	-1.55	15.23	9.57	9.92	0.35	5.62		
MW-8(M)	10/23/2003	836	1.04	15.23	9.43	9.86	0.43	5.75		
MW-8(M)	11/12/2003	1442	3.39	15.23	8.81	8.86	0.05	6.41		
MW-8(M)	12/16/2003	954	1.46	15.23	np	8.71	0	6.52		
MW-8(M)	1/11/2004	1355	4.01	15.23	np	7.55	0	7.68		Sheen in bailer
MW-8(M)	2/12/2004	1430	-2.19	15.23	8.37	8.48	0.11	6.85		
MW-9(M)	8/28/2002	1357	1.05	15.42	9.35	13.21	3.86	5.58	19.12	
MW-9(M)	9/12/2002	1049	-3.1	15.42	9.3	12.08	2.78	5.77		
MW-9(M)	9/13/2002	1552	1.12	15.42	9.61	10.21	0.6	5.73		
MW-9(M)	10/11/2002	1226	-1.52	15.42	9.75	10.92	1.17	5.52	19.47	
MW-9(M)	11/15/2002	1141	2.61	15.42	9.16	10.28	1.12	6.12		
MW-9(M)	12/13/2002	915	4.39	15.42	8.78	9.79	1.01	6.51		
MW-9(M)	1/14/2003	1137	2.16	15.42	7.76	8.55	0.79	7.56		
MW-9(M)	2/12/2003	1150	0.66	15.42	7.85	8.85	1	7.44		
MW-9(M)	3/13/2003	1045	2.91	15.42	7.35	8.21	0.86	7.96		
MW-9(M)	4/14/2003	1217	4.17	15.42	7.33	8.9	1.57	7.89		
MW-9(M)	5/15/2003	1116	2.59	15.42	8.11	10.3	2.19	7.03		
MW-9(M)	6/17/2003	1508	2.05	15.42	8.44	10.65	2.21	6.70		
MW-9(M)	7/14/2003	1241	1.8	15.42	9.00	9.94	0.94	6.30		
MW-9(M)	8/13/2003	1409	3	15.42	9.20	9.8	0.6	6.14		
MW-9(M)	9/12/2003	1456	3.21	15.42	9.38	9.9	0.52	5.97		
MW-9(M)	10/13/2003	939	-1.55	15.42	9.46	10.18	0.72	5.87		
MW-9(M)	10/23/2003	956	2.62	15.42	9.24	9.92	0.68	6.09		
MW-9(M)	11/12/2003	1456	3.39	15.42	9.15	9.49	0.34	6.23		
MW-9(M)	12/16/2003	1009	1.46	15.42	8.02	8.19	0.17	7.38		
MW-9(M)	1/11/2004	1407	4.01	15.42	7.52	7.66	0.14	7.88		

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Locator ID	Date	Time	Observed Tide Levels (Tongue Pt)	Top of Casing (feet MSL)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Corrected Water Elevation (feet)	Depth to Bottom (feet)	Slip 2 Seep Observations
MW-9(M)	2/12/2004	1444	-0.76	15.42	7.76	8.69	0.93	7.54		
MW-10(M)	8/28/2002	1430	1.05	16.32	np	11.23	0	5.09	19.43	
MW-10(M)	9/12/2002	1005	-2.84	16.32	np	11.1	0	5.22		
MW-10(M)	9/13/2002	1526	1.12	16.32	np	11.13	0	5.19		
MW-10(M)	10/11/2002	1055	-2.45	16.32	np	11.22	0	5.10	19.83	
MW-10(M)	11/15/2002	942	3.5	16.32	np	10.63	0	5.69		
MW-10(M)	12/13/2002	821	4.26	16.32	np	10.21	0	6.11		
MW-10(M)	1/14/2003	1048	3.45	16.32	np	9.62	0	6.70		
MW-10(M)	2/12/2003	1051	2.12	16.32	np	9.91	0	6.41		
MW-10(M)	3/13/2003	948	3.86	16.32	np	9.4	0	6.92		
MW-10(M)	4/14/2003	1118	4.35	16.32	np	9.1	0	7.22		
MW-10(M)	5/15/2003	1019	1.15	16.32	np	10.38	0	5.94		
MW-10(M)	6/17/2003	1413	0.45	16.32	np	10.41	0	5.91		
MW-10(M)	7/14/2003	1141	0.11	16.32	np	10.75	0	5.57		
MW-10(M)	8/13/2003	1333	3	16.32	np	10.77	0	5.55		
MW-10(M)	9/12/2003	1348	3.2	16.32	np	10.95	0	5.37		
MW-10(M)	10/13/2003	950	-1.55	16.32	np	10.88	0	5.44		
MW-10(M)	10/15/2003	1500	3.78	16.32	np	10.85	0	5.47		
MW-10(M)	11/12/2003	1334	3.65	16.32	np	10.67	0	5.65		
MW-10(M)	12/16/2003	1027	1.46	16.32	np	9.68	0	6.64		
MW-10(M)	1/11/2004	1410	4.01	16.32	np	9.32	0	7.00		
MW-10(M)	1/13/2004	1050	-1.76	16.32	np	9.55	0	6.77		
MW-10(M)	2/12/2004	1305	-3.4	16.32	np	9.95	0	6.37		
MW-11(M)	8/28/2002	1420	1.05	16.34	np	10.87	0	5.47	19.81	
MW-11(M)	9/12/2002	1000	-2.84	16.34	np	10.8	0	5.54		
MW-11(M)	9/13/2002	1531	1.12	16.34	np	10.83	0	5.51		
MW-11(M)	10/11/2002	1108	-2.45	16.34	np	11.01	0	5.33	19.83	
MW-11(M)	11/15/2002	949	3.5	16.34	np	10.37	0	5.97		
MW-11(M)	12/13/2002	829	4.26	16.34	np	9.94	0	6.40		

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Astoria, Oregon

Locator ID	Date	Time	Observed Tide Levels (Tongue Pt)	Top of Casing (feet MSL)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Corrected Water Elevation (feet)	Depth to Bottom (feet)	Slip 2 Seep Observations
MW-11(M)	1/14/2003	1057	3.45	16.34	np	9.08	0	7.26		
MW-11(M)	2/12/2003	1058	2.12	16.34	np	9.25	0	7.09		
MW-11(M)	3/13/2003	958	3.86	16.34	np	8.71	0	7.63		
MW-11(M)	4/14/2003	1127	4.35	16.34	np	8.86	0	7.48		
MW-11(M)	5/15/2003	1028	1.15	16.34	np	9.79	0	6.55		
MW-11(M)	6/17/2003	1422	0.45	16.34	np	10.02	0	6.32		
MW-11(M)	7/14/2003	1149	0.11	16.34	np	10.39	0	5.95		
MW-11(M)	8/13/2003	1340	3	16.34	np	10.41	0	5.93		
MW-11(M)	9/12/2003	1353	3.2	16.34	np	10.6	0	5.74		
MW-11(M)	10/13/2003	956	-1.55	16.34	np	10.72	0	5.62		
MW-11(M)	10/15/2003	1720	2.7	16.34	np	10.41	0	5.93		
MW-11(M)	11/12/2003	1341	3.65	16.34	np	10.29	0	6.05		Slight Odor
MW-11(M)	12/16/2003	1019	1.46	16.34	np	9.27	0	7.07		
MW-11(M)	1/11/2004	1414	4.01	16.34	np	8.73	0	7.61		
MW-11(M)	1/13/2004	1235	-0.61	16.34	np	9.21	0	7.13		slight sheen
MW-11(M)	2/12/2004	1311	-3.4	16.34	np	9.43	0	6.91		
MW-12(A)	10/13/2003	1152	1.5	30.58	np	20.00	0	10.58	25.38	
MW-12(A)	10/22/2003	955	3.54	30.58	np	19.61	0	10.97		
MW-12(A)	11/12/2003	1116	0.56	30.58	np	18.87	0	11.71		
MW-12(A)	12/16/2003	1345	0.34	30.58	np	15.44	0	15.14		
MW-12(A)	1/11/2004	1616	4.26	30.58	np	14.76	0	15.82		
MW-12(A)	1/15/2004	940	0.81	30.58	np	14.70	0	15.88		
MW-12(A)	2/12/2004	932	-2.53	30.58	np	14.26	0	16.32		
MW-13(A)	10/13/2003	1157	1.5	31.36	np	22.68	0	8.68	26.42	
MW-13(A)	10/22/2003	1130	3.62	31.36	np	22.34	0	9.02		Odor
MW-13(A)	11/12/2003	1122	0.56	31.36	np	22.14	0	9.22		
MW-13(A)	12/16/2003	1352	0.34	31.36	np	18.41	0	12.95		
MW-13(A)	1/11/2004	1620	4.26	31.36	np	17.39	0	13.97		
MW-13(A)	1/15/2004	1130	-1.98	31.36	np	17.28	0	14.08		

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Locator ID	Date	Time	Observed Tide Levels (Tongue Pt)	Top of Casing (feet MSL)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Corrected Water Elevation (feet)	Depth to Bottom (feet)	Slip 2 Seep Observations
MW-13(A)	2/12/2004	937	-2.53	31.86	np	16.71	0	15.15		
MW-14(A)	10/13/2003	1203	1.5	23.39	np	15.06	0	8.33	18.81	
MW-14(A)	10/21/2003	1645	-1.5	23.39	np	14.7	0	8.69		
MW-14(A)	11/12/2003	1056	0.56	23.39	np	14.55	0	8.84		Iron
MW-14(A)	12/16/2003	1336	0.34	23.39	np	12.01	0	11.38		
MW-14(A)	1/11/2004	1624	4.26	23.39	np	11.47	0	11.92		
MW-14(A)	1/15/2004	1250	-2.74	23.39	np	11.41	0	11.98		Iron
MW-14(A)	2/12/2004	1106	-3.59	23.39	np	11.07	0	12.32		
MW-15(A)	10/13/2003	1116	-0.1	16.95	np	9.08	0	7.87	14.81	
MW-15(A)	10/20/2003	1340	0.06	16.95	np	8.87	0	8.08		
MW-15(A)	11/12/2003	1026	-0.65	16.95	np	8.58	0	8.37		
MW-15(A)	12/16/2003	1239	-0.3	16.95	np	6.35	0	10.60		
MW-15(A)	1/11/2004	1529	4.58	16.95	5.77	5.8	0.03	11.18		
MW-15(A)	2/12/2004	1058	-3.59	16.95	5.41	5.9	0.49	11.48		Strong Odor
MW-16(A)	10/13/2003	1111	-0.1	16.48	np	8.59	0	7.89	15.21	
MW-16(A)	10/20/2003	1510	-0.31	16.48	np	8.39	0	8.09		
MW-16(A)	11/12/2003	1035	0.56	16.48	np	8.18	0	8.30		
MW-16(A)	12/16/2003	1224	-0.19	16.48	np	6.51	0	9.97		possible sheen
MW-16(A)	1/11/2004	1523	4.58	16.48	np	6.05	0	10.43		iron
MW-16(A)	1/19/2004	930	5.44	16.48	np	6.04	0	10.44		
MW-16(A)	2/12/2004	1110	-3.59	16.48	np	5.81	0	10.67		
MW-17(A)	10/13/2003	1125	-0.1	15.69	np	8.37	0	7.32	15.35	
MW-17(A)	10/17/2003	1240	1.23	15.69	np	8.31	0	7.38		
MW-17(A)	11/12/2003	1020	-0.65	15.69	np	7.88	0	7.81		
MW-17(A)	12/16/2003	1245	-0.3	15.69	np	5.7	0	9.99		
MW-17(A)	1/11/2004	1540	4.26	15.69	np	5	0	10.69		
MW-17(A)	1/19/2004	1130	4.2	15.69	np	5	0	10.69		

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 Astoria, Oregon

Locator ID	Date	Time	Observed Tide Levels (Tongue Pt)	Top of Casing (feet MSL)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Corrected Water Elevation (feet)	Depth to Bottom (feet)	Slip 2 Seep Observations
MW-17(A)	2/12/2004	1047	-3.59	15.69	np	4.66	0	11.03		
MW-18(A)	10/13/2003	1117	-0.1	16.23	np	8.85	0	7.38	15.36	
MW-18(A)	10/21/2003	1300	0.89	16.23	np	8.58	0	7.65		
MW-18(A)	11/12/2003	1042	0.56	16.23	np	8.39	0	7.84		Possible Sheen
MW-18(A)	12/16/2003	1234	-0.3	16.23	np	6.38	0	9.85		
MW-18(A)	1/19/2004	1040	5.35	16.23	np	5.74	0	10.49		
MW-18(A)	2/12/2004	1052	-3.59	16.23	np	5.42	0	10.81		
MW-19(A)	10/13/2003	1049	-0.1	17.98	np	10.59	0	7.39	15.3	
MW-19(A)	10/20/2003	1050	2.89	17.98	np	10.43	0	7.55		
MW-19(A)	11/12/2003	1145	1.93	17.98	np	10.18	0	7.80		
MW-19(A)	1/13/2004	1515	1.91	17.98	np	7.99	0	9.99		
MW-19(A)	2/12/2004	1122	-3.59	17.9	np	7.66	0	10.24		
MW-20(A)	10/13/2003	1047	-0.1	17.04	np	10.03	0	7.01	15.39	
MW-20(A)	10/20/2003	1210	1.9	17.04	np	9.88	0	7.16		
MW-20(A)	11/12/2003	1150	1.93	17.04	np	9.65	0	7.39		Iron
MW-20(A)	12/16/2003	1410	0.34	17.04	np	8.03	0	9.01		Iron
MW-20(A)	1/11/2004	1510	4.58	17.04	np	7.41	0	9.63		
MW-20(A)	1/13/2004	1630	3.15	17.04	np	7.44	0	9.60		Iron
MW-20(A)	2/12/2004	1126	-3.59	17.04	np	7.11	0	9.93		
MW-21(A)	10/13/2003	1035	-0.1	15.90	np	9.22	0	6.68	15.35	
MW-21(A)	10/20/2003	940	3.26	15.90	np	9.11	0	6.79		
MW-21(A)	11/12/2003	1156	1.93	15.90	np	8.91	0	6.99		
MW-21(A)	12/16/2003	1216	-0.19	15.90	np	7.49	0	8.41		Iron
MW-21(A)	1/11/2004	1503	4.58	15.90	np	6.9	0	9.00		
MW-21(A)	1/13/2004	1355	0.66	15.90	np	6.89	0	9.01		
MW-21(A)	2/12/2004	1135	-3.92	15.90	np	6.66	0	9.24		

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Locator ID	Date	Time	Observed Tide Levels (Tongue Pt)	Top of Casing (feet MSL)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Corrected Water Elevation (feet)	Depth to Bottom (feet)	Slip 2 Seep Observations
MW-22(A)	10/13/2003	1037	-0.1	16.13	np	9.24	0	6.89	15.08	
MW-22(A)	10/16/2003	940	0.09	16.13	np	9.21	0	6.92		
MW-22(A)	11/12/2003	1203	1.93	16.13	np	8.8	0	7.33		
MW-22(A)	12/16/2003	1048	0.48	16.13	np	6.91	0	9.22		
MW-22(A)	1/19/2004	815	3.22	16.13	np	6.15	0	9.98		
MW-23(A)	10/13/2003	1137	1.5	16.22	np	8.86	0	7.36	14.93	
MW-23(A)	10/20/2003	1630	0.49	16.22	np	8.71	0	7.51		
MW-23(A)	11/12/2003	1013	-0.65	16.22	np	8.3	0	7.92		
MW-23(A)	12/16/2003	1250	-0.3	16.22	np	5.36	0	10.86		
MW-23(A)	1/11/2004	1543	4.26	16.22	np	4.57	0	11.65		
MW-23(A)	1/15/2004	1745	1.31	16.22	np	4.47	0	11.75		
MW-23(A)	2/12/2004	1041	-3.59	16.22	np	4.09	0	12.13		
MW-24(A)	10/13/2003	1154	1.5	16.56	np	9.15	0	7.41	14.87	
MW-24(A)	10/21/2003	1430	-1.43	16.56	np	8.52	0	8.04		
MW-24(A)	11/12/2003	942	-0.65	16.56	np	8.17	0	8.39		
MW-24(A)	12/16/2003	1304	-0.3	16.56	np	4.45	0	12.11		
MW-24(A)	1/11/2004	1547	4.26	16.56	np	3.96	0	12.60		
MW-24(A)	1/15/2004	1630	0.29	16.56	np	3.85	0	12.71		
MW-24(A)	2/12/2004	1022	-2.53	16.56	np	4.05	0	12.51		Iron
MW-26(A)	10/13/2003	1150	1.5	16.27	np	9.14	0	7.13	15.35	
MW-26(A)	10/17/2003	1600	3.29	16.27	np	9.09	0	7.18		
MW-26(A)	11/12/2003	947	-0.65	16.27	np	8.46	0	7.81		
MW-26(A)	12/16/2003	1259	-0.3	16.27	np	5.51	0	10.76		
MW-26(A)	1/11/2004	1548	4.26	16.27	np	4.69	0	11.58		
MW-26(A)	1/15/2004	1600	-0.91	16.27	np	4.65	0	11.62		
MW-26(A)	2/12/2004	1026	-2.53	16.27	np	4.43	0	11.84		
MW-27(A)	10/13/2003	1213	1.5	16.36	np	9.26	0	7.10	15.24	

TABLE 1

GROUND-WATER ELEVATIONS

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Date	Time	Observed Tide Levels (Tongue Pt)	Top of Casing (feet MSL)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Corrected Water Elevation (feet)	Depth to Bottom (feet)	Slip 2 Seep Observations
MW-27(A)	10/21/2003	905	2.61	16.36	np	9.02	0	7.34		
MW-27(A)	11/12/2003	1000	-0.65	16.36	np	8.54	0	7.82		Slight Odor
MW-27(A)	12/16/2003	1329	-0.3	16.36	np	5.74	0	10.62		
MW-27(A)	1/11/2004	1556	4.26	16.36	np	4.96	0	11.40		
MW-27(A)	1/14/2004	1625	1.19	16.36	np	4.95	0	11.41		
MW-27(A)	2/12/2004	1007	-2.53	16.36	np	4.72	0	11.64		
MW-28(A)	10/13/2003	1130	1.5	16.13	np	9.05	0	7.08	15.36	
MW-28(A)	10/17/2003	1415	1.92	16.13	np	9.01	0	7.12		
MW-28(A)	11/12/2003	1007	-0.65	16.13	np	8.51	0	7.62		Slight Odor
MW-28(A)	12/16/2003	1254	-0.3	16.13	np	6.12	0	10.01		Sheen on Cap
MW-28(A)	1/11/2004	1550	4.26	16.13	np	5.31	0	10.82		
MW-28(A)	1/19/2004	1450	-1.95	16.13	np	5.25	0	10.88		
MW-28(A)	2/12/2004	1033	-3.59	16.13	np	4.91	0	11.22		
MW-29(A)	10/13/2003	1202	1.5	15.84	np	9.88	0	5.96	15.37	
MW-29(A)	10/21/2003	1550	-1.89	15.84	np	8.69	0	7.15		
MW-29(A)	11/12/2003	934	-0.65	15.84	np	8.33	0	7.51		Odor
MW-29(A)	12/16/2003	1309	-0.3	15.84	np	6.02	0	9.82		
MW-29(A)	1/11/2004	1552	4.26	15.84	np	5.21	0	10.63		
MW-29(A)	1/19/2004	1600	-3.67	15.84	np	5.13	0	10.71		
MW-29(A)	2/12/2004	1014	-2.53	15.84	np	4.8	0	11.04		
MW-30(A)	10/13/2003	1000	-1.55	16.67	np	9.91	0	6.76	15.11	
MW-30(A)	10/16/2003	820	1.18	16.67	np	9.9	0	6.77		
MW-30(A)	11/12/2003	1221	1.93	16.67	np	9.42	0	7.25		Possible slight odor
MW-30(A)	12/16/2003	1201	-0.19	16.67	np	7.49	0	9.18		
MW-30(A)	1/11/2004	1452	4.58	16.67	np	6.72	0	9.95		
MW-30(A)	1/16/2004	1400	-3.33	16.67	np	6.65	0	10.02		
MW-30(A)	2/12/2004	1150	-3.92	16.67	np	6.34	0	10.33		

TABLE 1

GROUND-WATER ELEVATIONS

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Date	Time	Observed Tide Levels (Tongue Pt)	Top of Casing (feet MSL)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Corrected Water Elevation (feet)	Depth to Bottom (feet)	Slip 2 Seep Observations
MW-31(A)	10/13/2003	950	-1.55	16.23	np	9.81	0	6.42	15.31	
MW-31(A)	10/16/2003	1350	2.65	16.23	np	9.77	0	6.46		
MW-31(A)	11/12/2003	1210	1.93	16.23	np	9.48	0	6.75		Iron
MW-31(A)	12/16/2003	1207	-0.19	16.23	np	7.97	0	8.26		
MW-31(A)	1/11/2004	1456	4.58	16.23	np	7.33	0	8.90		
MW-31(A)	1/12/2004	1615	4	16.23	np	7.36	0	8.87		
MW-31(A)	2/12/2004	1141	-3.92	16.23	np	7.12	0	9.11		Iron
MW-32(A)	10/13/2003	944	-1.55	16.51	np	10.43	0	6.08	15.36	
MW-32(A)	10/14/2003	1350	3.21	16.51	np	10.41	0	6.10		
MW-32(A)	11/12/2003	1316	3.06	16.51	np	10.07	0	6.44		
MW-32(A)	12/16/2003	1039	0.48	16.51	np	8.84	0	7.67		
MW-32(A)	1/11/2004	1419	4.01	16.51	np	8.21	0	8.30		
MW-32(A)	1/12/2004	1525	3.66	16.51	np	8.3	0	8.21		
MW-32(A)	2/12/2004	1241	-3.4	16.51	np	8.5	0	8.01		
MW-33(A)	10/13/2003	937	-1.55	16.14	np	10.87	0	5.27	17.31	
MW-33(A)	10/14/2003	838	-2.15	16.14	np	10.7	0	5.44		
MW-33(A)	11/12/2003	1328	3.06	16.14	np	10.33	0	5.81		
MW-33(A)	12/16/2003	1034	0.48	16.14	np	9.47	0	6.67		
MW-33(A)	1/11/2004	1416	4.01	16.14	np	8.92	0	7.22		
MW-33(A)	1/12/2004	1425	2.64	16.14	np	9.23	0	6.91		
MW-34(A)	10/13/2003	1003	-1.55	15.83	np	9.59	0	6.24	15.35	
MW-34(A)	10/15/2003	930	-0.99	15.83	np	9.57	0	6.26		
MW-34(A)	11/12/2003	1308	3.06	15.83	np	9.3	0	6.53		
MW-34(A)	12/16/2003	1054	0.48	15.83	np	7.91	0	7.92		
MW-34(A)	1/11/2004	1429	4.01	15.83	np	7.28	0	8.55		
MW-34(A)	1/13/2004	830	-0.07	15.83	np	7.31	0	8.52		
MW-34(A)	2/12/2004	1236	-3.4	15.83	np	7.21	0	8.62		

TABLE 1

GROUND-WATER ELEVATIONS

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Date	Time	Observed Tide Levels (Tongue Pt)	Top of Casing (feet MSL)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Corrected Water Elevation (feet)	Depth to Bottom (feet)	Slip 2 Seep Observations
MW-35(A)	10/13/2003	1007	-1.55	16.50	np	9.9	0	6.60	15.32	
MW-35(A)	10/16/2003	1115	0.27	16.50	np	9.86	0	6.64		
MW-35(A)	11/12/2003	1228	1.93	16.50	np	9.47	0	7.03		
MW-35(A)	12/16/2003	1154	-0.19	16.50	np	7.7	0	8.80		
MW-35(A)	1/11/2004	1449	4.58	16.50	np	6.95	0	9.55		
MW-35(A)	1/16/2004	1230	-2.45	16.50	np	6.87	0	9.63		
MW-35(A)	2/12/2004	1236	-3.4	16.50	np	6.53	0	9.97		
MW-36(A)	10/13/2003	1124	-0.1	16.14	np	8.96	0	7.18	15.36	
MW-36(A)	10/21/2003	1130	2.25	16.14	np	8.78	0	7.36		
MW-36(A)	11/12/2003	926	-1.42	16.14	np	8.41	0	7.73		
MW-36(A)	12/16/2003	1322	-0.3	16.14	np	5.74	0	10.40		
MW-36(A)	1/11/2004	1605	4.26	16.14	np	5.67	0	10.47		
MW-36(A)	1/14/2004	1500	0.02	16.14	np	4.63	0	11.51		
MW-36(A)	2/12/2004	1002	-2.53	16.14	np	4.19	0	11.95		
MW-37(A)	10/13/2003	1011	-1.55	18.22	np	11.31	0	6.91	15.41	
MW-37(A)	10/17/2003	810	1.8	18.22	np	11.23	0	6.99		
MW-37(A)	11/12/2003	1242	3.06	18.22	np	10.83	0	7.39		
MW-37(A)	12/16/2003	1146	-0.19	18.22	8.39	8.4	0.01	9.83		
MW-37(A)	1/11/2004	1447	4.58	18.22	7.32	7.33	0.01	10.90		
MW-37(A)	2/12/2004	1159	-3.92	18.22	np	6.7	0	11.52		Strong Odor
MW-38(A)	10/13/2003	1130	1.5	17.20	np	8.95	0	8.25	15.38	
MW-38(A)	10/21/2003	1040	3.15	17.20	np	8.53	0	8.67		
MW-38(A)	11/12/2003	919	-1.42	17.20	np	8.33	0	8.87		
MW-38(A)	12/16/2003	1314	-0.3	17.20	np	5.21	0	11.99		
MW-38(A)	1/11/2004	1609	4.26	17.20	np	4.26	0	12.94		
MW-38(A)	1/14/2004	810	2.72	17.20	np	4.4	0	12.80		
MW-38(A)	2/12/2004	954	-2.53	17.20	np	3.72	0	13.48		

TABLE 1

GROUND-WATER ELEVATIONS

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Date	Time	Observed Tide Levels (Tongue Pt)	Top of Casing (feet MSL)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Corrected Water Elevation (feet)	Depth to Bottom (feet)	Slip 2 Seep Observations
MW-39(A)	10/13/2003	1025	-1.55	17.29	np	9.3	0	7.99	15.41	
MW-39(A)	10/16/2003	1540	3.64	17.29	np	9.22	0	8.07		
MW-39(A)	12/16/2003	1104	0.48	17.29	np	5.79	0	11.50		
MW-39(A)	1/11/2004	1435	4.01	17.29	np	4.71	0	12.58		
MW-39(A)	1/16/2004	925	3.77	17.29	np	4.65	0	12.64		
MW-39(A)	2/12/2004	1225	-3.92	17.29	np	4.21	0	13.08		
MW-40(A)	10/13/2003	1025	-1.55	16.17	np	9.56	0	6.61	15.42	
MW-40(A)	10/17/2003	935	0.7	16.17	np	9.51	0	6.66		
MW-40(A)	11/12/2003	1235	3.06	16.17	9.18	9.27	0.09	6.98		pumped out
MW-40(A)	12/16/2003	1138	-0.19	16.17	np	7.45	0	8.72		
MW-40(A)	1/11/2004	1444	4.58	16.17	np	6.68	0	9.49		
MW-40(A)	1/20/2004	800	1.34	16.17	np	6.64	0	9.53		
MW-40(A)	2/12/2004	1211	-3.92	16.17	np	6.24	0	9.93		Odor
MW-41(A)	10/13/2003	907	-2.52	15.67	np	9.23	0	6.44	15.35	
MW-41(A)	10/14/2003	1540	2.91	15.67	np	9.25	0	6.42		sheen
MW-41(A)	11/12/2003	1417	3.65	15.67	np	8.91	0	6.76		
MW-41(A)	12/16/2003	937	1.46	15.67	np	7.39	0	8.28		Odor
MW-41(A)	1/11/2004	1342	4.01	15.67	np	6.72	0	8.95		odor
MW-41(A)	1/16/2004	1125	0.54	15.67	np	7.12	0	8.55		Product globules in baile
MW-41(A)	2/12/2004	1400	-2.19	15.67	6.41	6.71	0.3	9.22		Odor
MW-42(A)	10/13/2003	859	-2.52	15.91	np	9.39	0	6.52	15.37	
MW-42(A)	10/15/2003	1100	-0.18	15.91	np	9.38	0	6.53		sheen
MW-42(A)	11/12/2003	1408	3.65	15.91	np	9.06	0	6.85		
MW-42(A)	12/16/2003	925	2.67	15.91	np	7.52	0	8.39		
MW-42(A)	1/11/2004	1340	4.01	15.91	6.83	6.9	0.07	9.07		
MW-42(A)	2/12/2004	1352	-2.19	15.91	6.41	7.47	1.06	9.36		
MW-43(A)	10/13/2003	857	-2.52	15.94	np	9.07	0	6.87	15.35	

TABLE 1

GROUND-WATER ELEVATIONS

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Date	Time	Observed Tide Levels (Tongue Pt)	Top of Casing (feet MSL)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Corrected Water Elevation (feet)	Depth to Bottom (feet)	Slip 2 Seep Observations
MW-43(A)	10/13/2003	1645	0.78	15.94	np	9.01	0	6.93		
MW-43(A)	11/12/2003	1403	3.65	15.94	np	8.74	0	7.20		
MW-43(A)	12/16/2003	930	1.46	15.94	np	6.97	0	8.97		
MW-43(A)	1/11/2004	1337	4.01	15.94	np	6.24	0	9.70		
MW-43(A)	1/12/2004	1053	-1.03	15.94	np	6.33	0	9.61		
MW-43(A)	2/12/2004	1347	-2.19	15.94	np	6	0	9.94		
MW-44(A)	10/13/2003	1010	-1.55	15.31	np	8.22	0	7.09	15.41	
MW-44(A)	10/17/2003	1135	0.72	15.31	np	8.17	0	7.14		
MW-44(A)	11/12/2003	1302	3.06	15.31	np	7.95	0	7.36		
MW-44(A)	12/16/2003	1132	-0.19	15.31	5.88	6.02	0.14	9.41		
MW-44(A)	1/11/2004	1442	4.58	15.31	5.1	5.24	0.14	10.19		
MW-44(A)	2/12/2004	1217	-3.92	15.31	4.15	4.34	0.19	11.14		Odor
MW-45(A)	10/13/2003	1018	-1.55	17.32	np	9.92	0	7.40	17.16	
MW-45(A)	10/16/2003	1730	2.55	17.32	np	9.81	0	7.51		
MW-45(A)	11/12/2003	1256	3.06	17.32	np	9.13	0	8.19		
MW-45(A)	12/16/2003	1114	0.48	17.32	np	6.41	0	10.91		
MW-45(A)	1/11/2004	1440	4.58	17.32	np	5.39	0	11.93		
MW-45(A)	1/16/2004	1110	0.54	17.32	np	5.27	0	12.05		
MW-45(A)	2/12/2004	1229	-3.92	17.32	np	4.44	0	12.88		
MW-46(A)	10/13/2003	919	-2.52	16.00	np	7.46	0	8.54	15.34	
MW-46(A)	10/14/2003	1015	-1.65	16.00	np	7.38	0	8.62		
MW-46(A)	11/12/2003	857	-1.42	16.00	np	6.64	0	9.36		
MW-46(A)	12/16/2003	837	2.67	16.00	np	3.2	0	12.80		
MW-46(A)	1/11/2003	1318	2.89	16.00	np	2.47	0	13.53		
MW-46(A)	1/14/2004	1020	-0.22	16.00	np	2.9	0	13.10		
MW-46(A)	2/12/2004	901	-1.02	16.00	np	2.26	0	13.74		
MW-47(A)	10/13/2003	907	-2.52	16.39	np	8.42	0	7.97	15.37	

TABLE 1

GROUND-WATER ELEVATIONS

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Date	Time	Observed Tide Levels (Tongue Pt)	Top of Casing (feet MSL)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Corrected Water Elevation (feet)	Depth to Bottom (feet)	Slip 2 Seep Observations
MW-47(A)	10/13/2003	1745	-1.15	16.39	np	8.39	0	8.00		
MW-47(A)	11/12/2003	911	-1.42	16.39	np	7.65	0	8.74		
MW-47(A)	12/16/2003	851	2.67	16.39	np	4.81	0	11.58		
MW-47(A)	1/11/2004	1328	2.89	16.39	np	4.03	0	12.36		
MW-47(A)	1/14/2004	1230	-2.08	16.39	np	4.35	0	12.04		
MW-47(A)	2/12/2004	923	-1.02	16.39	np	3.82	0	12.57		
MW-48(A)	10/13/2003	915	-2.52	16.21	np	8.51	0	7.70	15.88	
MW-48(A)	10/14/2003	1215	0.87	16.21	np	8.48	0	7.73		
MW-48(A)	11/12/2003	905	-1.42	16.21	np	7.9	0	8.31		
MW-48(A)	12/16/2003	844	2.67	16.21	np	5.65	0	10.56		
MW-48(A)	1/11/2004	1325	2.89	16.21	np	4.97	0	11.24		
MW-48(A)	1/14/2004	1130	-1.44	16.21	np	5.25	0	10.96		
MW-48(A)	2/12/2004	910	-1.02	16.21	np	4.8	0	11.41		Iron
R-1(M)	10/22/2003	1340	0.58	13.77	np	4.55	0	9.22		
R-1(M)	11/12/2003	1449	3.39	13.77	np	5.06	0	8.71		
R-1(M)	12/16/2003	948	1.46	13.77	np	3.51	0	10.26		
R-1(M)	1/11/2004	1352	4.01	13.77	np	2.87	0	10.90		
Pier2(A)	12/16/2003	1628	1.91	17.37	np	10.51	0	6.86		
Pier2(A)	1/11/2004	1425	4.01	17.37	np	8.33	0	9.04		
Pier2(A)	2/12/2004	1453	-0.76	17.37	np	13.37	0	4.00		

Note:

Elevation datum used from November 2003 survey

TABLE 2
CHEMICALS DETECTED IN GROUND WATER
1st QUARTER 2004

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Chemical	Total Number of Analyses	Number of Analyses with a Detection	Frequency of Detection (Percent)	Maximum Value (ug/L)
Diesel Range Organics	37	14	38	9.38
Gasoline Range Organics	37	24	65	62,000
Heavy Oil Range Organics	37	4	11	0.92
1,2,4-Trimethylbenzene	37	19	51	3170
1,3,5-Trimethylbenzene	37	14	38	682
Benzene	37	24	65	1390
Ethylbenzene	37	29	78	2640
Isopropylbenzene	37	23	62	225
n-Propylbenzene	37	26	70	676
Toluene	37	15	41	8170
Xylenes	37	20	54	13,500
Acenaphthene	37	15	41	0.632
Anthracene	37	1	3	0.0715
Benzo(a)anthracene	37	2	5	0.0114
Benzo(a)pyrene	37	1	3	0.0105
Benzo(b)fluoranthene	37	1	3	0.0124
Chrysene	37	4	11	0.0144
Fluorene	37	14	38	1.04
Naphthalene	37	30	81	1310
Phenanthrene	37	9	24	1.11
Arsenic	37	29	78	30.7
Arsenic, Dissolved	2	2	100	26.4
Barium	37	37	100	67
Barium, Dissolved	2	2	100	60.9
Cadmium	37	2	5	0.25
Chromium	37	20	54	16.5
Lead	37	26	70	148
Lead, Dissolved	2	1	50	0.37
Mercury	37	8	22	0.33
Selenium	37	17	46	4.41
Selenium, Dissolved	2	1	50	1.41
Silver	37	2	5	0.08
Silver, Dissolved	2	1	50	0.07
Calcium	37	14	100	131
Chloride	37	14	100	16.5
Iron	37	14	100	48.3
Magnesium	37	14	100	28.1
Manganese	37	14	100	2.32

TABLE 3
DATA QUALIFIER DEFINITIONS

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

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

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

J+ The analyte was positively identified; the associated numerical value appears to be bias high.

J- The analyte was positively identified; the associated numerical value appears to be bias low.

UJ- The analyte was not detected above the reporting limit. However, the reporting limit appears to be bias low and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

C Common laboratory contaminant

B The analyte was also identified in a field or laboratory blank associated with this sample or sample group.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

TABLE 4
PETROLEUM HYDROCARBONS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Diesel Range Organics	Gasoline Range Organics	Residual Range Organics
			ug/L	ug/L	ug/L
MW-1(F)	MW-1(F)	10/22/2003	250 U	94	500 U
MW-1(F)	MW-1 (F)	1/15/2004	171 J	408	500 U
MW-2(M)	MW-2(M)	6/19/2003	2900	9440	500 U
MW-2(M)	MW-2 (M)	10/15/2003	3260	4510	1670
MW-2(M)	MW-2 (M)	1/12/2004	1340	628	500 U
MW-6(M)	MW-6(M)	6/19/2003	250 U	457	500 U
MW-6(M)	MW-6(M)	10/22/2003	179 J	80 U	500 U
MW-6(M)	MW-6 (M)	1/12/2004	250 U	80 U	500 U
MW-7(M)	BM-7(M)	6/19/2003	250 U	80 U	500 U
MW-7(M)	MW-7(M)	6/19/2003	250 U	80 U	500 U
MW-7(M)	MW-7(M)	10/13/2003	307	80 U	500 U
MW-7(M)	MW-7 (M)	1/12/2004	756	80 U	500 U
MW-10(M)	MW-10(M)	6/19/2003	1430	2400	500 U
MW-10(M)	MW-10 (M)	10/15/2003	1790	3360	302 J
MW-10(M)	MW-10 (M)	1/13/2004	1590	2570	500 U
MW-11(M)	MW-11(M)	6/19/2003	250 U	179	500 U
MW-11(M)	MW-11 (M)	10/15/2003	250 U	652	500 U
MW-11(M)	MW-11 (M)	1/13/2004	500	219	500 U
MW-12(A)	MW-12(A)	10/22/2003	250 U	60.1 J	500 U
MW-12(A)	MW-12 (A)	1/15/2004	250 U	80 U	500 U
MW-13(A)	MW-13(A)	10/22/2003	250 U	10100	500 U
MW-13(A)	MW-13 (A)	1/15/2004	1310	15300	658
MW-14(A)	MW-14(A)	10/21/2003	250 U	71.8 J	500 U
MW-14(A)	MW-14 (A)	1/15/2004	250 U	80 U	500 U
MW-15(A)	MW-15(A)	10/20/2003	250 U	2550	500 U
MW-16(A)	MW-16(A)	10/20/2003	250 U	457	425 J
MW-16(A)	MW-16(A)	1/19/2004	250 U	141	500 U
MW-17(A)	MW-17 (A)	10/17/2003	250 U	740	500 U
MW-17(A)	BM-17(A)	1/19/2004	250 U	1050	500 U
MW-17(A)	MW-17(A)	1/19/2004	250 U	778	500 U

TABLE 4
PETROLEUM HYDROCARBONS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Diesel Range Organics	Gasoline Range Organics	Residual Range Organics
			ug/L	ug/L	ug/L
MW-18(A)	MW-18(A)	10/21/2003	936	1280	2180
MW-18(A)	MW-18(A)	1/19/2004	807	830	500 U
MW-19(A)	BM-19(A)	10/20/2003	176 J	80 U	500 U
MW-19(A)	MW-19(A)	10/20/2003	180 J	80 U	500 U
MW-19(A)	MW-19 (A)	1/13/2004	250 U	80 U	500 U
MW-20(A)	MW-20(A)	10/20/2003	1370	1400	710
MW-20(A)	MW-20 (A)	1/13/2004	927	979	918
MW-21(A)	MW-21(A)	10/20/2003	1460	753	500 U
MW-21(A)	BM-21 (A)	1/13/2004	644	186	500 U
MW-21(A)	MW-21 (A)	1/13/2004	799	309	500 U
MW-22(A)	MW-22 (A)	10/16/2003	250 U	140	500 U
MW-22(A)	MW-22(A)	1/19/2004	250 U	80 U	500 U
MW-23(A)	MW-23(A)	10/20/2003	250 U	80 U	500 U
MW-23(A)	MW-23 (A)	1/15/2004	250 U	61.7 J	500 U
MW-24(A)	MW-24(A)	10/21/2003	250 U	376	500 U
MW-24(A)	MW-24 (A)	1/15/2004	250 U	4050	500 U
MW-26(A)	MW-26 (A)	10/17/2003	250 U	8050	500 U
MW-26(A)	MW-26 (A)	1/15/2004	250 U	24800	500 U
MW-27(A)	MW-27(A)	10/21/2003	250 U	99	500 U
MW-27(A)	MW-27 (A)	1/14/2004	250 U	173	500 U
MW-28(A)	MW-28 (A)	10/17/2003	2130	2060	500 U
MW-28(A)	MW-28(A)	1/19/2004	250 U	13800	500 U
MW-29(A)	MW-29(A)	10/21/2003	4120	60200	500 U
MW-29(A)	MW-29(A)	1/19/2004	250 U	62000	310 J
MW-30(A)	MW-30 (A)	10/16/2003	250 U	14700	500 U
MW-30(A)	MW-30 (A)	1/16/2004	250 U	9570	500 U
MW-31(A)	BM-31 (A)	10/16/2003	250 U	7390	500 U
MW-31(A)	MW-31 (A)	10/16/2003	250 U	7200	500 U

TABLE 4
PETROLEUM HYDROCARBONS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Diesel Range Organics ug/L	Gasoline Range Organics ug/L	Residual Range Organics ug/L
MW-31(A)	MW-31 (A)	1/12/2004	1100	5220	500 U
MW-32(A)	MW-32(A)	10/14/2003	250 U	80 U	500 U
MW-32(A)	MW-32 (A)	1/12/2004	250 U	80 U	500 U
MW-33(A)	MW-33(A)	10/14/2003	250 U	70 J	500 U
MW-33(A)	MW-33 (A)	1/12/2004	250 U	276	500 U
MW-34(A)	MW-34(A)	10/14/2003	250 U	80 U	500 U
MW-34(A)	MW-34 (A)	1/13/2004	250 U	80 U	500 U
MW-35(A)	MW-35 (A)	10/16/2003	250 U	80 U	500 U
MW-35(A)	MW-35 (A)	1/16/2004	250 U	80 U	500 U
MW-36(A)	MW-36(A)	10/21/2003	250 U	80 U	500 U
MW-36(A)	MW-36 (A)	1/14/2004	250 U	80 U	500 U
MW-37(A)	MW-37 (A)	10/17/2003	174 J	1350	500 U
MW-38(A)	MW-38(A)	10/21/2003	250 U	80 U	500 U
MW-38(A)	MW-38 (A)	1/14/2004	250 U	80 U	500 U
MW-39(A)	MW-39 (A)	10/16/2003	1250	518	500 U
MW-39(A)	MW-39 (A)	1/16/2004	806	291	500 U
MW-40(A)	MW-40 (A)	10/17/2003	3660	8270	500 U
MW-40(A)	MW-40(A)	1/20/2004	9380	31400	598
MW-41(A)	MW-41(A)	10/14/2003	4700	7700	319 J
MW-42(A)	MW-42 (A)	10/15/2003	5740	18900	2500 U
MW-43(A)	MW-43(A)	10/13/2003	1000	80 U	500 U
MW-43(A)	MW-43 (A)	1/12/2004	633	80 U	500 U
MW-44(A)	MW-44 (A)	10/17/2003	5780	67700	500 U
MW-45(A)	MW-45 (A)	10/16/2003	250 U	80 U	500 U
MW-45(A)	MW-45 (A)	1/16/2004	250 U	80 U	500 U
MW-46(A)	MW-46(A)	10/14/2003	250 U	80 U	500 U

TABLE 4
PETROLEUM HYDROCARBONS IN GROUND WATER

Remedial Investigation/Feasibility Study
 Astoria Area-Wide Petroleum Site
 Astoria, Oregon

Locator ID	Sample ID	Sample Date	Diesel Range Organics	Gasoline Range Organics	Residual Range Organics
			ug/L	ug/L	ug/L
MW-46(A)	MW-46(A)	1/14/2004	250 U	80 U	500 U
MW-47(A)	MW-47(A)	10/13/2003	250 U	80 U	500 U
MW-47(A)	MW-47 (A)	1/14/2004	250 U	54.3	500 U
MW-48(A)	MW-48(A)	10/14/2003	250 U	80 U	500 U
MW-48(A)	MW-48 (A)	1/14/2004	250 U	80 U	500 U
R-1(M)	R-1(M)	10/22/2003	250 U	80 U	500 U

TABLE 5
RBDM VOCs IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	1,2,4- Trimethylb enzene	1,2-Dibromo ethane	1,2- Dichloro ethane	1,3,5- Trimethylb enzene	Benzene	Ethylbenzene
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-1(F)	MW-1(F)	10/22/2003	1.64	0.5 U	0.5 U	0.42 J	0.41 J	3.65
MW-1(F)	MW-1 (F)	1/15/2004	0.09 J	0.5 U	0.5 U	0.5 U	2.79	1.99
MW-2(M)	MW-2(M)	6/19/2003	100	2.5 U	2.5 U	14.6	48.4	756
MW-2(M)	MW-2 (M)	10/15/2003	2.23	0.5 U	0.5 U	0.5 U	125	92.6
MW-2(M)	MW-2 (M)	1/12/2004	1 U	0.5 U	0.5 U	0.5 U	10.6	2.52
MW-6(M)	MW-6(M)	6/19/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-6(M)	MW-6(M)	10/22/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.41 J
MW-6(M)	MW-6 (M)	1/12/2004	0.92	0.5 U	0.5 U	0.2	0.5 U	0.5 U
MW-7(M)	BM-7(M)	6/19/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-7(M)	MW-7(M)	6/19/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-7(M)	MW-7(M)	10/13/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-7(M)	MW-7 (M)	1/12/2004	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-10(M)	MW-10(M)	6/19/2003	26.1	0.5 U	0.5 U	7.58	21	25
MW-10(M)	MW-10 (M)	10/15/2003	6.3	1 U	1 U	1.34	319	182
MW-10(M)	MW-10 (M)	1/13/2004	4.05	0.5 U	0.5 U	4.55	50.3	24.9
MW-11(M)	MW-11(M)	6/19/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-11(M)	MW-11 (M)	10/15/2003	1 U B	0.5 U	0.5 U	0.31 J	11.6	0.38 J
MW-11(M)	MW-11 (M)	1/13/2004	1 U	0.5 U	0.5 U	0.5 U	8.86	0.11
MW-12(A)	MW-12(A)	10/22/2003	0.15 J	0.5 U	0.5 U	0.5 U	0.19 J	1.35
MW-12(A)	MW-12 (A)	1/15/2004	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-13(A)	MW-13(A)	10/22/2003	17.4	2.5 U	2.5 U	42.8	259	915
MW-13(A)	MW-13 (A)	1/15/2004	393	10 U	6.8	10 U	750	2270
MW-14(A)	MW-14(A)	10/21/2003	0.53 J	0.5 U	0.5 U	0.17 J	0.77	2.36
MW-14(A)	MW-14 (A)	1/15/2004	0.09 J	0.5 U	0.5 U	0.5 U	0.65	3.28

TABLE 5
RBDM VOCs IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	1,2,4- Trimethylb enzene ug/L	1,2-Dibromo ethane ug/L	1,2- Dichloro ethane ug/L	1,3,5- Trimethylb enzene ug/L	Benzene ug/L	Ethylbenzene ug/L
MW-15(A)	MW-15(A)	10/20/2003	7.37	0.5 U	0.26 J	6.87	127	27
MW-16(A)	MW-16(A)	10/20/2003	2.09	0.5 U	0.5 U	0.93	11.4	1.86
MW-16(A)	MW-16(A)	1/19/2004	1 U	0.5 U	0.5 U	0.5 U	2.32	0.36 J
MW-17(A)	MW-17 (A)	10/17/2003	3.19	0.5 U	0.5 U	0.54	9.19	14.7
MW-17(A)	BM-17(A)	1/19/2004	0.62 J	0.5 U	0.5 U	2.21	2.5	50.3
MW-17(A)	MW-17(A)	1/19/2004	0.72 J	0.5 U	0.5 U	2.64	2.52	51.7
MW-18(A)	MW-18(A)	10/21/2003	0.72 J	1 U	1 U	1.56	273	2.18
MW-18(A)	MW-18(A)	1/19/2004	0.29 J	0.5 U	0.5 U	1.15	138	5.45
MW-19(A)	BM-19(A)	10/20/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-19(A)	MW-19(A)	10/20/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-19(A)	MW-19 (A)	1/13/2004	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-20(A)	MW-20(A)	10/20/2003	15.9	0.5 U	0.5 U	2.06	16.9	20.2
MW-20(A)	MW-20 (A)	1/13/2004	56.2	0.5 U	0.5 U	7.32	3.64	12.5
MW-21(A)	MW-21(A)	10/20/2003	0.2 J	0.5 U	0.5 U	0.24 J	0.5 U	3.1
MW-21(A)	BM-21 (A)	1/13/2004	1 U	0.5 U	0.5 U	0.5 U	0.25	1.2
MW-21(A)	MW-21 (A)	1/13/2004	1 U	0.5 U	0.5 U	0.5 U	0.31	1.45
MW-22(A)	MW-22 (A)	10/16/2003	1 U B	0.5 U	0.5 U	0.5 U	19.4	52.9
MW-22(A)	MW-22(A)	1/19/2004	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.3 J
MW-23(A)	MW-23(A)	10/20/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-23(A)	MW-23 (A)	1/15/2004	0.1	0.5 U	0.5 U	0.5 U	0.5 U	0.52
MW-24(A)	MW-24(A)	10/21/2003	2.05	0.5 U	0.5 U	1.35	0.62	7.69
MW-24(A)	MW-24 (A)	1/15/2004	232	5 U	5 U	33.9	2.7	60.1

TABLE 5
RBDM VOCs IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	1,2,4- Trimethylb enzene	1,2-Dibromo ethane	1,2- Dichloro ethane	1,3,5- Trimethylb enzene	Benzene	Ethylbenzene
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-26(A)	MW-26 (A)	10/17/2003	600	2.5 U	2.5 U	135	3.05	373
MW-26(A)	MW-26 (A)	1/15/2004	3120	10 U	10 U	682	3	1280
MW-27(A)	MW-27(A)	10/21/2003	1 U	0.5 U	0.5 U	0.5 U	0.98	0.12 J
MW-27(A)	MW-27 (A)	1/14/2004	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-28(A)	MW-28 (A)	10/17/2003	566	5 U	5 U	138	208	334
MW-28(A)	MW-28(A)	1/19/2004	942	5 U	5 U	204	702	902
MW-29(A)	MW-29(A)	10/21/2003	1980	25 U	25 U	446	482	2480
MW-29(A)	MW-29(A)	1/19/2004	2630	25 U	25 U	568	330	2640
MW-30(A)	MW-30 (A)	10/16/2003	20 U B	10 U	10 U	34.8	262	2080
MW-30(A)	MW-30 (A)	1/16/2004	33.6	10 U	10 U	14.2	341	1910
MW-31(A)	BM-31 (A)	10/16/2003	10 U B	5 U	5 U	3.9 J	1260	728
MW-31(A)	MW-31 (A)	10/16/2003	10 U B	5 U	5 U	3.9	1170	706
MW-31(A)	MW-31 (A)	1/12/2004	10 U	5 U	5 U	2.2	1390	798
MW-32(A)	MW-32(A)	10/14/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-32(A)	MW-32 (A)	1/12/2004	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-33(A)	MW-33(A)	10/14/2003	1 U	0.5 U	0.5 U	0.5 U	3.49	0.5 U
MW-33(A)	MW-33 (A)	1/12/2004	1 U	0.5 U	0.5 U	0.5 U	15	0.55
MW-34(A)	MW-34(A)	10/14/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.29 J
MW-34(A)	MW-34 (A)	1/13/2004	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.25
MW-35(A)	MW-35 (A)	10/16/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	1.12
MW-35(A)	MW-35 (A)	1/16/2004	0.13 J	0.5 U	0.5 U	0.5 U	0.5 U	0.42 J

TABLE 5
RBDM VOCs IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	1,2,4- Trimethylb enzene ug/L	1,2-Dibromo ethane ug/L	1,2- Dichloro ethane ug/L	1,3,5- Trimethylb enzene ug/L	Benzene ug/L	Ethylbenzene ug/L
MW-36(A)	MW-36(A)	10/21/2003	0.15 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-36(A)	MW-36 (A)	1/14/2004	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-37(A)	MW-37 (A)	10/17/2003	12.2	0.5 U	0.5 U	2.96	0.16 J	17
MW-38(A)	MW-38(A)	10/21/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-38(A)	MW-38 (A)	1/14/2004	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-39(A)	MW-39 (A)	10/16/2003	19.7	0.5 U	0.5 U	3.02	3.98	10.9
MW-39(A)	MW-39 (A)	1/16/2004	14.4	0.5 U	0.5 U	2.7	3.37	10.8
MW-40(A)	MW-40 (A)	10/17/2003	40.6	2.5 U	2.5 U	8.7	81.2	650
MW-40(A)	MW-40(A)	1/20/2004	3170	10 U	10 U	527	7.8 J	2230
MW-41(A)	MW-41(A)	10/14/2003	15.4	5 U	5 U	5 U	355	1260
MW-42(A)	MW-42 (A)	10/15/2003	44.8	10 U	10 U	11.2	3020	1850
MW-43(A)	MW-43(A)	10/13/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-43(A)	MW-43 (A)	1/12/2004	1 U	0.5 U	0.5 U	0.5 U	10.9	3.56
MW-44(A)	MW-44 (A)	10/17/2003	3470	25 U	25 U	898	898	2890
MW-45(A)	MW-45 (A)	10/16/2003	1 U B	0.5 U	0.5 U	0.5 U	0.16 J	0.32 J
MW-45(A)	MW-45 (A)	1/16/2004	0.11 J	0.5 U	0.5 U	0.5 U	0.5 U	0.23 J
MW-46(A)	MW-46(A)	10/14/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-46(A)	MW-46(A)	1/14/2004	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-47(A)	MW-47(A)	10/13/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-47(A)	MW-47 (A)	1/14/2004	1 U	0.5 U	0.5 U	0.5 U	0.21	0.13

TABLE 5
RBDM VOCs IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	1,2,4- Trimethylb enzene	1,2-Dibromo ethane	1,2- Dichloro ethane	1,3,5- Trimethylb enzene	Benzene	Ethylbenzene
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-48(A)	MW-48(A)	10/14/2003	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-48(A)	MW-48 (A)	1/14/2004	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
R-1(M)	R-1(M)	10/22/2003	1 U B	0.5 U	0.5 U	0.5 U	0.23 J	0.63

TABLE 5
RBDM VOCs IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Isopropyl benzene ug/L	Methyl-t- butyl ether ug/L	n-Propyl benzene ug/L	Toluene ug/L	Xylenes ug/L
MW-1(F)	MW-1(F)	10/22/2003	0.17 J	2 U	0.26 J	7.08	16.3
MW-1(F)	MW-1 (F)	1/15/2004	2.1	2 U	1.13	0.5 U	1 U
MW-2(M)	MW-2(M)	6/19/2003	70.2	10 U	270	15.5	369
MW-2(M)	MW-2 (M)	10/15/2003	42.9	2 U	159	8.5	21.3
MW-2(M)	MW-2 (M)	1/12/2004	10.2	2 U	47.8	0.51 J+,B	0.86
MW-6(M)	MW-6(M)	6/19/2003	2 U	2 U	0.5 U	0.5 U	1 U
MW-6(M)	MW-6(M)	10/22/2003	2 U	2 U	0.5 U	0.5 U B	1 U
MW-6(M)	MW-6 (M)	1/12/2004	0.27	2 U	0.49	0.5 U	1 U
MW-7(M)	BM-7(M)	6/19/2003	2 U	2 U	0.5 U	0.5 U	1 U
MW-7(M)	MW-7(M)	6/19/2003	2 U	2 U	0.5 U	0.5 U	1 U
MW-7(M)	MW-7(M)	10/13/2003	2 U	2 U	0.5 U	0.5 U	1 U
MW-7(M)	MW-7 (M)	1/12/2004	2 U	2 U	0.5 U	0.5 U	1 U
MW-10(M)	MW-10(M)	6/19/2003	27.8	2 U	26.8	5.55	49
MW-10(M)	MW-10 (M)	10/15/2003	18.5	4 U	48.6	19.3	49.6
MW-10(M)	MW-10 (M)	1/13/2004	27.5	2 U	28.9	15.3	46.9
MW-11(M)	MW-11(M)	6/19/2003	2 U	2 U	0.5 U	0.5 U	1 U
MW-11(M)	MW-11 (M)	10/15/2003	4.37	2 U	7.48	0.96 JB	8.39
MW-11(M)	MW-11 (M)	1/13/2004	3.15	2 U	1.3	0.5 U B	1 U
MW-12(A)	MW-12(A)	10/22/2003	2 U	2 U	0.5 U	2.77	3.77
MW-12(A)	MW-12 (A)	1/15/2004	2 U	2 U	0.5 U	0.5 U	1 U
MW-13(A)	MW-13(A)	10/22/2003	94.7	10 U	228	26.6	94.6
MW-13(A)	MW-13 (A)	1/15/2004	225	40 U	676	82.4	578
MW-14(A)	MW-14(A)	10/21/2003	0.11 J	2 U	0.2 J	5.91	6.82
MW-14(A)	MW-14 (A)	1/15/2004	0.28 J	2 U	0.66	0.5 U	0.47 J

TABLE 5
RBDM VOCs IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Isopropyl benzene ug/L	Methyl-t- butyl ether ug/L	n-Propyl benzene ug/L	Toluene ug/L	Xylenes ug/L
MW-15(A)	MW-15(A)	10/20/2003	42.4	0.93 J	90.3	13.5	40.7
MW-16(A)	MW-16(A)	10/20/2003	7.81	2 U	12.3	1.43 J,B	9.74
MW-16(A)	MW-16(A)	1/19/2004	3.79	2 U	5.44	0.5 U B	1 U
MW-17(A)	MW-17 (A)	10/17/2003	2.9	2 U	7.97	25.5	35.3
MW-17(A)	BM-17(A)	1/19/2004	6.44	2 U	16.4	1.04 JB	18.9
MW-17(A)	MW-17(A)	1/19/2004	6.55	2 U	17.4	1.05 JB	20.1
MW-18(A)	MW-18(A)	10/21/2003	25.8	0.98 J	45	21.1	22.4
MW-18(A)	MW-18(A)	1/19/2004	13.8	2 U	26.9	13.9	18.9
MW-19(A)	BM-19(A)	10/20/2003	2 U	0.23 J	0.5 U	0.5 U	1 U
MW-19(A)	MW-19(A)	10/20/2003	2 U	0.23 J	0.5 U	0.5 U	1 U
MW-19(A)	MW-19 (A)	1/13/2004	2 U	2 U	0.5 U	0.5 U	1 U
MW-20(A)	MW-20(A)	10/20/2003	1.88 J	2 U	3.62	1.29 J,B	121
MW-20(A)	MW-20 (A)	1/13/2004	6.54	2 U	8.92	0.88 J+,B	46.2
MW-21(A)	MW-21(A)	10/20/2003	2.5	2 U	7.31	0.5 U	1.73
MW-21(A)	BM-21 (A)	1/13/2004	2.36	2 U	6.9	0.5 U B	0.45
MW-21(A)	MW-21 (A)	1/13/2004	2.53	2 U	7.59	0.5 U B	0.46
MW-22(A)	MW-22 (A)	10/16/2003	2.78	2 U	7	2.96	7.82
MW-22(A)	MW-22(A)	1/19/2004	2 U	2 U	0.5 U	0.5 U	1 U
MW-23(A)	MW-23(A)	10/20/2003	2 U	2 U	0.15 J	0.5 U	1 U
MW-23(A)	MW-23 (A)	1/15/2004	2 U	2 U	0.17	0.5 U	0.38
MW-24(A)	MW-24(A)	10/21/2003	0.94 J	2 U	2.01	1.17 J,B	10.5
MW-24(A)	MW-24 (A)	1/15/2004	4.8	20 U	9.7	5 U	116

TABLE 5
RBDM VOCs IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Isopropyl benzene ug/L	Methyl-t- butyl ether ug/L	n-Propyl benzene ug/L	Toluene ug/L	Xylenes ug/L
MW-26(A)	MW-26 (A)	10/17/2003	32	10 U	83.3	18.4	1040
MW-26(A)	MW-26 (A)	1/15/2004	104	40 U	280	24.2 JB	5500
MW-27(A)	MW-27(A)	10/21/2003	2 U	2 U	0.5 U	0.5 U	1 U
MW-27(A)	MW-27 (A)	1/14/2004	2 U	2 U	0.5 U	0.5 U	1 U
MW-28(A)	MW-28 (A)	10/17/2003	24.4	20 U	85.6	201	1070
MW-28(A)	MW-28(A)	1/19/2004	30.1	20 U	92.4	696	4000
MW-29(A)	MW-29(A)	10/21/2003	86 J	100 U	234	5160	13300
MW-29(A)	MW-29(A)	1/19/2004	82 J	100 U	241	8170	13500
MW-30(A)	MW-30 (A)	10/16/2003	88.8	40 U	238	110	663
MW-30(A)	MW-30 (A)	1/16/2004	79	40 U	232	127	378
MW-31(A)	BM-31 (A)	10/16/2003	56.5	20 U	156	41.6	143
MW-31(A)	MW-31 (A)	10/16/2003	54.4	20 U	152	38.4	138
MW-31(A)	MW-31 (A)	1/12/2004	44.2	20 U	121	109	189
MW-32(A)	MW-32(A)	10/14/2003	2 U	2 U	0.5 U	0.5 U	1 U
MW-32(A)	MW-32 (A)	1/12/2004	2 U	2 U	0.5 U	0.5 U	1 U
MW-33(A)	MW-33(A)	10/14/2003	0.35 J	2 U	0.63	0.5 U	0.28 J
MW-33(A)	MW-33 (A)	1/12/2004	3.71	2 U	8.13	2.16	4.16
MW-34(A)	MW-34(A)	10/14/2003	2 U	2 U	0.5 U	0.5 U	1 U
MW-34(A)	MW-34 (A)	1/13/2004	2 U	2 U	0.5 U	0.5 U	1 U
MW-35(A)	MW-35 (A)	10/16/2003	2 U	2 U	0.17 J	0.5 U	1 U
MW-35(A)	MW-35 (A)	1/16/2004	2 U	2 U	0.18 J	0.5 U	1 U

TABLE 5
RBDM VOCs IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Isopropyl benzene ug/L	Methyl-t- butyl ether ug/L	n-Propyl benzene ug/L	Toluene ug/L	Xylenes ug/L
MW-36(A)	MW-36(A)	10/21/2003	2 U	2 U	0.5 U	0.5 U	0.28 J
MW-36(A)	MW-36 (A)	1/14/2004	2 U	2 U	0.5 U	0.5 U	1 U
MW-37(A)	MW-37 (A)	10/17/2003	6.72	2 U	10.4	0.72 J	30.6
MW-38(A)	MW-38(A)	10/21/2003	2 U	2 U	0.5 U	0.5 U	1 U
MW-38(A)	MW-38 (A)	1/14/2004	2 U	2 U	0.15	0.5 U	1 U
MW-39(A)	MW-39 (A)	10/16/2003	3.42	2 U	5.33	0.5 U B	21.6
MW-39(A)	MW-39 (A)	1/16/2004	3.34	2 U	4.57	0.5 U B	28.8
MW-40(A)	MW-40 (A)	10/17/2003	44.8	10 U	86.4	57.6	367
MW-40(A)	MW-40(A)	1/20/2004	98	40 U	334	833	6460
MW-41(A)	MW-41(A)	10/14/2003	38.1	20 U	88.9	103	192
MW-42(A)	MW-42 (A)	10/15/2003	63.4	40 U	226	163	370
MW-43(A)	MW-43(A)	10/13/2003	2 U	2 U	0.5 U	0.5 U	1 U
MW-43(A)	MW-43 (A)	1/12/2004	2 U	2 U	0.5 U	0.5 U B	1 U
MW-44(A)	MW-44 (A)	10/17/2003	94 J	100 U	388	5320	14900
MW-45(A)	MW-45 (A)	10/16/2003	2 U	2 U	0.21 J	0.5 U	1 U
MW-45(A)	MW-45 (A)	1/16/2004	2 U	2 U	0.5 U	0.5 U	1 U
MW-46(A)	MW-46(A)	10/14/2003	2 U	2 U	0.5 U	0.5 U	1 U
MW-46(A)	MW-46(A)	1/14/2004	2 U	2 U	0.5 U	0.5 U	1 U
MW-47(A)	MW-47(A)	10/13/2003	2 U	2 U	0.5 U	0.5 U	1 U
MW-47(A)	MW-47 (A)	1/14/2004	2 U	2 U	0.5 U	0.5 U	1 U

TABLE 5
RBDM VOCs IN GROUND WATER

Remedial Investigation/Feasibility Study
 Astoria Area-Wide Petroleum Site
 Astoria, Oregon

Locator ID	Sample ID	Sample Date	Isopropyl benzene	Methyl-t- butyl ether	n-Propyl benzene	Toluene	Xylenes
			ug/L	ug/L	ug/L	ug/L	ug/L
MW-48(A)	MW-48(A)	10/14/2003	2 U	2 U	0.5 U	0.5 U	1 U
MW-48(A)	MW-48 (A)	1/14/2004	2 U	2 U	0.5 U	0.5 U	1 U
R-1(M)	R-1(M)	10/22/2003	2 U	2 U	0.5 U	0.5 U B	1 U

TABLE 6
SVOCs IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Acenaphthene ug/L	Acenaphthylene ug/L	Anthracene ug/L	Benzo(a) anthracene ug/L	Benzo(a) pyrene ug/L	Benzo(b) fluoranthene ug/L	Benzo(g,h,i) perylene ug/L
MW-1(F)	MW-1(F)	10/22/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-1(F)	MW-1(F)	10/22/2003							
MW-1(F)	MW-1 (F)	1/15/2004	0.186	0.0998	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-1(F)	MW-1 (F)	1/15/2004							
MW-2(M)	MW-2(M)	6/19/2003	1.44	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-2(M)	MW-2(M)	6/19/2003							
MW-2(M)	MW-2 (M)	10/15/2003	0.638	0.05 U	0.0568	0.01 U	0.01 U	0.01 U	0.05 U
MW-2(M)	MW-2 (M)	10/15/2003							
MW-2(M)	MW-2 (M)	1/12/2004	0.54	0.15 U	0.1 U	0.02 U	0.02 U	0.02 U	0.1 U
MW-2(M)	MW-2 (M)	1/12/2004							
MW-6(M)	MW-6(M)	6/19/2003	0.214	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-6(M)	MW-6(M)	6/19/2003							
MW-6(M)	MW-6(M)	10/22/2003	0.146	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-6(M)	MW-6(M)	10/22/2003							
MW-6(M)	MW-6 (M)	1/12/2004	0.167	0.05 U	0.05 U	0.011	0.01 U	0.01 U	0.05 U
MW-6(M)	MW-6 (M)	1/12/2004							
MW-7(M)	BM-7(M)	6/19/2003	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-7(M)	BM-7(M)	6/19/2003							
MW-7(M)	MW-7(M)	6/19/2003	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-7(M)	MW-7(M)	6/19/2003							
MW-7(M)	MW-7(M)	10/13/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-7(M)	MW-7(M)	10/13/2003							
MW-7(M)	MW-7 (M)	1/12/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-7(M)	MW-7 (M)	1/12/2004							
MW-10(M)	MW-10(M)	6/19/2003	2 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
MW-10(M)	MW-10(M)	6/19/2003							
MW-10(M)	MW-10 (M)	10/15/2003	0.28	0.05 U	0.05 U	0.0475	0.069	0.0625	0.05 U
MW-10(M)	MW-10 (M)	10/15/2003							
MW-10(M)	MW-10 (M)	1/13/2004	1 U	1 U	0.05 U	0.0114	0.0105	0.0124	0.05 U
MW-10(M)	MW-10 (M)	1/13/2004							
MW-11(M)	MW-11(M)	6/19/2003	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-11(M)	MW-11(M)	6/19/2003							
MW-11(M)	MW-11 (M)	10/15/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U

TABLE 6
SVOCs IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Acenaphthene ug/L	Acenaphthylene ug/L	Anthracene ug/L	Benzo(a) anthracene ug/L	Benzo(a) pyrene ug/L	Benzo(b) fluoranthene ug/L	Benzo(g,h,i) perylene ug/L
MW-11(M)	MW-11 (M)	10/15/2003							
MW-11(M)	MW-11 (M)	1/13/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-11(M)	MW-11 (M)	1/13/2004							
MW-12(A)	MW-12(A)	10/22/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-12(A)	MW-12(A)	10/22/2003							
MW-12(A)	MW-12 (A)	1/15/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-12(A)	MW-12 (A)	1/15/2004							
MW-13(A)	MW-13(A)	10/22/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-13(A)	MW-13(A)	10/22/2003							
MW-13(A)	MW-13 (A)	1/15/2004	0.1 U	0.1 U	0.1 U	0.02 U	0.02 U	0.02 U	0.1 U
MW-13(A)	MW-13 (A)	1/15/2004							
MW-14(A)	MW-14(A)	10/21/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-14(A)	MW-14(A)	10/21/2003							
MW-14(A)	MW-14 (A)	1/15/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-14(A)	MW-14 (A)	1/15/2004							
MW-15(A)	MW-15(A)	10/20/2003	0.0916	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-15(A)	MW-15(A)	10/20/2003							
MW-16(A)	MW-16(A)	10/20/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-16(A)	MW-16(A)	10/20/2003							
MW-16(A)	MW-16(A)	1/19/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-16(A)	MW-16(A)	1/19/2004							
MW-17(A)	MW-17 (A)	10/17/2003	0.0612	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-17(A)	MW-17 (A)	10/17/2003							
MW-17(A)	BM-17(A)	1/19/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-17(A)	BM-17(A)	1/19/2004							
MW-17(A)	MW-17(A)	1/19/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-17(A)	MW-17(A)	1/19/2004							
MW-18(A)	MW-18(A)	10/21/2003	0.517	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-18(A)	MW-18(A)	10/21/2003							
MW-18(A)	MW-18(A)	1/19/2004	0.632	0.1 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-18(A)	MW-18(A)	1/19/2004							

TABLE 6
SVOCs IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Acenaphthene ug/L	Acenaphthylene ug/L	Anthracene ug/L	Benzo(a) anthracene ug/L	Benzo(a) pyrene ug/L	Benzo(b) fluoranthene ug/L	Benzo(g,h,i) perylene ug/L
MW-19(A)	BM-19(A)	10/20/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-19(A)	BM-19(A)	10/20/2003							
MW-19(A)	MW-19(A)	10/20/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-19(A)	MW-19(A)	10/20/2003							
MW-19(A)	MW-19 (A)	1/13/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-19(A)	MW-19 (A)	1/13/2004							
MW-20(A)	MW-20(A)	10/20/2003	0.318	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-20(A)	MW-20(A)	10/20/2003							
MW-20(A)	MW-20 (A)	1/13/2004	0.345	0.075 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-20(A)	MW-20 (A)	1/13/2004							
MW-21(A)	MW-21(A)	10/20/2003	0.224	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-21(A)	MW-21(A)	10/20/2003							
MW-21(A)	BM-21 (A)	1/13/2004	0.253	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-21(A)	BM-21 (A)	1/13/2004							
MW-21(A)	MW-21 (A)	1/13/2004	0.185	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-21(A)	MW-21 (A)	1/13/2004							
MW-22(A)	MW-22 (A)	10/16/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-22(A)	MW-22 (A)	10/16/2003							
MW-22(A)	MW-22(A)	1/19/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-22(A)	MW-22(A)	1/19/2004							
MW-23(A)	MW-23(A)	10/20/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-23(A)	MW-23(A)	10/20/2003							
MW-23(A)	MW-23 (A)	1/15/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-23(A)	MW-23 (A)	1/15/2004							
MW-24(A)	MW-24(A)	10/21/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-24(A)	MW-24(A)	10/21/2003							
MW-24(A)	MW-24 (A)	1/15/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-24(A)	MW-24 (A)	1/15/2004							
MW-26(A)	MW-26 (A)	10/17/2003	5 U	5 U	5 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-26(A)	MW-26 (A)	10/17/2003							
MW-26(A)	MW-26 (A)	1/15/2004	0.0687	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U

TABLE 6
SVOCs IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Acenaphthene ug/L	Acenaphthylene ug/L	Anthracene ug/L	Benzo(a) anthracene ug/L	Benzo(a) pyrene ug/L	Benzo(b) fluoranthene ug/L	Benzo(g,h,i) perylene ug/L
MW-26(A)	MW-26 (A)	1/15/2004							
MW-27(A)	MW-27(A)	10/21/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-27(A)	MW-27(A)	10/21/2003							
MW-27(A)	MW-27 (A)	1/14/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-27(A)	MW-27 (A)	1/14/2004							
MW-28(A)	MW-28 (A)	10/17/2003	5 U	5 U	5 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-28(A)	MW-28 (A)	10/17/2003							
MW-28(A)	MW-28(A)	1/19/2004	0.0548	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-28(A)	MW-28(A)	1/19/2004							
MW-29(A)	MW-29(A)	10/21/2003	0.0959	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-29(A)	MW-29(A)	10/21/2003							
MW-29(A)	MW-29(A)	1/19/2004	0.126	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-29(A)	MW-29(A)	1/19/2004							
MW-30(A)	MW-30 (A)	10/16/2003	0.0531	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-30(A)	MW-30 (A)	10/16/2003							
MW-30(A)	MW-30 (A)	1/16/2004	0.0751	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-30(A)	MW-30 (A)	1/16/2004							
MW-31(A)	BM-31 (A)	10/16/2003	0.0594	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-31(A)	BM-31 (A)	10/16/2003							
MW-31(A)	MW-31 (A)	10/16/2003	0.0661	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-31(A)	MW-31 (A)	10/16/2003							
MW-31(A)	MW-31 (A)	1/12/2004	0.096	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-31(A)	MW-31 (A)	1/12/2004							
MW-32(A)	MW-32(A)	10/14/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-32(A)	MW-32(A)	10/14/2003							
MW-32(A)	MW-32 (A)	1/12/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-32(A)	MW-32 (A)	1/12/2004							
MW-33(A)	MW-33(A)	10/14/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-33(A)	MW-33(A)	10/14/2003							
MW-33(A)	MW-33 (A)	1/12/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-33(A)	MW-33 (A)	1/12/2004							

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Locator ID	Sample ID	Sample Date	Acenaphthene ug/L	Acenaphthylene ug/L	Anthracene ug/L	Benzo(a) anthracene ug/L	Benzo(a) pyrene ug/L	Benzo(b) fluoranthene ug/L	Benzo(g,h,i) perylene ug/L
MW-34(A)	MW-34(A)	10/14/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-34(A)	MW-34(A)	10/14/2003							
MW-34(A)	MW-34 (A)	1/13/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-34(A)	MW-34 (A)	1/13/2004							
MW-35(A)	MW-35 (A)	10/16/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-35(A)	MW-35 (A)	10/16/2003							
MW-35(A)	MW-35 (A)	1/16/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-35(A)	MW-35 (A)	1/16/2004							
MW-36(A)	MW-36(A)	10/21/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-36(A)	MW-36(A)	10/21/2003							
MW-36(A)	MW-36 (A)	1/14/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-36(A)	MW-36 (A)	1/14/2004							
MW-37(A)	MW-37 (A)	10/17/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-37(A)	MW-37 (A)	10/17/2003							
MW-38(A)	MW-38(A)	10/21/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-38(A)	MW-38(A)	10/21/2003							
MW-38(A)	MW-38 (A)	1/14/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-38(A)	MW-38 (A)	1/14/2004							
MW-39(A)	MW-39 (A)	10/16/2003	1.04	0.05 U	0.137	0.01 U	0.01 U	0.01 U	0.05 U
MW-39(A)	MW-39 (A)	10/16/2003							
MW-39(A)	MW-39 (A)	1/16/2004	0.598	0.125 U	0.0715	0.01 U	0.01 U	0.01 U	0.05 U
MW-39(A)	MW-39 (A)	1/16/2004							
MW-40(A)	MW-40 (A)	10/17/2003	0.727	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-40(A)	MW-40 (A)	10/17/2003							
MW-40(A)	MW-40(A)	1/20/2004	0.553	0.15 U	0.1 U	0.02 U	0.02 U	0.02 U	0.1 U
MW-40(A)	MW-40(A)	1/20/2004							
MW-41(A)	MW-41(A)	10/14/2003	2.45	1.25 U	1.25 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-41(A)	MW-41(A)	10/14/2003							
MW-42(A)	MW-42 (A)	10/15/2003	1.1	0.05 U	0.0893	0.01 U	0.01 U	0.01 U	0.05 U

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Locator ID	Sample ID	Sample Date	Acenaphthene ug/L	Acenaphthylene ug/L	Anthracene ug/L	Benzo(a) anthracene ug/L	Benzo(a) pyrene ug/L	Benzo(b) fluoranthene ug/L	Benzo(g,h,i) perylene ug/L
MW-42(A)	MW-42 (A)	10/15/2003							
MW-43(A)	MW-43(A)	10/13/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-43(A)	MW-43(A)	10/13/2003							
MW-43(A)	MW-43 (A)	1/12/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-43(A)	MW-43 (A)	1/12/2004							
MW-44(A)	MW-44 (A)	10/17/2003	0.194	0.05 U	0.08 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-44(A)	MW-44 (A)	10/17/2003							
MW-45(A)	MW-45 (A)	10/16/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-45(A)	MW-45 (A)	10/16/2003							
MW-45(A)	MW-45 (A)	1/16/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-45(A)	MW-45 (A)	1/16/2004							
MW-46(A)	MW-46(A)	10/14/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-46(A)	MW-46(A)	10/14/2003							
MW-46(A)	MW-46(A)	1/14/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-46(A)	MW-46(A)	1/14/2004							
MW-47(A)	MW-47(A)	10/13/2003	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-47(A)	MW-47(A)	10/13/2003							
MW-47(A)	MW-47 (A)	1/14/2004	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-47(A)	MW-47 (A)	1/14/2004							
MW-48(A)	MW-48(A)	10/14/2003	0.362	0.05 U	0.05 U	0.0127	0.01 U	0.01 U	0.05 U
MW-48(A)	MW-48(A)	10/14/2003							
MW-48(A)	MW-48 (A)	1/14/2004	0.176	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-48(A)	MW-48 (A)	1/14/2004							
R-1(M)	R-1(M)	10/22/2003	0.0873	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.05 U
R-1(M)	R-1(M)	10/22/2003							

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Astoria, Oregon

Locator ID	Sample ID	Sample Date	Benzo(k) fluoranthene ug/L	Chrysene ug/L	Dibenzo(a,h) anthracene ug/L	Fluoranthene ug/L	Fluorene ug/L	Indeno(1,2, 3-cd) pyrene ug/L	Naphthalene ug/L
MW-1(F)	MW-1(F)	10/22/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U B
MW-1(F)	MW-1(F)	10/22/2003							0.947
MW-1(F)	MW-1 (F)	1/15/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.209	0.01 U	0.3 J
MW-1(F)	MW-1 (F)	1/15/2004							1.5 U
MW-2(M)	MW-2(M)	6/19/2003	0.5 U	0.5 U	1 U	0.5 U	2.16	0.5 U	656
MW-2(M)	MW-2(M)	6/19/2003							524
MW-2(M)	MW-2 (M)	10/15/2003	0.01 U	0.01 U	0.01 U	0.0693	1.33	0.01 U	125
MW-2(M)	MW-2 (M)	10/15/2003							89.4
MW-2(M)	MW-2 (M)	1/12/2004	0.02 U	0.02 U	0.02 U	0.1 U	0.78	0.02 U	4.08
MW-2(M)	MW-2 (M)	1/12/2004							3.42
MW-6(M)	MW-6(M)	6/19/2003	0.1 U	0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	2 U
MW-6(M)	MW-6(M)	6/19/2003							0.1 U
MW-6(M)	MW-6(M)	10/22/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-6(M)	MW-6(M)	10/22/2003							0.05 U
MW-6(M)	MW-6 (M)	1/12/2004	0.01 U	0.013	0.01 U	0.05 U	0.05 U	0.01 U	0.05 U
MW-6(M)	MW-6 (M)	1/12/2004							0.4
MW-7(M)	BM-7(M)	6/19/2003	0.1 U	0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	2 U
MW-7(M)	BM-7(M)	6/19/2003							0.1 U
MW-7(M)	MW-7(M)	6/19/2003	0.1 U	0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	2 U
MW-7(M)	MW-7(M)	6/19/2003							0.1 U
MW-7(M)	MW-7(M)	10/13/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-7(M)	MW-7(M)	10/13/2003							0.05 U
MW-7(M)	MW-7 (M)	1/12/2004	0.01 U	0.0104	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-7(M)	MW-7 (M)	1/12/2004							0.05 U
MW-10(M)	MW-10(M)	6/19/2003	0.5 U	0.5 U	1 U	0.5 U	2 U	0.5 U	20.6
MW-10(M)	MW-10(M)	6/19/2003							16.3
MW-10(M)	MW-10 (M)	10/15/2003	0.0548	0.0554	0.0172	0.0655	0.238	0.0408	65.3
MW-10(M)	MW-10 (M)	10/15/2003							12
MW-10(M)	MW-10 (M)	1/13/2004	0.01 U	0.0144	0.01 U	0.05 U	1 U	0.01 U	3 U
MW-10(M)	MW-10 (M)	1/13/2004							1.64
MW-11(M)	MW-11(M)	6/19/2003	0.1 U	0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	2 U
MW-11(M)	MW-11(M)	6/19/2003							0.35 U
MW-11(M)	MW-11 (M)	10/15/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.66 J

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Locator ID	Sample ID	Sample Date	Benzo(k) fluoranthene ug/L	Chrysene ug/L	Dibenzo(a,h) anthracene ug/L	Fluoranthene ug/L	Fluorene ug/L	Indeno(1,2, 3-cd) pyrene ug/L	Naphthalene ug/L
MW-11(M)	MW-11 (M)	10/15/2003							0.4 U
MW-11(M)	MW-11 (M)	1/13/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.325 U
MW-11(M)	MW-11 (M)	1/13/2004							2 U
MW-12(A)	MW-12(A)	10/22/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U B
MW-12(A)	MW-12(A)	10/22/2003							0.05 U
MW-12(A)	MW-12 (A)	1/15/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.05 U
MW-12(A)	MW-12 (A)	1/15/2004							2 U
MW-13(A)	MW-13(A)	10/22/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	122
MW-13(A)	MW-13(A)	10/22/2003							65.4
MW-13(A)	MW-13 (A)	1/15/2004	0.02 U	0.02 U	0.02 U	0.1 U	0.1 U	0.02 U	75.7
MW-13(A)	MW-13 (A)	1/15/2004							223
MW-14(A)	MW-14(A)	10/21/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U B
MW-14(A)	MW-14(A)	10/21/2003							0.977
MW-14(A)	MW-14 (A)	1/15/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.19 J
MW-14(A)	MW-14 (A)	1/15/2004							0.05 U
MW-15(A)	MW-15(A)	10/20/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.0941	0.01 U	2.11 J,B
MW-15(A)	MW-15(A)	10/20/2003							1.28
MW-16(A)	MW-16(A)	10/20/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U B
MW-16(A)	MW-16(A)	10/20/2003							0.35 U
MW-16(A)	MW-16(A)	1/19/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.28 J
MW-16(A)	MW-16(A)	1/19/2004							0.15 U
MW-17(A)	MW-17 (A)	10/17/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2.37
MW-17(A)	MW-17 (A)	10/17/2003							4.88
MW-17(A)	BM-17(A)	1/19/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	19.5
MW-17(A)	BM-17(A)	1/19/2004							0.125 U
MW-17(A)	MW-17(A)	1/19/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	19
MW-17(A)	MW-17(A)	1/19/2004							0.25 U
MW-18(A)	MW-18(A)	10/21/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.22	0.01 U	4 U B
MW-18(A)	MW-18(A)	10/21/2003							0.44
MW-18(A)	MW-18(A)	1/19/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.39	0.01 U	1.53 J
MW-18(A)	MW-18(A)	1/19/2004							0.688

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MW-19(A)	BM-19(A)	10/20/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-19(A)	BM-19(A)	10/20/2003							0.05 U
MW-19(A)	MW-19(A)	10/20/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-19(A)	MW-19(A)	10/20/2003							0.05 U
MW-19(A)	MW-19 (A)	1/13/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.05 U
MW-19(A)	MW-19 (A)	1/13/2004							2 U
MW-20(A)	MW-20(A)	10/20/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.434	0.01 U	11.1
MW-20(A)	MW-20(A)	10/20/2003							3.93
MW-20(A)	MW-20 (A)	1/13/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.527	0.01 U	9.6
MW-20(A)	MW-20 (A)	1/13/2004							36.5
MW-21(A)	MW-21(A)	10/20/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.327	0.01 U	3.04
MW-21(A)	MW-21(A)	10/20/2003							1.83
MW-21(A)	BM-21 (A)	1/13/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.374	0.01 U	1.75
MW-21(A)	BM-21 (A)	1/13/2004							3.76
MW-21(A)	MW-21 (A)	1/13/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.256	0.01 U	0.765
MW-21(A)	MW-21 (A)	1/13/2004							4.01
MW-22(A)	MW-22 (A)	10/16/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2.61
MW-22(A)	MW-22 (A)	10/16/2003							40.5
MW-22(A)	MW-22(A)	1/19/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-22(A)	MW-22(A)	1/19/2004							0.0931
MW-23(A)	MW-23(A)	10/20/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.0617
MW-23(A)	MW-23(A)	10/20/2003							2 U
MW-23(A)	MW-23 (A)	1/15/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.225 U
MW-23(A)	MW-23 (A)	1/15/2004							2 U
MW-24(A)	MW-24(A)	10/21/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.05 U
MW-24(A)	MW-24(A)	10/21/2003							2 U B
MW-24(A)	MW-24 (A)	1/15/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	114
MW-24(A)	MW-24 (A)	1/15/2004							44.6
MW-26(A)	MW-26 (A)	10/17/2003	0.01 U	0.01 U	0.01 U	5 U	5 U	0.01 U	280
MW-26(A)	MW-26 (A)	10/17/2003							107
MW-26(A)	MW-26 (A)	1/15/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.0718	0.01 U	564

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MW-26(A)	MW-26 (A)	1/15/2004							1030
MW-27(A)	MW-27(A)	10/21/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-27(A)	MW-27(A)	10/21/2003							0.158
MW-27(A)	MW-27 (A)	1/14/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-27(A)	MW-27 (A)	1/14/2004							0.0512
MW-28(A)	MW-28 (A)	10/17/2003	0.01 U	0.01 U	0.01 U	5 U	5 U	0.01 U	157
MW-28(A)	MW-28 (A)	10/17/2003							112
MW-28(A)	MW-28(A)	1/19/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.076	0.01 U	398
MW-28(A)	MW-28(A)	1/19/2004							78.4
MW-29(A)	MW-29(A)	10/21/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.0811	0.01 U	1340
MW-29(A)	MW-29(A)	10/21/2003							1640
MW-29(A)	MW-29(A)	1/19/2004	0.01 U	0.0125	0.01 U	0.05 U	0.101	0.01 U	1310
MW-29(A)	MW-29(A)	1/19/2004							867
MW-30(A)	MW-30 (A)	10/16/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.0569	0.01 U	531
MW-30(A)	MW-30 (A)	10/16/2003							1130
MW-30(A)	MW-30 (A)	1/16/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.0613	0.01 U	1200
MW-30(A)	MW-30 (A)	1/16/2004							696
MW-31(A)	BM-31 (A)	10/16/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.0515	0.01 U	15.3 J
MW-31(A)	BM-31 (A)	10/16/2003							8.36
MW-31(A)	MW-31 (A)	10/16/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.0582	0.01 U	10
MW-31(A)	MW-31 (A)	10/16/2003							16.2
MW-31(A)	MW-31 (A)	1/12/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.0661	0.01 U	9.96
MW-31(A)	MW-31 (A)	1/12/2004							13.5
MW-32(A)	MW-32(A)	10/14/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-32(A)	MW-32(A)	10/14/2003							0.05 U
MW-32(A)	MW-32 (A)	1/12/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.05 U
MW-32(A)	MW-32 (A)	1/12/2004							2 U
MW-33(A)	MW-33(A)	10/14/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-33(A)	MW-33(A)	10/14/2003							0.07 U
MW-33(A)	MW-33 (A)	1/12/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.175 U B
MW-33(A)	MW-33 (A)	1/12/2004							0.19 J

TABLE 6
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Locator ID	Sample ID	Sample Date	Benzo(k) fluoranthene ug/L	Chrysene ug/L	Dibenzo(a,h) anthracene ug/L	Fluoranthene ug/L	Fluorene ug/L	Indeno(1,2, 3-cd) pyrene ug/L	Naphthalene ug/L
MW-34(A)	MW-34(A)	10/14/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-34(A)	MW-34(A)	10/14/2003							0.0623
MW-34(A)	MW-34 (A)	1/13/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.116
MW-34(A)	MW-34 (A)	1/13/2004							2 U
MW-35(A)	MW-35 (A)	10/16/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	1.04 J
MW-35(A)	MW-35 (A)	10/16/2003							0.124
MW-35(A)	MW-35 (A)	1/16/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.31 J
MW-35(A)	MW-35 (A)	1/16/2004							0.349
MW-36(A)	MW-36(A)	10/21/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-36(A)	MW-36(A)	10/21/2003							0.05 U
MW-36(A)	MW-36 (A)	1/14/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.68 J
MW-36(A)	MW-36 (A)	1/14/2004							0.05 U
MW-37(A)	MW-37 (A)	10/17/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	21.5
MW-37(A)	MW-37 (A)	10/17/2003							11.1
MW-38(A)	MW-38(A)	10/21/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-38(A)	MW-38(A)	10/21/2003							0.05 U
MW-38(A)	MW-38 (A)	1/14/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U B
MW-38(A)	MW-38 (A)	1/14/2004							0.121
MW-39(A)	MW-39 (A)	10/16/2003	0.01 U	0.01 U	0.01 U	0.05 U	2.24	0.01 U	17.7
MW-39(A)	MW-39 (A)	10/16/2003							22.8
MW-39(A)	MW-39 (A)	1/16/2004	0.01 U	0.01 U	0.01 U	0.05 U	1.04	0.01 U	23.4
MW-39(A)	MW-39 (A)	1/16/2004							17.3
MW-40(A)	MW-40 (A)	10/17/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.618	0.01 U	82.5
MW-40(A)	MW-40 (A)	10/17/2003							43.8
MW-40(A)	MW-40(A)	1/20/2004	0.02 U	0.02 U	0.02 U	0.1 U	0.72	0.02 U	1220
MW-40(A)	MW-40(A)	1/20/2004							682
MW-41(A)	MW-41(A)	10/14/2003	0.01 U	0.02 U	0.01 U	1.25 U	4.97	0.01 U	105
MW-41(A)	MW-41(A)	10/14/2003							82.3
MW-42(A)	MW-42 (A)	10/15/2003	0.01 U	0.01 U	0.01 U	0.05 U	2.56	0.01 U	141

TABLE 6
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Astoria, Oregon

Locator ID	Sample ID	Sample Date	Benzo(k) fluoranthene ug/L	Chrysene ug/L	Dibenzo(a,h) anthracene ug/L	Fluoranthene ug/L	Fluorene ug/L	Indeno(1,2, 3-cd) pyrene ug/L	Naphthalene ug/L
MW-42(A)	MW-42 (A)	10/15/2003							190
MW-43(A)	MW-43(A)	10/13/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-43(A)	MW-43(A)	10/13/2003							0.05 U
MW-43(A)	MW-43 (A)	1/12/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-43(A)	MW-43 (A)	1/12/2004							0.05 U
MW-44(A)	MW-44 (A)	10/17/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.362	0.01 U	1050
MW-44(A)	MW-44 (A)	10/17/2003							696
MW-45(A)	MW-45 (A)	10/16/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	1.11 J
MW-45(A)	MW-45 (A)	10/16/2003							0.0896
MW-45(A)	MW-45 (A)	1/16/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-45(A)	MW-45 (A)	1/16/2004							0.05 U
MW-46(A)	MW-46(A)	10/14/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-46(A)	MW-46(A)	10/14/2003							0.05 U
MW-46(A)	MW-46(A)	1/14/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.05 U
MW-46(A)	MW-46(A)	1/14/2004							2 U
MW-47(A)	MW-47(A)	10/13/2003	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	2 U
MW-47(A)	MW-47(A)	10/13/2003							0.05 U
MW-47(A)	MW-47 (A)	1/14/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.05 U	0.01 U	0.0783
MW-47(A)	MW-47 (A)	1/14/2004							2 U
MW-48(A)	MW-48(A)	10/14/2003	0.01 U	0.0157	0.01 U	0.123	0.204	0.01 U	0.76 J
MW-48(A)	MW-48(A)	10/14/2003							0.538
MW-48(A)	MW-48 (A)	1/14/2004	0.01 U	0.01 U	0.01 U	0.05 U	0.0763	0.01 U	0.397
MW-48(A)	MW-48 (A)	1/14/2004							2 U
R-1(M)	R-1(M)	10/22/2003	0.01 U	0.015	0.01 U	0.05 U	0.05 U	0.01 U	2 U B
R-1(M)	R-1(M)	10/22/2003							0.0972

TABLE 6
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Astoria, Oregon

Locator ID	Sample ID	Sample Date	Phenanthrene	Pyrene
			ug/L	ug/L
MW-1(F)	MW-1(F)	10/22/2003	0.05 U	0.05 U
MW-1(F)	MW-1(F)	10/22/2003		
MW-1(F)	MW-1 (F)	1/15/2004	0.0523	0.05 U
MW-1(F)	MW-1 (F)	1/15/2004		
MW-2(M)	MW-2(M)	6/19/2003	1.45	0.5 U
MW-2(M)	MW-2(M)	6/19/2003		
MW-2(M)	MW-2 (M)	10/15/2003	1.07	0.051
MW-2(M)	MW-2 (M)	10/15/2003		
MW-2(M)	MW-2 (M)	1/12/2004	0.669	0.1 U
MW-2(M)	MW-2 (M)	1/12/2004		
MW-6(M)	MW-6(M)	6/19/2003	0.1 U	0.1 U
MW-6(M)	MW-6(M)	6/19/2003		
MW-6(M)	MW-6(M)	10/22/2003	0.05 U	0.05 U
MW-6(M)	MW-6(M)	10/22/2003		
MW-6(M)	MW-6 (M)	1/12/2004	0.05 U	0.05 U
MW-6(M)	MW-6 (M)	1/12/2004		
MW-7(M)	BM-7(M)	6/19/2003	0.1 U	0.1 U
MW-7(M)	BM-7(M)	6/19/2003		
MW-7(M)	MW-7(M)	6/19/2003	0.1 U	0.1 U
MW-7(M)	MW-7(M)	6/19/2003		
MW-7(M)	MW-7(M)	10/13/2003	0.05 U	0.05 U
MW-7(M)	MW-7(M)	10/13/2003		
MW-7(M)	MW-7 (M)	1/12/2004	0.05 U	0.05 U
MW-7(M)	MW-7 (M)	1/12/2004		
MW-10(M)	MW-10(M)	6/19/2003	0.5 U	0.5 U
MW-10(M)	MW-10(M)	6/19/2003		
MW-10(M)	MW-10 (M)	10/15/2003	0.104	0.0589
MW-10(M)	MW-10 (M)	10/15/2003		
MW-10(M)	MW-10 (M)	1/13/2004	0.05 U	0.05 U
MW-10(M)	MW-10 (M)	1/13/2004		
MW-11(M)	MW-11(M)	6/19/2003	0.1 U	0.1 U
MW-11(M)	MW-11(M)	6/19/2003		
MW-11(M)	MW-11 (M)	10/15/2003	0.05 U	0.05 U

TABLE 6
SVOCs IN GROUND WATER

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Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Phenanthrene ug/L	Pyrene ug/L
MW-11(M)	MW-11 (M)	10/15/2003		
MW-11(M)	MW-11 (M)	1/13/2004	0.05 U	0.05 U
MW-11(M)	MW-11 (M)	1/13/2004		
MW-12(A)	MW-12(A)	10/22/2003	0.05 U	0.05 U
MW-12(A)	MW-12(A)	10/22/2003		
MW-12(A)	MW-12 (A)	1/15/2004	0.05 U	0.05 U
MW-12(A)	MW-12 (A)	1/15/2004		
MW-13(A)	MW-13(A)	10/22/2003	0.05 U	0.05 U
MW-13(A)	MW-13(A)	10/22/2003		
MW-13(A)	MW-13 (A)	1/15/2004	0.1 U	0.1 U
MW-13(A)	MW-13 (A)	1/15/2004		
MW-14(A)	MW-14(A)	10/21/2003	0.05 U	0.05 U
MW-14(A)	MW-14(A)	10/21/2003		
MW-14(A)	MW-14 (A)	1/15/2004	0.05 U	0.05 U
MW-14(A)	MW-14 (A)	1/15/2004		
MW-15(A)	MW-15(A)	10/20/2003	0.106	0.05 U
MW-15(A)	MW-15(A)	10/20/2003		
MW-16(A)	MW-16(A)	10/20/2003	0.05 U	0.05 U
MW-16(A)	MW-16(A)	10/20/2003		
MW-16(A)	MW-16(A)	1/19/2004	0.05 U	0.05 U
MW-16(A)	MW-16(A)	1/19/2004		
MW-17(A)	MW-17 (A)	10/17/2003	0.05 U	0.05 U
MW-17(A)	MW-17 (A)	10/17/2003		
MW-17(A)	BM-17(A)	1/19/2004	0.05 U	0.05 U
MW-17(A)	BM-17(A)	1/19/2004		
MW-17(A)	MW-17(A)	1/19/2004	0.05 U	0.05 U
MW-17(A)	MW-17(A)	1/19/2004		
MW-18(A)	MW-18(A)	10/21/2003	0.05 U	0.05 U
MW-18(A)	MW-18(A)	10/21/2003		
MW-18(A)	MW-18(A)	1/19/2004	0.05 U	0.05 U
MW-18(A)	MW-18(A)	1/19/2004		

TABLE 6
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Locator ID	Sample ID	Sample Date	Phenanthrene ug/L	Pyrene ug/L
MW-19(A)	BM-19(A)	10/20/2003	0.05 U	0.05 U
MW-19(A)	BM-19(A)	10/20/2003		
MW-19(A)	MW-19(A)	10/20/2003	0.05 U	0.05 U
MW-19(A)	MW-19(A)	10/20/2003		
MW-19(A)	MW-19 (A)	1/13/2004	0.05 U	0.05 U
MW-19(A)	MW-19 (A)	1/13/2004		
MW-20(A)	MW-20(A)	10/20/2003	0.0697	0.05 U
MW-20(A)	MW-20(A)	10/20/2003		
MW-20(A)	MW-20 (A)	1/13/2004	0.0981	0.05 U
MW-20(A)	MW-20 (A)	1/13/2004		
MW-21(A)	MW-21(A)	10/20/2003	0.09 U	0.05 U
MW-21(A)	MW-21(A)	10/20/2003		
MW-21(A)	BM-21 (A)	1/13/2004	0.0902	0.05 U
MW-21(A)	BM-21 (A)	1/13/2004		
MW-21(A)	MW-21 (A)	1/13/2004	0.05 U	0.05 U
MW-21(A)	MW-21 (A)	1/13/2004		
MW-22(A)	MW-22 (A)	10/16/2003	0.05 U	0.05 U
MW-22(A)	MW-22 (A)	10/16/2003		
MW-22(A)	MW-22(A)	1/19/2004	0.05 U	0.05 U
MW-22(A)	MW-22(A)	1/19/2004		
MW-23(A)	MW-23(A)	10/20/2003	0.05 U	0.05 U
MW-23(A)	MW-23(A)	10/20/2003		
MW-23(A)	MW-23 (A)	1/15/2004	0.05 U	0.05 U
MW-23(A)	MW-23 (A)	1/15/2004		
MW-24(A)	MW-24(A)	10/21/2003	0.05 U	0.05 U
MW-24(A)	MW-24(A)	10/21/2003		
MW-24(A)	MW-24 (A)	1/15/2004	0.05 U	0.05 U
MW-24(A)	MW-24 (A)	1/15/2004		
MW-26(A)	MW-26 (A)	10/17/2003	5 U	0.05 U
MW-26(A)	MW-26 (A)	10/17/2003		
MW-26(A)	MW-26 (A)	1/15/2004	0.05 U	0.05 U

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Locator ID	Sample ID	Sample Date	Phenanthrene ug/L	Pyrene ug/L
MW-26(A)	MW-26 (A)	1/15/2004		
MW-27(A)	MW-27(A)	10/21/2003	0.05 U	0.05 U
MW-27(A)	MW-27(A)	10/21/2003		
MW-27(A)	MW-27 (A)	1/14/2004	0.05 U	0.05 U
MW-27(A)	MW-27 (A)	1/14/2004		
MW-28(A)	MW-28 (A)	10/17/2003	5 U	0.05 U
MW-28(A)	MW-28 (A)	10/17/2003		
MW-28(A)	MW-28(A)	1/19/2004	0.07	0.05 U
MW-28(A)	MW-28(A)	1/19/2004		
MW-29(A)	MW-29(A)	10/21/2003	0.0638	0.05 U
MW-29(A)	MW-29(A)	10/21/2003		
MW-29(A)	MW-29(A)	1/19/2004	0.0802	0.05 U
MW-29(A)	MW-29(A)	1/19/2004		
MW-30(A)	MW-30 (A)	10/16/2003	0.05 U	0.05 U
MW-30(A)	MW-30 (A)	10/16/2003		
MW-30(A)	MW-30 (A)	1/16/2004	0.05 U	0.05 U
MW-30(A)	MW-30 (A)	1/16/2004		
MW-31(A)	BM-31 (A)	10/16/2003	0.05 U	0.05 U
MW-31(A)	BM-31 (A)	10/16/2003		
MW-31(A)	MW-31 (A)	10/16/2003	0.05 U	0.05 U
MW-31(A)	MW-31 (A)	10/16/2003		
MW-31(A)	MW-31 (A)	1/12/2004	0.05 U	0.05 U
MW-31(A)	MW-31 (A)	1/12/2004		
MW-32(A)	MW-32(A)	10/14/2003	0.05 U	0.05 U
MW-32(A)	MW-32(A)	10/14/2003		
MW-32(A)	MW-32 (A)	1/12/2004	0.05 U	0.05 U
MW-32(A)	MW-32 (A)	1/12/2004		
MW-33(A)	MW-33(A)	10/14/2003	0.05 U	0.05 U
MW-33(A)	MW-33(A)	10/14/2003		
MW-33(A)	MW-33 (A)	1/12/2004	0.05 U	0.05 U
MW-33(A)	MW-33 (A)	1/12/2004		

TABLE 6
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Astoria, Oregon

Locator ID	Sample ID	Sample Date	Phenanthrene ug/L	Pyrene ug/L
MW-34(A)	MW-34(A)	10/14/2003	0.05 U	0.05 U
MW-34(A)	MW-34(A)	10/14/2003		
MW-34(A)	MW-34 (A)	1/13/2004	0.05 U	0.05 U
MW-34(A)	MW-34 (A)	1/13/2004		
MW-35(A)	MW-35 (A)	10/16/2003	0.05 U	0.05 U
MW-35(A)	MW-35 (A)	10/16/2003		
MW-35(A)	MW-35 (A)	1/16/2004	0.05 U	0.05 U
MW-35(A)	MW-35 (A)	1/16/2004		
MW-36(A)	MW-36(A)	10/21/2003	0.05 U	0.05 U
MW-36(A)	MW-36(A)	10/21/2003		
MW-36(A)	MW-36 (A)	1/14/2004	0.05 U	0.05 U
MW-36(A)	MW-36 (A)	1/14/2004		
MW-37(A)	MW-37 (A)	10/17/2003	0.05 U	0.05 U
MW-37(A)	MW-37 (A)	10/17/2003		
MW-38(A)	MW-38(A)	10/21/2003	0.05 U	0.05 U
MW-38(A)	MW-38(A)	10/21/2003		
MW-38(A)	MW-38 (A)	1/14/2004	0.05 U	0.05 U
MW-38(A)	MW-38 (A)	1/14/2004		
MW-39(A)	MW-39 (A)	10/16/2003	0.806	0.05 U
MW-39(A)	MW-39 (A)	10/16/2003		
MW-39(A)	MW-39 (A)	1/16/2004	0.629	0.05 U
MW-39(A)	MW-39 (A)	1/16/2004		
MW-40(A)	MW-40 (A)	10/17/2003	0.317	0.05 U
MW-40(A)	MW-40 (A)	10/17/2003		
MW-40(A)	MW-40(A)	1/20/2004	1.11	0.1 U
MW-40(A)	MW-40(A)	1/20/2004		
MW-41(A)	MW-41(A)	10/14/2003	6.93	0.2
MW-41(A)	MW-41(A)	10/14/2003		
MW-42(A)	MW-42 (A)	10/15/2003	2.16	0.05 U

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Astoria, Oregon

Locator ID	Sample ID	Sample Date	Phenanthrene ug/L	Pyrene ug/L
MW-42(A)	MW-42 (A)	10/15/2003		
MW-43(A)	MW-43(A)	10/13/2003	0.05 U	0.05 U
MW-43(A)	MW-43(A)	10/13/2003		
MW-43(A)	MW-43 (A)	1/12/2004	0.05 U	0.05 U
MW-43(A)	MW-43 (A)	1/12/2004		
MW-44(A)	MW-44 (A)	10/17/2003	0.44	0.05 U
MW-44(A)	MW-44 (A)	10/17/2003		
MW-45(A)	MW-45 (A)	10/16/2003	0.05 U	0.05 U
MW-45(A)	MW-45 (A)	10/16/2003		
MW-45(A)	MW-45 (A)	1/16/2004	0.05 U	0.05 U
MW-45(A)	MW-45 (A)	1/16/2004		
MW-46(A)	MW-46(A)	10/14/2003	0.05 U	0.05 U
MW-46(A)	MW-46(A)	10/14/2003		
MW-46(A)	MW-46(A)	1/14/2004	0.05 U	0.05 U
MW-46(A)	MW-46(A)	1/14/2004		
MW-47(A)	MW-47(A)	10/13/2003	0.05 U	0.05 U
MW-47(A)	MW-47(A)	10/13/2003		
MW-47(A)	MW-47 (A)	1/14/2004	0.05 U	0.05 U
MW-47(A)	MW-47 (A)	1/14/2004		
MW-48(A)	MW-48(A)	10/14/2003	0.345	0.0812
MW-48(A)	MW-48(A)	10/14/2003		
MW-48(A)	MW-48 (A)	1/14/2004	0.131	0.05 U
MW-48(A)	MW-48 (A)	1/14/2004		
R-1(M)	R-1(M)	10/22/2003	0.05 U	0.05 U
R-1(M)	R-1(M)	10/22/2003		

TABLE 7
TOTAL METALS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Arsenic ug/L	Barium ug/L	Cadmium ug/L	Chromium ug/L	Lead ug/L	Mercury ug/L
MW-1(F)	MW-1(F)	10/22/2003	9.53	254	0.24 J	23.7	25.5	0.2 U B
MW-1(F)	MW-1 (F)	1/15/2004	2.34	64.9	1 U	1 U	1 U B	0.2 U B
MW-2(M)	MW-2(M)	6/19/2003					10 U	
MW-2(M)	MW-2 (M)	10/15/2003	21.6	32	1 U	4.98	8.72	0.2 U
MW-2(M)	MW-2 (M)	1/12/2004	17.2	13.8	1 U	1 U	1.77 J+,B	0.2 U B
MW-6(M)	MW-6(M)	10/22/2003	13.3	20	1 U	2.07	7.57	0.2 U B
MW-6(M)	MW-6 (M)	1/12/2004	10.4	16	0.25 J	1.85	3.79 JB	0.288 J+,B
MW-7(M)	MW-7(M)	10/13/2003	12.6	32.3	1 U	3.54	8.4	0.2 U B
MW-7(M)	MW-7 (M)	1/12/2004	8.04	33.1	1 U	2.26	8.07	0.2 U
MW-10(M)	MW-10(M)	6/19/2003					10 U	
MW-10(M)	MW-10 (M)	10/15/2003	25.7	111	0.7 J	13.3	11.5	0.262 J+, B
MW-10(M)	MW-10 (M)	1/13/2004	25.3	42.6	1 U	1 U	1 U B	0.2 U
MW-11(M)	MW-11 (M)	10/15/2003	13.9	10.3	1 U	1 U	1 U	0.2 U
MW-11(M)	MW-11 (M)	1/13/2004	24	30.1	1 U	3.63	4.96 J+,B	0.2 U
MW-12(A)	MW-12(A)	10/22/2003	1 U	38	1 U	1 U	1 U	0.2 U
MW-12(A)	MW-12 (A)	1/15/2004	1 U	39.1	1 U	1 U	1 U B	0.2 U B
MW-13(A)	MW-13(A)	10/22/2003	1 U	15	1 U	1 U	0.83 J	0.2 U
MW-13(A)	MW-13 (A)	1/15/2004	2.88	38.5	1 U	1 U	2.6	0.2 U B
MW-14(A)	MW-14(A)	10/21/2003	1 U	28.3	1 U	1 U	1 U	0.2 U
MW-14(A)	MW-14 (A)	1/15/2004	1 U	26.7	1 U	1 U	1 U B	0.2 U B
MW-15(A)	MW-15(A)	10/20/2003	1 U	33.6	1 U	1 U	0.47 J	0.2 U
MW-16(A)	MW-16(A)	10/20/2003	2.13	39.6	1 U	1.09	0.97 J	0.2 U
MW-16(A)	MW-16(A)	1/19/2004	2.6	42.5	1 U	1.39	148	0.2 U
MW-17(A)	MW-17 (A)	10/17/2003	1 U	49.3	1 U	2.58	1.65	0.2 U
MW-17(A)	BM-17(A)	1/19/2004	1.22	33.2	1 U	1 U	1.97	0.2 U

TABLE 7
TOTAL METALS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Arsenic ug/L	Barium ug/L	Cadmium ug/L	Chromium ug/L	Lead ug/L	Mercury ug/L
MW-17(A)	MW-17(A)	1/19/2004	1.77	32.6	1 U	1 U	2.03	0.2 U
MW-18(A)	MW-18(A)	10/21/2003	1 U	55.6	1 U	1.82	4.57	0.2 U
MW-18(A)	MW-18(A)	1/19/2004	1 U	67	1 U	4.06	7.81	0.2 U
MW-19(A)	BM-19(A)	10/20/2003	1.69	29	1 U	1 U	0.57 J	0.2 U
MW-19(A)	MW-19(A)	10/20/2003	1.32	29.9	1 U	1 U	0.5 J	0.2 U
MW-19(A)	MW-19 (A)	1/13/2004	0.97 J	14.1	1 U	1 U	1 U B	0.33
MW-20(A)	MW-20(A)	10/20/2003	1.29	23.7	1 U	1.42	1.45	0.2 U
MW-20(A)	MW-20 (A)	1/13/2004	2.15	35.8	1 U	2.4	3.88 J+,B	0.2 U
MW-21(A)	MW-21(A)	10/20/2003	1.21	30.6	1 U	1.93	1.8	0.2 U
MW-21(A)	BM-21 (A)	1/13/2004	1 U	13.6	1 U	1 U	1 U B	0.157 J
MW-21(A)	MW-21 (A)	1/13/2004	1 U	13.4	1 U	1 U	1 U B	0.0836 J
MW-22(A)	MW-22 (A)	10/16/2003	1.47	24.1	1 U	1.45	0.69 J	0.2 U
MW-22(A)	MW-22(A)	1/19/2004	1.69	26	1 U	2.03	1.35	0.2 U
MW-23(A)	MW-23(A)	10/20/2003	1 U	25.7	1 U	1 U	0.61 J	0.2 U
MW-23(A)	MW-23 (A)	1/15/2004	1 U	11.4	1 U	1 U	3.27	0.2 U B
MW-24(A)	MW-24(A)	10/21/2003	2.15	57.9	1 U	0.89 J	0.93 J	0.2 U
MW-24(A)	MW-24 (A)	1/15/2004	5.74	23.8	1 U	1.01	5.75	0.2 U B
MW-26(A)	MW-26 (A)	10/17/2003	1.04 J	59.3	1 U	1.37	1.97	0.223 J+, B
MW-26(A)	MW-26 (A)	1/15/2004	8.61	22.9	1 U	1.57	5.98	0.2 U B
MW-27(A)	MW-27(A)	10/21/2003	1	11.2	1 U	1 U	0.33 J	0.2 U
MW-27(A)	MW-27 (A)	1/14/2004	16.5	13.3	1 U	1 U	1 U B	0.2 U B
MW-28(A)	MW-28 (A)	10/17/2003	3.45 J	112	1 U	12.8	46.4	0.2 U
MW-28(A)	MW-28(A)	1/19/2004	3.11	60.8	1 U	6.18	19.8	0.2 U
MW-29(A)	MW-29(A)	10/21/2003	5.73	33.6	1 U	2.5	5.04	0.2 U
MW-29(A)	MW-29(A)	1/19/2004	6.82	28.5	1 U	2.25	7.74	0.2 U

TABLE 7
TOTAL METALS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Arsenic ug/L	Barium ug/L	Cadmium ug/L	Chromium ug/L	Lead ug/L	Mercury ug/L
MW-30(A)	MW-30 (A)	10/16/2003	7.95	65.4	1 U	6.53	3.7	0.248 J+, B
MW-30(A)	MW-30 (A)	1/16/2004	10.9	51.5	1 U	4.79	3.17	0.2 U B
MW-31(A)	BM-31 (A)	10/16/2003	13.9	27.1	1 U	0.96 J	0.26 J	0.2 U
MW-31(A)	MW-31 (A)	10/16/2003	13.3	26.5	1 U	0.91 J	0.56 J	0.2 U
MW-31(A)	MW-31 (A)	1/12/2004	13	46	1 U	2.85	3.02 J+,B	0.115 J
MW-32(A)	MW-32(A)	10/14/2003	1.4	27.9	1 U	1.41	0.58 J	0.2 U B
MW-32(A)	MW-32 (A)	1/12/2004	2.29	11.9	1 U	1 U	1 U B	0.19 J
MW-33(A)	MW-33(A)	10/14/2003	21.6	18.2	1 U	0.94 J	0.41 J	0.2 U B
MW-33(A)	MW-33 (A)	1/12/2004	30.7	32.1	1 U	1.57	1.51 J+,B	0.0747 B
MW-34(A)	MW-34(A)	10/14/2003	1.42	36.7	1 U	3.05	1.32	0.2 U B
MW-34(A)	MW-34 (A)	1/13/2004	3.26	33.3	0.19 J	2.53	1.62 J+,B	0.2 U
MW-35(A)	MW-35 (A)	10/16/2003	1.02	13.6	1 U	1.5	0.24 J	0.2 U U
MW-35(A)	MW-35 (A)	1/16/2004	1.8	22.1	1 U	1.9	1.44	0.2 U B
MW-36(A)	MW-36(A)	10/21/2003	2.27	169	1 U	4.74	12.6	0.2 U
MW-36(A)	MW-36 (A)	1/14/2004	1 U	38.4	1 U	1.42	3.06	0.2 U B
MW-37(A)	MW-37 (A)	10/17/2003	1 U	27.5	1 U	0.93 J	0.58 J	0.2 U
MW-38(A)	MW-38(A)	10/21/2003	1 U	20.9	1 U	1 U	0.48 J	0.2 U
MW-38(A)	MW-38 (A)	1/14/2004	1 U	12.3	1 U	1 U	1.2 J+,B	0.2 U
MW-39(A)	MW-39 (A)	10/16/2003	1.65	7.54	1 U	1 U	0.19 J	0.2 U
MW-39(A)	MW-39 (A)	1/16/2004	2.29	11.2	1 U	0.88 J	1 U B	0.31 JB
MW-40(A)	MW-40 (A)	10/17/2003	3.81	46.2	1 U	5.42	2.95	0.2 U
MW-40(A)	MW-40(A)	1/20/2004	12.8	33.1	1 U	1 U	5.19	0.2 U
MW-41(A)	MW-41(A)	10/14/2003	14.4	23.5	1 U	1 U	0.13 J	0.2 U B

TABLE 7
TOTAL METALS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Arsenic ug/L	Barium ug/L	Cadmium ug/L	Chromium ug/L	Lead ug/L	Mercury ug/L
MW-42(A)	MW-42 (A)	10/15/2003	37.2	43.6	1 U	4.66	2.75	0.2 U
MW-43(A)	MW-43(A)	10/13/2003	7.52	22.7	1 U	0.85 J	0.23 J	0.2 U B
MW-43(A)	MW-43 (A)	1/12/2004	11.6	31.2	1 U	1.89	2.18 J+,B	0.2 U B
MW-44(A)	MW-44 (A)	10/17/2003	12.2	14.7	1 U	0.85 J	0.86 J	0.2 U
MW-45(A)	MW-45 (A)	10/16/2003	6.55	8.55	1 U	1.11	0.54 J	0.2 U
MW-45(A)	MW-45 (A)	1/16/2004	1 U	8.37	1 U	1 U	1 U B	0.2 U
MW-46(A)	MW-46(A)	10/14/2003	1.25	15.6	1 U	60.6	1.41	0.2 U B
MW-46(A)	MW-46(A)	1/14/2004	3.11	26	1 U	16.5	2.17 J+,B	0.2 U
MW-47(A)	MW-47(A)	10/13/2003	1 U	19.5	1 U	1.65	0.57 J	0.2 U
MW-47(A)	MW-47 (A)	1/14/2004	4.14	26.6	1 U	2.34	3.14 J+,B	0.2 U
MW-48(A)	MW-48(A)	10/14/2003	1 U	43.5	1 U	2.5	21.6	0.2 U
MW-48(A)	MW-48 (A)	1/14/2004	1.14	19.5	1 U	1 U	1 U J	0.2 U
R-1(M)	R-1(M)	10/22/2003	3.56 J	12	1 U	0.99 J	4.01	0.2 U

**TABLE 7
TOTAL METALS IN GROUND WATER**

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Selenium	Silver
			ug/L	ug/L
MW-1(F)	MW-1(F)	10/22/2003	2.22	0.18 J
MW-1(F)	MW-1 (F)	1/15/2004	1.29	1 U
MW-2(M)	MW-2(M)	6/19/2003		
MW-2(M)	MW-2 (M)	10/15/2003	1 U	1 U
MW-2(M)	MW-2 (M)	1/12/2004	1 U	1 U
MW-6(M)	MW-6(M)	10/22/2003	0.98 J	1 U
MW-6(M)	MW-6 (M)	1/12/2004	1.11	0.08 J
MW-7(M)	MW-7(M)	10/13/2003	2 U	0.11 J
MW-7(M)	MW-7 (M)	1/12/2004	1 U	1 U
MW-10(M)	MW-10(M)	6/19/2003		
MW-10(M)	MW-10 (M)	10/15/2003	1 U	1 U
MW-10(M)	MW-10 (M)	1/13/2004	1 U	1 U
MW-11(M)	MW-11 (M)	10/15/2003	1 U	1 U
MW-11(M)	MW-11 (M)	1/13/2004	1 U	1 U
MW-12(A)	MW-12(A)	10/22/2003	2.77	1 U
MW-12(A)	MW-12 (A)	1/15/2004	4.41	1 U
MW-13(A)	MW-13(A)	10/22/2003	1 U	1 U
MW-13(A)	MW-13 (A)	1/15/2004	0.96 J	1 U
MW-14(A)	MW-14(A)	10/21/2003	1 U	1 U
MW-14(A)	MW-14 (A)	1/15/2004	1.05	1 U
MW-15(A)	MW-15(A)	10/20/2003	1 U	1 U
MW-16(A)	MW-16(A)	10/20/2003	1 U	1 U
MW-16(A)	MW-16(A)	1/19/2004	1.35 J+,B	1 U
MW-17(A)	MW-17 (A)	10/17/2003	1 U	1 U
MW-17(A)	BM-17(A)	1/19/2004	1.27 J+,B	1 U

TABLE 7
TOTAL METALS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Selenium	Silver
			ug/L	ug/L
MW-17(A)	MW-17(A)	1/19/2004	1.07 J+,B	1 U
MW-18(A)	MW-18(A)	10/21/2003	1 U	1 U
MW-18(A)	MW-18(A)	1/19/2004	1.28 J+,B	1 U
MW-19(A)	BM-19(A)	10/20/2003	1 U	1 U
MW-19(A)	MW-19(A)	10/20/2003	1 U	1 U
MW-19(A)	MW-19 (A)	1/13/2004	1 U	1 U
MW-20(A)	MW-20(A)	10/20/2003	1 U	1 U
MW-20(A)	MW-20 (A)	1/13/2004	1 U	1 U
MW-21(A)	MW-21(A)	10/20/2003	0.87 J	1 U
MW-21(A)	BM-21 (A)	1/13/2004	1 U	0.07 J
MW-21(A)	MW-21 (A)	1/13/2004	1 U	1 U
MW-22(A)	MW-22 (A)	10/16/2003	1 U	1 U
MW-22(A)	MW-22(A)	1/19/2004	1.17 J+,B	1 U
MW-23(A)	MW-23(A)	10/20/2003	1 U	1 U
MW-23(A)	MW-23 (A)	1/15/2004	1.23	1 U
MW-24(A)	MW-24(A)	10/21/2003	0.6 J	1 U
MW-24(A)	MW-24 (A)	1/15/2004	1 U	1 U
MW-26(A)	MW-26 (A)	10/17/2003	1 U	1 U
MW-26(A)	MW-26 (A)	1/15/2004	1 U	1 U
MW-27(A)	MW-27(A)	10/21/2003	1.05	1 U
MW-27(A)	MW-27 (A)	1/14/2004	1 U	1 U
MW-28(A)	MW-28 (A)	10/17/2003	1 U	1 U
MW-28(A)	MW-28(A)	1/19/2004	1.3 J+,B	1 U
MW-29(A)	MW-29(A)	10/21/2003	1 U	1 U
MW-29(A)	MW-29(A)	1/19/2004	1.23 J+,B	1 U

TABLE 7
TOTAL METALS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Selenium ug/L	Silver ug/L
MW-30(A)	MW-30 (A)	10/16/2003	1 U	1 U
MW-30(A)	MW-30 (A)	1/16/2004	1.06	1 U
MW-31(A)	BM-31 (A)	10/16/2003	1 U	1 U
MW-31(A)	MW-31 (A)	10/16/2003	1 U	1 U
MW-31(A)	MW-31 (A)	1/12/2004	1 U	1 U
MW-32(A)	MW-32(A)	10/14/2003	2 U	1 U
MW-32(A)	MW-32 (A)	1/12/2004	1 U	1 U
MW-33(A)	MW-33(A)	10/14/2003	2 U	1 U
MW-33(A)	MW-33 (A)	1/12/2004	1 U	1 U
MW-34(A)	MW-34(A)	10/14/2003	2 U	1 U
MW-34(A)	MW-34 (A)	1/13/2004	1 U	1 U
MW-35(A)	MW-35 (A)	10/16/2003	1 U	1 U
MW-35(A)	MW-35 (A)	1/16/2004	1.49	1 U
MW-36(A)	MW-36(A)	10/21/2003	2.16	1 U
MW-36(A)	MW-36 (A)	1/14/2004	1 U	1 U
MW-37(A)	MW-37 (A)	10/17/2003	1 U	1 U
MW-38(A)	MW-38(A)	10/21/2003	1 U	1 U
MW-38(A)	MW-38 (A)	1/14/2004	1 U	1 U
MW-39(A)	MW-39 (A)	10/16/2003	1 U	1 U
MW-39(A)	MW-39 (A)	1/16/2004	0.9 J	1 U
MW-40(A)	MW-40 (A)	10/17/2003	1 U	1 U
MW-40(A)	MW-40(A)	1/20/2004	1.14 J+,B	1 U
MW-41(A)	MW-41(A)	10/14/2003	2 U	1 U

TABLE 7
TOTAL METALS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Selenium ug/L	Silver ug/L
MW-42(A)	MW-42 (A)	10/15/2003	0.71 J	1 U
MW-43(A)	MW-43(A)	10/13/2003	2 U	1 U
MW-43(A)	MW-43 (A)	1/12/2004	1 U	1 U
MW-44(A)	MW-44 (A)	10/17/2003	1 U	1 U
MW-45(A)	MW-45 (A)	10/16/2003	1 U	1 U
MW-45(A)	MW-45 (A)	1/16/2004	1.45	1 U
MW-46(A)	MW-46(A)	10/14/2003	2 U	1 U
MW-46(A)	MW-46(A)	1/14/2004	1 U	1 U
MW-47(A)	MW-47(A)	10/13/2003	2 U	1 U
MW-47(A)	MW-47 (A)	1/14/2004	1 U	1 U
MW-48(A)	MW-48(A)	10/14/2003	2 U	1 U
MW-48(A)	MW-48 (A)	1/14/2004	1 U	1 U
R-1(M)	R-1(M)	10/22/2003	1 U	1 U

**TABLE 8
DISSOLVED METALS IN GROUND WATER**

**Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon**

Locator ID	Sample ID	Sample Date	Arsenic ug/L	Barium ug/L	Cadmium ug/L	Chromium ug/L	Lead ug/L	Mercury ug/L
MW-1(F)	MW-1 (F)	1/15/2004	1.4	60.9	1 U	1 U	1 U B	0.2 U
MW-2(M)	MW-2 (M)	10/15/2003	19.3	11.8	1 U	1.37	2.03	0.2 U B
MW-6(M)	MW-6(M)	6/19/2003					10 U	
MW-6(M)	MW-6(M)	10/22/2003	13.3	12.4	1 U	1.32	0.27 J	0.038 J
MW-7(M)	BM-7(M)	6/19/2003					10 U	
MW-7(M)	MW-7(M)	6/19/2003					10 U	
MW-7(M)	MW-7(M)	10/13/2003	9.85	17.8	1 U	1 U	1 U	0.2 U B
MW-10(M)	MW-10 (M)	1/13/2004	26.4	38.2	1 U	1 U	0.37 J	0.2 U
MW-11(M)	MW-11(M)	6/19/2003					10 U	
MW-11(M)	MW-11 (M)	10/15/2003	14.8	10	0.14 J	1.02	0.24 J	0.2 U B
MW-12(A)	MW-12(A)	10/22/2003	1 U	39.5	1 U	1 U	0.24 J	0.2 U
MW-13(A)	MW-13(A)	10/22/2003	1 U	14.3	1 U	1.18	0.74 J	0.2 U
MW-14(A)	MW-14(A)	10/21/2003	1 U	27.7	1 U	1 U	0.21 J	0.2 U
MW-15(A)	MW-15(A)	10/20/2003	1 U	32.8	1 U	1 U	0.32 J	0.2 U
MW-16(A)	MW-16(A)	10/20/2003	1 U	25.4	1 U	1 U	0.34 J	0.2 U
MW-17(A)	MW-17 (A)	10/17/2003	1 U	36.2	1 U	1 U	0.1 J	0.2 U
MW-18(A)	MW-18(A)	10/21/2003	1 U	44.3	1 U	1 U	0.19 J	0.072 J
MW-19(A)	BM-19(A)	10/20/2003	1.88	26.4	1 U	1 U	0.14 J	0.2 U
MW-19(A)	MW-19(A)	10/20/2003	1.73	28.8	1 U	1 U	0.39 J	0.2 U
MW-20(A)	MW-20(A)	10/20/2003	1.18	15	1 U	1 U	0.22 J	0.2 U
MW-21(A)	MW-21(A)	10/20/2003	1 U	15.2	1 U	1 U	0.43 J	0.2 U

**TABLE 8
DISSOLVED METALS IN GROUND WATER**

**Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon**

Locator ID	Sample ID	Sample Date	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-22(A)	MW-22 (A)	10/16/2003	1 U	17	1 U	1.04	0.19 J	0.2 U B
MW-23(A)	MW-23(A)	10/20/2003	1 U	24.7	1 U	1 U	0.33 J	0.2 U
MW-24(A)	MW-24(A)	10/21/2003	2.43	57.2	1 U	1 U	0.33 J	0.2 U
MW-26(A)	MW-26 (A)	10/17/2003	1 U	52	1 U	1 U	1.16	0.2 U B
MW-27(A)	MW-27(A)	10/21/2003	0.99 J	11.9	0.1 J	1 U	0.3 J	0.2 U
MW-28(A)	MW-28 (A)	10/17/2003	1 U	38.1	1 U	1 U	1.02	0.2 U B
MW-29(A)	MW-29(A)	10/21/2003	5.97	19.7	1 U	1 U	3	0.088 J
MW-30(A)	MW-30 (A)	10/16/2003	6.93	27.6	1 U	1.25	0.44 J	0.2 U B
MW-31(A)	BM-31 (A)	10/16/2003	13.3	23.3	1 U	0.99 J	1 U	0.2 U
MW-31(A)	MW-31 (A)	10/16/2003	15.3	25.2	1 U	1.11	0.18 J	0.2 U B
MW-32(A)	MW-32(A)	10/14/2003	2.28	25	1 U	1 U	0.13 J	0.2 U
MW-33(A)	MW-33(A)	10/14/2003	18.2	15.5	1 U	1 U	0.14 J	0.2 U B
MW-34(A)	MW-34(A)	10/14/2003	1 U	23.5	1 U	1 U	0.14 J	0.2 U
MW-35(A)	MW-35 (A)	10/16/2003	1 U	13.2	1 U	0.92 J	1 U	0.2 U J
MW-36(A)	MW-36(A)	10/21/2003	1 U	82.7	1 U	1 U	0.98 J	0.2 U
MW-37(A)	MW-37 (A)	10/17/2003	1 U	24.8	1 U	2.03	0.41 J	0.2 U B
MW-38(A)	MW-38(A)	10/21/2003	1 U	20	1 U	1 U	0.24 J	0.2 U
MW-39(A)	MW-39 (A)	10/16/2003	1.79	6.83	1 U	0.86 J	0.19 J	0.2 U B

**TABLE 8
DISSOLVED METALS IN GROUND WATER**

**Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon**

Locator ID	Sample ID	Sample Date	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-40(A)	MW-40 (A)	10/17/2003	1.86	22.2	1 U	1.3	0.27 J	0.2 U B
MW-41(A)	MW-41(A)	10/14/2003	12.4	23	1 U	1 U	1 U	0.2 U B
MW-42(A)	MW-42 (A)	10/15/2003	35.6	20.2	1 U	1 U	0.48 J	0.2 U B
MW-43(A)	MW-43(A)	10/13/2003	7.34	23.4	1 U	1 U	0.14 J	0.2 U
MW-44(A)	MW-44 (A)	10/17/2003	11.9	13	1 U	1.09	0.29 J	0.2 U B
MW-45(A)	MW-45 (A)	10/16/2003	2.25	3.79	1 U	0.97 J	0.16 J	0.2 U
MW-46(A)	MW-46(A)	10/14/2003	1 U	9.1	1 U	54.3	0.29 J	0.2 U B
MW-47(A)	MW-47(A)	10/13/2003	1 U	17.4	1 U	1 U	0.18 J	0.2 U
MW-48(A)	MW-48(A)	10/14/2003	1 U	31.4	1 U	1 U	0.51 J	0.2 U J

**TABLE 8
DISSOLVED METALS IN GROUND WATER**

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Selenium	Silver
			ug/L	ug/L
MW-1(F)	MW-1 (F)	1/15/2004	1.41	1 U
MW-2(M)	MW-2 (M)	10/15/2003	2 U B	1 U
MW-6(M)	MW-6(M)	6/19/2003		
MW-6(M)	MW-6(M)	10/22/2003	0.76 J	1 U
MW-7(M)	BM-7(M)	6/19/2003		
MW-7(M)	MW-7(M)	6/19/2003		
MW-7(M)	MW-7(M)	10/13/2003	0.93 J	1 U
MW-10(M)	MW-10 (M)	1/13/2004	1.19 J+,B	0.07 J
MW-11(M)	MW-11(M)	6/19/2003		
MW-11(M)	MW-11 (M)	10/15/2003	2 U B	1 U
MW-12(A)	MW-12(A)	10/22/2003	5 U B	1 U
MW-13(A)	MW-13(A)	10/22/2003	5 U B	1 U
MW-14(A)	MW-14(A)	10/21/2003	5 U B	1 U
MW-15(A)	MW-15(A)	10/20/2003	1 U	1 U
MW-16(A)	MW-16(A)	10/20/2003	1 U B	1 U
MW-17(A)	MW-17 (A)	10/17/2003	1 U B	1 U
MW-18(A)	MW-18(A)	10/21/2003	1 U B	1 U
MW-19(A)	BM-19(A)	10/20/2003	1 U B	1 U
MW-19(A)	MW-19(A)	10/20/2003	1 U B	1 U
MW-20(A)	MW-20(A)	10/20/2003	1 U	1 U
MW-21(A)	MW-21(A)	10/20/2003	1 U B	1 U

**TABLE 8
DISSOLVED METALS IN GROUND WATER**

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Selenium ug/L	Silver ug/L
MW-22(A)	MW-22 (A)	10/16/2003	2 U B	1 U
MW-23(A)	MW-23(A)	10/20/2003	1 U	1 U
MW-24(A)	MW-24(A)	10/21/2003	1.27 J+,B	1 U
MW-26(A)	MW-26 (A)	10/17/2003	1 U B	1 U
MW-27(A)	MW-27(A)	10/21/2003	1.6 J+,B	1 U
MW-28(A)	MW-28 (A)	10/17/2003	1 U B	1 U
MW-29(A)	MW-29(A)	10/21/2003	5 U	1 U
MW-30(A)	MW-30 (A)	10/16/2003	2 U B	1 U
MW-31(A)	BM-31 (A)	10/16/2003	1 U	1 U
MW-31(A)	MW-31 (A)	10/16/2003	1 U B	1 U
MW-32(A)	MW-32(A)	10/14/2003	1 U	1 U
MW-33(A)	MW-33(A)	10/14/2003	1 U	1 U
MW-34(A)	MW-34(A)	10/14/2003	1 U	1 U
MW-35(A)	MW-35 (A)	10/16/2003	1 U	1 U
MW-36(A)	MW-36(A)	10/21/2003	2.61 J+,B	1 U
MW-37(A)	MW-37 (A)	10/17/2003	1 U B	1 U
MW-38(A)	MW-38(A)	10/21/2003	1.34 J+,B	1 U
MW-39(A)	MW-39 (A)	10/16/2003	1.11 J+, B	1 U

**TABLE 8
DISSOLVED METALS IN GROUND WATER**

**Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon**

Locator ID	Sample ID	Sample Date	Selenium	Silver
			ug/L	ug/L
MW-40(A)	MW-40 (A)	10/17/2003	1 U	1 U
MW-41(A)	MW-41(A)	10/14/2003	1 U	1 U
MW-42(A)	MW-42 (A)	10/15/2003	2 U B	1 U
MW-43(A)	MW-43(A)	10/13/2003	0.96 J	1 U
MW-44(A)	MW-44 (A)	10/17/2003	1 U B	1 U
MW-45(A)	MW-45 (A)	10/16/2003	1 U	1 U
MW-46(A)	MW-46(A)	10/14/2003	1 U	1 U
MW-47(A)	MW-47(A)	10/13/2003	1 U	1 U
MW-48(A)	MW-48(A)	10/14/2003	1 U	1 U

TABLE 9
ANIONS and CATIONS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Alkalinity, Total mgCaCO ₃ /L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Iron mg/L	Magnesium mg/L	Manganese mg/L
MW-1(F)	MW-1(F)	10/22/2003	490	119		17.5	46.6	46.8	10.5
MW-2(M)	MW-2(M)	6/19/2003			26.1		28.1		
MW-2(M)	MW-2 (M)	10/15/2003	116	23.4		16.8	39.3	11.1	1.69
MW-6(M)	MW-6(M)	6/19/2003			15.8		11.8		
MW-6(M)	MW-6 (M)	1/12/2004	130	15.7		16.5	29	11.1	2.32
MW-7(M)	BM-7(M)	6/19/2003			16.4		12.2		
MW-7(M)	MW-7(M)	6/19/2003			14.8		13		
MW-7(M)	MW-7(M)	10/13/2003	208	41.8		13.2	19.6	19.5	1.06
MW-10(M)	MW-10(M)	6/19/2003			30.6		47		
MW-10(M)	MW-10 (M)	10/15/2003	225	46.5		9.61	68.3	32.6	1.32
MW-11(M)	MW-11(M)	6/19/2003			9.51		25.7		
MW-11(M)	MW-11 (M)	10/15/2003	115	13.8		20.8	27.8	17.6	0.473
MW-12(A)	MW-12(A)	10/22/2003					0.87		
MW-12(A)	MW-12 (A)	1/15/2004	136	131		13.9	0.133 J	18.3	0.0127
MW-13(A)	MW-13(A)	10/22/2003	497	136		14.8	1.27	20.5	0.131
MW-14(A)	MW-14(A)	10/21/2003	132	110		12.9	0.348	18.3	0.245
MW-15(A)	MW-15(A)	10/20/2003					7.81		
MW-16(A)	MW-16(A)	10/20/2003					13.3		
MW-16(A)	MW-16(A)	1/19/2004	300	92.2		15.8	12	22	0.458
MW-17(A)	MW-17 (A)	10/17/2003	240	102		13.4	18.4	22.4	0.991
MW-18(A)	MW-18(A)	10/21/2003					20		
MW-18(A)	MW-18(A)	1/19/2004	332	67		13.2	28.6	28.1	1.53
MW-19(A)	BM-19(A)	10/20/2003					12.8		
MW-19(A)	MW-19(A)	10/20/2003					12.7		
MW-19(A)	MW-19 (A)	1/13/2004	92.7	19.7		12.6	3.01	10.4	0.162

TABLE 9
ANIONS and CATIONS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Alkalinity, Total mgCaCO ₃ /L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Iron mg/L	Magnesium mg/L	Manganese mg/L
MW-20(A)	MW-20(A)	10/20/2003	71.2	17.8		7.24	15.7	15	0.581
MW-21(A)	MW-21(A)	10/20/2003					25		
MW-21(A)	BM-21 (A)	1/13/2004	109	20.8		7.85	15.3	9.32	0.576
MW-21(A)	MW-21 (A)	1/13/2004	107	20.4		7.86	14.1	9.33	0.581
MW-22(A)	MW-22 (A)	10/16/2003					18.6		
MW-22(A)	MW-22(A)	1/19/2004	85	26.6		10.2	14.3	10	0.337
MW-23(A)	MW-23(A)	10/20/2003	90.3	37.8		11.5	6.21	11.2	0.293
MW-24(A)	MW-24(A)	10/21/2003	206	12.1		54.5	1.2	7.62	0.225
MW-26(A)	MW-26 (A)	10/17/2003					13.9		
MW-26(A)	MW-26 (A)	1/15/2004	127	21		12.3	34.6	7.66	1.39
MW-27(A)	MW-27(A)	10/21/2003					0.996		
MW-27(A)	MW-27 (A)	1/14/2004	34.4	12.5		10.2	33.3	5.72	0.294
MW-28(A)	MW-28 (A)	10/17/2003					58.5		
MW-28(A)	MW-28(A)	1/19/2004	138	46.9		10.7	48.3	14.5	1.61
MW-29(A)	MW-29(A)	10/21/2003					37.6		
MW-29(A)	MW-29(A)	1/19/2004	173	26.4		10.1	41.4	13.1	1.78
MW-30(A)	MW-30 (A)	10/16/2003	162	28		8.51	38.2	16.6	1.47
MW-31(A)	BM-31 (A)	10/16/2003	200	33.9		10.8	29.5	23.3	1.75
MW-31(A)	MW-31 (A)	10/16/2003	202	33.5		10.7	29.1	23.5	1.7
MW-32(A)	MW-32(A)	10/14/2003	153	12.4		26.7	3.24	24.4	0.11
MW-33(A)	MW-33(A)	10/14/2003	186	24.1		16.6	16.7	14.1	0.575
MW-34(A)	MW-34(A)	10/14/2003	179	31.6		19.1	5.5	26	0.324
MW-35(A)	MW-35 (A)	10/16/2003	45.7	9.06		16.6	5.93	6.62	0.206

TABLE 9
ANIONS and CATIONS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Alkalinity, Total mgCaCO ₃ /L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Iron mg/L	Magnesium mg/L	Manganese mg/L
MW-36(A)	MW-36(A)	10/21/2003					15		
MW-36(A)	MW-36 (A)	1/14/2004	84	17.9		6.75	0.41	5.45	0.059
MW-37(A)	MW-37 (A)	10/17/2003					27.1		
MW-38(A)	MW-38(A)	10/21/2003	150	32.4		17.2	1.48	13	0.209
MW-39(A)	MW-39 (A)	10/16/2003					6.09		
MW-39(A)	MW-39 (A)	1/16/2004	63.7	11.8		9.7	12.8	5.05	0.146
MW-40(A)	MW-40 (A)	10/17/2003	190	28.4		10.4	42.5	24.9	1.44
MW-41(A)	MW-41(A)	10/14/2003	185	40.6		9.23	35	13.6	2.29
MW-42(A)	MW-42 (A)	10/15/2003	218	48.3		7.64	48.2	18.1	2.62
MW-43(A)	MW-43(A)	10/13/2003	91	25.9		9.31	6.25	5.58	0.598
MW-44(A)	MW-44 (A)	10/17/2003	90.8	17.1		14.6	36.8	5.1	0.54
MW-45(A)	MW-45 (A)	10/16/2003					10.4		
MW-45(A)	MW-45 (A)	1/16/2004	71.6	24.1		12.1	0.798	7.53	0.0577
MW-46(A)	MW-46(A)	10/14/2003	54	10.1		7.64	15.4	6.32	0.722
MW-47(A)	MW-47(A)	10/13/2003	36.1	7.89		11.6	0.49	8.34	0.0476
MW-48(A)	MW-48(A)	10/14/2003	83.3	18		11.6	25.7	10.4	0.872

TABLE 9
ANIONS and CATIONS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Nitrogen, Nitrate (as N) mg/L	Nitrogen, Nitrate- Nitrite mg/L	Potassium mg/L	Sodium mg/L	Sulfate mg/L	Total Dissolved Solids mg/L	Total Organic Carbon (TOC) mg/L
MW-1(F)	MW-1(F)	10/22/2003		1 U	8.54	96.3	168		
MW-2(M)	MW-2(M)	6/19/2003	0.1 U					138	4.61
MW-2(M)	MW-2 (M)	10/15/2003		2 U B	6.03	12.6	1 U B		
MW-6(M)	MW-6(M)	6/19/2003	0.1 U					163	4.07
MW-6(M)	MW-6 (M)	1/12/2004		0.5 U	4	21.9	1.43		
MW-7(M)	BM-7(M)	6/19/2003	0.1 U					244	3.96
MW-7(M)	MW-7(M)	6/19/2003	0.1 U					248	3.9
MW-7(M)	MW-7(M)	10/13/2003		0.149	6.69	14.3	5.76		
MW-10(M)	MW-10(M)	6/19/2003	0.1 U					330	7.59
MW-10(M)	MW-10 (M)	10/15/2003		2 U B	11.3	11.6	0.77 U B		
MW-11(M)	MW-11(M)	6/19/2003	0.1 U					182	1.92
MW-11(M)	MW-11 (M)	10/15/2003		2 U	8.13	8.56	2.36		
MW-12(A)	MW-12(A)	10/22/2003							
MW-12(A)	MW-12 (A)	1/15/2004		2.01	7.11	64	371		
MW-13(A)	MW-13(A)	10/22/2003		0.02 U	7.71	62.6	52.6		
MW-14(A)	MW-14(A)	10/21/2003		0.0472	7.41	51.4	353		
MW-15(A)	MW-15(A)	10/20/2003							
MW-16(A)	MW-16(A)	10/20/2003							
MW-16(A)	MW-16(A)	1/19/2004		0.107 J+,B	7.99	43.5	133		
MW-17(A)	MW-17 (A)	10/17/2003		2 U	11.8	56.4	204		
MW-18(A)	MW-18(A)	10/21/2003							
MW-18(A)	MW-18(A)	1/19/2004		0.05 U	11.1	45.4	24.2		
MW-19(A)	BM-19(A)	10/20/2003							
MW-19(A)	MW-19(A)	10/20/2003							
MW-19(A)	MW-19 (A)	1/13/2004		0.512	5.05	24.5	25		

TABLE 9
ANIONS and CATIONS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Nitrogen, Nitrate (as N) mg/L	Nitrogen, Nitrate- Nitrite mg/L	Potassium mg/L	Sodium mg/L	Sulfate mg/L	Total Dissolved Solids mg/L	Total Organic Carbon (TOC) mg/L
MW-20(A)	MW-20(A)	10/20/2003		1 U	7.17	18	90.5		
MW-21(A)	MW-21(A)	10/20/2003							
MW-21(A)	BM-21 (A)	1/13/2004		0.5 U	5.52	13.9	8.34		
MW-21(A)	MW-21 (A)	1/13/2004		0.5 U	5.21	14.1	7.94		
MW-22(A)	MW-22 (A)	10/16/2003							
MW-22(A)	MW-22(A)	1/19/2004		0.415 J+,B	5.28	12	38.1		
MW-23(A)	MW-23(A)	10/20/2003		1 U B	4.71	20.9	104		
MW-24(A)	MW-24(A)	10/21/2003		1 U B	7.9	92.4	17.6		
MW-26(A)	MW-26 (A)	10/17/2003							
MW-26(A)	MW-26 (A)	1/15/2004		0.5 U	3.98	9.58	12.8		
MW-27(A)	MW-27(A)	10/21/2003							
MW-27(A)	MW-27 (A)	1/14/2004		0.76	3.07	14.4	43.9		
MW-28(A)	MW-28 (A)	10/17/2003							
MW-28(A)	MW-28(A)	1/19/2004		0.05 U	4.23	16.8	128		
MW-29(A)	MW-29(A)	10/21/2003							
MW-29(A)	MW-29(A)	1/19/2004		0.0531 J+,B	5.53	7.11	4.95		
MW-30(A)	MW-30 (A)	10/16/2003		2 U	7.18	7.49	1 U		
MW-31(A)	BM-31 (A)	10/16/2003		2 U B	9.03	11.4	3.28		
MW-31(A)	MW-31 (A)	10/16/2003		2 U	8.92	11.6	1.2 J+,B		
MW-32(A)	MW-32(A)	10/14/2003		0.052 J	12	48.2	64.5		
MW-33(A)	MW-33(A)	10/14/2003		0.094 J	9.21	39.6	13.8		
MW-34(A)	MW-34(A)	10/14/2003		0.039 J	12.4	14.8	16.4		
MW-35(A)	MW-35 (A)	10/16/2003		2 U	4.94	8.04	8.64		

TABLE 9
ANIONS and CATIONS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Nitrogen, Nitrate (as N) mg/L	Nitrogen, Nitrate- Nitrite mg/L	Potassium mg/L	Sodium mg/L	Sulfate mg/L	Total Dissolved Solids mg/L	Total Organic Carbon (TOC) mg/L
MW-36(A)	MW-36(A)	10/21/2003							
MW-36(A)	MW-36 (A)	1/14/2004		0.852	3.86	19	9.99		
MW-37(A)	MW-37 (A)	10/17/2003							
MW-38(A)	MW-38(A)	10/21/2003		1 U	6.6	29.4	38.9		
MW-39(A)	MW-39 (A)	10/16/2003							
MW-39(A)	MW-39 (A)	1/16/2004		0.5 U	2.82	10.2	3.45		
MW-40(A)	MW-40 (A)	10/17/2003		2 U	12.4	10	1.13		
MW-41(A)	MW-41(A)	10/14/2003		0.2 U	5.33	8.68	5.91		
MW-42(A)	MW-42 (A)	10/15/2003		2 U	6.49	9.19	5.8		
MW-43(A)	MW-43(A)	10/13/2003		0.07 J	4.32	6.42	7.61		
MW-44(A)	MW-44 (A)	10/17/2003		2 U	3.42	10.3	8.53		
MW-45(A)	MW-45 (A)	10/16/2003							
MW-45(A)	MW-45 (A)	1/16/2004		1.18	4.38	13.2	22.7		
MW-46(A)	MW-46(A)	10/14/2003		0.112 J	5.74	5.77	1.24	J+,B	
MW-47(A)	MW-47(A)	10/13/2003		1.03	7.26	8.79	25.2		
MW-48(A)	MW-48(A)	10/14/2003		0.2 U	8.76	10.6	45.6		

TABLE 10**PRODUCT REMOVAL**

Remedial Investigation/Feasibility Study
 Astoria Area-Wide Petroleum Site
 Astoria, Oregon

Well #	Date	Time	Amount of Product Removed (cubic feet)	Amount of Product Removed (ounces)	Amount of Product Removed (gallons)	Total Gallons
MW-3(M)	8/13/2003	15:09	0.02		0.150	1.913
MW-3(M)	10/23/2003	9:39		9	0.070	
MW-3(M)	10/23/2003	10:40		3	0.023	
MW-3(M)	11/12/2003	15:20		4	0.030	
MW-3(M)	11/12/2003	16:00		2	0.016	
MW-3(M)	12/16/2003	15:22		33	0.264	
MW-3(M)	1/20/2004	10:25		90	0.720	
MW-3(M)	2/12/2004	15:40		80	0.640	
MW-4(M)	7/14/2003	13:49	0.002		0.015	0.498
MW-4(M)	7/14/2003	14:52	0.0006		0.004	
MW-4(M)	8/13/2003	14:51	0.0004		0.004	
MW-4(M)	10/23/2003	9:18		4	0.032	
MW-4(M)	10/23/2003	10:29		0.2	0.002	
MW-4(M)	2/12/2004	0:00		55	0.440	
MW-8(M)	7/14/2003	13:34	0.007		0.052	0.241
MW-8(M)	7/14/2003	14:29	0.0008		0.006	
MW-8(M)	8/13/2003	14:42	0.003		0.022	
MW-8(M)	10/23/2003	8:36		15	0.120	
MW-8(M)	10/23/2003	10:20		1	0.008	
MW-8(M)	11/12/2003	15:30		4	0.032	
MW-9(M)	7/14/2003	13:15	0.02		0.150	0.758
MW-9(M)	7/14/2003	14:39	0.005		0.037	
MW-9(M)	8/13/2003	14:31	0.01		0.075	
MW-9(M)	10/23/2003	9:56		18	0.144	

TABLE 10

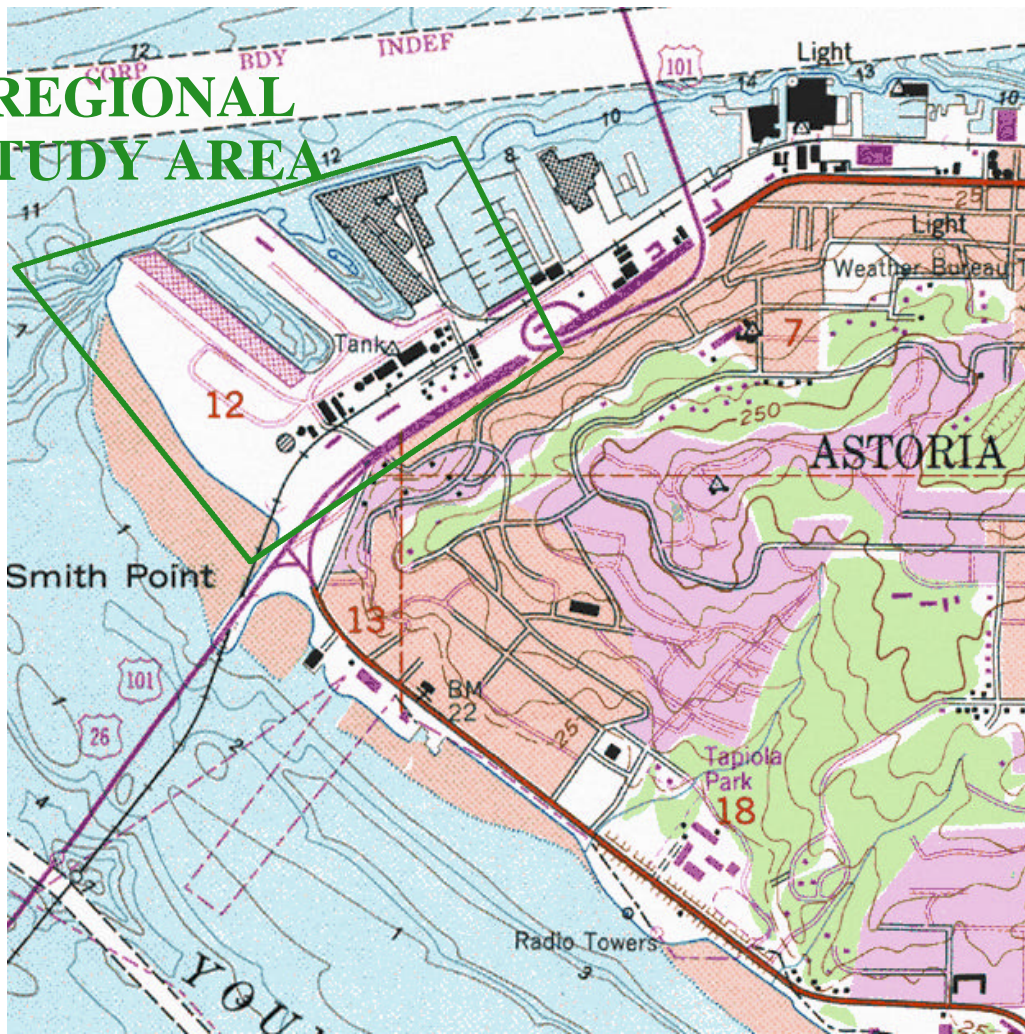
PRODUCT REMOVAL

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Well #	Date	Time	Amount of Product Removed (cubic feet)	Amount of Product Removed (ounces)	Amount of Product Removed (gallons)	Total Gallons
MW-9(M)	10/23/2003	11:00		9	0.072	
MW-9(M)	11/12/2003	15:45		5	0.040	
MW-9(M)	12/16/2003	15:05		6	0.048	
MW-9(M)	1/20/2004	10:50		4	0.032	
MW-9(M)	2/12/2004	0:00		20	0.160	
MW-40(A)	11/12/2003	16:45		1	0.008	

FIGURES

REGIONAL STUDY AREA



(from USGS, Astoria {1984}, OR 7.5' Quadrangles)

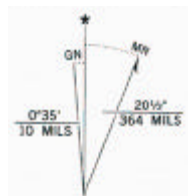
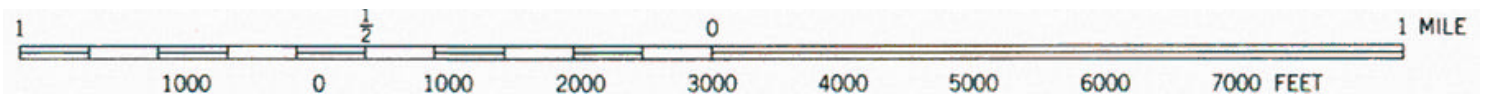


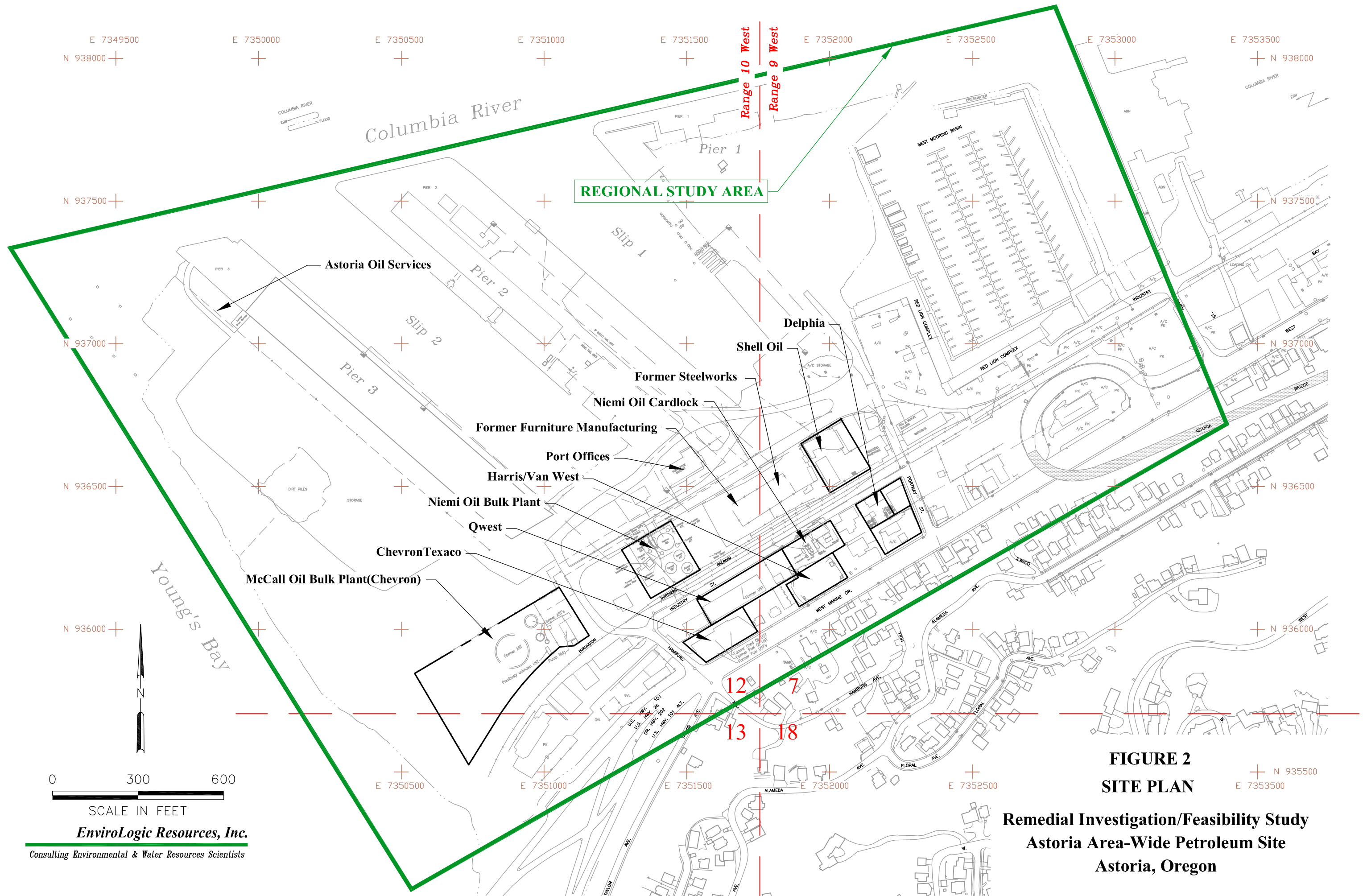
FIGURE 1

SITE LOCATION

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

EnviroLogic Resources, Inc.

Consulting Environmental & Water Resources Scientists



REGIONAL STUDY AREA

Range 10 West

Range 9 West

**FIGURE 2
SITE PLAN**

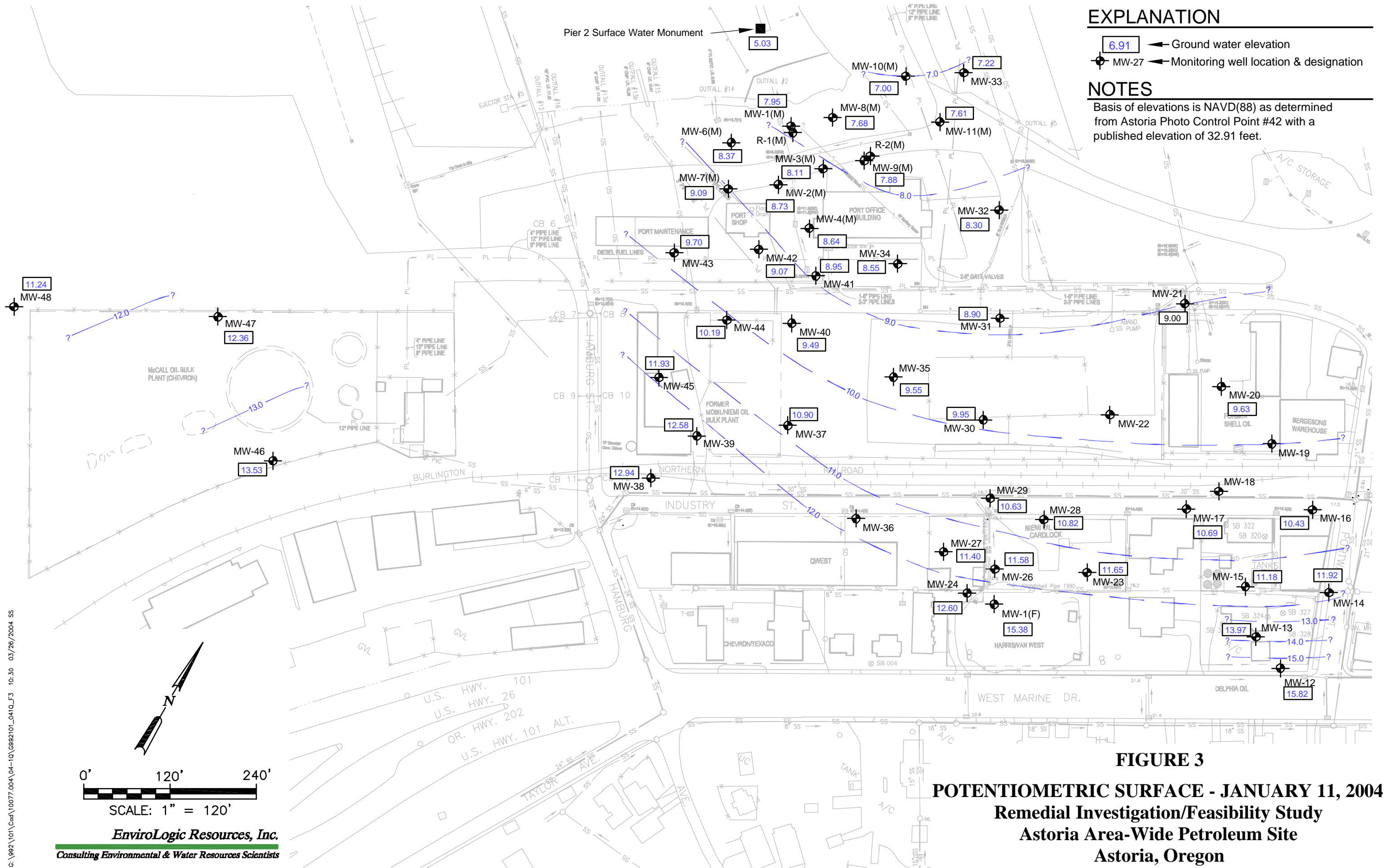
**Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon**

0 300 600

SCALE IN FEET

EnviroLogic Resources, Inc.

Consulting Environmental & Water Resources Scientists



EXPLANATION

- 6.91 ← Ground water elevation
- ⊕ MW-27 ← Monitoring well location & designation

NOTES

Basis of elevations is NAVD(88) as determined from Astoria Photo Control Point #42 with a published elevation of 32.91 feet.

FIGURE 3

POTENTIOMETRIC SURFACE - JANUARY 11, 2004
Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

c:\982\101\Cad\10077.004\04-10\G992101_041Q_F3 10.30 03/26/2004 SS

0' 120' 240'
 SCALE: 1" = 120'

EnviroLogic Resources, Inc.

Consulting Environmental & Water Resources Scientists

G:\992\101\Cad\10077.004\04-10\G992101_0410_F4_07:33 03/30/2004 SS

EXPLANATION

- Gx= 173 ← Gasoline
- ← Diesel (ND = Not Detected)
- ⊕ MW-27 ← Monitoring well location & designation
- P ← Free Product
- ← Extent of Free Product in Monitoring Wells - January 2004

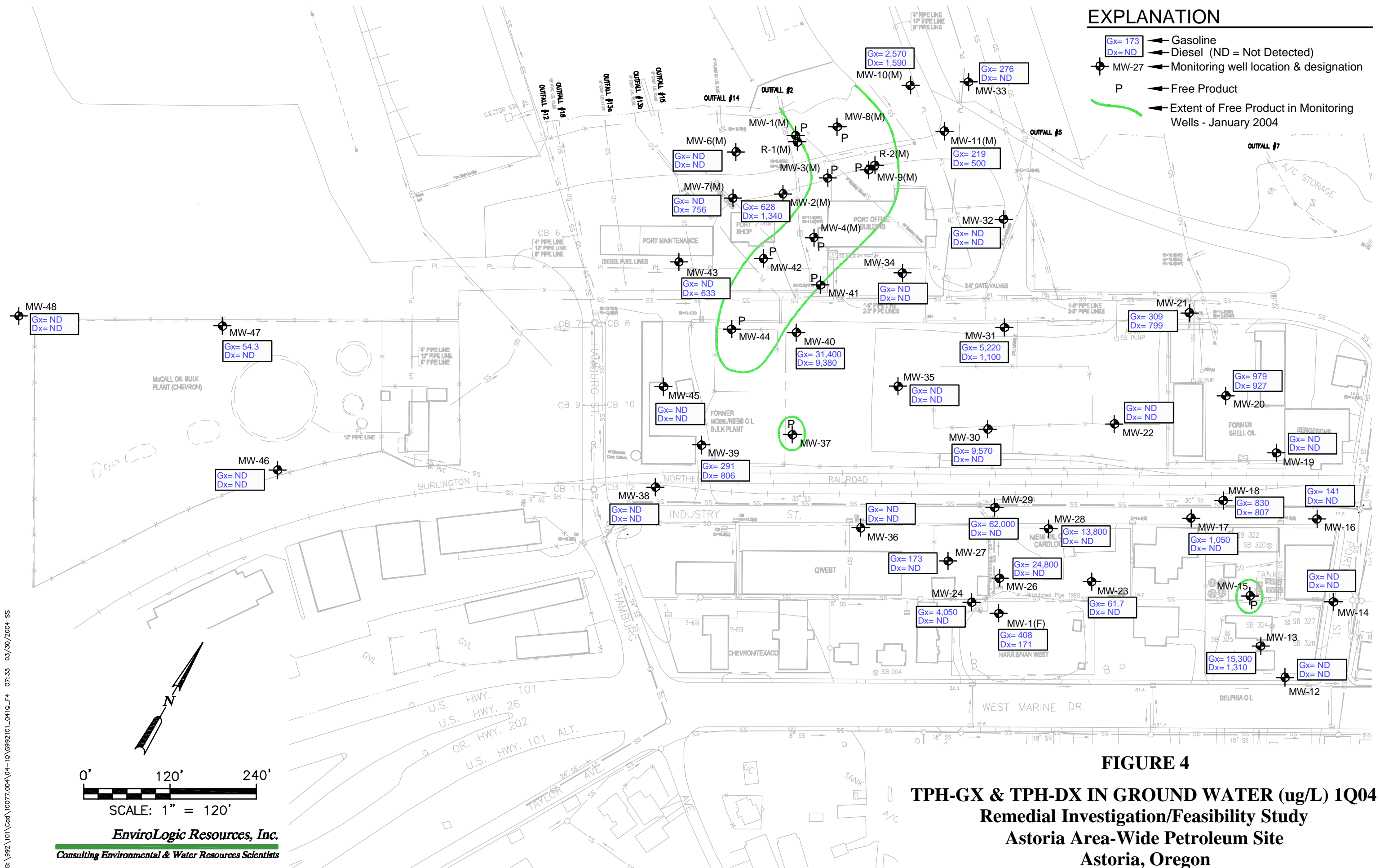


FIGURE 4
TPH-GX & TPH-DX IN GROUND WATER (ug/L) 1Q04
Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

G:\992\101\Cad\10077.004\04-10\G992101_041_Q_F5 07.44 03/30/2004 SS

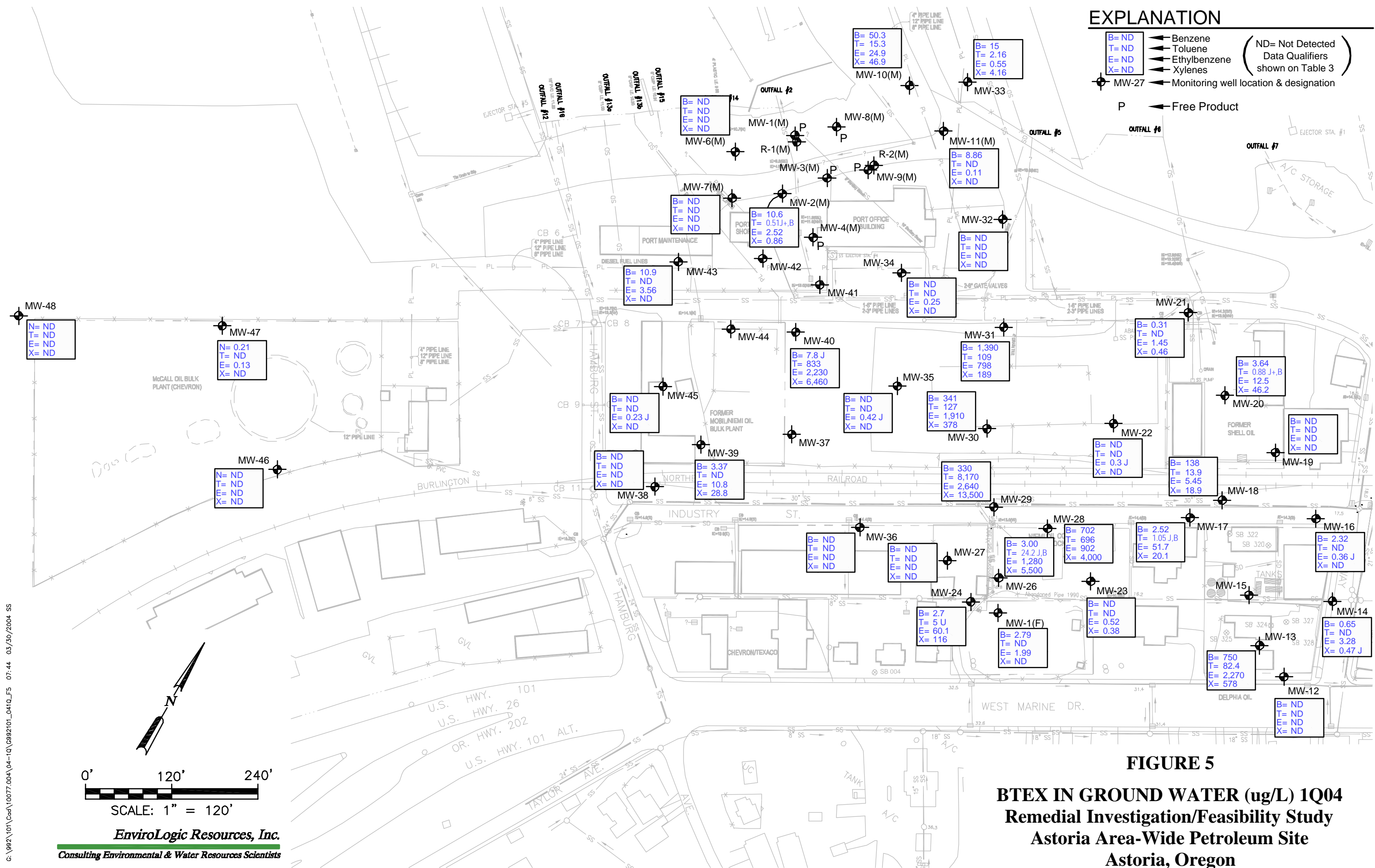


FIGURE 5
BTEX IN GROUND WATER (ug/L) 1Q04
Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

EXPLANATION

- N= 0.0512 ← Naphthalene (ND= Not Detected, Data)
- T= ND ← 1,2,4-Trimethylbenzene (Qualifiers shown on Table 3)
- MW-27 ← Monitoring well location & designation
- P ← Free Product

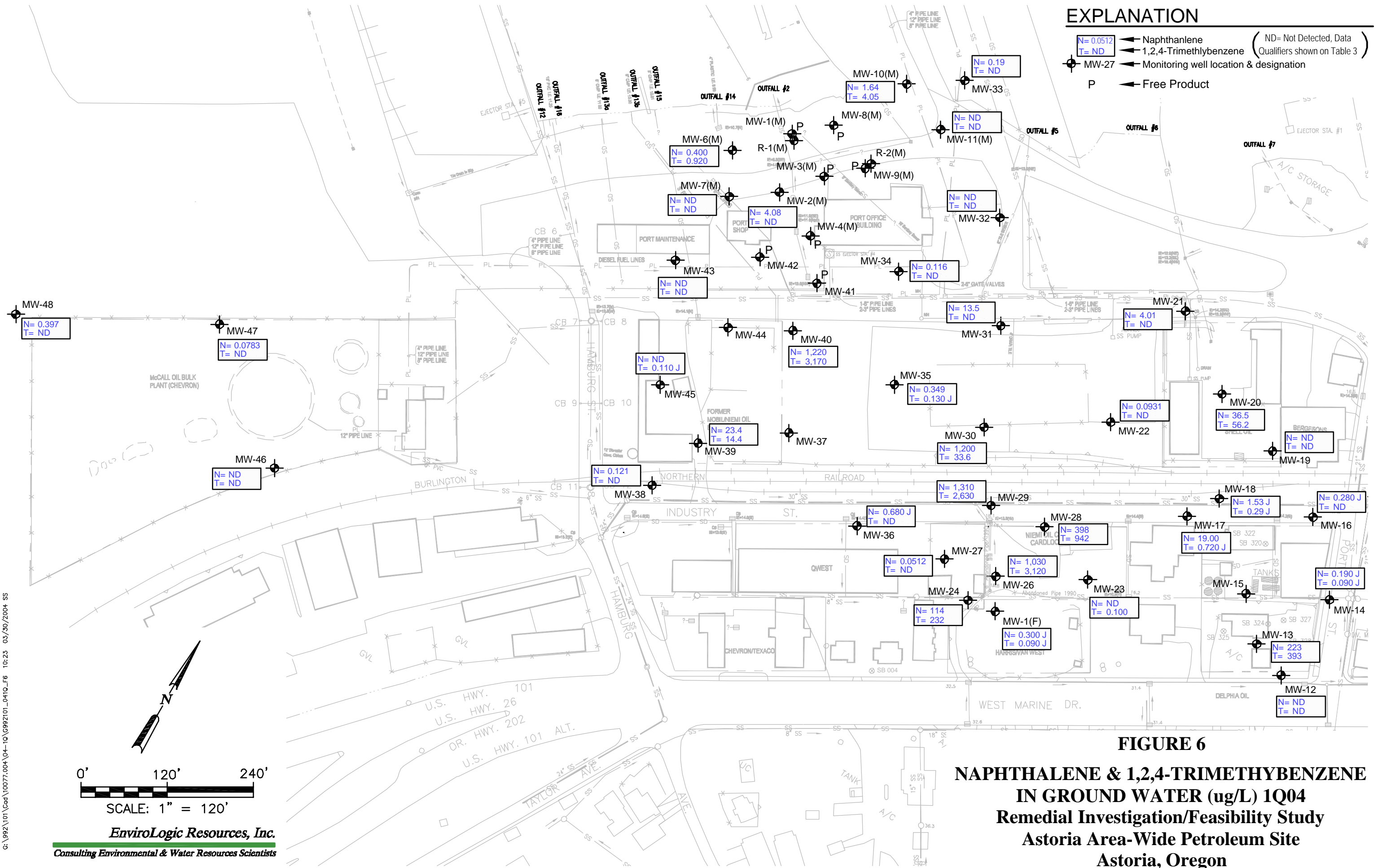
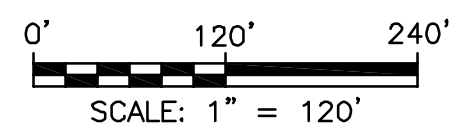


FIGURE 6

**NAPHTHALENE & 1,2,4-TRIMETHYLBENZENE
IN GROUND WATER (ug/L) 1Q04
Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon**



EnviroLogic Resources, Inc.
Consulting Environmental & Water Resources Scientists

G:\992\101\Cad\100771.004\04-10\9992101_0410_F6 10:23 03/30/2004 SS

APPENDIX A

METHODS AND PROCEDURES

APPENDIX A
METHODS AND PROCEDURES
GROUND-WATER SAMPLING

Standardized methods and procedures were developed prior to commencement of field activities. This protocol helped to control the quality of samples collected and helped to protect the health and safety of all site personnel. Quality-assurance protocols utilized are discussed in detail in the Quality Assurance Project Plan (QAPP) in Appendix B of the RI/FS Work Plan. Sampling procedures and protocols for each sampling activity were developed to meet the project data quality objectives and were based on proven and acceptable sampling methods as established by EPA guidance documents, Oregon state regulations, and professional judgment.

EnviroLogic Resources, Inc., performed all ground-water sampling and related activities. Ground-water level measurements were recorded from the monitoring wells at the start of the sampling event.

Ground-water samples were collected from 37 wells. The monitoring wells were first checked for free product, water levels were measured, and then approximately 3-borehole volumes of ground water were removed. Wells were purged using an ES-40 purge pump connected to clear vinyl PVC tubing. The water was transferred into a 250-gallon tote. Once the appropriate amount of water was purged from the well, the pH, temperature, and conductivity were measured continuously until stabilization using an Oakton meter. If the well was purged of all water, then the purging process was considered complete. Once ground water recovered or the field parameter readings were stable, the DO was measured down hole using a YSI 55 DO meter. Next, ground water was sampled with a weighted disposable PVC bailer to fill the VOA bottles. After filling the VOA bottles, polyethylene tubing was inserted into the well if not already present in the well from the last sampling event and connected to silicon tubing, and ground water was sampled through this tubing into the appropriate bottles using a Model 410 Solinst peristaltic pump. Finally, ground water was collected into a glass beaker and field parameters (pH,

temperature, conductivity, and ORP) were measured and recorded. The ORP was measured with an ORPTestr. Field parameters are presented on the Ground-Water Sampling Logs in Appendix B. The tubing was left inside the well casing to be used during the next sampling event, and the well was closed. When the tote was full of purged water, the water was pumped into a 4,000-gallon Baker tank, which is stored near the bank at the base of Slip 2.

Product was removed by using polyethylene tubing and a peristaltic pump. The tubing was held at the elevation of the product to collect only product to the extent possible. The product is contained in a 55-gallon drum stored on site.

Investigation derived waste (IDW), including purged and decontamination water are stored on-site in one staging area. The water is stored in a 4,000-gallon Baker tank. Samples of the water in the Baker Tank were collected and analyzed to compare concentrations to the discharge limits set by DEQ in a letter dated August 27, 2003. The concentrations of constituents in the decontamination and purge water were below discharge limits and the water was discharged from the Baker tank to a nearby storm water catch basin that has an outfall in Slip 2.

Field equipment blanks were collected and analyzed along with laboratory method blanks to evaluate whether the analytical results are representative of the sampled material and not influenced by non-site related contamination. Laboratory QC samples included laboratory matrix or method spikes, laboratory matrix spike duplicates, laboratory duplicates, and laboratory method blanks. These are described in Appendix B of the RI/FS Work Plan (*EnviroLogic Resources, 2002b*).

APPENDIX B
WATER SAMPLING LOGS

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-1(F)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/15/2004	Sample Number: MW-1(F)
Time Sample Collected: 800	Well or Boring No.: MW-1(F)
COC and RFA No.:	
Static Water Level: 16.21 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 65 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.60 mg/L; 5.9%
Color: mostly clear	Temperature: 12.9 deg C
Turbidity: clear	ORP: 122 mV
Conductance: 112 μ S	pH: 6.88
Odor: None	Other:
Analysis Requested:	
Comments: Field filtered for dissolved metals	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-2(M)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/12/2004	Sample Number: MW-2(M)
Time Sample Collected: 1200	Well or Boring No.: MW-2(M)
COC and RFA No.:	
Static Water Level: 6.39 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 75 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.71 mg/L; 6.8%
Color: Mostly clear	Temperature: 14.4 deg C
Turbidity: Clear	ORP: 67 mV
Conductance: 93.2 μ S	pH: 6.97
Odor: Medium to strong	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-6(M)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/12/2004	Sample Number: MW-6(M)
Time Sample Collected: 814	Well or Boring No.: MW-6(M)
COC and RFA No.:	
Static Water Level: 5.58 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 15 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 1.05 mg/L; 10.1%
Color: mostly clear	Temperature: 8.8 deg C
Turbidity: Clear	ORP: 68 mV
Conductance: 172 μ S	pH: 6.61
Odor: None	Other:
Analysis Requested:	
Comments: Well dry after 15 gallons purged	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-7(M)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/12/2004	Sample Number: MW-7(M)
Time Sample Collected: 940	Well or Boring No.: MW-7(M)
COC and RFA No.:	
Static Water Level: 5.81 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 100 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.90 mg/L; 9.1%
Color: clear	Temperature: 14.3 deg C
Turbidity: Clear	ORP: 69 mV
Conductance: 135 μ S	pH: 6.94
Odor: None	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-10(M)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/13/2004	Sample Number: MW-10(M)
Time Sample Collected: 1050	Well or Boring No.: MW-10(M)
COC and RFA No.:	
Static Water Level: 9.55 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 56 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 7.20 mg/L; 67.4%
Color: Clear to orangish tan	Temperature: 13.5 deg C
Turbidity: clear	ORP: -10 mV
Conductance: 111 µS	pH: 6.93
Odor: None	Other:
Analysis Requested:	
Comments: Field filtered dissolved metals	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-11(M)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/13/2004	Sample Number: MW-11(M)
Time Sample Collected: 1235	Well or Boring No.: MW-11(M)
COC and RFA No.:	
Static Water Level: 9.21 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 60 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 1.80 mg/L; 16.0%
Color: Transparent dark grey	Temperature: 15.2 deg C
Turbidity: slightly cloudy	ORP: -24 mV
Conductance: 94.1 µS	pH: 6.93
Odor: medium to strong	Other:
Analysis Requested:	
Comments: Slight sheen	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-12(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/15/2004	Sample Number: MW-12(A)
Time Sample Collected: 940	Well or Boring No.: MW-12(A)
COC and RFA No.:	
Static Water Level: 14.70 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 72 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 1.34 mg/L; 12.6%
Color: mostly clear	Temperature: 12.9 deg C
Turbidity: Clear	ORP: 151 mV
Conductance: 129 μ S	pH: 6.95
Odor: Slight	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-13(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/15/2004	Sample Number: MW-13(A)
Time Sample Collected: 1130	Well or Boring No.: MW-13(A)
COC and RFA No.:	
Static Water Level: 17.28 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 70 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.52 mg/L; 4.9%
Color: clear to light orangish tan	Temperature: 15.5 deg C
Turbidity: Clear	ORP: 43 mV
Conductance: 132 μ S	pH: 7.05
Odor: Slight	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-14(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/15/2004	Sample Number: MW-14(A)
Time Sample Collected: 1250	Well or Boring No.: MW-14(A)
COC and RFA No.:	
Static Water Level: 11.41 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 42 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 5.65 mg/L; 53.0%
Color: mostly clear	Temperature: 12.7 deg C
Turbidity: Clear	ORP: 135 mV
Conductance: 100 μ S	pH: 6.95
Odor: None	Other:
Analysis Requested:	
Comments: Iron in well.	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-16(A)

Sampled By: Melanie Bocianowski, Dan Beacraft

Date: 1/19/2004	Sample Number: MW-16(A)
Time Sample Collected: 930	Well or Boring No.: MW-16(A)
COC and RFA No.:	
Static Water Level: 6.04 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 65 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 1.17 mg/L; 10.9%
Color: Clear	Temperature: 15.4 deg C
Turbidity: Clear	ORP: 128 mV
Conductance: 701 μ S	pH: 6.77
Odor: None to slight	Other:
Analysis Requested:	
Comments: First bailer contained high amounts of iron.	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-17(A)

Sampled By: Melanie Bocianowski, Dan Beacraft

Date: 1/19/2004	Sample Number: MW-17(A): BM-17(A)
Time Sample Collected: 1130	Well or Boring No.: MW-17(A)
COC and RFA No.:	
Static Water Level: 5.00 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 70 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.34 mg/L; 3.2%
Color: clear	Temperature: 14.6 deg C
Turbidity: Clear	ORP: 101 mV
Conductance: 577 μ S	pH: 6.67
Odor: None	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-18(A)

Sampled By: Melanie Bocianowski, Dan Beacraft

Date: 1/19/2004	Sample Number: MW-18(A)
Time Sample Collected: 1040	Well or Boring No.: MW-18(A)
COC and RFA No.:	
Static Water Level: 5.74 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 65 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 1.11 mg/L; 10.5%
Color: clear	Temperature: 15.3 deg C
Turbidity: Clear	ORP: -11 mV
Conductance: 640 μ S	pH: 6.90
Odor: Slight	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-19(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/13/2004	Sample Number: MW-19(A)
Time Sample Collected: 1515	Well or Boring No.: MW-19(A)
COC and RFA No.:	
Static Water Level: 7.99 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 51 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 5.16 mg/L; 47.7%
Color: clear to light orangish tan	Temperature: 14.6 deg C
Turbidity: Slight to none	ORP: 137 mV
Conductance: 94.2 µS	pH: 6.99
Odor: none	Other:
Analysis Requested:	
Comments: MS/MSD duplicates collected	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-20(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/13/2004	Sample Number: MW-20(A)
Time Sample Collected: 1630	Well or Boring No.: MW-20(A)
COC and RFA No.:	
Static Water Level: 7.44 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 55 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.93 mg/L; 9.0%
Color: clear	Temperature: 14.9 deg C
Turbidity: Clear	ORP: 59 mV
Conductance: 100 μ S	pH: 6.94
Odor: None	Other:
Analysis Requested:	
Comments: Iron in well	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-21(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/13/2004	Sample Number: MW-21(A); BM-21(A)
Time Sample Collected: 1355	Well or Boring No.: MW-21(A)
COC and RFA No.:	
Static Water Level: 6.89 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 65 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 1.83 mg/L; 17.9%
Color: clear	Temperature: 15.5 deg C
Turbidity: clear	ORP: 125 mV
Conductance: 89.3 μ S	pH: 6.93
Odor: none	Other:
Analysis Requested:	
Comments: Iron in well	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-22(A)

Sampled By: Melanie Bocianowski

Date: 1/19/2004	Sample Number: MW-22(A)
Time Sample Collected: 815	Well or Boring No.: MW-22(A)
COC and RFA No.:	
Static Water Level: 6.15 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 61 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 5.32 mg/L; 49.7 %
Color: clear	Temperature: 14.5 deg C
Turbidity: Clear	ORP: 122 mV
Conductance: 289 μ S	pH: 6.66
Odor: None	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-23(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/15/2004	Sample Number: MW-23(A)
Time Sample Collected: 1745	Well or Boring No.: MW-23(A)
COC and RFA No.:	
Static Water Level: 4.47 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 71 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.31 mg/L; 3.0%
Color: clear	Temperature: 9.2 deg C
Turbidity: Clear	ORP: 135 mV
Conductance: 90.2 µS	pH: 7.04
Odor: None	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-24(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/15/2004	Sample Number: MW-24(A)
Time Sample Collected: 1630	Well or Boring No.: MW-24(A)
COC and RFA No.:	
Static Water Level: 3.85 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 15 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.94 mg/L; 8.6%
Color: clear	Temperature: 9.6 deg C
Turbidity: Mostly clear	ORP: na
Conductance: 41 µS	pH: 7.00
Odor: None	Other:
Analysis Requested:	
Comments: Well dry after 15 gallons of purged water	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-26(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/15/2004	Sample Number: MW-26(A)
Time Sample Collected: 1600	Well or Boring No.: MW-26(A)
COC and RFA No.:	
Static Water Level: 4.65 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 40 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.59 mg/L; 5.5%
Color: clear	Temperature: 10.7 deg C
Turbidity: Clear	ORP: 27 mV
Conductance: 81.0 µS	pH: 6.96
Odor: Slight	Other:
Analysis Requested:	
Comments: Well dry after 40 gallons of purged water	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-27(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/14/2004	Sample Number: MW-27(A)
Time Sample Collected: 1625	Well or Boring No.: MW-27(A)
COC and RFA No.:	
Static Water Level: 4.95 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 74 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.63 mg/L; 6.2%
Color: clear to orangish tan	Temperature: 12.5 deg C
Turbidity: Clear	ORP: 192 mV
Conductance: 89.4 μ S	pH: 7.08
Odor: None	Other:
Analysis Requested:	
Comments: High amount of iron in well	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-28(A)

Sampled By: Melanie Bocianowski, Dan Beacraft

Date: 1/19/2004	Sample Number: MW-28(A)
Time Sample Collected: 1450	Well or Boring No.: MW-28(A)
COC and RFA No.:	
Static Water Level: 5.25 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 69 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.37 mg/L; 3.6%
Color: clear	Temperature: 16.6 deg C
Turbidity: Clear to slightly cloudy	ORP: 64 mV
Conductance: 501 μ S	pH: 6.38
Odor: Slight	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-29(A)

Sampled By: Melanie Bocianowski, Dan Beacraft

Date: 1/19/2004	Sample Number: MW-29(A)
Time Sample Collected: 1600	Well or Boring No.: MW-29(A)
COC and RFA No.:	
Static Water Level: 5.13 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 70 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.17 mg/L; 1.6%
Color: mostly clear	Temperature: 14.2 deg C
Turbidity: Clear	ORP: 94 mV
Conductance: 347 μ S	pH: 6.57
Odor: Medium to strong	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-30(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/16/2004	Sample Number: MW-30(A)
Time Sample Collected: 1400	Well or Boring No.: MW-30(A)
COC and RFA No.:	
Static Water Level: 6.65 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 65 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.82 mg/L; 7.5%
Color: clear	Temperature: 14.7 deg C
Turbidity: clear	ORP: 45 mV
Conductance: 119 μ S	pH: 7.06
Odor: none	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-31(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/12/2004	Sample Number: MW-31(A)
Time Sample Collected: 1615	Well or Boring No.: MW-31(A)
COC and RFA No.:	
Static Water Level: 7.36 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 52 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.92 mg/L; 8.8%
Color: clear	Temperature: 13.1 deg C
Turbidity: Clear	ORP: 37 mV
Conductance: 97.4 μ S	pH: 7.29
Odor: None	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-32(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/12/2004	Sample Number: MW-32(A)
Time Sample Collected: 1525	Well or Boring No.: MW-32(A)
COC and RFA No.:	
Static Water Level: 8.30 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 53 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.53 mg/L; 5.5%
Color: clear	Temperature: 14.3 deg C
Turbidity: Slight to none	ORP: 141 mV
Conductance: 102 μ S	pH: 7.16
Odor: None	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-33(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/12/2004	Sample Number: MW-33(A)
Time Sample Collected: 1425	Well or Boring No.: MW-33(A)
COC and RFA No.:	
Static Water Level: 9.23 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 45 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 1.10 mg/L; 11.3%
Color: slightly light yellowish to clear	Temperature: 14.4 deg C
Turbidity: slightly cloudy	ORP: 100 mV
Conductance: 110 µS	pH: 7.14
Odor: none	Other:
Analysis Requested:	
Comments: iron	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-34(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/13/2004	Sample Number: MW-34(A)
Time Sample Collected: 830	Well or Boring No.: MW-34(A)
COC and RFA No.:	
Static Water Level: 7.31 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 65 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.11 mg/L; 0.1%
Color: clear	Temperature: 14.7 deg C
Turbidity: Clear	ORP: 150 mV
Conductance: 95.7 μ S	pH: 6.30
Odor: None	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-35(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/16/2004	Sample Number: MW-35(A)
Time Sample Collected: 1230	Well or Boring No.: MW-35(A)
COC and RFA No.:	
Static Water Level: 6.87 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 58 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 1.31 mg/L; 12.2%
Color: slightly light yellowish to clear	Temperature: 12.8 deg C
Turbidity: mostly Clear	ORP: 145 mV
Conductance: 104 μ S	pH: 7.08
Odor: None	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-36(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/14/2004	Sample Number: MW-36(A)
Time Sample Collected: 1500	Well or Boring No.: MW-36(A)
COC and RFA No.:	
Static Water Level: 4.63 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 50 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 2.98 mg/L; 27.6%
Color: milky to clear	Temperature: 11.5 deg C
Turbidity: milky/cloudy	ORP: 185 mV
Conductance: 96.1 μ S	pH: 7.12
Odor: None	Other:
Analysis Requested:	
Comments: Well almost pumping dry	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-38(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/14/2004	Sample Number: MW-38(A)
Time Sample Collected: 810	Well or Boring No.: MW-38(A)
COC and RFA No.:	
Static Water Level: 4.40 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 60 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 3.71 mg/L; 33.3%
Color: clear	Temperature: 12.3 deg C
Turbidity: Clear	ORP: 170 mV
Conductance: 85.6 μ S	pH: 6.93
Odor: None	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-39(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/16/2004	Sample Number: MW-39(A)
Time Sample Collected: 925	Well or Boring No.: MW-39(A)
COC and RFA No.:	
Static Water Level: 4.65feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 80 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.62 mg/L; 5.8 %
Color: clear	Temperature: 12.9 deg C
Turbidity: clear	ORP: 127 mV
Conductance: 82.2 µS	pH: 7.09
Odor: None	Other:
Analysis Requested:	
Comments: Collected MS/MSD duplicates	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-40(A)

Sampled By: Melanie Bocianowski, Dan Beacraft

Date: 1/20/2004	Sample Number: MW-40(A)
Time Sample Collected: 800	Well or Boring No.: MW-40(A)
COC and RFA No.:	
Static Water Level: 6.64 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 60 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.26 mg/L; 2.4 %
Color: Mostly clear / slightly yellowish	Temperature: 13.7 deg C
Turbidity: clear	ORP: 67 mV
Conductance: 512 μ S	pH: 6.43
Odor: Strong	Other:
Analysis Requested:	
Comments: Sheen	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-43(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/12/2004	Sample Number: MW-43(A)
Time Sample Collected: 1053	Well or Boring No.: MW-43(A)
COC and RFA No.:	
Static Water Level: 6.33 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 65 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 2.05 mg/L; 19.7 %
Color: clear	Temperature: 13.7 deg C
Turbidity: slight	ORP: 105 mV
Conductance: 95.7 µS	pH: 6.77
Odor: None	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-45(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/16/2004	Sample Number: MW-45(A)
Time Sample Collected: 1110	Well or Boring No.: MW-45(A)
COC and RFA No.:	
Static Water Level: 5.27 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 70 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 4.75 mg/L; 42.7%
Color: clear	Temperature: 11.3 deg C
Turbidity: clear	ORP: 137 mV
Conductance: 93.6 μ S	pH: 7.02
Odor: None	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-46(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/14/2004	Sample Number: MW-46(A)
Time Sample Collected: 1020	Well or Boring No.: MW-46(A)
COC and RFA No.:	
Static Water Level: 2.90 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 85 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 6.57 mg/L; 58.2 %
Color: transparent light orange	Temperature: 10.3 deg C
Turbidity: Clear	ORP: 169 mV
Conductance: 93.1 µS	pH: 7.06
Odor: none	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-47(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/14/2004	Sample Number: MW-47(A)
Time Sample Collected: 1230	Well or Boring No.: MW-47(A)
COC and RFA No.:	
Static Water Level: 4.35 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 60 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 1.10 mg/L; 8.9 %
Color: clear	Temperature: 10.6 deg C
Turbidity: Clear	ORP: 175 mV
Conductance: 118 µS	pH: 7.13
Odor: None	Other:
Analysis Requested:	
Comments:	

WATER SAMPLE LOG

Project Number: 10077.004

Project Name: Astoria Area-Wide Petroleum Site – 1st Quarter 2004

Facility: Astoria Area-Wide

Locator: MW-48(A)

Sampled By: Melanie Bocianowski, Nancy East-Smith

Date: 1/14/2004	Sample Number: MW-48(A)
Time Sample Collected: 1130	Well or Boring No.: MW-48(A)
COC and RFA No.:	
Static Water Level: 5.25 feet dtw	Time:
Well Depth:	Date Drilled:
Filter Pack Thickness:	Casing or "Geoprobe" Diameter:
Amount Purged: Approx. 50 gallons	Bailer or Well Point Depth:
Sample Collection Method: Bailer and peristaltic pump	
Pump intake depth:	
Discharge rate during sampling:	DO: 0.54 mg/L; 5.1 %
Color: clear	Temperature: 11.8 deg C
Turbidity: Clear	ORP: 152 mV
Conductance: 93.8 μ S	pH: 7.10
Odor: None	Other:
Analysis Requested:	
Comments:	

APPENDIX C

*LABORATORY ANALYTICAL REPORTS
WITH DATA VALIDATION REPORTS*

MEMORANDUM

To: File – 10077.004

From: Nancy East-Smith

Date: March 15, 2004

Subject: **QUALITY ASSURANCE/QUALITY CONTROL REVIEW**
Second Complete Ground Water Sampling Event – 1st Quarter 2004
ASTORIA AREA WIDE PETROLEUM SITE

This report presents the results of our review of laboratory analytical reports and the data validation conducted based on the laboratory reports for the second ground-water sampling event conducted at the site. The samples were collected on January 12, 13, 14, 15, 16, 19 and 20, 2004 as part of the second ground-water sampling event. Sample handling, analysis and quality control (QC) procedures were established in the July 15, 2002, Remedial Investigation/Feasibility Study, Astoria Area-Wide Petroleum Site, Astoria, Oregon, Phase I Work Plan (Phase 1 RI/FS) and the Work Plan Addendum, Phase 1 Ground Water Assessment, Astoria Area-Wide Petroleum Site, Astoria, Oregon, DEQ ECSI File #2277. Both documents were prepared by *EnviroLogic Resources, Inc.* The samples were submitted to North Creek Analytical, Inc., (NCA) of Beaverton, Oregon, for analysis.

A total of 55 water samples were submitted for analysis. This included 37 field samples, 2 field duplicates, 2 equipment blanks and 4 trip blanks. The samples were submitted in 3 groups, each group was assigned a lab order number. Basic information about each lab order number is presented below:

Lab Order	Number of Samples	Sample Type	Date Collected	Field Locations
P4A0208	17 1 1 1	Field Samples Trip Blanks Equipment Blank Field Duplicate	1/12, 13, 14,15/2004	MW-6, MW-7, MW-43, MW-2, MW-33, MW-32, MW-31, MW-34, MW-10, MW-11. MW-21, MW-19, MW-20, MW-38, MW-46, MW-47, MW-48, BM-21
P4A0306	13 1 2	Field Samples Equipment Blank Trip Blank	1/14, 15, 16, /2004	MW-36, MW-27, MW-1, MW-12, MW-13, MW-14, MW-24, MW-26, MW-23, MW-39, MW-35, MW-45

P4A0432	7 1 3	Field Samples Field Duplicate Trip Blanks	1/19, 20, /2004	MW-17, MW-18, BM-17, MW-16, MW-22, MW-28, MW-29, MW-40,
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As stated in Appendix B, Sections 8.0, 9.0, and 10.0 of the Phase I RI/FS our goal was to review the laboratory reports and chain of custodies for Quality Assurance/Quality Control (QA/QC) parameters and statistical parameters. The findings of our review are presented in the following pages. Qualified data are presented in the attached tables. Analyses performed are listed below.

Analysis	Reference
Gasoline Hydrocarbons	NWTPH-Gx
Diesel and Heavy Range Hydrocarbons	NWTPH-Dx
Hexavalent Chromium	EPA Method 7195
Total Metals	EPA Method 6000/7000
Dissolved Metals	EPA Method 6000/7000
Volatile Organic Compounds (VOCs)	EPA Method 8260B
Polynuclear Aromatic Compounds (PAHs)	EPA Method 8270M-SIM
Conventional Chemistry (Nitrate/Nitrite-Nitrogen)	EPA Method 353.2
Anions	EPA Method 300.0
Total Alkalinity by Conventional Chemistry Parameters	EPA Method 2320B

EPA = U.S. Environmental Protection Agency
 NWTPH = Northwest Total Petroleum Hydrocarbons
 SIM = Selected Ion Monitoring

CHAIN OF CUSTODY REVIEW

Chain of custodies (COC) were reviewed to determine sample condition upon arrival at the lab, to determine if analysis requested was in accordance with the RI/FS Work Plan, and that analyses requested were performed.

- No special conditions were noted on COCs to indicate sample containers were broken or otherwise in an adverse condition upon arrival at the laboratory.
- Cooler temperatures recorded at the laboratory upon receipt ranged from 0.1°C to 6.6°C.
- Analyses requested on the COC generally reflect the analysis presented in the laboratory reports. However, modifications to analytical requests made subsequent to the initial COC submittal were not noted on the submitted COC.

Although, the COC does not completely reflect analyses presented in the report our review indicates that the analyses conducted were requested and that no requested analysis was omitted.

QUALITY CONTROL/QUALITY ASSURANCE REVIEW

DATA QUALIFIERS

The following data qualifiers are used in this data validation report:

- **B.** The analyte was also identified in a field or laboratory blank associated with this sample or sample group.
- **J.** The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- **J+.** The analyte was positively identified; the associated numerical value is the estimated high of the analyte in the sample
- **U.** The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

The attached tables present the original result and the qualified result for all analyses that were qualified. The tables are organized by analytical method and only qualified analytical results are included.

HOLDING TIMES

We reviewed the laboratory reports and compared sample dates, prepared dates and analyzed dates for all the analyses. No holding time exceptions were noted.

FIELD BLANKS

Equipment Blanks

Equipment blanks were analyzed at the required frequency. A total of two equipment blanks were submitted for analysis of gasoline range hydrocarbons and VOCs. Both equipment blanks were obtained by running de-ionized water through a sample bailer. Toluene was detected in one equipment blank as noted below.

Analyte	Detected Concentration	MDL	RL
Toluene	0.360J µg/l	0.155 µg/l	0.500 µg/l

MDL = Method Detection Limit

RL = Reporting Limit

ug/l = micrograms per liter

Water samples which had this analyte detected within 5 times the concentration detected in the equipment blank are qualified with a UB flag and reported at the RL if the concentration was less than the RL or qualified with a JB flag (at the detected concentration) if the concentration is greater than the RL. Where field samples had analytes detected at concentrations greater than the 5 times the data is not qualified. Laboratory dilution of field samples was considered.

Trip Blanks

A total of 4 trip blanks were submitted for VOC analyses with the 3 lab orders. The trip blanks were provided by the laboratory and consisted of water in a 40 ml clear VOA (volatile organic analysis) vial.

No analytes were detected in the trip blanks.

Laboratory Method Blanks

Laboratory method blanks were analyzed at the required frequency. Laboratory blanks were performed on sample batches so each blank is associated with a batch of field samples. The batch sample associated with each field sample is identified in the laboratory report. Analytes detected in laboratory blanks are noted below:

Lab Order/ Batch No.	Field Samples Qualified	Analyte Detected in Laboratory Blank	Analytical Method	Blank MDL	Blank RL
P4A0432					
4010812	MW-17(A), BM-17(A), MW-(18), MW-16(A), MW-22(A), MW-28(A), MW-29(A), MW-40(A)	Manganese 0.000310J mg/l Selenium 0.000660J mg/l	EPA 6000/7000 (Total)	0.0000136 mg/l 0.0000566 mg/l	0.00200 mg/l 0.00100 mg/l
4010743	MW-16(A), MW-22(A), MW-29(A)	Nitrate/Nitrite-Nitrogen – 0.00304J mg/l	APHA/EPA	0.00250 mg/l	0.00500 mg/l
4010622	None	Bicarbonate – 0.483J mg/l	APHA/EPA	0.208 mg/l	10.0 mg/l
4A26036	None	Sodium – 0.0856J mg/l	EPA 6000/7000 (Total)	0.0420 mg/l	0.250 mg/l
P4A0306					
4010811	MW-27(A), MW-1(F), MW-12(A), MW-14(A), MW-39(A), MW-45(A)	Lead – 0.000099000J mg/l Barium – 0.000810J mg/l Manganese – 0.000200J mg/l	EPA 6000/7000 (Total)	0.0000910 mg/l 0.0000870 mg/l 0.0000136 mg/l	0.00100 mg/l 0.00100 mg/l 0.00200 mg/l
4010650	MW-1(F)	Lead– 0.000100J mg/l	EPA 6000/7000 (Dissolved)	0.0000870 mg/l	0.00100 mg/l
4010622	None	Bicarbonate - .0483J mg/l	APHA/EPA	0.208 mg/l	10.0 mg/l
4A29052	MW-36(A), MW-27(A), MW-1(F), MW-13(A), MW-14(A), MW-24(A), MW-26(A), MW-23(A), MW-39(A), MW-35(A), MW-30(A)	Mercury – 0.0000820J mg/l	EPA 6000/7000 (Total)	0.0000700 mg/l	0.000200 mg/l

P4A0208					
4010508	MW-6(M), MW-43(A), MW-2(M), MW-33(A), MW-32(A), MW-31(A), MW-34(A), MW-10(M), MW-11(M), MW-19(A), BM-21(A), MW-20(A), MW-38(A), MW-46(A), MW-47(A), MW-48(A)	Manganese – 0.000350J mg/l Lead - 0.000640J mg/l	EPA 6000/7000 (Total)	0.0000870 mg/l 0.0000136 mg/l	0.00100 mg/l 0.00200 mg/l
4010587	MW-10(M)	Selenium – 0.000590J mg/l	EPA 6000/7000 (Dissolved)	0.000566 mg/l	0.00100 mg/l
4010455	MW-33(A)	Naphthalene - 0.200J ug/l	EPA 8260B	0.0989 ug/l	2.00 ug/l
4010642	MW-38(A)	Naphthalene – 0.170J ug/l	EPA 8260B	0.0989 ug/l	2.00 ug/l
4010622	None	Bicarbonate - 0.483J mg/l	APHA/EPA	0.208 mg/l	10.0 mg/l
4A26036	None	Sodium – 0.0856J mg/l	EPA 6000/7000 (Total)	0.0420 mg/l	0.250 mg/l
4A29052	MW-43(A), MW-2(M), MW-33(A)	Mercury – 0.0000820J mg/l	EPA 6000/ 7000 (Total)	0.0000700 mg/l	0.000200 mg/l
4A30014	MW-6(M)	Mercury – 0.0000797J mg/l	EPA 6000/ 7000 (Total)	0.000070 mg/l	0.000200 mg/l

Field samples in the same batch that had analytes detected within 5 times the blank concentration (10 times for inorganics) are qualified by placing a J and B flag next to the detected concentration (J+ and B flag for inorganics) if the detected concentration is greater than the RL. Where the detected concentration is less than the RL, the RL value is reported with a UB flag (for both organics and inorganics). Data is not qualified where field samples had analytes detected at concentrations greater than 5 (or 10 times for inorganics) times the corresponding blank concentration. Laboratory dilution of field samples was considered.

SURROGATE RECOVERIES

Field Samples

One or more surrogates were utilized for each analysis except for metals, conventional chemistry, anions and total alkalinity. We reviewed all of the surrogate recoveries relative to the specified control limits and observed exceptions for four analyses, which involved three field samples. Where surrogate recoveries were not within control limits batch specific QC information and laboratory notes were reviewed to evaluate the data. This evaluation resulted in no data being qualified due to surrogate recovery issues.

SPIKE AND SURROGATE RECOVERIES

Laboratory Control Samples

Laboratory Control Samples (LCS) were conducted at the required frequency. Based on our review all LCS quality control information was acceptable except for one. One LCS (batch 4010455 sample group P4A0208) had a percent recovery (156%) for naphthalene that is outside the control limits (72-149%). The laboratory noted this would indicate a possible bias high in the field samples. However no field samples from this batch had naphthalene detected above the method reporting limit and therefore no data was qualified. No other data was qualified due to LCS issues.

Matrix Spike Samples

Matrix Spike (MS) were conducted at the required frequency. Based on our review several spike compounds and/or surrogates did not meet quality control limits. Where surrogate recoveries were not within control limits batch specific QC information and laboratory notes were reviewed to evaluate the data. This evaluation resulted in no data being qualified due to spike recovery issues.

LABORATORY AND FIELD DUPLICATES/RELATIVE PERCENT DIFFERENCE

Field duplicate samples were obtained at the frequency of two for 37 field samples. Two duplicates were submitted for. The field duplicate frequency set by the Work Plan was one for every 20 field samples. MSD, Laboratory Control Sample Duplicates (LCSDs), laboratory duplicates and field duplicate analytical information was reviewed. Based on our review several laboratory duplicate sample relative percent differences (RPDs) were not within acceptable limits. Where RPDs were not within control limits, batch specific QC information and laboratory notes were reviewed to evaluate the data. This evaluation resulted in no data being qualified due to RPD exceptions. MS/MSD exceptions for duplicate samples were included in the previous section. Field duplicate exceptions are noted below. RPD exceptions are generally not evaluated for concentrations within 5 times the RL and these are not presented below.

Lab Order	Sample	Analysis/ Sample Type	QC Exception	Comment
P4A0208	MW-21 and BM-21	PAHs	RPD for naphthalene (78%) was outside control limit of 60%.	Review of all other batch QA/QC information does not indicate this is an out-of-control condition for the batch.
P3J0775	MW-17 and BM-17	Total Metals	RPD for barium was 61.6%. The control limit is 20%	Review of all other batch QA/QC information does not indicate this is an out-of-control condition for the batch.

STATISTICAL EVALUATION

Precision

Precision is a measure of the ability to reproduce data and is evaluated using duplicate samples. This includes field duplicates, laboratory duplicates, MSDs and LCSDs. Relative percent difference (RPD) is used to measure the reproducibility as described in section 10.1 of Appendix B of the RI/FS Work Plan. The RPD control limits are listed in the laboratory reports. These control limits may be slightly different than those presented in the Work Plan, but they are still acceptable. Overall precision for the analysis was acceptable

RPD's outside the control limits would represent statistical exceptions and indicate a lack of ability to reproduce the data. LCSD evaluate the effect laboratory conditions have on precision -- no RPD exceptions were noted in LCSDs. Field duplicates, MSDs and lab duplicates evaluate the effect field and laboratory conditions have on precision. The only exceptions noted in the duplicates did not indicate there was an out-of-control condition for the batch. Overall, the precision of the laboratory data is acceptable, and no data is qualified due to lack of precision.

Accuracy

Accuracy measures the bias in a system and is evaluated using percent recovery of surrogate, spikes and LCS. LCS evaluates bias due to laboratory conditions. Bias due to field and laboratory conditions is evaluated using surrogates and matrix spikes. Our review indicates accuracy was acceptable.

Representatives

Equipment blanks, laboratory blanks and field duplicate samples evaluate how representative analytical results are of actual site conditions. Blanks evaluate the introduction of "analytes" from outside sources such as field equipment, transportation equipment and the laboratory environment. In general there were some problems with laboratory and field equipment introducing analytes that were not representative of sample conditions. These problems are summarized here and were discussed in detail previously. Each of these problems should be addressed to prevent further non-representative samples during future phases of fieldwork.

- Toluene was noted in the equipment blank taken on 01/16/04. This equipment blank was obtained by running de-ionized water through a new disposable bailer. The toluene detection indicates there is either toluene in the de-ionized water or the disposable bailers.
- Ten different analytes were detected in the laboratory method blanks at concentrations above the MDL but below the RL. These detected analytes, as noted in the Laboratory Method Blank section of this report would not be considered representative of field conditions. In particular low concentrations of mercury and manganese were noted in the metals' method blanks.

Duplicate field samples attempt to evaluate how representative a sample is of site conditions. Two duplicate water samples were reviewed. Each sample had one analyte that did not meet QC criteria. Overall, the representative ness of the laboratory data is acceptable.

Completeness

Completeness evaluates how successful the data set is at being valid. Our data group was 100 percent complete with respect to rejected analysis.

REFERENCES

USEPA (U.S. Environmental Protection Agency). 2002. USEPA Contract Laboratory Program, National Functional Guidelines For Inorganics Data Review. Office of Emergency and Remedial Response, U.S. Environmental Protection Agency. EPA 540/R-01/008.

USEPA (United States Environmental Protection Agency). 2001. USEPA Contract Laboratory Program, National Functional Guidelines for Low Concentration Organic Data Review. Office of Emergency and Remedial Response, U.S. Environmental Protection Agency. EPA 540/R-00/006.

USEPA (United States Environmental Protection Agency). 2003. Inorganic National Functional Guidelines Proposed Changes. <http://www.epa.gov/superfund/programs/clp/inorgfgchanges.htm>

EnviroLogic Resources, Inc. RI/FS and IRAM Development Work Plan, Phase I, Remedial Investigation/Feasibility Study, Astoria Area-Wide Petroleum Site, Astoria, Oregon, July 15, 2002.

EnviroLogic Resources, Inc. Work Plan Addendum, Phase 1 Ground Water Assessment, Astoria Area-Wide Petroleum Site, Astoria, Oregon, DEQ ECSI File #2277, July 2, 2003.

Qualified Analytical Data
Conventional Chemistry by EPA Method 353.2

Quarterly Ground Water Monitoring-1Q04
Astoria Area-Wide Site
Astoria, Oregon

Laboratory Identification	Sample Name	Analyte	Original Result	Qualified Result	Method Detection Limit	Reporting Limit	Units
P4A0432-04	MW-16(A)	Nitrate/Nitrite-Nitrogen	0.107	0.107 J+ B	0.0250	0.0500	mg/l
P4A0432-05	MW-22(A)	Nitrate/Nitrite-Nitrogen	0.415	0.415 J+ B	0.0250	0.0500	mg/l
P4A0432-07	MW-29(A)	Nitrate/Nitrite-Nitrogen	0.0531	0.0531 J+ B	0.0250	0.0500	mg/l

**Qualified Analytical Results
Metals by EPA Method 6000 and 7000**

Quarterly Ground Water Monitoring
Astoria Area-Wide Site
Astoria, Oregon

Laboratory Identification	Sample ID	Analyte	Original Result	Qualified Result		Detection Limit	Reporting Limit	Units
P4A0432-01	MW-17(A)	Total Selenium	0.00107	0.00107	J+ B	0.000566	0.00100	mg/l
P4A0432-02	BM-17(A)	Total Selenium	0.00127	0.00127	J+ B	0.000566	0.00100	mg/l
P4A0432-03	MW-18(A)	Total Selenium	0.00128	0.00128	J+ B	0.000566	0.00100	mg/l
P4A0432-04	MW-16(A)	Total Selenium	0.00135	0.00135	J+ B	0.000566	0.00100	mg/l
P4A0432-05	MW-22(A)	Total Selenium	0.00117	0.00117	J+ B	0.000566	0.00100	mg/l
P4A0432-06	MW-28(A)	Total Selenium	0.00130	0.00130	J+ B	0.000566	0.00100	mg/l
P4A0432-07	MW-29(A)	Total Selenium	0.00123	0.00123	J+ B	0.000566	0.00100	mg/l
P4A0432-08	MW-40(A)	Total Selenium	0.00114	0.00114	J+ B	0.000566	0.00100	mg/l
P4A0306-02	MW-27(A)	Total Lead	0.000190 J	0.00100	U B	0.0000870	0.00100	mg/l
		Total Mercury	0.0000940 J	0.000200	U B	0.0000700	0.000200	mg/l
P4A0306-04	MW-1(F)	Total Lead	0.000450 J	0.00100	U B	0.0000358	0.00100	mg/l
		Dissolved Lead	0.000380 J	0.00100	U B	0.0000870	0.00100	mg/l
		Total Mercury	0.0000754 J	0.000200	U B	0.0000700	0.000200	mg/l
P4A0306-01	MW-36(A)	Total Mercury	0.000124 J	0.000200	U B	0.0000700	0.000200	mg/l
P4A0306-07	MW-14(A)	Total Lead	0.000180 J	0.00100	U B	0.0000870	0.00100	mg/l
		Total Mercury	0.0000814 J	0.000200	U B	0.0000700	0.000200	mg/l
P4A0306-12	MW-39(A)	Total Lead	0.000570 J	0.00100	U B	0.0000870	0.00100	mg/l
		Total Mercury	0.000310	0.000310	J B	0.0000700	0.000200	mg/l
P4A0306-05	MW-12(A)	Total Lead	0.000500 J	0.00100	U B	0.0000870	0.00100	mg/l
		Total Mercury	0.0000772 J	0.000200	U B	0.0000700	0.000200	mg/l
P4A0306-16	MW-45(A)	Total Lead	0.000100 J	0.00100	U B	0.0000870	0.00100	mg/l
P4A0306-06	MW-13(A)	Total Mercury	0.0000905 J	0.000200	U B	0.0000358	0.000200	mg/l
P4A0306-08	MW-24(A)	Total Mercury	0.0000714 J	0.000200	U B	0.000566	0.000200	mg/l
P4A0306-09	MW-26(A)	Total Mercury	0.000110 J	0.000200	U B	0.0000358	0.000200	mg/l
P4A0306-10	MW-23(A)	Total Mercury	0.0000841 J	0.000200	U B	0.000566	0.000200	mg/l
P4A0306-14	MW-35(A)	Total Mercury	0.0000806 J	0.000200	U B	0.0000358	0.000200	mg/l
P4A0306-15	MW-30(A)	Total Mercury	0.0000895 J	0.000200	U B	0.000566	0.000200	mg/l
P4A0208-01	MW-6(M)	Total Lead	0.00379	0.00379	U B	0.0000870	0.00100	mg/l
		Total Mercury	0.000288	0.000288	J+ B	0.0000700	0.000200	mg/l
P4A0208-03	MW-43(A)	Total Lead	0.00218	0.00218	J+ B	0.0000870	0.00100	mg/l
		Total Mercury	0.0000846 J	0.000200	U B	0.0000700	0.000200	mg/l

**Qualified Analytical Results
Metals by EPA Method 6000 and 7000**

Quarterly Ground Water Monitoring
Astoria Area-Wide Site
Astoria, Oregon

Laboratory Identification	Sample ID	Analyte	Original Result	Qualified Result		Detection Limit	Reporting Limit	Units
P4A0208-04	MW-2(M)	Total Lead	0.00177	0.00177	J+ B	0.0000870	0.00100	mg/l
		Total Mercury	0.0000802	0.000200	U B	0.0000700	0.000200	mg/l
P4A0208-05	MW-33(A)	Total Lead	0.00151	0.00151	J+ B	0.0000870	0.00100	mg/l
		Total Mercury	0.0000747	0.000200	U B	0.0000700	0.000200	mg/l
P4A0208-06	MW-32(A)	Total Lead	0.000270	0.00100	U B	0.0000870	0.00100	mg/l
P4A0208-07	MW-31(A)	Total Lead	0.00302	0.00302	J+ B	0.0000870	0.00100	mg/l
P4A0208-09	MW-34(A)	Total Lead	0.00162	0.00162	J+ B	0.0000870	0.00100	mg/l
P4A0208-10	MW-10(M)	Total Lead	0.000690	0.00100	U B	0.0000870	0.00100	mg/l
		Dissolved Selenium	0.00119	0.00119	J+ B	0.000566	0.00100	mg/l
P4A0208-11	MW-11(M)	Total Lead	0.00496	0.00496	J+ B	0.0000870	0.00100	mg/l
P4A0208-12	MW-21(A)	Total Lead	0.000170	0.00100	U B	0.0000870	0.00100	mg/l
P4A0208-13	MW-19(A)	Total Lead	0.000150	0.00100	U B	0.0000870	0.00100	mg/l
P4A0208-15	BM-21(A)	Total Lead	0.000350	0.00100	U B	0.0000870	0.00100	mg/l
P4A0208-16	MW-20(A)	Total Lead	0.00388	0.00388	J+ B	0.0000870	0.00100	mg/l
P4A0208-18	MW-38(A)	Total Lead	0.00120	0.00120	J+ B	0.0000870	0.00100	mg/l
P4A0208-19	MW-46(A)	Total Lead	0.00217	0.00217	J+ B	0.0000870	0.00100	mg/l
P4A0208-20	MW-47(A)	Total Lead	0.00314	0.00314	J+ B	0.0000870	0.00100	mg/l
P4A0208-21	MW-48(A)	Total Lead	0.000970	0.00100	U B	0.0000870	0.00100	mg/l

**Qualified Analytical Results
VOCs by EPA Method 8260B**

Quarterly Ground Water Monitoring-1Q04
Astoria Area-Wide Site
Astoria, Oregon

Laboratory Identification	Sample Name	Analyte	Original Result	Qualified Result	Method Detection Limit	Reporting Limit	Units
P4A0208-03	MW-43(A)	Toluene	0.190 J	0.500 U B	0.155	0.500	ug/l
P4A0208-04	MW-2(M)	Toluene	0.510	0.510 J B	0.155	0.500	ug/l
P4A0208-05	MW-33(A)	Naphthalene	0.190 J	2.00 U B	0.989	2.00	ug/l
P4A0208-11	MW-11(M)	Toluene	0.170 J	0.500 U B	0.155	0.500	ug/l
P4A0208-12	MW-21(A)	Toluene	0.250 J	0.500 U B	0.155	0.500	ug/l
P4A0208-15	BM-21(A)	Toluene	0.210 J	0.500 U B	0.155	0.500	ug/l
P4A0208-16	MW-20(A)	Toluene	0.880	0.880 J B	0.155	0.500	ug/l
P4A0208-18	MW-38(A)	Naphthalene	0.250 J	2.00 U B	0.989	2.00	ug/l
P4A0306-09	MW-26(A)	Toluene	24.2	24.2 J B	3.10	10.0	ug/l
P4A0306-12	MW-39-(A)	Toluene	0.280 J	0.500 U B	0.155	0.500	ug/l
P4A0432-01	MW-17(A)	Toluene	1.05	1.05 J B	0.155	0.500	ug/l
P4A0432-02	BM-17(A)	Toluene	1.04	1.04 J B	0.155	0.500	ug/l
P4A0432-04	MW-16(A)	Toluene	0.180 J	0.500 U B	0.155	0.500	ug/l



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05 February 2004

Tom Calabrese
EnviroLogic Resources, Inc.
P.O. Box 80762
Portland, OR 97280-0762
RE: Astoria Area-Wide Petroleum Site RI-1

Enclosed are the results of analyses for samples received by the laboratory on 01/14/04 15:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Joy D. Chang
Project Manager



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EnviroLogic Resources, Inc.
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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-6 (M)	P4A0208-01	Water	01/12/04 08:14	01/14/04 15:15
MW-7 (M)	P4A0208-02	Water	01/12/04 09:40	01/14/04 15:15
MW-43 (A)	P4A0208-03	Water	01/12/04 10:53	01/14/04 15:15
MW-2 (M)	P4A0208-04	Water	01/12/04 12:00	01/14/04 15:15
MW-33 (A)	P4A0208-05	Water	01/12/04 14:25	01/14/04 15:15
MW-32 (A)	P4A0208-06	Water	01/12/04 15:25	01/14/04 15:15
MW-31 (A)	P4A0208-07	Water	01/12/04 16:15	01/14/04 15:15
TRIP BLANK	P4A0208-08	Water	01/12/04 16:15	01/14/04 15:15
MW-34 (A)	P4A0208-09	Water	01/13/04 08:30	01/14/04 15:15
MW-10 (M)	P4A0208-10	Water	01/13/04 10:50	01/14/04 15:15
MW-11 (M)	P4A0208-11	Water	01/13/04 12:35	01/14/04 15:15
MW-21 (A)	P4A0208-12	Water	01/13/04 13:55	01/14/04 15:15
MW-19 (A)	P4A0208-13	Water	01/13/04 15:15	01/14/04 15:15
EQUIP BLANK	P4A0208-14	Water	01/13/04 15:15	01/14/04 15:15
BM-21 (A)	P4A0208-15	Water	01/13/04 13:55	01/14/04 15:15
MW-20 (A)	P4A0208-16	Water	01/13/04 16:30	01/14/04 15:15
TRIP BLANK	P4A0208-17	Water	01/13/04 16:30	01/14/04 15:15
MW-38 (A)	P4A0208-18	Water	01/14/04 08:10	01/14/04 15:15
MW-46(A)	P4A0208-19	Water	01/14/04 10:20	01/14/04 15:15
MW-47 (A)	P4A0208-20	Water	01/14/04 12:30	01/14/04 15:15
MW-48 (A)	P4A0208-21	Water	01/14/04 11:30	01/14/04 15:15

North Creek Analytical - Portland

Joy D. Chang, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Gasoline Hydrocarbons per NW TPH-Gx Method
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-6 (M) (P4A0208-01RE1) Water Sampled: 01/12/04 08:14 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	U
Surrogate: 4-BFB	112 %		50-150			"	"	"	"	
MW-7 (M) (P4A0208-02RE1) Water Sampled: 01/12/04 09:40 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	U
Surrogate: 4-BFB	108 %		50-150			"	"	"	"	
MW-43 (A) (P4A0208-03RE1) Water Sampled: 01/12/04 10:53 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	U
Surrogate: 4-BFB	108 %		50-150			"	"	"	"	
MW-2 (M) (P4A0208-04RE1) Water Sampled: 01/12/04 12:00 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	628	250	400	ug/l	5	4010361	01/15/04	01/15/04	NW TPH-G	D
Surrogate: 4-BFB	125 %		50-150			"	"	"	"	
MW-33 (A) (P4A0208-05RE1) Water Sampled: 01/12/04 14:25 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	276	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	
Surrogate: 4-BFB	140 %		50-150			"	"	"	"	
MW-32 (A) (P4A0208-06RE1) Water Sampled: 01/12/04 15:25 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	U
Surrogate: 4-BFB	114 %		50-150			"	"	"	"	
MW-31 (A) (P4A0208-07RE1) Water Sampled: 01/12/04 16:15 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	5220	500	800	ug/l	10	4010361	01/15/04	01/15/04	NW TPH-G	D
Surrogate: 4-BFB	131 %		50-150			"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Gasoline Hydrocarbons per NW TPH-Gx Method
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-34 (A) (P4A0208-09RE1) Water Sampled: 01/13/04 08:30 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	U
Surrogate: 4-BFB	113 %		50-150			"	"	"	"	
MW-10 (M) (P4A0208-10RE1) Water Sampled: 01/13/04 10:50 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	2570	250	400	ug/l	5	4010361	01/15/04	01/15/04	NW TPH-G	D
Surrogate: 4-BFB	141 %		50-150			"	"	"	"	
MW-11 (M) (P4A0208-11RE1) Water Sampled: 01/13/04 12:35 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	219	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	
Surrogate: 4-BFB	125 %		50-150			"	"	"	"	
MW-21 (A) (P4A0208-12RE1) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	309	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	
Surrogate: 4-BFB	131 %		50-150			"	"	"	"	
MW-19 (A) (P4A0208-13RE1) Water Sampled: 01/13/04 15:15 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	U
Surrogate: 4-BFB	110 %		50-150			"	"	"	"	
EQUIP BLANK (P4A0208-14RE1) Water Sampled: 01/13/04 15:15 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	U
Surrogate: 4-BFB	113 %		50-150			"	"	"	"	
BM-21 (A) (P4A0208-15RE1) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	186	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	
Surrogate: 4-BFB	121 %		50-150			"	"	"	"	

North Creek Analytical - Portland

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 Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 13:42

**Gasoline Hydrocarbons per NW TPH-Gx Method
 North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-20 (A) (P4A0208-16RE1) Water Sampled: 01/13/04 16:30 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	979	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	
Surrogate: 4-BFB	146 %		50-150			"	"	"	"	
MW-38 (A) (P4A0208-18RE1) Water Sampled: 01/14/04 08:10 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	U
Surrogate: 4-BFB	122 %		50-150			"	"	"	"	
MW-46(A) (P4A0208-19RE1) Water Sampled: 01/14/04 10:20 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	U
Surrogate: 4-BFB	115 %		50-150			"	"	"	"	
MW-47 (A) (P4A0208-20RE1) Water Sampled: 01/14/04 12:30 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	54.3	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	J
Surrogate: 4-BFB	115 %		50-150			"	"	"	"	
MW-48 (A) (P4A0208-21RE1) Water Sampled: 01/14/04 11:30 Received: 01/14/04 15:15										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010361	01/15/04	01/15/04	NW TPH-G	U
Surrogate: 4-BFB	109 %		50-150			"	"	"	"	

North Creek Analytical - Portland

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-6 (M) (P4A0208-01) Water Sampled: 01/12/04 08:14 Received: 01/14/04 15:15										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010355	01/15/04	01/15/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	75.1 %		50-150			"	"	"	"	
MW-7 (M) (P4A0208-02) Water Sampled: 01/12/04 09:40 Received: 01/14/04 15:15										
Diesel Range Organics	0.756	0.153	0.250	mg/l	1	4010355	01/15/04	01/15/04	NWTPH-Dx	D-17
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	69.3 %		50-150			"	"	"	"	
MW-43 (A) (P4A0208-03) Water Sampled: 01/12/04 10:53 Received: 01/14/04 15:15										
Diesel Range Organics	0.633	0.153	0.250	mg/l	1	4010355	01/15/04	01/15/04	NWTPH-Dx	D-17
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	53.6 %		50-150			"	"	"	"	
MW-2 (M) (P4A0208-04) Water Sampled: 01/12/04 12:00 Received: 01/14/04 15:15										
Diesel Range Organics	1.34	0.153	0.250	mg/l	1	4010355	01/15/04	01/15/04	NWTPH-Dx	A-01
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	78.7 %		50-150			"	"	"	"	
MW-33 (A) (P4A0208-05) Water Sampled: 01/12/04 14:25 Received: 01/14/04 15:15										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010355	01/15/04	01/15/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	79.0 %		50-150			"	"	"	"	
MW-32 (A) (P4A0208-06) Water Sampled: 01/12/04 15:25 Received: 01/14/04 15:15										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010355	01/15/04	01/15/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	96.9 %		50-150			"	"	"	"	

North Creek Analytical - Portland

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Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-31 (A) (P4A0208-07) Water Sampled: 01/12/04 16:15 Received: 01/14/04 15:15										
Diesel Range Organics	1.10	0.153	0.250	mg/l	1	4010355	01/15/04	01/15/04	NWTPH-Dx	A-02
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	72.6 %		50-150			"	"	"	"	
MW-34 (A) (P4A0208-09) Water Sampled: 01/13/04 08:30 Received: 01/14/04 15:15										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010355	01/15/04	01/15/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	59.7 %		50-150			"	"	"	"	
MW-10 (M) (P4A0208-10) Water Sampled: 01/13/04 10:50 Received: 01/14/04 15:15										
Diesel Range Organics	1.59	0.153	0.250	mg/l	1	4010355	01/15/04	01/15/04	NWTPH-Dx	A-01
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	90.1 %		50-150			"	"	"	"	
MW-11 (M) (P4A0208-11) Water Sampled: 01/13/04 12:35 Received: 01/14/04 15:15										
Diesel Range Organics	0.500	0.153	0.250	mg/l	1	4010355	01/15/04	01/16/04	NWTPH-Dx	D-17
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	53.2 %		50-150			"	"	"	"	
MW-21 (A) (P4A0208-12) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Diesel Range Organics	0.799	0.153	0.250	mg/l	1	4010355	01/15/04	01/16/04	NWTPH-Dx	D-17
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	78.4 %		50-150			"	"	"	"	
MW-19 (A) (P4A0208-13) Water Sampled: 01/13/04 15:15 Received: 01/14/04 15:15										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010355	01/15/04	01/15/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	88.4 %		50-150			"	"	"	"	

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BM-21 (A) (P4A0208-15) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Diesel Range Organics	0.644	0.153	0.250	mg/l	1	4010355	01/15/04	01/16/04	NWTPH-Dx	D-17
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	72.6 %		50-150			"	"	"	"	
MW-20 (A) (P4A0208-16) Water Sampled: 01/13/04 16:30 Received: 01/14/04 15:15										
Diesel Range Organics	0.927	0.153	0.250	mg/l	1	4010355	01/15/04	01/16/04	NWTPH-Dx	D-17
Heavy Oil Range Hydrocarbons	0.918	0.286	0.500	"	"	"	"	"	"	
Surrogate: 1-Chlorooctadecane	44.7 %		50-150			"	"	"	"	S-09
MW-38 (A) (P4A0208-18) Water Sampled: 01/14/04 08:10 Received: 01/14/04 15:15										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010355	01/15/04	01/16/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	80.7 %		50-150			"	"	"	"	
MW-46(A) (P4A0208-19) Water Sampled: 01/14/04 10:20 Received: 01/14/04 15:15										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010355	01/15/04	01/15/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	80.9 %		50-150			"	"	"	"	
MW-47 (A) (P4A0208-20) Water Sampled: 01/14/04 12:30 Received: 01/14/04 15:15										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010355	01/15/04	01/15/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	33.4 %		50-150			"	"	"	"	S-09
MW-48 (A) (P4A0208-21) Water Sampled: 01/14/04 11:30 Received: 01/14/04 15:15										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010355	01/15/04	01/15/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	88.4 %		50-150			"	"	"	"	

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
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**Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-6 (M) (P4A0208-01) Water Sampled: 01/12/04 08:14 Received: 01/14/04 15:15										
Silver	0.000800	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/20/04	EPA 6020	J
Arsenic	0.0104	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0160	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	0.000250	0.000178	0.00100	"	"	"	"	"	"	J
Chromium	0.00185	0.000791	0.00100	"	"	"	"	"	"	
Manganese	2.32	0.0000680	0.0100	"	5	"	"	01/23/04	"	D
Lead	0.00379	0.0000870	0.00100	"	1	"	"	01/20/04	"	
Selenium	0.00111	0.000566	0.00100	"	"	"	"	01/23/04	"	
MW-7 (M) (P4A0208-02) Water Sampled: 01/12/04 09:40 Received: 01/14/04 15:15										
Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/20/04	EPA 6020	U
Arsenic	0.00804	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0331	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00226	0.000791	0.00100	"	"	"	"	"	"	
Lead	0.00807	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U
MW-43 (A) (P4A0208-03) Water Sampled: 01/12/04 10:53 Received: 01/14/04 15:15										
Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/20/04	EPA 6020	U
Arsenic	0.0116	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0312	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00189	0.000791	0.00100	"	"	"	"	"	"	
Lead	0.00218	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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MW-2 (M) (P4A0208-04) Water Sampled: 01/12/04 12:00 Received: 01/14/04 15:15

Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/20/04	EPA 6020	U
Arsenic	0.0172	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0138	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Lead	0.00177	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U

MW-33 (A) (P4A0208-05) Water Sampled: 01/12/04 14:25 Received: 01/14/04 15:15

Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/20/04	EPA 6020	U
Arsenic	0.0307	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0321	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00157	0.000791	0.00100	"	"	"	"	"	"	
Lead	0.00151	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U

MW-32 (A) (P4A0208-06) Water Sampled: 01/12/04 15:25 Received: 01/14/04 15:15

Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/20/04	EPA 6020	U
Arsenic	0.00229	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0119	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Lead	0.000270	0.0000870	0.00100	"	"	"	"	"	"	J
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
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Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-31 (A) (P4A0208-07) Water Sampled: 01/12/04 16:15 Received: 01/14/04 15:15										
Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/20/04	EPA 6020	U
Arsenic	0.0130	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0460	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00285	0.000791	0.00100	"	"	"	"	"	"	
Lead	0.00302	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U
MW-34 (A) (P4A0208-09) Water Sampled: 01/13/04 08:30 Received: 01/14/04 15:15										
Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/20/04	EPA 6020	U
Arsenic	0.00326	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0333	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	0.000190	0.000178	0.00100	"	"	"	"	"	"	J
Chromium	0.00253	0.000791	0.00100	"	"	"	"	"	"	
Lead	0.00162	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U
MW-10 (M) (P4A0208-10) Water Sampled: 01/13/04 10:50 Received: 01/14/04 15:15										
Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/20/04	EPA 6020	U
Arsenic	0.0253	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0426	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Lead	0.000690	0.0000870	0.00100	"	"	"	"	"	"	J
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-11 (M) (P4A0208-11) Water Sampled: 01/13/04 12:35 Received: 01/14/04 15:15										
Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/20/04	EPA 6020	U
Arsenic	0.0240	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0301	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00363	0.000791	0.00100	"	"	"	"	"	"	
Lead	0.00496	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U
MW-21 (A) (P4A0208-12) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/20/04	EPA 6020	U
Arsenic	ND	0.000964	0.00100	"	"	"	"	"	"	U
Barium	0.0134	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Manganese	0.581	0.0000136	0.00200	"	"	"	"	"	"	
Lead	0.000170	0.0000870	0.00100	"	"	"	"	"	"	J
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U
MW-19 (A) (P4A0208-13) Water Sampled: 01/13/04 15:15 Received: 01/14/04 15:15										
Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/20/04	EPA 6020	U
Arsenic	0.000970	0.000964	0.00100	"	"	"	"	"	"	J
Barium	0.0141	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Manganese	0.162	0.0000136	0.00200	"	"	"	"	"	"	
Lead	0.000150	0.0000870	0.00100	"	"	"	"	"	"	J
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U

North Creek Analytical - Portland

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EnviroLogic Resources, Inc.
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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BM-21 (A) (P4A0208-15) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Silver	0.0000700	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/21/04	EPA 6020	J
Arsenic	ND	0.000964	0.00100	"	"	"	"	"	"	U
Barium	0.0136	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Manganese	0.576	0.0000136	0.00200	"	"	"	"	"	"	
Lead	0.000350	0.0000870	0.00100	"	"	"	"	"	"	J
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U
MW-20 (A) (P4A0208-16) Water Sampled: 01/13/04 16:30 Received: 01/14/04 15:15										
Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/21/04	EPA 6020	U
Arsenic	0.00215	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0358	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00240	0.000791	0.00100	"	"	"	"	"	"	
Lead	0.00388	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U
MW-38 (A) (P4A0208-18) Water Sampled: 01/14/04 08:10 Received: 01/14/04 15:15										
Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/21/04	EPA 6020	U
Arsenic	ND	0.000964	0.00100	"	"	"	"	"	"	U
Barium	0.0123	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Lead	0.00120	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-46(A) (P4A0208-19) Water Sampled: 01/14/04 10:20 Received: 01/14/04 15:15										
Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/21/04	EPA 6020	U
Arsenic	0.00311	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0260	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.0165	0.000791	0.00100	"	"	"	"	"	"	
Lead	0.00217	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U
MW-47 (A) (P4A0208-20) Water Sampled: 01/14/04 12:30 Received: 01/14/04 15:15										
Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/21/04	EPA 6020	U
Arsenic	0.00414	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0266	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00234	0.000791	0.00100	"	"	"	"	"	"	
Lead	0.00314	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U
MW-48 (A) (P4A0208-21) Water Sampled: 01/14/04 11:30 Received: 01/14/04 15:15										
Silver	ND	0.0000460	0.00100	mg/l	1	4010508	01/19/04	01/21/04	EPA 6020	U
Arsenic	0.00114	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0195	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Lead	0.000970	0.0000870	0.00100	"	"	"	"	"	"	J
Selenium	ND	0.000566	0.00100	"	"	"	"	01/23/04	"	U

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Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 13:42

**Dissolved Metals per EPA 6000/7000 Series Methods
 North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-10 (M) (P4A0208-10) Water Sampled: 01/13/04 10:50 Received: 01/14/04 15:15										
Silver	0.0000700	0.0000460	0.00100	mg/l	1	4010587	01/21/04	01/22/04	EPA 6020	J
Arsenic	0.0264	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0382	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.0000730	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Mercury	ND	0.0000630	0.000200	"	"	4010957	01/30/04	01/30/04	EPA 7470A	U
Lead	0.000370	0.0000870	0.00100	"	"	4010587	01/21/04	01/22/04	EPA 6020	J
Selenium	0.00119	0.000566	0.00100	"	"	"	"	"	"	

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 Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 13:42

Hexavalent Chromium per EPA Method 7195
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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MW-46(A) (P4A0208-19) Water **Sampled: 01/14/04 10:20** **Received: 01/14/04 15:15**

Hexavalent Chromium	0.00542	0.000450	0.0100	mg/l	1	4010342	01/14/04	01/16/04	EPA 7195	J
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Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
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**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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MW-6 (M) (P4A0208-01RE1) Water Sampled: 01/12/04 08:14 Received: 01/14/04 15:15

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010489	01/19/04	01/19/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	0.400	0.0989	2.00	"	"	"	"	"	"	J
1,2,4-Trimethylbenzene	0.920	0.0884	1.00	"	"	"	"	"	"	J
1,3,5-Trimethylbenzene	0.200	0.157	0.500	"	"	"	"	"	"	J
Isopropylbenzene	0.270	0.107	2.00	"	"	"	"	"	"	J
n-Propylbenzene	0.490	0.138	0.500	"	"	"	"	"	"	J
Surrogate: 4-BFB	97.5 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	101 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	98.5 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	100 %		80-120			"	"	"	"	

MW-7 (M) (P4A0208-02) Water Sampled: 01/12/04 09:40 Received: 01/14/04 15:15

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010455	01/17/04	01/17/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	95.5 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	104 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	100 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	95.5 %		80-120			"	"	"	"	

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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MW-43 (A) (P4A0208-03) Water Sampled: 01/12/04 10:53 Received: 01/14/04 15:15

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010455	01/17/04	01/17/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	10.9	0.147	0.500	"	"	"	"	"	"	
Toluene	0.190	0.155	0.500	"	"	"	"	"	"	J
Ethylbenzene	3.56	0.110	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	99.0 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	104 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	99.5 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	91.5 %		80-120			"	"	"	"	

MW-2 (M) (P4A0208-04RE1) Water Sampled: 01/12/04 12:00 Received: 01/14/04 15:15

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010489	01/19/04	01/19/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	10.6	0.147	0.500	"	"	"	"	"	"	
Toluene	0.510	0.155	0.500	"	"	"	"	"	"	
Ethylbenzene	2.52	0.110	0.500	"	"	"	"	"	"	
Xylenes (total)	0.860	0.262	1.00	"	"	"	"	"	"	J
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	3.42	0.0989	2.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	10.2	0.107	2.00	"	"	"	"	"	"	
n-Propylbenzene	47.8	0.138	0.500	"	"	"	"	"	"	
Surrogate: 4-BFB	102 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	103 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	101 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	97.0 %		80-120			"	"	"	"	

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-33 (A) (P4A0208-05) Water Sampled: 01/12/04 14:25 Received: 01/14/04 15:15										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010455	01/17/04	01/17/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	15.0	0.147	0.500	"	"	"	"	"	"	
Toluene	2.16	0.155	0.500	"	"	"	"	"	"	
Ethylbenzene	0.550	0.110	0.500	"	"	"	"	"	"	
Xylenes (total)	4.16	0.262	1.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	0.190	0.0989	2.00	"	"	"	"	"	"	J
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	3.71	0.107	2.00	"	"	"	"	"	"	
n-Propylbenzene	8.13	0.138	0.500	"	"	"	"	"	"	
Surrogate: 4-BFB	97.0 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	104 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	97.5 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	96.5 %		80-120			"	"	"	"	

MW-32 (A) (P4A0208-06RE1) Water Sampled: 01/12/04 15:25 Received: 01/14/04 15:15										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010642	01/22/04	01/22/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	98.5 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	106 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	100 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	97.5 %		80-120			"	"	"	"	

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-31 (A) (P4A0208-07RE1) Water Sampled: 01/12/04 16:15 Received: 01/14/04 15:15										
1,2-Dibromoethane	ND	1.87	5.00	ug/l	10	4010642	01/22/04	01/23/04	EPA 8260B	D, U
1,2-Dichloroethane	ND	1.42	5.00	"	"	"	"	"	"	D, U
Benzene	1390	1.47	5.00	"	"	"	"	"	"	D
Toluene	109	1.55	5.00	"	"	"	"	"	"	D
Ethylbenzene	798	1.10	5.00	"	"	"	"	"	"	D
Xylenes (total)	189	2.62	10.0	"	"	"	"	"	"	D
Methyl tert-butyl ether	ND	0.865	20.0	"	"	"	"	"	"	D, U
Naphthalene	13.5	0.989	20.0	"	"	"	"	"	"	J, D
1,2,4-Trimethylbenzene	ND	0.884	10.0	"	"	"	"	"	"	D, U
1,3,5-Trimethylbenzene	2.20	1.57	5.00	"	"	"	"	"	"	J, D
Isopropylbenzene	44.2	1.07	20.0	"	"	"	"	"	"	D
n-Propylbenzene	121	1.38	5.00	"	"	"	"	"	"	D
<i>Surrogate: 4-BFB</i>	<i>101 %</i>		<i>75-120</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: 1,2-DCA-d4</i>	<i>108 %</i>		<i>77-129</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>102 %</i>		<i>80-121</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>	<i>107 %</i>		<i>80-120</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	

TRIP BLANK (P4A0208-08) Water Sampled: 01/12/04 16:15 Received: 01/14/04 15:15										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010455	01/17/04	01/17/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
<i>Surrogate: 4-BFB</i>	<i>98.0 %</i>		<i>75-120</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: 1,2-DCA-d4</i>	<i>107 %</i>		<i>77-129</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>102 %</i>		<i>80-121</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>	<i>102 %</i>		<i>80-120</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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MW-34 (A) (P4A0208-09RE1) Water Sampled: 01/13/04 08:30 Received: 01/14/04 15:15

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010642	01/22/04	01/22/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	0.250	0.110	0.500	"	"	"	"	"	"	J
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
<i>Surrogate: 4-BFB</i>	98.0 %		75-120			"	"	"	"	
<i>Surrogate: 1,2-DCA-d4</i>	108 %		77-129			"	"	"	"	
<i>Surrogate: Dibromofluoromethane</i>	101 %		80-121			"	"	"	"	
<i>Surrogate: Toluene-d8</i>	96.0 %		80-120			"	"	"	"	

MW-10 (M) (P4A0208-10RE1) Water Sampled: 01/13/04 10:50 Received: 01/14/04 15:15

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010489	01/19/04	01/19/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	50.3	0.147	0.500	"	"	"	"	"	"	
Toluene	15.3	0.155	0.500	"	"	"	"	"	"	
Ethylbenzene	24.9	0.110	0.500	"	"	"	"	"	"	
Xylenes (total)	46.9	0.262	1.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	1.64	0.0989	2.00	"	"	"	"	"	"	J
1,2,4-Trimethylbenzene	4.05	0.0884	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	4.55	0.157	0.500	"	"	"	"	"	"	
Isopropylbenzene	27.5	0.107	2.00	"	"	"	"	"	"	
n-Propylbenzene	28.9	0.138	0.500	"	"	"	"	"	"	
<i>Surrogate: 4-BFB</i>	102 %		75-120			"	"	"	"	
<i>Surrogate: 1,2-DCA-d4</i>	104 %		77-129			"	"	"	"	
<i>Surrogate: Dibromofluoromethane</i>	102 %		80-121			"	"	"	"	
<i>Surrogate: Toluene-d8</i>	102 %		80-120			"	"	"	"	

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Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-11 (M) (P4A0208-11RE1) Water Sampled: 01/13/04 12:35 Received: 01/14/04 15:15										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010642	01/17/04	01/22/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	8.86	0.147	0.500	"	"	"	"	"	"	J
Toluene	0.170	0.155	0.500	"	"	"	"	"	"	J
Ethylbenzene	0.110	0.110	0.500	"	"	"	"	"	"	J
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	3.15	0.107	2.00	"	"	"	"	"	"	J
n-Propylbenzene	1.30	0.138	0.500	"	"	"	"	"	"	J
<i>Surrogate: 4-BFB</i>	<i>101 %</i>		<i>75-120</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: 1,2-DCA-d4</i>	<i>108 %</i>		<i>77-129</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>105 %</i>		<i>80-121</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>	<i>105 %</i>		<i>80-120</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
MW-21 (A) (P4A0208-12RE1) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010642	01/22/04	01/22/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	0.310	0.147	0.500	"	"	"	"	"	"	J
Toluene	0.250	0.155	0.500	"	"	"	"	"	"	J
Ethylbenzene	1.45	0.110	0.500	"	"	"	"	"	"	J
Xylenes (total)	0.460	0.262	1.00	"	"	"	"	"	"	J
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	4.01	0.0989	2.00	"	"	"	"	"	"	J
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	2.53	0.107	2.00	"	"	"	"	"	"	J
n-Propylbenzene	7.59	0.138	0.500	"	"	"	"	"	"	J
<i>Surrogate: 4-BFB</i>	<i>100 %</i>		<i>75-120</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: 1,2-DCA-d4</i>	<i>109 %</i>		<i>77-129</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>104 %</i>		<i>80-121</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>	<i>99.0 %</i>		<i>80-120</i>			<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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MW-19 (A) (P4A0208-13RE1) Water Sampled: 01/13/04 15:15 Received: 01/14/04 15:15

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010642	01/22/04	01/22/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	99.5 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	108 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	101 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	98.5 %		80-120			"	"	"	"	

EQUIP BLANK (P4A0208-14RE1) Water Sampled: 01/13/04 15:15 Received: 01/14/04 15:15

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010642	01/22/04	01/22/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	101 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	106 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	103 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	102 %		80-120			"	"	"	"	

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BM-21 (A) (P4A0208-15RE1) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010642	01/22/04	01/22/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	0.250	0.147	0.500	"	"	"	"	"	"	J
Toluene	0.210	0.155	0.500	"	"	"	"	"	"	J
Ethylbenzene	1.20	0.110	0.500	"	"	"	"	"	"	
Xylenes (total)	0.450	0.262	1.00	"	"	"	"	"	"	J
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	3.76	0.0989	2.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	2.36	0.107	2.00	"	"	"	"	"	"	
n-Propylbenzene	6.90	0.138	0.500	"	"	"	"	"	"	
Surrogate: 4-BFB	99.5 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	106 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	102 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	99.0 %		80-120			"	"	"	"	
MW-20 (A) (P4A0208-16RE1) Water Sampled: 01/13/04 16:30 Received: 01/14/04 15:15										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010642	01/22/04	01/23/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	3.64	0.147	0.500	"	"	"	"	"	"	
Toluene	0.880	0.155	0.500	"	"	"	"	"	"	
Ethylbenzene	12.5	0.110	0.500	"	"	"	"	"	"	
Xylenes (total)	46.2	0.262	1.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	36.5	0.0989	2.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	56.2	0.0884	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	7.32	0.157	0.500	"	"	"	"	"	"	
Isopropylbenzene	6.54	0.107	2.00	"	"	"	"	"	"	
n-Propylbenzene	8.92	0.138	0.500	"	"	"	"	"	"	
Surrogate: 4-BFB	101 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	106 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	102 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	99.0 %		80-120			"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TRIP BLANK (P4A0208-17) Water Sampled: 01/13/04 16:30 Received: 01/14/04 15:15										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010455	01/17/04	01/17/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	97.5 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	102 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	98.5 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	100 %		80-120			"	"	"	"	
MW-38 (A) (P4A0208-18RE1) Water Sampled: 01/14/04 08:10 Received: 01/14/04 15:15										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010642	01/22/04	01/22/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	0.490	0.0989	2.00	"	"	"	"	"	"	J
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	0.150	0.138	0.500	"	"	"	"	"	"	J
Surrogate: 4-BFB	103 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	109 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	106 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	102 %		80-120			"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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MW-46(A) (P4A0208-19RE1) Water Sampled: 01/14/04 10:20 Received: 01/14/04 15:15

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010642	01/22/04	01/22/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	99.0 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	108 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	100 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	95.5 %		80-120			"	"	"	"	

MW-47 (A) (P4A0208-20RE1) Water Sampled: 01/14/04 12:30 Received: 01/14/04 15:15

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010642	01/22/04	01/22/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	0.210	0.147	0.500	"	"	"	"	"	"	J
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	0.130	0.110	0.500	"	"	"	"	"	"	J
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	98.5 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	107 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	101 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	99.5 %		80-120			"	"	"	"	

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-48 (A) (P4A0208-21) Water Sampled: 01/14/04 11:30 Received: 01/14/04 15:15										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010489	01/19/04	01/19/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	97.5 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	103 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	100 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	97.0 %		80-120			"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-6 (M) (P4A0208-01) Water Sampled: 01/12/04 08:14 Received: 01/14/04 15:15										
Acenaphthene	0.167	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	0.0110	0.0100	0.0100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	0.0130	0.0100	0.0100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
<i>Surrogate: Fluorene-d10</i>	78.8 %		25-150			"	"	"	"	
<i>Surrogate: Pyrene-d10</i>	88.1 %		23-150			"	"	"	"	
<i>Surrogate: Benzo (a) pyrene-d12</i>	76.7 %		10-150			"	"	"	"	

MW-7 (M) (P4A0208-02) Water Sampled: 01/12/04 09:40 Received: 01/14/04 15:15										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	0.0104	0.0100	0.0100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-7 (M) (P4A0208-02) Water Sampled: 01/12/04 09:40 Received: 01/14/04 15:15										
Naphthalene	ND	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	73.3 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	84.3 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	72.9 %		10-150			"	"	"	"	
MW-43 (A) (P4A0208-03) Water Sampled: 01/12/04 10:53 Received: 01/14/04 15:15										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	71.2 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	90.7 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	50.8 %		10-150			"	"	"	"	

North Creek Analytical - Portland

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (M) (P4A0208-04) Water Sampled: 01/12/04 12:00 Received: 01/14/04 15:15										
Acenaphthene	0.540	0.100	0.100	ug/l	2	4010359	01/15/04	01/22/04	EPA 8270m	D
Acenaphthylene	ND	0.150	0.150	"	"	"	"	"	"	R-03, D, U
Anthracene	ND	0.100	0.100	"	"	"	"	"	"	D, U
Benzo (a) anthracene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Benzo (a) pyrene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Benzo (b) fluoranthene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Benzo (ghi) perylene	ND	0.100	0.100	"	"	"	"	"	"	D, U
Benzo (k) fluoranthene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Chrysene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Dibenzo (a,h) anthracene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Fluoranthene	ND	0.100	0.100	"	"	"	"	"	"	D, U
Fluorene	0.780	0.100	0.100	"	"	"	"	"	"	D
Indeno (1,2,3-cd) pyrene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Naphthalene	4.08	0.100	0.100	"	"	"	"	"	"	D
Phenanthrene	0.669	0.100	0.100	"	"	"	"	"	"	D
Pyrene	ND	0.100	0.100	"	"	"	"	"	"	D, U
Surrogate: Fluorene-d10	47.9 %		25-150			"	"	"	"	D
Surrogate: Pyrene-d10	70.8 %		23-150			"	"	"	"	D
Surrogate: Benzo (a) pyrene-d12	65.7 %		10-150			"	"	"	"	D

MW-33 (A) (P4A0208-05) Water Sampled: 01/12/04 14:25 Received: 01/14/04 15:15										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U

North Creek Analytical - Portland

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-33 (A) (P4A0208-05) Water Sampled: 01/12/04 14:25 Received: 01/14/04 15:15										
Naphthalene	ND	0.175	0.175	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	R-03, U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	67.8 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	84.3 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	75.8 %		10-150			"	"	"	"	
MW-32 (A) (P4A0208-06) Water Sampled: 01/12/04 15:25 Received: 01/14/04 15:15										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	66.9 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	86.4 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	85.2 %		10-150			"	"	"	"	

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-31 (A) (P4A0208-07) Water Sampled: 01/12/04 16:15 Received: 01/14/04 15:15										
Acenaphthene	0.0960	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	0.0661	0.0500	0.0500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	9.96	0.500	0.500	"	10	"	"	01/22/04	"	D
Phenanthrene	ND	0.0500	0.0500	"	1	"	"	01/20/04	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
<i>Surrogate: Fluorene-d10</i>	<i>69.5 %</i>		<i>25-150</i>			"	"	"	"	
<i>Surrogate: Pyrene-d10</i>	<i>85.2 %</i>		<i>23-150</i>			"	"	"	"	
<i>Surrogate: Benzo (a) pyrene-d12</i>	<i>65.7 %</i>		<i>10-150</i>			"	"	"	"	

MW-34 (A) (P4A0208-09) Water Sampled: 01/13/04 08:30 Received: 01/14/04 15:15										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-34 (A) (P4A0208-09) Water Sampled: 01/13/04 08:30 Received: 01/14/04 15:15										
Naphthalene	0.116	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	69.1 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	82.2 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	73.7 %		10-150			"	"	"	"	
MW-10 (M) (P4A0208-10) Water Sampled: 01/13/04 10:50 Received: 01/14/04 15:15										
Acenaphthene	ND	1.00	1.00	ug/l	20	4010359	01/15/04	01/22/04	EPA 8270m	R-03, D, U
Acenaphthylene	ND	1.00	1.00	"	"	"	"	"	"	R-03, D, U
Anthracene	ND	0.0500	0.0500	"	1	"	"	01/20/04	"	U
Benzo (a) anthracene	0.0114	0.0100	0.0100	"	"	"	"	"	"	
Benzo (a) pyrene	0.0105	0.0100	0.0100	"	"	"	"	"	"	
Benzo (b) fluoranthene	0.0124	0.0100	0.0100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	0.0144	0.0100	0.0100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	1.00	1.00	"	20	"	"	01/22/04	"	R-03, D, U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	1	"	"	01/20/04	"	U
Naphthalene	ND	3.00	3.00	"	20	"	"	01/22/04	"	R-03, D, U
Phenanthrene	ND	0.0500	0.0500	"	1	"	"	01/20/04	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	62.7 %		25-150			"	"	01/22/04	"	D
Surrogate: Pyrene-d10	85.2 %		23-150			"	"	01/20/04	"	
Surrogate: Benzo (a) pyrene-d12	64.0 %		10-150			"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-11 (M) (P4A0208-11) Water Sampled: 01/13/04 12:35 Received: 01/14/04 15:15										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	ND	0.325	0.325	"	"	"	"	"	"	R-03, U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	61.0 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	66.9 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	44.5 %		10-150			"	"	"	"	

MW-21 (A) (P4A0208-12) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Acenaphthene	0.185	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	0.256	0.0500	0.0500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-21 (A) (P4A0208-12) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Naphthalene	0.765	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	69.5 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	83.5 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	71.2 %		10-150			"	"	"	"	
MW-19 (A) (P4A0208-13) Water Sampled: 01/13/04 15:15 Received: 01/14/04 15:15										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	69.1 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	81.4 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	76.7 %		10-150			"	"	"	"	

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BM-21 (A) (P4A0208-15) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Acenaphthene	0.253	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	0.374	0.0500	0.0500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	1.75	0.0500	0.0500	"	"	"	"	"	"	
Phenanthrene	0.0902	0.0500	0.0500	"	"	"	"	"	"	
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	69.5 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	92.8 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	83.9 %		10-150			"	"	"	"	

MW-20 (A) (P4A0208-16) Water Sampled: 01/13/04 16:30 Received: 01/14/04 15:15

Acenaphthene	0.345	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/22/04	EPA 8270m	
Acenaphthylene	ND	0.0750	0.0750	"	"	"	"	"	"	R-03, U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	0.527	0.0500	0.0500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-20 (A) (P4A0208-16) Water Sampled: 01/13/04 16:30 Received: 01/14/04 15:15										
Naphthalene	9.60	1.00	1.00	ug/l	20	4010359	01/15/04	01/20/04	EPA 8270m	D
Phenanthrene	0.0981	0.0500	0.0500	"	1	"	"	01/22/04	"	
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	50.8 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	60.6 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	56.4 %		10-150			"	"	"	"	
MW-38 (A) (P4A0208-18) Water Sampled: 01/14/04 08:10 Received: 01/14/04 15:15										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	0.121	0.0500	0.0500	"	"	"	"	"	"	
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	74.6 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	86.9 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	76.7 %		10-150			"	"	"	"	

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Reported:
02/05/04 13:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-46(A) (P4A0208-19) Water Sampled: 01/14/04 10:20 Received: 01/14/04 15:15										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	70.8 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	85.2 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	73.7 %		10-150			"	"	"	"	

MW-47 (A) (P4A0208-20) Water Sampled: 01/14/04 12:30 Received: 01/14/04 15:15										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-47 (A) (P4A0208-20) Water Sampled: 01/14/04 12:30 Received: 01/14/04 15:15										
Naphthalene	0.0783	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/20/04	EPA 8270m	
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
<i>Surrogate: Fluorene-d10</i>	<i>74.6 %</i>		<i>25-150</i>			"	"	"	"	
<i>Surrogate: Pyrene-d10</i>	<i>84.7 %</i>		<i>23-150</i>			"	"	"	"	
<i>Surrogate: Benzo (a) pyrene-d12</i>	<i>64.0 %</i>		<i>10-150</i>			"	"	"	"	
MW-48 (A) (P4A0208-21) Water Sampled: 01/14/04 11:30 Received: 01/14/04 15:15										
Acenaphthene	0.176	0.0500	0.0500	ug/l	1	4010359	01/15/04	01/21/04	EPA 8270m	
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	0.0763	0.0500	0.0500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	0.397	0.0500	0.0500	"	"	"	"	"	"	
Phenanthrene	0.131	0.0500	0.0500	"	"	"	"	"	"	
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
<i>Surrogate: Fluorene-d10</i>	<i>71.6 %</i>		<i>25-150</i>			"	"	"	"	
<i>Surrogate: Pyrene-d10</i>	<i>89.4 %</i>		<i>23-150</i>			"	"	"	"	
<i>Surrogate: Benzo (a) pyrene-d12</i>	<i>75.8 %</i>		<i>10-150</i>			"	"	"	"	

North Creek Analytical - Portland

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EnviroLogic Resources, Inc.
 P.O. Box 80762
 Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 13:42

**Conventional Chemistry Parameters per APHA/EPA Methods
 North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-6 (M) (P4A0208-01) Water Sampled: 01/12/04 08:14 Received: 01/14/04 15:15										
Nitrate/Nitrite-Nitrogen	ND	0.250	0.500	mg/l	100	4010640	01/22/04	01/22/04	EPA 353.2	R-05, D, U
MW-21 (A) (P4A0208-12) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Nitrate/Nitrite-Nitrogen	ND	0.250	0.500	mg/l	100	4010640	01/22/04	01/22/04	EPA 353.2	R-05, D, U
MW-19 (A) (P4A0208-13) Water Sampled: 01/13/04 15:15 Received: 01/14/04 15:15										
Nitrate/Nitrite-Nitrogen	0.512	0.0250	0.0500	mg/l	10	4010640	01/22/04	01/22/04	EPA 353.2	R-05, D
BM-21 (A) (P4A0208-15) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Nitrate/Nitrite-Nitrogen	ND	0.250	0.500	mg/l	100	4010640	01/22/04	01/22/04	EPA 353.2	R-05, D, U

North Creek Analytical - Portland

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 Project Manager: Tom Calabrese

Reported:
 02/05/04 13:42

**Anions per EPA Method 300.0
 North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-6 (M) (P4A0208-01) Water Sampled: 01/12/04 08:14 Received: 01/14/04 15:15										
Chloride	16.5	0.0508	0.500	mg/l	1	4010368	01/15/04	01/15/04	EPA 300.0	
Sulfate	1.43	0.0860	1.00	"	"	"	"	"	"	
MW-21 (A) (P4A0208-12) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Chloride	7.86	0.0508	0.500	mg/l	1	4010368	01/15/04	01/15/04	EPA 300.0	
Sulfate	7.94	0.0860	1.00	"	"	"	"	"	"	
MW-19 (A) (P4A0208-13) Water Sampled: 01/13/04 15:15 Received: 01/14/04 15:15										
Chloride	12.6	0.0508	0.500	mg/l	1	4010368	01/15/04	01/15/04	EPA 300.0	
Sulfate	25.0	0.0860	1.00	"	"	"	"	"	"	
BM-21 (A) (P4A0208-15) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Chloride	7.85	0.0508	0.500	mg/l	1	4010368	01/15/04	01/15/04	EPA 300.0	
Sulfate	8.34	0.0860	1.00	"	"	"	"	"	"	

North Creek Analytical - Portland

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Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
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**Total Alkalinity by Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-6 (M) (P4A0208-01) Water Sampled: 01/12/04 08:14 Received: 01/14/04 15:15										
Bicarbonate Alkalinity	130	1.04	50.0mg/L as CaC	5	4010622	01/22/04	01/22/04	SM 2320B		D
Carbonate Alkalinity	ND	1.04	50.0	"	"	"	"	"	"	D, U
Hydroxide Alkalinity	ND	1.04	50.0	"	"	"	"	"	"	D, U
Total Alkalinity	130	1.04	50.0	"	"	"	"	"	"	D
MW-21 (A) (P4A0208-12) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Bicarbonate Alkalinity	107	0.208	10.0mg/L as CaC	1	4010622	01/22/04	01/22/04	SM 2320B		
Carbonate Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Hydroxide Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Total Alkalinity	107	0.208	10.0	"	"	"	"	"	"	
MW-19 (A) (P4A0208-13) Water Sampled: 01/13/04 15:15 Received: 01/14/04 15:15										
Bicarbonate Alkalinity	92.7	0.208	10.0mg/L as CaC	1	4010622	01/22/04	01/22/04	SM 2320B		
Carbonate Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Hydroxide Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Total Alkalinity	92.7	0.208	10.0	"	"	"	"	"	"	
BM-21 (A) (P4A0208-15) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Bicarbonate Alkalinity	109	0.208	10.0mg/L as CaC	1	4010622	01/22/04	01/22/04	SM 2320B		
Carbonate Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Hydroxide Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Total Alkalinity	109	0.208	10.0	"	"	"	"	"	"	

North Creek Analytical - Portland

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 Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 13:42

Total Metals by EPA 6000/7000 Series Methods
North Creek Analytical - Bothell

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-6 (M) (P4A0208-01) Water Sampled: 01/12/04 08:14 Received: 01/14/04 15:15										
Calcium	15.7	0.0360	0.250	mg/l	1	4A26036	01/26/04	01/28/04	EPA 6010B	
Iron	29.0	0.0620	0.150	"	"	"	"	"	"	
Mercury	0.000288	0.0000700	0.000200	"	"	4A30014	01/30/04	01/30/04	EPA 7470A	
Potassium	4.00	0.255	2.00	"	"	4A26036	01/26/04	01/30/04	EPA 6010B	
Magnesium	11.1	0.0180	0.500	"	"	"	"	01/28/04	"	
Sodium	21.9	0.0420	0.250	"	"	"	"	"	"	
MW-7 (M) (P4A0208-02) Water Sampled: 01/12/04 09:40 Received: 01/14/04 15:15										
Mercury	ND	0.0000700	0.000200	mg/l	1	4A29052	01/29/04	01/30/04	EPA 7470A	U
MW-43 (A) (P4A0208-03) Water Sampled: 01/12/04 10:53 Received: 01/14/04 15:15										
Mercury	0.0000846	0.0000700	0.000200	mg/l	1	4A29052	01/29/04	01/30/04	EPA 7470A	J
MW-2 (M) (P4A0208-04) Water Sampled: 01/12/04 12:00 Received: 01/14/04 15:15										
Mercury	0.0000802	0.0000700	0.000200	mg/l	1	4A29052	01/29/04	01/30/04	EPA 7470A	J
MW-33 (A) (P4A0208-05) Water Sampled: 01/12/04 14:25 Received: 01/14/04 15:15										
Mercury	0.0000747	0.0000700	0.000200	mg/l	1	4A29052	01/29/04	01/30/04	EPA 7470A	J
MW-32 (A) (P4A0208-06) Water Sampled: 01/12/04 15:25 Received: 01/14/04 15:15										
Mercury	0.000190	0.0000700	0.000200	mg/l	1	4A29053	01/29/04	02/02/04	EPA 7470A	J
MW-31 (A) (P4A0208-07) Water Sampled: 01/12/04 16:15 Received: 01/14/04 15:15										
Mercury	0.000115	0.0000700	0.000200	mg/l	1	4A29053	01/29/04	02/02/04	EPA 7470A	J

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Total Metals by EPA 6000/7000 Series Methods
North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-34 (A) (P4A0208-09) Water Sampled: 01/13/04 08:30 Received: 01/14/04 15:15										
Mercury	ND	0.0000700	0.000200	mg/l	1	4A29053	01/29/04	02/02/04	EPA 7470A	U
MW-10 (M) (P4A0208-10) Water Sampled: 01/13/04 10:50 Received: 01/14/04 15:15										
Mercury	ND	0.0000700	0.000200	mg/l	1	4A29053	01/29/04	02/02/04	EPA 7470A	U
MW-11 (M) (P4A0208-11) Water Sampled: 01/13/04 12:35 Received: 01/14/04 15:15										
Mercury	ND	0.0000700	0.000200	mg/l	1	4A29053	01/29/04	02/02/04	EPA 7470A	U
MW-21 (A) (P4A0208-12) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Calcium	20.4	0.0360	0.250	mg/l	1	4A26036	01/26/04	01/28/04	EPA 6010B	
Iron	14.1	0.0620	0.150	"	"	"	"	"	"	
Mercury	0.0000836	0.0000700	0.000200	"	"	4A29052	01/29/04	01/30/04	EPA 7470A	J
Potassium	5.21	0.255	2.00	"	"	4A26036	01/26/04	01/30/04	EPA 6010B	
Magnesium	9.33	0.0180	0.500	"	"	"	"	01/28/04	"	
Sodium	14.1	0.0420	0.250	"	"	"	"	"	"	
MW-19 (A) (P4A0208-13) Water Sampled: 01/13/04 15:15 Received: 01/14/04 15:15										
Calcium	19.7	0.0360	0.250	mg/l	1	4A26036	01/26/04	01/28/04	EPA 6010B	
Iron	3.01	0.0620	0.150	"	"	"	"	"	"	
Mercury	0.000330	0.0000700	0.000200	"	"	4A29052	01/29/04	01/30/04	EPA 7470A	
Potassium	5.05	0.255	2.00	"	"	4A26036	01/26/04	01/30/04	EPA 6010B	
Magnesium	10.4	0.0180	0.500	"	"	"	"	01/28/04	"	
Sodium	24.5	0.0420	0.250	"	"	"	"	"	"	
BM-21 (A) (P4A0208-15) Water Sampled: 01/13/04 13:55 Received: 01/14/04 15:15										
Calcium	20.8	0.0360	0.250	mg/l	1	4A26036	01/26/04	01/28/04	EPA 6010B	
Iron	15.3	0.0620	0.150	"	"	"	"	"	"	
Mercury	0.000157	0.0000700	0.000200	"	"	4A29052	01/29/04	01/30/04	EPA 7470A	J
Potassium	5.52	0.255	2.00	"	"	4A26036	01/26/04	01/30/04	EPA 6010B	
Magnesium	9.32	0.0180	0.500	"	"	"	"	01/28/04	"	
Sodium	13.9	0.0420	0.250	"	"	"	"	"	"	

North Creek Analytical - Portland

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Reported:
 02/05/04 13:42

**Total Metals by EPA 6000/7000 Series Methods
 North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-20 (A) (P4A0208-16) Water Sampled: 01/13/04 16:30 Received: 01/14/04 15:15										
Mercury	ND	0.0000700	0.000200	mg/l	1	4A29053	01/29/04	02/02/04	EPA 7470A	U
MW-38 (A) (P4A0208-18) Water Sampled: 01/14/04 08:10 Received: 01/14/04 15:15										
Mercury	ND	0.0000700	0.000200	mg/l	1	4A29053	01/29/04	02/02/04	EPA 7470A	U
MW-46(A) (P4A0208-19) Water Sampled: 01/14/04 10:20 Received: 01/14/04 15:15										
Mercury	ND	0.0000700	0.000200	mg/l	1	4A29053	01/29/04	02/02/04	EPA 7470A	U
MW-47 (A) (P4A0208-20) Water Sampled: 01/14/04 12:30 Received: 01/14/04 15:15										
Mercury	ND	0.0000700	0.000200	mg/l	1	4A29053	01/29/04	02/02/04	EPA 7470A	U
MW-48 (A) (P4A0208-21) Water Sampled: 01/14/04 11:30 Received: 01/14/04 15:15										
Mercury	ND	0.0000700	0.000200	mg/l	1	4A29053	01/29/04	02/02/04	EPA 7470A	U

North Creek Analytical - Portland

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EnviroLogic Resources, Inc.
 P.O. Box 80762
 Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 13:42

Gasoline Hydrocarbons per NW TPH-Gx Method - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4010361: Prepared 01/15/04 Using EPA 5030B											
Blank (4010361-BLK1)											
Gasoline Range Hydrocarbons	50.7	50.0	80.0	ug/l							J
Surrogate: 4-BFB	54.8			"	50.0		110	50-150			
LCS (4010361-BS1)											
Gasoline Range Hydrocarbons	1190	50.0	80.0	ug/l	1250		95.2	70-130			
Surrogate: 4-BFB	57.2			"	50.0		114	50-150			
Duplicate (4010361-DUP1)						Source: P4A0208-03RE1					
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l		ND				40	U
Surrogate: 4-BFB	53.8			"	50.0		108	50-150			
Duplicate (4010361-DUP2)						Source: P4A0208-05RE1					
Gasoline Range Hydrocarbons	131	50.0	80.0	ug/l		276			71.3	40	Q-01
Surrogate: 4-BFB	60.2			"	50.0		120	50-150			
Matrix Spike (4010361-MS1)						Source: P4A0208-13RE1					
Gasoline Range Hydrocarbons	1130	50.0	80.0	ug/l	1250	ND	90.4	70-130			
Surrogate: 4-BFB	58.0			"	50.0		116	50-150			

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010355: Prepared 01/15/04 Using EPA 3510 Fuels

Blank (4010355-BLK1)

Diesel Range Organics	ND	0.153	0.250	mg/l							U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"							U
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.0828</i>			"	<i>0.0960</i>		<i>86.2</i>	<i>50-150</i>			

LCS (4010355-BS1)

Diesel Range Organics	2.36	0.153	0.250	mg/l	2.50		94.4	50-150			
Heavy Oil Range Hydrocarbons	1.61	0.286	0.500	"	1.50		107	50-150			
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.0984</i>			"	<i>0.0960</i>		<i>102</i>	<i>50-150</i>			

LCS Dup (4010355-BSD1)

Diesel Range Organics	2.61	0.153	0.250	mg/l	2.50		104	50-150	10.1	50	
Heavy Oil Range Hydrocarbons	1.66	0.286	0.500	"	1.50		111	50-150	3.06	50	
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.0943</i>			"	<i>0.0960</i>		<i>98.2</i>	<i>50-150</i>			

Matrix Spike (4010355-MS1)

Source: P4A0208-13

Diesel Range Organics	2.01	0.153	0.250	mg/l	2.36	ND	85.2	50-150			
Heavy Oil Range Hydrocarbons	1.37	0.286	0.500	"	1.42	ND	96.5	50-150			
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.0780</i>			"	<i>0.0906</i>		<i>86.1</i>	<i>50-150</i>			

Matrix Spike Dup (4010355-MSD1)

Source: P4A0208-13

Diesel Range Organics	1.93	0.153	0.250	mg/l	2.36	ND	81.8	50-150	4.06	50	
Heavy Oil Range Hydrocarbons	1.48	0.286	0.500	"	1.42	ND	104	50-150	7.72	50	
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.0857</i>			"	<i>0.0906</i>		<i>94.6</i>	<i>50-150</i>			

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Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Total Metals per EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010508: Prepared 01/19/04 Using EPA 200/3005

Blank (4010508-BLK1)

Arsenic	ND	0.000964	0.00100	mg/l							U
Barium	ND	0.0000910	0.00100	"							U
Cadmium	ND	0.000178	0.00100	"							U
Chromium	ND	0.000791	0.00100	"							U
Lead	0.000640	0.0000870	0.00100	"							J
Manganese	0.000350	0.0000136	0.00200	"							J
Selenium	ND	0.000566	0.00100	"							U
Silver	ND	0.0000460	0.00100	"							U

LCS (4010508-BS1)

Arsenic	0.0991	0.000964	0.00100	mg/l	0.100		99.1	80-120			
Barium	0.102	0.0000910	0.00100	"	0.100		102	80-120			
Cadmium	0.101	0.000178	0.00100	"	0.100		101	80-120			
Chromium	0.104	0.000791	0.00100	"	0.100		104	80-120			
Lead	0.106	0.0000870	0.00100	"	0.100		106	80-120			
Manganese	0.103	0.0000136	0.00200	"	0.100		103	80-120			
Selenium	0.102	0.000566	0.00100	"	0.100		102	80-120			
Silver	0.0540	0.0000460	0.00100	"	0.0500		108	80-120			

Duplicate (4010508-DUP1)

Source: P4A0208-13

Arsenic	ND	0.000964	0.00100	mg/l	0.000970				20		U
Barium	0.0141	0.0000910	0.00100	"	0.0141			0.00	20		
Cadmium	ND	0.000178	0.00100	"	ND				20		U
Chromium	ND	0.000791	0.00100	"	ND				20		U
Lead	0.000120	0.0000870	0.00100	"	0.000150			22.2	20		Q-06, J
Manganese	0.162	0.0000136	0.00200	"	0.162			0.00	20		
Selenium	ND	0.000566	0.00100	"	ND				20		U
Silver	ND	0.0000460	0.00100	"	ND				20		U

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

Total Metals per EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010508: Prepared 01/19/04 Using EPA 200/3005

Matrix Spike (4010508-MS1)

Source: P4A0208-13

Arsenic	0.102	0.000964	0.00100	mg/l	0.100	0.000970	101	75-125			
Barium	0.114	0.0000910	0.00100	"	0.100	0.0141	99.9	75-125			
Cadmium	0.102	0.000178	0.00100	"	0.100	ND	102	75-125			
Chromium	0.105	0.000791	0.00100	"	0.100	ND	105	75-125			
Lead	0.104	0.0000870	0.00100	"	0.100	0.000150	104	75-125			
Manganese	0.266	0.0000136	0.00200	"	0.100	0.162	104	75-125			
Selenium	0.109	0.000566	0.00100	"	0.100	ND	109	75-125			
Silver	0.0525	0.0000460	0.00100	"	0.0500	ND	105	75-125			

Matrix Spike Dup (4010508-MSD1)

Source: P4A0208-13

Arsenic	0.102	0.000964	0.00100	mg/l	0.100	0.000970	101	75-125	0.00	20	
Barium	0.116	0.0000910	0.00100	"	0.100	0.0141	102	75-125	1.74	20	
Cadmium	0.102	0.000178	0.00100	"	0.100	ND	102	75-125	0.00	20	
Chromium	0.104	0.000791	0.00100	"	0.100	ND	104	75-125	0.957	20	
Lead	0.105	0.0000870	0.00100	"	0.100	0.000150	105	75-125	0.957	20	
Manganese	0.269	0.0000136	0.00200	"	0.100	0.162	107	75-125	1.12	20	
Selenium	0.107	0.000566	0.00100	"	0.100	ND	107	75-125	1.85	20	
Silver	0.0524	0.0000460	0.00100	"	0.0500	ND	105	75-125	0.191	20	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

Dissolved Metals per EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010587: Prepared 01/21/04 Using EPA 200/3005 Diss

Blank (4010587-BLK1)

Arsenic	ND	0.000964	0.00100	mg/l							U
Barium	ND	0.0000910	0.00100	"							U
Cadmium	ND	0.0000730	0.00100	"							U
Chromium	ND	0.000791	0.00100	"							U
Lead	ND	0.0000870	0.00100	"							U
Selenium	0.000590	0.000566	0.00100	"							J
Silver	ND	0.0000460	0.00100	"							U

LCS (4010587-BS1)

Arsenic	0.102	0.000964	0.00100	mg/l	0.100		102	80-120			
Barium	0.104	0.0000910	0.00100	"	0.100		104	80-120			
Cadmium	0.103	0.0000730	0.00100	"	0.100		103	80-120			
Chromium	0.104	0.000791	0.00100	"	0.100		104	80-120			
Lead	0.103	0.0000870	0.00100	"	0.100		103	80-120			
Selenium	0.102	0.000566	0.00100	"	0.100		102	80-120			
Silver	0.0526	0.0000460	0.00100	"	0.0500		105	80-120			

Duplicate (4010587-DUP1)

Source: P4A0208-10

Arsenic	0.0272	0.000964	0.00100	mg/l		0.0264			2.99	20	
Barium	0.0388	0.0000910	0.00100	"		0.0382			1.56	20	
Cadmium	ND	0.0000730	0.00100	"		ND				20	U
Chromium	ND	0.000791	0.00100	"		ND				20	U
Lead	0.000380	0.0000870	0.00100	"		0.000370			2.67	20	J
Selenium	0.000800	0.000566	0.00100	"		0.00119			39.2	20	Q-06, J
Silver	ND	0.0000460	0.00100	"		0.000070				20	U

Matrix Spike (4010587-MS1)

Source: P4A0208-10

Arsenic	0.134	0.000964	0.00100	mg/l	0.100	0.0264	108	75-125			
Barium	0.144	0.0000910	0.00100	"	0.100	0.0382	106	75-125			
Cadmium	0.107	0.0000730	0.00100	"	0.100	ND	107	75-125			
Chromium	0.110	0.000791	0.00100	"	0.100	ND	110	75-125			
Lead	0.103	0.0000870	0.00100	"	0.100	0.000370	103	75-125			
Selenium	0.110	0.000566	0.00100	"	0.100	0.00119	109	75-125			
Silver	0.0542	0.0000460	0.00100	"	0.0500	0.000070	108	75-125			

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

Dissolved Metals per EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010587: Prepared 01/21/04 Using EPA 200/3005 Diss

Matrix Spike (4010587-MS2)

Source: P4A0270-01

Arsenic	0.112	0.000964	0.00100	mg/l	0.100	0.00440	108	75-125			
Barium	0.114	0.0000910	0.00100	"	0.100	0.00863	105	75-125			
Cadmium	0.106	0.0000730	0.00100	"	0.100	ND	106	75-125			
Chromium	0.110	0.000791	0.00100	"	0.100	0.00129	109	75-125			
Lead	0.103	0.0000870	0.00100	"	0.100	0.000550	102	75-125			
Selenium	0.107	0.000566	0.00100	"	0.100	ND	107	75-125			
Silver	0.0540	0.0000460	0.00100	"	0.0500	0.000140	108	75-125			

Batch 4010957: Prepared 01/30/04 Using EPA 7470A

Blank (4010957-BLK1)

Mercury	ND	0.0000630	0.000200	mg/l							U
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LCS (4010957-BS1)

Mercury	0.00461	0.0000630	0.000200	mg/l	0.00500		92.2	85-115			
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Duplicate (4010957-DUP1)

Source: P4A0208-10

Mercury	ND	0.0000630	0.000200	mg/l		ND				20	U
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Matrix Spike (4010957-MS1)

Source: P4A0208-10

Mercury	0.00440	0.0000630	0.000200	mg/l	0.00500	ND	88.0	75-125			
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EnviroLogic Resources, Inc.
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Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

Hexavalent Chromium per EPA Method 7195 - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4010342: Prepared 01/14/04 Using EPA 7195											
Blank (4010342-BLK1)											
Hexavalent Chromium	ND	0.000450	0.0100	mg/l							U
LCS (4010342-BS1)											
Hexavalent Chromium	1.03	0.000450	0.0100	mg/l	1.00		103	85-115			
Duplicate (4010342-DUP1) Source: P4A0196-01											
Hexavalent Chromium	0.00360	0.000450	0.0100	mg/l		0.00421			15.6	20	J
Matrix Spike (4010342-MS1) Source: P4A0196-01											
Hexavalent Chromium	1.01	0.000450	0.0100	mg/l	1.00	0.00421	101	80-120			

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Selected Volatile Organic Compounds per EPA Method 8260B - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010455: Prepared 01/17/04 Using EPA 5030B

Blank (4010455-BLK1)

1,2-Dibromoethane	ND	0.187	0.500	ug/l							U
1,2-Dichloroethane	ND	0.142	0.500	"							U
Benzene	ND	0.147	0.500	"							U
Toluene	ND	0.155	0.500	"							U
Ethylbenzene	ND	0.110	0.500	"							U
Xylenes (total)	ND	0.262	1.00	"							U
Methyl tert-butyl ether	ND	0.0865	2.00	"							U
Naphthalene	0.200	0.0989	2.00	"							J
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"							U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"							U
Isopropylbenzene	ND	0.107	2.00	"							U
n-Propylbenzene	ND	0.138	0.500	"							U
<i>Surrogate: 4-BFB</i>	19.8			"	20.0		99.0	75-120			
<i>Surrogate: 1,2-DCA-d4</i>	20.8			"	20.0		104	77-129			
<i>Surrogate: Dibromofluoromethane</i>	19.9			"	20.0		99.5	80-121			
<i>Surrogate: Toluene-d8</i>	20.0			"	20.0		100	80-120			

LCS (4010455-BS1)

Benzene	21.1	0.147	0.500	ug/l	20.0		106	80-120			
Toluene	21.9	0.155	0.500	"	20.0		110	80-124			
Ethylbenzene	21.8	0.110	0.500	"	20.0		109	80-120			
Xylenes (total)	67.1	0.262	1.00	"	60.0		112	73-124			
Methyl tert-butyl ether	22.4	0.0865	2.00	"	20.0		112	80-129			
Naphthalene	31.2	0.0989	2.00	"	20.0		156	72-149			A-03
<i>Surrogate: 4-BFB</i>	20.3			"	20.0		102	75-120			
<i>Surrogate: 1,2-DCA-d4</i>	20.1			"	20.0		100	77-129			
<i>Surrogate: Dibromofluoromethane</i>	20.3			"	20.0		102	80-121			
<i>Surrogate: Toluene-d8</i>	20.6			"	20.0		103	80-120			

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

Selected Volatile Organic Compounds per EPA Method 8260B - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010455: Prepared 01/17/04 Using EPA 5030B

Matrix Spike (4010455-MS1)

Source: P4A0208-13

Benzene	20.2	0.147	0.500	ug/l	20.0	ND	101	80-124			
Toluene	19.1	0.155	0.500	"	20.0	ND	95.5	79.7-131			
Ethylbenzene	19.2	0.110	0.500	"	20.0	ND	96.0	80-124			
Xylenes (total)	48.4	0.262	1.00	"	60.0	ND	80.7	44.6-154			
Methyl tert-butyl ether	20.7	0.0865	2.00	"	20.0	ND	104	80-130			
Naphthalene	25.4	0.0989	2.00	"	20.0	ND	127	69-163			
Surrogate: 4-BFB	20.1			"	20.0		100	75-120			
Surrogate: 1,2-DCA-d4	20.1			"	20.0		100	77-129			
Surrogate: Dibromofluoromethane	20.4			"	20.0		102	80-121			
Surrogate: Toluene-d8	19.6			"	20.0		98.0	80-120			

Matrix Spike Dup (4010455-MSD1)

Source: P4A0208-13

Benzene	21.0	0.147	0.500	ug/l	20.0	ND	105	80-124	3.88	25	
Toluene	20.0	0.155	0.500	"	20.0	ND	100	79.7-131	4.60	25	
Ethylbenzene	20.3	0.110	0.500	"	20.0	ND	102	80-124	5.57	25	
Xylenes (total)	51.3	0.262	1.00	"	60.0	ND	85.5	44.6-154	5.82	25	
Methyl tert-butyl ether	21.6	0.0865	2.00	"	20.0	ND	108	80-130	4.26	25	
Naphthalene	25.9	0.0989	2.00	"	20.0	ND	130	69-163	1.95	25	
Surrogate: 4-BFB	20.6			"	20.0		103	75-120			
Surrogate: 1,2-DCA-d4	20.3			"	20.0		102	77-129			
Surrogate: Dibromofluoromethane	20.2			"	20.0		101	80-121			
Surrogate: Toluene-d8	20.0			"	20.0		100	80-120			

Batch 4010489: Prepared 01/19/04 Using EPA 5030B

Blank (4010489-BLK1)

1,2-Dibromoethane	ND	0.187	0.500	ug/l							U
1,2-Dichloroethane	ND	0.142	0.500	"							U
Benzene	ND	0.147	0.500	"							U
Toluene	ND	0.155	0.500	"							U
Ethylbenzene	ND	0.110	0.500	"							U
Xylenes (total)	ND	0.262	1.00	"							U
Methyl tert-butyl ether	ND	0.0865	2.00	"							U
Naphthalene	ND	0.0989	2.00	"							U

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Selected Volatile Organic Compounds per EPA Method 8260B - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010489: Prepared 01/19/04 Using EPA 5030B

Blank (4010489-BLK1)

Surrogate: 4-BFB	19.8			ug/l	20.0		99.0	75-120			
Surrogate: 1,2-DCA-d4	20.6			"	20.0		103	77-129			
Surrogate: Toluene-d8	20.3			"	20.0		102	80-120			

LCS (4010489-BS1)

Benzene	21.1	0.147	0.500	ug/l	20.0		106	80-120			
Toluene	21.8	0.155	0.500	"	20.0		109	80-124			
Ethylbenzene	21.6	0.110	0.500	"	20.0		108	80-120			
Xylenes (total)	66.6	0.262	1.00	"	60.0		111	73-124			
Methyl tert-butyl ether	21.9	0.0865	2.00	"	20.0		110	80-129			
Naphthalene	26.9	0.0989	2.00	"	20.0		134	72-149			
Surrogate: 4-BFB	20.5			"	20.0		102	75-120			
Surrogate: 1,2-DCA-d4	19.8			"	20.0		99.0	77-129			
Surrogate: Toluene-d8	20.6			"	20.0		103	80-120			

Matrix Spike (4010489-MS1)

Source: P4A0249-08

Benzene	20.0	0.147	0.500	ug/l	20.0	ND	100	80-124			
Toluene	20.3	0.155	0.500	"	20.0	0.210	100	79.7-131			
Ethylbenzene	20.2	0.110	0.500	"	20.0	0.220	99.9	80-124			
Xylenes (total)	60.8	0.262	1.00	"	60.0	1.35	99.1	44.6-154			
Methyl tert-butyl ether	20.8	0.0865	2.00	"	20.0	ND	104	80-130			
Naphthalene	26.3	0.0989	2.00	"	20.0	1.73	123	69-163			
Surrogate: 4-BFB	20.9			"	20.0		104	75-120			
Surrogate: 1,2-DCA-d4	19.9			"	20.0		99.5	77-129			
Surrogate: Toluene-d8	20.6			"	20.0		103	80-120			

Matrix Spike Dup (4010489-MSD1)

Source: P4A0249-08

Benzene	19.9	0.147	0.500	ug/l	20.0	ND	99.5	80-124	0.501	25	
Toluene	19.2	0.155	0.500	"	20.0	0.210	95.0	79.7-131	5.57	25	
Ethylbenzene	19.2	0.110	0.500	"	20.0	0.220	94.9	80-124	5.08	25	
Xylenes (total)	56.1	0.262	1.00	"	60.0	1.35	91.2	44.6-154	8.04	25	
Methyl tert-butyl ether	20.9	0.0865	2.00	"	20.0	ND	104	80-130	0.480	25	
Naphthalene	25.3	0.0989	2.00	"	20.0	1.73	118	69-163	3.88	25	
Surrogate: 4-BFB	20.6			"	20.0		103	75-120			

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Selected Volatile Organic Compounds per EPA Method 8260B - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010489: Prepared 01/19/04 Using EPA 5030B

Matrix Spike Dup (4010489-MSD1)

Source: P4A0249-08

Surrogate: 1,2-DCA-d4	20.3			ug/l	20.0		102	77-129			
Surrogate: Toluene-d8	20.4			"	20.0		102	80-120			

Batch 4010642: Prepared 01/22/04 Using EPA 5030B

Blank (4010642-BLK1)

1,2-Dibromoethane	ND	0.187	0.500	ug/l							U
1,2-Dichloroethane	ND	0.142	0.500	"							U
Benzene	ND	0.147	0.500	"							U
Toluene	ND	0.155	0.500	"							U
Ethylbenzene	ND	0.110	0.500	"							U
Xylenes (total)	ND	0.262	1.00	"							U
Methyl tert-butyl ether	ND	0.0865	2.00	"							U
Naphthalene	0.170	0.0989	2.00	"							J
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"							U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"							U
Isopropylbenzene	ND	0.107	2.00	"							U
n-Propylbenzene	ND	0.138	0.500	"							U
Surrogate: 4-BFB	20.4			"	20.0		102	75-120			
Surrogate: 1,2-DCA-d4	21.1			"	20.0		106	77-129			
Surrogate: Dibromofluoromethane	20.3			"	20.0		102	80-121			
Surrogate: Toluene-d8	20.5			"	20.0		102	80-120			

LCS (4010642-BS1)

Benzene	21.6	0.147	0.500	ug/l	20.0		108	80-120			
Toluene	21.9	0.155	0.500	"	20.0		110	80-124			
Ethylbenzene	21.6	0.110	0.500	"	20.0		108	80-120			
Xylenes (total)	65.8	0.262	1.00	"	60.0		110	73-124			
Methyl tert-butyl ether	22.6	0.0865	2.00	"	20.0		113	80-129			
Naphthalene	26.2	0.0989	2.00	"	20.0		131	72-149			
Surrogate: 4-BFB	20.9			"	20.0		104	75-120			
Surrogate: 1,2-DCA-d4	20.6			"	20.0		103	77-129			
Surrogate: Dibromofluoromethane	20.7			"	20.0		104	80-121			
Surrogate: Toluene-d8	21.3			"	20.0		106	80-120			

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EnviroLogic Resources, Inc.
 P.O. Box 80762
 Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 13:42

Selected Volatile Organic Compounds per EPA Method 8260B - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010642: Prepared 01/22/04 Using EPA 5030B

Matrix Spike (4010642-MS1)

Source: P4A0208-13RE1

Benzene	19.3	0.147	0.500	ug/l	20.0	ND	96.5	80-124			
Toluene	18.2	0.155	0.500	"	20.0	ND	91.0	79.7-131			
Ethylbenzene	17.6	0.110	0.500	"	20.0	ND	88.0	80-124			
Xylenes (total)	44.7	0.262	1.00	"	60.0	ND	74.5	44.6-154			
Methyl tert-butyl ether	19.9	0.0865	2.00	"	20.0	ND	99.5	80-130			
Naphthalene	22.7	0.0989	2.00	"	20.0	ND	114	69-163			
<i>Surrogate: 4-BFB</i>	20.5			"	20.0		102	75-120			
<i>Surrogate: 1,2-DCA-d4</i>	20.5			"	20.0		102	77-129			
<i>Surrogate: Dibromofluoromethane</i>	20.7			"	20.0		104	80-121			
<i>Surrogate: Toluene-d8</i>	20.4			"	20.0		102	80-120			

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010359: Prepared 01/15/04 Using EPA 3520/600 Series

Blank (4010359-BLK1)

Acenaphthene	ND	0.0500	0.0500	ug/l							U
Acenaphthylene	ND	0.0500	0.0500	"							U
Anthracene	ND	0.0500	0.0500	"							U
Benzo (a) anthracene	ND	0.0100	0.0100	"							U
Benzo (a) pyrene	ND	0.0100	0.0100	"							U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"							U
Benzo (ghi) perylene	ND	0.0500	0.0500	"							U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"							U
Chrysene	ND	0.0100	0.0100	"							U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"							U
Fluoranthene	ND	0.0500	0.0500	"							U
Fluorene	ND	0.0500	0.0500	"							U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"							U
Naphthalene	ND	0.0500	0.0500	"							U
Phenanthrene	ND	0.0500	0.0500	"							U
Pyrene	ND	0.0500	0.0500	"							U
Surrogate: Fluorene-d10	1.77			"	2.50		70.8	25-150			
Surrogate: Pyrene-d10	2.05			"	2.50		82.0	23-150			
Surrogate: Benzo (a) pyrene-d12	2.03			"	2.50		81.2	10-150			

LCS (4010359-BS1)

Acenaphthene	2.02	0.0500	0.0500	ug/l	2.50		80.8	26-150			
Benzo (a) pyrene	2.10	0.0100	0.0100	"	2.50		84.0	38-150			
Pyrene	2.03	0.0500	0.0500	"	2.50		81.2	33-150			
Surrogate: Fluorene-d10	1.87			"	2.50		74.8	25-150			
Surrogate: Pyrene-d10	2.13			"	2.50		85.2	23-150			
Surrogate: Benzo (a) pyrene-d12	2.19			"	2.50		87.6	10-150			

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010359: Prepared 01/15/04 Using EPA 3520/600 Series

Matrix Spike (4010359-MS1)

Source: P4A0208-13

Acenaphthene	1.90	0.0500	0.0500	ug/l	2.50	ND	76.0	26-135			
Benzo (a) pyrene	1.93	0.0100	0.0100	"	2.50	ND	77.2	38-137			
Pyrene	2.06	0.0500	0.0500	"	2.50	ND	82.4	33-133			
<i>Surrogate: Fluorene-d10</i>	<i>1.71</i>			"	<i>2.50</i>		<i>68.4</i>	<i>25-150</i>			
<i>Surrogate: Pyrene-d10</i>	<i>2.06</i>			"	<i>2.50</i>		<i>82.4</i>	<i>23-150</i>			
<i>Surrogate: Benzo (a) pyrene-d12</i>	<i>2.05</i>			"	<i>2.50</i>		<i>82.0</i>	<i>10-150</i>			

Matrix Spike Dup (4010359-MSD1)

Source: P4A0208-13

Acenaphthene	1.99	0.0500	0.0500	ug/l	2.50	ND	79.6	26-135	4.63	60	
Benzo (a) pyrene	1.86	0.0100	0.0100	"	2.50	ND	74.4	38-137	3.69	60	
Pyrene	2.06	0.0500	0.0500	"	2.50	ND	82.4	33-133	0.00	60	
<i>Surrogate: Fluorene-d10</i>	<i>1.80</i>			"	<i>2.50</i>		<i>72.0</i>	<i>25-150</i>			
<i>Surrogate: Pyrene-d10</i>	<i>2.05</i>			"	<i>2.50</i>		<i>82.0</i>	<i>23-150</i>			
<i>Surrogate: Benzo (a) pyrene-d12</i>	<i>1.97</i>			"	<i>2.50</i>		<i>78.8</i>	<i>10-150</i>			

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

Conventional Chemistry Parameters per APHA/EPA Methods - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4010640: Prepared 01/22/04 Using Wet Chem											
Blank (4010640-BLK1)											
Nitrate/Nitrite-Nitrogen	ND	0.00250	0.00500	mg/l							U
LCS (4010640-BS1)											
Nitrate/Nitrite-Nitrogen	0.0876	0.00250	0.00500	mg/l	0.100		87.6	85-115			
Duplicate (4010640-DUP1) Source: P4A0208-13											
Nitrate/Nitrite-Nitrogen	0.485	0.0250	0.0500	mg/l		0.512			5.42	20	D
Matrix Spike (4010640-MS1) Source: P4A0208-13											
Nitrate/Nitrite-Nitrogen	0.904	0.0250	0.0500	mg/l	0.500	0.512	78.4	75-125			D
Matrix Spike Dup (4010640-MSD1) Source: P4A0208-13											
Nitrate/Nitrite-Nitrogen	0.920	0.0250	0.0500	mg/l	0.500	0.512	81.6	75-125	1.75	20	D

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Anions per EPA Method 300.0 - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4010368: Prepared 01/15/04 Using Wet Chem											
Blank (4010368-BLK1)											
Chloride	ND	0.0508	0.500	mg/l							U
Sulfate	ND	0.0860	1.00	"							U
LCS (4010368-BS1)											
Chloride	9.51	0.0508	0.500	mg/l	10.0		95.1	90-110			
Sulfate	29.6	0.0860	1.00	"	30.0		98.7	90-110			
Duplicate (4010368-DUP1) Source: P4A0208-13											
Chloride	12.5	0.0508	0.500	mg/l		12.6			0.797	20	
Sulfate	24.6	0.0860	1.00	"		25.0			1.61	20	
Matrix Spike (4010368-MS1) Source: P4A0208-13											
Chloride	13.8	0.0564	0.556	mg/l	2.22	12.6	54.1	80-120			Q-02, D
Sulfate	29.3	0.0955	1.11	"	4.44	25.0	96.8	80-120			D
Matrix Spike Dup (4010368-MSD1) Source: P4A0208-13											
Chloride	13.9	0.0564	0.556	mg/l	2.22	12.6	58.6	80-120	0.722	20	Q-02, D
Sulfate	29.5	0.0955	1.11	"	4.44	25.0	101	80-120	0.680	20	D

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Total Alkalinity by Conventional Chemistry Parameters per APHA/EPA Methods - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010622: Prepared 01/22/04 Using Wet Chem

Blank (4010622-BLK1)

Bicarbonate Alkalinity	0.483	0.208	10.0	mg/L as CaCO3							J
Carbonate Alkalinity	ND	0.208	10.0	"							U
Hydroxide Alkalinity	ND	0.208	10.0	"							U
Total Alkalinity	0.483	0.208	10.0	"							J

LCS (4010622-BS1)

Carbonate Alkalinity	110	0.208	10.0	mg/L as CaCO3	100		110	85-115			
Total Alkalinity	194	0.208	10.0	"	200		97.0	85-115			

LCS (4010622-BS2)

Bicarbonate Alkalinity	90.8	0.208	10.0	mg/L as CaCO3	100		90.8	85-115			
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Duplicate (4010622-DUP1)

Source: P4A0208-13

Bicarbonate Alkalinity	92.3	0.208	10.0	mg/L as CaCO3		92.7			0.432	20	
Carbonate Alkalinity	ND	0.208	10.0	"		ND				20	U
Hydroxide Alkalinity	ND	0.208	10.0	"		ND				20	U
Total Alkalinity	92.3	0.208	10.0	"		92.7			0.432	20	

Duplicate (4010622-DUP2)

Source: P4A0306-12

Bicarbonate Alkalinity	64.3	0.208	10.0	mg/L as CaCO3		63.7			0.938	20	
Carbonate Alkalinity	ND	0.208	10.0	"		ND				20	U
Hydroxide Alkalinity	ND	0.208	10.0	"		ND				20	U
Total Alkalinity	64.3	0.208	10.0	"		63.7			0.938	20	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Total Metals by EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4A26036: Prepared 01/26/04 Using EPA 3010A

Blank (4A26036-BLK1)

Calcium	ND	0.0360	0.250	mg/l							U
Iron	ND	0.0620	0.150	"							U
Magnesium	ND	0.0180	0.500	"							U
Potassium	ND	0.255	2.00	"							U
Sodium	0.0856	0.0420	0.250	"							J

LCS (4A26036-BS1)

Calcium	4.84	0.0360	0.250	mg/l	5.00		96.8	80-120			
Iron	5.11	0.0620	0.150	"	5.00		102	80-120			
Magnesium	5.18	0.0180	0.500	"	5.00		104	80-120			
Potassium	9.63	0.255	2.00	"	10.0		96.3	80-120			
Sodium	5.58	0.0420	0.250	"	5.00		112	80-120			

LCS Dup (4A26036-BSD1)

Calcium	4.90	0.0360	0.250	mg/l	5.00		98.0	80-120	1.23	20	
Iron	5.12	0.0620	0.150	"	5.00		102	80-120	0.195	20	
Magnesium	5.20	0.0180	0.500	"	5.00		104	80-120	0.385	20	
Potassium	9.74	0.255	2.00	"	10.0		97.4	80-120	1.14	20	
Sodium	5.53	0.0420	0.250	"	5.00		111	80-120	0.900	20	

Duplicate (4A26036-DUP1)

Source: B4A0411-05

Calcium	11.2	0.0360	0.250	mg/l		11.8			5.22	20	
Iron	12.3	0.0620	0.150	"		12.8			3.98	20	
Magnesium	4.98	0.0180	0.500	"		5.05			1.40	20	
Potassium	2.46	0.255	2.00	"		2.82			13.6	20	
Sodium	10.2	0.0420	0.250	"		10.2			0.00	20	

Duplicate (4A26036-DUP2)

Source: P4A0208-13

Calcium	18.9	0.0360	0.250	mg/l		19.7			4.15	20	
Iron	2.84	0.0620	0.150	"		3.01			5.81	20	
Magnesium	10.1	0.0180	0.500	"		10.4			2.93	20	
Potassium	4.72	0.255	2.00	"		5.05			6.76	20	
Sodium	23.9	0.0420	0.250	"		24.5			2.48	20	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Total Metals by EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4A26036: Prepared 01/26/04 Using EPA 3010A

Matrix Spike (4A26036-MS1)

Source: B4A0411-05

Calcium	16.5	0.0360	0.250	mg/l	5.00	11.8	94.0	75-125			
Iron	17.5	0.0620	0.150	"	5.00	12.8	94.0	75-125			
Magnesium	10.0	0.0180	0.500	"	5.00	5.05	99.0	80-120			
Potassium	12.6	0.255	2.00	"	10.0	2.82	97.8	80-120			
Sodium	15.1	0.0420	0.250	"	5.00	10.2	98.0	75-125			

Matrix Spike (4A26036-MS2)

Source: P4A0208-13

Calcium	24.4	0.0360	0.250	mg/l	5.00	19.7	94.0	75-125			
Iron	7.89	0.0620	0.150	"	5.00	3.01	97.6	75-125			
Magnesium	15.0	0.0180	0.500	"	5.00	10.4	92.0	80-120			
Potassium	14.8	0.255	2.00	"	10.0	5.05	97.5	80-120			
Sodium	28.8	0.0420	0.250	"	5.00	24.5	86.0	75-125			

Matrix Spike Dup (4A26036-MSD1)

Source: B4A0411-05

Calcium	16.9	0.0360	0.250	mg/l	5.00	11.8	102	75-125	2.40	20	
Iron	18.0	0.0620	0.150	"	5.00	12.8	104	75-125	2.82	20	
Magnesium	10.3	0.0180	0.500	"	5.00	5.05	105	80-120	2.96	20	
Potassium	13.0	0.255	2.00	"	10.0	2.82	102	80-120	3.12	20	
Sodium	15.7	0.0420	0.250	"	5.00	10.2	110	75-125	3.90	20	

Matrix Spike Dup (4A26036-MSD2)

Source: P4A0208-13

Calcium	24.7	0.0360	0.250	mg/l	5.00	19.7	100	75-125	1.22	20	
Iron	8.15	0.0620	0.150	"	5.00	3.01	103	75-125	3.24	20	
Magnesium	15.6	0.0180	0.500	"	5.00	10.4	104	80-120	3.92	20	
Potassium	15.1	0.255	2.00	"	10.0	5.05	100	80-120	2.01	20	
Sodium	30.1	0.0420	0.250	"	5.00	24.5	112	75-125	4.41	20	

Post Spike (4A26036-PS1)

Source: B4A0411-05

Calcium	15.8	0.0360	0.250	ug/ml	5.00	11.8	80.0	75-125			
Iron	17.1	0.0620	0.150	"	5.00	12.8	86.0	75-125			
Magnesium	9.84	0.0180	0.500	"	5.00	5.05	95.8	75-125			
Potassium	12.3	0.255	2.00	"	10.0	2.82	94.8	75-125			
Sodium	14.9	0.0420	0.250	"	5.00	10.2	94.0	75-125			

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

**Total Metals by EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4A26036: Prepared 01/26/04 Using EPA 3010A

Post Spike (4A26036-PS2)

Source: P4A0208-13

Calcium	23.6	0.0360	0.250	ug/ml	5.00	19.7	78.0	75-125			
Iron	7.97	0.0620	0.150	"	5.00	3.01	99.2	75-125			
Magnesium	15.2	0.0180	0.500	"	5.00	10.4	96.0	75-125			
Potassium	14.6	0.255	2.00	"	10.0	5.05	95.5	75-125			
Sodium	29.2	0.0420	0.250	"	5.00	24.5	94.0	75-125			

Batch 4A29052: Prepared 01/29/04 Using EPA 7470A

Blank (4A29052-BLK1)

Mercury	0.0000820	0.0000700	0.000200	mg/l							J
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LCS (4A29052-BS1)

Mercury	0.00502	0.0000700	0.000200	mg/l	0.00500		100	80-120			
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LCS Dup (4A29052-BSD1)

Mercury	0.00560	0.0000700	0.000200	mg/l	0.00500		112	80-120	10.9	20	
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Matrix Spike (4A29052-MS1)

Source: P4A0208-13

Mercury	0.00519	0.0000700	0.000200	mg/l	0.00500	0.000330	97.2	73-121			
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Matrix Spike Dup (4A29052-MSD1)

Source: P4A0208-13

Mercury	0.00569	0.0000700	0.000200	mg/l	0.00500	0.000330	107	73-121	9.19	20	
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Batch 4A29053: Prepared 01/29/04 Using EPA 7470A

Blank (4A29053-BLK1)

Mercury	ND	0.0000700	0.000200	mg/l							U
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North Creek Analytical - Portland

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 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 13:42

**Total Metals by EPA 6000/7000 Series Methods - Quality Control
 North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4A29053: Prepared 01/29/04 Using EPA 7470A

LCS (4A29053-BS1)

Mercury 0.00502 0.0000700 0.000200 mg/l 0.00500 100 80-120

LCS Dup (4A29053-BSD1)

Mercury 0.00520 0.0000700 0.000200 mg/l 0.00500 104 80-120 3.52 20

Matrix Spike (4A29053-MS1)

Source: P4A0208-06

Mercury 0.00520 0.0000700 0.000200 mg/l 0.00500 0.000190 100 73-121

Matrix Spike Dup (4A29053-MSD1)

Source: P4A0208-06

Mercury 0.00551 0.0000700 0.000200 mg/l 0.00500 0.000190 106 73-121 5.79 20

Batch 4A30014: Prepared 01/30/04 Using EPA 7470A

Blank (4A30014-BLK1)

Mercury 0.0000797 0.0000700 0.000200 mg/l

LCS (4A30014-BS1)

Mercury 0.00575 0.0000700 0.000200 mg/l 0.00500 115 80-120

LCS Dup (4A30014-BSD1)

Mercury 0.00584 0.0000700 0.000200 mg/l 0.00500 117 80-120 1.55 20

Matrix Spike (4A30014-MS1)

Source: P4A0208-01

Mercury 0.00597 0.0000700 0.000200 mg/l 0.00500 0.000288 114 73-121

Matrix Spike Dup (4A30014-MSD1)

Source: P4A0208-01

Mercury 0.00607 0.0000700 0.000200 mg/l 0.00500 0.000288 116 73-121 1.66 20

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 13:42

Notes and Definitions

- A-01 The detected hydrocarbons appear to be due to gas overlap as well as biogenic interference, however, diesel may be present as well.
- A-02 Detected hydrocarbons appear to be due primarily to the overlap of gasoline. Trace quantities of diesel related compounds are present in sample extract.
- A-03 The spike recovery for this analyte is outside of established control limits, analytical results may be biased high. Samples associated with this batch QC are non-detect for Naphthalene at or above the MRL.
- D Data reported from a preparation or analytical dilution.
- D-17 Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference.
- J Estimated value.
- Q-01 The spike recovery, and/or RPD, for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.
- Q-02 The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.
- Q-06 Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit.
- R-03 The reporting limit for this analyte was raised due to matrix interference.
- R-05 Reporting limits raised due to dilution necessary for analysis. Sample contains high levels of reported analyte, non-target analyte, and/or matrix interference.
- S-09 Surrogate recovery is outside control limits due to matrix interference.
- U Analyte included in the analysis but not detected.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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05 February 2004

Tom Calabrese
EnviroLogic Resources, Inc.
P.O. Box 80762
Portland, OR 97280-0762
RE: Astoria Area-Wide Petroleum Site RI-1

Enclosed are the results of analyses for samples received by the laboratory on 01/17/04 10:02. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Joy D. Chang
Project Manager



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-36 (A)	P4A0306-01	Water	01/14/04 15:00	01/17/04 10:02
MW-27 (A)	P4A0306-02	Water	01/14/04 16:25	01/17/04 10:02
TRIP BLANK	P4A0306-03	Water	01/14/04 16:25	01/17/04 10:02
MW-1 (F)	P4A0306-04	Water	01/15/04 08:00	01/17/04 10:02
MW-12 (A)	P4A0306-05	Water	01/15/04 09:40	01/17/04 10:02
MW-13 (A)	P4A0306-06	Water	01/15/04 11:30	01/17/04 10:02
MW-14 (A)	P4A0306-07	Water	01/15/04 12:50	01/17/04 10:02
MW-24 (A)	P4A0306-08	Water	01/15/04 16:30	01/17/04 10:02
MW-26 (A)	P4A0306-09	Water	01/15/04 16:00	01/17/04 10:02
MW-23 (A)	P4A0306-10	Water	01/15/04 17:45	01/17/04 10:02
TRIP BLANK	P4A0306-11	Water	01/15/04 17:45	01/17/04 10:02
MW-39 (A)	P4A0306-12	Water	01/16/04 09:25	01/17/04 10:02
EQUIP BLANK	P4A0306-13	Water	01/16/04 14:00	01/17/04 10:02
MW-35 (A)	P4A0306-14	Water	01/16/04 12:30	01/17/04 10:02
MW-30 (A)	P4A0306-15	Water	01/16/04 14:00	01/17/04 10:02
MW-45 (A)	P4A0306-16	Water	01/16/04 11:10	01/17/04 10:02

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
 P.O. Box 80762
 Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 14:42

Gasoline Hydrocarbons per NW TPH-Gx Method
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-36 (A) (P4A0306-01) Water Sampled: 01/14/04 15:00 Received: 01/17/04 10:02										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010477	01/19/04	01/19/04	NW TPH-G	U
Surrogate: 4-BFB	96.2 %		50-150			"	"	"	"	
MW-27 (A) (P4A0306-02) Water Sampled: 01/14/04 16:25 Received: 01/17/04 10:02										
Gasoline Range Hydrocarbons	173	50.0	80.0	ug/l	1	4010477	01/19/04	01/19/04	NW TPH-G	
Surrogate: 4-BFB	85.6 %		50-150			"	"	"	"	
MW-1 (F) (P4A0306-04) Water Sampled: 01/15/04 08:00 Received: 01/17/04 10:02										
Gasoline Range Hydrocarbons	408	50.0	80.0	ug/l	1	4010477	01/19/04	01/19/04	NW TPH-G	
Surrogate: 4-BFB	116 %		50-150			"	"	"	"	
MW-12 (A) (P4A0306-05) Water Sampled: 01/15/04 09:40 Received: 01/17/04 10:02										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010477	01/19/04	01/19/04	NW TPH-G	U
Surrogate: 4-BFB	92.0 %		50-150			"	"	"	"	
MW-13 (A) (P4A0306-06) Water Sampled: 01/15/04 11:30 Received: 01/17/04 10:02										
Gasoline Range Hydrocarbons	15300	250	400	ug/l	5	4010477	01/19/04	01/19/04	NW TPH-G	D
Surrogate: 4-BFB	300 %		50-150			"	"	"	"	S-09
MW-14 (A) (P4A0306-07) Water Sampled: 01/15/04 12:50 Received: 01/17/04 10:02										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010477	01/19/04	01/19/04	NW TPH-G	U
Surrogate: 4-BFB	90.2 %		50-150			"	"	"	"	
MW-24 (A) (P4A0306-08RE1) Water Sampled: 01/15/04 16:30 Received: 01/17/04 10:02										
Gasoline Range Hydrocarbons	4050	500	800	ug/l	10	4010524	01/20/04	01/20/04	NW TPH-G	D
Surrogate: 4-BFB	104 %		50-150			"	"	"	"	

North Creek Analytical - Portland

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Gasoline Hydrocarbons per NW TPH-Gx Method
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-26 (A) (P4A0306-09RE2) Water Sampled: 01/15/04 16:00 Received: 01/17/04 10:02										
Gasoline Range Hydrocarbons	24800	500	800	ug/l	10	4010570	01/21/04	01/21/04	NW TPH-G	D
<i>Surrogate: 4-BFB</i>	<i>149 %</i>		<i>50-150</i>			"	"	"	"	
MW-23 (A) (P4A0306-10) Water Sampled: 01/15/04 17:45 Received: 01/17/04 10:02										
Gasoline Range Hydrocarbons	61.7	50.0	80.0	ug/l	1	4010477	01/19/04	01/19/04	NW TPH-G	J
<i>Surrogate: 4-BFB</i>	<i>99.4 %</i>		<i>50-150</i>			"	"	"	"	
MW-39 (A) (P4A0306-12) Water Sampled: 01/16/04 09:25 Received: 01/17/04 10:02										
Gasoline Range Hydrocarbons	291	50.0	80.0	ug/l	1	4010477	01/19/04	01/19/04	NW TPH-G	
<i>Surrogate: 4-BFB</i>	<i>110 %</i>		<i>50-150</i>			"	"	"	"	
EQUIP BLANK (P4A0306-13) Water Sampled: 01/16/04 14:00 Received: 01/17/04 10:02										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010477	01/19/04	01/19/04	NW TPH-G	U
<i>Surrogate: 4-BFB</i>	<i>93.2 %</i>		<i>50-150</i>			"	"	"	"	
MW-35 (A) (P4A0306-14) Water Sampled: 01/16/04 12:30 Received: 01/17/04 10:02										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010477	01/19/04	01/19/04	NW TPH-G	U
<i>Surrogate: 4-BFB</i>	<i>92.0 %</i>		<i>50-150</i>			"	"	"	"	
MW-30 (A) (P4A0306-15) Water Sampled: 01/16/04 14:00 Received: 01/17/04 10:02										
Gasoline Range Hydrocarbons	9570	250	400	ug/l	5	4010477	01/19/04	01/19/04	NW TPH-G	D
<i>Surrogate: 4-BFB</i>	<i>163 %</i>		<i>50-150</i>			"	"	"	"	S-09
MW-45 (A) (P4A0306-16) Water Sampled: 01/16/04 11:10 Received: 01/17/04 10:02										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010477	01/19/04	01/19/04	NW TPH-G	U
<i>Surrogate: 4-BFB</i>	<i>92.6 %</i>		<i>50-150</i>			"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
 P.O. Box 80762
 Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 14:42

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-36 (A) (P4A0306-01) Water Sampled: 01/14/04 15:00 Received: 01/17/04 10:02										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010516	01/20/04	01/20/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	80.0 %		50-150			"	"	"	"	
MW-27 (A) (P4A0306-02) Water Sampled: 01/14/04 16:25 Received: 01/17/04 10:02										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010516	01/20/04	01/20/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	84.0 %		50-150			"	"	"	"	
MW-1 (F) (P4A0306-04) Water Sampled: 01/15/04 08:00 Received: 01/17/04 10:02										
Diesel Range Organics	0.171	0.153	0.250	mg/l	1	4010516	01/20/04	01/20/04	NWTPH-Dx	J
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	81.9 %		50-150			"	"	"	"	
MW-12 (A) (P4A0306-05) Water Sampled: 01/15/04 09:40 Received: 01/17/04 10:02										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010516	01/20/04	01/20/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	85.4 %		50-150			"	"	"	"	
MW-13 (A) (P4A0306-06) Water Sampled: 01/15/04 11:30 Received: 01/17/04 10:02										
Diesel Range Organics	1.31	0.153	0.250	mg/l	1	4010516	01/20/04	01/20/04	NWTPH-Dx	A-01
Heavy Oil Range Hydrocarbons	0.658	0.286	0.500	"	"	"	"	"	"	
Surrogate: 1-Chlorooctadecane	36.4 %		50-150			"	"	"	"	S-09
MW-14 (A) (P4A0306-07) Water Sampled: 01/15/04 12:50 Received: 01/17/04 10:02										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010516	01/20/04	01/20/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	85.0 %		50-150			"	"	"	"	

North Creek Analytical - Portland

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EnviroLogic Resources, Inc.
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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-24 (A) (P4A0306-08) Water Sampled: 01/15/04 16:30 Received: 01/17/04 10:02										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010516	01/20/04	01/20/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	67.2 %		50-150			"	"	"	"	
MW-26 (A) (P4A0306-09) Water Sampled: 01/15/04 16:00 Received: 01/17/04 10:02										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010516	01/20/04	01/20/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	82.9 %		50-150			"	"	"	"	
MW-23 (A) (P4A0306-10) Water Sampled: 01/15/04 17:45 Received: 01/17/04 10:02										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010516	01/20/04	01/20/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	83.2 %		50-150			"	"	"	"	
MW-39 (A) (P4A0306-12) Water Sampled: 01/16/04 09:25 Received: 01/17/04 10:02										
Diesel Range Organics	0.806	0.153	0.250	mg/l	1	4010516	01/20/04	01/20/04	NWTPH-Dx	A-02
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	63.9 %		50-150			"	"	"	"	
MW-35 (A) (P4A0306-14) Water Sampled: 01/16/04 12:30 Received: 01/17/04 10:02										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010516	01/20/04	01/21/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	62.6 %		50-150			"	"	"	"	
MW-30 (A) (P4A0306-15) Water Sampled: 01/16/04 14:00 Received: 01/17/04 10:02										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010516	01/20/04	01/21/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	83.4 %		50-150			"	"	"	"	

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 14:42

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-45 (A) (P4A0306-16) Water Sampled: 01/16/04 11:10 Received: 01/17/04 10:02										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010516	01/20/04	01/21/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
<i>Surrogate: 1-Chlorooctadecane</i>	98.6 %		50-150			"	"	"	"	

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
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**Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-36 (A) (P4A0306-01) Water Sampled: 01/14/04 15:00 Received: 01/17/04 10:02										
Silver	ND	0.0000460	0.00100	mg/l	1	4010811	01/27/04	01/29/04	EPA 6020	U
Arsenic	ND	0.000964	0.00100	"	"	"	"	"	"	U
Barium	0.0384	0.0000910	0.00100	"	"	"	"	01/30/04	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	01/29/04	"	U
Chromium	0.00142	0.000791	0.00100	"	"	"	"	"	"	
Manganese	0.0590	0.0000136	0.00200	"	"	"	"	01/30/04	"	
Lead	0.00306	0.0000870	0.00100	"	"	"	"	01/29/04	"	
Selenium	ND	0.000566	0.00100	"	"	"	"	"	"	U
MW-27 (A) (P4A0306-02) Water Sampled: 01/14/04 16:25 Received: 01/17/04 10:02										
Silver	ND	0.0000460	0.00100	mg/l	1	4010811	01/27/04	01/29/04	EPA 6020	U
Arsenic	0.0165	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0133	0.0000910	0.00100	"	"	"	"	01/30/04	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	01/29/04	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Manganese	0.294	0.0000136	0.00200	"	"	"	"	01/30/04	"	
Lead	0.000190	0.0000870	0.00100	"	"	"	"	01/29/04	"	J
Selenium	ND	0.000566	0.00100	"	"	"	"	"	"	U
MW-1 (F) (P4A0306-04) Water Sampled: 01/15/04 08:00 Received: 01/17/04 10:02										
Silver	ND	0.0000460	0.00100	mg/l	1	4010811	01/27/04	01/29/04	EPA 6020	U
Arsenic	0.00234	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0649	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Lead	0.000450	0.0000870	0.00100	"	"	"	"	"	"	J
Selenium	0.00129	0.000566	0.00100	"	"	"	"	"	"	

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-12 (A) (P4A0306-05) Water Sampled: 01/15/04 09:40 Received: 01/17/04 10:02										
Silver	ND	0.0000460	0.00100	mg/l	1	4010811	01/27/04	01/29/04	EPA 6020	U
Arsenic	ND	0.000964	0.00100	"	"	"	"	"	"	U
Barium	0.0391	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Manganese	0.0127	0.0000136	0.00200	"	"	"	"	"	"	
Lead	0.000500	0.0000870	0.00100	"	"	"	"	"	"	J
Selenium	0.00441	0.000566	0.00100	"	"	"	"	"	"	
MW-13 (A) (P4A0306-06) Water Sampled: 01/15/04 11:30 Received: 01/17/04 10:02										
Silver	ND	0.0000460	0.00100	mg/l	1	4010811	01/27/04	01/29/04	EPA 6020	U
Arsenic	0.00288	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0385	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Lead	0.00260	0.0000870	0.00100	"	"	"	"	"	"	J
Selenium	0.000960	0.000566	0.00100	"	"	"	"	"	"	J
MW-14 (A) (P4A0306-07) Water Sampled: 01/15/04 12:50 Received: 01/17/04 10:02										
Silver	ND	0.0000460	0.00100	mg/l	1	4010811	01/27/04	01/29/04	EPA 6020	U
Arsenic	ND	0.000964	0.00100	"	"	"	"	"	"	U
Barium	0.0267	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Lead	0.000180	0.0000870	0.00100	"	"	"	"	"	"	J
Selenium	0.00105	0.000566	0.00100	"	"	"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-24 (A) (P4A0306-08) Water Sampled: 01/15/04 16:30 Received: 01/17/04 10:02										
Silver	ND	0.0000460	0.00100	mg/l	1	4010811	01/27/04	01/29/04	EPA 6020	U
Arsenic	0.00574	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0238	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00101	0.000791	0.00100	"	"	"	"	"	"	
Lead	0.00575	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	ND	0.000566	0.00100	"	"	"	"	"	"	U
MW-26 (A) (P4A0306-09) Water Sampled: 01/15/04 16:00 Received: 01/17/04 10:02										
Silver	ND	0.0000460	0.00100	mg/l	1	4010811	01/27/04	01/29/04	EPA 6020	U
Arsenic	0.00861	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0229	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00157	0.000791	0.00100	"	"	"	"	"	"	
Manganese	1.39	0.0000272	0.00400	"	2	"	"	01/30/04	"	D
Lead	0.00598	0.0000870	0.00100	"	1	"	"	01/29/04	"	
Selenium	ND	0.000566	0.00100	"	"	"	"	"	"	U
MW-23 (A) (P4A0306-10) Water Sampled: 01/15/04 17:45 Received: 01/17/04 10:02										
Silver	ND	0.0000460	0.00100	mg/l	1	4010811	01/27/04	01/29/04	EPA 6020	U
Arsenic	ND	0.000964	0.00100	"	"	"	"	"	"	U
Barium	0.0114	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Lead	0.00327	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	0.00123	0.000566	0.00100	"	"	"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
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Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-39 (A) (P4A0306-12) Water Sampled: 01/16/04 09:25 Received: 01/17/04 10:02										
Silver	ND	0.0000460	0.00100	mg/l	1	4010811	01/27/04	01/29/04	EPA 6020	U
Arsenic	0.00229	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0112	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.000880	0.000791	0.00100	"	"	"	"	"	"	J
Manganese	0.146	0.0000136	0.00200	"	"	"	"	"	"	
Lead	0.000570	0.0000870	0.00100	"	"	"	"	"	"	J
Selenium	0.000900	0.000566	0.00100	"	"	"	"	"	"	J
MW-35 (A) (P4A0306-14) Water Sampled: 01/16/04 12:30 Received: 01/17/04 10:02										
Silver	ND	0.0000460	0.00100	mg/l	1	4010811	01/27/04	01/29/04	EPA 6020	U
Arsenic	0.00180	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0221	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00190	0.000791	0.00100	"	"	"	"	"	"	
Lead	0.00144	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	0.00149	0.000566	0.00100	"	"	"	"	01/30/04	"	
MW-30 (A) (P4A0306-15) Water Sampled: 01/16/04 14:00 Received: 01/17/04 10:02										
Silver	ND	0.0000460	0.00100	mg/l	1	4010811	01/27/04	01/29/04	EPA 6020	U
Arsenic	0.0109	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0515	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00479	0.000791	0.00100	"	"	"	"	"	"	
Lead	0.00317	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	0.00106	0.000566	0.00100	"	"	"	"	01/30/04	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
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Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
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**Total Metals per EPA 6000/7000 Series Methods
 North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-45 (A) (P4A0306-16) Water Sampled: 01/16/04 11:10 Received: 01/17/04 10:02										
Silver	ND	0.0000460	0.00100	mg/l	1	4010811	01/27/04	01/29/04	EPA 6020	U
Arsenic	ND	0.000964	0.00100	"	"	"	"	"	"	U
Barium	0.00837	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Manganese	0.0577	0.0000136	0.00200	"	"	"	"	"	"	
Lead	0.000100	0.0000870	0.00100	"	"	"	"	"	"	J
Selenium	0.00145	0.000566	0.00100	"	"	"	"	01/30/04	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 14:42

Dissolved Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (F) (P4A0306-04) Water Sampled: 01/15/04 08:00 Received: 01/17/04 10:02										
Silver	ND	0.0000460	0.00100	mg/l	1	4010650	01/22/04	01/24/04	EPA 6020	U
Arsenic	0.00140	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0609	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.0000730	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Mercury	ND	0.0000630	0.000200	"	"	4010957	01/30/04	01/30/04	EPA 7470A	U
Lead	0.000380	0.0000870	0.00100	"	"	4010650	01/22/04	01/24/04	EPA 6020	J
Selenium	0.00141	0.000566	0.00100	"	"	"	"	01/28/04	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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MW-36 (A) (P4A0306-01) Water Sampled: 01/14/04 15:00 Received: 01/17/04 10:02

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010494	01/19/04	01/19/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	0.680	0.0989	2.00	"	"	"	"	"	"	J
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
<i>Surrogate: 4-BFB</i>	<i>91.5 %</i>		<i>75-120</i>							
<i>Surrogate: 1,2-DCA-d4</i>	<i>101 %</i>		<i>77-129</i>							
<i>Surrogate: Dibromofluoromethane</i>	<i>102 %</i>		<i>80-121</i>							
<i>Surrogate: Toluene-d8</i>	<i>96.5 %</i>		<i>80-120</i>							

MW-27 (A) (P4A0306-02) Water Sampled: 01/14/04 16:25 Received: 01/17/04 10:02

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010494	01/19/04	01/19/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
<i>Surrogate: 4-BFB</i>	<i>90.0 %</i>		<i>75-120</i>							
<i>Surrogate: 1,2-DCA-d4</i>	<i>100 %</i>		<i>77-129</i>							
<i>Surrogate: Dibromofluoromethane</i>	<i>101 %</i>		<i>80-121</i>							
<i>Surrogate: Toluene-d8</i>	<i>94.5 %</i>		<i>80-120</i>							

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

North Creek Analytical, Inc.
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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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TRIP BLANK (P4A0306-03) Water Sampled: 01/14/04 16:25 Received: 01/17/04 10:02

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010494	01/19/04	01/19/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	91.0 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	104 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	104 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	101 %		80-120			"	"	"	"	

MW-1 (F) (P4A0306-04) Water Sampled: 01/15/04 08:00 Received: 01/17/04 10:02

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010494	01/19/04	01/19/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	2.79	0.147	0.500	"	"	"	"	"	"	
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	1.99	0.110	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	0.300	0.0989	2.00	"	"	"	"	"	"	J
1,2,4-Trimethylbenzene	0.0900	0.0884	1.00	"	"	"	"	"	"	J
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	2.10	0.107	2.00	"	"	"	"	"	"	
n-Propylbenzene	1.13	0.138	0.500	"	"	"	"	"	"	
Surrogate: 4-BFB	98.5 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	103 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	100 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	98.0 %		80-120			"	"	"	"	

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Joy D. Chang, Project Manager



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-12 (A) (P4A0306-05) Water Sampled: 01/15/04 09:40 Received: 01/17/04 10:02										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010494	01/19/04	01/19/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	92.0 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	102 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	102 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	99.0 %		80-120			"	"	"	"	

MW-13 (A) (P4A0306-06RE2) Water Sampled: 01/15/04 11:30 Received: 01/17/04 10:02										
1,2-Dibromoethane	ND	3.74	10.0	ug/l	20	4010572	01/21/04	01/21/04	EPA 8260B	D, U
1,2-Dichloroethane	6.80	2.84	10.0	"	"	"	"	"	"	J, D
Benzene	750	2.94	10.0	"	"	"	"	"	"	D
Toluene	82.4	3.10	10.0	"	"	"	"	"	"	D
Ethylbenzene	2270	2.20	10.0	"	"	"	"	"	"	D
Xylenes (total)	578	5.24	20.0	"	"	"	"	"	"	D
Methyl tert-butyl ether	ND	1.73	40.0	"	"	"	"	"	"	D, U
Naphthalene	223	1.98	40.0	"	"	"	"	"	"	D
1,2,4-Trimethylbenzene	393	1.77	20.0	"	"	"	"	"	"	D
1,3,5-Trimethylbenzene	ND	3.14	10.0	"	"	"	"	"	"	D, U
Isopropylbenzene	225	2.14	40.0	"	"	"	"	"	"	D
n-Propylbenzene	676	2.76	10.0	"	"	"	"	"	"	D
Surrogate: 4-BFB	102 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	104 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	100 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	106 %		80-120			"	"	"	"	

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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MW-14 (A) (P4A0306-07) Water Sampled: 01/15/04 12:50 Received: 01/17/04 10:02

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010494	01/19/04	01/19/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	0.650	0.147	0.500	"	"	"	"	"	"	
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	3.28	0.110	0.500	"	"	"	"	"	"	
Xylenes (total)	0.470	0.262	1.00	"	"	"	"	"	"	J
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	0.190	0.0989	2.00	"	"	"	"	"	"	J
1,2,4-Trimethylbenzene	0.0900	0.0884	1.00	"	"	"	"	"	"	J
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	0.280	0.107	2.00	"	"	"	"	"	"	J
n-Propylbenzene	0.660	0.138	0.500	"	"	"	"	"	"	
Surrogate: 4-BFB	95.0 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	106 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	105 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	95.0 %		80-120			"	"	"	"	

MW-24 (A) (P4A0306-08RE2) Water Sampled: 01/15/04 16:30 Received: 01/17/04 10:02

1,2-Dibromoethane	ND	1.87	5.00	ug/l	10	4010633	01/22/04	01/22/04	EPA 8260B	D, U
1,2-Dichloroethane	ND	1.42	5.00	"	"	"	"	"	"	D, U
Benzene	2.70	1.47	5.00	"	"	"	"	"	"	J, D
Toluene	ND	1.55	5.00	"	"	"	"	"	"	D, U
Ethylbenzene	60.1	1.10	5.00	"	"	"	"	"	"	D
Xylenes (total)	116	2.62	10.0	"	"	"	"	"	"	D
Methyl tert-butyl ether	ND	0.865	20.0	"	"	"	"	"	"	D, U
Naphthalene	114	0.989	20.0	"	"	"	"	"	"	D
1,2,4-Trimethylbenzene	232	0.884	10.0	"	"	"	"	"	"	D
1,3,5-Trimethylbenzene	33.9	1.57	5.00	"	"	"	"	"	"	D
Isopropylbenzene	4.80	1.07	20.0	"	"	"	"	"	"	J, D
n-Propylbenzene	9.70	1.38	5.00	"	"	"	"	"	"	D
Surrogate: 4-BFB	97.0 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	111 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	109 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	106 %		80-120			"	"	"	"	

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

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Environmental Laboratory Network



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-26 (A) (P4A0306-09RE1) Water Sampled: 01/15/04 16:00 Received: 01/17/04 10:02										
1,2-Dibromoethane	ND	3.74	10.0	ug/l	20	4010542	01/20/04	01/20/04	EPA 8260B	D, U
1,2-Dichloroethane	ND	2.84	10.0	"	"	"	"	"	"	D, U
Benzene	3.00	2.94	10.0	"	"	"	"	"	"	J, D
Toluene	24.2	3.10	10.0	"	"	"	"	"	"	D
Ethylbenzene	1280	2.20	10.0	"	"	"	"	"	"	D
Xylenes (total)	5500	5.24	20.0	"	"	"	"	"	"	D
Methyl tert-butyl ether	ND	1.73	40.0	"	"	"	"	"	"	D, U
Naphthalene	1030	1.98	40.0	"	"	"	"	"	"	D
1,2,4-Trimethylbenzene	3120	1.77	20.0	"	"	"	"	"	"	D
1,3,5-Trimethylbenzene	682	3.14	10.0	"	"	"	"	"	"	D
Isopropylbenzene	104	2.14	40.0	"	"	"	"	"	"	D
n-Propylbenzene	280	2.76	10.0	"	"	"	"	"	"	D
Surrogate: 4-BFB	96.0 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	98.0 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	99.0 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	100 %		80-120			"	"	"	"	

MW-23 (A) (P4A0306-10RE1) Water Sampled: 01/15/04 17:45 Received: 01/17/04 10:02										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010542	01/20/04	01/20/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	0.520	0.110	0.500	"	"	"	"	"	"	
Xylenes (total)	0.380	0.262	1.00	"	"	"	"	"	"	J
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	0.100	0.0884	1.00	"	"	"	"	"	"	J
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	0.170	0.138	0.500	"	"	"	"	"	"	J
Surrogate: 4-BFB	89.5 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	101 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	102 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	96.5 %		80-120			"	"	"	"	

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

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Environmental Laboratory Network



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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TRIP BLANK (P4A0306-11) Water Sampled: 01/15/04 17:45 Received: 01/17/04 10:02

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010494	01/19/04	01/19/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	89.0 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	106 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	104 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	100 %		80-120			"	"	"	"	

MW-39 (A) (P4A0306-12) Water Sampled: 01/16/04 09:25 Received: 01/17/04 10:02

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010494	01/19/04	01/19/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	3.37	0.147	0.500	"	"	"	"	"	"	
Toluene	0.280	0.155	0.500	"	"	"	"	"	"	J
Ethylbenzene	10.8	0.110	0.500	"	"	"	"	"	"	
Xylenes (total)	28.8	0.262	1.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	23.4	0.0989	2.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	14.4	0.0884	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	2.70	0.157	0.500	"	"	"	"	"	"	
Isopropylbenzene	3.34	0.107	2.00	"	"	"	"	"	"	
n-Propylbenzene	4.57	0.138	0.500	"	"	"	"	"	"	
Surrogate: 4-BFB	100 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	103 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	102 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	94.5 %		80-120			"	"	"	"	

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
EQUIP BLANK (P4A0306-13) Water Sampled: 01/16/04 14:00 Received: 01/17/04 10:02										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010494	01/19/04	01/19/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	0.360	0.155	0.500	"	"	"	"	"	"	J
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	92.0 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	106 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	106 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	101 %		80-120			"	"	"	"	
MW-35 (A) (P4A0306-14) Water Sampled: 01/16/04 12:30 Received: 01/17/04 10:02										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010494	01/19/04	01/19/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	0.420	0.110	0.500	"	"	"	"	"	"	J
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	0.310	0.0989	2.00	"	"	"	"	"	"	J
1,2,4-Trimethylbenzene	0.130	0.0884	1.00	"	"	"	"	"	"	J
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	0.180	0.138	0.500	"	"	"	"	"	"	J
Surrogate: 4-BFB	94.5 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	103 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	102 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	95.0 %		80-120			"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-30 (A) (P4A0306-15) Water Sampled: 01/16/04 14:00 Received: 01/17/04 10:02										
1,2-Dibromoethane	ND	3.74	10.0	ug/l	20	4010494	01/19/04	01/19/04	EPA 8260B	D, U
1,2-Dichloroethane	ND	2.84	10.0	"	"	"	"	"	"	D, U
Benzene	341	2.94	10.0	"	"	"	"	"	"	D
Toluene	127	3.10	10.0	"	"	"	"	"	"	D
Ethylbenzene	1910	2.20	10.0	"	"	"	"	"	"	D
Xylenes (total)	378	5.24	20.0	"	"	"	"	"	"	D
Methyl tert-butyl ether	ND	1.73	40.0	"	"	"	"	"	"	D, U
Naphthalene	1200	1.98	40.0	"	"	"	"	"	"	D
1,2,4-Trimethylbenzene	33.6	1.77	20.0	"	"	"	"	"	"	D
1,3,5-Trimethylbenzene	14.2	3.14	10.0	"	"	"	"	"	"	D
Isopropylbenzene	79.0	2.14	40.0	"	"	"	"	"	"	D
n-Propylbenzene	232	2.76	10.0	"	"	"	"	"	"	D
Surrogate: 4-BFB	100 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	100 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	98.0 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	102 %		80-120			"	"	"	"	
MW-45 (A) (P4A0306-16) Water Sampled: 01/16/04 11:10 Received: 01/17/04 10:02										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010494	01/19/04	01/19/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	0.230	0.110	0.500	"	"	"	"	"	"	J
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	0.110	0.0884	1.00	"	"	"	"	"	"	J
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	93.5 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	104 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	103 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	99.5 %		80-120			"	"	"	"	

North Creek Analytical - Portland

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Joy D. Chang, Project Manager



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-36 (A) (P4A0306-01) Water Sampled: 01/14/04 15:00 Received: 01/17/04 10:02										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010525	01/20/04	01/26/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	53.0 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	71.6 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	66.5 %		10-150			"	"	"	"	

MW-27 (A) (P4A0306-02) Water Sampled: 01/14/04 16:25 Received: 01/17/04 10:02										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010525	01/20/04	01/26/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-27 (A) (P4A0306-02) Water Sampled: 01/14/04 16:25 Received: 01/17/04 10:02										
Naphthalene	0.0512	0.0500	0.0500	ug/l	1	4010525	01/20/04	01/26/04	EPA 8270m	
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
<i>Surrogate: Fluorene-d10</i>	<i>56.4 %</i>		<i>25-150</i>			"	"	"	"	
<i>Surrogate: Pyrene-d10</i>	<i>69.9 %</i>		<i>23-150</i>			"	"	"	"	
<i>Surrogate: Benzo (a) pyrene-d12</i>	<i>66.1 %</i>		<i>10-150</i>			"	"	"	"	
MW-1 (F) (P4A0306-04) Water Sampled: 01/15/04 08:00 Received: 01/17/04 10:02										
Acenaphthene	0.186	0.0500	0.0500	ug/l	1	4010525	01/20/04	01/26/04	EPA 8270m	
Acenaphthylene	0.0998	0.0500	0.0500	"	"	"	"	"	"	
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	0.209	0.0500	0.0500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	ND	1.50	1.50	"	"	"	"	"	"	R-03, U
Phenanthrene	0.0523	0.0500	0.0500	"	"	"	"	"	"	
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
<i>Surrogate: Fluorene-d10</i>	<i>45.8 %</i>		<i>25-150</i>			"	"	"	"	
<i>Surrogate: Pyrene-d10</i>	<i>72.9 %</i>		<i>23-150</i>			"	"	"	"	
<i>Surrogate: Benzo (a) pyrene-d12</i>	<i>60.2 %</i>		<i>10-150</i>			"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-12 (A) (P4A0306-05) Water Sampled: 01/15/04 09:40 Received: 01/17/04 10:02										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010525	01/20/04	01/26/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	54.2 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	72.9 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	72.0 %		10-150			"	"	"	"	

MW-13 (A) (P4A0306-06) Water Sampled: 01/15/04 11:30 Received: 01/17/04 10:02										R-05
Acenaphthene	ND	0.100	0.100	ug/l	2	4010525	01/20/04	01/27/04	EPA 8270m	D, U
Acenaphthylene	ND	0.100	0.100	"	"	"	"	"	"	D, U
Anthracene	ND	0.100	0.100	"	"	"	"	"	"	D, U
Benzo (a) anthracene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Benzo (a) pyrene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Benzo (b) fluoranthene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Benzo (ghi) perylene	ND	0.100	0.100	"	"	"	"	"	"	D, U
Benzo (k) fluoranthene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Chrysene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Dibenzo (a,h) anthracene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Fluoranthene	ND	0.100	0.100	"	"	"	"	"	"	D, U
Fluorene	ND	0.100	0.100	"	"	"	"	"	"	D, U
Indeno (1,2,3-cd) pyrene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-13 (A) (P4A0306-06) Water Sampled: 01/15/04 11:30 Received: 01/17/04 10:02 R-05										
Naphthalene	75.7	5.00	5.00	ug/l	100	4010525	01/20/04	01/27/04	EPA 8270m	D
Phenanthrene	ND	0.100	0.100	"	2	"	"	01/27/04	"	D, U
Pyrene	ND	0.100	0.100	"	"	"	"	"	"	D, U
Surrogate: Fluorene-d10	61.9 %		25-150			"	"	"	"	D
Surrogate: Pyrene-d10	71.2 %		23-150			"	"	"	"	D
Surrogate: Benzo (a) pyrene-d12	58.9 %		10-150			"	"	"	"	D
MW-14 (A) (P4A0306-07) Water Sampled: 01/15/04 12:50 Received: 01/17/04 10:02										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010525	01/20/04	01/26/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	52.1 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	67.8 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	58.5 %		10-150			"	"	"	"	

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Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-24 (A) (P4A0306-08) Water Sampled: 01/15/04 16:30 Received: 01/17/04 10:02										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010525	01/20/04	01/26/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	44.6	2.50	2.50	"	50	"	"	01/27/04	"	D
Phenanthrene	ND	0.0500	0.0500	"	1	"	"	01/26/04	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	58.5 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	67.8 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	50.4 %		10-150			"	"	"	"	

MW-26 (A) (P4A0306-09) Water Sampled: 01/15/04 16:00 Received: 01/17/04 10:02										
Acenaphthene	0.0687	0.0500	0.0500	ug/l	1	4010525	01/20/04	01/26/04	EPA 8270m	
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	0.0718	0.0500	0.0500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U

North Creek Analytical - Portland

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Joy D. Chang, Project Manager



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-26 (A) (P4A0306-09) Water Sampled: 01/15/04 16:00 Received: 01/17/04 10:02										
Naphthalene	564	50.0	50.0	ug/l	1000	4010525	01/20/04	01/28/04	EPA 8270m	D
Phenanthrene	ND	0.0500	0.0500	"	1	"	"	01/26/04	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	60.6 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	70.3 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	64.0 %		10-150			"	"	"	"	
MW-23 (A) (P4A0306-10) Water Sampled: 01/15/04 17:45 Received: 01/17/04 10:02										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010525	01/20/04	01/27/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	ND	0.225	0.225	"	"	"	"	"	"	R-03, U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	65.7 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	72.0 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	46.2 %		10-150			"	"	"	"	

North Creek Analytical - Portland

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-39 (A) (P4A0306-12) Water Sampled: 01/16/04 09:25 Received: 01/17/04 10:02										
Acenaphthene	0.598	0.0500	0.0500	ug/l	1	4010525	01/20/04	01/26/04	EPA 8270m	
Acenaphthylene	ND	0.125	0.125	"	"	"	"	"	"	R-03, U
Anthracene	0.0715	0.0500	0.0500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	1.04	0.0500	0.0500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	17.3	0.250	0.250	"	5	"	"	01/26/04	"	D
Phenanthrene	0.629	0.0500	0.0500	"	1	"	"	01/26/04	"	
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
<i>Surrogate: Fluorene-d10</i>	<i>48.3 %</i>		<i>25-150</i>			"	"	"	"	
<i>Surrogate: Pyrene-d10</i>	<i>70.3 %</i>		<i>23-150</i>			"	"	"	"	
<i>Surrogate: Benzo (a) pyrene-d12</i>	<i>55.5 %</i>		<i>10-150</i>			"	"	"	"	

MW-35 (A) (P4A0306-14) Water Sampled: 01/16/04 12:30 Received: 01/17/04 10:02

Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010525	01/20/04	01/26/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-35 (A) (P4A0306-14) Water Sampled: 01/16/04 12:30 Received: 01/17/04 10:02										
Naphthalene	0.349	0.0500	0.0500	ug/l	1	4010525	01/20/04	01/26/04	EPA 8270m	
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
<i>Surrogate: Fluorene-d10</i>	<i>56.8 %</i>		<i>25-150</i>			"	"	"	"	
<i>Surrogate: Pyrene-d10</i>	<i>68.2 %</i>		<i>23-150</i>			"	"	"	"	
<i>Surrogate: Benzo (a) pyrene-d12</i>	<i>46.2 %</i>		<i>10-150</i>			"	"	"	"	
MW-30 (A) (P4A0306-15) Water Sampled: 01/16/04 14:00 Received: 01/17/04 10:02										
Acenaphthene	0.0751	0.0500	0.0500	ug/l	1	4010525	01/20/04	01/26/04	EPA 8270m	
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	0.0613	0.0500	0.0500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	696	50.0	50.0	"	1000	"	"	01/28/04	"	D
Phenanthrene	ND	0.0500	0.0500	"	1	"	"	01/26/04	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
<i>Surrogate: Fluorene-d10</i>	<i>59.3 %</i>		<i>25-150</i>			"	"	"	"	
<i>Surrogate: Pyrene-d10</i>	<i>68.6 %</i>		<i>23-150</i>			"	"	"	"	
<i>Surrogate: Benzo (a) pyrene-d12</i>	<i>31.3 %</i>		<i>10-150</i>			"	"	"	"	

North Creek Analytical - Portland

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-45 (A) (P4A0306-16) Water Sampled: 01/16/04 11:10 Received: 01/17/04 10:02										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010525	01/20/04	01/27/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	57.2 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	65.3 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	42.8 %		10-150			"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-36 (A) (P4A0306-01) Water Sampled: 01/14/04 15:00 Received: 01/17/04 10:02										
Nitrate/Nitrite-Nitrogen	0.852	0.0250	0.0500	mg/l	10	4010732	01/26/04	01/26/04	EPA 353.2	D
MW-27 (A) (P4A0306-02) Water Sampled: 01/14/04 16:25 Received: 01/17/04 10:02										
Nitrate/Nitrite-Nitrogen	0.760	0.250	0.500	mg/l	100	4010732	01/26/04	01/26/04	EPA 353.2	D
MW-12 (A) (P4A0306-05) Water Sampled: 01/15/04 09:40 Received: 01/17/04 10:02										
Nitrate/Nitrite-Nitrogen	2.01	0.0500	0.100	mg/l	20	4010732	01/26/04	01/26/04	EPA 353.2	D
MW-26 (A) (P4A0306-09) Water Sampled: 01/15/04 16:00 Received: 01/17/04 10:02										
Nitrate/Nitrite-Nitrogen	ND	0.250	0.500	mg/l	100	4010732	01/26/04	01/26/04	EPA 353.2	R-05, D, U
MW-39 (A) (P4A0306-12) Water Sampled: 01/16/04 09:25 Received: 01/17/04 10:02										
Nitrate/Nitrite-Nitrogen	ND	0.250	0.500	mg/l	100	4010732	01/26/04	01/26/04	EPA 353.2	R-05, D, U
MW-45 (A) (P4A0306-16) Water Sampled: 01/16/04 11:10 Received: 01/17/04 10:02										
Nitrate/Nitrite-Nitrogen	1.18	0.0250	0.0500	mg/l	10	4010732	01/26/04	01/26/04	EPA 353.2	D

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

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02/05/04 14:42

**Anions per EPA Method 300.0
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-36 (A) (P4A0306-01) Water Sampled: 01/14/04 15:00 Received: 01/17/04 10:02										
Chloride	6.75	0.0508	0.500	mg/l	1	4010485	01/19/04	01/19/04	EPA 300.0	
Sulfate	9.99	0.0860	1.00	"	"	"	"	"	"	
MW-27 (A) (P4A0306-02) Water Sampled: 01/14/04 16:25 Received: 01/17/04 10:02										
Chloride	10.2	0.0508	0.500	mg/l	1	4010485	01/19/04	01/19/04	EPA 300.0	
Sulfate	43.9	0.0860	1.00	"	"	"	"	"	"	
MW-12 (A) (P4A0306-05) Water Sampled: 01/15/04 09:40 Received: 01/17/04 10:02										
Chloride	13.9	0.0508	0.500	mg/l	1	4010485	01/19/04	01/19/04	EPA 300.0	
Sulfate	371	0.860	10.0	"	10	"	"	01/19/04	"	D
MW-26 (A) (P4A0306-09) Water Sampled: 01/15/04 16:00 Received: 01/17/04 10:02										
Chloride	12.3	0.0508	0.500	mg/l	1	4010485	01/19/04	01/19/04	EPA 300.0	
Sulfate	12.8	0.0860	1.00	"	"	"	"	"	"	
MW-39 (A) (P4A0306-12) Water Sampled: 01/16/04 09:25 Received: 01/17/04 10:02										
Chloride	9.70	0.0508	0.500	mg/l	1	4010485	01/19/04	01/19/04	EPA 300.0	
Sulfate	3.45	0.0860	1.00	"	"	"	"	"	"	
MW-45 (A) (P4A0306-16) Water Sampled: 01/16/04 11:10 Received: 01/17/04 10:02										
Chloride	12.1	0.0508	0.500	mg/l	1	4010485	01/19/04	01/19/04	EPA 300.0	
Sulfate	22.7	0.0860	1.00	"	"	"	"	"	"	

North Creek Analytical - Portland

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Reported:
02/05/04 14:42

**Total Alkalinity by Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-36 (A) (P4A0306-01) Water Sampled: 01/14/04 15:00 Received: 01/17/04 10:02										
Bicarbonate Alkalinity	84.0	0.208	10.0mg/L as CaC		1	4010622	01/22/04	01/22/04	SM 2320B	
Carbonate Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Hydroxide Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Total Alkalinity	84.0	0.208	10.0	"	"	"	"	"	"	
MW-27 (A) (P4A0306-02) Water Sampled: 01/14/04 16:25 Received: 01/17/04 10:02										
Bicarbonate Alkalinity	34.4	0.208	10.0mg/L as CaC		1	4010622	01/22/04	01/22/04	SM 2320B	
Carbonate Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Hydroxide Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Total Alkalinity	34.4	0.208	10.0	"	"	"	"	"	"	
MW-12 (A) (P4A0306-05) Water Sampled: 01/15/04 09:40 Received: 01/17/04 10:02										
Bicarbonate Alkalinity	136	0.208	10.0mg/L as CaC		1	4010622	01/22/04	01/22/04	SM 2320B	
Carbonate Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Hydroxide Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Total Alkalinity	136	0.208	10.0	"	"	"	"	"	"	
MW-26 (A) (P4A0306-09) Water Sampled: 01/15/04 16:00 Received: 01/17/04 10:02										
Bicarbonate Alkalinity	127	1.04	50.0mg/L as CaC		5	4010622	01/22/04	01/22/04	SM 2320B	D
Carbonate Alkalinity	ND	1.04	50.0	"	"	"	"	"	"	D, U
Hydroxide Alkalinity	ND	1.04	50.0	"	"	"	"	"	"	D, U
Total Alkalinity	127	1.04	50.0	"	"	"	"	"	"	D
MW-39 (A) (P4A0306-12) Water Sampled: 01/16/04 09:25 Received: 01/17/04 10:02										
Bicarbonate Alkalinity	63.7	0.208	10.0mg/L as CaC		1	4010622	01/22/04	01/22/04	SM 2320B	
Carbonate Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Hydroxide Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Total Alkalinity	63.7	0.208	10.0	"	"	"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
 P.O. Box 80762
 Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 14:42

**Total Alkalinity by Conventional Chemistry Parameters per APHA/EPA Methods
 North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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MW-45 (A) (P4A0306-16) Water **Sampled: 01/16/04 11:10** **Received: 01/17/04 10:02**

Bicarbonate Alkalinity	71.6	0.208	10.0mg/L as CaC	1		4010622	01/22/04	01/22/04	SM 2320B	
Carbonate Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Hydroxide Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Total Alkalinity	71.6	0.208	10.0	"	"	"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Total Metals by EPA 6000/7000 Series Methods
North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-36 (A) (P4A0306-01) Water Sampled: 01/14/04 15:00 Received: 01/17/04 10:02										
Calcium	17.9	0.0360	0.250	mg/l	1	4A26036	01/26/04	01/28/04	EPA 6010B	
Iron	0.410	0.0620	0.150	"	"	"	"	"	"	
Mercury	0.000124	0.0000700	0.000200	"	"	4A29052	01/29/04	01/30/04	EPA 7470A	J
Potassium	3.86	0.255	2.00	"	"	4A26036	01/26/04	01/30/04	EPA 6010B	
Magnesium	5.45	0.0180	0.500	"	"	"	"	01/28/04	"	
Sodium	19.0	0.0420	0.250	"	"	"	"	"	"	
MW-27 (A) (P4A0306-02) Water Sampled: 01/14/04 16:25 Received: 01/17/04 10:02										
Calcium	12.5	0.0360	0.250	mg/l	1	4A26036	01/26/04	01/28/04	EPA 6010B	
Iron	33.3	0.0620	0.150	"	"	"	"	"	"	
Mercury	0.0000940	0.0000700	0.000200	"	"	4A29052	01/29/04	01/30/04	EPA 7470A	J
Potassium	3.07	0.255	2.00	"	"	4A26036	01/26/04	01/30/04	EPA 6010B	
Magnesium	5.72	0.0180	0.500	"	"	"	"	01/28/04	"	
Sodium	14.4	0.0420	0.250	"	"	"	"	"	"	
MW-1 (F) (P4A0306-04) Water Sampled: 01/15/04 08:00 Received: 01/17/04 10:02										
Mercury	0.0000754	0.0000700	0.000200	mg/l	1	4A29052	01/29/04	01/30/04	EPA 7470A	J
MW-12 (A) (P4A0306-05) Water Sampled: 01/15/04 09:40 Received: 01/17/04 10:02										
Calcium	131	0.0360	0.250	mg/l	1	4A26036	01/26/04	01/28/04	EPA 6010B	
Iron	0.133	0.0620	0.150	"	"	"	"	"	"	J
Mercury	0.0000772	0.0000700	0.000200	"	"	4A29052	01/29/04	01/30/04	EPA 7470A	J
Potassium	7.11	0.255	2.00	"	"	4A26036	01/26/04	01/30/04	EPA 6010B	
Magnesium	18.3	0.0180	0.500	"	"	"	"	01/28/04	"	
Sodium	64.0	0.0420	0.250	"	"	"	"	"	"	

North Creek Analytical - Portland

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Total Metals by EPA 6000/7000 Series Methods
North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-13 (A) (P4A0306-06) Water Sampled: 01/15/04 11:30 Received: 01/17/04 10:02										
Mercury	0.0000905	0.0000700	0.000200	mg/l	1	4A29052	01/29/04	01/30/04	EPA 7470A	J
MW-14 (A) (P4A0306-07) Water Sampled: 01/15/04 12:50 Received: 01/17/04 10:02										
Mercury	0.0000814	0.0000700	0.000200	mg/l	1	4A29052	01/29/04	01/30/04	EPA 7470A	J
MW-24 (A) (P4A0306-08) Water Sampled: 01/15/04 16:30 Received: 01/17/04 10:02										
Mercury	0.0000714	0.0000700	0.000200	mg/l	1	4A29052	01/29/04	01/30/04	EPA 7470A	J
MW-26 (A) (P4A0306-09) Water Sampled: 01/15/04 16:00 Received: 01/17/04 10:02										
Calcium	21.0	0.0360	0.250	mg/l	1	4A26036	01/26/04	01/28/04	EPA 6010B	
Iron	34.6	0.0620	0.150	"	"	"	"	"	"	
Mercury	0.000110	0.0000700	0.000200	"	"	4A29052	01/29/04	01/30/04	EPA 7470A	J
Potassium	3.98	0.255	2.00	"	"	4A26036	01/26/04	01/30/04	EPA 6010B	
Magnesium	7.66	0.0180	0.500	"	"	"	"	01/28/04	"	
Sodium	9.58	0.0420	0.250	"	"	"	"	"	"	
MW-23 (A) (P4A0306-10) Water Sampled: 01/15/04 17:45 Received: 01/17/04 10:02										
Mercury	0.0000841	0.0000700	0.000200	mg/l	1	4A29052	01/29/04	01/30/04	EPA 7470A	J
MW-39 (A) (P4A0306-12) Water Sampled: 01/16/04 09:25 Received: 01/17/04 10:02										
Calcium	11.8	0.0360	0.250	mg/l	1	4A26036	01/26/04	01/28/04	EPA 6010B	
Iron	12.8	0.0620	0.150	"	"	"	"	"	"	
Mercury	0.000310	0.0000700	0.000200	"	"	4A29052	01/29/04	01/30/04	EPA 7470A	
Potassium	2.82	0.255	2.00	"	"	4A26036	01/26/04	01/30/04	EPA 6010B	
Magnesium	5.05	0.0180	0.500	"	"	"	"	01/28/04	"	
Sodium	10.2	0.0420	0.250	"	"	"	"	"	"	

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 14:42

**Total Metals by EPA 6000/7000 Series Methods
 North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-35 (A) (P4A0306-14) Water Sampled: 01/16/04 12:30 Received: 01/17/04 10:02										
Mercury	0.0000806	0.0000700	0.000200	mg/l	1	4A29052	01/29/04	01/30/04	EPA 7470A	J
MW-30 (A) (P4A0306-15) Water Sampled: 01/16/04 14:00 Received: 01/17/04 10:02										
Mercury	0.0000895	0.0000700	0.000200	mg/l	1	4A29052	01/29/04	01/30/04	EPA 7470A	J
MW-45 (A) (P4A0306-16) Water Sampled: 01/16/04 11:10 Received: 01/17/04 10:02										
Calcium	24.1	0.0360	0.250	mg/l	1	4A26036	01/26/04	01/28/04	EPA 6010B	
Iron	0.798	0.0620	0.150	"	"	"	"	"	"	
Mercury	ND	0.0000700	0.000200	"	"	4A29052	01/29/04	01/30/04	EPA 7470A	U
Potassium	4.38	0.255	2.00	"	"	4A26036	01/26/04	01/30/04	EPA 6010B	
Magnesium	7.53	0.0180	0.500	"	"	"	"	01/28/04	"	
Sodium	13.2	0.0420	0.250	"	"	"	"	"	"	

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Gasoline Hydrocarbons per NW TPH-Gx Method - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010477: Prepared 01/19/04 Using EPA 5030B

Blank (4010477-BLK1)

Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l							U
Surrogate: 4-BFB	50.0			"	50.0		100	50-150			

LCS (4010477-BS1)

Gasoline Range Hydrocarbons	1210	50.0	80.0	ug/l	1250		96.8	70-130			
Surrogate: 4-BFB	52.7			"	50.0		105	50-150			

LCS Dup (4010477-BSD1)

Gasoline Range Hydrocarbons	1190	50.0	80.0	ug/l	1250		95.2	70-130	1.67	40	
Surrogate: 4-BFB	52.3			"	50.0		105	50-150			

Duplicate (4010477-DUP1)

Source: P4A0306-01

Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l		ND				40	U
Surrogate: 4-BFB	46.1			"	50.0		92.2	50-150			

Duplicate (4010477-DUP2)

Source: P4A0306-12

Gasoline Range Hydrocarbons	234	50.0	80.0	ug/l		291			21.7	40	
Surrogate: 4-BFB	54.8			"	50.0		110	50-150			

Batch 4010524: Prepared 01/20/04 Using EPA 5030B

Blank (4010524-BLK1)

Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l							U
Surrogate: 4-BFB	50.5			"	50.0		101	50-150			

LCS (4010524-BS1)

Gasoline Range Hydrocarbons	1160	50.0	80.0	ug/l	1250		92.8	70-130			
Surrogate: 4-BFB	50.0			"	50.0		100	50-150			

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 14:42

Gasoline Hydrocarbons per NW TPH-Gx Method - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010524: Prepared 01/20/04 Using EPA 5030B

LCS Dup (4010524-BSD1)

Gasoline Range Hydrocarbons	1090	50.0	80.0	ug/l	1250		87.2	70-130	6.22	40	
Surrogate: 4-BFB	48.2			"	50.0		96.4	50-150			

Duplicate (4010524-DUP1)

Source: P4A0363-01

Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l		ND				40	U
Surrogate: 4-BFB	47.6			"	50.0		95.2	50-150			

Batch 4010570: Prepared 01/21/04 Using EPA 5030B

Blank (4010570-BLK1)

Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l							U
Surrogate: 4-BFB	44.6			"	50.0		89.2	50-150			

LCS (4010570-BS2)

Gasoline Range Hydrocarbons	1180	50.0	80.0	ug/l	1250		94.4	70-130			
Surrogate: 4-BFB	52.6			"	50.0		105	50-150			

LCS Dup (4010570-BSD2)

Gasoline Range Hydrocarbons	1160	50.0	80.0	ug/l	1250		92.8	70-130	1.71	40	
Surrogate: 4-BFB	52.6			"	50.0		105	50-150			

Duplicate (4010570-DUP1)

Source: P4A0432-01

Gasoline Range Hydrocarbons	942	50.0	80.0	ug/l		778			19.1	40	
Surrogate: 4-BFB	64.0			"	50.0		128	50-150			

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4010516: Prepared 01/20/04 Using EPA 3510 Fuels											
Blank (4010516-BLK1)											
Diesel Range Organics	ND	0.153	0.250	mg/l							U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"							U
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.0866</i>			"	<i>0.0960</i>		<i>90.2</i>	<i>50-150</i>			
LCS (4010516-BS1)											
Diesel Range Organics	2.10	0.153	0.250	mg/l	2.50		84.0	50-150			
Heavy Oil Range Hydrocarbons	1.27	0.286	0.500	"	1.50		84.7	50-150			
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.0856</i>			"	<i>0.0960</i>		<i>89.2</i>	<i>50-150</i>			
LCS Dup (4010516-BSD1)											
Diesel Range Organics	2.25	0.153	0.250	mg/l	2.50		90.0	50-150	6.90	50	
Heavy Oil Range Hydrocarbons	1.32	0.286	0.500	"	1.50		88.0	50-150	3.86	50	
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.0992</i>			"	<i>0.0960</i>		<i>103</i>	<i>50-150</i>			
Matrix Spike (4010516-MS1) Source: P4A0306-12											
Diesel Range Organics	3.02	0.153	0.250	mg/l	2.36	0.806	93.8	50-150			
Heavy Oil Range Hydrocarbons	1.31	0.286	0.500	"	1.42	ND	92.3	50-150			
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.0882</i>			"	<i>0.0906</i>		<i>97.4</i>	<i>50-150</i>			
Matrix Spike Dup (4010516-MSD1) Source: P4A0306-12											
Diesel Range Organics	3.03	0.153	0.250	mg/l	2.36	0.806	94.2	50-150	0.331	50	
Heavy Oil Range Hydrocarbons	1.34	0.286	0.500	"	1.42	ND	94.4	50-150	2.26	50	
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.0895</i>			"	<i>0.0906</i>		<i>98.8</i>	<i>50-150</i>			

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

Total Metals per EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010811: Prepared 01/27/04 Using EPA 200/3005

Blank (4010811-BLK1)

Arsenic	ND	0.000964	0.00100	mg/l							U
Barium	0.000810	0.0000910	0.00100	"							J
Cadmium	ND	0.000178	0.00100	"							U
Chromium	ND	0.000791	0.00100	"							U
Lead	0.0000900	0.0000870	0.00100	"							J
Manganese	0.000200	0.0000136	0.00200	"							J
Selenium	ND	0.000566	0.00100	"							U
Silver	ND	0.0000460	0.00100	"							U

LCS (4010811-BS1)

Arsenic	0.0984	0.000964	0.00100	mg/l	0.100		98.4	80-120			
Barium	0.105	0.0000910	0.00100	"	0.100		105	80-120			
Cadmium	0.0988	0.000178	0.00100	"	0.100		98.8	80-120			
Chromium	0.109	0.000791	0.00100	"	0.100		109	80-120			
Lead	0.0969	0.0000870	0.00100	"	0.100		96.9	80-120			
Manganese	0.107	0.0000136	0.00200	"	0.100		107	80-120			
Selenium	0.0914	0.000566	0.00100	"	0.100		91.4	80-120			
Silver	0.0528	0.0000460	0.00100	"	0.0500		106	80-120			

Duplicate (4010811-DUP1)

Source: P4A0306-12

Arsenic	0.00226	0.000964	0.00100	mg/l		0.00229			1.32	20	
Barium	0.0107	0.0000910	0.00100	"		0.0112			4.57	20	
Cadmium	ND	0.000178	0.00100	"		ND				20	U
Chromium	ND	0.000791	0.00100	"		0.000880				20	U
Lead	0.000510	0.0000870	0.00100	"		0.000570			11.1	20	J
Manganese	0.142	0.0000136	0.00200	"		0.146			2.78	20	
Selenium	ND	0.000566	0.00100	"		0.000900				20	U
Silver	ND	0.0000460	0.00100	"		ND				20	U

North Creek Analytical - Portland

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Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

Total Metals per EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010811: Prepared 01/27/04 Using EPA 200/3005

Matrix Spike (4010811-MS1)

Source: P4A0306-12

Arsenic	0.0994	0.000964	0.00100	mg/l	0.100	0.00229	97.1	75-125			
Barium	0.109	0.0000910	0.00100	"	0.100	0.0112	97.8	75-125			
Cadmium	0.0971	0.000178	0.00100	"	0.100	ND	97.1	75-125			
Chromium	0.105	0.000791	0.00100	"	0.100	0.000880	104	75-125			
Lead	0.0959	0.0000870	0.00100	"	0.100	0.000570	95.3	75-125			
Manganese	0.244	0.0000136	0.00200	"	0.100	0.146	98.0	75-125			
Selenium	0.0993	0.000566	0.00100	"	0.100	0.000900	98.4	75-125			
Silver	0.0507	0.0000460	0.00100	"	0.0500	ND	101	75-125			

Matrix Spike Dup (4010811-MSD1)

Source: P4A0306-12

Arsenic	0.101	0.000964	0.00100	mg/l	0.100	0.00229	98.7	75-125	1.60	20	
Barium	0.112	0.0000910	0.00100	"	0.100	0.0112	101	75-125	2.71	20	
Cadmium	0.102	0.000178	0.00100	"	0.100	ND	102	75-125	4.92	20	
Chromium	0.108	0.000791	0.00100	"	0.100	0.000880	107	75-125	2.82	20	
Lead	0.0963	0.0000870	0.00100	"	0.100	0.000570	95.7	75-125	0.416	20	
Manganese	0.249	0.0000136	0.00200	"	0.100	0.146	103	75-125	2.03	20	
Selenium	0.0991	0.000566	0.00100	"	0.100	0.000900	98.2	75-125	0.202	20	
Silver	0.0519	0.0000460	0.00100	"	0.0500	ND	104	75-125	2.34	20	

North Creek Analytical - Portland

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

Dissolved Metals per EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010650: Prepared 01/22/04 Using EPA 200/3005 Diss

Blank (4010650-BLK1)

Arsenic	ND	0.000964	0.00100	mg/l							U
Barium	ND	0.0000910	0.00100	"							U
Cadmium	ND	0.0000730	0.00100	"							U
Chromium	ND	0.000791	0.00100	"							U
Lead	0.000100	0.0000870	0.00100	"							J
Selenium	ND	0.000566	0.00100	"							U
Silver	ND	0.0000460	0.00100	"							U

LCS (4010650-BS1)

Arsenic	0.104	0.000964	0.00100	mg/l	0.100		104	80-120			
Barium	0.106	0.0000910	0.00100	"	0.100		106	80-120			
Cadmium	0.104	0.0000730	0.00100	"	0.100		104	80-120			
Chromium	0.106	0.000791	0.00100	"	0.100		106	80-120			
Lead	0.110	0.0000870	0.00100	"	0.100		110	80-120			
Selenium	0.0989	0.000566	0.00100	"	0.100		98.9	80-120			
Silver	0.0548	0.0000460	0.00100	"	0.0500		110	80-120			

Duplicate (4010650-DUP1)

Source: P4A0306-04

Arsenic	0.00215	0.000964	0.00100	mg/l		0.00140			42.3	20	Q-06
Barium	0.0619	0.0000910	0.00100	"		0.0609			1.63	20	
Cadmium	ND	0.0000730	0.00100	"		ND				20	U
Chromium	ND	0.000791	0.00100	"		ND				20	U
Lead	0.000370	0.0000870	0.00100	"		0.000380			2.67	20	J
Selenium	0.00185	0.000566	0.00100	"		0.00141			27.0	20	Q-06
Silver	ND	0.0000460	0.00100	"		ND				20	U

Matrix Spike (4010650-MS1)

Source: P4A0306-04

Arsenic	0.105	0.000964	0.00100	mg/l	0.100	0.00140	104	75-125			
Barium	0.164	0.0000910	0.00100	"	0.100	0.0609	103	75-125			
Cadmium	0.102	0.0000730	0.00100	"	0.100	ND	102	75-125			
Chromium	0.105	0.000791	0.00100	"	0.100	ND	105	75-125			
Lead	0.104	0.0000870	0.00100	"	0.100	0.000380	104	75-125			
Selenium	0.0979	0.000566	0.00100	"	0.100	0.00141	96.5	75-125			
Silver	0.0527	0.0000460	0.00100	"	0.0500	ND	105	75-125			

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

Dissolved Metals per EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010650: Prepared 01/22/04 Using EPA 200/3005 Diss

Matrix Spike (4010650-MS2)

Source: P4A0346-01

Arsenic	0.107	0.000964	0.00100	mg/l	0.100	0.00275	104	75-125			
Barium	0.142	0.0000910	0.00100	"	0.100	0.0370	105	75-125			
Cadmium	0.103	0.0000730	0.00100	"	0.100	ND	103	75-125			
Chromium	0.108	0.000791	0.00100	"	0.100	0.00100	107	75-125			
Lead	0.106	0.0000870	0.00100	"	0.100	0.000170	106	75-125			
Selenium	0.103	0.000566	0.00100	"	0.100	0.000660	102	75-125			
Silver	0.0542	0.0000460	0.00100	"	0.0500	ND	108	75-125			

Batch 4010957: Prepared 01/30/04 Using EPA 7470A

Blank (4010957-BLK1)

Mercury	ND	0.0000630	0.000200	mg/l							U
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LCS (4010957-BS1)

Mercury	0.00461	0.0000630	0.000200	mg/l	0.00500		92.2	85-115			
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Duplicate (4010957-DUP1)

Source: P4A0208-10

Mercury	ND	0.0000630	0.000200	mg/l		ND				20	U
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Matrix Spike (4010957-MS1)

Source: P4A0208-10

Mercury	0.00440	0.0000630	0.000200	mg/l	0.00500	ND	88.0	75-125			
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North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Selected Volatile Organic Compounds per EPA Method 8260B - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010494: Prepared 01/19/04 Using EPA 5030B

Blank (4010494-BLK1)

1,2-Dibromoethane	ND	0.187	0.500	ug/l							U
1,2-Dichloroethane	ND	0.142	0.500	"							U
Benzene	ND	0.147	0.500	"							U
Toluene	ND	0.155	0.500	"							U
Ethylbenzene	ND	0.110	0.500	"							U
Xylenes (total)	ND	0.262	1.00	"							U
Methyl tert-butyl ether	ND	0.0865	2.00	"							U
Naphthalene	ND	0.0989	2.00	"							U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"							U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"							U
Isopropylbenzene	ND	0.107	2.00	"							U
n-Propylbenzene	ND	0.138	0.500	"							U
Surrogate: 4-BFB	18.5			"	20.0		92.5	75-120			
Surrogate: 1,2-DCA-d4	20.9			"	20.0		104	77-129			
Surrogate: Dibromofluoromethane	20.5			"	20.0		102	80-121			
Surrogate: Toluene-d8	20.3			"	20.0		102	80-120			

LCS (4010494-BS1)

Benzene	20.4	0.147	0.500	ug/l	20.0		102	80-120			
Toluene	21.0	0.155	0.500	"	20.0		105	80-124			
Ethylbenzene	20.5	0.110	0.500	"	20.0		102	80-120			
Xylenes (total)	62.7	0.262	1.00	"	60.0		104	73-124			
Methyl tert-butyl ether	21.9	0.0865	2.00	"	20.0		110	80-129			
Naphthalene	20.7	0.0989	2.00	"	20.0		104	72-149			
Surrogate: 4-BFB	19.8			"	20.0		99.0	75-120			
Surrogate: 1,2-DCA-d4	21.7			"	20.0		108	77-129			
Surrogate: Dibromofluoromethane	21.5			"	20.0		108	80-121			
Surrogate: Toluene-d8	21.2			"	20.0		106	80-120			

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

Selected Volatile Organic Compounds per EPA Method 8260B - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010494: Prepared 01/19/04 Using EPA 5030B

Matrix Spike (4010494-MS1)

Source: P4A0306-12

Benzene	23.4	0.147	0.500	ug/l	20.0	3.37	100	80-124			
Toluene	18.6	0.155	0.500	"	20.0	0.280	91.6	79.7-131			
Ethylbenzene	31.1	0.110	0.500	"	20.0	10.8	102	80-124			
Xylenes (total)	80.4	0.262	1.00	"	60.0	28.8	86.0	44.6-154			
Methyl tert-butyl ether	20.4	0.0865	2.00	"	20.0	ND	102	80-130			
Naphthalene	47.9	0.0989	2.00	"	20.0	23.4	122	69-163			
Surrogate: 4-BFB	20.2			"	20.0		101	75-120			
Surrogate: 1,2-DCA-d4	20.9			"	20.0		104	77-129			
Surrogate: Dibromofluoromethane	21.2			"	20.0		106	80-121			
Surrogate: Toluene-d8	19.8			"	20.0		99.0	80-120			

Matrix Spike Dup (4010494-MSD1)

Source: P4A0306-12

Benzene	23.1	0.147	0.500	ug/l	20.0	3.37	98.6	80-124	1.29	25	
Toluene	17.5	0.155	0.500	"	20.0	0.280	86.1	79.7-131	6.09	25	
Ethylbenzene	28.4	0.110	0.500	"	20.0	10.8	88.0	80-124	9.08	25	
Xylenes (total)	67.3	0.262	1.00	"	60.0	28.8	64.2	44.6-154	17.7	25	
Methyl tert-butyl ether	20.2	0.0865	2.00	"	20.0	ND	101	80-130	0.985	25	
Naphthalene	47.6	0.0989	2.00	"	20.0	23.4	121	69-163	0.628	25	
Surrogate: 4-BFB	19.5			"	20.0		97.5	75-120			
Surrogate: 1,2-DCA-d4	20.6			"	20.0		103	77-129			
Surrogate: Dibromofluoromethane	20.5			"	20.0		102	80-121			
Surrogate: Toluene-d8	19.3			"	20.0		96.5	80-120			

Batch 4010542: Prepared 01/20/04 Using EPA 5030B

Blank (4010542-BLK1)

1,2-Dibromoethane	ND	0.187	0.500	ug/l							U
1,2-Dichloroethane	ND	0.142	0.500	"							U
Benzene	ND	0.147	0.500	"							U
Toluene	ND	0.155	0.500	"							U
Ethylbenzene	ND	0.110	0.500	"							U
Xylenes (total)	ND	0.262	1.00	"							U
Methyl tert-butyl ether	ND	0.0865	2.00	"							U
Naphthalene	ND	0.0989	2.00	"							U

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Selected Volatile Organic Compounds per EPA Method 8260B - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010542: Prepared 01/20/04 Using EPA 5030B

Blank (4010542-BLK1)

1,2,4-Trimethylbenzene	ND	0.0884	1.00	ug/l							U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"							U
Isopropylbenzene	ND	0.107	2.00	"							U
n-Propylbenzene	ND	0.138	0.500	"							U
<i>Surrogate: 4-BFB</i>	18.2			"	20.0		91.0	75-120			
<i>Surrogate: 1,2-DCA-d4</i>	20.6			"	20.0		103	77-129			
<i>Surrogate: Dibromofluoromethane</i>	20.5			"	20.0		102	80-121			
<i>Surrogate: Toluene-d8</i>	20.2			"	20.0		101	80-120			

LCS (4010542-BS1)

Benzene	19.2	0.147	0.500	ug/l	20.0		96.0	80-120			
Toluene	19.7	0.155	0.500	"	20.0		98.5	80-124			
Ethylbenzene	19.6	0.110	0.500	"	20.0		98.0	80-120			
Xylenes (total)	60.4	0.262	1.00	"	60.0		101	73-124			
Methyl tert-butyl ether	21.3	0.0865	2.00	"	20.0		106	80-129			
Naphthalene	20.2	0.0989	2.00	"	20.0		101	72-149			
<i>Surrogate: 4-BFB</i>	20.5			"	20.0		102	75-120			
<i>Surrogate: 1,2-DCA-d4</i>	20.5			"	20.0		102	77-129			
<i>Surrogate: Dibromofluoromethane</i>	20.8			"	20.0		104	80-121			
<i>Surrogate: Toluene-d8</i>	21.0			"	20.0		105	80-120			

Matrix Spike (4010542-MS1)

Source: P4A0346-01

Benzene	19.8	0.147	0.500	ug/l	20.0	ND	99.0	80-124			
Toluene	19.8	0.155	0.500	"	20.0	ND	99.0	79.7-131			
Ethylbenzene	20.3	0.110	0.500	"	20.0	ND	102	80-124			
Xylenes (total)	57.2	0.262	1.00	"	60.0	ND	95.3	44.6-154			
Methyl tert-butyl ether	20.1	0.0865	2.00	"	20.0	ND	100	80-130			
Naphthalene	18.4	0.0989	2.00	"	20.0	ND	92.0	69-163			
<i>Surrogate: 4-BFB</i>	20.1			"	20.0		100	75-120			
<i>Surrogate: 1,2-DCA-d4</i>	20.2			"	20.0		101	77-129			
<i>Surrogate: Dibromofluoromethane</i>	20.8			"	20.0		104	80-121			
<i>Surrogate: Toluene-d8</i>	20.6			"	20.0		103	80-120			

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Selected Volatile Organic Compounds per EPA Method 8260B - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010542: Prepared 01/20/04 Using EPA 5030B

Matrix Spike Dup (4010542-MSD1)

Source: P4A0346-01

Benzene	20.0	0.147	0.500	ug/l	20.0	ND	100	80-124	1.01	25	
Toluene	17.7	0.155	0.500	"	20.0	ND	88.5	79.7-131	11.2	25	
Ethylbenzene	17.8	0.110	0.500	"	20.0	ND	89.0	80-124	13.1	25	
Xylenes (total)	42.4	0.262	1.00	"	60.0	ND	70.7	44.6-154	29.7	25	Q-01
Methyl tert-butyl ether	20.7	0.0865	2.00	"	20.0	ND	104	80-130	2.94	25	
Naphthalene	19.0	0.0989	2.00	"	20.0	ND	95.0	69-163	3.21	25	
<i>Surrogate: 4-BFB</i>	<i>19.7</i>			<i>"</i>	<i>20.0</i>		<i>98.5</i>	<i>75-120</i>			
<i>Surrogate: 1,2-DCA-d4</i>	<i>19.9</i>			<i>"</i>	<i>20.0</i>		<i>99.5</i>	<i>77-129</i>			
<i>Surrogate: Dibromofluoromethane</i>	<i>20.2</i>			<i>"</i>	<i>20.0</i>		<i>101</i>	<i>80-121</i>			
<i>Surrogate: Toluene-d8</i>	<i>19.2</i>			<i>"</i>	<i>20.0</i>		<i>96.0</i>	<i>80-120</i>			

Batch 4010572: Prepared 01/21/04 Using EPA 5030B

Blank (4010572-BLK1)

1,2-Dibromoethane	ND	0.187	0.500	ug/l							U
1,2-Dichloroethane	ND	0.142	0.500	"							U
Benzene	ND	0.147	0.500	"							U
Toluene	ND	0.155	0.500	"							U
Ethylbenzene	ND	0.110	0.500	"							U
Xylenes (total)	ND	0.262	1.00	"							U
Methyl tert-butyl ether	ND	0.0865	2.00	"							U
Naphthalene	0.160	0.0989	2.00	"							J
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"							U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"							U
Isopropylbenzene	ND	0.107	2.00	"							U
n-Propylbenzene	ND	0.138	0.500	"							U
<i>Surrogate: 4-BFB</i>	<i>20.3</i>			<i>"</i>	<i>20.0</i>		<i>102</i>	<i>75-120</i>			
<i>Surrogate: 1,2-DCA-d4</i>	<i>20.2</i>			<i>"</i>	<i>20.0</i>		<i>101</i>	<i>77-129</i>			
<i>Surrogate: Dibromofluoromethane</i>	<i>19.4</i>			<i>"</i>	<i>20.0</i>		<i>97.0</i>	<i>80-121</i>			
<i>Surrogate: Toluene-d8</i>	<i>20.5</i>			<i>"</i>	<i>20.0</i>		<i>102</i>	<i>80-120</i>			

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Selected Volatile Organic Compounds per EPA Method 8260B - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010572: Prepared 01/21/04 Using EPA 5030B

LCS (4010572-BS1)

Benzene	21.5	0.147	0.500	ug/l	20.0		108	80-120			
Toluene	21.9	0.155	0.500	"	20.0		110	80-124			
Ethylbenzene	22.1	0.110	0.500	"	20.0		110	80-120			
Xylenes (total)	67.6	0.262	1.00	"	60.0		113	73-124			
Methyl tert-butyl ether	22.6	0.0865	2.00	"	20.0		113	80-129			
Naphthalene	25.2	0.0989	2.00	"	20.0		126	72-149			
<i>Surrogate: 4-BFB</i>	20.9			"	20.0		104	75-120			
<i>Surrogate: 1,2-DCA-d4</i>	20.0			"	20.0		100	77-129			
<i>Surrogate: Dibromofluoromethane</i>	20.4			"	20.0		102	80-121			
<i>Surrogate: Toluene-d8</i>	20.9			"	20.0		104	80-120			

Matrix Spike (4010572-MS1)

Source: P4A0363-02

Benzene	20.1	0.147	0.500	ug/l	20.0	ND	100	80-124			
Toluene	19.6	0.155	0.500	"	20.0	ND	98.0	79.7-131			
Ethylbenzene	17.6	0.110	0.500	"	20.0	ND	88.0	80-124			
Xylenes (total)	50.4	0.262	1.00	"	60.0	ND	84.0	44.6-154			
Methyl tert-butyl ether	20.9	0.0865	2.00	"	20.0	ND	104	80-130			
Naphthalene	19.5	0.0989	2.00	"	20.0	ND	97.5	69-163			
<i>Surrogate: 4-BFB</i>	20.9			"	20.0		104	75-120			
<i>Surrogate: 1,2-DCA-d4</i>	20.3			"	20.0		102	77-129			
<i>Surrogate: Dibromofluoromethane</i>	20.4			"	20.0		102	80-121			
<i>Surrogate: Toluene-d8</i>	20.7			"	20.0		104	80-120			

Matrix Spike Dup (4010572-MSD1)

Source: P4A0363-02

Benzene	20.8	0.147	0.500	ug/l	20.0	ND	104	80-124	3.42	25	
Toluene	19.7	0.155	0.500	"	20.0	ND	98.5	79.7-131	0.509	25	
Ethylbenzene	18.6	0.110	0.500	"	20.0	ND	93.0	80-124	5.52	25	
Xylenes (total)	50.9	0.262	1.00	"	60.0	ND	84.8	44.6-154	0.987	25	
Methyl tert-butyl ether	21.4	0.0865	2.00	"	20.0	ND	107	80-130	2.36	25	
Naphthalene	20.4	0.0989	2.00	"	20.0	ND	102	69-163	4.51	25	
<i>Surrogate: 4-BFB</i>	20.8			"	20.0		104	75-120			
<i>Surrogate: 1,2-DCA-d4</i>	20.2			"	20.0		101	77-129			
<i>Surrogate: Dibromofluoromethane</i>	20.3			"	20.0		102	80-121			

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Selected Volatile Organic Compounds per EPA Method 8260B - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010572: Prepared 01/21/04 Using EPA 5030B

Matrix Spike Dup (4010572-MSD1)

Source: P4A0363-02

Surrogate: Toluene-d8 20.6 ug/l 20.0 103 80-120

Batch 4010633: Prepared 01/22/04 Using EPA 5030B

Blank (4010633-BLK1)

1,2-Dibromoethane	ND	0.187	0.500	ug/l							U
1,2-Dichloroethane	ND	0.142	0.500	"							U
Benzene	ND	0.147	0.500	"							U
Toluene	ND	0.155	0.500	"							U
Ethylbenzene	ND	0.110	0.500	"							U
Xylenes (total)	ND	0.262	1.00	"							U
Methyl tert-butyl ether	ND	0.0865	2.00	"							U
Naphthalene	ND	0.0989	2.00	"							U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"							U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"							U
Isopropylbenzene	ND	0.107	2.00	"							U
n-Propylbenzene	ND	0.138	0.500	"							U

Surrogate: 4-BFB 18.6 " 20.0 93.0 75-120
Surrogate: 1,2-DCA-d4 21.6 " 20.0 108 77-129
Surrogate: Dibromofluoromethane 21.6 " 20.0 108 80-121
Surrogate: Toluene-d8 20.5 " 20.0 102 80-120

LCS (4010633-BS1)

Benzene	21.8	0.147	0.500	ug/l	20.0	109	80-120
Toluene	23.2	0.155	0.500	"	20.0	116	80-124
Ethylbenzene	23.0	0.110	0.500	"	20.0	115	80-120
Xylenes (total)	71.2	0.262	1.00	"	60.0	119	73-124
Methyl tert-butyl ether	24.6	0.0865	2.00	"	20.0	123	80-129
Naphthalene	25.0	0.0989	2.00	"	20.0	125	72-149
<i>Surrogate: 4-BFB</i>	20.1			"	20.0	100	75-120
<i>Surrogate: 1,2-DCA-d4</i>	20.9			"	20.0	104	77-129
<i>Surrogate: Dibromofluoromethane</i>	20.8			"	20.0	104	80-121
<i>Surrogate: Toluene-d8</i>	20.5			"	20.0	102	80-120

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

Selected Volatile Organic Compounds per EPA Method 8260B - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010633: Prepared 01/22/04 Using EPA 5030B

Matrix Spike (4010633-MS1)

Source: P4A0399-01

Benzene	19.4	0.147	0.500	ug/l	20.0	ND	97.0	80-124			
Toluene	18.3	0.155	0.500	"	20.0	ND	91.5	79.7-131			
Ethylbenzene	18.3	0.110	0.500	"	20.0	ND	91.5	80-124			
Xylenes (total)	48.4	0.262	1.00	"	60.0	ND	80.7	44.6-154			
Methyl tert-butyl ether	20.1	0.0865	2.00	"	20.0	ND	100	80-130			
Naphthalene	15.9	0.0989	2.00	"	20.0	ND	79.5	69-163			
Surrogate: 4-BFB	18.5			"	20.0		92.5	75-120			
Surrogate: 1,2-DCA-d4	19.8			"	20.0		99.0	77-129			
Surrogate: Dibromofluoromethane	19.9			"	20.0		99.5	80-121			
Surrogate: Toluene-d8	19.1			"	20.0		95.5	80-120			

Matrix Spike Dup (4010633-MSD1)

Source: P4A0399-01

Benzene	19.5	0.147	0.500	ug/l	20.0	ND	97.5	80-124	0.514	25	
Toluene	18.1	0.155	0.500	"	20.0	ND	90.5	79.7-131	1.10	25	
Ethylbenzene	18.2	0.110	0.500	"	20.0	ND	91.0	80-124	0.548	25	
Xylenes (total)	46.3	0.262	1.00	"	60.0	ND	77.2	44.6-154	4.44	25	
Methyl tert-butyl ether	20.6	0.0865	2.00	"	20.0	ND	103	80-130	2.46	25	
Naphthalene	15.7	0.0989	2.00	"	20.0	ND	78.5	69-163	1.27	25	
Surrogate: 4-BFB	19.2			"	20.0		96.0	75-120			
Surrogate: 1,2-DCA-d4	19.7			"	20.0		98.5	77-129			
Surrogate: Dibromofluoromethane	19.8			"	20.0		99.0	80-121			
Surrogate: Toluene-d8	18.5			"	20.0		92.5	80-120			

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
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Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010525: Prepared 01/20/04 Using EPA 3520/600 Series

Blank (4010525-BLK1)

Acenaphthene	ND	0.0500	0.0500	ug/l							U
Acenaphthylene	ND	0.0500	0.0500	"							U
Anthracene	ND	0.0500	0.0500	"							U
Benzo (a) anthracene	ND	0.0100	0.0100	"							U
Benzo (a) pyrene	ND	0.0100	0.0100	"							U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"							U
Benzo (ghi) perylene	ND	0.0500	0.0500	"							U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"							U
Chrysene	ND	0.0100	0.0100	"							U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"							U
Fluoranthene	ND	0.0500	0.0500	"							U
Fluorene	ND	0.0500	0.0500	"							U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"							U
Naphthalene	ND	0.0500	0.0500	"							U
Phenanthrene	ND	0.0500	0.0500	"							U
Pyrene	ND	0.0500	0.0500	"							U
Surrogate: Fluorene-d10	1.48			"	2.50		59.2	25-150			
Surrogate: Pyrene-d10	1.82			"	2.50		72.8	23-150			
Surrogate: Benzo (a) pyrene-d12	1.90			"	2.50		76.0	10-150			

LCS (4010525-BS1)

Acenaphthene	1.77	0.0500	0.0500	ug/l	2.50		70.8	26-150			
Benzo (a) pyrene	1.90	0.0100	0.0100	"	2.50		76.0	38-150			
Pyrene	1.83	0.0500	0.0500	"	2.50		73.2	33-150			
Surrogate: Fluorene-d10	1.53			"	2.50		61.2	25-150			
Surrogate: Pyrene-d10	1.92			"	2.50		76.8	23-150			
Surrogate: Benzo (a) pyrene-d12	1.98			"	2.50		79.2	10-150			

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Polynuclear Aromatic Compounds per EPA 8270M-SIM - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010525: Prepared 01/20/04 Using EPA 3520/600 Series

Matrix Spike (4010525-MS1)

Source: P4A0306-12

Acenaphthene	2.18	0.250	0.250	ug/l	2.36	0.598	67.0	26-135			D
Benzo (a) pyrene	1.25	0.0500	0.0500	"	2.36	ND	53.0	38-137			D
Pyrene	1.72	0.250	0.250	"	2.36	ND	72.9	33-133			D
<i>Surrogate: Fluorene-d10</i>	<i>1.39</i>			"	<i>2.36</i>		<i>58.9</i>	<i>25-150</i>			<i>D</i>
<i>Surrogate: Pyrene-d10</i>	<i>1.78</i>			"	<i>2.36</i>		<i>75.4</i>	<i>23-150</i>			<i>D</i>
<i>Surrogate: Benzo (a) pyrene-d12</i>	<i>1.39</i>			"	<i>2.36</i>		<i>58.9</i>	<i>10-150</i>			<i>D</i>

Matrix Spike Dup (4010525-MSD1)

Source: P4A0306-12

Acenaphthene	1.99	0.250	0.250	ug/l	2.36	0.598	59.0	26-135	9.11	60	D
Benzo (a) pyrene	1.20	0.0500	0.0500	"	2.36	ND	50.8	38-137	4.08	60	D
Pyrene	1.54	0.250	0.250	"	2.36	ND	65.3	33-133	11.0	60	D
<i>Surrogate: Fluorene-d10</i>	<i>1.24</i>			"	<i>2.36</i>		<i>52.5</i>	<i>25-150</i>			<i>D</i>
<i>Surrogate: Pyrene-d10</i>	<i>1.60</i>			"	<i>2.36</i>		<i>67.8</i>	<i>23-150</i>			<i>D</i>
<i>Surrogate: Benzo (a) pyrene-d12</i>	<i>1.32</i>			"	<i>2.36</i>		<i>55.9</i>	<i>10-150</i>			<i>D</i>

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Conventional Chemistry Parameters per APHA/EPA Methods - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4010732: Prepared 01/26/04 Using Wet Chem											
Blank (4010732-BLK1)											
Nitrate/Nitrite-Nitrogen	ND	0.00250	0.00500	mg/l							U
LCS (4010732-BS1)											
Nitrate/Nitrite-Nitrogen	0.0980	0.00250	0.00500	mg/l	0.100		98.0	85-115			
Duplicate (4010732-DUP1) Source: P4A0306-12											
Nitrate/Nitrite-Nitrogen	ND	0.250	0.500	mg/l		ND				20	D, U
Matrix Spike (4010732-MS1) Source: P4A0306-12											
Nitrate/Nitrite-Nitrogen	4.68	0.250	0.500	mg/l	5.00	ND	93.6	75-125			D
Matrix Spike Dup (4010732-MSD1) Source: P4A0306-12											
Nitrate/Nitrite-Nitrogen	4.48	0.250	0.500	mg/l	5.00	ND	89.6	75-125	4.37	20	D

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Anions per EPA Method 300.0 - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4010485: Prepared 01/19/04 Using Wet Chem											
Blank (4010485-BLK1)											
Chloride	ND	0.0508	0.500	mg/l							U
Sulfate	ND	0.0860	1.00	"							U
LCS (4010485-BS1)											
Chloride	9.73	0.0508	0.500	mg/l	10.0		97.3	90-110			
Sulfate	30.2	0.0860	1.00	"	30.0		101	90-110			
Duplicate (4010485-DUP1) Source: P4A0306-12											
Chloride	9.73	0.0508	0.500	mg/l		9.70			0.309	20	
Sulfate	3.36	0.0860	1.00	"		3.45			2.64	20	
Matrix Spike (4010485-MS1) Source: P4A0306-12											
Chloride	11.1	0.0564	0.556	mg/l	2.22	9.70	63.1	80-120			Q-02, D
Sulfate	7.97	0.0955	1.11	"	4.44	3.45	102	80-120			D
Matrix Spike Dup (4010485-MSD1) Source: P4A0306-12											
Chloride	11.1	0.0564	0.556	mg/l	2.22	9.70	63.1	80-120	0.00	20	Q-02, D
Sulfate	7.97	0.0955	1.11	"	4.44	3.45	102	80-120	0.00	20	D

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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 Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 14:42

Total Alkalinity by Conventional Chemistry Parameters per APHA/EPA Methods - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010622: Prepared 01/22/04 Using Wet Chem

Blank (4010622-BLK1)

Bicarbonate Alkalinity	0.483	0.208	10.0	mg/L as CaCO3							J
Carbonate Alkalinity	ND	0.208	10.0	"							U
Hydroxide Alkalinity	ND	0.208	10.0	"							U
Total Alkalinity	0.483	0.208	10.0	"							J

LCS (4010622-BS1)

Carbonate Alkalinity	110	0.208	10.0	mg/L as CaCO3	100		110	85-115			
Total Alkalinity	194	0.208	10.0	"	200		97.0	85-115			

LCS (4010622-BS2)

Bicarbonate Alkalinity	90.8	0.208	10.0	mg/L as CaCO3	100		90.8	85-115			
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Duplicate (4010622-DUP1)

Source: P4A0208-13

Bicarbonate Alkalinity	92.3	0.208	10.0	mg/L as CaCO3		92.7			0.432	20	
Carbonate Alkalinity	ND	0.208	10.0	"		ND				20	U
Hydroxide Alkalinity	ND	0.208	10.0	"		ND				20	U
Total Alkalinity	92.3	0.208	10.0	"		92.7			0.432	20	

Duplicate (4010622-DUP2)

Source: P4A0306-12

Bicarbonate Alkalinity	64.3	0.208	10.0	mg/L as CaCO3		63.7			0.938	20	
Carbonate Alkalinity	ND	0.208	10.0	"		ND				20	U
Hydroxide Alkalinity	ND	0.208	10.0	"		ND				20	U
Total Alkalinity	64.3	0.208	10.0	"		63.7			0.938	20	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Total Metals by EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4A26036: Prepared 01/26/04 Using EPA 3010A

Blank (4A26036-BLK1)

Calcium	ND	0.0360	0.250	mg/l							U
Iron	ND	0.0620	0.150	"							U
Magnesium	ND	0.0180	0.500	"							U
Potassium	ND	0.255	2.00	"							U
Sodium	0.0856	0.0420	0.250	"							J

LCS (4A26036-BS1)

Calcium	4.84	0.0360	0.250	mg/l	5.00		96.8	80-120			
Iron	5.11	0.0620	0.150	"	5.00		102	80-120			
Magnesium	5.18	0.0180	0.500	"	5.00		104	80-120			
Potassium	9.63	0.255	2.00	"	10.0		96.3	80-120			
Sodium	5.58	0.0420	0.250	"	5.00		112	80-120			

LCS Dup (4A26036-BSD1)

Calcium	4.90	0.0360	0.250	mg/l	5.00		98.0	80-120	1.23	20	
Iron	5.12	0.0620	0.150	"	5.00		102	80-120	0.195	20	
Magnesium	5.20	0.0180	0.500	"	5.00		104	80-120	0.385	20	
Potassium	9.74	0.255	2.00	"	10.0		97.4	80-120	1.14	20	
Sodium	5.53	0.0420	0.250	"	5.00		111	80-120	0.900	20	

Duplicate (4A26036-DUP1)

Source: P4A0306-12

Calcium	11.2	0.0360	0.250	mg/l		11.8			5.22	20	
Iron	12.3	0.0620	0.150	"		12.8			3.98	20	
Magnesium	4.98	0.0180	0.500	"		5.05			1.40	20	
Potassium	2.46	0.255	2.00	"		2.82			13.6	20	
Sodium	10.2	0.0420	0.250	"		10.2			0.00	20	

Duplicate (4A26036-DUP2)

Source: B4A0413-03

Calcium	18.9	0.0360	0.250	mg/l		19.7			4.15	20	
Iron	2.84	0.0620	0.150	"		3.01			5.81	20	
Magnesium	10.1	0.0180	0.500	"		10.4			2.93	20	
Potassium	4.72	0.255	2.00	"		5.05			6.76	20	
Sodium	23.9	0.0420	0.250	"		24.5			2.48	20	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Total Metals by EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4A26036: Prepared 01/26/04 Using EPA 3010A

Matrix Spike (4A26036-MS1)

Source: P4A0306-12

Calcium	16.5	0.0360	0.250	mg/l	5.00	11.8	94.0	75-125			
Iron	17.5	0.0620	0.150	"	5.00	12.8	94.0	75-125			
Magnesium	10.0	0.0180	0.500	"	5.00	5.05	99.0	80-120			
Potassium	12.6	0.255	2.00	"	10.0	2.82	97.8	80-120			
Sodium	15.1	0.0420	0.250	"	5.00	10.2	98.0	75-125			

Matrix Spike (4A26036-MS2)

Source: B4A0413-03

Calcium	24.4	0.0360	0.250	mg/l	5.00	19.7	94.0	75-125			
Iron	7.89	0.0620	0.150	"	5.00	3.01	97.6	75-125			
Magnesium	15.0	0.0180	0.500	"	5.00	10.4	92.0	80-120			
Potassium	14.8	0.255	2.00	"	10.0	5.05	97.5	80-120			
Sodium	28.8	0.0420	0.250	"	5.00	24.5	86.0	75-125			

Matrix Spike Dup (4A26036-MSD1)

Source: P4A0306-12

Calcium	16.9	0.0360	0.250	mg/l	5.00	11.8	102	75-125	2.40	20	
Iron	18.0	0.0620	0.150	"	5.00	12.8	104	75-125	2.82	20	
Magnesium	10.3	0.0180	0.500	"	5.00	5.05	105	80-120	2.96	20	
Potassium	13.0	0.255	2.00	"	10.0	2.82	102	80-120	3.12	20	
Sodium	15.7	0.0420	0.250	"	5.00	10.2	110	75-125	3.90	20	

Matrix Spike Dup (4A26036-MSD2)

Source: B4A0413-03

Calcium	24.7	0.0360	0.250	mg/l	5.00	19.7	100	75-125	1.22	20	
Iron	8.15	0.0620	0.150	"	5.00	3.01	103	75-125	3.24	20	
Magnesium	15.6	0.0180	0.500	"	5.00	10.4	104	80-120	3.92	20	
Potassium	15.1	0.255	2.00	"	10.0	5.05	100	80-120	2.01	20	
Sodium	30.1	0.0420	0.250	"	5.00	24.5	112	75-125	4.41	20	

Post Spike (4A26036-PS1)

Source: P4A0306-12

Calcium	15.8	0.0360	0.250	ug/ml	5.00	11.8	80.0	75-125			
Iron	17.1	0.0620	0.150	"	5.00	12.8	86.0	75-125			
Magnesium	9.84	0.0180	0.500	"	5.00	5.05	95.8	75-125			
Potassium	12.3	0.255	2.00	"	10.0	2.82	94.8	75-125			
Sodium	14.9	0.0420	0.250	"	5.00	10.2	94.0	75-125			

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

**Total Metals by EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4A26036: Prepared 01/26/04 Using EPA 3010A

Post Spike (4A26036-PS2)

Source: B4A0413-03

Calcium	23.6	0.0360	0.250	ug/ml	5.00	19.7	78.0	75-125			
Iron	7.97	0.0620	0.150	"	5.00	3.01	99.2	75-125			
Magnesium	15.2	0.0180	0.500	"	5.00	10.4	96.0	75-125			
Potassium	14.6	0.255	2.00	"	10.0	5.05	95.5	75-125			
Sodium	29.2	0.0420	0.250	"	5.00	24.5	94.0	75-125			

Batch 4A29052: Prepared 01/29/04 Using EPA 7470A

Blank (4A29052-BLK1)

Mercury	0.0000820	0.0000700	0.000200	mg/l							J
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LCS (4A29052-BS1)

Mercury	0.00502	0.0000700	0.000200	mg/l	0.00500		100	80-120			
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LCS Dup (4A29052-BSD1)

Mercury	0.00560	0.0000700	0.000200	mg/l	0.00500		112	80-120	10.9	20	
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Matrix Spike (4A29052-MS1)

Source: B4A0413-03

Mercury	0.00519	0.0000700	0.000200	mg/l	0.00500	0.000330	97.2	73-121			
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Matrix Spike Dup (4A29052-MSD1)

Source: B4A0413-03

Mercury	0.00569	0.0000700	0.000200	mg/l	0.00500	0.000330	107	73-121	9.19	20	
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North Creek Analytical - Portland

Joy D. Chang, Project Manager

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Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 14:42

Notes and Definitions

- A-01 The detected hydrocarbons appear to be due to gas and heavy range overlap as well as biogenic interference.
- A-02 The detected hydrocarbons appear to be due to gas overlap and biogenic interference, however, there may be heavily weathered diesel present as well.
- D Data reported from a preparation or analytical dilution.
- J Estimated value.
- Q-01 The spike recovery, and/or RPD, for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.
- Q-02 The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.
- Q-06 Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit.
- R-03 The reporting limit for this analyte was raised due to matrix interference.
- R-05 Reporting limits raised due to dilution necessary for analysis. Sample contains high levels of reported analyte, non-target analyte, and/or matrix interference.
- S-09 Surrogate recovery is outside control limits due to matrix interference.
- U Analyte included in the analysis but not detected.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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05 February 2004

Tom Calabrese
EnviroLogic Resources, Inc.
P.O. Box 80762
Portland, OR 97280-0762
RE: Astoria Area-Wide Petroleum Site RI-1

Enclosed are the results of analyses for samples received by the laboratory on 01/21/04 12:17. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Joy D. Chang
Project Manager



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EnviroLogic Resources, Inc.
 P.O. Box 80762
 Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 15:03

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-17(A)	P4A0432-01	Water	01/19/04 11:30	01/21/04 12:17
BM-17(A)	P4A0432-02	Water	01/19/04 11:30	01/21/04 12:17
MW-18(A)	P4A0432-03	Water	01/19/04 10:40	01/21/04 12:17
MW-16(A)	P4A0432-04	Water	01/19/04 09:30	01/21/04 12:17
MW-22(A)	P4A0432-05	Water	01/19/04 08:15	01/21/04 12:17
MW-28(A)	P4A0432-06	Water	01/19/04 14:50	01/21/04 12:17
MW-29(A)	P4A0432-07	Water	01/19/04 16:00	01/21/04 12:17
MW-40(A)	P4A0432-08	Water	01/20/04 08:00	01/21/04 12:17
Trip Blank	P4A0432-09	Water	01/20/04 08:00	01/21/04 12:17

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Gasoline Hydrocarbons per NW TPH-Gx Method
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-17(A) (P4A0432-01) Water Sampled: 01/19/04 11:30 Received: 01/21/04 12:17										
Gasoline Range Hydrocarbons	778	50.0	80.0	ug/l	1	4010570	01/21/04	01/21/04	NW TPH-G	
Surrogate: 4-BFB	125 %		50-150			"	"	"	"	
BM-17(A) (P4A0432-02) Water Sampled: 01/19/04 11:30 Received: 01/21/04 12:17										
Gasoline Range Hydrocarbons	1050	50.0	80.0	ug/l	1	4010570	01/21/04	01/21/04	NW TPH-G	
Surrogate: 4-BFB	143 %		50-150			"	"	"	"	
MW-18(A) (P4A0432-03) Water Sampled: 01/19/04 10:40 Received: 01/21/04 12:17										
Gasoline Range Hydrocarbons	830	50.0	80.0	ug/l	1	4010570	01/21/04	01/21/04	NW TPH-G	
Surrogate: 4-BFB	148 %		50-150			"	"	"	"	
MW-16(A) (P4A0432-04) Water Sampled: 01/19/04 09:30 Received: 01/21/04 12:17										
Gasoline Range Hydrocarbons	141	50.0	80.0	ug/l	1	4010570	01/21/04	01/21/04	NW TPH-G	
Surrogate: 4-BFB	107 %		50-150			"	"	"	"	
MW-22(A) (P4A0432-05) Water Sampled: 01/19/04 08:15 Received: 01/21/04 12:17										
Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l	1	4010570	01/21/04	01/22/04	NW TPH-G	U
Surrogate: 4-BFB	81.4 %		50-150			"	"	"	"	
MW-28(A) (P4A0432-06RE2) Water Sampled: 01/19/04 14:50 Received: 01/21/04 12:17										
Gasoline Range Hydrocarbons	13800	2500	4000	ug/l	50	4010678	01/23/04	01/23/04	NW TPH-G	D
Surrogate: 4-BFB	98.0 %		50-150			"	"	"	"	
MW-29(A) (P4A0432-07) Water Sampled: 01/19/04 16:00 Received: 01/21/04 12:17										
Gasoline Range Hydrocarbons	62000	2500	4000	ug/l	50	4010570	01/21/04	01/22/04	NW TPH-G	D
Surrogate: 4-BFB	104 %		50-150			"	"	"	"	

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 15:03

Gasoline Hydrocarbons per NW TPH-Gx Method
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-40(A) (P4A0432-08) Water Sampled: 01/20/04 08:00 Received: 01/21/04 12:17										
Gasoline Range Hydrocarbons	31400	500	800	ug/l	10	4010570	01/21/04	01/22/04	NW TPH-G	D
<i>Surrogate: 4-BFB</i>	<i>144 %</i>		<i>50-150</i>			"	"	"	"	

North Creek Analytical - Portland

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Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-17(A) (P4A0432-01) Water Sampled: 01/19/04 11:30 Received: 01/21/04 12:17										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010603	01/22/04	01/22/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	92.5 %		50-150			"	"	"	"	
BM-17(A) (P4A0432-02) Water Sampled: 01/19/04 11:30 Received: 01/21/04 12:17										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010603	01/22/04	01/22/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	97.6 %		50-150			"	"	"	"	
MW-18(A) (P4A0432-03) Water Sampled: 01/19/04 10:40 Received: 01/21/04 12:17										
Diesel Range Organics	0.807	0.153	0.250	mg/l	1	4010603	01/22/04	01/22/04	NWTPH-Dx	D-17
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	96.9 %		50-150			"	"	"	"	
MW-16(A) (P4A0432-04) Water Sampled: 01/19/04 09:30 Received: 01/21/04 12:17										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010603	01/22/04	01/22/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	95.8 %		50-150			"	"	"	"	
MW-22(A) (P4A0432-05) Water Sampled: 01/19/04 08:15 Received: 01/21/04 12:17										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010603	01/22/04	01/22/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	96.0 %		50-150			"	"	"	"	
MW-28(A) (P4A0432-06) Water Sampled: 01/19/04 14:50 Received: 01/21/04 12:17										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010603	01/22/04	01/22/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"	"	"	"	"	"	U
Surrogate: 1-Chlorooctadecane	91.2 %		50-150			"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
 P.O. Box 80762
 Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 15:03

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-29(A) (P4A0432-07) Water Sampled: 01/19/04 16:00 Received: 01/21/04 12:17										
Diesel Range Organics	ND	0.153	0.250	mg/l	1	4010603	01/22/04	01/22/04	NWTPH-Dx	U
Heavy Oil Range Hydrocarbons	0.310	0.286	0.500	"	"	"	"	"	"	J
Surrogate: 1-Chlorooctadecane	86.1 %		50-150			"	"	"	"	
MW-40(A) (P4A0432-08) Water Sampled: 01/20/04 08:00 Received: 01/21/04 12:17										
Diesel Range Organics	9.38	0.153	0.250	mg/l	1	4010603	01/22/04	01/22/04	NWTPH-Dx	A-01
Heavy Oil Range Hydrocarbons	0.598	0.286	0.500	"	"	"	"	"	"	D-15
Surrogate: 1-Chlorooctadecane	111 %		50-150			"	"	"	"	

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-17(A) (P4A0432-01) Water Sampled: 01/19/04 11:30 Received: 01/21/04 12:17										
Silver	ND	0.0000460	0.00100	mg/l	1	4010812	01/27/04	01/29/04	EPA 6020	U
Arsenic	0.00177	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0326	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	"	"	U
Lead	0.00203	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	0.00107	0.000566	0.00100	"	"	"	"	01/30/04	"	
BM-17(A) (P4A0432-02) Water Sampled: 01/19/04 11:30 Received: 01/21/04 12:17										
Silver	ND	0.0000460	0.00100	mg/l	1	4010812	01/27/04	01/29/04	EPA 6020	U
Arsenic	0.00122	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0332	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	01/30/04	"	U
Lead	0.00197	0.0000870	0.00100	"	"	"	"	01/29/04	"	
Selenium	0.00127	0.000566	0.00100	"	"	"	"	01/30/04	"	
MW-18(A) (P4A0432-03) Water Sampled: 01/19/04 10:40 Received: 01/21/04 12:17										
Silver	ND	0.0000460	0.00100	mg/l	1	4010812	01/27/04	01/29/04	EPA 6020	U
Arsenic	ND	0.000964	0.00100	"	"	"	"	"	"	U
Barium	0.0670	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00406	0.000791	0.00100	"	"	"	"	01/30/04	"	
Manganese	1.53	0.0000272	0.00400	"	2	"	"	01/30/04	"	R-02, D
Lead	0.00781	0.0000870	0.00100	"	1	"	"	01/29/04	"	
Selenium	0.00128	0.000566	0.00100	"	"	"	"	01/30/04	"	

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

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02/05/04 15:03

**Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-16(A) (P4A0432-04) Water Sampled: 01/19/04 09:30 Received: 01/21/04 12:17										
Silver	ND	0.0000460	0.00100	mg/l	1	4010812	01/27/04	01/29/04	EPA 6020	U
Arsenic	0.00260	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0425	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00139	0.000791	0.00100	"	"	"	"	01/30/04	"	
Manganese	0.458	0.0000136	0.00200	"	"	"	"	01/29/04	"	
Lead	0.148	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	0.00135	0.000566	0.00100	"	"	"	"	01/30/04	"	
MW-22(A) (P4A0432-05) Water Sampled: 01/19/04 08:15 Received: 01/21/04 12:17										
Silver	ND	0.0000460	0.00100	mg/l	1	4010812	01/27/04	01/29/04	EPA 6020	U
Arsenic	0.00169	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0260	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00203	0.000791	0.00100	"	"	"	"	01/30/04	"	
Manganese	0.337	0.0000136	0.00200	"	"	"	"	01/29/04	"	
Lead	0.00135	0.0000870	0.00100	"	"	"	"	"	"	
Selenium	0.00117	0.000566	0.00100	"	"	"	"	01/30/04	"	
MW-28(A) (P4A0432-06) Water Sampled: 01/19/04 14:50 Received: 01/21/04 12:17										
Silver	ND	0.0000460	0.00100	mg/l	1	4010812	01/27/04	01/29/04	EPA 6020	U
Arsenic	0.00311	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0608	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00618	0.000791	0.00100	"	"	"	"	01/30/04	"	
Manganese	1.61	0.0000680	0.0100	"	5	"	"	01/30/04	"	R-02, D
Lead	0.0198	0.0000870	0.00100	"	1	"	"	01/29/04	"	
Selenium	0.00130	0.000566	0.00100	"	"	"	"	01/30/04	"	

North Creek Analytical - Portland

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Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-29(A) (P4A0432-07) Water Sampled: 01/19/04 16:00 Received: 01/21/04 12:17										
Silver	ND	0.0000460	0.00100	mg/l	1	4010812	01/27/04	01/29/04	EPA 6020	U
Arsenic	0.00682	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0285	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	0.00225	0.000791	0.00100	"	"	"	"	01/30/04	"	
Manganese	1.78	0.0000680	0.0100	"	5	"	"	01/30/04	"	R-02, D
Lead	0.00774	0.0000870	0.00100	"	1	"	"	01/29/04	"	
Selenium	0.00123	0.000566	0.00100	"	"	"	"	01/30/04	"	
MW-40(A) (P4A0432-08) Water Sampled: 01/20/04 08:00 Received: 01/21/04 12:17										
Silver	ND	0.0000460	0.00100	mg/l	1	4010812	01/27/04	01/29/04	EPA 6020	U
Arsenic	0.0128	0.000964	0.00100	"	"	"	"	"	"	
Barium	0.0331	0.0000910	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.000178	0.00100	"	"	"	"	"	"	U
Chromium	ND	0.000791	0.00100	"	"	"	"	01/30/04	"	U
Lead	0.00519	0.0000870	0.00100	"	"	"	"	01/29/04	"	
Selenium	0.00114	0.000566	0.00100	"	"	"	"	01/30/04	"	

North Creek Analytical - Portland

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Reported:
02/05/04 15:03

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-17(A) (P4A0432-01) Water Sampled: 01/19/04 11:30 Received: 01/21/04 12:17										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010664	01/23/04	01/23/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	2.52	0.147	0.500	"	"	"	"	"	"	
Toluene	1.05	0.155	0.500	"	"	"	"	"	"	
Ethylbenzene	51.7	0.110	0.500	"	"	"	"	"	"	
Xylenes (total)	20.1	0.262	1.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	19.0	0.0989	2.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	0.720	0.0884	1.00	"	"	"	"	"	"	J
1,3,5-Trimethylbenzene	2.64	0.157	0.500	"	"	"	"	"	"	
Isopropylbenzene	6.55	0.107	2.00	"	"	"	"	"	"	
n-Propylbenzene	17.4	0.138	0.500	"	"	"	"	"	"	
Surrogate: 4-BFB	95.0 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	100 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	101 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	96.0 %		80-120			"	"	"	"	
BM-17(A) (P4A0432-02) Water Sampled: 01/19/04 11:30 Received: 01/21/04 12:17										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010664	01/23/04	01/23/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	2.50	0.147	0.500	"	"	"	"	"	"	
Toluene	1.04	0.155	0.500	"	"	"	"	"	"	
Ethylbenzene	50.3	0.110	0.500	"	"	"	"	"	"	
Xylenes (total)	18.9	0.262	1.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	19.5	0.0989	2.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	0.620	0.0884	1.00	"	"	"	"	"	"	J
1,3,5-Trimethylbenzene	2.21	0.157	0.500	"	"	"	"	"	"	
Isopropylbenzene	6.44	0.107	2.00	"	"	"	"	"	"	
n-Propylbenzene	16.4	0.138	0.500	"	"	"	"	"	"	
Surrogate: 4-BFB	106 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	110 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	111 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	104 %		80-120			"	"	"	"	

North Creek Analytical - Portland

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Joy D. Chang, Project Manager



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-18(A) (P4A0432-03) Water Sampled: 01/19/04 10:40 Received: 01/21/04 12:17										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010664	01/23/04	01/23/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	138	0.147	0.500	"	"	"	"	"	"	
Toluene	13.9	0.155	0.500	"	"	"	"	"	"	
Ethylbenzene	5.45	0.110	0.500	"	"	"	"	"	"	
Xylenes (total)	18.9	0.262	1.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	1.53	0.0989	2.00	"	"	"	"	"	"	J
1,2,4-Trimethylbenzene	0.290	0.0884	1.00	"	"	"	"	"	"	J
1,3,5-Trimethylbenzene	1.15	0.157	0.500	"	"	"	"	"	"	
Isopropylbenzene	13.8	0.107	2.00	"	"	"	"	"	"	
n-Propylbenzene	26.9	0.138	0.500	"	"	"	"	"	"	
Surrogate: 4-BFB	99.5 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	104 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	104 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	99.0 %		80-120			"	"	"	"	

MW-16(A) (P4A0432-04) Water Sampled: 01/19/04 09:30 Received: 01/21/04 12:17

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010664	01/23/04	01/23/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	2.32	0.147	0.500	"	"	"	"	"	"	
Toluene	0.180	0.155	0.500	"	"	"	"	"	"	J
Ethylbenzene	0.360	0.110	0.500	"	"	"	"	"	"	J
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	0.280	0.0989	2.00	"	"	"	"	"	"	J
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	3.79	0.107	2.00	"	"	"	"	"	"	
n-Propylbenzene	5.44	0.138	0.500	"	"	"	"	"	"	
Surrogate: 4-BFB	94.0 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	100 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	100 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	94.0 %		80-120			"	"	"	"	

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network



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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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MW-22(A) (P4A0432-05) Water Sampled: 01/19/04 08:15 Received: 01/21/04 12:17

1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010664	01/23/04	01/23/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	0.300	0.110	0.500	"	"	"	"	"	"	J
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	91.0 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	104 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	104 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	91.0 %		80-120			"	"	"	"	

MW-28(A) (P4A0432-06) Water Sampled: 01/19/04 14:50 Received: 01/21/04 12:17

1,2-Dibromoethane	ND	1.87	5.00	ug/l	10	4010664	01/23/04	01/23/04	EPA 8260B	D, U
1,2-Dichloroethane	ND	1.42	5.00	"	"	"	"	"	"	D, U
Benzene	702	1.47	5.00	"	"	"	"	"	"	D
Toluene	696	1.55	5.00	"	"	"	"	"	"	D
Ethylbenzene	902	1.10	5.00	"	"	"	"	"	"	D
Xylenes (total)	4000	2.62	10.0	"	"	"	"	"	"	D
Methyl tert-butyl ether	ND	0.865	20.0	"	"	"	"	"	"	D, U
Naphthalene	398	0.989	20.0	"	"	"	"	"	"	D
1,2,4-Trimethylbenzene	942	0.884	10.0	"	"	"	"	"	"	D
1,3,5-Trimethylbenzene	204	1.57	5.00	"	"	"	"	"	"	D
Isopropylbenzene	30.1	1.07	20.0	"	"	"	"	"	"	D
n-Propylbenzene	92.4	1.38	5.00	"	"	"	"	"	"	D
Surrogate: 4-BFB	98.5 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	104 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	104 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	104 %		80-120			"	"	"	"	

North Creek Analytical - Portland

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Joy D. Chang, Project Manager

North Creek Analytical, Inc.
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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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MW-29(A) (P4A0432-07) Water Sampled: 01/19/04 16:00 Received: 01/21/04 12:17

1,2-Dibromoethane	ND	9.35	25.0	ug/l	50	4010664	01/23/04	01/23/04	EPA 8260B	D, U
1,2-Dichloroethane	ND	7.10	25.0	"	"	"	"	"	"	D, U
Benzene	330	7.35	25.0	"	"	"	"	"	"	D
Toluene	8170	7.75	25.0	"	"	"	"	"	"	D
Ethylbenzene	2640	5.50	25.0	"	"	"	"	"	"	D
Xylenes (total)	13500	13.1	50.0	"	"	"	"	"	"	D
Methyl tert-butyl ether	ND	4.32	100	"	"	"	"	"	"	D, U
Naphthalene	1310	4.94	100	"	"	"	"	"	"	D
1,2,4-Trimethylbenzene	2630	4.42	50.0	"	"	"	"	"	"	D
1,3,5-Trimethylbenzene	568	7.85	25.0	"	"	"	"	"	"	D
Isopropylbenzene	82.0	5.35	100	"	"	"	"	"	"	J, D
n-Propylbenzene	241	6.90	25.0	"	"	"	"	"	"	D
Surrogate: 4-BFB	98.5 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	103 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	103 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	103 %		80-120			"	"	"	"	

MW-40(A) (P4A0432-08) Water Sampled: 01/20/04 08:00 Received: 01/21/04 12:17

1,2-Dibromoethane	ND	3.74	10.0	ug/l	20	4010664	01/23/04	01/23/04	EPA 8260B	D, U
1,2-Dichloroethane	ND	2.84	10.0	"	"	"	"	"	"	D, U
Benzene	7.80	2.94	10.0	"	"	"	"	"	"	J, D
Toluene	833	3.10	10.0	"	"	"	"	"	"	D
Ethylbenzene	2230	2.20	10.0	"	"	"	"	"	"	D
Xylenes (total)	6460	5.24	20.0	"	"	"	"	"	"	D
Methyl tert-butyl ether	ND	1.73	40.0	"	"	"	"	"	"	D, U
Naphthalene	1220	1.98	40.0	"	"	"	"	"	"	D
1,2,4-Trimethylbenzene	3170	1.77	20.0	"	"	"	"	"	"	D
1,3,5-Trimethylbenzene	527	3.14	10.0	"	"	"	"	"	"	D
Isopropylbenzene	98.0	2.14	40.0	"	"	"	"	"	"	D
n-Propylbenzene	334	2.76	10.0	"	"	"	"	"	"	D
Surrogate: 4-BFB	96.0 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	99.5 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	100 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	100 %		80-120			"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Selected Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Trip Blank (P4A0432-09) Water Sampled: 01/20/04 08:00 Received: 01/21/04 12:17										
1,2-Dibromoethane	ND	0.187	0.500	ug/l	1	4010664	01/23/04	01/23/04	EPA 8260B	U
1,2-Dichloroethane	ND	0.142	0.500	"	"	"	"	"	"	U
Benzene	ND	0.147	0.500	"	"	"	"	"	"	U
Toluene	ND	0.155	0.500	"	"	"	"	"	"	U
Ethylbenzene	ND	0.110	0.500	"	"	"	"	"	"	U
Xylenes (total)	ND	0.262	1.00	"	"	"	"	"	"	U
Methyl tert-butyl ether	ND	0.0865	2.00	"	"	"	"	"	"	U
Naphthalene	ND	0.0989	2.00	"	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"	"	"	"	"	"	U
Isopropylbenzene	ND	0.107	2.00	"	"	"	"	"	"	U
n-Propylbenzene	ND	0.138	0.500	"	"	"	"	"	"	U
Surrogate: 4-BFB	92.0 %		75-120			"	"	"	"	
Surrogate: 1,2-DCA-d4	108 %		77-129			"	"	"	"	
Surrogate: Dibromofluoromethane	108 %		80-121			"	"	"	"	
Surrogate: Toluene-d8	104 %		80-120			"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-17(A) (P4A0432-01) Water Sampled: 01/19/04 11:30 Received: 01/21/04 12:17										
Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010667	01/23/04	01/27/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	ND	0.250	0.250	"	"	"	"	"	"	R-03, U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	58.1 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	70.8 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	60.6 %		10-150			"	"	"	"	

BM-17(A) (P4A0432-02) Water Sampled: 01/19/04 11:30 Received: 01/21/04 12:17

Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010667	01/23/04	01/27/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BM-17(A) (P4A0432-02) Water Sampled: 01/19/04 11:30 Received: 01/21/04 12:17										
Naphthalene	ND	0.125	0.125	ug/l	1	4010667	01/23/04	01/27/04	EPA 8270m	R-03, U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	55.0 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	69.2 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	63.3 %		10-150			"	"	"	"	
MW-18(A) (P4A0432-03) Water Sampled: 01/19/04 10:40 Received: 01/21/04 12:17										
Acenaphthene	0.632	0.0500	0.0500	ug/l	1	4010667	01/23/04	01/27/04	EPA 8270m	
Acenaphthylene	ND	0.100	0.100	"	"	"	"	"	"	R-03, U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	0.390	0.0500	0.0500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	0.688	0.0500	0.0500	"	"	"	"	"	"	
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	49.2 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	68.6 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	50.8 %		10-150			"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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MW-16(A) (P4A0432-04) Water Sampled: 01/19/04 09:30 Received: 01/21/04 12:17

Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010667	01/23/04	01/27/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	ND	0.150	0.150	"	"	"	"	"	"	R-03, U
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	55.9 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	69.5 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	52.5 %		10-150			"	"	"	"	

MW-22(A) (P4A0432-05) Water Sampled: 01/19/04 08:15 Received: 01/21/04 12:17

Acenaphthene	ND	0.0500	0.0500	ug/l	1	4010667	01/23/04	01/27/04	EPA 8270m	U
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-22(A) (P4A0432-05) Water Sampled: 01/19/04 08:15 Received: 01/21/04 12:17										
Naphthalene	0.0931	0.0500	0.0500	ug/l	1	4010667	01/23/04	01/27/04	EPA 8270m	
Phenanthrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
<i>Surrogate: Fluorene-d10</i>	<i>55.9 %</i>		<i>25-150</i>			"	"	"	"	
<i>Surrogate: Pyrene-d10</i>	<i>69.5 %</i>		<i>23-150</i>			"	"	"	"	
<i>Surrogate: Benzo (a) pyrene-d12</i>	<i>61.4 %</i>		<i>10-150</i>			"	"	"	"	
MW-28(A) (P4A0432-06) Water Sampled: 01/19/04 14:50 Received: 01/21/04 12:17										
Acenaphthene	0.0548	0.0500	0.0500	ug/l	1	4010667	01/23/04	01/27/04	EPA 8270m	
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	0.0760	0.0500	0.0500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	78.4	2.50	2.50	"	50	"	"	01/28/04	"	D
Phenanthrene	0.0700	0.0500	0.0500	"	1	"	"	01/27/04	"	
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
<i>Surrogate: Fluorene-d10</i>	<i>60.2 %</i>		<i>25-150</i>			"	"	"	"	
<i>Surrogate: Pyrene-d10</i>	<i>75.0 %</i>		<i>23-150</i>			"	"	"	"	
<i>Surrogate: Benzo (a) pyrene-d12</i>	<i>63.1 %</i>		<i>10-150</i>			"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-29(A) (P4A0432-07) Water Sampled: 01/19/04 16:00 Received: 01/21/04 12:17										
Acenaphthene	0.126	0.0500	0.0500	ug/l	1	4010667	01/23/04	01/27/04	EPA 8270m	
Acenaphthylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Anthracene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (a) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (a) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Benzo (ghi) perylene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Chrysene	0.0125	0.0100	0.0100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Fluoranthene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Fluorene	0.101	0.0500	0.0500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"	"	"	"	"	"	U
Naphthalene	867	10.0	10.0	"	200	"	"	01/28/04	"	D
Phenanthrene	0.0802	0.0500	0.0500	"	1	"	"	01/27/04	"	
Pyrene	ND	0.0500	0.0500	"	"	"	"	"	"	U
Surrogate: Fluorene-d10	61.9 %		25-150			"	"	"	"	
Surrogate: Pyrene-d10	60.6 %		23-150			"	"	"	"	
Surrogate: Benzo (a) pyrene-d12	61.0 %		10-150			"	"	"	"	

MW-40(A) (P4A0432-08) Water Sampled: 01/20/04 08:00 Received: 01/21/04 12:17										R-05
Acenaphthene	0.553	0.100	0.100	ug/l	2	4010667	01/23/04	01/28/04	EPA 8270m	D
Acenaphthylene	ND	0.150	0.150	"	"	"	"	"	"	R-03, D, U
Anthracene	ND	0.100	0.100	"	"	"	"	"	"	D, U
Benzo (a) anthracene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Benzo (a) pyrene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Benzo (b) fluoranthene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Benzo (ghi) perylene	ND	0.100	0.100	"	"	"	"	"	"	D, U
Benzo (k) fluoranthene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Chrysene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Dibenzo (a,h) anthracene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U
Fluoranthene	ND	0.100	0.100	"	"	"	"	"	"	D, U
Fluorene	0.720	0.100	0.100	"	"	"	"	"	"	D
Indeno (1,2,3-cd) pyrene	ND	0.0200	0.0200	"	"	"	"	"	"	D, U

North Creek Analytical - Portland

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Joy D. Chang, Project Manager



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 Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 15:03

**Polynuclear Aromatic Compounds per EPA 8270M-SIM
 North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-40(A) (P4A0432-08) Water										R-05
Sampled: 01/20/04 08:00 Received: 01/21/04 12:17										
Naphthalene	682	10.0	10.0	ug/l	200	4010667	01/23/04	01/28/04	EPA 8270m	D
Phenanthrene	1.11	0.100	0.100	"	2	"	"	01/28/04	"	D
Pyrene	ND	0.100	0.100	"	"	"	"	"	"	D, U
Surrogate: Fluorene-d10	45.2 %		25-150			"	"	"	"	D
Surrogate: Pyrene-d10	47.3 %		23-150			"	"	"	"	D
Surrogate: Benzo (a) pyrene-d12	24.8 %		10-150			"	"	"	"	D

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-18(A) (P4A0432-03) Water Sampled: 01/19/04 10:40 Received: 01/21/04 12:17										
Nitrate/Nitrite-Nitrogen	ND	0.0250	0.0500	mg/l	10	4010743	01/26/04	01/26/04	EPA 353.2	R-03, D, U
MW-16(A) (P4A0432-04) Water Sampled: 01/19/04 09:30 Received: 01/21/04 12:17										
Nitrate/Nitrite-Nitrogen	0.107	0.0250	0.0500	mg/l	10	4010743	01/26/04	01/26/04	EPA 353.2	R-03, D
MW-22(A) (P4A0432-05) Water Sampled: 01/19/04 08:15 Received: 01/21/04 12:17										
Nitrate/Nitrite-Nitrogen	0.415	0.0250	0.0500	mg/l	10	4010743	01/26/04	01/26/04	EPA 353.2	R-03, D
MW-28(A) (P4A0432-06) Water Sampled: 01/19/04 14:50 Received: 01/21/04 12:17										
Nitrate/Nitrite-Nitrogen	ND	0.0250	0.0500	mg/l	10	4010743	01/26/04	01/26/04	EPA 353.2	R-03, D, U
MW-29(A) (P4A0432-07) Water Sampled: 01/19/04 16:00 Received: 01/21/04 12:17										
Nitrate/Nitrite-Nitrogen	0.0531	0.0250	0.0500	mg/l	10	4010743	01/26/04	01/26/04	EPA 353.2	R-03, D

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 15:03

**Anions per EPA Method 300.0
 North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-18(A) (P4A0432-03) Water Sampled: 01/19/04 10:40 Received: 01/21/04 12:17										
Chloride	13.2	0.0508	0.500	mg/l	1	4010747	01/26/04	01/26/04	EPA 300.0	
Sulfate	24.2	0.0860	1.00	"	"	"	"	"	"	
MW-16(A) (P4A0432-04) Water Sampled: 01/19/04 09:30 Received: 01/21/04 12:17										
Chloride	15.8	0.0508	0.500	mg/l	1	4010747	01/26/04	01/26/04	EPA 300.0	
Sulfate	133	0.860	10.0	"	10	"	"	01/27/04	"	D
MW-22(A) (P4A0432-05) Water Sampled: 01/19/04 08:15 Received: 01/21/04 12:17										
Chloride	10.2	0.0508	0.500	mg/l	1	4010747	01/26/04	01/26/04	EPA 300.0	
Sulfate	38.1	0.0860	1.00	"	"	"	"	"	"	
MW-28(A) (P4A0432-06) Water Sampled: 01/19/04 14:50 Received: 01/21/04 12:17										
Chloride	10.7	0.0508	0.500	mg/l	1	4010747	01/26/04	01/26/04	EPA 300.0	
Sulfate	128	0.860	10.0	"	10	"	"	01/27/04	"	D
MW-29(A) (P4A0432-07) Water Sampled: 01/19/04 16:00 Received: 01/21/04 12:17										
Chloride	10.1	0.0508	0.500	mg/l	1	4010747	01/26/04	01/26/04	EPA 300.0	
Sulfate	4.95	0.0860	1.00	"	"	"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Total Alkalinity by Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-18(A) (P4A0432-03) Water Sampled: 01/19/04 10:40 Received: 01/21/04 12:17										
Bicarbonate Alkalinity	332	1.04	50.0mg/L as CaC	5	4010622	01/22/04	01/22/04	SM 2320B		D
Carbonate Alkalinity	ND	1.04	50.0	"	"	"	"	"	"	D, U
Hydroxide Alkalinity	ND	1.04	50.0	"	"	"	"	"	"	D, U
Total Alkalinity	332	1.04	50.0	"	"	"	"	"	"	D
MW-16(A) (P4A0432-04) Water Sampled: 01/19/04 09:30 Received: 01/21/04 12:17										
Bicarbonate Alkalinity	300	1.04	50.0mg/L as CaC	5	4010622	01/22/04	01/22/04	SM 2320B		D
Carbonate Alkalinity	ND	1.04	50.0	"	"	"	"	"	"	D, U
Hydroxide Alkalinity	ND	1.04	50.0	"	"	"	"	"	"	D, U
Total Alkalinity	300	1.04	50.0	"	"	"	"	"	"	D
MW-22(A) (P4A0432-05) Water Sampled: 01/19/04 08:15 Received: 01/21/04 12:17										
Bicarbonate Alkalinity	85.0	0.208	10.0mg/L as CaC	1	4010622	01/22/04	01/22/04	SM 2320B		
Carbonate Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Hydroxide Alkalinity	ND	0.208	10.0	"	"	"	"	"	"	U
Total Alkalinity	85.0	0.208	10.0	"	"	"	"	"	"	
MW-28(A) (P4A0432-06) Water Sampled: 01/19/04 14:50 Received: 01/21/04 12:17										
Bicarbonate Alkalinity	138	1.04	50.0mg/L as CaC	5	4010622	01/22/04	01/22/04	SM 2320B		D
Carbonate Alkalinity	ND	1.04	50.0	"	"	"	"	"	"	D, U
Hydroxide Alkalinity	ND	1.04	50.0	"	"	"	"	"	"	D, U
Total Alkalinity	138	1.04	50.0	"	"	"	"	"	"	D
MW-29(A) (P4A0432-07) Water Sampled: 01/19/04 16:00 Received: 01/21/04 12:17										
Bicarbonate Alkalinity	173	1.04	50.0mg/L as CaC	5	4010622	01/22/04	01/22/04	SM 2320B		D
Carbonate Alkalinity	ND	1.04	50.0	"	"	"	"	"	"	D, U
Hydroxide Alkalinity	ND	1.04	50.0	"	"	"	"	"	"	D, U
Total Alkalinity	173	1.04	50.0	"	"	"	"	"	"	D

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Total Metals by EPA 6000/7000 Series Methods
North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-17(A) (P4A0432-01) Water Sampled: 01/19/04 11:30 Received: 01/21/04 12:17										
Mercury	ND	0.0000700	0.000200	mg/l	1	4A29053	01/29/04	02/02/04	EPA 7470A	U
BM-17(A) (P4A0432-02) Water Sampled: 01/19/04 11:30 Received: 01/21/04 12:17										
Mercury	ND	0.0000700	0.000200	mg/l	1	4A29053	01/29/04	02/02/04	EPA 7470A	U
MW-18(A) (P4A0432-03) Water Sampled: 01/19/04 10:40 Received: 01/21/04 12:17										
Calcium	67.0	0.0360	0.250	mg/l	1	4A26036	01/26/04	01/28/04	EPA 6010B	
Iron	28.6	0.0620	0.150	"	"	"	"	"	"	
Mercury	ND	0.0000700	0.000200	"	"	4A29053	01/29/04	02/02/04	EPA 7470A	U
Potassium	11.1	0.255	2.00	"	"	4A26036	01/26/04	01/30/04	EPA 6010B	
Magnesium	28.1	0.0180	0.500	"	"	"	"	01/28/04	"	
Sodium	45.4	0.0420	0.250	"	"	"	"	"	"	
MW-16(A) (P4A0432-04) Water Sampled: 01/19/04 09:30 Received: 01/21/04 12:17										
Calcium	92.2	0.0360	0.250	mg/l	1	4A26036	01/26/04	01/28/04	EPA 6010B	
Iron	12.0	0.0620	0.150	"	"	"	"	"	"	
Mercury	ND	0.0000700	0.000200	"	"	4A29053	01/29/04	02/02/04	EPA 7470A	U
Potassium	7.99	0.255	2.00	"	"	4A26036	01/26/04	01/30/04	EPA 6010B	
Magnesium	22.0	0.0180	0.500	"	"	"	"	01/28/04	"	
Sodium	43.5	0.0420	0.250	"	"	"	"	"	"	
MW-22(A) (P4A0432-05) Water Sampled: 01/19/04 08:15 Received: 01/21/04 12:17										
Calcium	26.6	0.0360	0.250	mg/l	1	4A26036	01/26/04	01/28/04	EPA 6010B	
Iron	14.3	0.0620	0.150	"	"	"	"	"	"	
Mercury	ND	0.0000700	0.000200	"	"	4A29053	01/29/04	02/02/04	EPA 7470A	U
Potassium	5.28	0.255	2.00	"	"	4A26036	01/26/04	01/30/04	EPA 6010B	
Magnesium	10.0	0.0180	0.500	"	"	"	"	01/28/04	"	
Sodium	12.0	0.0420	0.250	"	"	"	"	"	"	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
 P.O. Box 80762
 Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 15:03

Total Metals by EPA 6000/7000 Series Methods
North Creek Analytical - Bothell

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-28(A) (P4A0432-06) Water Sampled: 01/19/04 14:50 Received: 01/21/04 12:17										
Calcium	46.9	0.0360	0.250	mg/l	1	4A26036	01/26/04	01/28/04	EPA 6010B	
Iron	48.3	0.0620	0.150	"	"	"	"	"	"	
Mercury	ND	0.0000700	0.000200	"	"	4A29053	01/29/04	02/02/04	EPA 7470A	U
Potassium	4.23	0.255	2.00	"	"	4A26036	01/26/04	01/30/04	EPA 6010B	
Magnesium	14.5	0.0180	0.500	"	"	"	"	01/28/04	"	
Sodium	16.8	0.0420	0.250	"	"	"	"	"	"	
MW-29(A) (P4A0432-07) Water Sampled: 01/19/04 16:00 Received: 01/21/04 12:17										
Calcium	26.4	0.0360	0.250	mg/l	1	4A26036	01/26/04	01/28/04	EPA 6010B	
Iron	41.4	0.0620	0.150	"	"	"	"	"	"	
Mercury	ND	0.0000700	0.000200	"	"	4A29053	01/29/04	02/02/04	EPA 7470A	U
Potassium	5.53	0.255	2.00	"	"	4A26036	01/26/04	01/30/04	EPA 6010B	
Magnesium	13.1	0.0180	0.500	"	"	"	"	01/28/04	"	
Sodium	7.11	0.0420	0.250	"	"	"	"	"	"	
MW-40(A) (P4A0432-08) Water Sampled: 01/20/04 08:00 Received: 01/21/04 12:17										
Mercury	ND	0.0000700	0.000200	mg/l	1	4A29053	01/29/04	02/02/04	EPA 7470A	U

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Gasoline Hydrocarbons per NW TPH-Gx Method - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010570: Prepared 01/21/04 Using EPA 5030B

Blank (4010570-BLK1)

Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l							U
Surrogate: 4-BFB	44.6			"	50.0		89.2	50-150			

LCS (4010570-BS2)

Gasoline Range Hydrocarbons	1180	50.0	80.0	ug/l	1250		94.4	70-130			
Surrogate: 4-BFB	52.6			"	50.0		105	50-150			

LCS Dup (4010570-BSD2)

Gasoline Range Hydrocarbons	1160	50.0	80.0	ug/l	1250		92.8	70-130	1.71	40	
Surrogate: 4-BFB	52.6			"	50.0		105	50-150			

Duplicate (4010570-DUP1)

Source: P4A0432-01

Gasoline Range Hydrocarbons	942	50.0	80.0	ug/l		778			19.1	40	
Surrogate: 4-BFB	64.0			"	50.0		128	50-150			

Batch 4010678: Prepared 01/23/04 Using EPA 5030B

Blank (4010678-BLK1)

Gasoline Range Hydrocarbons	ND	50.0	80.0	ug/l							U
Surrogate: 4-BFB	48.3			"	50.0		96.6	50-150			

LCS (4010678-BS1)

Gasoline Range Hydrocarbons	1240	50.0	80.0	ug/l	1250		99.2	70-130			
Surrogate: 4-BFB	43.9			"	50.0		87.8	50-150			

LCS Dup (4010678-BSD1)

Gasoline Range Hydrocarbons	1150	50.0	80.0	ug/l	1250		92.0	70-130	7.53	40	
Surrogate: 4-BFB	47.7			"	50.0		95.4	50-150			

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4010603: Prepared 01/22/04 Using EPA 3510 Fuels											
Blank (4010603-BLK1)											
Diesel Range Organics	ND	0.153	0.250	mg/l							U
Heavy Oil Range Hydrocarbons	ND	0.286	0.500	"							U
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.0883</i>			"	<i>0.0960</i>		<i>92.0</i>	<i>50-150</i>			
LCS (4010603-BS1)											
Diesel Range Organics	2.30	0.153	0.250	mg/l	2.50		92.0	50-150			
Heavy Oil Range Hydrocarbons	1.45	0.286	0.500	"	1.50		96.7	50-150			
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.0898</i>			"	<i>0.0960</i>		<i>93.5</i>	<i>50-150</i>			
LCS Dup (4010603-BSD1)											
Diesel Range Organics	2.58	0.153	0.250	mg/l	2.50		103	50-150	11.5	50	
Heavy Oil Range Hydrocarbons	1.64	0.286	0.500	"	1.50		109	50-150	12.3	50	
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.0933</i>			"	<i>0.0960</i>		<i>97.2</i>	<i>50-150</i>			

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

Total Metals per EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010812: Prepared 01/27/04 Using EPA 200/3005

Blank (4010812-BLK1)

Arsenic	ND	0.000964	0.00100	mg/l							U
Barium	ND	0.0000910	0.00100	"							U
Cadmium	ND	0.000178	0.00100	"							U
Chromium	ND	0.000791	0.00100	"							U
Lead	ND	0.0000870	0.00100	"							U
Manganese	0.000310	0.0000136	0.00200	"							J
Selenium	0.000660	0.000566	0.00100	"							J
Silver	ND	0.0000460	0.00100	"							U

LCS (4010812-BS1)

Arsenic	0.0945	0.000964	0.00100	mg/l	0.100		94.5	80-120			
Barium	0.0965	0.0000910	0.00100	"	0.100		96.5	80-120			
Cadmium	0.0927	0.000178	0.00100	"	0.100		92.7	80-120			
Chromium	0.104	0.000791	0.00100	"	0.100		104	80-120			
Lead	0.0960	0.0000870	0.00100	"	0.100		96.0	80-120			
Manganese	0.0998	0.0000136	0.00200	"	0.100		99.8	80-120			
Selenium	0.0992	0.000566	0.00100	"	0.100		99.2	80-120			
Silver	0.0512	0.0000460	0.00100	"	0.0500		102	80-120			

Duplicate (4010812-DUP1)

Source: P4A0432-01

Arsenic	ND	0.000964	0.00100	mg/l		0.00177				20	U
Barium	0.0332	0.0000910	0.00100	"		0.0326			1.82	20	
Cadmium	ND	0.000178	0.00100	"		ND				20	U
Chromium	ND	0.000791	0.00100	"		ND				20	U
Lead	0.00194	0.0000870	0.00100	"		0.00203			4.53	20	
Manganese	1.28	0.0000272	0.00400	"		1.33			3.83	20	R-02, D
Selenium	0.000690	0.000566	0.00100	"		0.00107			43.2	20	Q-06, J
Silver	ND	0.0000460	0.00100	"		ND				20	U

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

Total Metals per EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010812: Prepared 01/27/04 Using EPA 200/3005

Matrix Spike (4010812-MS1)

Source: P4A0432-01

Arsenic	0.101	0.000964	0.00100	mg/l	0.100	0.00177	99.2	75-125			
Barium	0.131	0.0000910	0.00100	"	0.100	0.0326	98.4	75-125			
Cadmium	0.0958	0.000178	0.00100	"	0.100	ND	95.8	75-125			
Chromium	0.107	0.000791	0.00100	"	0.100	ND	107	75-125			
Lead	0.0970	0.0000870	0.00100	"	0.100	0.00203	95.0	75-125			
Manganese	1.40	0.0000272	0.00400	"	0.100	1.33	70.0	75-125			Q-07, R-02, D
Selenium	0.100	0.000566	0.00100	"	0.100	0.00107	98.9	75-125			
Silver	0.0515	0.0000460	0.00100	"	0.0500	ND	103	75-125			

Matrix Spike Dup (4010812-MSD1)

Source: P4A0432-01

Arsenic	0.104	0.000964	0.00100	mg/l	0.100	0.00177	102	75-125	2.93	20	
Barium	0.131	0.0000910	0.00100	"	0.100	0.0326	98.4	75-125	0.00	20	
Cadmium	0.0963	0.000178	0.00100	"	0.100	ND	96.3	75-125	0.521	20	
Chromium	0.109	0.000791	0.00100	"	0.100	ND	109	75-125	1.85	20	
Lead	0.0968	0.0000870	0.00100	"	0.100	0.00203	94.8	75-125	0.206	20	
Manganese	1.45	0.0000272	0.00400	"	0.100	1.33	120	75-125	3.51	20	R-02, D
Selenium	0.105	0.000566	0.00100	"	0.100	0.00107	104	75-125	4.88	20	
Silver	0.0523	0.0000460	0.00100	"	0.0500	ND	105	75-125	1.54	20	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Selected Volatile Organic Compounds per EPA Method 8260B - Quality Control
North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010664: Prepared 01/23/04 Using EPA 5030B

Blank (4010664-BLK1)

1,2-Dibromoethane	ND	0.187	0.500	ug/l							U
1,2-Dichloroethane	ND	0.142	0.500	"							U
Benzene	ND	0.147	0.500	"							U
Toluene	ND	0.155	0.500	"							U
Ethylbenzene	ND	0.110	0.500	"							U
Xylenes (total)	ND	0.262	1.00	"							U
Methyl tert-butyl ether	ND	0.0865	2.00	"							U
Naphthalene	ND	0.0989	2.00	"							U
1,2,4-Trimethylbenzene	ND	0.0884	1.00	"							U
1,3,5-Trimethylbenzene	ND	0.157	0.500	"							U
Isopropylbenzene	ND	0.107	2.00	"							U
n-Propylbenzene	ND	0.138	0.500	"							U
Surrogate: 4-BFB	18.3			"	20.0		91.5	75-120			
Surrogate: 1,2-DCA-d4	21.0			"	20.0		105	77-129			
Surrogate: Dibromofluoromethane	20.6			"	20.0		103	80-121			
Surrogate: Toluene-d8	20.4			"	20.0		102	80-120			

LCS (4010664-BS1)

Benzene	20.1	0.147	0.500	ug/l	20.0		100	80-120			
Toluene	20.5	0.155	0.500	"	20.0		102	80-124			
Ethylbenzene	20.0	0.110	0.500	"	20.0		100	80-120			
Xylenes (total)	59.9	0.262	1.00	"	60.0		99.8	73-124			
Methyl tert-butyl ether	20.7	0.0865	2.00	"	20.0		104	80-129			
Naphthalene	19.1	0.0989	2.00	"	20.0		95.5	72-149			
Surrogate: 4-BFB	19.8			"	20.0		99.0	75-120			
Surrogate: 1,2-DCA-d4	21.0			"	20.0		105	77-129			
Surrogate: Dibromofluoromethane	21.2			"	20.0		106	80-121			
Surrogate: Toluene-d8	21.0			"	20.0		105	80-120			

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

Selected Volatile Organic Compounds per EPA Method 8260B - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010664: Prepared 01/23/04 Using EPA 5030B

Matrix Spike (4010664-MS1)

Source: P4A0432-02

Benzene	23.6	0.147	0.500	ug/l	20.0	2.50	106	80-124			
Toluene	19.9	0.155	0.500	"	20.0	1.04	94.3	79.7-131			
Ethylbenzene	86.7	0.110	0.500	"	20.0	50.3	182	80-124			Q-01
Xylenes (total)	77.6	0.262	1.00	"	60.0	18.9	97.8	44.6-154			
Methyl tert-butyl ether	20.8	0.0865	2.00	"	20.0	ND	104	80-130			
Naphthalene	44.0	0.0989	2.00	"	20.0	19.5	122	69-163			
Surrogate: 4-BFB	19.1			"	20.0		95.5	75-120			
Surrogate: 1,2-DCA-d4	20.3			"	20.0		102	77-129			
Surrogate: Dibromofluoromethane	20.6			"	20.0		103	80-121			
Surrogate: Toluene-d8	19.5			"	20.0		97.5	80-120			

Matrix Spike Dup (4010664-MSD1)

Source: P4A0432-02

Benzene	24.6	0.147	0.500	ug/l	20.0	2.50	110	80-124	4.15	25	
Toluene	19.8	0.155	0.500	"	20.0	1.04	93.8	79.7-131	0.504	25	
Ethylbenzene	104	0.110	0.500	"	20.0	50.3	268	80-124	18.1	25	Q-01
Xylenes (total)	77.6	0.262	1.00	"	60.0	18.9	97.8	44.6-154	0.00	25	
Methyl tert-butyl ether	21.3	0.0865	2.00	"	20.0	ND	106	80-130	2.38	25	
Naphthalene	53.3	0.0989	2.00	"	20.0	19.5	169	69-163	19.1	25	Q-01
Surrogate: 4-BFB	19.2			"	20.0		96.0	75-120			
Surrogate: 1,2-DCA-d4	20.5			"	20.0		102	77-129			
Surrogate: Dibromofluoromethane	20.5			"	20.0		102	80-121			
Surrogate: Toluene-d8	19.5			"	20.0		97.5	80-120			

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010667: Prepared 01/23/04 Using EPA 3520/600 Series

Blank (4010667-BLK1)

Acenaphthene	ND	0.0500	0.0500	ug/l							U
Acenaphthylene	ND	0.0500	0.0500	"							U
Anthracene	ND	0.0500	0.0500	"							U
Benzo (a) anthracene	ND	0.0100	0.0100	"							U
Benzo (a) pyrene	ND	0.0100	0.0100	"							U
Benzo (b) fluoranthene	ND	0.0100	0.0100	"							U
Benzo (ghi) perylene	ND	0.0500	0.0500	"							U
Benzo (k) fluoranthene	ND	0.0100	0.0100	"							U
Chrysene	ND	0.0100	0.0100	"							U
Dibenzo (a,h) anthracene	ND	0.0100	0.0100	"							U
Fluoranthene	ND	0.0500	0.0500	"							U
Fluorene	ND	0.0500	0.0500	"							U
Indeno (1,2,3-cd) pyrene	ND	0.0100	0.0100	"							U
Naphthalene	ND	0.0500	0.0500	"							U
Phenanthrene	ND	0.0500	0.0500	"							U
Pyrene	ND	0.0500	0.0500	"							U
Surrogate: Fluorene-d10	1.50			"	2.50		60.0	25-150			
Surrogate: Pyrene-d10	1.82			"	2.50		72.8	23-150			
Surrogate: Benzo (a) pyrene-d12	1.75			"	2.50		70.0	10-150			

LCS (4010667-BS1)

Acenaphthene	1.68	0.0500	0.0500	ug/l	2.50		67.2	26-150			
Benzo (a) pyrene	1.68	0.0100	0.0100	"	2.50		67.2	38-150			
Pyrene	1.72	0.0500	0.0500	"	2.50		68.8	33-150			
Surrogate: Fluorene-d10	1.57			"	2.50		62.8	25-150			
Surrogate: Pyrene-d10	1.86			"	2.50		74.4	23-150			
Surrogate: Benzo (a) pyrene-d12	1.83			"	2.50		73.2	10-150			

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EnviroLogic Resources, Inc.
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Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010667: Prepared 01/23/04 Using EPA 3520/600 Series

LCS Dup (4010667-BSD1)

Acenaphthene	1.77	0.0500	0.0500	ug/l	2.50		70.8	26-150	5.22	60	
Benzo (a) pyrene	1.78	0.0100	0.0100	"	2.50		71.2	38-150	5.78	60	
Pyrene	1.80	0.0500	0.0500	"	2.50		72.0	33-150	4.55	60	
<i>Surrogate: Fluorene-d10</i>	<i>1.62</i>			<i>"</i>	<i>2.50</i>		<i>64.8</i>	<i>25-150</i>			
<i>Surrogate: Pyrene-d10</i>	<i>1.89</i>			<i>"</i>	<i>2.50</i>		<i>75.6</i>	<i>23-150</i>			
<i>Surrogate: Benzo (a) pyrene-d12</i>	<i>1.89</i>			<i>"</i>	<i>2.50</i>		<i>75.6</i>	<i>10-150</i>			

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Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
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Conventional Chemistry Parameters per APHA/EPA Methods - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4010743: Prepared 01/26/04 Using Wet Chem											
Blank (4010743-BLK1)											
Nitrate/Nitrite-Nitrogen	0.00304	0.00250	0.00500	mg/l							J
Blank (4010743-BLK2)											
Nitrate/Nitrite-Nitrogen	ND	0.00250	0.00500	mg/l							U
LCS (4010743-BS1)											
Nitrate/Nitrite-Nitrogen	0.0902	0.00250	0.00500	mg/l	0.100		90.2	85-115			
LCS (4010743-BS2)											
Nitrate/Nitrite-Nitrogen	0.0917	0.00250	0.00500	mg/l	0.100		91.7	85-115			
Duplicate (4010743-DUP1)						Source: P4A0427-01					
Nitrate/Nitrite-Nitrogen	0.278	0.00500	0.0100	mg/l		0.287			3.19	20	D
Duplicate (4010743-DUP2)						Source: P4A0488-01					
Nitrate/Nitrite-Nitrogen	1.26	0.0250	0.0500	mg/l		1.26			0.00	20	D
Matrix Spike (4010743-MS1)						Source: P4A0427-01					
Nitrate/Nitrite-Nitrogen	0.375	0.00500	0.0100	mg/l	0.100	0.287	88.0	75-125			D
Matrix Spike (4010743-MS2)						Source: P4A0488-01					
Nitrate/Nitrite-Nitrogen	1.71	0.0250	0.0500	mg/l	0.500	1.26	90.0	75-125			D
Matrix Spike Dup (4010743-MSD1)						Source: P4A0427-01					
Nitrate/Nitrite-Nitrogen	0.375	0.00500	0.0100	mg/l	0.100	0.287	88.0	75-125	0.00	20	D
Matrix Spike Dup (4010743-MSD2)						Source: P4A0488-01					
Nitrate/Nitrite-Nitrogen	1.75	0.0250	0.0500	mg/l	0.500	1.26	98.0	75-125	2.31	20	D

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
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Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 15:03

**Anions per EPA Method 300.0 - Quality Control
 North Creek Analytical - Portland**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4010747: Prepared 01/26/04 Using Wet Chem											
Blank (4010747-BLK1)											
Chloride	ND	0.0508	0.500	mg/l							U
Sulfate	ND	0.0860	1.00	"							U
LCS (4010747-BS1)											
Chloride	9.59	0.0508	0.500	mg/l	10.0		95.9	90-110			
Sulfate	30.0	0.0860	1.00	"	30.0		100	90-110			
Duplicate (4010747-DUP1) Source: P4A0432-03											
Chloride	13.0	0.0508	0.500	mg/l		13.2			1.53	20	
Sulfate	24.1	0.0860	1.00	"		24.2			0.414	20	
Matrix Spike (4010747-MS1) Source: P4A0432-03											
Chloride	13.7	0.0564	0.556	mg/l	2.22	13.2	22.5	80-120			Q-02, D
Sulfate	29.0	0.0955	1.11	"	4.44	24.2	108	80-120			D
Matrix Spike Dup (4010747-MSD1) Source: P4A0432-03											
Chloride	13.6	0.0564	0.556	mg/l	2.22	13.2	18.0	80-120	0.733	20	Q-02, D
Sulfate	29.0	0.0955	1.11	"	4.44	24.2	108	80-120	0.00	20	D

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
 Project Number: 10077.004
 Project Manager: Tom Calabrese

Reported:
 02/05/04 15:03

Total Alkalinity by Conventional Chemistry Parameters per APHA/EPA Methods - Quality Control
North Creek Analytical - Portland

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4010622: Prepared 01/22/04 Using Wet Chem

Blank (4010622-BLK1)

Bicarbonate Alkalinity	0.483	0.208	10.0	mg/L as CaCO3							J
Carbonate Alkalinity	ND	0.208	10.0	"							U
Hydroxide Alkalinity	ND	0.208	10.0	"							U
Total Alkalinity	0.483	0.208	10.0	"							J

LCS (4010622-BS1)

Carbonate Alkalinity	110	0.208	10.0	mg/L as CaCO3	100		110	85-115			
Total Alkalinity	194	0.208	10.0	"	200		97.0	85-115			

LCS (4010622-BS2)

Bicarbonate Alkalinity	90.8	0.208	10.0	mg/L as CaCO3	100		90.8	85-115			
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Duplicate (4010622-DUP1)

Source: P4A0208-13

Bicarbonate Alkalinity	92.3	0.208	10.0	mg/L as CaCO3		92.7			0.432	20	
Carbonate Alkalinity	ND	0.208	10.0	"		ND				20	U
Hydroxide Alkalinity	ND	0.208	10.0	"		ND				20	U
Total Alkalinity	92.3	0.208	10.0	"		92.7			0.432	20	

Duplicate (4010622-DUP2)

Source: P4A0306-12

Bicarbonate Alkalinity	64.3	0.208	10.0	mg/L as CaCO3		63.7			0.938	20	
Carbonate Alkalinity	ND	0.208	10.0	"		ND				20	U
Hydroxide Alkalinity	ND	0.208	10.0	"		ND				20	U
Total Alkalinity	64.3	0.208	10.0	"		63.7			0.938	20	

North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Total Metals by EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4A26036: Prepared 01/26/04 Using EPA 3010A

Blank (4A26036-BLK1)

Calcium	ND	0.0360	0.250	mg/l							U
Iron	ND	0.0620	0.150	"							U
Magnesium	ND	0.0180	0.500	"							U
Potassium	ND	0.255	2.00	"							U
Sodium	0.0856	0.0420	0.250	"							J

LCS (4A26036-BS1)

Calcium	4.84	0.0360	0.250	mg/l	5.00		96.8	80-120			
Iron	5.11	0.0620	0.150	"	5.00		102	80-120			
Magnesium	5.18	0.0180	0.500	"	5.00		104	80-120			
Potassium	9.63	0.255	2.00	"	10.0		96.3	80-120			
Sodium	5.58	0.0420	0.250	"	5.00		112	80-120			

LCS Dup (4A26036-BSD1)

Calcium	4.90	0.0360	0.250	mg/l	5.00		98.0	80-120	1.23	20	
Iron	5.12	0.0620	0.150	"	5.00		102	80-120	0.195	20	
Magnesium	5.20	0.0180	0.500	"	5.00		104	80-120	0.385	20	
Potassium	9.74	0.255	2.00	"	10.0		97.4	80-120	1.14	20	
Sodium	5.53	0.0420	0.250	"	5.00		111	80-120	0.900	20	

Duplicate (4A26036-DUP1)

Source: B4A0411-05

Calcium	11.2	0.0360	0.250	mg/l		11.8			5.22	20	
Iron	12.3	0.0620	0.150	"		12.8			3.98	20	
Magnesium	4.98	0.0180	0.500	"		5.05			1.40	20	
Potassium	2.46	0.255	2.00	"		2.82			13.6	20	
Sodium	10.2	0.0420	0.250	"		10.2			0.00	20	

Duplicate (4A26036-DUP2)

Source: B4A0413-03

Calcium	18.9	0.0360	0.250	mg/l		19.7			4.15	20	
Iron	2.84	0.0620	0.150	"		3.01			5.81	20	
Magnesium	10.1	0.0180	0.500	"		10.4			2.93	20	
Potassium	4.72	0.255	2.00	"		5.05			6.76	20	
Sodium	23.9	0.0420	0.250	"		24.5			2.48	20	

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Total Metals by EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4A26036: Prepared 01/26/04 Using EPA 3010A

Matrix Spike (4A26036-MS1)

Source: B4A0411-05

Calcium	16.5	0.0360	0.250	mg/l	5.00	11.8	94.0	75-125			
Iron	17.5	0.0620	0.150	"	5.00	12.8	94.0	75-125			
Magnesium	10.0	0.0180	0.500	"	5.00	5.05	99.0	80-120			
Potassium	12.6	0.255	2.00	"	10.0	2.82	97.8	80-120			
Sodium	15.1	0.0420	0.250	"	5.00	10.2	98.0	75-125			

Matrix Spike (4A26036-MS2)

Source: B4A0413-03

Calcium	24.4	0.0360	0.250	mg/l	5.00	19.7	94.0	75-125			
Iron	7.89	0.0620	0.150	"	5.00	3.01	97.6	75-125			
Magnesium	15.0	0.0180	0.500	"	5.00	10.4	92.0	80-120			
Potassium	14.8	0.255	2.00	"	10.0	5.05	97.5	80-120			
Sodium	28.8	0.0420	0.250	"	5.00	24.5	86.0	75-125			

Matrix Spike Dup (4A26036-MSD1)

Source: B4A0411-05

Calcium	16.9	0.0360	0.250	mg/l	5.00	11.8	102	75-125	2.40	20	
Iron	18.0	0.0620	0.150	"	5.00	12.8	104	75-125	2.82	20	
Magnesium	10.3	0.0180	0.500	"	5.00	5.05	105	80-120	2.96	20	
Potassium	13.0	0.255	2.00	"	10.0	2.82	102	80-120	3.12	20	
Sodium	15.7	0.0420	0.250	"	5.00	10.2	110	75-125	3.90	20	

Matrix Spike Dup (4A26036-MSD2)

Source: B4A0413-03

Calcium	24.7	0.0360	0.250	mg/l	5.00	19.7	100	75-125	1.22	20	
Iron	8.15	0.0620	0.150	"	5.00	3.01	103	75-125	3.24	20	
Magnesium	15.6	0.0180	0.500	"	5.00	10.4	104	80-120	3.92	20	
Potassium	15.1	0.255	2.00	"	10.0	5.05	100	80-120	2.01	20	
Sodium	30.1	0.0420	0.250	"	5.00	24.5	112	75-125	4.41	20	

Post Spike (4A26036-PS1)

Source: B4A0411-05

Calcium	15.8	0.0360	0.250	ug/ml	5.00	11.8	80.0	75-125			
Iron	17.1	0.0620	0.150	"	5.00	12.8	86.0	75-125			
Magnesium	9.84	0.0180	0.500	"	5.00	5.05	95.8	75-125			
Potassium	12.3	0.255	2.00	"	10.0	2.82	94.8	75-125			
Sodium	14.9	0.0420	0.250	"	5.00	10.2	94.0	75-125			

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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EnviroLogic Resources, Inc.
P.O. Box 80762
Portland OR, 97280-0762

Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

**Total Metals by EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell**

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 4A26036: Prepared 01/26/04 Using EPA 3010A

Post Spike (4A26036-PS2)

Source: B4A0413-03

Calcium	23.6	0.0360	0.250	ug/ml	5.00	19.7	78.0	75-125			
Iron	7.97	0.0620	0.150	"	5.00	3.01	99.2	75-125			
Magnesium	15.2	0.0180	0.500	"	5.00	10.4	96.0	75-125			
Potassium	14.6	0.255	2.00	"	10.0	5.05	95.5	75-125			
Sodium	29.2	0.0420	0.250	"	5.00	24.5	94.0	75-125			

Batch 4A29053: Prepared 01/29/04 Using EPA 7470A

Blank (4A29053-BLK1)

Mercury	ND	0.0000700	0.000200	mg/l							U
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LCS (4A29053-BS1)

Mercury	0.00502	0.0000700	0.000200	mg/l	0.00500		100	80-120			
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LCS Dup (4A29053-BSD1)

Mercury	0.00520	0.0000700	0.000200	mg/l	0.00500		104	80-120	3.52	20	
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Matrix Spike (4A29053-MS1)

Source: B4A0413-09

Mercury	0.00520	0.0000700	0.000200	mg/l	0.00500	0.000190	100	73-121			
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Matrix Spike Dup (4A29053-MSD1)

Source: B4A0413-09

Mercury	0.00551	0.0000700	0.000200	mg/l	0.00500	0.000190	106	73-121	5.79	20	
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North Creek Analytical - Portland

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Project: Astoria Area-Wide Petroleum Site RI-1
Project Number: 10077.004
Project Manager: Tom Calabrese

Reported:
02/05/04 15:03

Notes and Definitions

- A-01 The detected hydrocarbons appear to be due to gas overlap and biogenic interference, however weathered diesel may be present as well.
- D Data reported from a preparation or analytical dilution.
- D-15 Detected hydrocarbons have non-petroleum peaks or elution pattern that suggests the presence of biogenic interference.
- D-17 Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference.
- J Estimated value.
- Q-01 The spike recovery, and/or RPD, for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.
- Q-02 The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.
- Q-06 Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit.
- Q-07 The recovery of this spike is outside control limits due to sample dilution required from high analyte concentration and/or matrix interferences.
- R-02 The reporting limit for this analyte was raised due to the high analyte concentration present in the sample.
- R-03 The reporting limit for this analyte was raised due to matrix interference.
- R-05 Reporting limits raised due to dilution necessary for analysis. Sample contains high levels of reported analyte, non-target analyte, and/or matrix interference.
- U Analyte included in the analysis but not detected.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

North Creek Analytical - Portland

Joy D. Chang, Project Manager

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