Soil and Groundwater Quality
Testing Results
Puyallup River Side Channel and
Tacoma Metals Site
Tacoma, Washington

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1.0 INTRODUCTION AND BACKGROUND

This report presents the soil and groundwater quality testing results for sampling performed at the proposed Puyallup River Side Channel (PRSC) habitat mitigation site in Tacoma, Washington (Figure 1). This testing program was performed in general accordance with the Soil and Groundwater Quality Testing Work Plan (Hart Crowser 2003a) and Response to EPA Comments (Hart Crowser 2003b).

The objectives of this investigation were to acquire data to evaluate the potential for contaminant migration from the adjacent Tacoma Metals site to the PRSC habitat mitigation site; to support design of any necessary remedial actions; and to characterize soils to be excavated from the mitigation site for disposal or possible reuse. The following sections are included in this report:

- 1.0 INTRODUCTION AND BACKGROUND;
- 2.0 PREVIOUS INVESTIGATIONS;
- 3.0 SCOPE OF FIELD INVESTIGATION;
- 4.0 SOIL AND GROUNDWATER QUALITY TESTING RESULTS;
- 5.0 COMPARISON TO SCREENING LEVELS;
- 6.0 CONCLUSIONS; and
- 7.0 REFERENCES.

This text is supplemented by these appendices:

- Appendix A - Field Investigation Methods; and
- Appendix B - Data Validation and Laboratory Certificates of Analysis.

1.1 Site Background

The PRSC site will be constructed as part of the Thea Foss and Wheeler-Osgood Waterways Remediation Project, to provide habitat mitigation for the project. The design for this habitat mitigation property, owned by the Simpson Tacoma Land Company, involves establishing a brackish marsh area by breaching the existing levee running along the Puyallup River. The design also includes grading the site to elevations as low as –2 feet mean lower-low water (MLLW), and constructing an approximately 1,700-foot-long levee to maintain protection

against flooding on the Puyallup River. The new levee will be constructed adjacent to the Tacoma Metals property boundary, as shown on Figure 2.

The Tacoma Metals site is a former scrap metal yard occupied by General Metals from the 1950s until 1982, and Tacoma Metals from 1983 to 1998. A creosote plant was also located on the west end of the site in the early 1900s. General Metals and Tacoma Metals conducted recycling of materials including processing of motor vehicles, transformers, and batteries. The north side of the property (adjacent to the proposed mitigation area) has remained unpaved (City of Tacoma 2003).

1.2 Geologic and Hydrogeologic Conditions

This description of geologic and hydrogeologic conditions is based on the current and previous investigations at the PRSC and Tacoma Metals sites (Kennedy Jenks 2001; City of Tacoma 2003).

1.3.1 Geologic Conditions

Soil types encountered on the PRSC and Tacoma Metals sites, from the ground surface downward, are as follows:

- **Fill.** About 5 to 15 feet of wood chips (intact and decayed) were encountered in the southern half of the PRSC site. Approximately 3 to 8 feet of sand and gravel fill were encountered on the Tacoma Metals site.

- **Sand and Silt.** About 5 to 15 feet of very loose to loose Sand with various amounts of silt and gravel or medium stiff to stiff clayey or sandy Silt were encountered underlying the wood chip and sand and gravel fill.

- **Dense to Very Dense Sand.** Dense to very dense Sand with various amounts of silt and gravel was encountered below elevations of approximately -5 to -15 feet MLLW.

In addition to the soil units described above, variable brick fill, plastic battery casing material, glass, and metal fragments were observed in some explorations. These materials were generally in explorations located along the Tacoma Metals property line or on the Tacoma Metals site.

1.3.2 Groundwater Occurrence and Flow

Groundwater levels at the PRSC site were measured at low and high tide on June 30 and July 9, 2003, respectively, as presented in Table 1. Groundwater

elevations ranged from approximately 7.1 to 9.7 feet MLLW depending on location and tide stage. Overall flow appears to be toward the river. Water levels measured at HC-MW-2 appear anomalously high, and may indicate the presence of a localized perched layer within the silt and wood waste. Comparison of measured water levels in the deep and shallow well pair HC-MW-3D and HC-MW-3S indicates an upward component of flow at the site.

Groundwater flow directions at the Tacoma Metals site have been measured as flowing south during high tides and to the east during low tides (Kennedy Jenks 2001); however, these "snapshots" do not account for the complexities involved in determining net groundwater flow rates and directions in tidally influenced systems. No comprehensive tidal monitoring study has been performed at the site to determine average, long-term groundwater flow directions.

Based on experience at similar sites, net groundwater flow at the Tacoma Metals and PRSC sites is expected to be toward the river, with some downstream component of flow. At this site, that would indicate net flow to the northeast, or from the Tacoma Metals site to the southern half of the PRSC site.

2.0 PREVIOUS INVESTIGATIONS

Previous investigations and remedial actions performed at the Tacoma Metals and PRSC sites are summarized below. These include work performed by Hart Crowser, Ecology and Environment, Pacific Groundwater Group, and Kennedy Jenks.

2.1 Habitat Mitigation Area

As part of the Final Design Analysis Report (DAR) for the PRSC site, Hart Crowser conducted field explorations and engineering analyses for design of the habitat mitigation area (City of Tacoma 2003). Six test pits and two borings were completed at the site to characterize subsurface conditions. Six of these explorations were completed in the southern portion of the site, near the Tacoma Metals site (Figure 2). Five to 15 feet of intact and decayed wood chips were encountered overlying sand. Variable brick and plastic battery casing material were observed in some of the test pits, generally in locations along the Tacoma Metals property line. No soil or groundwater quality testing data were collected as part of the City's investigation.

2.2 Tacoma Metals Site

EPA Site Assessment, Ecology and Environment, 1988. An EPA Site Assessment conducted by Ecology & Environment in 1988 indicated the site soils contain concentrations of lead, cadmium, chromium, mercury, nickel, zinc, and polychlorinated biphenyls (PCBs) above cleanup criteria in effect at that time. Elevated PCBs were identified along the unpaved north fence line adjacent to the PRSC habitat mitigation site.

Limited Phase II Environmental Assessment, Hart Crowser, 1990. A Phase II Assessment conducted by Hart Crowser in 1990 also identified elevated metals and PCBs as well as carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and total petroleum hydrocarbons (TPH) above proposed soil cleanup criteria in effect at that time. Groundwater sampled from well points located on the northern unpaved area contained elevated concentrations of metals, PCBs, cPAHs, and TPH.

Groundwater Evaluation, Pacific Groundwater Group (PGG), 1992. A groundwater assessment conducted at the property by PGG identified concentrations of gasoline-range TPH ranging from 4,500 to 18,000 ug/L in two wells (MW-4 and MW-5 on Figure 2) located on the eastern property line. Elevated concentrations of PAHs were identified in well MW-8 located approximately 180 feet east of the former creosote plant, and approximately 25 feet west of the property line common to the PRSC site.

Remedial Investigation/ Feasibility Study (RI/FS), Kennedy Jenks Consultants, 2000-2001. In 1999, Ecology issued an Agreed Order for an RI/FS to be conducted for the property. As part of the RI/FS, groundwater monitoring conducted by Kennedy Jenks Consultants in 2000 and 2001 indicated that conditions were similar to those identified by PGG in 1992. A draft RI/FS report dated July 2001 identified elevated concentrations of PAHs and gasoline-range TPH in groundwater. Naphthalene concentrations ranging from 5,600 to 8,500 ug/L were detected in well MW-8 during four monitoring events in 2000 and 2001. Well MW-8 also contained concentrations of gasoline-range TPH ranging from 29,000 to 39,000 ug/L.

The RI/FS report also mentioned that a removal of contaminated soil was conducted at some point during the mid-1990s. However, no reports detailing specifics of the soil removal were available at Ecology.

Subsequent to the RI/FS, nine additional monitoring wells (MW-13 through MW-21) were installed at the site. Two wells (MW-13 and MW-20) are located between well MW-8 and the property boundary. These wells were sampled and

analyzed for gasoline-, diesel-, and oil-range TPH, VOCs, and SVOCs. Concentrations of detected constituents were significantly lower than concentrations detected in well MW-8.

Draft Cleanup Action Plan, 2002. A Draft Cleanup Action Plan (CAP) was issued in April 2002. The CAP calls for implementation of the following actions:

- **Excavation of Petroleum-Impacted Soils and Free Product.** The CAP proposes removing soil down to groundwater elevation at which point the free product would be removed from the excavations. This would be done in two areas: the area of the former creosote plant, and west of the former brick building. The estimated volume to be removed is approximately 7,800 cubic yards. While the lateral extent of the excavations would be determined at the time of the excavation, the CAP shows that the northern edge of the second area is located approximately 40 feet south of the northern property boundary.

- **Excavation of Lead-Acid Battery Casings and Associated Soils.** This area is located approximately 120 feet from the northeast property boundary. The excavation is estimated to be 10 cubic yards.

- **Excavation of Metals-Impacted Soils at Property Boundary.** The CAP includes removal of impacted soil within an approximate 5-foot buffer along selected portions of the property boundary. The boundary to be excavated includes portions adjacent to the mitigation area. Excavation would continue laterally toward adjacent properties and vertically until cleanup levels are met.

- **Enhancement of Biodegradation of Impacted Groundwater.** Initially an oxygen-releasing compound (ORC) would be used in the area of MW-8 and the former creosote plant excavation. If warranted, ORC would be introduced in the area of the former red brick building excavation and other areas.

- **Install Low Permeability Cap.** A low permeability asphalt cap with a stormwater collection system would be placed over the entire site, except the existing storage building. The stormwater system would be designed to treat runoff to meet surface water cleanup levels.

- **Groundwater and Surface Water Monitoring.** Confirmation monitoring of groundwater and surface water would be conducted to show cleanup levels have been attained.

DNAPL Investigation, Kennedy Jenks Consultants, Ongoing. To assess the potential presence of dense non-aqueous phase liquid (DNAPL), eight deep borings were drilled on the western portion of the site around the former creosote plant. Borings were to be drilled to the top of the first confining silt/clay layer (approximately 26 to 33 feet below ground surface) and completed as groundwater monitoring wells. According to the work plan, monitoring wells were to be installed with a 6-inch-long blank PVC sump at the base for collection of DNAPL. Although no formal report on the DNAPL investigation has been submitted to Ecology, the Ecology Project Manager indicated that no DNAPL had been measured to date (P. Balaraju 2003).

2.3 Conclusions Based on Previous Investigations

Several concerns were identified based on previous investigations, including:

- The potential for surface water quality exceedances in the PRSC habitat mitigation area. Elevated PAH concentrations were detected in well MW-8 on the Tacoma Metals site adjacent to the PRSC habitat mitigation area. Following construction of the mitigation area, potential groundwater flow paths from the area around MW-8 to surface water receptors will be reduced from on the order of hundreds of feet to on the order of tens of feet, potentially resulting in surface water exceedances at the point of groundwater discharge to surface water in the habitat mitigation area.

- It was not conclusively known whether free phase product exists at the Tacoma Metals site boundary that could result in the formation of sheen or product seeps during or after construction f the PRSC habitat mitigation area.

- Continued migration of PAHs from the Tacoma Metals site may potentially result in the contamination of clean fill materials placed in the PRSC habitat mitigation area to concentrations above sediment quality standards through partitioning of contaminants onto the fill soils.

Existing soil quality within the PRSC habitat mitigation area is not currently known; the potential for reuse or disposal will be evaluated by the City of Tacoma and its contractor, Manson Construction Company, in August 2003.

3.0 SCOPE OF FIELD INVESTIGATION

The overall objective of this investigation is to provide additional data for use in ensuring the adequacy of the design and excavation of the PRSC habitat mitigation site. Specific objectives include:

- Collect and analyze soil and groundwater quality samples representative of the expected conditions to be encountered during soil excavation within the study area;
- Collect and analyze soil quality samples to support reuse or disposal evaluation of soils to be excavated from the site;
- Determine current migration of contaminants from the Tacoma Metals site to the PRSC habitat mitigation site and evaluate the potential for future migration following habitat mitigation activities; and
- Provide data to support remedial redesign of the habitat area, if necessary.

The soil quality and groundwater quality investigations described in the following sections were designed to provide the data necessary to meet these objectives. Procedures used for soil and groundwater sampling and sample handling are presented in Appendix A.

Sampling locations included soil borings/groundwater monitoring wells as shown on Figures 2.

3.1 Soil Quality Investigation

Five borings (HC-MW-1, HC-MW-2, HC-MW-3D, HC-MW-3S, and HC-MW-4) were drilled and completed as monitoring wells at the locations shown on Figure 2. Soil descriptions and other relevant details are presented on boring logs located in Appendix A. Slight to moderate product-like odors were noted at or near the water table in borings HC-MW2, HC-MW-3D, and HC-MW-4. Sheen was not observed on any soil samples.

Within the proposed excavation area, soil samples were collected at 2.5-foot-depth intervals to the total depth of the excavation. Below the proposed excavation depth and in boring HC-MW-4 (located outside the excavation area) soil samples were collected at 5-foot-depth intervals. Twenty-one soil samples were collected from four of the borings (HC-MW-1, HC-MW-2, HC-MW-3D, and HC-MW-4) and submitted for chemical analysis of diesel- and oil-range TPH, metals, semivolatile organic compounds (SVOCs), and pesticides and

polychlorinated biphenyls (PCBs). Soil samples were not collected from shallow boring HC-MW-3S, drilled adjacent to deep boring HC-MW-3D.

3.2 Groundwater Quality Investigation

3.2.1 PRSC Site Monitoring Wells

Five new monitoring wells were installed at the PRSC habitat mitigation site. Monitoring well installation, development, and sampling procedures are described in Appendix A. Groundwater samples were collected from the new wells on June 30, 2003 and analyzed for gasoline-range TPH, benzene, toluene, ethylbenzene, and xylenes (BTEX), metals, PAHs, and total suspended solids (TSS). The water quality parameters of pH, temperature, specific conductivity, and turbidity were measured in the field. Sheen and NAPL were not observed in any of the wells.

Samples collected for metals were not initially indicated on the chain of custody form due to an oversight by the on-site field representative. Collected samples were not filtered or preserved prior to delivery to the laboratory. Upon consultation with the laboratory, it was decided to analyze a portion of the TSS sample volume for total metals rather than dissolved metals, as the delay between sample collection and filtration may have resulted in unreliable dissolved metals results.

3.2.2 Tacoma Metals Site Wells

Groundwater samples were collected from five monitoring wells (MW-4, MW-8, MW-11, MW-13, and MW-18) on the Tacoma Metals site on July 9, 2003. A blind duplicate sample (MW-D) was also collected from well MW-8. Samples were submitted for analysis of gasoline-range TPH, dissolved metals, PAHs, and TSS. The water quality parameters of pH, temperature, specific conductivity, and turbidity were measured in the field. Samples collected for dissolved metals analyses were filtered and preserved immediately after delivery by the laboratory, located directly across Lincoln Avenue from the PRSC site. Sheen and NAPL were not observed in any of the wells.

4.0 SOIL AND GROUNDWATER QUALITY TESTING RESULTS

Results of the soil and groundwater testing program are summarized below by matrix.

4.1 Soil Quality Results

Soil sample analytical results, with sample depths and elevations, are presented in Tables 2 through 9. Soil quality results were segregated based on whether they fall within the excavation area or will remain in-place following construction.

4.1.1 Samples Collected within the Excavation Area

Soil quality data for samples collected within the excavation area are included for completeness. These soils will be excavated and disposed of or reused offsite. The potential for reuse or disposal will be evaluated by the City of Tacoma and Manson as part of the PRSC habitat construction. The remainder of this section only addresses soil samples collected outside the excavation area.

4.1.2 Samples Collected outside the Excavation Area

Data for soil samples collected outside the excavation area are indicative of the quality of soils that will remain in-place following construction. Diesel- and oil-range TPH were detected in two and five samples, respectively (Table 2). The maximum concentrations (81 mg/kg diesel and 2,200 mg/kg oil) occurred at a depth of 8.5 to 10 feet at HC-MW-4, located approximately 50 feet west of the PRSC habitat mitigation site. Maximum concentrations of diesel- and oil-range TPH within the habitat footprint were 27 and 120 mg/kg, respectively.

Uniformly low concentrations of arsenic (5.3 mg/kg maximum), cadmium (0.2 mg/kg maximum), chromium (25.7 mg/kg maximum), copper (81.1 mg/kg maximum), lead (30.7 mg/kg maximum), mercury (0.123 mg/kg maximum), nickel (31.1 mg/kg maximum), and zinc (53.2 mg/kg maximum) were detected in one or more soil samples (Table 3). Silver was not detected in any soil sample.

Generally low concentrations of PAHs were detected in one or more soil samples (Tables 4 and 5). The most wide-spread detected PAHs were phenanthrene (detected in seven samples with a maximum concentration of 830 ug/kg), acenaphthene (detected in six samples with a maximum concentration of 640 ug/kg), naphthalene (detected in five samples with a maximum concentration of 300 ug/kg), fluorene (detected in four samples with a maximum concentration of 470 ug/kg), and pyrene (detected in four samples with a maximum concentration of 1,100 ug/kg).

Very low concentrations of three phenol compounds were detected in soil collected at a depth of 15 to 16.5 feet from HC-MW-3D (Table 6). These

detections appear to be associated with overlying materials, as evidenced by similar concentrations detected in shallow soils collected from this boring.

Five phthalates, including butylbenzyl phthalate (1,200 ug/kg) and bis(2-ethylhexyl) phthalate (BEP; 3,000 ug/kg) were detected in soil collected at a depth of 8.5 to 10 feet from HC-MW-4 (Table 7). This boring is located outside the habitat mitigation area footprint. BEP was the only phthalate detected in soil samples collected within the mitigation area, with a maximum concentration of 330 ug/kg at a depth of 15 to 16.5 feet at HC-MW-3D.

Other detected SVOCs (Table 8) included benzyl alcohol (maximum concentration of 33 ug/kg), carbozole (maximum concentration of 150 ug/kg), dibenzofuran (maximum concentration of 120 ug/kg), and N-nitrosodiphenylamine (maximum concentration of 13 ug/kg).

Pesticides and PCBs were non-detect the soil samples analyzed (Table 9).

4.2 Groundwater Quality Results

Groundwater quality results are presented in Tables 10 through 14. Field parameter measurements collected during sampling are presented in Appendix A.

Detected concentrations of gasoline-range TPH and BTEX compounds (Table 10) in samples collected from wells on the Tacoma Metals site were consistent with previous rounds of sampling. Maximum detected gasoline concentrations (12,000 ug/L) were in samples from wells MW-8 and MW-18. Maximum detected BTEX concentrations also occurred in samples from these wells. Gasoline and BTEX concentrations are approximately an order of magnitude lower at well MW-13, locate between MW-8 and the PRSC site. Significantly lower concentrations of gasoline-range TPH (maximum of 59 ug/L) were detected in three of five wells on the PRSC habitat mitigation site. BTEX compounds were not detected in any well on the PRSC habitat mitigation site.

Low concentrations of total or dissolved arsenic and copper and total lead were detected in one or more groundwater samples (Table 11). Dissolved lead was not detected in the samples collected from the Tacoma Metals site.

Low concentrations of HPAHs (primarily fluoranthene and pyrene) were detected in wells MW-8, MW-11, and MW-18 on the Tacoma Metals site (Table 12). HPAHs were not detected in any groundwater samples collected from the PRSC habitat mitigation site.

The LPAHs 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene were detected in wells MW-8, MW-11, and MW-18 on the Tacoma Metals site (Table 13). Acenaphthene, fluorene, naphthalene were also detected in well MW-13. Acenaphthene was the only LPAH detected in groundwater samples from the PRSC habitat mitigation site, with detections in wells HC-MW-3D, HC-MW-3S, and HC-MW-4. The maximum detected concentration was in the deep well (58 ug/L) with significantly lower concentrations in the shallow wells (2.8 to 3.4 ug/L).

5.0 COMPARISON TO SCREENING LEVELS

Screening levels for soil are the sediment quality objectives (SQOs). Screening levels for groundwater are based on surface water quality criteria, and are taken as the lower of the Washington State Freshwater Chronic Criteria presented in Chapter 173-201A WAC and the Human Health Consumption of Organisms Criteria in the National Recommended Water Quality Criteria (EPA 2002). Screening criteria are presented in Tables 2 through 13.

5.1 Soil Quality

With the exception of two sample locations, detected constituent concentrations in soil samples are below the SQOs. The sample collected from a depth of 8.5 to 10 feet at HC-MW-4 (located approximately 50 feet west of the PRSC habitat area footprint) exceeds the SQO for butylbenzyl phthalate of 900 ug/kg with a concentration of 1,200 ug/kg and the SQO for BEP of 1,300 ug/kg with a concentration of 3,000 ug/kg. Butylbenzyl phthalate was not detected in any other samples representing soil to remain in-place following construction. Detected concentrations of BEP in these soils were well below the SQO.

The sample collected from a depth of 30 to 31.5 feet at HC-MW-3D slightly exceeds the SQO for acenaphthene of 500 ug/kg with a concentration of 640 ug/kg. This sample was collected at an elevation of -11.6 to -13.1 feet MLLW, approximately 15 feet below the bottom of the proposed excavation depth at this location.

5.2 Groundwater Quality

With the exception of several HPAHs at one well, detected constituent concentrations in groundwater samples were below surface water quality screening criteria. Concentrations of benzo(a)anthracene (2.5 ug/L), benzo(a)pyrene (1.2 ug/L), benzo(b,k)fluoranthenes (1.9 ug/L), and chrysene (1.7 ug/L) in well MW-11 exceed the human health consumption of organisms

criteria for these constituents of 0.018 ug/L. This well is located approximately 140 west of the PRSC habitat mitigation site. These constituents were not detected in any other groundwater sample, including samples collected from wells MW-8, MW-13, MW-18, and HC-MW-4, located between MW-11 and the PRSC habitat mitigation site boundary.

6.0 CONCLUSIONS

Current soil quality at the proposed final excavation elevation of the PRSC habitat mitigation site is protective of the environment. Only one sediment quality exceedance (acenaphthene at a depth of 30 to 31.5 feet in HC-MW-3D) was observed in soils underlying the PRSC habitat mitigation site. This exceedance was relatively low (detected concentration of 640 ug/kg compared to the SQO of 500 ug/kg) and occurred approximately 15 feet below the bottom of the proposed excavation.

Acenaphthene was also detected in groundwater at well pair HC-MW-3D and HC-MW-3S. Although there is an upward vertical gradient at this location, concentrations in the shallow well screened near the surface of the proposed mitigation area (2.9 ug/L) are significantly lower than those in the deep well (58 ug/L). This indicates either a sinking plume (in spite of upward groundwater flow) or that significant attenuation of acenaphthene is occurring over the approximately 20 feet separating the shallow well screen from the deep well screen. In either case, the shallow groundwater quality near the proposed PRSC habitat mitigation area surface has not resulted in soil concentrations that exceed the SQO, and is unlikely to result in future contamination of the soils to concentrations above the SQO.

The only other detected sediment quality exceedances occurred outside the PRSC habitat mitigation area (butylbenzyl phthalate and BEP at HC-MW-4) and do not appear to represent soil quality within the mitigation area.

Groundwater quality exiting the Tacoma Metals site and entering the PRSC habitat mitigation site is protective of surface water quality. HPAHs at one location (MW-11) exceed the surface water quality screening criteria. This location is in the interior of the Tacoma Metals site, and the HPAHs detected at this location were not detected in wells along the Tacoma Metals property boundary or in wells on the PRSC habitat mitigation site.

Based on these findings, it is very unlikely that historical contamination associated with the Tacoma Metals site will result in sediment quality or surface

water quality exceedances at the PRSC habitat mitigation site. Therefore, no modifications to the current habitat area design are required.

7.0 REFERENCES

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Table 1 - Groundwater Elevation Measurements

Well I.D.	Top of Casing Elevation in Feet MLLW	Ground Surface Elevation in Feet MLLW	Date of Measurement	Tide Stage	Depth to Water in Feet below TOC	Groundwater Elevation in Feet MLLW
HC-MW-1	19.96	17.2	6/30/2003	L	12.45	7.51
			7/9/2003	H	10.27	9.69
HC-MW-2	22.18	19.4	6/30/2003	L	13.74	8.44
			7/9/2003	H	13.64	8.54
HC-MW-3D	21.48	18.4	6/30/2003	L	14.26	7.22
			7/9/2003	H	13.56	7.92
HC-MW-3S	21.02	18.0	6/30/2003	L	13.89	7.13
			7/9/2003	H	13.66	7.36
HC-MW4	21.96	19.3	6/30/2003	L	13.11	8.85
			7/9/2003	H	13.03	8.93

H - High Tide
L - Low Tide
MLLW - Mean Lower Low Water
TOC - Top of Casing

Table 2 - Analytical Results for Soil Samples - TPH

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	NWTPH-Diesel in mg/kg	NWTPH-Heavy Oil in mg/kg
Sediment Quality Objective				NA	NA
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	20 U	40 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	20 U	47
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	20 U	40 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	27	91
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4	19 U	39 U
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9	20 U	120
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1	20 U	40 U
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1	20 U	40 U
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1	20 U	39 U
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1	19 U	39 U
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8	20 U	39 U
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3	81	2,200
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7	20 U	48

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	NWTPH-Diesel in mg/kg	NWTPH-Heavy Oil in mg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	45	1,600
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	33	640
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	41	86
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	36	120
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4	20 U	600
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4	26	190
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9	25	160
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4	23	180

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
NA - Not Available

Table 3 - Analytical Results for Soil Samples - Metals

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Arsenic in mg/kg	Cadmium in mg/kg	Chromium in mg/kg	Copper in mg/kg	Lead in mg/kg
Sediment Quality Objective				57	5.1	NA	390	450
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	2.1	0.05 U	12	11.4	5.48
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	5.3	0.05 U	12.1	17.9	3.5
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	1.5	0.05 U	12	11.8	1.83
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	4	0.25 U	25.7	30.2	30.7
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4	1.7	0.05 U	11.6	12.8	4.9
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9	3.9	0.26 U	14.9	21.7	7.91
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1	1	0.05 U	7.62	11.8	3.73
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1	2.6	0.04 U	10.3	11.2	1.99
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1	1.3	0.23 U	13.7	13.1	2.14
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1	2	0.05	11.9	11.6	1.35
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8	0.4	0.05 U	23.8	81.1	1.07
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3	5.1	0.2	19.6	26.9	16
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7	2.3	0.24 U	13.3	17	4.29

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Arsenic in mg/kg	Cadmium in mg/kg	Chromium in mg/kg	Copper in mg/kg	Lead in mg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	6	0.25	19.7	23.1	10.1
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	3.3	0.09	10.1	16	4.68
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	3.7	0.25 U	21.3	25.5	33.1
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	4.4	0.26 U	20.1	25.6	27.1
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4	2.8	0.45	8.07	14.9	14.2
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4	4.4	0.14	19.8	24.3	8.71
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9	3.5	0.26 U	13.4	23.9	8.87
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4	2.5	0.13	10.6	19.6	6.45

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
NA - Not Available

Table 3 - Analytical Results for Soil Samples - Metals

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Mercury in mg/kg	Nickel in mg/kg	Silver in mg/kg	Zinc in mg/kg
Sediment Quality Objective				0.59	140	6.1	410
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	0.0122 B	10.9	0.05 U	44.8
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	0.015 B	8.43	0.05 U	25.6
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	0.0096 U	7.64	0.05 U	20
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	0.0428 B	31.1	0.24 U	53.2
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4	0.01 B	9.47	0.05 U	23.6
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9	0.0638 B	10	0.25 U	34.9
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1	0.0114 B	6.81	0.05 U	26.3
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1	0.0092 U	7.38	0.04 U	21.9
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1	0.0081 U	11.3	0.22 U	25.4
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1	0.0075 U	7.73	0.05 U	19.1
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8	0.0101 U	6.48	0.05 U	50
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3	0.123 B	7.98	0.05 U	41.1
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7	0.0341 B	9.35	0.23 U	27.2

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Mercury in mg/kg	Nickel in mg/kg	Silver in mg/kg	Zinc in mg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	0.233	13.5	0.05 U	36.9
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	0.0901 B	11.8	0.05 U	31.2
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	0.034 B	25.2	0.24 U	45.6
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	0.0294 B	23.5	0.25 U	49.3
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4	0.103 B	5.28	0.05 U	69.9
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4	0.0982 B	14	0.05 U	54.1
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9	0.115 B	11.8	0.25 U	42.9
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4	0.275	8.27	0.05 U	34.6

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
NA - Not Available

Table 4 - Analytical Results for Soil Samples - HPAHs

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Benzo(a) anthracene in µg/kg	Benzo(a)pyrene in µg/kg	Benzo(b,k) fluoranthenes in µg/kg	Benzo(g,h,i) perylene in µg/kg
Sediment Quality Objective				1,600 (1300)	1,600 (1300)	3,600 (1200)	720
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	100 U	100 U	100 U	100 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	100 U	100 U	100 U	100 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	100 U	100 U	100 U	100 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	210	130	260	94 U
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4	97 U	97 U	97 U	97 U
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9	100 U	100 U	100 U	100 U
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1	100 U	100 U	100 U	100 U
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1	99 U	99 U	99 U	99 U
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1	98 U	98 U	98 U	98 U
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1	97 U	97 U	97 U	97 U
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8	98 U	98 U	98 U	98 U
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3	230	210	480	120
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7	99 U	99 U	99 U	99 U

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Benzo(a) anthracene in µg/kg	Benzo(a)pyrene in µg/kg	Benzo(b,k) fluoranthenes in µg/kg	Benzo(g,h,i) perylene in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	100 U	100 U	100 U	100 U
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	99 U	99 U	99 U	99 U
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	97 U	97 U	97 U	97 U
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	220	180	300	100 U
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4	100 U	100 U	100 U	100 U
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4	99 U	99 U	130	99 U
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9	100 U	100 U	140	100 U
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4	100 U	100 U	140	100 U

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
HPAHs - High Molecular Weight Polycyclic Aromatic Hydrocarbons

Table 4 - Analytical Results for Soil Samples - HPAHs

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Chrysene in µg/kg	Dibenz(a,h) anthracene in µg/kg	Fluoranthene in µg/kg	Indeno(1,2,3-c,d) pyrene in µg/kg	Pyrene in µg/kg
Sediment Quality Objective				✓2,800 (13,000)	✓230 (1200)	✓2,500	690	3,300
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	100 U	100 U	100 U	100 U	100 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	100 U	100 U	100 U	100 U	100 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	100 U	100 U	100 U	100 U	100 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	220	94 U	630	94 U	610
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4	97 U	97 U	97 U	97 U	97
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9	100 U	100 U	200	100 U	230
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1	100 U	100 U	100 U	100 U	100 U
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1	99 U	99 U	99 U	99 U	99 U
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1	98 U	98 U	98 U	98 U	98 U
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1	97 U	97 U	97 U	97 U	97 U
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8	98 U	98 U	98 U	98 U	98 U
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3	270	140	570	130	1,100
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7	99 U	99 U	99 U	99 U	99 U

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Chrysene in µg/kg	Dibenz(a,h) anthracene in µg/kg	Fluoranthene in µg/kg	Indeno(1,2,3-c,d) pyrene in µg/kg	Pyrene in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	100 U	100 U	100 U	100 U	100 U
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	99 U	99 U	99 U	99 U	99 U
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	97 U	97 U	110	97 U	140
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	240	100 U	750	100 U	790
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4	100 U	100 U	100 U	100 U	100 U
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4	99 U	99 U	200	99 U	480
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9	100 U	100 U	360	100 U	650
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4	100 U	100 U	340	100 U	580

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
HPAHs - High Molecular Weight Polycyclic Aromatic Hydrocarbons

Table 5 - Analytical Results for Soil Samples - LPAHs

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	2-Methylnaphthalene in µg/kg	Acenaphthene in µg/kg	Acenaphthylene in µg/kg	Anthracene in µg/kg
Sediment Quality Objective				670	500	1,300	960
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	100 U	100 U	100 U	100 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	100 U	100 U	100 U	100 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	100 U	100 U	100 U	100 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	94 U	120	94 U	180
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4	97 U	97 U	97 U	97 U
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9	100 U	100 U	100 U	100 U
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1	100 U	280	100 U	100 U
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1	99 U	140	99 U	99 U
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1	440	640	98 U	98 U
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1	170	450	97 U	97 U
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8	98 U	270	98 U	98 U
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3	100 U	100 U	100 U	200
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7	99 U	99 U	99 U	99 U

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	2-Methylnaphthalene in µg/kg	Acenaphthene in µg/kg	Acenaphthylene in µg/kg	Anthracene in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	100 U	100 U	100 U	100 U
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	99 U	99 U	99 U	99 U
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	97 U	97 U	97 U	97 U
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	100 U	330	100 U	320
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4	100 U	100 U	100 U	100 U
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4	99 U	99 U	99 U	180
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9	100 U	100 U	100 U	100 U
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4	100 U	100 U	100 U	100 U

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
LPAHs - Low Molecular Weight Polycyclic Aromatic Hydrocarbons

Table 5 - Analytical Results for Soil Samples - LPAHs

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Fluorene in µg/kg	Naphthalene in µg/kg	Phenanthrene in µg/kg
Sediment Quality Objective				540	2,100	1,500
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	100 U	100 U	100 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	100 U	100 U	100 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	100 U	100 U	100 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	120	110	830
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4	97 U	97 U	120
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9	100 U	140	160
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1	100 U	120	100 U
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1	99 U	99 U	99 U
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1	470	300	350
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1	330	150	230
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8	110	98 U	140
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3	100 U	100 U	360
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7	99 U	99 U	99 U

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Fluorene in µg/kg	Naphthalene in µg/kg	Phenanthrene in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	100 U	100 U	100 U
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	99 U	99 U	99 U
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	97 U	97 U	97
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	270	100 U	1,700
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4	100 U	100 U	100 U
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4	99 U	220	240
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9	100 U	350	290
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4	100 U	320	300

U - Not detected at detection limit indicated..
MLLW - Mean Lower Low Water
LPAHs - Low Molecular Weight Polycyclic Aromatic Hydrocarbons

Table 6 - Analytical Results for Soil Samples - Phenols

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	2,4,5-Trichloro-phenol in µg/kg	2,4,6-Trichloro-phenol in µg/kg	2,4-Dichloro-phenol in µg/kg	2,4-Dimethyl-phenol in µg/kg	2,4-Dinitrophenol in µg/kg
Sediment Quality Objective				NA	NA	NA	NA	NA
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	100 U	100 U	100 U	100 U	500 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	100 U	100 U	100 U	100 U	500 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	100 U	100 U	100 U	100 U	500 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	94 U	94 U	94 U	94 U	470 U
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4	97 U	97 U	97 U	5 U	480 U
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9	100 U	100 U	100 U	11	500 U
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1	100 U	100 U	100 U	5 U	500 U
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1	99 U	99 U	99 U	5 U	500 U
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1	98 U	98 U	98 U	5 U	490 U
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1	97 U	97 U	97 U	5 U	490 U
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8	98 U	98 U	98 U	5 U	490 U
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3	100 U	100 U	100 U		500 U
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7	99 U	99 U	99 U	5 U	490 U

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	2,4,5-Trichloro-phenol in µg/kg	2,4,6-Trichloro-phenol in µg/kg	2,4-Dichloro-phenol in µg/kg	2,4-Dimethyl-phenol in µg/kg	2,4-Dinitrophenol in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	100 U	100 U	100 U	100 U	500 U
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	99 U	99 U	99 U	99 U	500 U
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	97 U	97 U	97 U	97 U	480 U
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	100 U	100 U	100 U	100 U	500 U
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4	100 U	100 U	100 U	5 U	500 U
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4	99 U	99 U	99 U	6 B	500 U
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9	100 U	100 U	100 U	12	500 U
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4	100 U	100 U	100 U	12	500 U

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
NA - Not Available

Table 6 - Analytical Results for Soil Samples - Phenols

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	2-Chlorophenol in µg/kg	2-Methyl-4,6-dinitrophenol in µg/kg	2-Methylphenol in µg/kg	2-Nitrophenol in µg/kg	4-Chloro-3-methylphenol in µg/kg	4-Methylphenol in µg/kg
Sediment Quality Objective				NA	NA	~~63~~ 670	NA	NA	
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	100 U	500 U	100 U	100 U	100 U	100 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	100 U	500 U	100 U	100 U	100 U	100 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	100 U	500 U	100 U	100 U	100 U	100 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	94 U	470 U	94 U	94 U	94 U	94 U
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4	97 U	480 U	5 U	97 U	97 U	97 U
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9	100 U	500 U	12	100 U	100 U	210
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1	100 U	500 U	5 U	100 U	100 U	100 U
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1	99 U	500 U	5 U	99 U	99 U	99 U
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1	98 U	490 U	5 U	98 U	98 U	98 U
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1	97 U	490 U	5 U	97 U	97 U	97 U
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8	98 U	490 U	5 U	98 U	98 U	98 U
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3	100 U	500 U		100 U	100 U	100 U
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7	99 U	490 U	5 U	99 U	99 U	99 U

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	2-Chlorophenol in µg/kg	2-Methyl-4,6-dinitrophenol in µg/kg	2-Methylphenol in µg/kg	2-Nitrophenol in µg/kg	4-Chloro-3-methylphenol in µg/kg	4-Methylphenol in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	100 U	500 U	100 U	100 U	100 U	100 U
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	99 U	500 U	99 U	99 U	99 U	99 U
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	97 U	480 U	97 U	97 U	97 U	97 U
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	100 U	500 U	100 U	100 U	100 U	100 U
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4	100 U	500 U	5 U	100 U	100 U	100 U
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4	99 U	500 U	6 B	99 U	99 U	280
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9	100 U	500 U	10	100 U	100 U	210
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4	100 U	500 U	13	100 U	100 U	290

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
NA - Not Available

Table 6 - Analytical Results for Soil Samples - Phenols

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	4-Nitrophenol in µg/kg	Pentachloro-phenol in µg/kg	Phenol in µg/kg
Sediment Quality Objective				NA	360	420
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	500 U	500 U	100 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	500 U	500 U	100 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	500 U	500 U	100 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	470 U	470 U	94 U
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4	480 U	98 U	97 U
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9	500 U	100 U	100 U
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1	500 U	97 U	100 U
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1	500 U	99 U	99 U
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1	490 U	100 U	98 U
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1	490 U	98 U	97 U
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8	490 U	95 U	98 U
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3	500 U		100 U
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7	490 U	99 U	99 U

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	4-Nitrophenol in µg/kg	Pentachloro-phenol in µg/kg	Phenol in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	500 U	500 U	100 U
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	500 U	500 U	99 U
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	480 U	480 U	97 U
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	500 U	500 U	100 U
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4	500 U	99 U	100 U
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4	500 U	98 U	99 U
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9	500 U	98 U	100 U
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4	500 U	99 U	100 U

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
NA - Not Available

Table 7 - Analytical Results for Soil Samples - Phthalates

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Butyl benzyl phthalate in µg/kg	Di-n-butyl phthalate in µg/kg	Di-n-octyl phthalate in µg/kg	Diethyl phthalate in µg/kg	Dimethyl phthalate in µg/kg	Bis(2-Ethylhexyl) phthalate in µg/kg
Sediment Quality Objective				900	1,400	6,200	200	200 - 160	4,300
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	100 U	100 U	100 U	100 U	100 U	230
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	100 U	100 U	100 U	100 U	100 U	100 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	100 U	100 U	100 U	100 U	100 U	220
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	94 U	94 U	94 U	94 U	94 U	94
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4	97 U	97 U	97 U	97 U	97 U	140
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9	100 U	100 U	100 U	100 U	100 U	330
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1	100 U	100 U	100 U	100 U	100 U	150
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1	99 U	99 U	99 U	99 U	99 U	210
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1	98 U	98 U	98 U	98 U	98 U	98 U
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1	97 U	97 U	97 U	97 U	97 U	97 U
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8	98 U	98 U	98 U	98 U	98 U	170
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3	1,200	290	380	130	100 U	3,000
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7	99 U	99 U	99 U	99 U	99 U	130

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Butyl benzyl phthalate in µg/kg	Di-n-butyl phthalate in µg/kg	Di-n-octyl phthalate in µg/kg	Diethyl phthalate in µg/kg	Dimethyl phthalate in µg/kg	Bis(2-Ethylhexyl) phthalate in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	270	100 U	100 U	100 U	100 U	560
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	180	99 U	99 U	99 U	99 U	780
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	97 U	97 U	97 U	97 U	97 U	97
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	100 U	100 U	100 U	100 U	100 U	310
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4	630	100 U	100 U	100 U	100 U	1,400
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4	210	99 U	99 U	99 U	99 U	230
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9	160	100 U	100 U	100 U	100 U	590
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4	230	100 U	100 U	100 U	100 U	180

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water

Table 8 - Analytical Results for Soil Samples - SVOCs

Detection limits are higher than SQO.

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	1,2,4-Trichloro benzene in µg/kg	1,2-Dichloro benzene in µg/kg	1,2-Diphenyl hydrazine in µg/kg	1,3-Dichlorobenzene in µg/kg	1,4-Dichlorobenzene in µg/kg	2,2'-oxybis(1-Chloropropane) in µg/kg
Sediment Quality Objective				22 51	NA 50	NA	NA 170	NA 110	NA
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	100 U	100 U	100 U	100 U	100 U	100 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	100 U	100 U	100 U	100 U	100 U	100 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	100 U	100 U	100 U	100 U	100 U	100 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	94 U	94 U	94 U	94 U	94 U	94 U
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4	5 U	97 U			97 U	
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9	5 U	100 U			100 U	
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1	5 U	100 U			100 U	
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1	5 U	99 U			99 U	
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1	5 U	98 U			98 U	
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1	5 U	97 U			97 U	
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8	5 U	98 U			98 U	
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3		100 U			100 U	
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7	5 U	99 U			99 U	

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	1,2,4-Trichloro benzene in µg/kg	1,2-Dichloro benzene in µg/kg	1,2-Diphenyl hydrazine in µg/kg	1,3-Dichlorobenzene in µg/kg	1,4-Dichlorobenzene in µg/kg	2,2'-oxybis(1-Chloropropane) in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	100 U	100 U	100 U	100 U	100 U	100 U
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	99 U	99 U	99 U	99 U	99 U	99 U
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	97 U	97 U	97 U	97 U	97 U	97 U
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	100 U	100 U	100 U	100 U	100 U	100 U
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4	5 U	100 U			100 U	
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4	5 U	99 U			99 U	
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9	5 U	100 U			100 U	
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4	5 U	100 U			100 U	

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
NA - Not Available
SVOAs - Semivolatile Organic Compounds

Table 8 - Analytical Results for Soil Samples - SVOCs

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	2,4-Dinitrotoluene in µg/kg	2,6-Dinitrotoluene in µg/kg	2-Chloro-naphthalene in µg/kg	2-Nitroaniline in µg/kg	3,3'-Dichlorobenzidine in µg/kg	3-Nitroaniline in µg/kg
Sediment Quality Objective				NA	NA	NA	NA	NA	NA
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	100 U	100 U	100 U	100 U	500 U	100 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	100 U	100 U	100 U	100 U	500 U	100 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	100 U	100 U	100 U	100 U	500 U	100 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	94 U	94 U	94 U	94 U	470 U	94 U
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4						
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9						
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1						
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1						
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1						
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1						
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8						
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3						
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7						

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	2,4-Dinitrotoluene in µg/kg	2,6-Dinitrotoluene in µg/kg	2-Chloro-naphthalene in µg/kg	2-Nitroaniline in µg/kg	3,3'-Dichlorobenzidine in µg/kg	3-Nitroaniline in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	100 U	100 U	100 U	100 U	500 U	100 U
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	99 U	99 U	99 U	99 U	500 U	99 U
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	97 U	97 U	97 U	97 U	480 U	97 U
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	100 U	100 U	100 U	100 U	500 U	100 U
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4						
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4						
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9						
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4						

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
NA - Not Available
SVOAs - Semivolatile Organic Compounds

Table 8 - Analytical Results for Soil Samples - SVOCs

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	4-Bromophenyl phenyl ether in µg/kg	4-Chloroaniline in µg/kg	4-Chlorophenyl phenyl ether in µg/kg	4-Nitroaniline in µg/kg	Aniline in µg/kg	Benzoic acid in µg/kg
Sediment Quality Objective				NA	NA	NA	NA	NA	~~650~~ 540
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	100 U	100 U	100 U	100 U	100 U	500 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	100 U	100 U	100 U	100 U	100 U	500 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	100 U	100 U	100 U	100 U	100 U	500 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	94 U	94 U	94 U	94 U	94 U	470 U
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4						480 U
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9						500 U
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1						500 U
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1						500 U
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1						490 U
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1						490 U
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8						490 U
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3						500 U
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7						490 U

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	4-Bromophenyl phenyl ether in µg/kg	4-Chloroaniline in µg/kg	4-Chlorophenyl phenyl ether in µg/kg	4-Nitroaniline in µg/kg	Aniline in µg/kg	Benzoic acid in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	100 U	100 U	100 U	100 U	100 U	500 U
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	99 U	99 U	99 U	99 U	99 U	500 U
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	97 U	97 U	97 U	97 U	97 U	480 U
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	100 U	100 U	100 U	100 U	100 U	500 U
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4						500 U
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4						500 U
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9						500 U
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4						500 U

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
NA - Not Available
SVOAs - Semivolatile Organic Compounds

Table 8 - Analytical Results for Soil Samples - SVOCs

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Benzyl Alcohol in µg/kg	Biphenyl in µg/kg	Carbazole in µg/kg	Dibenzofuran in µg/kg	Dibenzothiophene in µg/kg	Hexachloro-benzene in µg/kg	Hexachloro-butadiene in µg/kg
Sediment Quality Objective				73	NA	NA	540	NA	NA	11
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	100 U	100 U	100 U	100 U	100 U	100 U	100 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	100 U	100 U	100 U	100 U	100 U	100 U	100 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	100 U	100 U	100 U	100 U	100 U	100 U	100 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	94 U	94 U	150	94 U	94 U	94 U	94 U
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4	10 B			97 U		5 U	5 U
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9	33			100 U		5 U	5 U
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1	18			100 U		5 U	5 U
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1	6 B			99 U		5 U	5 U
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1	5 U			120		5 U	5 U
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1	7 B			97 U		5 U	5 U
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8	11			98 U		5 U	5 U
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3				100 U			
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7	24			99 U		5 U	5 U

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Benzyl Alcohol in µg/kg	Biphenyl in µg/kg	Carbazole in µg/kg	Dibenzofuran in µg/kg	Dibenzothiophene in µg/kg	Hexachloro-benzene in µg/kg	Hexachloro-butadiene in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	100 U	100 U	100 U	100 U	100 U	100 U	100 U
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	99 U	99 U	99 U	99 U	99 U	99 U	99 U
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	97 U	97 U	97 U	97 U	97 U	97 U	97 U
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	100 U	100 U	600	100 U	120	100 U	100 U
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4	23			100 U		5 U	5 U
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4	44			99 U		5 U	5 U
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9	42			100 U		5 U	5 U
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4	46			100 U		5 U	5 U

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
NA - Not Available
SVOAs - Semivolatile Organic Compounds

Table 8 - Analytical Results for Soil Samples - SVOCs

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Hexachloro-cyclopentadiene in µg/kg	Hexachloro-ethane in µg/kg	Isophorone in µg/kg	N-Nitroso-di-n-propylamine in µg/kg	N-Nitroso dimethylamine in µg/kg	N-Nitroso diphenylamine in µg/kg
Sediment Quality Objective				NA	NA	NA	NA	NA	~~28~~
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	100 U	100 U	100 U	100 U	100 U	100 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	100 U	100 U	100 U	100 U	100 U	100 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	100 U	100 U	100 U	100 U	100 U	100 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	94 U	94 U	94 U	94 U	94 U	94 U
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4						13
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9						11
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1						5 U
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1						5 U
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1						5 U
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1						5 U
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8						5 U
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3						
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7						5 U

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Hexachloro-cyclopentadiene in µg/kg	Hexachloro-ethane in µg/kg	Isophorone in µg/kg	N-Nitroso-di-n-propylamine in µg/kg	N-Nitroso dimethylamine in µg/kg	N-Nitroso diphenylamine in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	100 U	100 U	100 U	100 U	100 U	100 U
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	99 U	99 U	99 U	99 U	99 U	99 U
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	97 U	97 U	97 U	97 U	97 U	97 U
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	100 U	100 U	100 U	100 U	100 U	100 U
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4						5 U
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4						5 U
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9						8 B
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4						7 B

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
NA - Not Available
SVOAs - Semivolatile Organic Compounds

Table 8 - Analytical Results for Soil Samples - SVOCs

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Nitrobenzene in µg/kg	Bis(2-Chloroethoxy) methane in µg/kg	Bis(2-Chloroethyl) ether in µg/kg
Sediment Quality Objective				NA	NA	NA
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	100 U	100 U	100 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	100 U	100 U	100 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	100 U	100 U	100 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	94 U	94 U	94 U
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4			
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9			
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1			
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1			
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1			
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1			
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8			
HC-MW-4 (S2)	6/24/03	8.5 to 10	10.8 to 9.3			
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7			

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Nitrobenzene in µg/kg	Bis(2-Chloroethoxy) methane in µg/kg	Bis(2-Chloroethyl) ether in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	100 U	100 U	100 U
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	99 U	99 U	99 U
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	97 U	97 U	97 U
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	100 U	100 U	100 U
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4			
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4			
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9			
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4			

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
NA - Not Available
SVOAs - Semivolatile Organic Compounds

Table 9 - Analytical Results for Soil Samples - Pesticides/PCBs

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	4,4-DDD in µg/kg	4,4-DDE in µg/kg	4,4-DDT in µg/kg	Aroclor-1016 in µg/kg	Aroclor-1221 in µg/kg
Sediment Quality Objective				16	9	34	300	300
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	2.4 U	2.4 U	2.4 U	115 U	231 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	2.6 U	2.6 U	2.6 U	135 U	271 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	2.3 U	2.3 U	2.3 U	119 U	239 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	2.3 U	2.3 U	2.3 U	117 U	234 U
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9	2.9 U	2.9 U	2.9 U	143 U	287 U
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1	2.3 U	2.3 U	2.3 U	117 U	234 U
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1	2.6 U	2.6 U	2.6 U	124 U	249 U
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1	2.2 U	2.2 U	2.2 U	113 U	225 U
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1	2.4 U	2.4 U	2.4 U	116 U	231 U
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8	2.4 U	2.4 U	2.4 U	121 U	242 U
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4	2.2 U	2.2 U	2.2 U	120 U	240 U
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7	2.9 U	2.9 U	2.9 U	135 U	270 U

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	4,4-DDD in µg/kg	4,4-DDE in µg/kg	4,4-DDT in µg/kg	Aroclor-1016 in µg/kg	Aroclor-1221 in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	6 U	6 U	6 U	291 U	582 U
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	4.8 U	4.8 U	4.8 U	228 U	455 U
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	2.5 U	2.5 U	2.5 U	123 U	246 U
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	2.7 U	2.7 U	2.7 U	133 U	265 U
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4	4.4 U	4.4 U	4.4 U	213 U	427 U
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4	4.3 U	4.3 U	4.3 U	225 U	449 U
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9	3.1 U	3.1 U	3.1 U	161 U	322 U
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4	3.5 U	3.5 U	3.5 U	169 U	339 U

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
Note - The sediment quality objective for the Aroclors is for total Aroclors.
PCBs - Polychlorinated Biphenyls

Table 9 - Analytical Results for Soil Samples - Pesticides/PCBs

Samples Outside the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Aroclor-1232 in µg/kg	Aroclor-1242 in µg/kg	Aroclor-1248 in µg/kg	Aroclor-1254 in µg/kg	Aroclor-1260 in µg/kg
Sediment Quality Objective				300	300	300	300	300
HC-MW-1 (S3)	6/24/03	10 to 11.5	7.2 to 5.7	115 U	115 U	115 U	115 U	115 U
HC-MW-1 (S4)	6/24/03	15 to 16.5	2.2 to 0.7	135 U	135 U	135 U	135 U	135 U
HC-MW-1 (S5)	6/24/03	20 to 21.5	-2.8 to -4.3	119 U	119 U	119 U	119 U	119 U
HC-MW-2 (S5)	6/24/03	12.5 to 14	6.9 to 5.4	117 U	117 U	117 U	117 U	117 U
HC-MW-3D (S6)	6/25/03	15 to 16.5	3.4 to 1.9	143 U	143 U	143 U	143 U	143 U
HC-MW-3D (S7)	6/25/03	20 to 21.5	-1.6 to -3.1	117 U	117 U	117 U	117 U	117 U
HC-MW-3D (S8)	6/25/03	25 to 26.5	-6.6 to -8.1	124 U	124 U	124 U	124 U	124 U
HC-MW-3D (S9)	6/25/03	30 to 31.5	-11.6 to -13.1	113 U	113 U	113 U	113 U	113 U
HC-MW-3D (S10)	6/25/03	35 to 36.5	-16.6 to -18.1	116 U	116 U	116 U	116 U	116 U
HC-MW-3D (S11)	6/25/03	40 to 41.2	-21.6 to -22.8	121 U	121 U	121 U	121 U	121 U
HC-MW-2 (S6)	6/24/03	17.5 to 19	1.9 to 0.4	120 U	120 U	120 U	120 U	120 U
HC-MW-4 (S4)	6/24/03	18.5 to 20	0.8 to -0.7	135 U	135 U	135 U	135 U	135 U

Samples Within the Proposed Excavation

Sample ID	Sampling Date	Depth Interval in Feet	Elev. Interval in Feet MLLW	Aroclor-1232 in µg/kg	Aroclor-1242 in µg/kg	Aroclor-1248 in µg/kg	Aroclor-1254 in µg/kg	Aroclor-1260 in µg/kg
HC-MW-1 (S1+S2)	6/24/03	3 to 6.5	14.2 to 10.7	291 U	291 U	291 U	291 U	291 U
HC-MW-2 (S1+S2)	6/24/03	3 to 6.5	16.4 to 12.9	228 U	228 U	228 U	228 U	228 U
HC-MW-2 (S3)	6/24/03	7.5 to 9	11.9 to 10.4	123 U	123 U	123 U	123 U	123 U
HC-MW-2 (S4)	6/24/03	10 to 11.5	9.4 to 7.9	133 U	133 U	133 U	133 U	133 U
HC-MW-3D (S1)	6/25/03	2.5 to 4	15.9 to 14.4	213 U	213 U	213 U	213 U	213 U
HC-MW-3D (S3)	6/25/03	7.5 to 9	10.9 to 9.4	225 U	225 U	225 U	225 U	225 U
HC-MW-3D (S4)	6/25/03	10 to 11.5	8.4 to 6.9	161 U	161 U	161 U	161 U	161 U
HC-MW-3D (S5)	6/25/03	12.5 to 14	5.9 to 4.4	169 U	169 U	169 U	169 U	169 U

U - Not detected at detection limit indicated.
MLLW - Mean Lower Low Water
Note - The sediment quality objective for the Aroclors is for total Aroclors.
PCBs - Polychlorinated Biphenyls

Table 10 - Analytical Results for Groundwater Samples - TPH/BTEX

Sample ID	Sampling Date	Benzene in µg/L	Ethylbenzene in µg/L	Toluene in µg/L	Xylenes (Total) in µg/L
Screening Level		51 (43)	29,000 (6,910)	200,000 (17,500)	NA
HC-MW-1	6/30/03	5 U	5 U	5 U	5 U
HC-MW-2	6/30/03	1 U	1 U	1 U	1 U
HC-MW-3D	6/30/03	1 U	1 U	1 U	1 U
HC-MW-3S	6/30/03	1 U	1 U	1 U	1 U
HC-MW-4	6/30/03	1 U	1 U	1 U	1 U
MW-4	7/9/03	1 U	1 U	1 U	1 U
MW-8	7/9/03	29	190	41	830
MW-D	7/9/03	24	160	40	760
MW-11	7/9/03	2.4	4.5	1 U	5.9
MW-13	7/9/03	5 U	5 U	10	5 U
MW-18	7/9/03	43	180	13	330

Sample ID	Sampling Date	NWTPH-Gasoline in µg/L
Screening Level		NA
HC-MW-1	6/30/03	120 U
HC-MW-2	6/30/03	25 U
HC-MW-3D	6/30/03	49
HC-MW-3S	6/30/03	59
HC-MW-4	6/30/03	56
MW-4	7/9/03	25 U
MW-8	7/9/03	12,000
MW-D	7/9/03	10,000
MW-11	7/9/03	600
MW-13	7/9/03	280
MW-18	7/9/03	12,000

U - Not detected at detection limit indicated.
NA - Not Available
MW-D is a duplicate of MW-8
The screening level is based on the lower of the Freshwater Chronic Criteria in Chapter 173-201A WAC and the Human Health Consumption of Organisms Criteria in National Recommended Water Quality Criteria (EPA 2002).
TPH/BTEX - Total Petroleum Hydrocarbon/Benzene, Toluene, Ethylbenzene, and Xylenes

Table 11 - Analytical Results for Groundwater Samples - Metals

Sample ID	Sampling Date	Arsenic in µg/L	Copper in µg/L	Lead in µg/L
Screening Level		190	11.4 (5-64)	2.5
HC-MW-1	6/30/03	4.4	1.9	1.99
HC-MW-2	6/30/03	2 U	2.8	1.78
HC-MW-3D	6/30/03	2 U	5.5	1.53
HC-MW-3S	6/30/03	2 U	1.4 U	1.35
HC-MW-4	6/30/03	2.5	1.4 U	1.48

Sample ID	Sampling Date	Arsenic, Dissolved in µg/L	Copper, Dissolved in µg/L	Lead, Dissolved in µg/L
Screening Level		190	11.4	2.5
MW-4	7/9/03	2.1 U	2.3	1.3 U
MW-8	7/9/03	2.1 U	2.1 U	1.3 U
MW-D	7/9/03	2.1 U	2.1 U	1.3 U
MW-11	7/9/03	3.8	2.8	1.3 U
MW-13	7/9/03	2.1 U	3.2	1.3 U
MW-18	7/9/03	2.1 U	2.4	1.3 U

U - Not detected at detection limit indicated.
MW-D is a duplicate of MW-8
The screening level is based on the Freshwater Chronic Criteria in Chapter 173-201A WAC.

Table 12 - Analytical Results for Groundwater Samples - HPAHs

Sample ID	Sampling Date	Benzo(a)anthracene in µg/L	Benzo(a)pyrene in µg/L	Benzo(b,k) fluoranthenes in µg/L	Benzo(g,h,i) perylene in µg/L	Chrysene in µg/L
Screening Level		0.018	0.018	0.018	NA	0.018
HC-MW-1	6/30/03	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
HC-MW-2	6/30/03	1 U	1 U	1 U	1 U	1 U
HC-MW-3D	6/30/03	1 U	1 U	1 U	1 U	1 U
HC-MW-3S	6/30/03	1 U	1 U	1 U	1 U	1 U
HC-MW-4	6/30/03	1 U	1 U	1 U	1 U	1 U
MW-4	7/9/03	1 U	1 U	1 U	1 U	1 U
MW-8	7/9/03	1 U	1 U	1 U	1 U	1 U
MW-D	7/9/03	1 U	1 U	1 U	1 U	1 U
MW-11	7/9/03	2.5	1.2	1.9	1 U	1.7
MW-13	7/9/03	1 U	1 U	1 U	1 U	1 U
MW-18	7/9/03	1 U	1 U	1 U	1 U	1 U

Sample ID	Sampling Date	Dibenz(a,h) anthracene in µg/L	Fluoranthene in µg/L	Indeno(1,2,3-c,d) pyrene in µg/L	Pyrene in µg/L
Screening Level		0.018	140	0.018	4,000
HC-MW-1	6/30/03	1 UJ	1 UJ	1 UJ	1 UJ
HC-MW-2	6/30/03	1 U	1 U	1 U	1 U
HC-MW-3D	6/30/03	1 U	1 U	1 U	1 U
HC-MW-3S	6/30/03	1 U	1 U	1 U	1 U
HC-MW-4	6/30/03	1 U	1 U	1 U	1 U
MW-4	7/9/03	1 U	1 U	1 U	1 U
MW-8	7/9/03	1 U	2.1	1 U	1.2
MW-D	7/9/03	1 U	1.8	1 U	1.1
MW-11	7/9/03	1 U	22	1 U	19
MW-13	7/9/03	1 U	1 U	1 U	1 U
MW-18	7/9/03	1 U	5.1	1 U	3.6

U - Not detected at detection limit indicated.
J - Estimated Value
NA - Not Available
MW-D is a duplicate of MW-8
The screening level is based on the Human Health Consumption of Organisms Criteria in National Recommended Water Quality Criteria (EPA 2002).
HPAHs - High Molecular Weight Polycyclic Aromatic Hydrocarbons

Table 13 - Analytical Results for Groundwater Samples - LPAHs

Sample ID	Sampling Date	2-Methylnaphthalene in µg/L	Acenaphthene in µg/L	Acenaphthylene in µg/L	Anthracene in µg/L
Screening Level		NA	990 (643)	NA	40,000 (25,900)
HC-MW-1	6/30/03	1 UJ	1 UJ	1 UJ	1 UJ
HC-MW-2	6/30/03	1 U	1 U	1 U	1 U
HC-MW-3D	6/30/03	1 U	58	1 U	1 U
HC-MW-3S	6/30/03	1 U	2.9	1 U	1 U
HC-MW-4	6/30/03	1 U	3.4	1 U	1 U
MW-4	7/9/03	1 U	1 U	1 U	1 U
MW-8	7/9/03	520	180	3.1	3.7
MW-D	7/9/03	460	160	2.9	2.9
MW-11	7/9/03	1.2	130	1.1	18
MW-13	7/9/03	1 U	5.1	1 U	1 U
MW-18	7/9/03	740	310	3.1	8.2

Sample ID	Sampling Date	Fluorene in µg/L	Naphthalene in µg/L	Phenanthrene in µg/L
Screening Level		5,300 (3,460)	NA (2,300)	NA
HC-MW-1	6/30/03	1 UJ	1 UJ	1 UJ
HC-MW-2	6/30/03	1 U	1 U	1 U
HC-MW-3D	6/30/03	1 U	1 U	1 U
HC-MW-3S	6/30/03	1 U	1 U	1 U
HC-MW-4	6/30/03	1.2	1 U	1 U
MW-4	7/9/03	1 U	1 U	1 U
MW-8	7/9/03	69	3,400	34
MW-D	7/9/03	63	3,100	31
MW-11	7/9/03	93	67	110
MW-13	7/9/03	1.9	3.6	1 U
MW-18	7/9/03	150	8,800	100

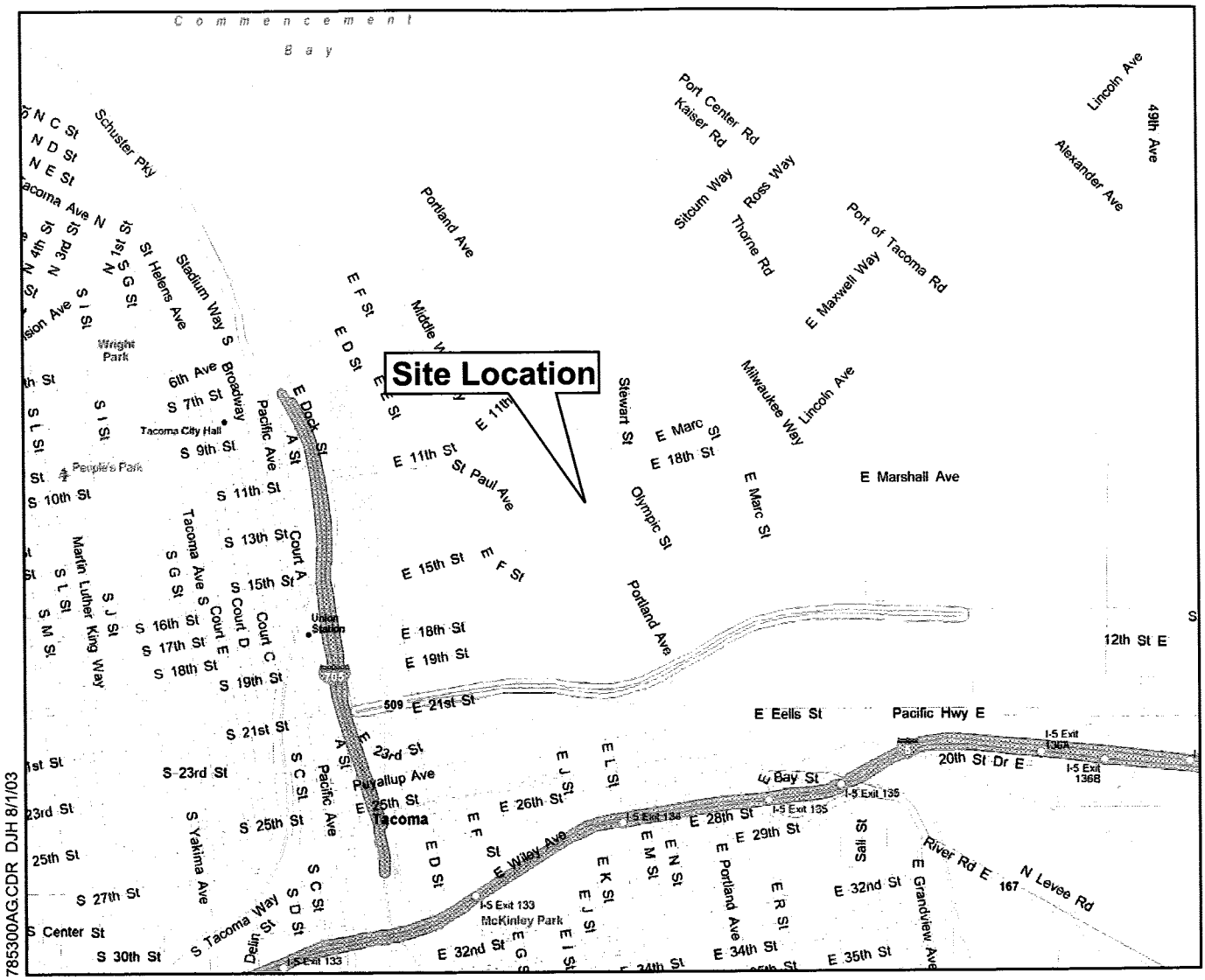
U - Not detected at detection limit indicated.
NA - Not Available
MW-D is a duplicate of MW-8
The screening level is based on the Human Health Consumption of Organisms Criteria in National Recommended Water Quality Criteria (EPA 2002).
LPAHs - Low Molecular Weight Polycyclic Aromatic Hydrocarbons

Table 14 - Analytical Results for Groundwater Samples - TSS

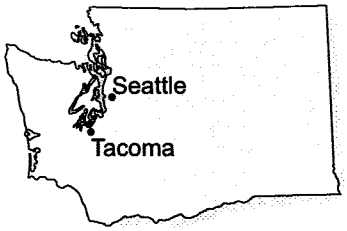
Sample ID	Sampling Date	TSS in mg/L
Screening Level		NA
HC-MW-1	6/30/03	1.4
HC-MW-2	6/30/03	14.4
HC-MW-3D	6/30/03	10.5
HC-MW-3S	6/30/03	1.8
HC-MW-4	6/30/03	2.2
MW-4	7/9/03	5.3
MW-8	7/9/03	32.9
MW-D	7/9/03	7.4
MW-11	7/9/03	9.9
MW-13	7/9/03	1.3 U
MW-18	7/9/03	26.8

U - Not detected at detection limit indicated.
MW-D is a duplicate of MW-8
NA - Not Available
TSS - Total Suspended Solids

Vicinity Map



Note: Base map prepared from Microsoft Streets and Trips 2002.



WASHINGTON

0 .5 1

Approximate Scale in Miles

N

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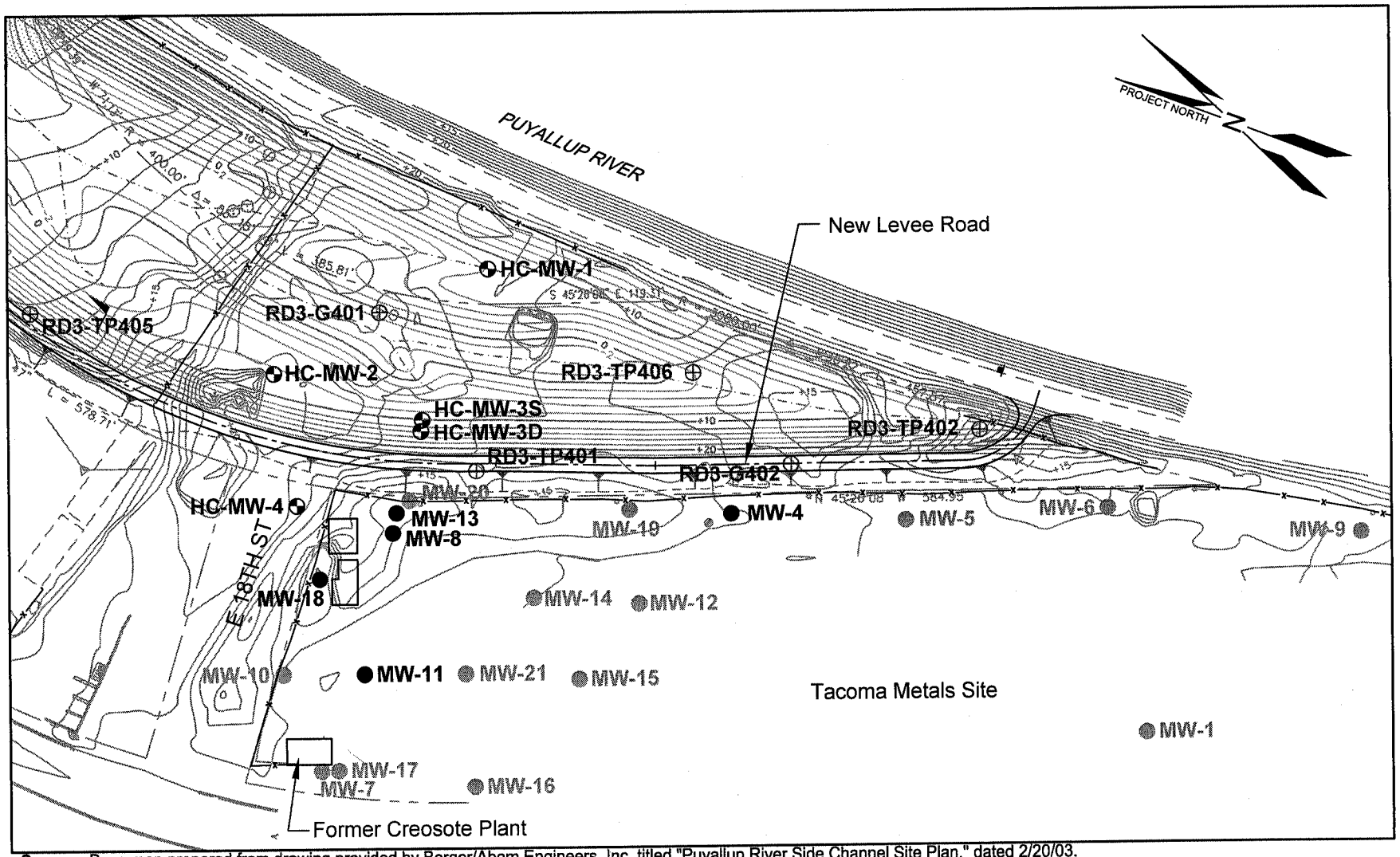
7853 ***8/03***

Figure 1

Site and Exploration Plan
Puyallup River Side Channel



Source: Base map prepared from drawing provided by Berger/Abam Engineers, Inc. titled "Puyallup River Side Channel Site Plan," dated 2/20/03.

HC-MW-1 ⊕ Monitoring Well Location and Number by Hart Crowser

MW-12 ● Monitoring Well Location and Number by Kennedy/Jenks (Bold Indicates Wells Sampled by Hart Crowser)

RD3-G401 ⊕ Previous Geotechnical Exploration Location and Number

0 120 240

Scale in Feet

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Figure 2

8/03

APPENDIX A
FIELD INVESTIGATION METHODS

APPENDIX A
FIELD INVESTIGATION METHODS

A.1 Introduction

This appendix presents sampling and analysis procedures followed during fieldwork at the Puyallup River Side Channel (PRSC) and Tacoma Metals sites. The exploration program included hollow-stem auger drilling and split-spoon soil sampling, monitoring well installation and development, and groundwater sampling. The methods and procedures described here are in accordance with previously EPA-approved procedures from earlier work on this project.

A.2 Utility Clearance

Prior to conducting field explorations on the site, a utility check (water, sewer, electric, telephone, gas, etc.) was performed to ensure that no accidental rupture occurred. Appropriate authorities for utilities were notified and sent site exploration maps. All utilities in the area of the explorations were clearly marked.

A.3 Soil Sampling

A.3.1 Split-Spoon Sampling

Soil samples were collected in general accordance with the Standard Penetration Test (SPT) procedure described in ASTM D 1586. Sampling proceeded as follows:

- A 8-inch-diameter auger was used for drilling.
- During drilling, a clean 2-inch-diameter split-spoon sampler was driven into the soil for 18 inches by a 140-pound hammer dropping 30 inches onto the end of the drilling rods. The number of blows required to drive the sampler the final 12 inches only is the Standard Penetration Resistance. This resistance, or blow count, provides a relative measure of the density of granular soils and the consistency of finer-grained cohesive soils.

Soil samples obtained from the split-spoon sampler during the SPT drive were split open and logged by a Hart Crowser geologist in accordance with Figure A-1. SPT blow counts and samples were collected at either 2.5- or 5-foot-depth intervals. Soil samples were homogenized and placed in the appropriate jar for chemical analysis. Soil samples were submitted to the City of Tacoma Public Works Utility Services Laboratory for chemical analysis.

A.3.2 Field Screening

A portion of the soil from the split-spoon sampler (or cuttings) were transferred into a clean 8-ounce jar for field screening of organic vapors using a portable photoionization detector (PID). The PID is capable of providing qualitative estimates of total organic vapor concentrations in the sample jar headspace. The soil sample jars headspace were covered with aluminum foil, capped, and allowed to equilibrate for a minimum of 10 minutes. PID measurements were made by removing the cap and penetrating the aluminum foil with the tip of the PID, taking care not to allow contact between the tip of the PID and soil particles. The maximum organic vapor reading observed during the first 10 seconds was recorded on the field boring log.

A.3.3 Soil Classification

The on-site field representative visually classified the soil samples recovered from the borings in general accordance with ASTM Method D 2488 (Figure A-1), prepared a log of soils encountered in the exploration, and recorded pertinent observations regarding drilling conditions, types of soils encountered, and the depth to water during drilling. Soil descriptions include the following properties: density of sands and gravels/consistency of silts and clays (as determined from the penetration resistance or qualitatively estimated from drill action), moisture, color, minor constituents, and major constituents. The presence of non-soil substances (e.g., debris or carbon), staining, and/or odors were noted.

A.4 Monitoring Well Installation

Four shallow wells (HC-MW-1, HC-MW-2, HC-MW-3S, and HC-MW-4) were screened across the water table, each with an approximate total depth of 20 feet. A fifth deeper well (HC-MW-3D) with a depth of 45 feet was installed adjacent to shallow well HC-MW-3S. Final well depths and screen placements were based on conditions encountered at the time of drilling. Well completion diagrams are presented on Figures A-2 through A-6, and well construction details are summarized in Table A-1.

Wells were constructed using 5- or 10-foot-long, 2-inch-diameter Schedule 40 PVC well screens with 0.020-inch machine-cut slots and 2-inch-diameter Schedule 40 blank PVC riser pipe. Wells were completed by lowering the well screen and riser down through the hollow-stem auger. As the auger was withdrawn, No. 10/20 silica sand was poured in the annular space from the base of the boring to approximately 3 feet above the top of the screened interval.

Well seals were constructed by placing bentonite chips in the annular space on top of the filter sand to within 3 feet of the ground surface. The remaining annular space was backfilled with concrete to complete the surface seal. Monitoring wells were completed with locking stick-up steel monuments set in concrete.

Well locations and top of casing elevations were surveyed by the City of Tacoma following installation as presented in Table A-1 and on the boring logs.

A.5 Monitoring Well Development

Monitoring wells were developed using a pre-cleaned Whale submersible pump. A minimum of ten casing volumes was removed during development, in addition to the volume of water added during drilling, if any. Well development proceeded until turbidity decreased and the measured groundwater parameters of temperature, electrical conductivity and pH stabilized (within ±10 percent of the previous readings).

A.6 Groundwater Sampling

Groundwater samples were collected from wells HC-1, HC-2, HC-3S, HC-3D, and HC-4 during low tide using low-flow sampling techniques. Groundwater samples were submitted to the City of Tacoma Public Works Utility Services Laboratory for the chemical analysis.

A.6.1 Sampling Equipment

The equipment used for collection of groundwater samples included:

- Temperature, pH, and electrical conductivity meters;
- Peristaltic pump with poly tubing;
- Laboratory-supplied pre-cleaned containers with appropriate preservatives added, if any;
- Coolers with blue ice; and
- Hart Crowser Groundwater Sampling Data and Sample Custody Record forms.

A.6.2 Groundwater Sampling Procedures

Upon arrival at the site, field personnel recorded site conditions, depth to water in the wells, and other requested information on the Groundwater Sampling Data forms. Groundwater samples were collected using low-flow sampling techniques to minimize suspended solids in the samples. The wells were purged and sampled with a peristaltic pump. Clean tubing was used for each well and disposed of after use. Purge water was collected in 55-gallon drums.

The field parameters of temperature, pH, and electrical conductivity were measured and recorded periodically during purging of the well. The sample was collected when parameters have stabilized (within ±10 percent of the previous readings). Final, stabilized field parameter measurements are presented in Table A-2.

A.7 Equipment Decontamination

General decontamination procedures are outlined below. All decontamination, water was placed in labeled drums and stored on site. A composite water sample was prepared and submitted to the City of Tacoma analytical laboratory to determine appropriate disposal.

A.7.1 Large Equipment

All drill tools, steel casing, auger, and drill rod were steam cleaned prior to initiating drilling and between borings. The steam clean unit was provided by the drillers. All steam cleaning was conducted in a designated on-site area.

A.7.2 Soil Sampling Equipment

All equipment used to sample subsurface soils, or miscellaneous tools, which come in contact with the soil samples, were decontaminated before collection of each sample. The decontamination sequence consisted of a scrub with a phosphate detergent (Alconox) solution, followed by potable/tap water rinse, and finished by thoroughly spraying with deionized distilled.

A.8 Previous Explorations

Logs of previous explorations by the City on the PRSC site are presented in Attachment A-1.

F:\Docs\JOBS\7853\Phase 8\Side Channel Report.doc

Key to Exploration Logs

Sample Description

Classification of soils in this report is based on visual field and laboratory observations which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field nor laboratory testing unless presented herein. Visual-manual classification methods of ASTM D 2488 were used as an identification guide.

Soil descriptions consist of the following:
Density/consistency, moisture, color, minor constituents, MAJOR CONSTITUENT, additional remarks.

Density/Consistency

Soil density/consistency in borings is related primarily to the Standard Penetration Resistance. Soil density/consistency in test pits is estimated based on visual observation and is presented parenthetically on the test pit logs.

SAND or GRAVEL Density	Standard Penetration Resistance (N) in Blows/Foot	SILT or CLAY Consistency	Standard Penetration Resistance(N) in Blows/Foot	Approximate Shear Strength in TSF
Very loose	0 - 4	Very soft	0 - 2	<0.125
Loose	4 - 10	Soft	2 - 4	0.125 - 0.25
Medium dense	10 - 30	Medium stiff	4 - 8	0.25 - 0.5
Dense	30 - 50	Stiff	8 - 15	0.5 - 1.0
Very dense	>50	Very stiff	15 - 30	1.0 - 2.0
		Hard	>30	>2.0

Moisture

Dry	Little perceptible moisture
Damp	Some perceptible moisture, probably below optimum
Moist	Probably near optimum moisture content
Wet	Much perceptible moisture, probably above optimum

Minor Constituents

	Estimated Percentage
Not identified in description	0 - 5
Slightly (clayey, silty, etc.)	5 - 12
Clayey, silty, sandy, gravelly	12 - 30
Very (clayey, silty, etc.)	30 - 50

Legends

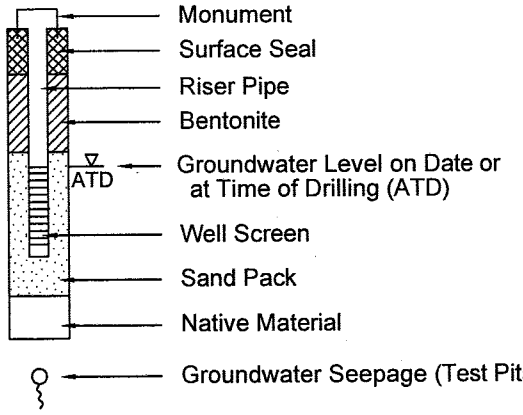
Sampling Test Symbols

Boring Samples		Test Pit Samples	
☒	Split Spoon	☒	Grab (Jar)
▧	Shelby Tube	▨	Bag
▥	Cuttings	▧	Shelby Tube
◫	Core Run		
*	No Sample Recovery		
P	Tube Pushed, Not Driven		

Test Symbols

GS	Grain Size Classification
CN	Consolidation
UU	Unconsolidated Undrained Triaxial
CU	Consolidated Undrained Triaxial
CD	Consolidated Drained Triaxial
QU	Unconfined Compression
DS	Direct Shear
K	Permeability
PP	Pocket Penetrometer Approximate Compressive Strength in TSF
TV	Torvane Approximate Shear Strength in TSF
CBR	California Bearing Ratio
MD	Moisture Density Relationship
AL	Atterberg Limits Water Content in Percent Liquid Limit Natural Plastic Limit
PID	Photoionization Detector Reading
CA	Chemical Analysis
DT	*In Situ* Density Test

Groundwater Observation Wells



HC Standards\Standard Report Figures\A-1'sA-1 Standard

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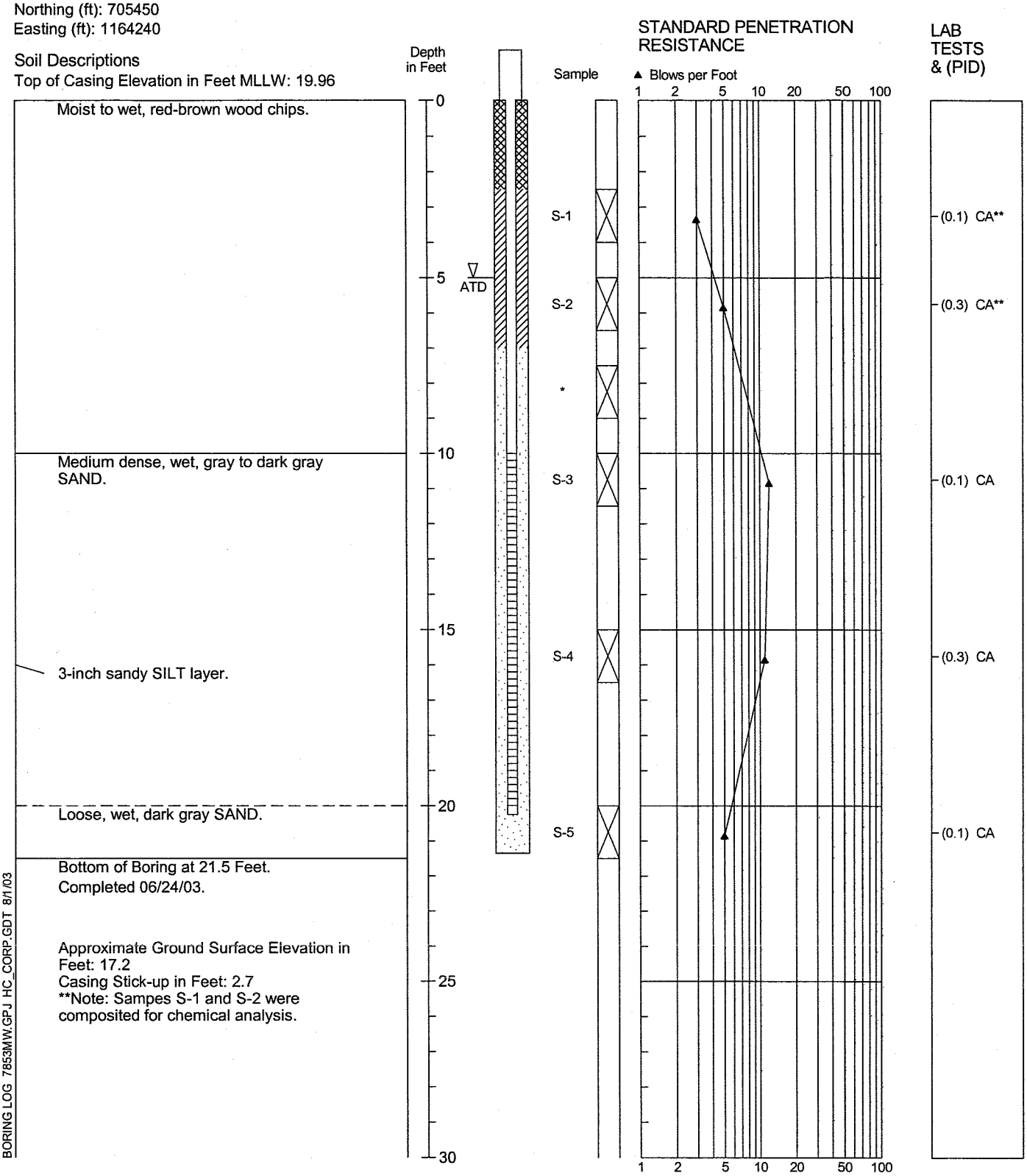
7940 8/03

Figure A-1

Monitoring Well Log HC-MW-1

Northing (ft): 705450
Easting (ft): 1164240

Soil Descriptions
Top of Casing Elevation in Feet MLLW: 19.96



BORING LOG 7853MW.GPJ HC_CORP.GDT 8/1/03

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7853 *06/03*

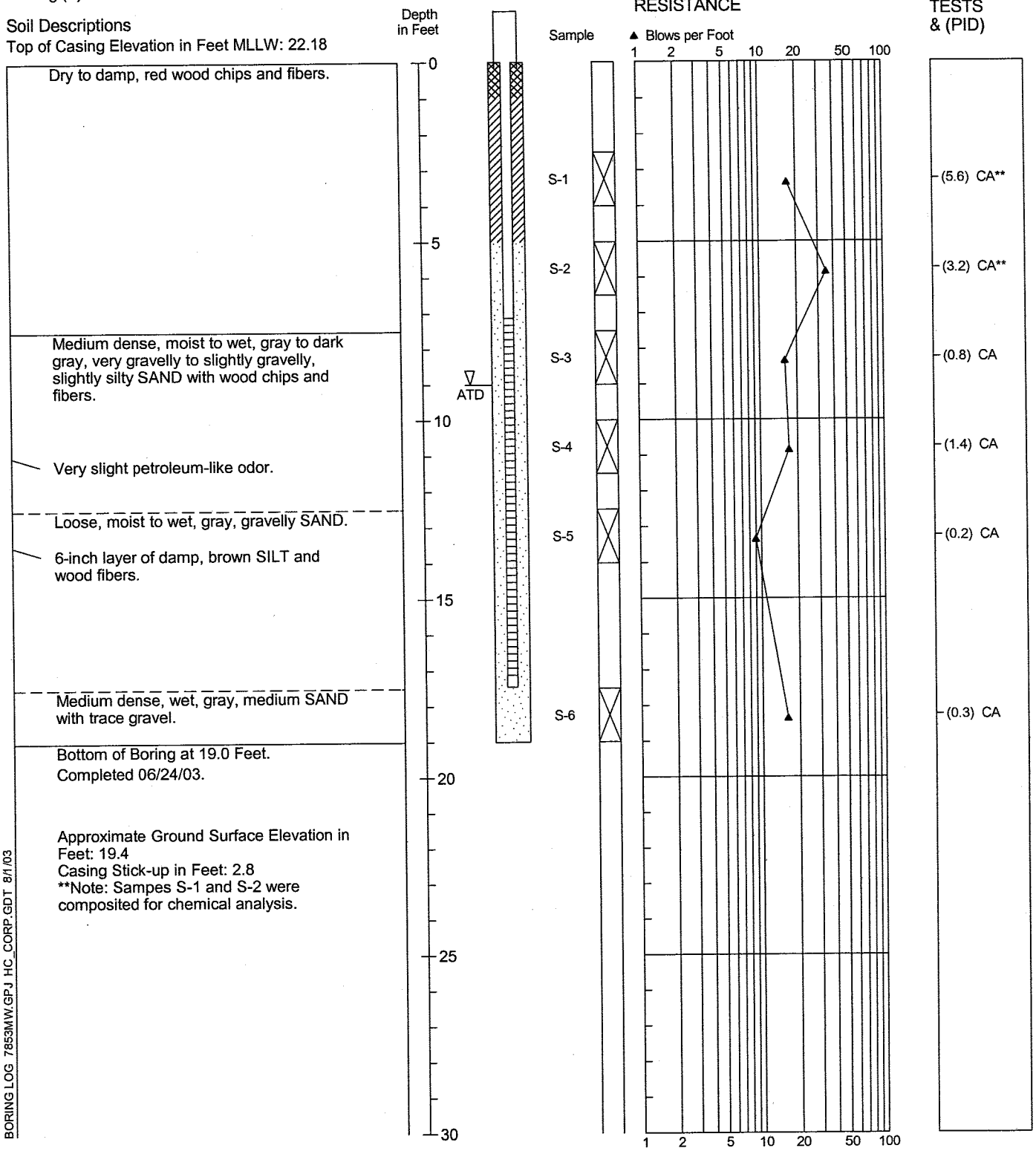
Figure A-2

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

Monitoring Well Log HC-MW-2

Northing (ft): 705572
Easting (ft): 1164050

Soil Descriptions
Top of Casing Elevation in Feet MLLW: 22.18



BORING LOG 7853MW.GPJ HC_CORP.GDT 8/1/03

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

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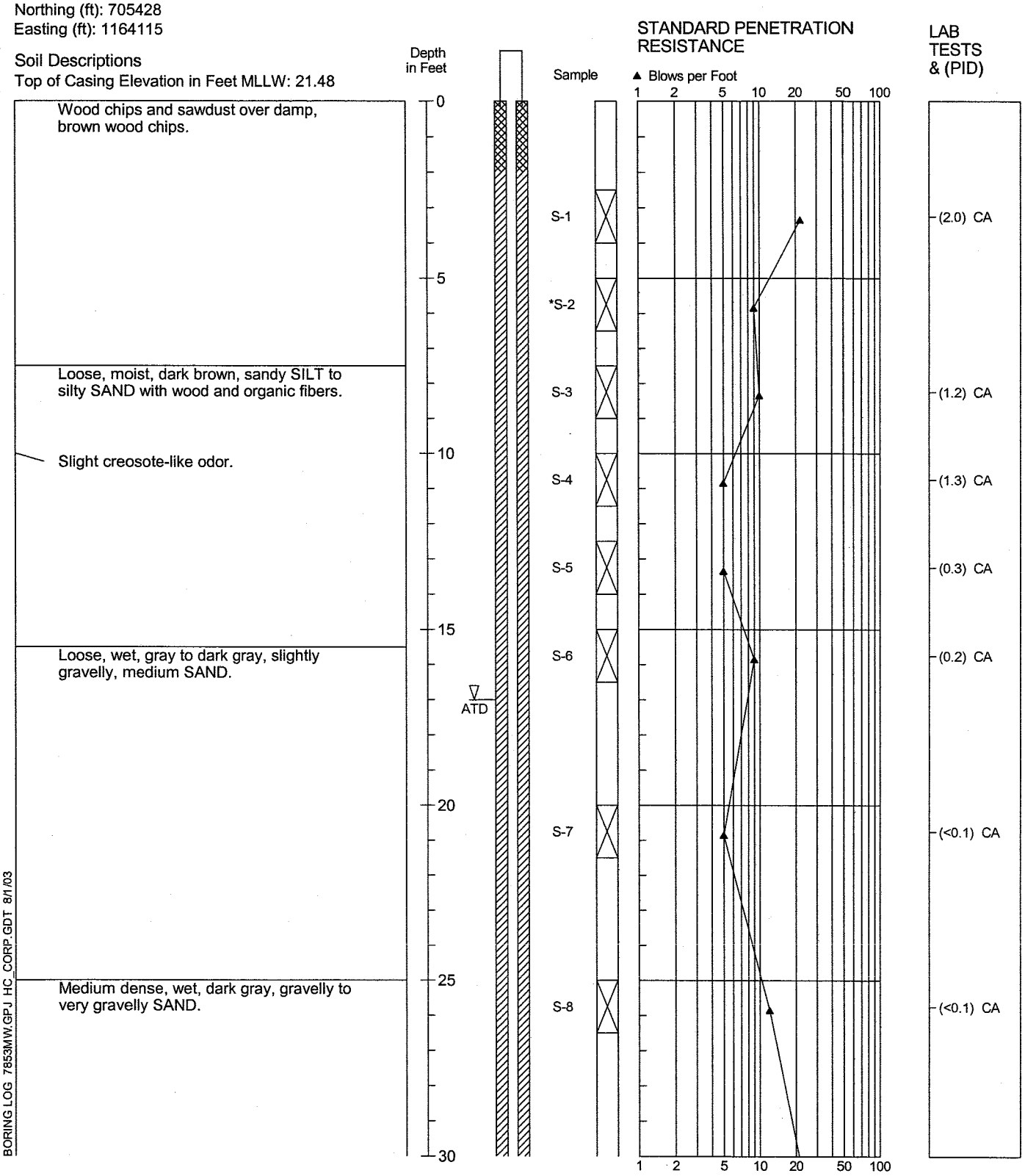
7853 *06/03*

Figure A-3

Monitoring Well Log HC-MW-3D

Northing (ft): 705428
Easting (ft): 1164115

Soil Descriptions
Top of Casing Elevation in Feet MLLW: 21.48



BORING LOG 7853MW.GPJ HC_CORP.GDT 8/1/03

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER

7853 *06/03*
Figure A-4 *1/2*

Monitoring Well Log HC-MW-3D

Northing (ft): 705428
Easting (ft): 1164115

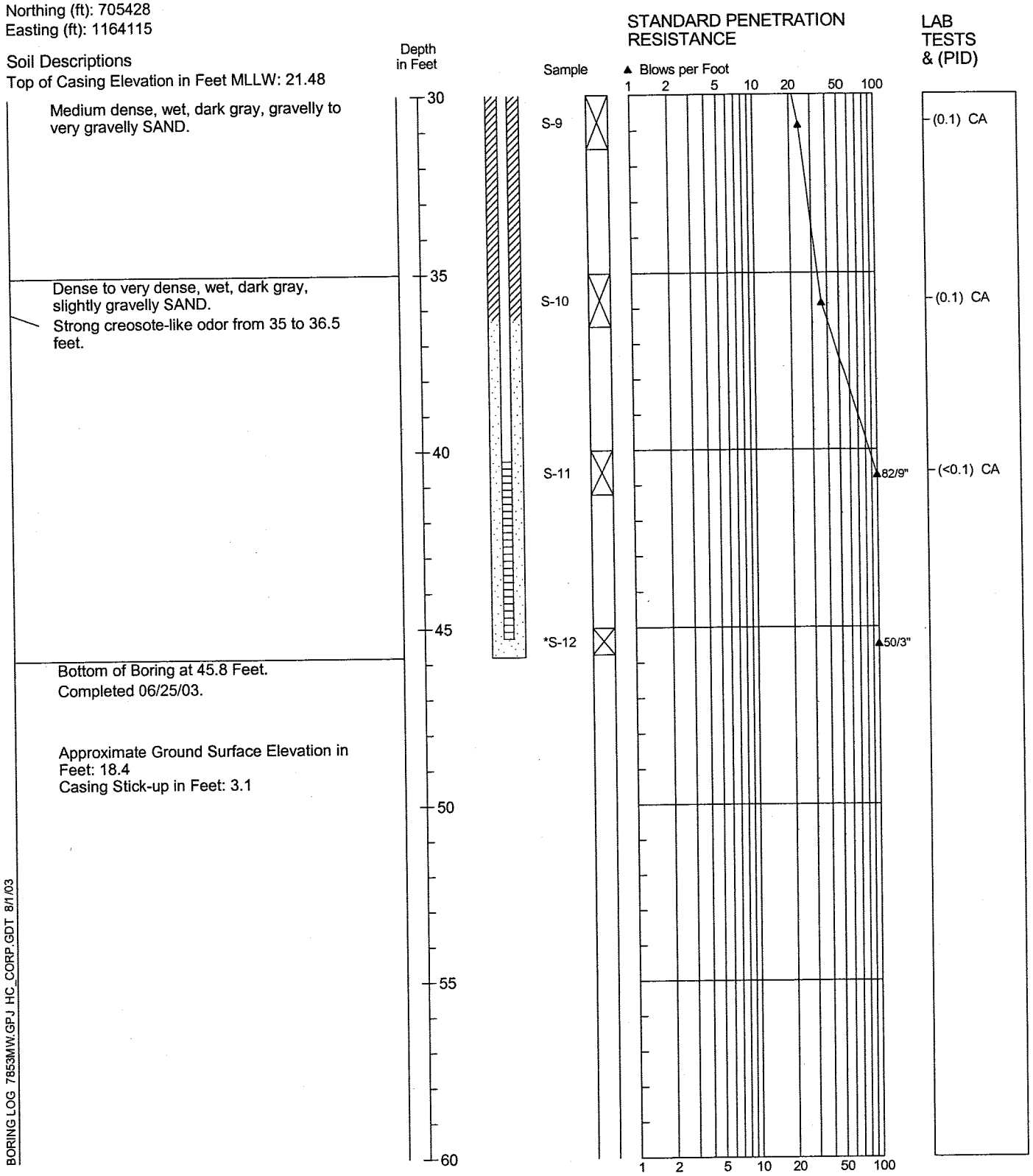
Soil Descriptions
Top of Casing Elevation in Feet MLLW: 21.48

Medium dense, wet, dark gray, gravelly to very gravelly SAND.

Dense to very dense, wet, dark gray, slightly gravelly SAND.
Strong creosote-like odor from 35 to 36.5 feet.

Bottom of Boring at 45.8 Feet.
Completed 06/25/03.

Approximate Ground Surface Elevation in Feet: 18.4
Casing Stick-up in Feet: 3.1



BORING LOG 7853MW.GPJ HC_CORP.GDT 8/1/03

HARTCROWSER

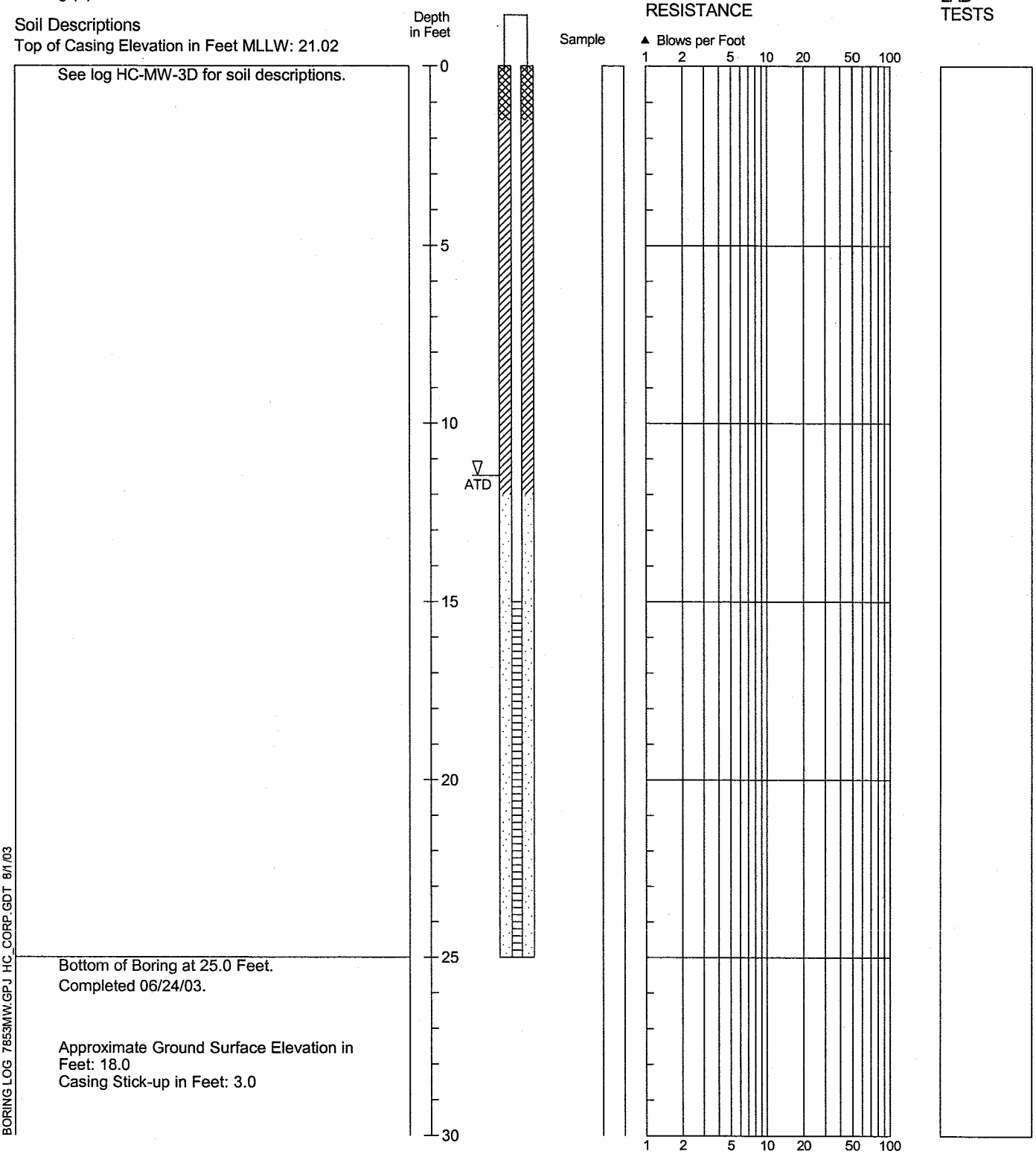
7853 06/03
Figure A-4 2/2

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

Monitoring Well Log HC-MW-3S

Northing (ft): 705423
Easting (ft): 1164118

Soil Descriptions
Top of Casing Elevation in Feet MLLW: 21.02



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

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7853 *06/03*

Figure A-5

Monitoring Well Log HC-MW-4

Northing (ft): 705509
Easting (ft): 1163979

Soil Descriptions
Top of Casing Elevation in Feet MLLW: 21.96

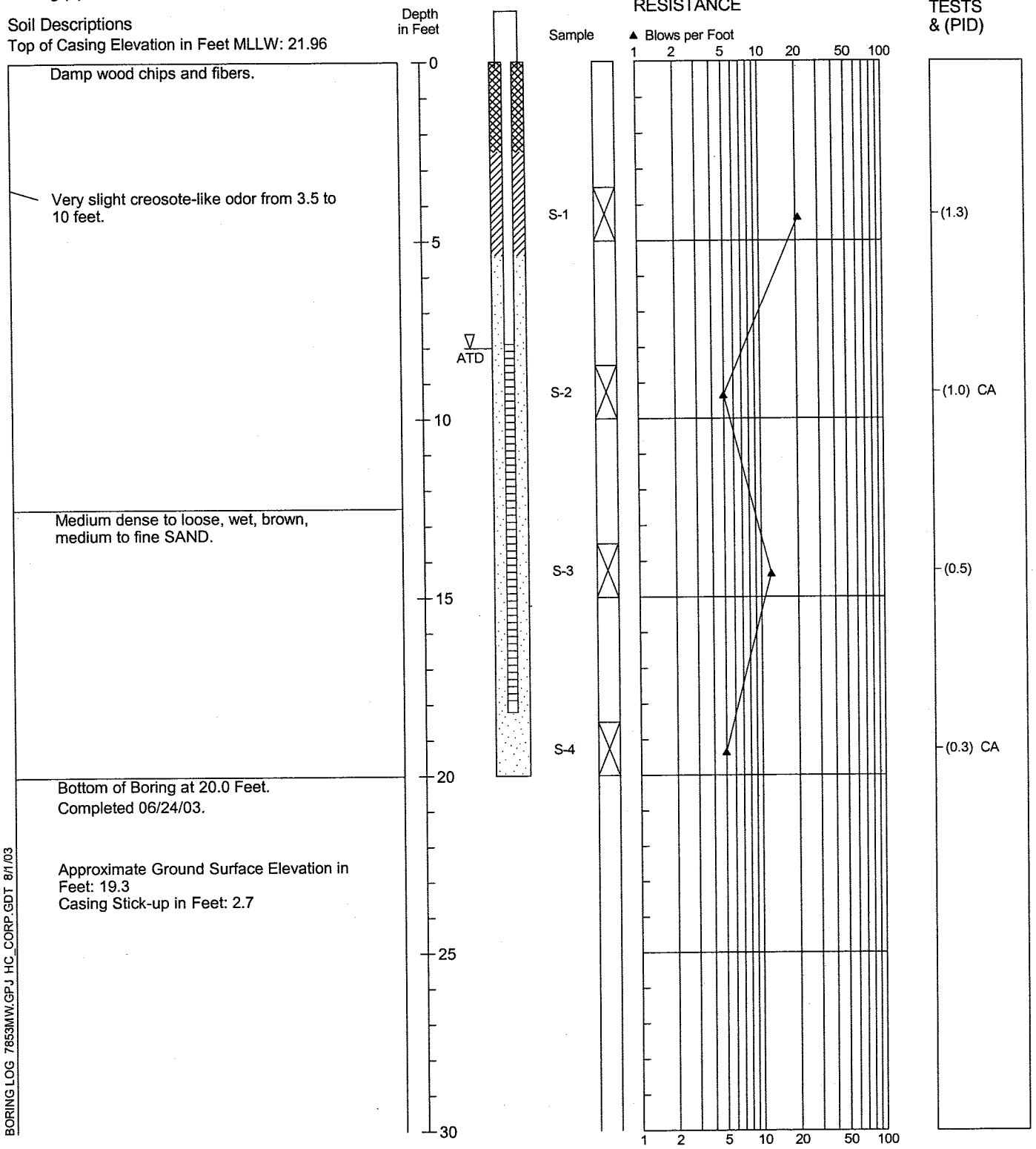
Damp wood chips and fibers.

Very slight creosote-like odor from 3.5 to 10 feet.

Medium dense to loose, wet, brown, medium to fine SAND.

Bottom of Boring at 20.0 Feet.
Completed 06/24/03.

Approximate Ground Surface Elevation in Feet: 19.3
Casing Stick-up in Feet: 2.7



BORING LOG 7853MW.GPJ HC_CORP.GDT 8/1/03

HARTCROWSER

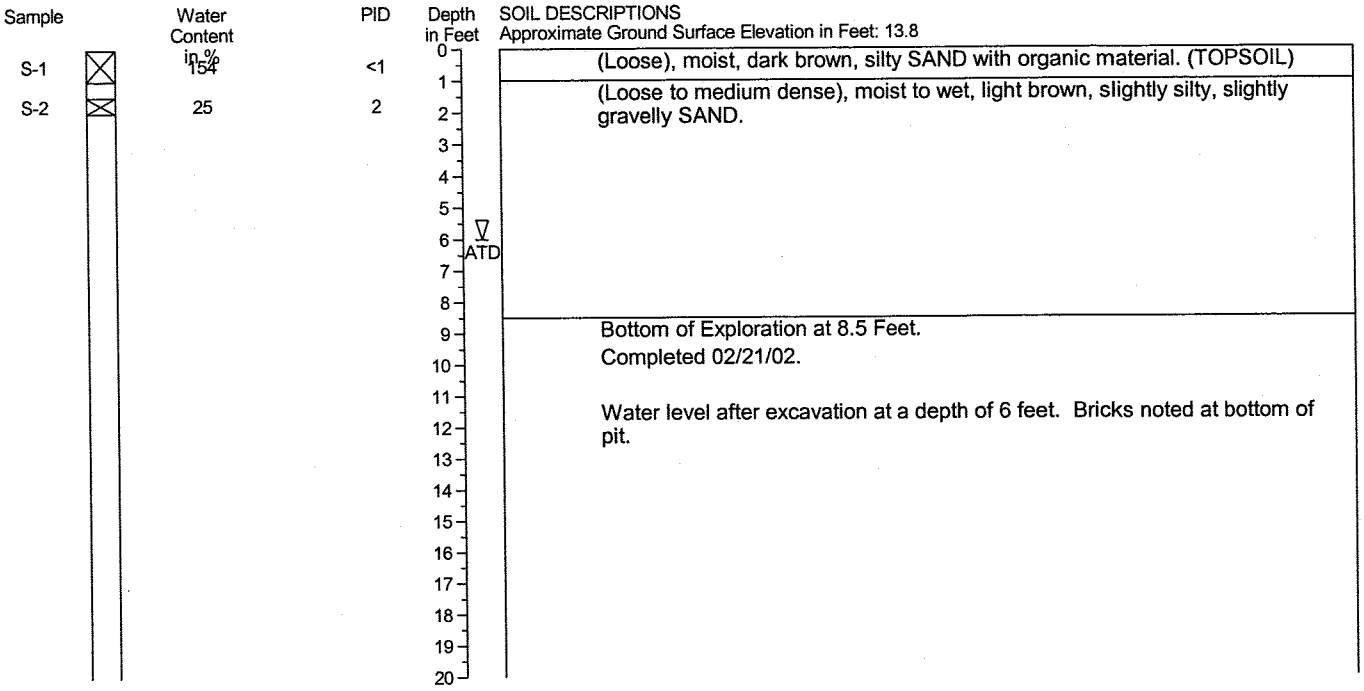
7853 06/03

Figure A-6

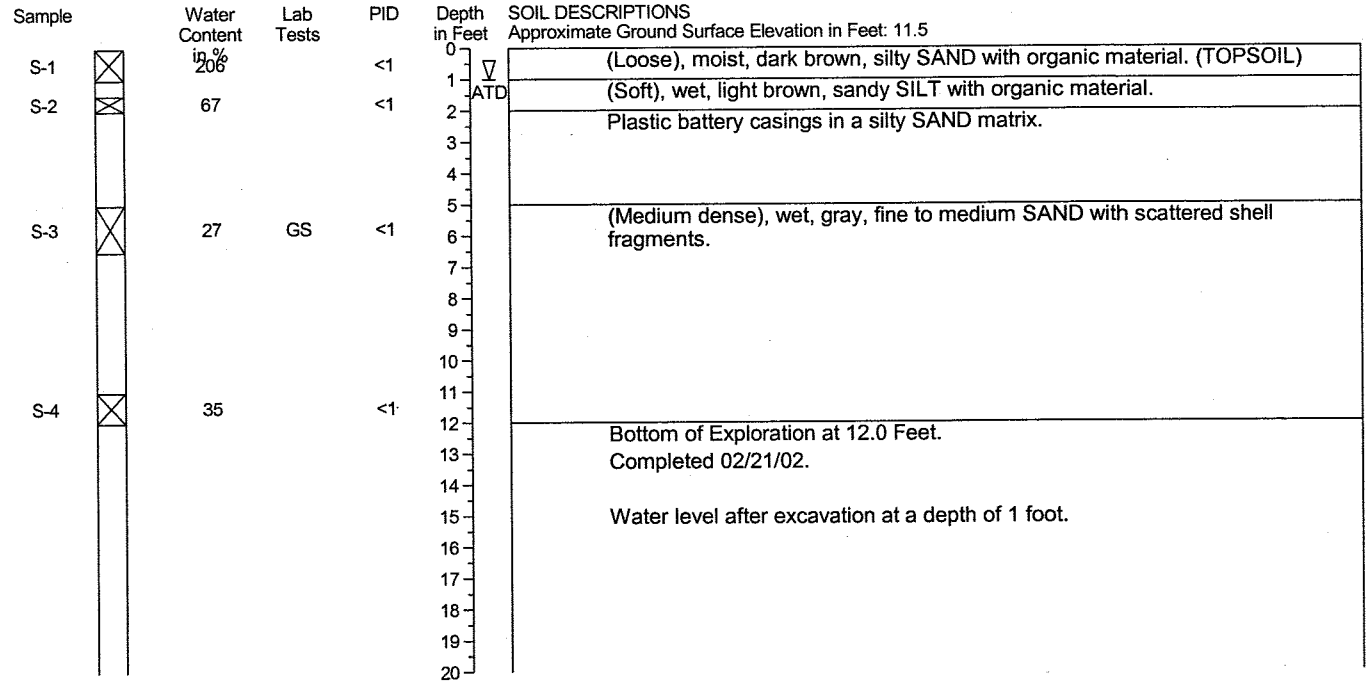
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

ATTACHMENT A-1
PREVIOUS GEOTECHNICAL EXPLORATIONS
FROM APPENDIX A OF THE DESIGN ANALYSIS REPORT
DATED NOVEMBER 1, 2002

Test Pit Log RD3-TP401



Test Pit Log RD3-TP402



2 LOGS PER PAGE 407248TP.GPJ HC_CORP.GDT 8/6/03

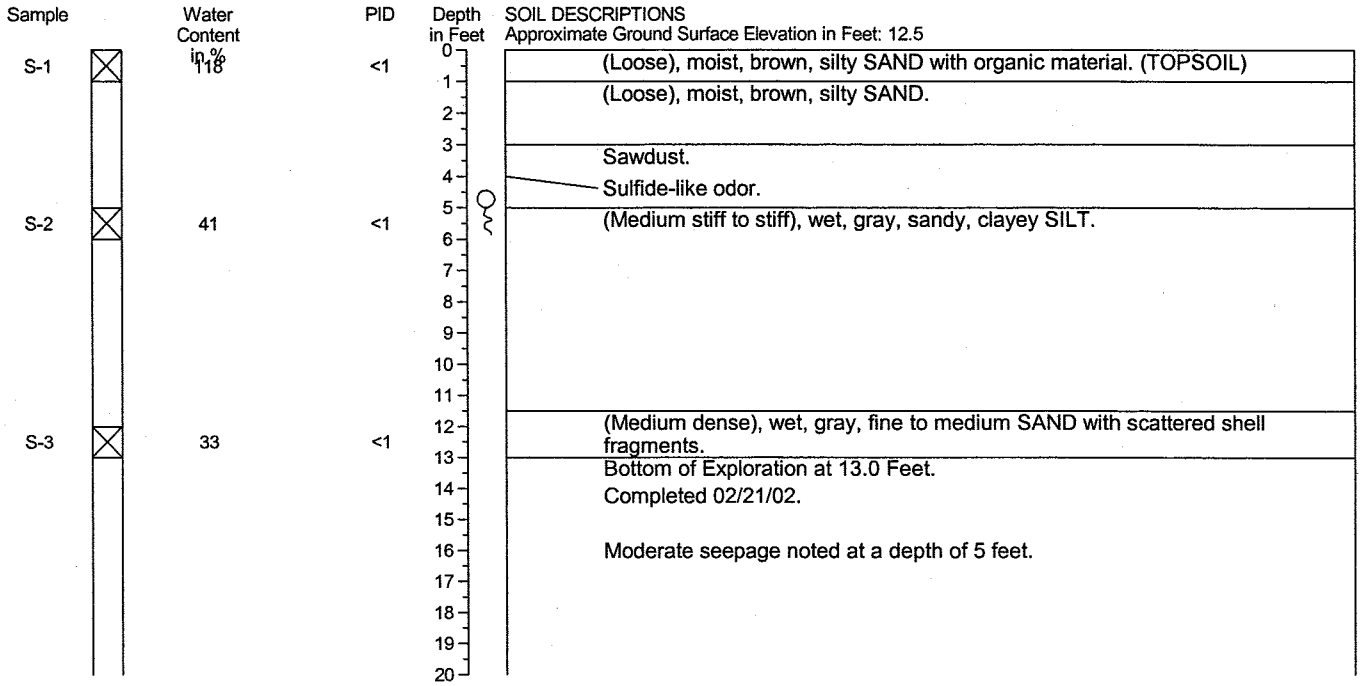
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

HARTCROWSER

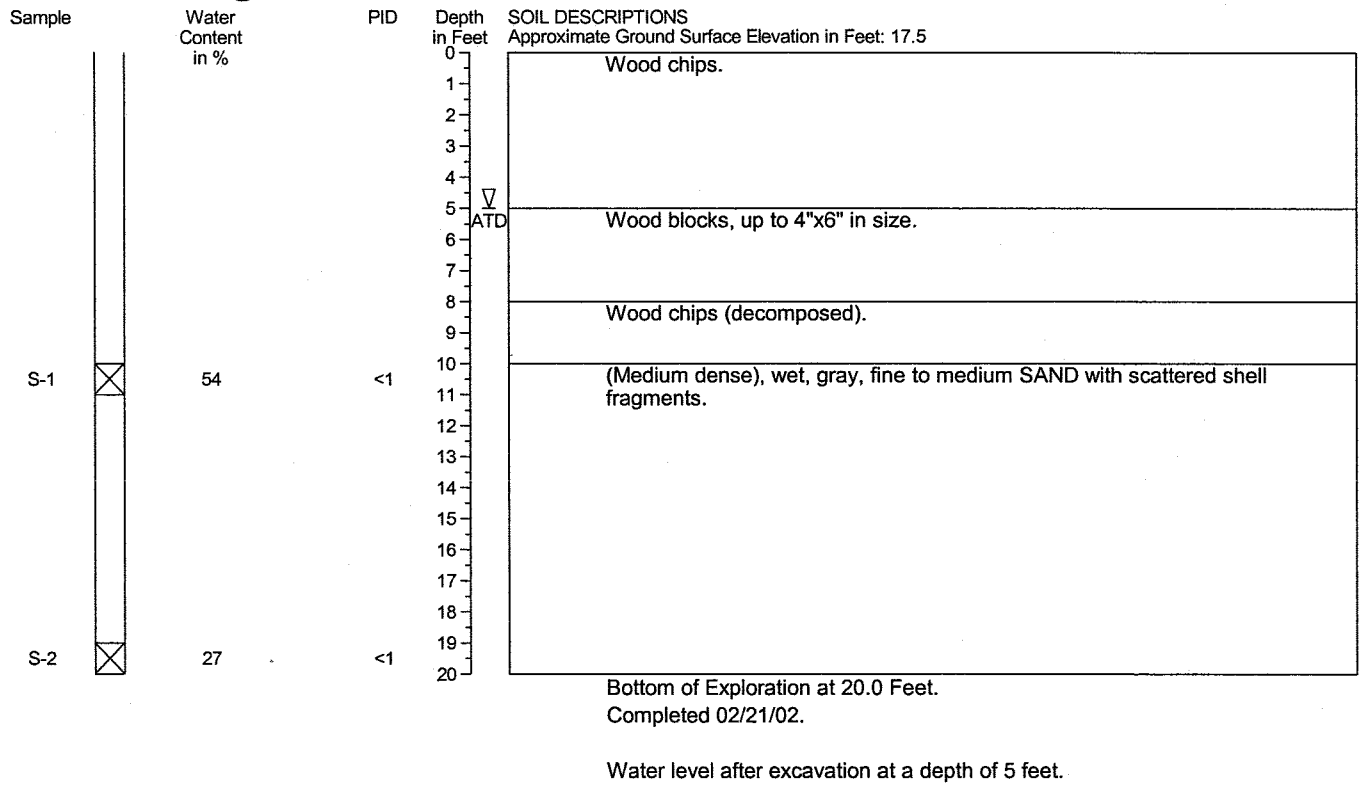
4072-48 *02/02*

Figure A-2

Test Pit Log RD3-TP405



Test Pit Log RD3-TP406



2 LOGS PER PAGE 407248TP.GPJ HC_CORP.GDT 8/6/03

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

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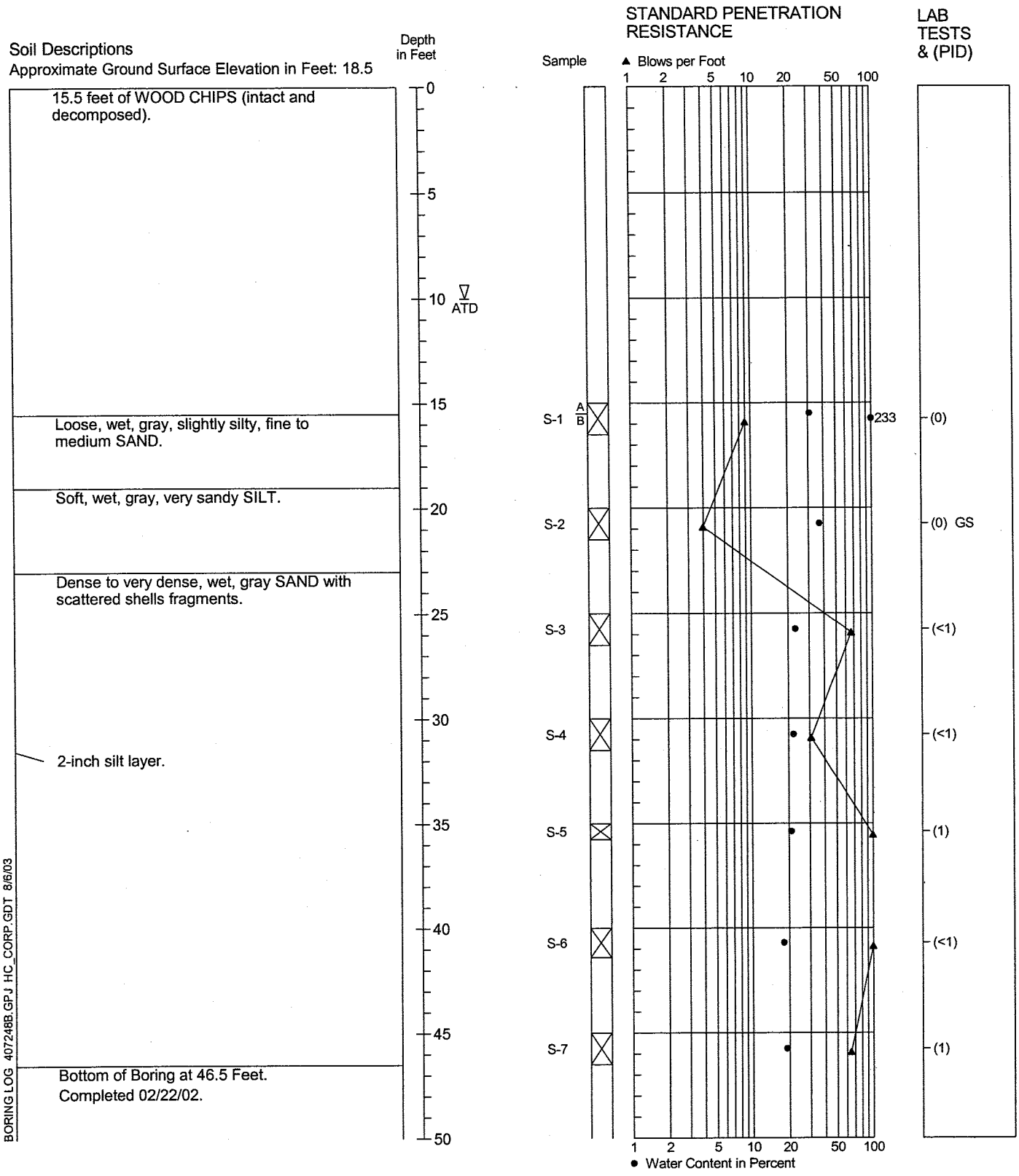
4072-48 *02/02*

Figure A-4

Boring Log RD3-G401



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER

4072-48 *02/02*

Figure A-5

APPENDIX B
DATA VALIDATION AND LABORATORY CERTIFICATES OF ANALYSIS

City of Tacoma
Environmental Services
Science and Engineering Division

Memorandum

TO: John O'Loughlin, P.E., Foss Construction Management

FROM: Christopher L. Getchell, Source Control Supervisor

SUBJECT: Foss Waterway Construction WO# DC2001

DATE: July 23, 2003

Attached are the sample analysis results for the water samples collected from the Puyallup River Side Channel on June 30 and July 9, 2003. These samples were analyzed for NWTPH-G, Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX), TSS, Polynuclear Aromatic Hydrocarbons (PAH), and Total or Dissolved Metals.

The Science and Engineering Division analyzed the samples. The samples collected on June 30 did not originally have Total Metals requested. The Total Metals were requested July 8. A portion of the remaining TSS aliquots were divided and preserved at that time.

A Quality Control Data Review was prepared concerning these samples and is attached with the data reports.

If you have any questions concerning this data, call me at (253) 502-2130.

Christopher L. Getchell,
Source Control Supervisor.

CLG:LAZ

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Quality Control Data Review

TO: Christopher L. Getchell, Source Control Supervisor

FROM: Lori A. Zboralski, Senior Laboratory Analyst

DATE: July 23, 2003

SAMPLES

This report concerns the following samples associated with **Foss Waterway Construction WO# DC2001:**

Sample Description	Lab ID#	Date Sampled
HC-MW-1	20030701001	06/30/2003
HC-MW-2	20030701002	06/30/2003
HC-MW-3D	20030701003	06/30/2003
HC-MW-3S	20030701004	06/30/2003
HC-MW-4	20030701005	06/30/2003
Trip Blank	20030701006	06/30/2003
MW-D	20030710062	07/09/2003
MW-4	20030710063	07/09/2003
MW-11	20030710064	07/09/2003
MW-13	20030710065	07/09/2003
MW-8	20030710066	07/09/2003
MW-18	20030710067	07/09/2003
Trip Blank	20030710068	07/09/2003

HOLDING TIMES

The samples were extracted within the 7-day sample collection-to-extraction holding time for Semi-Volatile Organics and analyzed within 7 days for TSS, 14 days for NWTPH-G and BTEX, 40 days after the extraction for Semi-Volatile Organics, and 180 days for Total or Dissolved Metals.

Total Metals was not originally listed on the Chain of Custody for the samples collected June 30, 2003. A portion of the TSS aliquot was divided and preserved for Total Metals analysis on July 8, 2003.

CHAIN OF CUSTODY

Total Metals was not originally listed on the Chain of Custody for the samples collected June 30, 2003. A portion of the TSS aliquot was divided and preserved for Total Metals analysis on July 8, 2003.

METHODS

These samples were analyzed according to the methods outlined in the "Soil and Groundwater Quality Testing Work Plan", June 16, 2003.

Two samples had to be analyzed diluted for NWTPH-G and Volatile Organics due to sample foaming. The dilutions are as follows: HC-MW-1 at 1:5 and MW-13 at 1:5.

Four samples had to be diluted to bring the analyte concentrations within the calibration ranges. Sample MW-D was diluted 1:5 for BTEX and 1:40 for NWTPH-G; MW-11 was diluted 1:5 for NWTPH-G; MW-8 was diluted 1:20 for BTEX and NWTPH-G; and MW-18 was diluted 1:10 for BTEX and 1:50 for NWTPH-G.

DAILY INSTRUMENT PERFORMANCE STANDARDS

The Mass Spectrometer used for the Semi-Volatile Organics, BTEX, and NWTPH-G analyses were tuned according to the recommendations of methods 8260 and 8270. All mass abundances and ratios were within the criteria of the methods.

CALIBRATION AND VERIFICATION

The Initial Calibrations for Semi-Volatile Organics and BTEX had relative standard deviations of less than 15% for all reported compounds. The Continuing Calibrations had percent differences of less than 20% for all reported compounds.

The NWTPH-G initial calibrations met method requirements for linearity with correlation coefficients of greater than 0.990. The continuing calibrations associated with these samples had percent differences of less than 20%.

ICP calibrations met Method 6010B recommendations for linearity and accuracy. Sensitivity was monitored by analysis of standards at approximately two times the method detection limits. The recoveries of these standards ranged from 89 to 115%. The recoveries were within the laboratory limits of 50 to 200%.

The ICP calibration stabilities were monitored throughout the course of the analytical runs by analysis of standards in the middle of the linear range for the elements analyzed. The recoveries of these standards are to have recoveries of 90 to 110%. The recoveries of these standards ranged from 96 to 104%.

INTERELEMENT CORRECTION CHECK

Standards are analyzed to monitor the inter-element correction factors for ICP. These standards contain the interfering elements and the analytes of concern for this project. Recoveries of these standards are to be with 80 to 120%. The recoveries ranged from 91 to 106%.

METHOD AND CALIBRATION BLANKS

Method and calibration blanks were analyzed at the required frequencies for the methods. Method Blanks were analyzed for every digestion or extraction batch. Calibration blanks for ICP were analyzed every 10 samples. The concentrations of these blanks were less than the detection limits or less than $1/5^{th}$ the concentration in the samples at all times.

FIELD BLANKS

Trip Blanks for BTEX and NWTPH-G were collected each day. There were no analytes detected in these blanks.

SURROGATES

Surrogate compounds were added to each sample prior to extraction for Semi-Volatile Organics and prior to injection for Volatile Organics. The recoveries of these compounds are tracked with control charts for BTEX and Semi-Volatile Organics. The recoveries associated with NWTPH-G are to be within 50 to 150%. All surrogate recoveries were within the required limits, **except the recoveries of 2-Fluorobiphenyl and Terphenyl-d14 in sample HC-MW-1. The recoveries in this sample were 33 and 23%, respectively. The lower limit for 2-Fluorobiphenyl is 38.5 and for Terphenyl-d14 is 28%. The Semi-Volatile Organic compound values for sample HC-MW-1 are qualified as estimated based on low surrogate recoveries.** The surrogate Dibromofluoromethane had high recoveries in HC-MW-1 and HC-MW-4, at 131 and 132%, respectively. The upper limit for Dibromofluoromethane is 125%. The samples had no Volatile Organic compounds detected so no data is qualified.

LABORATORY CONTROL SAMPLES

Laboratory Control Samples were analyzed at the required frequency for the methods. Recoveries for metals are to be within 80 to 120%. Recoveries ranged from 95 to 103%. Control samples for BETX and method 8270 are evaluated against control chart limits based on the 95% confidence intervals. The control samples associated with these samples all had recoveries within the laboratory's control chart limits. The recovery of the control sample for NWTPH-G is to have a recovery between 50 and 150%. The recovery for the NWTPH-G control sample was 102%.

DUPLICATE SAMPLE ANALYSIS

Samples in this batch were analyzed in duplicate for Total Metals, Dissolved Metals, and TSS. The relative percent differences are to be less than 20% for analytes with concentrations greater than 5 times the reporting limit. The relative percent differences ranged from 0 to 5%.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE ANALYSIS

The following samples were analyzed with matrix spikes: HC-MW-3D for Total Metals and MW-D for Dissolved Metals. The recoveries ranged from 94 to 119% and all were within the recommended recoveries of 75 to 125%.

Sample HC-MW-3D was analyzed with Matrix Spike and Matrix Spike duplicate for BTEX and Semi-Volatile Organics. Sample MW-4 was analyzed with Matrix Spike and Matrix Spike Duplicate for NWTPH-G. The recoveries for BTEX and Semi-Volatile Organics were all within the laboratory control limits for these compounds. The NWTPH-G recoveries were within the method limits of 50 to 150% at 84 and 112%.

ICP SERIAL DILUTIONS

Sample HC-MW-3D for Total Metals and MW-D for Dissolved Metals were analyzed at 1:5 dilutions. The percent differences for the diluted samples compared to the undiluted samples were less than 10% for analyte concentrations greater than 50 times the reporting limits.

INTERNAL STANDARDS

Internal Standards were used in the determinations of the Semi-Volatile Organic and BTEX compounds. According to the methods, the internal standard areas in the samples are to be within 50 to 200% the standards measured in the continuing calibrations. The recoveries of the internal standards for these analyses ranged from

DATA AVAILABILITY

All data associated with the samples contained in this report are archived at the Science and Engineering Division and are available upon request.

DATA ASSESSMENT

Discuss any dilutions that were necessary and why, interferences, any reporting limits that may have been exceeded, or any other circumstances that help explain the results.

The qualifiers assigned to these samples including:

U indicates the parameter was not detected above the Detection Limit.

UJ indicates the parameter was not detected above the Detection Limit and the value is considered estimated.

All data including qualified values are acceptable for use.

City of Tacoma

Science and Engineering Division

2201 Portland Avenue Tacoma WA 98421
Phone: 253.591.5588 Fax: 253.502.2170

Project: **Foss**
DC2001CLA
Date July 23, 2003

Lab#: 20030701001
Sample ID: HC-MW-1
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 6/30/2003

Test	Result	Units
CONVENTIONAL		
TSS	**1.4**	mg/L
GC/MS-BNA		
2-Methylnaphthalene	1.0 U J	ug/L
Acenaphthene	1.0 U J	ug/L
Acenaphthylene	1.0 U J	ug/L
Anthracene	1.0 U J	ug/L
Benzo(a)anthracene	1.0 U J	ug/L
Benzo(a)pyrene	1.0 U J	ug/L
Benzo(b,k)fluoranthenes	1.0 U J	ug/L
Benzo(g,h,i)perylene	1.0 U J	ug/L
Chrysene	1.0 U J	ug/L
Dibenz(a,h)anthracene	1.0 U J	ug/L
Fluoranthene	1.0 U J	ug/L
Fluorene	1.0 U J	ug/L
Indeno(1,2,3-c,d)pyrene	1.0 U J	ug/L
Naphthalene	1.0 U J	ug/L
Phenanthrene	1.0 U J	ug/L
Pyrene	1.0 U J	ug/L

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
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B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030701001
Sample ID: HC-MW-1
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 6/30/2003

	Test	Result	Units
GC/MS-VOA			
	Benzene	5.0 U	ug/L
	Ethylbenzene	5.0 U	ug/L
	NWTPH-Gasoline	120 U	ug/L
	Toluene	5.0 U	ug/L
	Xylenes (Total)	5.0 U	ug/L
ICP			
	Arsenic	**4.4**	ug/L
	Copper	**1.9**	ug/L
	Lead	**1.99**	ug/L

Lori A. Zboralski July 23, 2003
Reviewed By: **Date**

NWTPH-G Surrogate Recoveries

Compound	True	Found	%Recovery	Limits
Bromofluorobenzene	20	23.19	116	50-150
Toluene-d8	20	21.08	105	50-150

Flags:
U: The value is less than detection limit
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Project: **Foss**
DC2001CLA
Date July 23, 2003

Lab#: 20030701002
Sample ID: HC-MW-2
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 6/30/2003

Test	Result	Units
CONVENTIONAL		
TSS	**14.4**	mg/L
GC/MS-BNA		
2-Methylnaphthalene	1.0 U	ug/L
Acenaphthene	1.0 U	ug/L
Acenaphthylene	1.0 U	ug/L
Anthracene	1.0 U	ug/L
Benzo(a)anthracene	1.0 U	ug/L
Benzo(a)pyrene	1.0 U	ug/L
Benzo(b,k)fluoranthenes	1.0 U	ug/L
Benzo(g,h,i)perylene	1.0 U	ug/L
Chrysene	1.0 U	ug/L
Dibenz(a,h)anthracene	1.0 U	ug/L
Fluoranthene	1.0 U	ug/L
Fluorene	1.0 U	ug/L
Indeno(1,2,3-c,d)pyrene	1.0 U	ug/L
Naphthalene	1.0 U	ug/L
Phenanthrene	1.0 U	ug/L
Pyrene	1.0 U	ug/L

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Lab#: 20030701002
Sample ID: HC-MW-2
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 6/30/2003

	Test	Result	Units
GC/MS-VOA			
	Benzene	1.0 U	ug/L
	Ethylbenzene	1.0 U	ug/L
	NWTPH-Gasoline	25 U	ug/L
	Toluene	1.0 U	ug/L
	Xylenes (Total)	1.0 U	ug/L
ICP			
	Arsenic	2.0 U	ug/L
	Copper	**2.8**	ug/L
	Lead	**1.78**	ug/L

Lori A. Zboralski July 23, 2003
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NWTPH-G Surrogate Recoveries

Compound	True	Found	%Recovery	Limits
Bromofluorobenzene	20	22.18	111	50-150
Toluene-d8	20	21.93	110	50-150

Flags: U: The value is less than detection limit
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Project: **Foss**
DC2001CLA
Date July 23, 2003

Lab#: 20030701003
Sample ID: HC-MW-3D
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 6/30/2003

Test	Result	Units
CONVENTIONAL		
TSS	**10.5**	mg/L
GC/MS-BNA		
2-Methylnaphthalene	1.0 U	ug/L
Acenaphthene	**58**	ug/L
Acenaphthylene	1.0 U	ug/L
Anthracene	1.0 U	ug/L
Benzo(a)anthracene	1.0 U	ug/L
Benzo(a)pyrene	1.0 U	ug/L
Benzo(b,k)fluoranthenes	1.0 U	ug/L
Benzo(g,h,i)perylene	1.0 U	ug/L
Chrysene	1.0 U	ug/L
Dibenz(a,h)anthracene	1.0 U	ug/L
Fluoranthene	1.0 U	ug/L
Fluorene	1.0 U	ug/L
Indeno(1,2,3-c,d)pyrene	1.0 U	ug/L
Naphthalene	1.0 U	ug/L
Phenanthrene	1.0 U	ug/L
Pyrene	1.0 U	ug/L

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Lab#: 20030701003
Sample ID: HC-MW-3D
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 6/30/2003

	Test	Result	Units
GC/MS-VOA			
	Benzene	1.0 U	ug/L
	Ethylbenzene	1.0 U	ug/L
	NWTPH-Gasoline	**49**	ug/L
	Toluene	1.0 U	ug/L
	Xylenes (Total)	1.0 U	ug/L
ICP			
	Arsenic	2.0 U	ug/L
	Copper	**5.5**	ug/L
	Lead	**1.53**	ug/L

Lori A. Zboralski — July 23, 2003

Reviewed By: **Date**

NWTPH-G Surrogate Recoveries

Compound	True	Found	%Recovery	Limits
Bromofluorobenzene	20	22.20	111	50-150
Toluene-d8	20	22.05	110	50-150

Flags:
- U: The value is less than detection limit
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Project: **Foss**
DC2001CLA
Date July 23, 2003

Lab#: 20030701004
Sample ID: HC-MW-3S
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 6/30/2003

Test	Result	Units
CONVENTIONAL		
TSS	**1.8**	mg/L
GC/MS-BNA		
2-Methylnaphthalene	1.0 U	ug/L
Acenaphthene	**2.9**	ug/L
Acenaphthylene	1.0 U	ug/L
Anthracene	1.0 U	ug/L
Benzo(a)anthracene	1.0 U	ug/L
Benzo(a)pyrene	1.0 U	ug/L
Benzo(b,k)fluoranthenes	1.0 U	ug/L
Benzo(g,h,i)perylene	1.0 U	ug/L
Chrysene	1.0 U	ug/L
Dibenz(a,h)anthracene	1.0 U	ug/L
Fluoranthene	1.0 U	ug/L
Fluorene	1.0 U	ug/L
Indeno(1,2,3-c,d)pyrene	1.0 U	ug/L
Naphthalene	1.0 U	ug/L
Phenanthrene	1.0 U	ug/L
Pyrene	1.0 U	ug/L

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Lab#: 20030701004
Sample ID: HC-MW-3S
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 6/30/2003

	Test	Result	Units
GC/MS-VOA			
	Benzene	1.0 U	ug/L
	Ethylbenzene	1.0 U	ug/L
	NWTPH-Gasoline	**59**	ug/L
	Toluene	1.0 U	ug/L
	Xylenes (Total)	1.0 U	ug/L
ICP			
	Arsenic	2.0 U	ug/L
	Copper	1.4 U	ug/L
	Lead	**1.35**	ug/L

Lori A. Zboralski — **Reviewed By:**
July 23, 2003 — **Date**

NWTPH-G Surrogate Recoveries

Compound	True	Found	%Recovery	Limits
Bromofluorobenzene	20	20.54	103	50-150
Toluene-d8	20	21.93	110	50-150

Flags:
- U: The value is less than detection limit
- UJ: The value is less than detection limit and considered estimated
- J: The value is considered estimated
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Project: **Foss**
DC2001CLA
Date July 23, 2003

Lab#: 20030701005
Sample ID: HC-MW-4
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 6/30/2003

Test	Result	Units
CONVENTIONAL		
TSS	**2.2**	mg/L
GC/MS-BNA		
2-Methylnaphthalene	1.0 U	ug/L
Acenaphthene	**3.4**	ug/L
Acenaphthylene	1.0 U	ug/L
Anthracene	1.0 U	ug/L
Benzo(a)anthracene	1.0 U	ug/L
Benzo(a)pyrene	1.0 U	ug/L
Benzo(b,k)fluoranthenes	1.0 U	ug/L
Benzo(g,h,i)perylene	1.0 U	ug/L
Chrysene	1.0 U	ug/L
Dibenz(a,h)anthracene	1.0 U	ug/L
Fluoranthene	1.0 U	ug/L
Fluorene	**1.2**	ug/L
Indeno(1,2,3-c,d)pyrene	1.0 U	ug/L
Naphthalene	1.0 U	ug/L
Phenanthrene	1.0 U	ug/L
Pyrene	1.0 U	ug/L

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UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030701005
Sample ID: HC-MW-4
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 6/30/2003

	Test	Result	Units
GC/MS-VOA			
	Benzene	1.0 U	ug/L
	Ethylbenzene	1.0 U	ug/L
	NWTPH-Gasoline	**56**	ug/L
	Toluene	1.0 U	ug/L
	Xylenes (Total)	1.0 U	ug/L
ICP			
	Arsenic	**2.5**	ug/L
	Copper	1.4 U	ug/L
	Lead	**1.48**	ug/L

Lori A. Zboralski July 23, 2003
Reviewed By: **Date**

NWTPH-G Surrogate Recoveries

Compound	True	Found	%Recovery	Limits
Bromofluorobenzene	20	23.93	120	50-150
Toluene-d8	20	21.50	108	50-150

Flags:
- U: The value is less than detection limit
- UJ: The value is less than detection limit and considered estimated
- J: The value is considered estimated
- B: The value is less than the reporting limit but greater than detection limit

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Project: **Foss**
DC2001CLA
Date July 23, 2003

Lab#: 20030701006
Sample ID: Trip Blank
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 6/30/2003

	Test	Result	Units
GC/MS-VOA			
	Benzene	1.0 U	ug/L
	Ethylbenzene	1.0 U	ug/L
	NWTPH-Gasoline	25 U	ug/L
	Toluene	1.0 U	ug/L
	Xylenes (Total)	1.0 U	ug/L

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Reviewed By: **Date**

NWTPH-G Surrogate Recoveries

Compound	True	Found	%Recovery	Limits
Bromofluorobenzene	20	22.61	113	50-150
Toluene-d8	20	21.54	108	50-150

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
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Project: **Foss**
DC2001CLA
Date July 23, 2003

Lab#: 20030710062
Sample ID: MW-D
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 7/9/2003

Test	Result	Units
CONVENTIONAL		
TSS	**7.4**	mg/L
GC/MS-BNA		
2-Methylnaphthalene	**460**	ug/L
Acenaphthene	**160**	ug/L
Acenaphthylene	**2.9**	ug/L
Anthracene	**2.9**	ug/L
Benzo(a)anthracene	1.0 U	ug/L
Benzo(a)pyrene	1.0 U	ug/L
Benzo(b,k)fluoranthenes	1.0 U	ug/L
Benzo(g,h,i)perylene	1.0 U	ug/L
Chrysene	1.0 U	ug/L
Dibenz(a,h)anthracene	1.0 U	ug/L
Fluoranthene	**1.8**	ug/L
Fluorene	**63**	ug/L
Indeno(1,2,3-c,d)pyrene	1.0 U	ug/L
Naphthalene	**3100**	ug/L
Phenanthrene	**31**	ug/L
Pyrene	**1.1**	ug/L

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030710062
Sample ID: MW-D
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 7/9/2003

	Test	Result	Units
GC/MS-VOA			
	Benzene	**24**	ug/L
	Ethylbenzene	**160**	ug/L
	NWTPH-Gasoline	**10000**	ug/L
	Toluene	**40**	ug/L
	Xylenes (Total)	**760**	ug/L
ICP-DISS			
	Arsenic, Dissolved	2.1 U	ug/L
	Copper, Dissolved	2.1 U	ug/L
	Lead, Dissolved	1.3 U	ug/L

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NWTPH-G Surrogate Recoveries

Compound	True	Found	%Recovery	Limits
Bromofluorobenzene	20	19.67	98	50-150
Toluene-d8	20	19.68	98	50-150

Flags:
- U: The value is less than detection limit
- UJ: The value is less than detection limit and considered estimated
- J: The value is considered estimated
- B: The value is less than the reporting limit but greater than detection limit

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Project: **Foss**
DC2001CLA
Date July 23, 2003

Lab#: 20030710063
Sample ID: MW-4
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 7/9/2003

Test	Result	Units
CONVENTIONAL		
TSS	5.3	mg/L
GC/MS-BNA		
2-Methylnaphthalene	1.0 U	ug/L
Acenaphthene	1.0 U	ug/L
Acenaphthylene	1.0 U	ug/L
Anthracene	1.0 U	ug/L
Benzo(a)anthracene	1.0 U	ug/L
Benzo(a)pyrene	1.0 U	ug/L
Benzo(b,k)fluoranthenes	1.0 U	ug/L
Benzo(g,h,i)perylene	1.0 U	ug/L
Chrysene	1.0 U	ug/L
Dibenz(a,h)anthracene	1.0 U	ug/L
Fluoranthene	1.0 U	ug/L
Fluorene	1.0 U	ug/L
Indeno(1,2,3-c,d)pyrene	1.0 U	ug/L
Naphthalene	1.0 U	ug/L
Phenanthrene	1.0 U	ug/L
Pyrene	1.0 U	ug/L

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030710063
Sample ID: MW-4
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 7/9/2003

	Test	Result	Units
GC/MS-VOA			
	Benzene	1.0 U	ug/L
	Ethylbenzene	1.0 U	ug/L
	NWTPH-Gasoline	25 U	ug/L
	Toluene	1.0 U	ug/L
	Xylenes (Total)	1.0 U	ug/L
ICP-DISS			
	Arsenic, Dissolved	2.1 U	ug/L
	Copper, Dissolved	**2.3**	ug/L
	Lead, Dissolved	1.3 U	ug/L

Lori A. Zboralski — July 23, 2003

Reviewed By: **Date**

NWTPH-G Surrogate Recoveries

Compound	True	Found	%Recovery	Limits
Bromofluorobenzene	20	20.98	105	50-150
Toluene-d8	20	21.93	110	50-150

Flags:
- U: The value is less than detection limit
- UJ: The value is less than detection limit and considered estimated
- J: The value is considered estimated
- B: The value is less than the reporting limit but greater than detection limit

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Project: **Foss**
DC2001CLA
Date July 23, 2003

Lab#: 20030710064
Sample ID: MW-11
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 7/9/2003

Test	Result	Units
CONVENTIONAL		
TSS	**9.9**	mg/L
GC/MS-BNA		
2-Methylnaphthalene	**1.2**	ug/L
Acenaphthene	**130**	ug/L
Acenaphthylene	**1.1**	ug/L
Anthracene	**18**	ug/L
Benzo(a)anthracene	**2.5**	ug/L
Benzo(a)pyrene	**1.2**	ug/L
Benzo(b,k)fluoranthenes	**1.9**	ug/L
Benzo(g,h,i)perylene	1.0 U	ug/L
Chrysene	**1.7**	ug/L
Dibenz(a,h)anthracene	1.0 U	ug/L
Fluoranthene	**22**	ug/L
Fluorene	**93**	ug/L
Indeno(1,2,3-c,d)pyrene	1.0 U	ug/L
Naphthalene	**67**	ug/L
Phenanthrene	**110**	ug/L
Pyrene	**19**	ug/L

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UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030710064
Sample ID: MW-11
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 7/9/2003

	Test	Result	Units
GC/MS-VOA			
	Benzene	**2.4**	ug/L
	Ethylbenzene	**4.5**	ug/L
	NWTPH-Gasoline	**600**	ug/L
	Toluene	1.0 U	ug/L
	Xylenes (Total)	**5.9**	ug/L
ICP-DISS			
	Arsenic, Dissolved	**3.8**	ug/L
	Copper, Dissolved	**2.8**	ug/L
	Lead, Dissolved	1.3 U	ug/L

Lori A. Zboralski — **Reviewed By:**
July 23, 2003 — **Date**

NWTPH-G Surrogate Recoveries

Compound	True	Found	%Recovery	Limits
Bromofluorobenzene	20	22.28	111	50-150
Toluene-d8	20	21.90	110	50-150

Flags:
- U: The value is less than detection limit
- UJ: The value is less than detection limit and considered estimated
- J: The value is considered estimated
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Project: **Foss**
DC2001CLA
Date July 23, 2003

Lab#: 20030710065
Sample ID: MW-13
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 7/9/2003

Test	Result	Units
CONVENTIONAL		
TSS	1.3 U	mg/L
GC/MS-BNA		
2-Methylnaphthalene	1.0 U	ug/L
Acenaphthene	**5.1**	ug/L
Acenaphthylene	1.0 U	ug/L
Anthracene	1.0 U	ug/L
Benzo(a)anthracene	1.0 U	ug/L
Benzo(a)pyrene	1.0 U	ug/L
Benzo(b,k)fluoranthenes	1.0 U	ug/L
Benzo(g,h,i)perylene	1.0 U	ug/L
Chrysene	1.0 U	ug/L
Dibenz(a,h)anthracene	1.0 U	ug/L
Fluoranthene	1.0 U	ug/L
Fluorene	**1.9**	ug/L
Indeno(1,2,3-c,d)pyrene	1.0 U	ug/L
Naphthalene	**3.6**	ug/L
Phenanthrene	1.0 U	ug/L
Pyrene	1.0 U	ug/L

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#:	20030710065	
Sample ID:	MW-13	
Sample Type:	Groundwater	Puyallup River Side Channel
Sample Date:	7/9/2003	

	Test	Result	Units
GC/MS-VOA			
	Benzene	5.0 U	ug/L
	Ethylbenzene	5.0 U	ug/L
	NWTPH-Gasoline	**280**	ug/L
	Toluene	**10.0**	ug/L
	Xylenes (Total)	5.0 U	ug/L
ICP-DISS			
	Arsenic, Dissolved	2.1 U	ug/L
	Copper, Dissolved	**3.2**	ug/L
	Lead, Dissolved	1.3 U	ug/L

Lori A. Zboralski — **Reviewed By:**

July 23, 2003 — **Date**

NWTPH-G Surrogate Recoveries

Compound	True	Found	%Recovery	Limits
Bromofluorobenzene	20	20.50	103	50-150
Toluene-d8	20	21.77	109	50-150

Flags:
- U: The value is less than detection limit
- UJ: The value is less than detection limit and considered estimated
- J: The value is considered estimated
- B: The value is less than the reporting limit but greater than detection limit

City of Tacoma

Science and Engineering Division

2201 Portland Avenue Tacoma WA 98421
Phone: 253.591.5588 Fax: 253.502.2170

Project: **Foss**
DC2001CLA
Date July 23, 2003

Lab#: 20030710066
Sample ID: MW-8
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 7/9/2003

Test	Result	Units
CONVENTIONAL		
TSS	**32.9**	mg/L
GC/MS-BNA		
2-Methylnaphthalene	**520**	ug/L
Acenaphthene	**180**	ug/L
Acenaphthylene	**3.1**	ug/L
Anthracene	**3.7**	ug/L
Benzo(a)anthracene	1.0 U	ug/L
Benzo(a)pyrene	1.0 U	ug/L
Benzo(b,k)fluoranthenes	1.0 U	ug/L
Benzo(g,h,i)perylene	1.0 U	ug/L
Chrysene	1.0 U	ug/L
Dibenz(a,h)anthracene	1.0 U	ug/L
Fluoranthene	**2.1**	ug/L
Fluorene	**69**	ug/L
Indeno(1,2,3-c,d)pyrene	1.0 U	ug/L
Naphthalene	**3400**	ug/L
Phenanthrene	**34**	ug/L
Pyrene	**1.2**	ug/L

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030710066
Sample ID: MW-8
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 7/9/2003

	Test	Result	Units
GC/MS-VOA			
	Benzene	**29**	ug/L
	Ethylbenzene	**190**	ug/L
	NWTPH-Gasoline	**12000**	ug/L
	Toluene	**41**	ug/L
	Xylenes (Total)	**830**	ug/L
ICP-DISS			
	Arsenic, Dissolved	2.1 U	ug/L
	Copper, Dissolved	2.1 U	ug/L
	Lead, Dissolved	1.3 U	ug/L

Lori A. Horalski July 23, 2003
Reviewed By: **Date**

NWTPH-G Surrogate Recoveries

Compound	True	Found	%Recovery	Limits
Bromofluorobenzene	20	21.53	108	50-150
Toluene-d8	20	21.55	108	50-150

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

City of Tacoma

Science and Engineering Division

2201 Portland Avenue Tacoma WA 98421
Phone: 253.591.5588 Fax: 253.502.2170

Project: **Foss**
DC2001CLA
Date July 23, 2003

Lab#: 20030710067
Sample ID: MW-18
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 7/9/2003

Test	Result	Units
CONVENTIONAL		
TSS	**26.8**	mg/L
GC/MS-BNA		
2-Methylnaphthalene	**740**	ug/L
Acenaphthene	**310**	ug/L
Acenaphthylene	**3.1**	ug/L
Anthracene	**8.2**	ug/L
Benzo(a)anthracene	1.0 U	ug/L
Benzo(a)pyrene	1.0 U	ug/L
Benzo(b,k)fluoranthenes	1.0 U	ug/L
Benzo(g,h,i)perylene	1.0 U	ug/L
Chrysene	1.0 U	ug/L
Dibenz(a,h)anthracene	1.0 U	ug/L
Fluoranthene	**5.1**	ug/L
Fluorene	**150**	ug/L
Indeno(1,2,3-c,d)pyrene	1.0 U	ug/L
Naphthalene	**8800**	ug/L
Phenanthrene	**100**	ug/L
Pyrene	**3.6**	ug/L

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030710067
Sample ID: MW-18
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 7/9/2003

	Test	Result	Units
GC/MS-VOA			
	Benzene	**43**	ug/L
	Ethylbenzene	**180**	ug/L
	NWTPH-Gasoline	**12000**	ug/L
	Toluene	**13**	ug/L
	Xylenes (Total)	**330**	ug/L
ICP-DISS			
	Arsenic, Dissolved	2.1 U	ug/L
	Copper, Dissolved	**2.4**	ug/L
	Lead, Dissolved	1.3 U	ug/L

Lori A. Zboralski July 23, 2003
Reviewed By: **Date**

NWTPH-G Surrogate Recoveries

Compound	True	Found	%Recovery	Limits
Bromofluorobenzene	20	19.92	100	50-150
Toluene-d8	20	22.02	110	50-150

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

City of Tacoma

Science and Engineering Division

2201 Portland Avenue Tacoma WA 98421
Phone: 253.591.5588 Fax: 253.502.2170

Project: **Foss**
DC2001CLA
Date July 23, 2003

Lab#: 20030710068
Sample ID: Trip Blank
Sample Type: Groundwater Puyallup River Side Channel
Sample Date: 7/9/2003

	Test	Result	Units
GC/MS-VOA			
	Benzene	1.0 U	ug/L
	Ethylbenzene	1.0 U	ug/L
	NWTPH-Gasoline	25 U	ug/L
	Toluene	1.0 U	ug/L
	Xylenes (Total)	1.0 U	ug/L

Lori A. Zboralski July 23, 2003
Reviewed By: **Date**

NWTPH-G Surrogate Recoveries

Compound	True	Found	%Recovery	Limits
Bromofluorobenzene	20	16.81	84	50-150
Toluene-d8	20	20.76	104	50-150

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Sample Custody Record

Samples Shipped to: _____

HARTCROWSER

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102-3699
Phone: 206-324-9530 FAX: 206-328-5581

JOB 7853 LAB NUMBER _____

PROJECT NAME Puyallup River Site 6 Monitoring

HART CROWSER CONTACT Joe Mazzola

SAMPLED BY: Will Damon

LAB NO.	SAMPLE ID	DESCRIPTION	DATE	TIME	MATRIX	BTEX (8260B)	NWTPH-G	PAH (8270C)	TSS (160.2)	Diss Metals (*)	NO. OF CONTAINERS	OBSERVATIONS/COMMENTS/ COMPOSITING INSTRUCTIONS
	MW-D	Ambient, July & VOA	7/9/03	0940	H2O	X	X	X	X	X	9	
	MW-4			1030		X	X	X	X	X	9	(*) Diss. Metals
	MW-11			1155		X	X	X	X	X	9	Not Preserved w/
	MW-13			1305		X	X	X	X	X	9	Filtered in field
	MW-8			1405		X	X	X	X	X	9	(As, Cu, Pb)
	MW-18			1525		X	X	X	X	X	9	
	TB Blank			—		X	X				3	

RELINQUISHED BY	DATE	RECEIVED BY	DATE
SIGNATURE	7/9/03	SIGNATURE	7/9/03
PRINT NAME William Damon	TIME	PRINT NAME Stephanie Saint	TIME
COMPANY Hart Crowser	1605	COMPANY [illegible]	1605
RELINQUISHED BY	DATE	RECEIVED BY	DATE
SIGNATURE	TIME	SIGNATURE	TIME
PRINT NAME		PRINT NAME	
COMPANY		COMPANY	

SPECIAL SHIPMENT HANDLING OR STORAGE REQUIREMENTS:

57 TOTAL NUMBER OF CONTAINERS

SAMPLE RECEIPT INFORMATION
CUSTODY SEALS: ☐YES ☐NO ☐N/A
GOOD CONDITION ☐YES ☐NO
TEMPERATURE _____
SHIPMENT METHOD: ☐HAND ☐COURIER ☐OVERNIGHT

COOLER NO.: STORAGE LOCATION:

See Lab Work Order No. _____ for Other Contract Requirements

TURNAROUND TIME:
☐ 24 HOURS ☐ 1 WEEK
☐ 48 HOURS ☐ STANDARD
☐ 72 HOURS OTHER _____

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Sample Custody Record

Samples Shipped to: _____

HARTCROWSER

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102-3699
Phone: 206-324-9530 FAX: 206-328-5581

JOB 7853 LAB NUMBER _____

PROJECT NAME Puyallup River Side Channel

HART CROWSER CONTACT Joe Medvick

SAMPLED BY: Will Daniel

REQUESTED ANALYSIS: BTEX (8260B); PAH (8270C); NWTPH-G; TSS (160.2); Total As, Cu, Pb

LAB NO.	SAMPLE ID	DESCRIPTION	DATE	TIME	MATRIX	BTEX	PAH	NWTPH-G	TSS	Total As, Cu, Pb	NO. OF CONTAINERS	OBSERVATIONS/COMMENTS/ COMPOSITING INSTRUCTIONS
	HC-MW-3D		6/30/03	1115	H2O	X	X	X	X	X	6	← Extra 1 gal. Amber for MS/MSD
	HC-MW-1			1220		X	X	X	X	X	5	
	HC-MW-2			1455		X	X	X	X	X	5	
	HC-MW-4			1535		X	X	X	X	X	5	
	HC-MW-3S			1630		X	X	X	X	X	5	
	TRIP BLANK		↓	—	↓	X		X			3	

↑ added 7/2/03 TSS sample divided and preserved. -BBJ 7/22/03

RELINQUISHED BY	DATE	RECEIVED BY	DATE
SIGNATURE	6/30/03	SIGNATURE	6/30/03
PRINT NAME: William Daniel	TIME	PRINT NAME: DALE HARRIS	TIME
COMPANY: Hart Crowser	1707	COMPANY: Courier	17:07
RELINQUISHED BY	DATE	RECEIVED BY	DATE
SIGNATURE	TIME	SIGNATURE	TIME
PRINT NAME		PRINT NAME	
COMPANY		COMPANY	

SPECIAL SHIPMENT HANDLING OR STORAGE REQUIREMENTS:

TOTAL NUMBER OF CONTAINERS

SAMPLE RECEIPT INFORMATION
CUSTODY SEALS: ☐YES ☐NO ☐N/A
GOOD CONDITION ☐YES ☐NO
TEMPERATURE _____
SHIPMENT METHOD: ☐HAND ☐COURIER ☐OVERNIGHT

COOLER NO.: STORAGE LOCATION:

See Lab Work Order No. _____ for Other Contract Requirements

TURNAROUND TIME:
☐ 24 HOURS ☐ 1 WEEK
☐ 48 HOURS ☒ STANDARD
☐ 72 HOURS OTHER _____

White and Yellow Copies to Lab — Pink to Project Manager — Lab to Return White Copy to Hart Crowser — Gold to Sample Custodian

City of Tacoma
Environmental Services
Science and Engineering Division

Memorandum

TO: John O'Loughlin, P.E., Foss Construction Management

FROM: Christopher L. Getchell, Source Control Supervisor

SUBJECT: Foss Waterway Construction WO# DC2001

DATE: August 6, 2003

Attached are the sample analysis results for the sediment samples collected from the Puyallup River Side Channel on June 24 and 25, 2003. These samples were analyzed for NWTPH-Dx, Chlorinated Pesticides DDT, DDE, and DDD, PCBs and Aroclors, Semi-Volatile Organics, Mercury, and Total Metals.

The Science and Engineering Division analyzed the samples for all analytes except Chlorinated Pesticides and PCBs. Severn Trent Laboratories performed the Pesticide and PCB analyses.

The Science and Engineering Division LIMS system uses a value for MDL that prints non-detect values. The Severn Trent Laboratories PQL values for PCBs were entered for MDL instead of the correct values of MRL. The MRL values are ½ the PQL values.

A Quality Control Data Review was prepared concerning these samples and is attached with the data reports.

If you have any questions concerning this data, call me at (253) 502-2130.

Christopher L. Getchell,
Source Control Supervisor.

CLG:LAZ

C:\QCWork\Sharedwd\2003\cvrlttr\30624098.doc

Quality Control Data Review

TO: Christopher L. Getchell, Source Control Supervisor

FROM: Lori A. Zboralski, Senior Laboratory Analyst

DATE: August 6, 2003

SAMPLES

This report concerns the following samples associated with **Foss Waterway Construction WO# DC2001:**

Sample Description	Lab ID#	Date Sampled
HC-MW-1 (S1 + S2)	20030624098	06/24/2003
HC-MW-1 (S3)	20030624100	06/24/2003
HC-MW-1 (S4)	20030624101	06/24/2003
HC-MW-1 (S5)	20030624102	06/24/2003
HC-MW-2 (S1 + S2)	20030624103	06/24/2003
HC-MW-2 (S3)	20030624105	06/24/2003
HC-MW-2 (S4)	20030624106	06/24/2003
HC-MW-2 (S5)	20030624107	06/24/2003
HC-MW-2 (S6)	20030624108	06/24/2003
HC-MW-4 (S2)	20030624109	06/24/2003
HC-MW-4 (S4)	20030624110	06/24/2003
HC-MW-3D (S1)	20030625112	06/25/2003
HC-MW-3D (S3)	20030625113	06/25/2003
HC-MW-3D (S4)	20030625114	06/25/2003
HC-MW-3D (S5)	20030625115	06/25/2003
HC-MW-3D (S6)	20030625116	06/25/2003
HC-MW-3D (S7)	20030625117	06/25/2003
HC-MW-3D (S8)	20030625118	06/25/2003
HC-MW-3D (S9)	20030625119	06/25/2003
HC-MW-3D (S10)	20030625120	06/25/2003
HC-MW-3D (S11)	20030625121	06/25/2003

HOLDING TIMES

The samples were extracted within the 14-day sample collection-to-extraction holding time for Chlorinated Pesticides, PCBs as Aroclors, and Semi-Volatile Organics and analyzed within 7 days for Total Solids, 28 days for Total Mercury and NWTPH-Dx, 40 days after the extraction for Chlorinated Pesticides, PCBs as Aroclors, and Semi-Volatile Organics, and 180 days for Total Metals.

CHAIN OF CUSTODY

The Chain of Custody records were filled out according to procedures.

METHODS

These samples were analyzed according to the methods outlined in the "Soil and Groundwater Quality Testing Work Plan", June 16, 2003.

DAILY INSTRUMENT PERFORMANCE STANDARDS

The Mass Spectrometers used for the Semi-Volatile Organics and NWTPH-Dx analyses were tuned according to the recommendations of methods 8270. All mass abundances and ratios were within the criteria of the methods.

CALIBRATION AND VERIFICATION

The Initial Calibrations for Semi-Volatile Organics had relative standard deviations of less than 15% for all reported compounds, except for the following

Compound	%RSD
Pentachlorophenol (SIM)	39.35
Hexachlorocyclopentadiene (SCAN)	18.50
2,4-Dinitrophenol (SIM)	25.22

Method 8270 allows for individual compounds to have %RSD outside of the limits if the average of all of the compounds' RSD values is less than 15%. The average for the SIM calibration was 9.70 and the average for SCAN was 8.67. No data is qualified because of Initial Calibration.

The Continuing Calibrations for Semi-Volatile Organics had percent differences of less than 20% for all reported compounds, **except for the following**

Date	**Compound**	**%D**
7/8/2003	**Pyrene (SCAN)**	**25.4**

The Pyrene values for samples with concentrations above the detection limit, HC-MW-2 (S6), HC-MW-4 (S2), HC-MW-3D (S3), HC-MW-3D (S4), and HC-MW-3D (S5) are qualified as estimated based on high continuing calibration %D values.

The Initial Calibrations for Chlorinated Pesticides and PCBs as Aroclors had relative standard deviations of less than 20% for all reported compounds.

The Continuing Calibrations for Chlorinated Pesticides and PCBs as Aroclors had percent differences of less than 20% for all reported compounds, except for the following

Date	File Name	Column #	Compound	%D
7/15/2003	pest1477.d	1	DDT	26
7/15/2003	pest1477.d	2	DDE	39
7/15/2003	pest1494.d	2	DDE	23

There were no concentrations of these Chlorinated Pesticides found in any of the samples. No data was qualified.

The NWTPH-Dx initial calibrations met method requirements for linearity with correlation coefficients of greater than 0.990. The continuing calibrations associated with these samples had percent differences of less than 15%.

ICP calibrations met Method 6010B recommendations for linearity and accuracy. Mercury calibrations met Method 7470 recommendations for linearity and accuracy. Sensitivity was monitored by analysis of standards at or near the method detection limits. The recoveries of these standards ranged from 87 to 124%. The recoveries were within the laboratory limits of 50 to 200%.

The ICP calibration stabilities were monitored throughout the course of the analytical runs by analysis of standards in the middle of the linear range for the elements analyzed. The recoveries of these standards are to have recoveries of 90 to 110%. The recoveries of these standards ranged from 84 to 104%.

INTERELEMENT CORRECTION CHECK

Standards are analyzed to monitor the inter-element correction factors for ICP. These standards contain the interfering elements and the analytes of concern for this project. Recoveries of these standards are to be with 80 to 120%. The recoveries ranged from 91 to 106%.

METHOD AND CALIBRATION BLANKS

Method and calibration blanks were analyzed at the required frequencies for the methods. Method Blanks were analyzed for every digestion or extraction batch. Calibration blanks for ICP were analyzed every 10 samples. The concentrations of these blanks were less than the detection limits or less than $1/5^{th}$ the concentration in the samples at all times.

SURROGATES

Surrogate compounds were added to each sample prior to extraction for Chlorinated Pesticides, PCBs as Aroclors, and Semi-Volatile Organics. The recoveries of these compounds are tracked with control charts for Chlorinated Pesticides, PCBs as Aroclors, and Semi-Volatile Organics. All surrogate recoveries were within the required limits, **except the following**

Analysis	Sample	Compound	% Recovery	Limits
Pesticides	**HC-MW-1 (S1+S2)**	**TCMX**	**72**	**76-123**
		DCB	**21**	**56-141**
	HC-MW-1 (S3)	**DCB**	**14**	**56-114**
	HC-MW-1-(S4)	**TCMX**	**70**	**76-123**
		DCB	**7**	**56-114**
	HC-MW-1 (S5)	**TCMX**	**71**	**76-123**
		DCB	**11**	**56-114**
	HC-MW-2 (S1+S2)	**TCMX**	**72**	**76-123**
		DCB	**13**	**56-114**
	HC-MW-2 (S3)	**TCMX**	**63**	**76-123**
		DCB	**13**	**56-114**
	HC-MW-2 (S4)	**DCB**	**38**	**56-114**

Analysis	Sample	Compound	% Recovery	Limits
	HC-MW-2 (S5)	TCMX	72	76-123
		DCB	0	56-141
	HC-MW-2 (S6)	TCMX	75	76-123
		DCB	13	56-141
	HC-MW-4 (S4)	TCMX	74	76-123
		DCB	11	56-141
	HC-MW-3D (S3)	DCB	20	56-114
	HC-MW-3D (S5)	DCB	31	56-114
	HC-MW-3D (S6)	TCMX	71	76-123
		DCB	17	56-114

The Pesticide results for the samples associated with these low surrogate recoveries are qualified as estimated.

Analysis	Sample	Compound	% Recovery	Limits
PCBs	HC-MW-1 (S1+S2)	TCMX	163	72-114
		DCB	164	55-133
	HC-MW-2 (S1+S2)	TCMX	147	72-114
		DCB	142	55-133
	HC-MW-3D (S1)	TCMX	140	72-114
	HC-MW-3D (S3)	TCMX	129	72-114
	HC-MW-3D (S4)	TCMX	120	72-114
	HC-MW-3D (S5)	TCMX	124	72-114

Sample HC-MW-1 (S1+S2) had Aroclor-1260 detected at 210 ug/Kg. The Aroclor-1260 value for sample HC-MW-1 (S1+S2) is qualified as estimated based on the high surrogate recoveries. The other samples had no PCBs as Aroclors detected. The data is not qualified.

Analysis	Sample	Compound	% Recovery	Limits
Semi-VOA (SCAN)	HC-MW-4 (S2)	Pyrene-d10	132	58-110
	HC-MW-3D (S1)	Pyrene-d10	128	58-110
	HC-MW-3D (S3)	Pyrene-d10	143	58-110
		Terphenyl-d14	145	31-143
	HC-MW-3D (S4)	2,4,6-Tribromophenol	100	31-98
		Pyrene-d10	131	58-110
	HC-MW-3D (S5)	Pyrene-d10	118	58-110
	HC-MW-3D (S6)	2,4,6-Tribromophenol	118	31-98
	HC-MW-3D (S8)	2,4,6-Tribromophenol	103	31-98
	HC-MW-3D (S9)	2,4,6-Tribromophenol	99	31-98
	HC-MW-3D (S10)	2,4,6-Tribromophenol	100	31-98

Samples with two or more recoveries outside the limits for acid surrogates or base/neutral surrogates are qualified as estimated. Only sample HC-MW-3D (S3) had two base/neutral surrogate recoveries outside the limits. The base/neutral compounds analyzed by SCAN are qualified as estimated for sample HC-MW-3D (S3).

Analysis	Sample	Compound	% Recovery	Limits
Semi-VOA (SIM)	HC-MW-3D (S9)	2-Fluorobiphenyl	24	30-115
		2-Fluorophenol	14	25-121
		Phenol-d5	20	24-113

The SIM compounds Benzyl Alcohol, 2-Methylphenol, 1,2,4-Trichlorobenzene, N-Nitrosodiphenylamine, Pentachlorophenol, 2,4-Dimethylphenol, Hexachlorobenzene, and Hexachlorobutadiene in sample HC-MW-3D (S9) are qualified as estimated based on the low surrogate recoveries.

Analysis	Sample	Compound	% Recovery	Limits
NWTPH-Dx	HC-MW-1 (S5)	2-Fluorobiphenyl	49	50-150
	HC-MW-3D (S3)	2-Fluorobiphenyl	45	50-150

The NWTPH-Dx Diesel and Heavy Oil values for HC-MW-1 (S5) and HC-MW-3D (S3) are qualified as estimated based on the low surrogate recoveries.

LABORATORY CONTROL SAMPLES

Laboratory Control Samples were analyzed at the required frequency for the methods. Recoveries for metals are to be within 80 to 120%. Recoveries for all other analytes are to be within the laboratories' control chart limits. Recoveries for all analytes were within the required limits, **except for the recovery of 2,4-Dimethylphenol in CONTROL1006 for SIM. The recovery was 13%. The limits are 32 to 119%. The 2,4-Dimethylphenol values for samples HC-MW-1 (S1 + S2), HC-MW-1 (S3), HC-MW-1 (S4), HC-MW-1 (S5), HC-MW-2 (S1 + S2), HC-MW-2 (S3), HC-MW-2 (S4), and HC-MW-2 (S5) are qualified as estimated based on the low Control recovery.**

DUPLICATE SAMPLE ANALYSIS

Samples in this batch were analyzed in duplicate for Total Metals, Mercury, and Total Solids. The relative percent differences are to be less than 35% for analytes with concentrations greater than 5 times the reporting limit. The relative percent differences ranged from 0 to 79%. **The Lead RPD for sample HC-MW-1 (S3) was 79%. The lead value for the sample is qualified as estimated. The Chromium RPD for sample HC-MW-3D (S11) was 61%. The chromium value for the sample is qualified as estimated.**

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE ANALYSIS

The following samples were analyzed with matrix spikes: HC-MW-1 (S3) and HC-MW-3D (S11) for Total Metals and Mercury. Recoveries for Metals and Mercury are recommended to be between 75 and 125%. **The recoveries ranged from 47 to 92%. The recovery of Chromium in sample HC-MW-3D (S11) was 47%. The chromium value for HC-MW-3D (S11) is qualified as estimated based on the low recovery.**

Sample HC-MW-3D (S10) was analyzed with a matrix spike and matrix spike duplicate for Chlorinated Pesticides. **The MS recovery of DDT was 31% and the MSD recovery was 48%. The control limits are 67 to 122%. The DDT value for HC-MW-3D (S10) is qualified as estimated.**

Samples HC-MW-1 (S3) and HC-MW-3D (S11) were analyzed with Matrix Spike and Matrix Spike duplicate for Semi-Volatile Organics. Samples HC-MW-2 (S6) and HC-MW-3D (S11) were analyzed with Matrix Spike and Matrix Spike Duplicate for NWTPH-Dx. The recoveries for Semi-Volatile Organics were all within the laboratory control limits for these compounds, except for those listed in the following table:

Analysis	Sample	Compound	% Recovery	Limits
Semi-VOA (MSD)	**HC-MW-3D (S11)**	**2,4-Dimethylphenol**	**8**	**32-119**
		2-Methylphenol	**39**	**50-150**
		Benzo(g,h,i)perylene	**45**	**60-105**
		Dibenz(a,h)anthracene	**52**	**56-109**
		Di-n-octyl phthalate	**125**	**53-116**
		Indeno(1,2,3-c,d)pyrene	**52**	**61-106**
Semi-VOA (MS)	**HC-MW-3D (S11)**	**Benzo(g,h,i)perylene**	**40**	**60-105**
		Dibenz(a,h)anthracene	**46**	**56-109**
		Indeno(1,2,3-c,d)pyrene	**45**	**61-106**

The compounds Benzo(g,h,i)perylene, Dibenz(a,h)perylene, and Indeno(1,2,3-c,d)pyrene all had low recoveries in the MS and the MSD. These three compounds are qualified as estimated for HC-MW-3D (S11).

The NWTPH-Dx recoveries are to be within the method limits of 50 to 150%. The recoveries of Diesel ranged from 22 to 66 in samples HC-MW-2 (S6) and HC-MW-3D (S11) with the MSD for HC-MW-3D (S11) having the recovery of 22%. The MS for Diesel for the sample was 66%. No data is qualified. The Heavy Oil recoveries in the same samples ranged from 59 to 132% and all were within the method limits.

ICP SERIAL DILUTIONS

Samples HC-MW-1 (S3) and HC-MW-3D (S11) were analyzed at 1:5 dilutions for Total Metals. The percent differences for the diluted samples compared to the undiluted samples were less than 10% for analyte concentrations greater than 50 times the reporting limits.

INTERNAL STANDARDS

Internal Standards were used in the determinations of the Semi-Volatile Organic compounds. According to the methods, the internal standard areas in the samples are to be within 50 to 200% the standards measured in the continuing calibrations. The recoveries of the internal standards for these analyses ranged from

DATA AVAILABILITY

All data associated with the samples contained in this report are archived at the Science and Engineering Division and are available upon request.

The qualifiers assigned to these samples including:

U indicates the parameter was not detected above the Detection Limit.

UJ indicates the parameter was not detected above the Detection Limit and the value is considered estimated.

J indicates the value is considered estimated.

All data including qualified values are acceptable for use.

City of Tacoma

Science and Engineering Division

2201 Portland Avenue Tacoma WA 98421
Phone: 253.591.5588 Fax: 253.502.2170

Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030624098
Sample ID: HC-MW-1 (S1+S2)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
CONVENTIONAL		
Solids	**29.0**	per cent
CV		
Mercury	**0.233**	mg/Kg
GC/ECD-PCB		
Aroclor-1016	140 U	ug/Kg
Aroclor-1221	290 U	ug/Kg
Aroclor-1232	140 U	ug/Kg
Aroclor-1242	140 U	ug/Kg
Aroclor-1248	140 U	ug/Kg
Aroclor-1254	140 U	ug/Kg
Aroclor-1260	**210** J	ug/Kg
GC/ECD-PEST		
4,4-DDD	6.0 U J	ug/Kg
4,4-DDE	6.0 U J	ug/Kg
4,4-DDT	6.0 U J	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	100 U	ug/Kg
1,3-Dichlorobenzene	100 U	ug/Kg
1,4-Dichlorobenzene	100 U	ug/Kg

Flags: U: The value is less than detection limit
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B: The value is less than the reporting limit but greater than detection limit

Lab#:	20030624098
Sample ID:	HC-MW-1 (S1+S2)
Sample Type:	Sediment Puyallup River Side Channel
Sample Date:	6/24/2003

Test	Result	Units
2,4,5-Trichlorophenol	100 U	ug/Kg
2,4,6-Trichlorophenol	100 U	ug/Kg
2,4-Dichlorophenol	100 U	ug/Kg
2,4-Dinitrophenol	500 U	ug/Kg
2-Chlorophenol	100 U	ug/Kg
2-Methyl-4,6-dinitrophenol	500 U	ug/Kg
2-Methylnaphthalene	100 U	ug/Kg
2-Nitrophenol	100 U	ug/Kg
4-Chloro-3-methylphenol	100 U	ug/Kg
4-Methylphenol	100 U	ug/Kg
4-Nitrophenol	500 U	ug/Kg
Acenaphthene	100 U	ug/Kg
Acenaphthylene	100 U	ug/Kg
Anthracene	100 U	ug/Kg
Benzo(a)anthracene	100 U	ug/Kg
Benzo(a)pyrene	100 U	ug/Kg
Benzo(b,k)fluoranthenes	100 U	ug/Kg
Benzo(g,h,i)perylene	100 U	ug/Kg
Benzoic acid	500 U	ug/Kg
bis(2-Ethylhexyl)phthalate	**560**	ug/Kg
Butyl benzyl phthalate	**270**	ug/Kg
Chrysene	100 U	ug/Kg
Dibenz(a,h)anthracene	100 U	ug/Kg
Dibenzofuran	100 U	ug/Kg
Diethyl phthalate	100 U	ug/Kg
Dimethyl phthalate	100 U	ug/Kg
Di-n-butyl phthalate	100 U	ug/Kg
Di-n-octyl phthalate	100 U	ug/Kg
Fluoranthene	100 U	ug/Kg
Fluorene	100 U	ug/Kg

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Lab#: 20030624098
Sample ID: HC-MW-1 (S1+S2)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

	Test	Result	Units
	Indeno(1,2,3-c,d)pyrene	100 U	ug/Kg
	Naphthalene	100 U	ug/Kg
	Phenanthrene	100 U	ug/Kg
	Phenol	100 U	ug/Kg
	Pyrene	100 U	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	5 U J	ug/Kg
	2-Methylphenol	5 U	ug/Kg
	Benzyl Alcohol	**22**	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	5 U	ug/Kg
	Pentachlorophenol	100 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	**450**	mg/Kg
	NWTPH-Heavy Oil	**1600**	mg/Kg
ICP			
	Arsenic	**6.0**	mg/Kg
	Cadmium	**0.250**	mg/Kg
	Chromium	**19.7**	mg/Kg
	Copper	**23.1**	mg/Kg
	Lead	**10.1**	mg/Kg
	Nickel	**13.5**	mg/Kg
	Silver	0.053 U	mg/Kg
	Zinc	**36.9**	mg/Kg

Lori A. Zboralski — August 6, 2003
Reviewed By: **Date**

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City of Tacoma

Science and Engineering Division

2201 Portland Avenue Tacoma WA 98421
Phone: 253.591.5588 Fax: 253.502.2170

Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030624100
Sample ID: HC-MW-1 (S3)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
CONVENTIONAL		
Solids	**82.0**	per cent
CV		
Mercury	0.0122 B	mg/Kg
GC/ECD-PCB		
Aroclor-1016	58 U	ug/Kg
Aroclor-1221	120 U	ug/Kg
Aroclor-1232	58 U	ug/Kg
Aroclor-1242	58 U	ug/Kg
Aroclor-1248	58 U	ug/Kg
Aroclor-1254	58 U	ug/Kg
Aroclor-1260	58 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	2.4 U J	ug/Kg
4,4-DDE	2.4 U J	ug/Kg
4,4-DDT	2.4 U J	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	100 U	ug/Kg
1,3-Dichlorobenzene	100 U	ug/Kg
1,4-Dichlorobenzene	100 U	ug/Kg

Flags: U: The value is less than detection limit
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Lab#: 20030624100
Sample ID: HC-MW-1 (S3)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
2,4,5-Trichlorophenol	100 U	ug/Kg
2,4,6-Trichlorophenol	100 U	ug/Kg
2,4-Dichlorophenol	100 U	ug/Kg
2,4-Dinitrophenol	500 U	ug/Kg
2-Chlorophenol	100 U	ug/Kg
2-Methyl-4,6-dinitrophenol	500 U	ug/Kg
2-Methylnaphthalene	100 U	ug/Kg
2-Nitrophenol	100 U	ug/Kg
4-Chloro-3-methylphenol	100 U	ug/Kg
4-Methylphenol	100 U	ug/Kg
4-Nitrophenol	500 U	ug/Kg
Acenaphthene	100 U	ug/Kg
Acenaphthylene	100 U	ug/Kg
Anthracene	100 U	ug/Kg
Benzo(a)anthracene	100 U	ug/Kg
Benzo(a)pyrene	100 U	ug/Kg
Benzo(b,k)fluoranthenes	100 U	ug/Kg
Benzo(g,h,i)perylene	100 U	ug/Kg
Benzoic acid	500 U	ug/Kg
bis(2-Ethylhexyl)phthalate	**230**	ug/Kg
Butyl benzyl phthalate	100 U	ug/Kg
Chrysene	100 U	ug/Kg
Dibenz(a,h)anthracene	100 U	ug/Kg
Dibenzofuran	100 U	ug/Kg
Diethyl phthalate	100 U	ug/Kg
Dimethyl phthalate	100 U	ug/Kg
Di-n-butyl phthalate	100 U	ug/Kg
Di-n-octyl phthalate	100 U	ug/Kg
Fluoranthene	100 U	ug/Kg
Fluorene	100 U	ug/Kg

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Lab#: 20030624100
Sample ID: HC-MW-1 (S3)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

	Test	Result	Units
	Indeno(1,2,3-c,d)pyrene	100 U	ug/Kg
	Naphthalene	100 U	ug/Kg
	Phenanthrene	100 U	ug/Kg
	Phenol	100 U	ug/Kg
	Pyrene	100 U	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	5 U J	ug/Kg
	2-Methylphenol	5 U	ug/Kg
	Benzyl Alcohol	5 U	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	5 U	ug/Kg
	Pentachlorophenol	98 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	20 U	mg/Kg
	NWTPH-Heavy Oil	40 U	mg/Kg
ICP			
	Arsenic	**2.1**	mg/Kg
	Cadmium	0.050 U	mg/Kg
	Chromium	**12.0**	mg/Kg
	Copper	**11.4**	mg/Kg
	Lead	**5.48** J	mg/Kg
	Nickel	**10.9**	mg/Kg
	Silver	0.048 U	mg/Kg
	Zinc	**44.8**	mg/Kg

Lori A Zoralski — **Reviewed By:**
August 6, 2003 — **Date**

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City of Tacoma

Science and Engineering Division

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Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030624101
Sample ID: HC-MW-1 (S4)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

	Test	Result	Units
CONVENTIONAL			
	Solids	**74.3**	per cent
CV			
	Mercury	0.0150 B	mg/Kg
GC/ECD-PCB			
	Aroclor-1016	68 U	ug/Kg
	Aroclor-1221	140 U	ug/Kg
	Aroclor-1232	68 U	ug/Kg
	Aroclor-1242	68 U	ug/Kg
	Aroclor-1248	68 U	ug/Kg
	Aroclor-1254	68 U	ug/Kg
	Aroclor-1260	68 U	ug/Kg
GC/ECD-PEST			
	4,4-DDD	2.6 U J	ug/Kg
	4,4-DDE	2.6 U J	ug/Kg
	4,4-DDT	2.6 U J	ug/Kg
GC/MS-BNA			
	1,2-Dichlorobenzene	100 U	ug/Kg
	1,3-Dichlorobenzene	100 U	ug/Kg
	1,4-Dichlorobenzene	100 U	ug/Kg

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Lab#: 20030624101
Sample ID: HC-MW-1 (S4)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
2,4,5-Trichlorophenol	100 U	ug/Kg
2,4,6-Trichlorophenol	100 U	ug/Kg
2,4-Dichlorophenol	100 U	ug/Kg
2,4-Dinitrophenol	500 U	ug/Kg
2-Chlorophenol	100 U	ug/Kg
2-Methyl-4,6-dinitrophenol	500 U	ug/Kg
2-Methylnaphthalene	100 U	ug/Kg
2-Nitrophenol	100 U	ug/Kg
4-Chloro-3-methylphenol	100 U	ug/Kg
4-Methylphenol	100 U	ug/Kg
4-Nitrophenol	500 U	ug/Kg
Acenaphthene	100 U	ug/Kg
Acenaphthylene	100 U	ug/Kg
Anthracene	100 U	ug/Kg
Benzo(a)anthracene	100 U	ug/Kg
Benzo(a)pyrene	100 U	ug/Kg
Benzo(b,k)fluoranthenes	100 U	ug/Kg
Benzo(g,h,i)perylene	100 U	ug/Kg
Benzoic acid	500 U	ug/Kg
bis(2-Ethylhexyl)phthalate	100 U	ug/Kg
Butyl benzyl phthalate	100 U	ug/Kg
Chrysene	100 U	ug/Kg
Dibenz(a,h)anthracene	100 U	ug/Kg
Dibenzofuran	100 U	ug/Kg
Diethyl phthalate	100 U	ug/Kg
Dimethyl phthalate	100 U	ug/Kg
Di-n-butyl phthalate	100 U	ug/Kg
Di-n-octyl phthalate	100 U	ug/Kg
Fluoranthene	100 U	ug/Kg
Fluorene	100 U	ug/Kg

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Lab#: 20030624101
Sample ID: HC-MW-1 (S4)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

	Test	Result	Units
	Indeno(1,2,3-c,d)pyrene	100 U	ug/Kg
	Naphthalene	100 U	ug/Kg
	Phenanthrene	100 U	ug/Kg
	Phenol	100 U	ug/Kg
	Pyrene	100 U	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	5 U J	ug/Kg
	2-Methylphenol	5 U	ug/Kg
	Benzyl Alcohol	9 B	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	5 U	ug/Kg
	Pentachlorophenol	100 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	20 U	mg/Kg
	NWTPH-Heavy Oil	**47**	mg/Kg
ICP			
	Arsenic	**5.3**	mg/Kg
	Cadmium	0.052 U	mg/Kg
	Chromium	**12.1**	mg/Kg
	Copper	**17.9**	mg/Kg
	Lead	**3.50**	mg/Kg
	Nickel	**8.43**	mg/Kg
	Silver	0.050 U	mg/Kg
	Zinc	**25.6**	mg/Kg

Lori A. Zoralski August 6, 2003
Reviewed By: **Date**

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City of Tacoma

Science and Engineering Division

2201 Portland Avenue Tacoma WA 98421
Phone: 253.591.5588 Fax: 253.502.2170

Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030624102
Sample ID: HC-MW-1 (S5)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
CONVENTIONAL		
Solids	**80.3**	per cent
CV		
Mercury	0.0096 U	mg/Kg
GC/ECD-PCB		
Aroclor-1016	60 U	ug/Kg
Aroclor-1221	120 U	ug/Kg
Aroclor-1232	60 U	ug/Kg
Aroclor-1242	60 U	ug/Kg
Aroclor-1248	60 U	ug/Kg
Aroclor-1254	60 U	ug/Kg
Aroclor-1260	60 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	2.3 U J	ug/Kg
4,4-DDE	2.3 U J	ug/Kg
4,4-DDT	2.3 U J	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	100 U	ug/Kg
1,3-Dichlorobenzene	100 U	ug/Kg
1,4-Dichlorobenzene	100 U	ug/Kg

Flags: U: The value is less than detection limit
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Lab#: 20030624102
Sample ID: HC-MW-1 (S5)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
2,4,5-Trichlorophenol	100 U	ug/Kg
2,4,6-Trichlorophenol	100 U	ug/Kg
2,4-Dichlorophenol	100 U	ug/Kg
2,4-Dinitrophenol	500 U	ug/Kg
2-Chlorophenol	100 U	ug/Kg
2-Methyl-4,6-dinitrophenol	500 U	ug/Kg
2-Methylnaphthalene	100 U	ug/Kg
2-Nitrophenol	100 U	ug/Kg
4-Chloro-3-methylphenol	100 U	ug/Kg
4-Methylphenol	100 U	ug/Kg
4-Nitrophenol	500 U	ug/Kg
Acenaphthene	100 U	ug/Kg
Acenaphthylene	100 U	ug/Kg
Anthracene	100 U	ug/Kg
Benzo(a)anthracene	100 U	ug/Kg
Benzo(a)pyrene	100 U	ug/Kg
Benzo(b,k)fluoranthenes	100 U	ug/Kg
Benzo(g,h,i)perylene	100 U	ug/Kg
Benzoic acid	500 U	ug/Kg
bis(2-Ethylhexyl)phthalate	**220**	ug/Kg
Butyl benzyl phthalate	100 U	ug/Kg
Chrysene	100 U	ug/Kg
Dibenz(a,h)anthracene	100 U	ug/Kg
Dibenzofuran	100 U	ug/Kg
Diethyl phthalate	100 U	ug/Kg
Dimethyl phthalate	100 U	ug/Kg
Di-n-butyl phthalate	100 U	ug/Kg
Di-n-octyl phthalate	100 U	ug/Kg
Fluoranthene	100 U	ug/Kg
Fluorene	100 U	ug/Kg

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UJ: The value is less than detection limit and considered estimated
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Lab#: 20030624102
Sample ID: HC-MW-1 (S5)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

	Test	Result	Units
	Indeno(1,2,3-c,d)pyrene	100 U	ug/Kg
	Naphthalene	100 U	ug/Kg
	Phenanthrene	100 U	ug/Kg
	Phenol	100 U	ug/Kg
	Pyrene	100 U	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	5 U J	ug/Kg
	2-Methylphenol	5 U	ug/Kg
	Benzyl Alcohol	8 B	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	5 U	ug/Kg
	Pentachlorophenol	100 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	20 U J	mg/Kg
	NWTPH-Heavy Oil	40 U J	mg/Kg
ICP			
	Arsenic	**1.5**	mg/Kg
	Cadmium	0.052 U	mg/Kg
	Chromium	**12.0**	mg/Kg
	Copper	**11.8**	mg/Kg
	Lead	**1.83**	mg/Kg
	Nickel	**7.64**	mg/Kg
	Silver	0.050 U	mg/Kg
	Zinc	**20.0**	mg/Kg

Lori A. Zboralski August 6, 2003
Reviewed By: **Date**

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Science and Engineering Division

2201 Portland Avenue Tacoma WA 98421
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Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030624103
Sample ID: HC-MW-2 (S1+S2)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
CONVENTIONAL		
Solids	**36.9**	per cent
CV		
Mercury	0.0901 B	mg/Kg
GC/ECD-PCB		
Aroclor-1016	110 U	ug/Kg
Aroclor-1221	230 U	ug/Kg
Aroclor-1232	110 U	ug/Kg
Aroclor-1242	110 U	ug/Kg
Aroclor-1248	110 U	ug/Kg
Aroclor-1254	110 U	ug/Kg
Aroclor-1260	110 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	4.8 U J	ug/Kg
4,4-DDE	4.8 U J	ug/Kg
4,4-DDT	4.8 U J	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	99 U	ug/Kg
1,3-Dichlorobenzene	99 U	ug/Kg
1,4-Dichlorobenzene	99 U	ug/Kg

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
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Lab#: 20030624103
Sample ID: HC-MW-2 (S1+S2)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
2,4,5-Trichlorophenol	99 U	ug/Kg
2,4,6-Trichlorophenol	99 U	ug/Kg
2,4-Dichlorophenol	99 U	ug/Kg
2,4-Dinitrophenol	500 U	ug/Kg
2-Chlorophenol	99 U	ug/Kg
2-Methyl-4,6-dinitrophenol	500 U	ug/Kg
2-Methylnaphthalene	99 U	ug/Kg
2-Nitrophenol	99 U	ug/Kg
4-Chloro-3-methylphenol	99 U	ug/Kg
4-Methylphenol	99 U	ug/Kg
4-Nitrophenol	500 U	ug/Kg
Acenaphthene	99 U	ug/Kg
Acenaphthylene	99 U	ug/Kg
Anthracene	99 U	ug/Kg
Benzo(a)anthracene	99 U	ug/Kg
Benzo(a)pyrene	99 U	ug/Kg
Benzo(b,k)fluoranthenes	99 U	ug/Kg
Benzo(g,h,i)perylene	99 U	ug/Kg
Benzoic acid	500 U	ug/Kg
bis(2-Ethylhexyl)phthalate	**780**	ug/Kg
Butyl benzyl phthalate	**180**	ug/Kg
Chrysene	99 U	ug/Kg
Dibenz(a,h)anthracene	99 U	ug/Kg
Dibenzofuran	99 U	ug/Kg
Diethyl phthalate	99 U	ug/Kg
Dimethyl phthalate	99 U	ug/Kg
Di-n-butyl phthalate	99 U	ug/Kg
Di-n-octyl phthalate	99 U	ug/Kg
Fluoranthene	99 U	ug/Kg
Fluorene	99 U	ug/Kg

Flags:
U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030624103
Sample ID: HC-MW-2 (S1+S2)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

	Test	Result	Units
	Indeno(1,2,3-c,d)pyrene	99 U	ug/Kg
	Naphthalene	99 U	ug/Kg
	Phenanthrene	99 U	ug/Kg
	Phenol	99 U	ug/Kg
	Pyrene	99 U	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	5 U J	ug/Kg
	2-Methylphenol	5 U	ug/Kg
	Benzyl Alcohol	**19**	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	5 U	ug/Kg
	Pentachlorophenol	100 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	**170**	mg/Kg
	NWTPH-Heavy Oil	**640**	mg/Kg
ICP			
	Arsenic	**3.3**	mg/Kg
	Cadmium	**0.089**	mg/Kg
	Chromium	**10.1**	mg/Kg
	Copper	**16.0**	mg/Kg
	Lead	**4.68**	mg/Kg
	Nickel	**11.8**	mg/Kg
	Silver	0.049 U	mg/Kg
	Zinc	**31.2**	mg/Kg

Lori A. Zboralski August 6, 2003

Reviewed By: **Date**

Flags: U: The value is less than detection limit
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City of Tacoma

Science and Engineering Division

2201 Portland Avenue Tacoma WA 98421
Phone: 253.591.5588 Fax: 253.502.2170

Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030624105
Sample ID: HC-MW-2 (S3)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

	Test	Result	Units
CONVENTIONAL			
	Solids	**87.1**	per cent
CV			
	Mercury	0.0340 B	mg/Kg
GC/ECD-PCB			
	Aroclor-1016	62 U	ug/Kg
	Aroclor-1221	120 U	ug/Kg
	Aroclor-1232	62 U	ug/Kg
	Aroclor-1242	62 U	ug/Kg
	Aroclor-1248	62 U	ug/Kg
	Aroclor-1254	62 U	ug/Kg
	Aroclor-1260	62 U	ug/Kg
GC/ECD-PEST			
	4,4-DDD	2.5 U J	ug/Kg
	4,4-DDE	2.5 U J	ug/Kg
	4,4-DDT	2.5 U J	ug/Kg
GC/MS-BNA			
	1,2-Dichlorobenzene	97 U	ug/Kg
	1,3-Dichlorobenzene	97 U	ug/Kg
	1,4-Dichlorobenzene	97 U	ug/Kg

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030624105
Sample ID: HC-MW-2 (S3)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
2,4,5-Trichlorophenol	97 U	ug/Kg
2,4,6-Trichlorophenol	97 U	ug/Kg
2,4-Dichlorophenol	97 U	ug/Kg
2,4-Dinitrophenol	480 U	ug/Kg
2-Chlorophenol	97 U	ug/Kg
2-Methyl-4,6-dinitrophenol	480 U	ug/Kg
2-Methylnaphthalene	97 U	ug/Kg
2-Nitrophenol	97 U	ug/Kg
4-Chloro-3-methylphenol	97 U	ug/Kg
4-Methylphenol	97 U	ug/Kg
4-Nitrophenol	480 U	ug/Kg
Acenaphthene	97 U	ug/Kg
Acenaphthylene	97 U	ug/Kg
Anthracene	97 U	ug/Kg
Benzo(a)anthracene	97 U	ug/Kg
Benzo(a)pyrene	97 U	ug/Kg
Benzo(b,k)fluoranthenes	97 U	ug/Kg
Benzo(g,h,i)perylene	97 U	ug/Kg
Benzoic acid	480 U	ug/Kg
bis(2-Ethylhexyl)phthalate	97 B	ug/Kg
Butyl benzyl phthalate	97 U	ug/Kg
Chrysene	97 U	ug/Kg
Dibenz(a,h)anthracene	97 U	ug/Kg
Dibenzofuran	97 U	ug/Kg
Diethyl phthalate	97 U	ug/Kg
Dimethyl phthalate	97 U	ug/Kg
Di-n-butyl phthalate	97 U	ug/Kg
Di-n-octyl phthalate	97 U	ug/Kg
Fluoranthene	110	ug/Kg
Fluorene	97 U	ug/Kg

Flags:
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Lab#: 20030624105
Sample ID: HC-MW-2 (S3)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

	Test	Result	Units
	Indeno(1,2,3-c,d)pyrene	97 U	ug/Kg
	Naphthalene	97 U	ug/Kg
	Phenanthrene	97 B	ug/Kg
	Phenol	97 U	ug/Kg
	Pyrene	**140**	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	5 U J	ug/Kg
	2-Methylphenol	5 U	ug/Kg
	Benzyl Alcohol	8 B	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	**51**	ug/Kg
	Pentachlorophenol	100 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	**41**	mg/Kg
	NWTPH-Heavy Oil	**86**	mg/Kg
ICP			
	Arsenic	**3.7**	mg/Kg
	Cadmium	0.25 U	mg/Kg
	Chromium	**21.3**	mg/Kg
	Copper	**25.5**	mg/Kg
	Lead	**33.1**	mg/Kg
	Nickel	**25.2**	mg/Kg
	Silver	0.24 U	mg/Kg
	Zinc	**45.6**	mg/Kg

Lori A. Zboralski — **Reviewed By:**
August 6, 2003 — **Date**

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Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030624106
Sample ID: HC-MW-2 (S4)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
CONVENTIONAL		
Solids	**67.2**	per cent
CV		
Mercury	0.0294 B	mg/Kg
GC/ECD-PCB		
Aroclor-1016	66 U	ug/Kg
Aroclor-1221	130 U	ug/Kg
Aroclor-1232	66 U	ug/Kg
Aroclor-1242	66 U	ug/Kg
Aroclor-1248	66 U	ug/Kg
Aroclor-1254	66 U	ug/Kg
Aroclor-1260	66 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	2.7 U J	ug/Kg
4,4-DDE	2.7 U J	ug/Kg
4,4-DDT	2.7 U J	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	100 U	ug/Kg
1,3-Dichlorobenzene	100 U	ug/Kg
1,4-Dichlorobenzene	100 U	ug/Kg

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
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Lab#: 20030624106
Sample ID: HC-MW-2 (S4)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
2,4,5-Trichlorophenol	100 U	ug/Kg
2,4,6-Trichlorophenol	100 U	ug/Kg
2,4-Dichlorophenol	100 U	ug/Kg
2,4-Dinitrophenol	500 U	ug/Kg
2-Chlorophenol	100 U	ug/Kg
2-Methyl-4,6-dinitrophenol	500 U	ug/Kg
2-Methylnaphthalene	100 U	ug/Kg
2-Nitrophenol	100 U	ug/Kg
4-Chloro-3-methylphenol	100 U	ug/Kg
4-Methylphenol	100 U	ug/Kg
4-Nitrophenol	500 U	ug/Kg
Acenaphthene	**330**	ug/Kg
Acenaphthylene	100 U	ug/Kg
Anthracene	**320**	ug/Kg
Benzo(a)anthracene	**220**	ug/Kg
Benzo(a)pyrene	**180**	ug/Kg
Benzo(b,k)fluoranthenes	**300**	ug/Kg
Benzo(g,h,i)perylene	100 U	ug/Kg
Benzoic acid	500 U	ug/Kg
bis(2-Ethylhexyl)phthalate	**310**	ug/Kg
Butyl benzyl phthalate	100 U	ug/Kg
Chrysene	**240**	ug/Kg
Dibenz(a,h)anthracene	100 U	ug/Kg
Dibenzofuran	100 U	ug/Kg
Diethyl phthalate	100 U	ug/Kg
Dimethyl phthalate	100 U	ug/Kg
Di-n-butyl phthalate	100 U	ug/Kg
Di-n-octyl phthalate	100 U	ug/Kg
Fluoranthene	**750**	ug/Kg
Fluorene	**270**	ug/Kg

Flags:
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Lab#: 20030624106
Sample ID: HC-MW-2 (S4)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

	Test	Result	Units
	Indeno(1,2,3-c,d)pyrene	100 U	ug/Kg
	Naphthalene	100 U	ug/Kg
	Phenanthrene	**1700**	ug/Kg
	Phenol	100 U	ug/Kg
	Pyrene	**790**	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	5 U J	ug/Kg
	2-Methylphenol	5 U	ug/Kg
	Benzyl Alcohol	**11**	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	**43**	ug/Kg
	Pentachlorophenol	100 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	**36**	mg/Kg
	NWTPH-Heavy Oil	**120**	mg/Kg
ICP			
	Arsenic	**4.4**	mg/Kg
	Cadmium	0.26 U	mg/Kg
	Chromium	**20.1**	mg/Kg
	Copper	**25.6**	mg/Kg
	Lead	**27.1**	mg/Kg
	Nickel	**23.5**	mg/Kg
	Silver	0.25 U	mg/Kg
	Zinc	**49.3**	mg/Kg

Lori A. Zboralski — **Reviewed By:**
August 6, 2003 — **Date**

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Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030624107
Sample ID: HC-MW-2 (S5)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
CONVENTIONAL		
Solids	**73.2**	per cent
CV		
Mercury	0.0428 B	mg/Kg
GC/ECD-PCB		
Aroclor-1016	59 U	ug/Kg
Aroclor-1221	120 U	ug/Kg
Aroclor-1232	59 U	ug/Kg
Aroclor-1242	59 U	ug/Kg
Aroclor-1248	59 U	ug/Kg
Aroclor-1254	59 U	ug/Kg
Aroclor-1260	59 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	2.3 U J	ug/Kg
4,4-DDE	2.3 U J	ug/Kg
4,4-DDT	2.3 U J	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	94 U	ug/Kg
1,3-Dichlorobenzene	94 U	ug/Kg
1,4-Dichlorobenzene	94 U	ug/Kg

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030624107
Sample ID: HC-MW-2 (S5)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
2,4,5-Trichlorophenol	94 U	ug/Kg
2,4,6-Trichlorophenol	94 U	ug/Kg
2,4-Dichlorophenol	94 U	ug/Kg
2,4-Dinitrophenol	470 U	ug/Kg
2-Chlorophenol	94 U	ug/Kg
2-Methyl-4,6-dinitrophenol	470 U	ug/Kg
2-Methylnaphthalene	94 U	ug/Kg
2-Nitrophenol	94 U	ug/Kg
4-Chloro-3-methylphenol	94 U	ug/Kg
4-Methylphenol	94 U	ug/Kg
4-Nitrophenol	470 U	ug/Kg
Acenaphthene	**120**	ug/Kg
Acenaphthylene	94 U	ug/Kg
Anthracene	**180**	ug/Kg
Benzo(a)anthracene	**210**	ug/Kg
Benzo(a)pyrene	**130**	ug/Kg
Benzo(b,k)fluoranthenes	**260**	ug/Kg
Benzo(g,h,i)perylene	94 U	ug/Kg
Benzoic acid	470 U	ug/Kg
bis(2-Ethylhexyl)phthalate	94 B	ug/Kg
Butyl benzyl phthalate	94 U	ug/Kg
Chrysene	**220**	ug/Kg
Dibenz(a,h)anthracene	94 U	ug/Kg
Dibenzofuran	94 U	ug/Kg
Diethyl phthalate	94 U	ug/Kg
Dimethyl phthalate	94 U	ug/Kg
Di-n-butyl phthalate	94 U	ug/Kg
Di-n-octyl phthalate	94 U	ug/Kg
Fluoranthene	**630**	ug/Kg
Fluorene	**120**	ug/Kg

Flags:
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UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030624107
Sample ID: HC-MW-2 (S5)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

	Test	Result	Units
	Indeno(1,2,3-c,d)pyrene	94 U	ug/Kg
	Naphthalene	**110**	ug/Kg
	Phenanthrene	**830**	ug/Kg
	Phenol	94 U	ug/Kg
	Pyrene	**610**	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	5 U J	ug/Kg
	2-Methylphenol	5 U	ug/Kg
	Benzyl Alcohol	**10**	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	9 B	ug/Kg
	Pentachlorophenol	92 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	**27**	mg/Kg
	NWTPH-Heavy Oil	**91**	mg/Kg
ICP			
	Arsenic	**4.0**	mg/Kg
	Cadmium	0.25 U	mg/Kg
	Chromium	**25.7**	mg/Kg
	Copper	**30.2**	mg/Kg
	Lead	**30.7**	mg/Kg
	Nickel	**31.1**	mg/Kg
	Silver	0.24 U	mg/Kg
	Zinc	**53.2**	mg/Kg

Lori C. Zboralski August 6, 2003
Reviewed By: **Date**

Flags: U: The value is less than detection limit
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City of Tacoma

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Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030624108
Sample ID: HC-MW-2 (S6)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
CONVENTIONAL		
Solids	**84.1**	per cent
CV		
Mercury	0.0100 B	mg/Kg
GC/ECD-PCB		
Aroclor-1016	60 U	ug/Kg
Aroclor-1221	120 U	ug/Kg
Aroclor-1232	60 U	ug/Kg
Aroclor-1242	60 U	ug/Kg
Aroclor-1248	60 U	ug/Kg
Aroclor-1254	60 U	ug/Kg
Aroclor-1260	60 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	2.2 U J	ug/Kg
4,4-DDE	2.2 U J	ug/Kg
4,4-DDT	2.2 U J	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	97 U	ug/Kg
1,4-Dichlorobenzene	97 U	ug/Kg
2,4,5-Trichlorophenol	97 U	ug/Kg

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030624108
Sample ID: HC-MW-2 (S6)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
2,4,6-Trichlorophenol	97 U	ug/Kg
2,4-Dichlorophenol	97 U	ug/Kg
2,4-Dinitrophenol	480 U	ug/Kg
2-Chlorophenol	97 U	ug/Kg
2-Methyl-4,6-dinitrophenol	480 U	ug/Kg
2-Methylnaphthalene	97 U	ug/Kg
2-Nitrophenol	97 U	ug/Kg
4-Chloro-3-methylphenol	97 U	ug/Kg
4-Methylphenol	97 U	ug/Kg
4-Nitrophenol	480 U	ug/Kg
Acenaphthene	97 U	ug/Kg
Acenaphthylene	97 U	ug/Kg
Anthracene	97 U	ug/Kg
Benzo(a)anthracene	97 U	ug/Kg
Benzo(a)pyrene	97 U	ug/Kg
Benzo(b,k)fluoranthenes	97 U	ug/Kg
Benzo(g,h,i)perylene	97 U	ug/Kg
Benzoic acid	480 U	ug/Kg
bis(2-Ethylhexyl)phthalate	**140**	ug/Kg
Butyl benzyl phthalate	97 U	ug/Kg
Chrysene	97 U	ug/Kg
Dibenz(a,h)anthracene	97 U	ug/Kg
Dibenzofuran	97 U	ug/Kg
Diethyl phthalate	97 U	ug/Kg
Dimethyl phthalate	97 U	ug/Kg
Di-n-butyl phthalate	97 U	ug/Kg
Di-n-octyl phthalate	97 U	ug/Kg
Fluoranthene	97 U	ug/Kg
Fluorene	97 U	ug/Kg
Indeno(1,2,3-c,d)pyrene	97 U	ug/Kg

Flags:
U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030624108
Sample ID: HC-MW-2 (S6)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

	Test	Result	Units
	Naphthalene	97 U	ug/Kg
	Phenanthrene	**120**	ug/Kg
	Phenol	97 U	ug/Kg
	Pyrene	97 B J	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	5 U J	ug/Kg
	2-Methylphenol	5 U	ug/Kg
	Benzyl Alcohol	10 B	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	**13**	ug/Kg
	Pentachlorophenol	98 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	19 U	mg/Kg
	NWTPH-Heavy Oil	39 U	mg/Kg
ICP			
	Arsenic	**1.7**	mg/Kg
	Cadmium	0.052 U	mg/Kg
	Chromium	**11.6**	mg/Kg
	Copper	**12.8**	mg/Kg
	Lead	**4.90**	mg/Kg
	Nickel	**9.47**	mg/Kg
	Silver	0.050 U	mg/Kg
	Zinc	**23.6**	mg/Kg

Lori A Zboralski — August 6, 2003
Reviewed By: **Date**

Flags:
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- J: The value is considered estimated
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Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030624109
Sample ID: HC-MW-4 (S2)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
CONVENTIONAL		
Solids	**37.1**	per cent
CV		
Mercury	0.123 B	mg/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	100 U	ug/Kg
1,4-Dichlorobenzene	100 U	ug/Kg
2,4,5-Trichlorophenol	100 U	ug/Kg
2,4,6-Trichlorophenol	100 U	ug/Kg
2,4-Dichlorophenol	100 U	ug/Kg
2,4-Dinitrophenol	500 U	ug/Kg
2-Chlorophenol	100 U	ug/Kg
2-Methyl-4,6-dinitrophenol	500 U	ug/Kg
2-Methylnaphthalene	100 U	ug/Kg
2-Nitrophenol	100 U	ug/Kg
4-Chloro-3-methylphenol	100 U	ug/Kg
4-Methylphenol	100 U	ug/Kg
4-Nitrophenol	500 U	ug/Kg
Acenaphthene	100 U	ug/Kg
Acenaphthylene	100 U	ug/Kg

Flags:
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Lab#: 20030624109
Sample ID: HC-MW-4 (S2)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

	Test	Result		Units
	Anthracene	**200**		ug/Kg
	Benzo(a)anthracene	**230**		ug/Kg
	Benzo(a)pyrene	**210**		ug/Kg
	Benzo(b,k)fluoranthenes	**480**		ug/Kg
	Benzo(g,h,i)perylene	**120**		ug/Kg
	Benzoic acid	500 U		ug/Kg
	bis(2-Ethylhexyl)phthalate	**3000**		ug/Kg
	Butyl benzyl phthalate	**1200**		ug/Kg
	Chrysene	**270**		ug/Kg
	Dibenz(a,h)anthracene	**140**		ug/Kg
	Dibenzofuran	100 U		ug/Kg
	Diethyl phthalate	**130**		ug/Kg
	Dimethyl phthalate	100 U		ug/Kg
	Di-n-butyl phthalate	**290**		ug/Kg
	Di-n-octyl phthalate	**380**		ug/Kg
	Fluoranthene	**570**		ug/Kg
	Fluorene	100 U		ug/Kg
	Indeno(1,2,3-c,d)pyrene	**130**		ug/Kg
	Naphthalene	100 U		ug/Kg
	Phenanthrene	**360**		ug/Kg
	Phenol	100 U		ug/Kg
	Pyrene	**1100**	J	ug/Kg
GC/MS-TPH				
	NWTPH-Diesel	**81**		mg/Kg
	NWTPH-Heavy Oil	**2200**		mg/Kg
ICP				
	Arsenic	**5.1**		mg/Kg
	Cadmium	**0.200**		mg/Kg
	Chromium	**19.6**		mg/Kg
	Copper	**26.9**		mg/Kg

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
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Lab#:	20030624109	
Sample ID:	HC-MW-4 (S2)	
Sample Type:	Sediment	Puyallup River Side Channel
Sample Date:	6/24/2003	

Test	Result	Units
Lead	**16.0**	mg/Kg
Nickel	**7.98**	mg/Kg
Silver	0.052 U	mg/Kg
Zinc	**41.1**	mg/Kg

Lori A. Zboralski — **Reviewed By:**

August 6, 2003 — **Date**

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City of Tacoma

Science and Engineering Division

2201 Portland Avenue Tacoma WA 98421
Phone: 253.591.5588 Fax: 253.502.2170

Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030624110
Sample ID: HC-MW-4 (S4)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
CONVENTIONAL		
Solids	**68.8**	per cent
CV		
Mercury	0.0341 B	mg/Kg
GC/ECD-PCB		
Aroclor-1016	67 U	ug/Kg
Aroclor-1221	140 U	ug/Kg
Aroclor-1232	67 U	ug/Kg
Aroclor-1242	67 U	ug/Kg
Aroclor-1248	67 U	ug/Kg
Aroclor-1254	67 U	ug/Kg
Aroclor-1260	67 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	2.9 U J	ug/Kg
4,4-DDE	2.9 U J	ug/Kg
4,4-DDT	2.9 U J	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	99 U	ug/Kg
1,4-Dichlorobenzene	99 U	ug/Kg
2,4,5-Trichlorophenol	99 U	ug/Kg

Flags: U: The value is less than detection limit
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Lab#: 20030624110
Sample ID: HC-MW-4 (S4)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/24/2003

Test	Result	Units
2,4,6-Trichlorophenol	99 U	ug/Kg
2,4-Dichlorophenol	99 U	ug/Kg
2,4-Dinitrophenol	490 U	ug/Kg
2-Chlorophenol	99 U	ug/Kg
2-Methyl-4,6-dinitrophenol	490 U	ug/Kg
2-Methylnaphthalene	99 U	ug/Kg
2-Nitrophenol	99 U	ug/Kg
4-Chloro-3-methylphenol	99 U	ug/Kg
4-Methylphenol	99 U	ug/Kg
4-Nitrophenol	490 U	ug/Kg
Acenaphthene	99 U	ug/Kg
Acenaphthylene	99 U	ug/Kg
Anthracene	99 U	ug/Kg
Benzo(a)anthracene	99 U	ug/Kg
Benzo(a)pyrene	99 U	ug/Kg
Benzo(b,k)fluoranthenes	99 U	ug/Kg
Benzo(g,h,i)perylene	99 U	ug/Kg
Benzoic acid	490 U	ug/Kg
bis(2-Ethylhexyl)phthalate	**130**	ug/Kg
Butyl benzyl phthalate	99 U	ug/Kg
Chrysene	99 U	ug/Kg
Dibenz(a,h)anthracene	99 U	ug/Kg
Dibenzofuran	99 U	ug/Kg
Diethyl phthalate	99 U	ug/Kg
Dimethyl phthalate	99 U	ug/Kg
Di-n-butyl phthalate	99 U	ug/Kg
Di-n-octyl phthalate	99 U	ug/Kg
Fluoranthene	99 U	ug/Kg
Fluorene	99 U	ug/Kg
Indeno(1,2,3-c,d)pyrene	99 U	ug/Kg

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Lab#:	20030624110	
Sample ID:	HC-MW-4 (S4)	
Sample Type:	Sediment	Puyallup River Side Channel
Sample Date:	6/24/2003	

	Test	Result	Units
	Naphthalene	99 U	ug/Kg
	Phenanthrene	99 U	ug/Kg
	Phenol	99 U	ug/Kg
	Pyrene	99 U	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	5 U J	ug/Kg
	2-Methylphenol	5 U	ug/Kg
	Benzyl Alcohol	**24**	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	5 U	ug/Kg
	Pentachlorophenol	99 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	20 U	mg/Kg
	NWTPH-Heavy Oil	**48**	mg/Kg
ICP			
	Arsenic	**2.3**	mg/Kg
	Cadmium	0.24 U	mg/Kg
	Chromium	**13.3**	mg/Kg
	Copper	**17.0**	mg/Kg
	Lead	**4.29**	mg/Kg
	Nickel	**9.35**	mg/Kg
	Silver	0.23 U	mg/Kg
	Zinc	**27.2**	mg/Kg

Lori A. Zboralski — **Reviewed By:**

August 6, 2003 — **Date**

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City of Tacoma

Science and Engineering Division

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Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030625112
Sample ID: HC-MW-3D (S1)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
CONVENTIONAL		
Solids	**43.9**	per cent
CV		
Mercury	0.103 B	mg/Kg
GC/ECD-PCB		
Aroclor-1016	110 U	ug/Kg
Aroclor-1221	210 U	ug/Kg
Aroclor-1232	110 U	ug/Kg
Aroclor-1242	110 U	ug/Kg
Aroclor-1248	110 U	ug/Kg
Aroclor-1254	110 U	ug/Kg
Aroclor-1260	110 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	4.4 U	ug/Kg
4,4-DDE	4.4 U	ug/Kg
4,4-DDT	4.4 U	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	100 U	ug/Kg
1,4-Dichlorobenzene	100 U	ug/Kg
2,4,5-Trichlorophenol	100 U	ug/Kg

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Lab#: 20030625112
Sample ID: HC-MW-3D (S1)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
2,4,6-Trichlorophenol	100 U	ug/Kg
2,4-Dichlorophenol	100 U	ug/Kg
2,4-Dinitrophenol	500 U	ug/Kg
2-Chlorophenol	100 U	ug/Kg
2-Methyl-4,6-dinitrophenol	500 U	ug/Kg
2-Methylnaphthalene	100 U	ug/Kg
2-Nitrophenol	100 U	ug/Kg
4-Chloro-3-methylphenol	100 U	ug/Kg
4-Methylphenol	100 U	ug/Kg
4-Nitrophenol	500 U	ug/Kg
Acenaphthene	100 U	ug/Kg
Acenaphthylene	100 U	ug/Kg
Anthracene	100 U	ug/Kg
Benzo(a)anthracene	100 U	ug/Kg
Benzo(a)pyrene	100 U	ug/Kg
Benzo(b,k)fluoranthenes	100 U	ug/Kg
Benzo(g,h,i)perylene	100 U	ug/Kg
Benzoic acid	500 U	ug/Kg
bis(2-Ethylhexyl)phthalate	**1400**	ug/Kg
Butyl benzyl phthalate	**630**	ug/Kg
Chrysene	100 U	ug/Kg
Dibenz(a,h)anthracene	100 U	ug/Kg
Dibenzofuran	100 U	ug/Kg
Diethyl phthalate	100 U	ug/Kg
Dimethyl phthalate	100 U	ug/Kg
Di-n-butyl phthalate	100 U	ug/Kg
Di-n-octyl phthalate	100 U	ug/Kg
Fluoranthene	100 U	ug/Kg
Fluorene	100 U	ug/Kg
Indeno(1,2,3-c,d)pyrene	100 U	ug/Kg

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Lab#: 20030625112
Sample ID: HC-MW-3D (S1)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

	Test	Result	Units
	Naphthalene	100 U	ug/Kg
	Phenanthrene	100 U	ug/Kg
	Phenol	100 U	ug/Kg
	Pyrene	100 U	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	5 U J	ug/Kg
	2-Methylphenol	5 U	ug/Kg
	Benzyl Alcohol	**23**	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	5 U	ug/Kg
	Pentachlorophenol	99 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	20 U	mg/Kg
	NWTPH-Heavy Oil	**600**	mg/Kg
ICP			
	Arsenic	**2.8**	mg/Kg
	Cadmium	**0.446**	mg/Kg
	Chromium	**8.07**	mg/Kg
	Copper	**14.9**	mg/Kg
	Lead	**14.2**	mg/Kg
	Nickel	**5.28**	mg/Kg
	Silver	0.051 U	mg/Kg
	Zinc	**69.9**	mg/Kg

Lori A. Zboralski — August 6, 2003

Reviewed By: **Date**

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City of Tacoma

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Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030625113
Sample ID: HC-MW-3D (S3)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
CONVENTIONAL		
Solids	**55.8**	per cent
CV		
Mercury	0.0982 B	mg/Kg
GC/ECD-PCB		
Aroclor-1016	110 U	ug/Kg
Aroclor-1221	220 U	ug/Kg
Aroclor-1232	110 U	ug/Kg
Aroclor-1242	110 U	ug/Kg
Aroclor-1248	110 U	ug/Kg
Aroclor-1254	110 U	ug/Kg
Aroclor-1260	110 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	4.3 U J	ug/Kg
4,4-DDE	4.3 U J	ug/Kg
4,4-DDT	4.3 U J	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	99 U J	ug/Kg
1,4-Dichlorobenzene	99 U J	ug/Kg
2,4,5-Trichlorophenol	99 U	ug/Kg

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Lab#: 20030625113
Sample ID: HC-MW-3D (S3)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result			Units
2,4,6-Trichlorophenol	99	U		ug/Kg
2,4-Dichlorophenol	99	U		ug/Kg
2,4-Dinitrophenol	500	U		ug/Kg
2-Chlorophenol	99	U		ug/Kg
2-Methyl-4,6-dinitrophenol	500	U		ug/Kg
2-Methylnaphthalene	99	U	J	ug/Kg
2-Nitrophenol	99	U		ug/Kg
4-Chloro-3-methylphenol	99	U		ug/Kg
4-Methylphenol	**280**			ug/Kg
4-Nitrophenol	500	U		ug/Kg
Acenaphthene	99	U	J	ug/Kg
Acenaphthylene	99	U	J	ug/Kg
Anthracene	**180**		J	ug/Kg
Benzo(a)anthracene	99	U	J	ug/Kg
Benzo(a)pyrene	99	U	J	ug/Kg
Benzo(b,k)fluoranthenes	**130**		J	ug/Kg
Benzo(g,h,i)perylene	99	U	J	ug/Kg
Benzoic acid	500	U		ug/Kg
bis(2-Ethylhexyl)phthalate	**230**		J	ug/Kg
Butyl benzyl phthalate	**210**		J	ug/Kg
Chrysene	99	U	J	ug/Kg
Dibenz(a,h)anthracene	99	U	J	ug/Kg
Dibenzofuran	99	U		ug/Kg
Diethyl phthalate	99	U	J	ug/Kg
Dimethyl phthalate	99	U	J	ug/Kg
Di-n-butyl phthalate	99	U	J	ug/Kg
Di-n-octyl phthalate	99	U	J	ug/Kg
Fluoranthene	**200**		J	ug/Kg
Fluorene	99	U	J	ug/Kg
Indeno(1,2,3-c,d)pyrene	99	U	J	ug/Kg

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Lab#: 20030625113
Sample ID: HC-MW-3D (S3)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

	Test	Result		Units
	Naphthalene	**220**	J	ug/Kg
	Phenanthrene	**240**	J	ug/Kg
	Phenol	99	U	ug/Kg
	Pyrene	**480**	J	ug/Kg
GC/MS-SM-BNA				
	1,2,4-Trichlorobenzene	5	U	ug/Kg
	2,4-Dimethylphenol	6	B J	ug/Kg
	2-Methylphenol	6	B	ug/Kg
	Benzyl Alcohol	**44**		ug/Kg
	Hexachlorobenzene	5	U	ug/Kg
	Hexachlorobutadiene	5	U	ug/Kg
	N-Nitrosodiphenylamine	5	U	ug/Kg
	Pentachlorophenol	98	U	ug/Kg
GC/MS-TPH				
	NWTPH-Diesel	**26**	J	mg/Kg
	NWTPH-Heavy Oil	**190**	J	mg/Kg
ICP				
	Arsenic	**4.4**		mg/Kg
	Cadmium	**0.139**		mg/Kg
	Chromium	**19.8**		mg/Kg
	Copper	**24.3**		mg/Kg
	Lead	**8.71**		mg/Kg
	Nickel	**14.0**		mg/Kg
	Silver	0.049	U	mg/Kg
	Zinc	**54.1**		mg/Kg

Lori A. Zboralski — **Reviewed By:**
August 6, 2003 — **Date**

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Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030625114
Sample ID: HC-MW-3D (S4)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
CONVENTIONAL		
Solids	**59.9**	per cent
CV		
Mercury	0.115 B	mg/Kg
GC/ECD-PCB		
Aroclor-1016	81 U	ug/Kg
Aroclor-1221	160 U	ug/Kg
Aroclor-1232	81 U	ug/Kg
Aroclor-1242	81 U	ug/Kg
Aroclor-1248	81 U	ug/Kg
Aroclor-1254	81 U	ug/Kg
Aroclor-1260	81 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	3.1 U	ug/Kg
4,4-DDE	3.1 U	ug/Kg
4,4-DDT	3.1 U	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	100 U	ug/Kg
1,4-Dichlorobenzene	100 U	ug/Kg
2,4,5-Trichlorophenol	100 U	ug/Kg

Flags: U: The value is less than detection limit
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Lab#: 20030625114
Sample ID: HC-MW-3D (S4)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
2,4,6-Trichlorophenol	100 U	ug/Kg
2,4-Dichlorophenol	100 U	ug/Kg
2,4-Dinitrophenol	500 U	ug/Kg
2-Chlorophenol	100 U	ug/Kg
2-Methyl-4,6-dinitrophenol	500 U	ug/Kg
2-Methylnaphthalene	100 U	ug/Kg
2-Nitrophenol	100 U	ug/Kg
4-Chloro-3-methylphenol	100 U	ug/Kg
4-Methylphenol	**210**	ug/Kg
4-Nitrophenol	500 U	ug/Kg
Acenaphthene	100 U	ug/Kg
Acenaphthylene	100 U	ug/Kg
Anthracene	100 U	ug/Kg
Benzo(a)anthracene	100 U	ug/Kg
Benzo(a)pyrene	100 U	ug/Kg
Benzo(b,k)fluoranthenes	**140**	ug/Kg
Benzo(g,h,i)perylene	100 U	ug/Kg
Benzoic acid	500 U	ug/Kg
bis(2-Ethylhexyl)phthalate	**590**	ug/Kg
Butyl benzyl phthalate	**160**	ug/Kg
Chrysene	100 U	ug/Kg
Dibenz(a,h)anthracene	100 U	ug/Kg
Dibenzofuran	100 U	ug/Kg
Diethyl phthalate	100 U	ug/Kg
Dimethyl phthalate	100 U	ug/Kg
Di-n-butyl phthalate	100 U	ug/Kg
Di-n-octyl phthalate	100 U	ug/Kg
Fluoranthene	**360**	ug/Kg
Fluorene	100 U	ug/Kg
Indeno(1,2,3-c,d)pyrene	100 U	ug/Kg

Flags:
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UJ: The value is less than detection limit and considered estimated
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Lab#: 20030625114
Sample ID: HC-MW-3D (S4)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

	Test	Result	Units
	Naphthalene	**350**	ug/Kg
	Phenanthrene	**290**	ug/Kg
	Phenol	100 U	ug/Kg
	Pyrene	**650** J	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	**12** J	ug/Kg
	2-Methylphenol	**10**	ug/Kg
	Benzyl Alcohol	**42**	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	8 B	ug/Kg
	Pentachlorophenol	98 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	**25**	mg/Kg
	NWTPH-Heavy Oil	**160**	mg/Kg
ICP			
	Arsenic	**3.5**	mg/Kg
	Cadmium	0.26 U	mg/Kg
	Chromium	**13.4**	mg/Kg
	Copper	**23.9**	mg/Kg
	Lead	**8.87**	mg/Kg
	Nickel	**11.8**	mg/Kg
	Silver	0.25 U	mg/Kg
	Zinc	**42.9**	mg/Kg

Lori A. Zboralski — August 6, 2003
Reviewed By: **Date**

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Science and Engineering Division

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Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030625115
Sample ID: HC-MW-3D (S5)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
CONVENTIONAL		
Solids	**58.4**	per cent
CV		
Mercury	**0.275**	mg/Kg
GC/ECD-PCB		
Aroclor-1016	85 U	ug/Kg
Aroclor-1221	170 U	ug/Kg
Aroclor-1232	85 U	ug/Kg
Aroclor-1242	85 U	ug/Kg
Aroclor-1248	85 U	ug/Kg
Aroclor-1254	85 U	ug/Kg
Aroclor-1260	85 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	3.5 U J	ug/Kg
4,4-DDE	3.5 U J	ug/Kg
4,4-DDT	3.5 U J	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	100 U	ug/Kg
1,4-Dichlorobenzene	100 U	ug/Kg
2,4,5-Trichlorophenol	100 U	ug/Kg

Flags: U: The value is less than detection limit
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B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030625115
Sample ID: HC-MW-3D (S5)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
2,4,6-Trichlorophenol	100 U	ug/Kg
2,4-Dichlorophenol	100 U	ug/Kg
2,4-Dinitrophenol	500 U	ug/Kg
2-Chlorophenol	100 U	ug/Kg
2-Methyl-4,6-dinitrophenol	500 U	ug/Kg
2-Methylnaphthalene	100 U	ug/Kg
2-Nitrophenol	100 U	ug/Kg
4-Chloro-3-methylphenol	100 U	ug/Kg
4-Methylphenol	**290**	ug/Kg
4-Nitrophenol	500 U	ug/Kg
Acenaphthene	100 U	ug/Kg
Acenaphthylene	100 U	ug/Kg
Anthracene	100 U	ug/Kg
Benzo(a)anthracene	100 U	ug/Kg
Benzo(a)pyrene	100 U	ug/Kg
Benzo(b,k)fluoranthenes	**140**	ug/Kg
Benzo(g,h,i)perylene	100 U	ug/Kg
Benzoic acid	500 U	ug/Kg
bis(2-Ethylhexyl)phthalate	**180**	ug/Kg
Butyl benzyl phthalate	**230**	ug/Kg
Chrysene	100 U	ug/Kg
Dibenz(a,h)anthracene	100 U	ug/Kg
Dibenzofuran	100 U	ug/Kg
Diethyl phthalate	100 U	ug/Kg
Dimethyl phthalate	100 U	ug/Kg
Di-n-butyl phthalate	100 U	ug/Kg
Di-n-octyl phthalate	100 U	ug/Kg
Fluoranthene	**340**	ug/Kg
Fluorene	100 U	ug/Kg
Indeno(1,2,3-c,d)pyrene	100 U	ug/Kg

Flags:
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UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030625115
Sample ID: HC-MW-3D (S5)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

	Test	Result	Units
	Naphthalene	**320**	ug/Kg
	Phenanthrene	**300**	ug/Kg
	Phenol	100 U	ug/Kg
	Pyrene	**580** J	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	**12** J	ug/Kg
	2-Methylphenol	**13**	ug/Kg
	Benzyl Alcohol	**46**	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	7 B	ug/Kg
	Pentachlorophenol	99 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	**23**	mg/Kg
	NWTPH-Heavy Oil	**180**	mg/Kg
ICP			
	Arsenic	**2.5**	mg/Kg
	Cadmium	**0.133**	mg/Kg
	Chromium	**10.6**	mg/Kg
	Copper	**19.6**	mg/Kg
	Lead	**6.45**	mg/Kg
	Nickel	**8.27**	mg/Kg
	Silver	0.047 U	mg/Kg
	Zinc	**34.6**	mg/Kg

Lori A. Zboralski — **Reviewed By:**
August 6, 2003 — **Date**

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City of Tacoma

Science and Engineering Division

2201 Portland Avenue Tacoma WA 98421
Phone: 253.591.5588 Fax: 253.502.2170

Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030625116
Sample ID: HC-MW-3D (S6)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
CONVENTIONAL		
Solids	**59.2**	per cent
CV		
Mercury	0.0638 B	mg/Kg
GC/ECD-PCB		
Aroclor-1016	72 U	ug/Kg
Aroclor-1221	140 U	ug/Kg
Aroclor-1232	72 U	ug/Kg
Aroclor-1242	72 U	ug/Kg
Aroclor-1248	72 U	ug/Kg
Aroclor-1254	72 U	ug/Kg
Aroclor-1260	72 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	2.9 U J	ug/Kg
4,4-DDE	2.9 U J	ug/Kg
4,4-DDT	2.9 U J	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	100 U	ug/Kg
1,4-Dichlorobenzene	100 U	ug/Kg
2,4,5-Trichlorophenol	100 U	ug/Kg

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
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Lab#: 20030625116
Sample ID: HC-MW-3D (S6)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
2,4,6-Trichlorophenol	100 U	ug/Kg
2,4-Dichlorophenol	100 U	ug/Kg
2,4-Dinitrophenol	500 U	ug/Kg
2-Chlorophenol	100 U	ug/Kg
2-Methyl-4,6-dinitrophenol	500 U	ug/Kg
2-Methylnaphthalene	100 U	ug/Kg
2-Nitrophenol	100 U	ug/Kg
4-Chloro-3-methylphenol	100 U	ug/Kg
4-Methylphenol	**210**	ug/Kg
4-Nitrophenol	500 U	ug/Kg
Acenaphthene	100 U	ug/Kg
Acenaphthylene	100 U	ug/Kg
Anthracene	100 U	ug/Kg
Benzo(a)anthracene	100 U	ug/Kg
Benzo(a)pyrene	100 U	ug/Kg
Benzo(b,k)fluoranthenes	100 U	ug/Kg
Benzo(g,h,i)perylene	100 U	ug/Kg
Benzoic acid	500 U	ug/Kg
bis(2-Ethylhexyl)phthalate	**330**	ug/Kg
Butyl benzyl phthalate	100 U	ug/Kg
Chrysene	100 U	ug/Kg
Dibenz(a,h)anthracene	100 U	ug/Kg
Dibenzofuran	100 U	ug/Kg
Diethyl phthalate	100 U	ug/Kg
Dimethyl phthalate	100 U	ug/Kg
Di-n-butyl phthalate	100 U	ug/Kg
Di-n-octyl phthalate	100 U	ug/Kg
Fluoranthene	**200**	ug/Kg
Fluorene	100 U	ug/Kg
Indeno(1,2,3-c,d)pyrene	100 U	ug/Kg

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Lab#: 20030625116
Sample ID: HC-MW-3D (S6)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

	Test	Result	Units
	Naphthalene	**140**	ug/Kg
	Phenanthrene	**160**	ug/Kg
	Phenol	100 U	ug/Kg
	Pyrene	**230**	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	**11** J	ug/Kg
	2-Methylphenol	**12**	ug/Kg
	Benzyl Alcohol	**33**	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	**11**	ug/Kg
	Pentachlorophenol	100 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	20 U	mg/Kg
	NWTPH-Heavy Oil	**120**	mg/Kg
ICP			
	Arsenic	**3.9**	mg/Kg
	Cadmium	0.26 U	mg/Kg
	Chromium	**14.9**	mg/Kg
	Copper	**21.7**	mg/Kg
	Lead	**7.91**	mg/Kg
	Nickel	**10.00**	mg/Kg
	Silver	0.25 U	mg/Kg
	Zinc	**34.9**	mg/Kg

Lori A. Zboralski — **Reviewed By:**
August 6, 2003 — **Date**

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Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030625117
Sample ID: HC-MW-3D (S7)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
CONVENTIONAL		
Solids	**79.4**	per cent
CV		
Mercury	0.0114 B	mg/Kg
GC/ECD-PCB		
Aroclor-1016	58 U	ug/Kg
Aroclor-1221	120 U	ug/Kg
Aroclor-1232	58 U	ug/Kg
Aroclor-1242	58 U	ug/Kg
Aroclor-1248	58 U	ug/Kg
Aroclor-1254	58 U	ug/Kg
Aroclor-1260	58 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	2.3 U	ug/Kg
4,4-DDE	2.3 U	ug/Kg
4,4-DDT	2.3 U	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	100 U	ug/Kg
1,4-Dichlorobenzene	100 U	ug/Kg
2,4,5-Trichlorophenol	100 U	ug/Kg

Flags: U: The value is less than detection limit
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Lab#: 20030625117
Sample ID: HC-MW-3D (S7)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
2,4,6-Trichlorophenol	100 U	ug/Kg
2,4-Dichlorophenol	100 U	ug/Kg
2,4-Dinitrophenol	500 U	ug/Kg
2-Chlorophenol	100 U	ug/Kg
2-Methyl-4,6-dinitrophenol	500 U	ug/Kg
2-Methylnaphthalene	100 U	ug/Kg
2-Nitrophenol	100 U	ug/Kg
4-Chloro-3-methylphenol	100 U	ug/Kg
4-Methylphenol	100 U	ug/Kg
4-Nitrophenol	500 U	ug/Kg
Acenaphthene	**280**	ug/Kg
Acenaphthylene	100 U	ug/Kg
Anthracene	100 U	ug/Kg
Benzo(a)anthracene	100 U	ug/Kg
Benzo(a)pyrene	100 U	ug/Kg
Benzo(b,k)fluoranthenes	100 U	ug/Kg
Benzo(g,h,i)perylene	100 U	ug/Kg
Benzoic acid	500 U	ug/Kg
bis(2-Ethylhexyl)phthalate	**150**	ug/Kg
Butyl benzyl phthalate	100 U	ug/Kg
Chrysene	100 U	ug/Kg
Dibenz(a,h)anthracene	100 U	ug/Kg
Dibenzofuran	100 U	ug/Kg
Diethyl phthalate	100 U	ug/Kg
Dimethyl phthalate	100 U	ug/Kg
Di-n-butyl phthalate	100 U	ug/Kg
Di-n-octyl phthalate	100 U	ug/Kg
Fluoranthene	100 U	ug/Kg
Fluorene	100 U	ug/Kg
Indeno(1,2,3-c,d)pyrene	100 U	ug/Kg

Flags:
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Lab#: 20030625117
Sample ID: HC-MW-3D (S7)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

	Test	Result	Units
	Naphthalene	**120**	ug/Kg
	Phenanthrene	100 U	ug/Kg
	Phenol	100 U	ug/Kg
	Pyrene	100 U	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	5 U J	ug/Kg
	2-Methylphenol	5 U	ug/Kg
	Benzyl Alcohol	**18**	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	5 U	ug/Kg
	Pentachlorophenol	97 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	20 U	mg/Kg
	NWTPH-Heavy Oil	40 U	mg/Kg
ICP			
	Arsenic	**1.0**	mg/Kg
	Cadmium	0.052 U	mg/Kg
	Chromium	**7.62**	mg/Kg
	Copper	**11.8**	mg/Kg
	Lead	**3.73**	mg/Kg
	Nickel	**6.81**	mg/Kg
	Silver	0.050 U	mg/Kg
	Zinc	**26.3**	mg/Kg

Lori A. Zboralski — August 6, 2003

Reviewed By: **Date**

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Science and Engineering Division

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Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030625118
Sample ID: HC-MW-3D (S8)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
CONVENTIONAL		
Solids	**77.3**	per cent
CV		
Mercury	0.0092 U	mg/Kg
GC/ECD-PCB		
Aroclor-1016	62 U	ug/Kg
Aroclor-1221	120 U	ug/Kg
Aroclor-1232	62 U	ug/Kg
Aroclor-1242	62 U	ug/Kg
Aroclor-1248	62 U	ug/Kg
Aroclor-1254	62 U	ug/Kg
Aroclor-1260	62 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	2.6 U	ug/Kg
4,4-DDE	2.6 U	ug/Kg
4,4-DDT	2.6 U	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	99 U	ug/Kg
1,4-Dichlorobenzene	99 U	ug/Kg
2,4,5-Trichlorophenol	99 U	ug/Kg

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030625118
Sample ID: HC-MW-3D (S8)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
2,4,6-Trichlorophenol	99 U	ug/Kg
2,4-Dichlorophenol	99 U	ug/Kg
2,4-Dinitrophenol	500 U	ug/Kg
2-Chlorophenol	99 U	ug/Kg
2-Methyl-4,6-dinitrophenol	500 U	ug/Kg
2-Methylnaphthalene	99 U	ug/Kg
2-Nitrophenol	99 U	ug/Kg
4-Chloro-3-methylphenol	99 U	ug/Kg
4-Methylphenol	99 U	ug/Kg
4-Nitrophenol	500 U	ug/Kg
Acenaphthene	**140**	ug/Kg
Acenaphthylene	99 U	ug/Kg
Anthracene	99 U	ug/Kg
Benzo(a)anthracene	99 U	ug/Kg
Benzo(a)pyrene	99 U	ug/Kg
Benzo(b,k)fluoranthenes	99 U	ug/Kg
Benzo(g,h,i)perylene	99 U	ug/Kg
Benzoic acid	500 U	ug/Kg
bis(2-Ethylhexyl)phthalate	**210**	ug/Kg
Butyl benzyl phthalate	99 U	ug/Kg
Chrysene	99 U	ug/Kg
Dibenz(a,h)anthracene	99 U	ug/Kg
Dibenzofuran	99 U	ug/Kg
Diethyl phthalate	99 U	ug/Kg
Dimethyl phthalate	99 U	ug/Kg
Di-n-butyl phthalate	99 U	ug/Kg
Di-n-octyl phthalate	99 U	ug/Kg
Fluoranthene	99 U	ug/Kg
Fluorene	99 U	ug/Kg
Indeno(1,2,3-c,d)pyrene	99 U	ug/Kg

Flags:
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- UJ: The value is less than detection limit and considered estimated
- J: The value is considered estimated
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Lab#:	20030625118	
Sample ID:	HC-MW-3D (S8)	
Sample Type:	Sediment	Puyallup River Side Channel
Sample Date:	6/25/2003	

	Test	Result	Units
	Naphthalene	99 U	ug/Kg
	Phenanthrene	99 U	ug/Kg
	Phenol	99 U	ug/Kg
	Pyrene	99 U	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	5 U J	ug/Kg
	2-Methylphenol	5 U	ug/Kg
	Benzyl Alcohol	6 B	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	5 U	ug/Kg
	Pentachlorophenol	99 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	20 U	mg/Kg
	NWTPH-Heavy Oil	40 U	mg/Kg
ICP			
	Arsenic	**2.6**	mg/Kg
	Cadmium	0.045 U	mg/Kg
	Chromium	**10.3**	mg/Kg
	Copper	**11.2**	mg/Kg
	Lead	**1.99**	mg/Kg
	Nickel	**7.38**	mg/Kg
	Silver	0.043 U	mg/Kg
	Zinc	**21.9**	mg/Kg

Lori A. Zboralski — August 6, 2003

Reviewed By: **Date**

Flags:
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City of Tacoma

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Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030625119
Sample ID: HC-MW-3D (S9)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
CONVENTIONAL		
Solids	**81.9**	per cent
CV		
Mercury	0.0081 U	mg/Kg
GC/ECD-PCB		
Aroclor-1016	56 U	ug/Kg
Aroclor-1221	110 U	ug/Kg
Aroclor-1232	56 U	ug/Kg
Aroclor-1242	56 U	ug/Kg
Aroclor-1248	56 U	ug/Kg
Aroclor-1254	56 U	ug/Kg
Aroclor-1260	56 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	2.2 U	ug/Kg
4,4-DDE	2.2 U	ug/Kg
4,4-DDT	2.2 U	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	98 U	ug/Kg
1,4-Dichlorobenzene	98 U	ug/Kg
2,4,5-Trichlorophenol	98 U	ug/Kg

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030625119
Sample ID: HC-MW-3D (S9)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
2,4,6-Trichlorophenol	98 U	ug/Kg
2,4-Dichlorophenol	98 U	ug/Kg
2,4-Dinitrophenol	490 U	ug/Kg
2-Chlorophenol	98 U	ug/Kg
2-Methyl-4,6-dinitrophenol	490 U	ug/Kg
2-Methylnaphthalene	**440**	ug/Kg
2-Nitrophenol	98 U	ug/Kg
4-Chloro-3-methylphenol	98 U	ug/Kg
4-Methylphenol	98 U	ug/Kg
4-Nitrophenol	490 U	ug/Kg
Acenaphthene	**640**	ug/Kg
Acenaphthylene	98 U	ug/Kg
Anthracene	98 U	ug/Kg
Benzo(a)anthracene	98 U	ug/Kg
Benzo(a)pyrene	98 U	ug/Kg
Benzo(b,k)fluoranthenes	98 U	ug/Kg
Benzo(g,h,i)perylene	98 U	ug/Kg
Benzoic acid	490 U	ug/Kg
bis(2-Ethylhexyl)phthalate	98 U	ug/Kg
Butyl benzyl phthalate	98 U	ug/Kg
Chrysene	98 U	ug/Kg
Dibenz(a,h)anthracene	98 U	ug/Kg
Dibenzofuran	**120**	ug/Kg
Diethyl phthalate	98 U	ug/Kg
Dimethyl phthalate	98 U	ug/Kg
Di-n-butyl phthalate	98 U	ug/Kg
Di-n-octyl phthalate	98 U	ug/Kg
Fluoranthene	98 U	ug/Kg
Fluorene	**470**	ug/Kg
Indeno(1,2,3-c,d)pyrene	98 U	ug/Kg

Flags:
U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030625119
Sample ID: HC-MW-3D (S9)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

	Test	Result	Units
	Naphthalene	**300**	ug/Kg
	Phenanthrene	**350**	ug/Kg
	Phenol	98 U	ug/Kg
	Pyrene	98 U	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U J	ug/Kg
	2,4-Dimethylphenol	5 U J	ug/Kg
	2-Methylphenol	5 U J	ug/Kg
	Benzyl Alcohol	5 U J	ug/Kg
	Hexachlorobenzene	5 U J	ug/Kg
	Hexachlorobutadiene	5 U J	ug/Kg
	N-Nitrosodiphenylamine	5 U J	ug/Kg
	Pentachlorophenol	100 U J	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	20 U	mg/Kg
	NWTPH-Heavy Oil	39 U	mg/Kg
ICP			
	Arsenic	**1.3**	mg/Kg
	Cadmium	0.23 U	mg/Kg
	Chromium	**13.7**	mg/Kg
	Copper	**13.1**	mg/Kg
	Lead	**2.14**	mg/Kg
	Nickel	**11.3**	mg/Kg
	Silver	0.22 U	mg/Kg
	Zinc	**25.4**	mg/Kg

Lori A. Zboralski — August 6, 2003
Reviewed By: **Date**

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City of Tacoma

Science and Engineering Division

2201 Portland Avenue Tacoma WA 98421
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Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030625120
Sample ID: HC-MW-3D (S10)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
CONVENTIONAL		
Solids	**83.4**	per cent
CV		
Mercury	0.0075 U	mg/Kg
GC/ECD-PCB		
Aroclor-1016	58 U	ug/Kg
Aroclor-1221	120 U	ug/Kg
Aroclor-1232	58 U	ug/Kg
Aroclor-1242	58 U	ug/Kg
Aroclor-1248	58 U	ug/Kg
Aroclor-1254	58 U	ug/Kg
Aroclor-1260	58 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	2.4 U	ug/Kg
4,4-DDE	2.4 U	ug/Kg
4,4-DDT	2.4 U J	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	97 U	ug/Kg
1,4-Dichlorobenzene	97 U	ug/Kg
2,4,5-Trichlorophenol	97 U	ug/Kg

Flags: U: The value is less than detection limit
UJ: The value is less than detection limit and considered estimated
J: The value is considered estimated
B: The value is less than the reporting limit but greater than detection limit

Lab#: 20030625120
Sample ID: HC-MW-3D (S10)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
2,4,6-Trichlorophenol	97 U	ug/Kg
2,4-Dichlorophenol	97 U	ug/Kg
2,4-Dinitrophenol	490 U	ug/Kg
2-Chlorophenol	97 U	ug/Kg
2-Methyl-4,6-dinitrophenol	490 U	ug/Kg
2-Methylnaphthalene	**170**	ug/Kg
2-Nitrophenol	97 U	ug/Kg
4-Chloro-3-methylphenol	97 U	ug/Kg
4-Methylphenol	97 U	ug/Kg
4-Nitrophenol	490 U	ug/Kg
Acenaphthene	**450**	ug/Kg
Acenaphthylene	97 U	ug/Kg
Anthracene	97 U	ug/Kg
Benzo(a)anthracene	97 U	ug/Kg
Benzo(a)pyrene	97 U	ug/Kg
Benzo(b,k)fluoranthenes	97 U	ug/Kg
Benzo(g,h,i)perylene	97 U	ug/Kg
Benzoic acid	490 U	ug/Kg
bis(2-Ethylhexyl)phthalate	97 U	ug/Kg
Butyl benzyl phthalate	97 U	ug/Kg
Chrysene	97 U	ug/Kg
Dibenz(a,h)anthracene	97 U	ug/Kg
Dibenzofuran	97 U	ug/Kg
Diethyl phthalate	97 U	ug/Kg
Dimethyl phthalate	97 U	ug/Kg
Di-n-butyl phthalate	97 U	ug/Kg
Di-n-octyl phthalate	97 U	ug/Kg
Fluoranthene	97 U	ug/Kg
Fluorene	**330**	ug/Kg
Indeno(1,2,3-c,d)pyrene	97 U	ug/Kg

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Lab#: 20030625120
Sample ID: HC-MW-3D (S10)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

	Test	Result	Units
	Naphthalene	**150**	ug/Kg
	Phenanthrene	**230**	ug/Kg
	Phenol	97 U	ug/Kg
	Pyrene	97 U	ug/Kg
GC/MS-SM-BNA			
	1,2,4-Trichlorobenzene	5 U	ug/Kg
	2,4-Dimethylphenol	5 U J	ug/Kg
	2-Methylphenol	5 U	ug/Kg
	Benzyl Alcohol	7 B	ug/Kg
	Hexachlorobenzene	5 U	ug/Kg
	Hexachlorobutadiene	5 U	ug/Kg
	N-Nitrosodiphenylamine	5 U	ug/Kg
	Pentachlorophenol	98 U	ug/Kg
GC/MS-TPH			
	NWTPH-Diesel	19 U	mg/Kg
	NWTPH-Heavy Oil	39 U	mg/Kg
ICP			
	Arsenic	**2.0**	mg/Kg
	Cadmium	**0.053**	mg/Kg
	Chromium	**11.9**	mg/Kg
	Copper	**11.6**	mg/Kg
	Lead	**1.35**	mg/Kg
	Nickel	**7.73**	mg/Kg
	Silver	0.045 U	mg/Kg
	Zinc	**19.1**	mg/Kg

Lori A. Zboralski — August 6, 2003
Reviewed By: **Date**

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City of Tacoma

Science and Engineering Division

2201 Portland Avenue Tacoma WA 98421
Phone: 253.591.5588 Fax: 253.502.2170

Project: **Foss**
DC2001CLA
Date August 06, 2003

Lab#: 20030625121
Sample ID: HC-MW-3D (S11)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
CONVENTIONAL		
Solids	**79.5**	per cent
CV		
Mercury	0.010 U	mg/Kg
GC/ECD-PCB		
Aroclor-1016	61 U	ug/Kg
Aroclor-1221	120 U	ug/Kg
Aroclor-1232	61 U	ug/Kg
Aroclor-1242	61 U	ug/Kg
Aroclor-1248	61 U	ug/Kg
Aroclor-1254	61 U	ug/Kg
Aroclor-1260	61 U	ug/Kg
GC/ECD-PEST		
4,4-DDD	2.4 U	ug/Kg
4,4-DDE	2.4 U	ug/Kg
4,4-DDT	2.4 U	ug/Kg
GC/MS-BNA		
1,2-Dichlorobenzene	98 U	ug/Kg
1,4-Dichlorobenzene	98 U	ug/Kg
2,4,5-Trichlorophenol	98 U	ug/Kg

Flags:
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- UJ: The value is less than detection limit and considered estimated
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Lab#: 20030625121
Sample ID: HC-MW-3D (S11)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

Test	Result	Units
2,4,6-Trichlorophenol	98 U	ug/Kg
2,4-Dichlorophenol	98 U	ug/Kg
2,4-Dinitrophenol	490 U	ug/Kg
2-Chlorophenol	98 U	ug/Kg
2-Methyl-4,6-dinitrophenol	490 U	ug/Kg
2-Methylnaphthalene	98 U	ug/Kg
2-Nitrophenol	98 U	ug/Kg
4-Chloro-3-methylphenol	98 U	ug/Kg
4-Methylphenol	98 U	ug/Kg
4-Nitrophenol	490 U	ug/Kg
Acenaphthene	**270**	ug/Kg
Acenaphthylene	98 U	ug/Kg
Anthracene	98 U	ug/Kg
Benzo(a)anthracene	98 U	ug/Kg
Benzo(a)pyrene	98 U	ug/Kg
Benzo(b,k)fluoranthenes	98 U	ug/Kg
Benzo(g,h,i)perylene	98 U J	ug/Kg
Benzoic acid	490 U	ug/Kg
bis(2-Ethylhexyl)phthalate	**170**	ug/Kg
Butyl benzyl phthalate	98 U	ug/Kg
Chrysene	98 U	ug/Kg
Dibenz(a,h)anthracene	98 U J	ug/Kg
Dibenzofuran	98 U	ug/Kg
Diethyl phthalate	98 U	ug/Kg
Dimethyl phthalate	98 U	ug/Kg
Di-n-butyl phthalate	98 U	ug/Kg
Di-n-octyl phthalate	98 U	ug/Kg
Fluoranthene	98 U	ug/Kg
Fluorene	**110**	ug/Kg
Indeno(1,2,3-c,d)pyrene	98 U J	ug/Kg

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Lab#: 20030625121
Sample ID: HC-MW-3D (S11)
Sample Type: Sediment Puyallup River Side Channel
Sample Date: 6/25/2003

	Test	Result		Units
	Naphthalene	98 U		ug/Kg
	Phenanthrene	**140**		ug/Kg
	Phenol	98 U		ug/Kg
	Pyrene	98 U		ug/Kg
GC/MS-SM-BNA				
	1,2,4-Trichlorobenzene	5 U		ug/Kg
	2,4-Dimethylphenol	5 U		ug/Kg
	2-Methylphenol	5 U		ug/Kg
	Benzyl Alcohol	**11**		ug/Kg
	Hexachlorobenzene	5 U		ug/Kg
	Hexachlorobutadiene	5 U		ug/Kg
	N-Nitrosodiphenylamine	5 U		ug/Kg
	Pentachlorophenol	95 U		ug/Kg
GC/MS-TPH				
	NWTPH-Diesel	20 U		mg/Kg
	NWTPH-Heavy Oil	39 U		mg/Kg
ICP				
	Arsenic	**0.4**		mg/Kg
	Cadmium	0.050 U		mg/Kg
	Chromium	**23.8**	J	mg/Kg
	Copper	**81.1**		mg/Kg
	Lead	**1.07**		mg/Kg
	Nickel	**6.48**		mg/Kg
	Silver	0.048 U		mg/Kg
	Zinc	**50.0**		mg/Kg

Lori A. Zboralski August 6, 2003
Reviewed By: **Date**

Flags: U: The value is less than detection limit
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Sample Custody Record

DATE 6/24/03 PAGE 1 OF 1

HARTCROWSER

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102-3699

JOB NUMBER 7953 LAB NUMBER WO# DC2001 CLA

PROJECT MANAGER Joe Mazzitz

PROJECT NAME Puyallup River Side Channel

SAMPLED BY: William Dawson

LAB NO.	SAMPLE	TIME	STATION	MATRIX	TESTING: Metals (6010B)	SVO (8270C)	PCBs, (8082)	Chlorin. Pest (8081)	NWTPH-Dx	NO. OF CONTAINERS	OBSERVATIONS/COMMENTS/ COMPOSITING INSTRUCTIONS
	HC-MW-1/S-1	0915	Puyallup River Side Channel	WOOD	✓	✓	✓	✓	✓	1	2 Combined in Lab 6-25-03
	HC-MW-1/S-2	0920		WOOD						1	2 12:00 by B.E.
	HC-MW-1/S-3	0940		SOIL						1	
	HC-MW-1/S-4	0945		↓						1	
	HC-MW-1/S-5	0955		↓						1	
	HC-MW-2/S-1	1150		WOOD						1	2 Combined in Lab 6-25-03
	HC-MW-2/S-2	1200		WOOD						1	2 12:00 by B.E.
	HC-MW-2/S-3	1205		SOIL						1	
	HC-MW-2/S-4	1215		↓						1	
	HC-MW-2/S-5	1300		↓						1	
	HC-MW-2/S-6	1310		↓						1	
	HC-MW-4/S-2	1455	↓	WOOD	✓	✓	✓	✓	✓	1	Not enough sample for SIMS PCB or Pest. BE 7/1/03
	HC-MW-4/S-4	1510		SLOUGH						1	

RELINQUISHED BY	DATE	RECEIVED BY	DATE
SIGNATURE	6/24/03	SIGNATURE William O'Essmeier	6/24 2003
PRINTED NAME William Dawson	TIME	PRINTED NAME Bill Essmeier	TIME
COMPANY Hart Crowser		COMPANY City of Tacoma	15:30

RELINQUISHED BY	DATE	RECEIVED BY	DATE
SIGNATURE		SIGNATURE	
PRINTED NAME	TIME	PRINTED NAME	TIME
COMPANY		COMPANY	

TOTAL NUMBER OF CONTAINERS 13

METHOD OF SHIPMENT Hand Delivery

SPECIAL SHIPMENT/HANDLING OR STORAGE REQUIREMENTS Standard TAT.

DISTRIBUTION:

1. PROVIDE WHITE AND YELLOW COPIES TO LABORATORY
2. RETURN PINK COPY TO PROJECT MANAGER
3. LABORATORY TO FILL IN SAMPLE NUMBER AND SIGN FOR RECEIPT
4. LABORATORY TO RETURN WHITE COPY TO HART CROWSER

Sample Custody Record

Samples Shipped to: ______

HARTCROWSER

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102-3699
Phone: 206-324-9530 FAX: 206-328-5581

JOB 7953 LAB NUMBER WO# DC2001CLA

PROJECT NAME Puyallup River Side Channel

HART CROWSER CONTACT Joe Morrice / Sara Carl

SAMPLED BY: Will Damon

LAB NO.	SAMPLE ID	DESCRIPTION	DATE	TIME	MATRIX	METALS (6010B)	SVOC (8270C)	PCBs (8082)	CHLORINATED PESTS. (8081)	NWTPH-Dx	NO. OF CONTAINERS	OBSERVATIONS/COMMENTS/ COMPOSITING INSTRUCTIONS
	HC-MW-3D S-1	8 oz. Glass	6/25/03	0850	Wood	X	X	X	X	X	1	
	HC-MW-3D S-3	↓	↓	0900	Soil	X	X	X	X	X	1	
	HC-MW-3D S-4			0910	↓	X	X	X	X	X	1	
	HC-MW-3D S-5			0920		X	X	X	X	X	1	
	HC-MW-3D S-6			0925		X	X	X	X	X	1	
	HC-MW-3D S-7			0930		X	X	X	X	X	1	
	HC-MW-3D S-8			0940		X	X	X	X	X	1	
	HC-MW-3D S-9			0955		X	X	X	X	X	1	
	HC-MW-3D S-10			1010		X	X	X	X	X	1	
	HC-MW-3D S-11	↓	↓	1025	↓	X	X	X	X	X	1	

RELINQUISHED BY	DATE	RECEIVED BY	DATE
SIGNATURE: [signature]	6/25/03	SIGNATURE: [signature]	6/25/03
PRINT NAME: William Damon	TIME	PRINT NAME: Mark Stafford	TIME
COMPANY: Hart Crowser		COMPANY: C.O.T	11:53 AM

RELINQUISHED BY	DATE	RECEIVED BY	DATE
SIGNATURE		SIGNATURE	
PRINT NAME	TIME	PRINT NAME	TIME
COMPANY		COMPANY	

SPECIAL SHIPMENT HANDLING OR STORAGE REQUIREMENTS:

COOLER NO.: STORAGE LOCATION:

See Lab Work Order No. ______ for Other Contract Requirements

TOTAL NUMBER OF CONTAINERS: 10

SAMPLE RECEIPT INFORMATION
CUSTODY SEALS: ☐YES ☐NO ☐N/A
GOOD CONDITION ☐YES ☐NO
TEMPERATURE ______
SHIPMENT METHOD: ☐HAND ☐COURIER ☐OVERNIGHT

TURNAROUND TIME:
☐ 24 HOURS ☐ 1 WEEK
☐ 48 HOURS ☒ STANDARD
☐ 72 HOURS OTHER ______

White and Yellow Copies to Lab Pink to Project Manager Lab to Return White Copy to Hart Crowser Gold to Sample Custodian