Data Report
Washington State
Liquor Control Board Site

Prepared for
Washington State
Department of Ecology

July 28, 2011
17330-32

HARTCROWSER

This page is intentionally left blank
for double-sided printing.

Data Report
Washington State
Liquor Control Board Site

Prepared for
Washington State
Department of Ecology

July 28, 2011
17330-32

Prepared by
Hart Crowser, Inc.

Kim Reinauer, PE, LEED AP
Project
Environmental Engineer

Ross Stainsby, LHG, PMP
Senior Associate
Project Manager

1700 Westlake Avenue North, Suite 200
Seattle, Washington 98109-6212
Fax 206.328.5581
Tel 206.324.9530

This page is intentionally left blank
for double-sided printing.

CONTENTS

TABLES

CONTENTS (Continued)

Page

FIGURES

APPENDIX A
FIELD METHODS AND EXPLORATION LOGS

APPENDIX B
CHEMICAL DATA QUALITY REVIEW AND LABORATORY REPORTS

DATA REPORT
WASHINGTON STATE LIQUOR CONTROL BOARD SITE
SEATTLE, WASHINGTON

1.0 INTRODUCTION

This data report has been prepared for Washington State Department of Ecology (Ecology) to evaluate and document the Washington State Liquor Control Board (WSLCB) site as a potential source of Lower Duwamish Waterway contamination. Our activities included performing a reconnaissance-level investigation at the WSLCB site. The work described here was completed in accordance with the Sampling and Analysis Plan/Quality Assurance Project Plan (SAP/QAPP), dated April 15, 2011 (Hart Crowser 2011b). The purpose of our activities was to evaluate the site for potential sediment recontamination associated with the following:

- Imported dredge or fill material;
- Past and current housekeeping and material management practices;
- Fuel oil underground storage tanks; and
- Past uses on the adjacent T-108 property that may have impacted the WSLCB property.

2.0 SITE LOCATION AND DESCRIPTION

The site is located at 4401 East Marginal Way South in Seattle, Washington (Figure 1) and is approximately 10.91 acres in size. The WSLCB site occupies King County Tax Parcel Number 1824049063. There is currently one building on the property, an approximately 182,900-square-foot warehouse (Figure 2). The facility has been owned and operated by the State of Washington to store liquor for distribution since 1948. The original warehouse was demolished in 1997 and the current warehouse was built in generally the same location in 1999.

The site is bordered by ConGlobal Industries (formerly Container Care) and the Lower Duwamish Waterway to the west, South Idaho Street to the north, East Marginal Way South to the east, and the South Oregon Street right-of-way to the south. The Port of Seattle's Terminal 108 (T-108) is located south of the South Oregon Street right-of-way.

3.0 SITE BACKGROUND AND HISTORY

The site is located adjacent to the Lower Duwamish Waterway (LDW). The LDW is the 5.5-mile portion of the Duwamish River south of Harbor Island in Seattle, Washington. The Duwamish River is fed mainly by the Green River and smaller tributaries, and flows into Elliott Bay. The LDW was added to the US Environmental Protection Agency's (EPA) National Priorities List in 2001. Ecology added the site to the Washington State Hazardous Sites List in 2002.

Ecology and the EPA are working to clean up contaminated sediment and control sources of recontamination in the LDW. Ecology is the lead agency responsible for source control in the LDW. Source control is the process of finding and stopping or reducing, to the maximum extent practicable, releases of pollution to waterway sediment. The goal of source control is to stop ongoing sources and minimize post-remediation recontamination.

Ecology identified the WSLCB site for further evaluation and characterization because the history of the WSLCB site and past uses on the adjacent properties suggest there may have been releases of hazardous substances to soil and groundwater. The Summary of Existing Information Report (Hart Crowser 2011c) and Reconnaissance Plan (Hart Crowser 2011a) summarize historical use and contamination history relevant to potential LDW sediment recontamination and identify areas where further information is required.

The straightening and dredging of the LDW during the early 1900s filled a branch of the Duwamish River that cut through the eastern edge of the site. Hydraulic fill was also added to the entire WSLCB site. Although the source of the fill material was not documented, it is likely dredged material from the main channel (Harper-Owes 1985).

Construction records provided by the WSLCB indicate that there were three heating oil USTs associated with the original warehouse that were removed in 1992. Two of the USTs were located beneath the southeast corner of the original warehouse. The two USTs combined capacity totaled about 6,000 gallons. The third UST was located beneath the northwest corner of the original warehouse and was approximately 4,000 gallons. Minimal impacted soil was removed with the UST located in the northwest corner of the building. Impacted soil was not encountered during the removal of the two tanks in the southeast corner (WSLCB 1992).

Seattle Public Utilities, King County/(METRO, and Ecology have inspected the site numerous times since 1992 to evaluate water quality, source control, dangerous waste, and sanitary sewer discharge. The site regularly had materials

management-related and housekeeping issues observed during these inspections.

The Port of Seattle (Port) conducted a subsurface site investigation at the adjacent T-108 site. Elevated concentrations of PCBs, PAHs, metals, and petroleum in soil and groundwater were identified on the T-108 property. These impacts extended northward into the South Oregon Street right-of-way. The Port's investigation did not include the WSLCB site and, therefore, the extent of the impacts in this direction is unknown.

4.0 SCOPE OF WORK

Our reconnaissance-level investigation included the following activities:

- Completion of eight borings (MW-1 through MW-8) using a hollow-stem auger. Borings were drilled to a depth of approximately 21.5 feet below ground surface (bgs), except for MW-6, which was drilled to a depth of 26.5 feet bgs.
- Collection of soil samples at approximately 2.5-foot intervals for field evaluation.
- Collection of three soil samples for chemical analysis from each boring (typically, sample collection was from the vadose zone, at the groundwater interface, and in the native soil).
- Installation of 2-inch inside diameter monitoring wells in all eight of the borings.
- Collection of groundwater samples for chemical analysis from each well using low-flow sampling methods.
- Collection of solids samples for chemical analysis from four catch basins.
- Evaluation of laboratory chemical analysis results.
- Preparation of this report presenting the findings of our work.

Soil, groundwater, and catch basin solids samples were analyzed for the following constituents:

- Semivolatile organic compounds (SVOCs)
- Volatile organic compounds (VOCs)

- Polychlorinated biphenyls (PCBs)
- Pesticides
- Total petroleum hydrocarbons (TPH) including gasoline, diesel, and heavy-oil ranges
- Metals (arsenic, cadmium, chromium, copper, lead, mercury, silver, and zinc)
- Total organic carbon (TOC)

In addition to the analytes above, catch basin solids samples and shallow soil samples were analyzed for the following constituents:

- Dioxins and furans
- Polybrominated diethyl ethers (PBDEs)

5.0 GEOLOGY AND HYDROGEOLOGY

Our field observations and investigations conducted by others indicate that the site geology generally consists of a native silt material overlain by a silty sand hydraulic fill unit and structural fill material.

Historically, as the Duwamish River meandered through the Duwamish Valley, it deposited sediment that created varying subsurface soil conditions in different areas of the valley. The WSLCB site was near the historical bank of Elliott Bay before much of the southern part of the bay was filled in the early 1900s.

A Hydraulic Fill unit was observed over the entire site with a thickness ranging between 2.5 and 17 feet. The Hydraulic Fill unit consists of fine to coarse sand to silty sand.

A distinct Structural Fill unit was encountered above the Hydraulic Fill unit in the southern portion of the site in boring MW-5 and MW-6 and had a thickness of 4.5 and 9.5 feet, respectively. The Structural Fill unit consisted of sandy gravel to gravelly sand and contained concrete, wood, and filter fabric debris.

The Native unit underlies the Hydraulic Fill unit across the site. Along the western and southwestern portions of the site, the Native unit consists of silt. In borings MW-2 and MW-7, on the eastern portion of the site, the Native unit consists of alternating units of sandy silt to silty sand. The easternmost boring, MW-8, has a Native unit consisting of silty Sand.

Groundwater was measured on June 15, 2011 at depths ranging from approximately 5 to 11 feet bgs (Table 1). Based on the limited groundwater elevation data, the groundwater appears to be perched water on top of the silt

unit in the western and southern portions of the site. The northeastern portion of the site appears to be tidally influenced by the Lower Duwamish Waterway.

Our limited groundwater elevation data suggests that there are areas of perched water and areas that may be within historic channels of higher permeable zones or possible utility corridors. Due to the relatively complex site geology, groundwater flow is variable but generally flows toward the Lower Duwamish Waterway.

6.0 INVESTIGATION METHODS AND RESULTS

Investigation field efforts were completed in accordance with the SAP/QAPP (Hart Crowser 2011b). The soil boring explorations and catch basin sampling locations are shown on Figure 2. A summary of well completion details is provided in Table 1. A detailed description of field methods and the explorations logs are presented in Appendix A.

Soil, groundwater, and catch basin solids samples were submitted to Analytical Resources, Inc (ARI) in Tukwila, Washington. ARI subcontracted to Brooks Rand Labs (BRL), LLC of Seattle, Washington for analysis of low-level mercury groundwater samples. Chemical data quality review and laboratory reports are provided in Appendix B.

6.1 Soil Borings and Analytical Results

Eight hollow-stem auger explorations, MW-1 through MW-8, were completed between April 18 and 20, 2011, at locations shown on Figure 2. Sample locations were selected to characterize the fill material underlying the site and characterize potential impacts from historical activities. Samples collected from borings MW-4 through MW-8 along the southern portion of the site were used to determine if PAHs, metals, and petroleum in soil and groundwater extend onto the WSLCB site from the T-108 site. MW-1 and MW-7 were used to assess potential impacts from the historical fuel oil tanks that were identified as part of our historical review (Hart Crowser 2011b).

Soil samples were field screened from the borings at 2.5-foot-depth intervals. Field screening included a combination of photoionization detector (PID) tests, sheen tests, and visual observations. Field evidence of contamination was not observed in any of the samples collected. Field screening results are presented in the exploration logs in Appendix A.

Soil Analytical Results

Three soil samples from each boring were collected for chemical analysis. The soil samples selected for chemical analysis were collected near the surface, near the water table, and below the water table. The analytical results are summarized in Tables 2 through 5.

The soil sample analytical results were compared to Model Toxics Control Act (MTCA) Method B Soil Cleanup Levels, soil screening levels protective of sediment, and the most stringent screening levels without potable surface water. Method B cleanup levels used as screening levels in this report are standard formula values from Ecology's Cleanup Levels and Risk Calculations (CLARC) database. The other screening levels were provided by Ecology in an Excel file titled "Draft LDW Preliminary Screening Levels v12r7.xls," on April 13, 2011.

Method B standard formula values were calculated using default assumptions based on the direct contact pathway for the protection of human health. For analytes that have carcinogen and non-carcinogen Method B values, the lower of the two values was used for comparison.

Soil screening levels protective of sediment were calculated by Ecology to be protective of Sediment Quality Standards (SQS) using equations 747-1 and 747-2 per WAC 173-340-740(1)(d). Screening levels were based on the soil to groundwater and groundwater to sediment pathways and, therefore, there were different values for vadose and saturated soil.

The sample results were compared to the most stringent screening levels for sites with potable groundwater (but not potable surface water). Natural background and practical quantitation limits (PQLs) have not been incorporated into these screening levels.

Screening levels were derived from conservative assumptions and, in some cases, are below the reporting limits. Results were compared to the reporting limits in these situations. Chemical values that exceed screening levels are identified in Tables 2 through 5 and discussed below.

TPH. Thirteen of the 24 soil samples had low-level TPH detections but all samples were below screening criteria (Table 2). Gasoline-range petroleum hydrocarbon concentrations ranged from 8.4 to 9.5 mg/kg and diesel- and heavy oil-range petroleum hydrocarbon concentrations ranged from 6.7 to 66 mg/kg.

Metals. All 24 soil samples had detections of 3 or more of the 8 metals analyzed (arsenic, cadmium, chromium, copper, lead, mercury, silver, and zinc).

Analytical results are presented in Table 2 and samples with detections are summarized below.

- Arsenic - The reporting limit for arsenic exceeds the most stringent soil standard. Soil samples from MW1-S7, MW3-S7, MW4-S7, MW5-S2, MW5-S8, MW6-S2, MW6-S7, MW7-S1, and MW7-S7 had arsenic detections between 5.7 and 17.1 mg/kg. These concentrations exceeded the most stringent soil standard of 0.00058 mg/kg and the Method B cleanup level for carcinogenic arsenic of 0.667 mg/kg. However, all concentrations were below the Method B cleanup level for non-carcinogenic arsenic of 24 mg/kg. The natural arsenic background level in the Puget Sound area is 7 mg/kg (Ecology, 1994).

- Cadmium - The reporting limit for cadmium exceeds the most stringent soil standard. Soil samples from MW4-S7, MW5-S2, MW5-S5, MW5-S8, and MW6-S2 had cadmium detections at detected concentrations between 0.3 and 1.9 mg/kg. These concentrations exceed the most stringent soil standard of 0.001 mg/kg. One sample, MW5-S5, exceeded the soil screening level protective of sediment of 1.3 mg/kg, but does not exceed the Method B cleanup level. The natural cadmium background level in the Puget Sound area is 1 mg/kg (Ecology, 1994).

- Chromium - All 24 soil samples had chromium detections at concentrations ranging from 8.5 to 51.8 mg/kg. Only two soil samples, MW5-S5 and MW6-S2, exceeded the most stringent soil standard of 42 mg/kg, but do not exceed the soil screening levels protective of sediment or the Method B cleanup level. The natural chromium background level in the Puget Sound area is 48 mg/kg (Ecology, 1994).

- Copper - All 24 soil samples had copper at concentrations ranging from 7.5 to 67.2 mg/kg. These concentrations exceed the most stringent soil standard of 0.053 mg/kg, but do not exceed the soil screening level protective of sediment or the Method B cleanup level. The natural copper background level in the Puget Sound area is 36 mg/kg (Ecology, 1994).

- Lead - Ten soil samples had lead detections at concentrations ranging from 3 to 240 mg/kg. Soil samples from MW4-S3, MW5-S2, MW5-S5, MW6-S2, and MW6-S4 exceeded the most stringent soil standard of 5.4 mg/kg, but do not exceed the soil screening level protective of sediment. The natural lead background level in the Puget Sound area is 24 mg/kg (Ecology, 1994).

- Mercury - The reporting limit for mercury exceeds the most stringent soil standard. Soil samples from MW1-S2, MW1-S7, MW3-S7, MW4-S7, MW5-S2, MW5-S5, MW5-S8, MW6-S2, MW6-S4, and MW6-S7 had mercury

detections at concentrations between 0.02 and 0.13 mg/kg. These concentrations exceeded the most stringent soil standard of 0.00027 mg/kg, and five samples (MW1-S2, MW4-S7, MW5-S5, MW5-S8, and MW6-S7) exceeded the soil screening level of 0.02 mg/kg protective of sediment for saturated soil. The natural mercury background level in the Puget Sound area is 0.07 mg/kg (Ecology, 1994).

- Silver - The reporting limit for silver exceeds the most stringent soil standard. Soil samples from MW5-S2 and MW6-S2 had silver detections at concentrations of 1.2 and 1.3 mg/kg, respectively. These concentrations exceeded the most stringent soil standard of 0.013 mg/kg, but do not exceed the soil screening level protective of sediment or Method B cleanup levels.

- Zinc - All 24 soil samples had zinc detections at concentrations ranging from 19 to 203 mg/kg. These concentrations exceeded the most stringent soil standard of 2.029 mg/kg and 16 samples (MW1-S2, MW1-S3, MW1-S7, MW2-S3, MW2-S6, MW3-S3, MW3-S7, MW4-S3, MW4-S7, MW5-S5, MW5-S8, MW6-S7, MW7-S4, MW7-S7, MW8-S3, and MW8-S6) exceeded the soil screening level of 16 mg/kg protective of sediment for saturated soil. The natural zinc background level in the Puget Sound area is 85 mg/kg (Ecology, 1994).

VOCs. Analytical results are presented in Table 3 and samples with detections are summarized below. All detected sample concentrations are below Method B screening levels where applicable.

- Acetone - All 24 soil samples had acetone detections at concentrations ranging from 13 to 200 ug/kg. These concentrations do not exceed the most stringent soil standard of 230.93 ug/kg. Acetone is a common laboratory contaminant and, at these concentrations, the detections are possibly due to laboratory interference and not site contamination.

- Methylene Chloride - All 24 soil samples had methylene chloride detections at concentrations ranging from 6 to 23 ug/kg. These concentrations exceed the most stringent soil standard of 1.2 ug/kg. Methylene chloride is a common laboratory contaminant and, at these concentrations, the detections are possible due to laboratory interference and not site contamination.

- Carbon Disulfide - Sixteen soil samples had carbon disulfide detections at concentrations ranging from 2 to 33 ug/kg. Values for the most stringent screening level are not available for carbon disulfide.

- 2-Butanone - Eight soil samples had 2-butanone detections at concentrations ranging from 5.2 to 22 ug/kg. These concentrations do not exceed the most stringent screening level of 1,500 ug/kg.

- Benzene - The reporting limit for benzene exceeds the most stringent soil standard. Benzene was detected in one soil sample, MW-2-S2, at a concentration of 1.3 ug/kg, which is above the most stringent soil standard of 0.0002 ug/kg.

- Toluene - Soil samples from MW3-S7 and MW5-S2 had toluene detections at concentrations of 1.2 and 1.5 ug/kg, respectively. These concentrations are below the most stringent soil standard of 698 ug/kg.

- Ethylbenzene - One soil sample, MW-3-S2, had a detected concentration of 5.3 ug/kg, which is above the most stringent soil standard of 1.7 ug/kg.

- Xylene - One soil sample, MW-3-S2, has a detected m,p-xylene and o-xylene concentrations of 20 and 6.3 ug/kg, respectively. These concentrations are below the most stringent soil standard of 200 ug/kg.

SVOCs. The SVOCs are presented in Table 4 and described below.

- Chlorinated Hydrocarbons – None of the 24 soil samples exceeded the specified reporting limit for the four chlorinated hydrocarbons analyzed.

- Phthalates - Ten soil samples had phthalate detections at concentrations ranging from 9.5 to 100 ug/kg. One soil sample (MW1-S2 at a concentration of 100 ug/kg) exceeded the most stringent screening level and the screening levels protective of sediment for saturated soil for bis(2-ethylhexyl)phthalate of 47 ug/kg. All detected sample concentrations are below Method B cleanup levels of phthalates when applicable.

- Acid Extractables - Ten soil samples had detected concentrations ranging from 10 to 160 ug/kg. One sample (MW6-S4 at a concentration of 25 ug/kg) exceeded the most stringent screening level for 4-methylphenol of 22.13 ug/kg, but not the screening level protective of sediment.

- Miscellaneous Extractables - MW5-S5 and MW6-S4 have dibenzofuran detections of 23 and 18 ug/kg, respectively. MW5-S5 exceeded the most stringent screening levels of 15.37 mg/kg, but did not exceed Method B screening level of 80,000 ug/kg.

PAHs. PAHs were analyzed as part of the SVOC analysis and also under PAH-SIM to achieve lower detection limits. Results for the two analyses yielded similar results, however, there were some discrepancies because of the

heterogeneous nature of soils. Twenty soil samples had detections of PAHs at concentrations ranging from 4.7 to 540 ug/kg (Table 4). Eleven soil samples (MW1-S2, MW2-S3, MW3-S2, MW4-S3, MW4-S7, MW5-S2, MW5-S5, MW6-S2, MW6-S4, MW7-S1, and MW8-S3) exceeded the most stringent screening levels for one or more PAH compound. MW-1 exceeded the screening level protective of sediment for acenaphthene. MW5-S5 exceeded screening levels protective of sediment for 3 HPAHs. One soil sample (MW6-S4 at a concentration of 230 ug/kg) exceeded the benzo(a)pyrene Method B cleanup level of 137 ug/kg.

Dioxin/Furans. Of the 24 soil samples, eight were analyzed for chlorinated dioxin/furan congeners. All analyzed soil samples had detected concentrations ranging from 0.0518 to 4160 pg/g (Table 4). 2,3,7,8-TCDD was the only analyte with a screening level and the reporting limit exceeds the most stringent soil standard. One soil sample (MW5-S2) had a 2,3,7,8-TCDD concentration of 0.551 pg/g and exceeded the most stringent screening level of $3.2x10^{-5}$ pg/g.

PCBs. Six soil samples (MW5-S2, MW5-S5, MW6-S2, MW6-S4, MW7-S1, and MW7-S4) had detections of PCBs at concentrations ranging from 4.8 to 170 ug/kg (Table 5). These concentrations exceed the most stringent screening levels, but do not exceed screening levels protective of sediment or Method B cleanup levels.

PDBEs. Of the 24 soils sample, eight were analyzed for PDBEs. Two soils samples (MW5-S2 and MW6-S2) had detected concentrations ranging from 2.9 to 5.2 ug/kg (Table 5). No screening levels have been established for PBDEs.

Pesticides. Three soil samples (MW5-S2, MW6-S2, and MW6-S4) had detections of pesticides with concentrations ranging from 2.4 to 19 ug/kg (Table 5). These concentrations are below the most stringent screening levels and Method B cleanup level where applicable.

6.3 Groundwater Sampling and Analytical Results

The eight borings were completed as monitoring wells to assess groundwater quality and flow direction, since contaminated groundwater could migrate off site and potentially impact sediment. Monitoring well installation is described and well construction details are provided on boring logs in Appendix A.

Groundwater Analytical Results

Groundwater samples were collected from each of the eight monitoring wells using low-flow sampling methods on April 25 and 26, 2011. Groundwater

sampling methods are described in Appendix A. Groundwater analytical results are summarized on Tables 6 through 9.

For screening purposes, the sample results are compared to groundwater screening levels protective of sediment and the most stringent screening levels without potable surface water. These screening levels were provided by Ecology in an Excel file titled "Draft LDW Preliminary Screening Levels v12r7.xls," on April 13, 2011.

Groundwater screening levels protective of sediment were calculated by Ecology to be protective of Sediment Quality Standards (SQS) per 173-340-720(1)(c). Sample results are also compared to the most stringent screening levels for sites with potable groundwater but not potable surface water. Natural background and practical quantitation limits (PQLs) have not been incorporated into these screening levels.

Screening levels were derived from conservative assumptions and, in some cases, are below the reporting limit. Results were compared to the reporting limit in these situations. Chemical values that exceed screening levels are identified in Tables 6 through 9.

TPH, SVOCs, PCBs, and pesticides were not detected at concentrations above the specified reporting limit. The reporting limits of some of the analytes were above one or more of the screening level criteria, shown in Tables 6 through 9.

Metals. All eight groundwater samples have detections of two or more of the eight metals analyzed (arsenic, cadmium, chromium, copper, lead, mercury, silver, and zinc) for total and dissolved constituents. Total and dissolved cadmium and silver were not detected at concentrations above the specified reporting limit for all groundwater samples. Analytical results are presented in Table 6 and detected concentrations are summarized below.

- Arsenic - Dissolved arsenic was detected in all groundwater samples except MW-5 at concentrations ranging from 0.4 to 10.1 ug/L, which exceeds the most stringent screening levels of 0.05 ug/L. Total arsenic was detected in all wells except MW-5 at concentrations ranging from 0.4 to 11.8 ug/L, which exceeds the most stringent screening level of 0.05 ug/L.

- Chromium - Dissolved chromium was detected in three groundwater samples (MW-2, MW-5, and MW-6) at concentrations ranging from 0.05 to 5.4 ug/L, below the most stringent screening level (50 ug/L) and the groundwater screening level protective of sediment (306 ug/L). Total chromium was detected in five groundwater samples (MW-1, MW-2, MW-3,

MW-5, and MW-6) at concentrations ranging from 0.05 to 4.7 ug/L, below the most stringent screening level (50 ug/L) and the screening level protective of sediment (306 ug/L).

- Copper - Dissolved copper was detected in all groundwater samples except MW-5 at concentrations ranging from 0.6 to 6 ug/L, below the most stringent screening level and screening level protective of sediment. Total copper was detected in all groundwater samples except MW-5 at concentrations ranging from 1.1 to 7.8 ug/L. One groundwater sample (MW-2) exceeded the most stringent screening level of 7.3 ug/L, but did not exceed the screening level of 123 ug/L that is protective of sediment.

- Lead - Dissolved lead was detected in MW-2 and MW-3 at concentrations of 0.4 and 0.3 ug/L, below the most stringent screening level and screening level protective of sediment. Total lead was detected in five groundwater samples (MW-1, MW-2, MW-3, MW-4, and MW-6) at concentrations ranging from 0.2 to 1.2 ug/L, below the most stringent screening level and screening level protective of sediment.

- Mercury - Dissolved mercury was detected in all eight groundwater samples at concentrations ranging from 0.00016 to 0.00479 ug/L, below the most stringent screening level and protective of the sediment screening level of 0.0052 ug/L. Total mercury was detected in all eight groundwater samples with concentrations ranging from 0.00049 to 0.00285 ug/L, below the most stringent screening level and protective of the sediment screening level of 0.0052 ug/L.

- Zinc - Dissolved zinc was detected in three groundwater samples (MW-2, MW-3, and MW-6) at concentrations ranging from 4 to 9 ug/L, below the most stringent screening level and screening level protective of sediment. Total zinc was detected in four groundwater samples (MW-1, MW-2, MW-3, and MW-6) at concentrations ranging from 4 to 12 ug/L, below the most stringent screening level and screening level protective of sediment.

VOCs. Chloroform was detected in MW-2 at a concentration of 0.2 ug/L, below the most stringent screening level of 4.3 ug/L. Naphthalene was detected in MW-4 at a concentration of 0.6 ug/L, below the most stringent screening level of 53.8 ug/L. No other VOCs were detected at concentrations above the specified reporting limits. VOCs are presented in Table 7.

PAHs. PAHs were detected in all eight groundwater samples with concentrations ranging from 0.0052 to 0.71 ug/L. One groundwater sample (MW-4) exceeds the most stringent screening levels for three HPAHs, but not

the screening levels protective of sediment. Other detections were below screening levels. PAHs are presented in Table 8.

6.4 Catch Basin Solids Sampling and Analysis

The catch basins on the WSLCB site drain to the Lower Duwamish Waterway. The accumulated solids in the catch basins has the potential to be transported directly to the Lower Duwamish Waterway; therefore, four selected catch basins (CB-1 through CB-4) were sampled on April 19 and 21, 2011.

The catch basins sampled were located on the eastern portion of the site and were either circular or rectangular in shape, with varying water column and solids thicknesses (Figure 2). Catch basins located west of the building did not have enough solids accumulated to sample. A description of the catch basins and field observations are provided in Table 10.

Catch Basin Solids Analytical Results

Catch basin solids analytical results were compared to sediment screening levels because the material in the catch basin has the potential to discharge directly to the Lower Duwamish Waterway during a storm event. Most of the samples had TOC concentrations outside the 0.5 to 3.5 percent range; therefore, the results were compared to Apparent Effects Threshold (AET) values in accordance with Sediment Management Standards protocols. The results were compared to the Lowest Apparent Effects Threshold (LAET) which is the dry weight equivalent of the SQS values. The SQS and LAET numerical chemical concentration criteria define the degree of sediment quality that is expected to cause no adverse effects to biological resources in sediments.

Several analyte reporting limits are higher than the sediment screening levels, in these cases, samples were compared to the reporting limit. Chemical values that exceed screening levels are identified in Tables 11 through 14.

TPH. TPH was detected in all four solids samples (Table 11). Gasoline-range petroleum hydrocarbon concentrations range from 33 to 160 mg/kg and diesel- and heavy oil-range petroleum hydrocarbon concentrations range from 170 to 2,000 mg/kg. No SQS screening levels have been established for TPH.

Metals. All four solids samples had detections of seven or more of the eight metals analyzed (arsenic, cadmium, chromium, copper, lead, mercury, silver, and zinc). Analytical results are presented in Table 11 and detected concentrations are summarized below.

- Arsenic - Arsenic was detected in all solids samples except CB-2 at concentrations ranging from 10 to 15 mg/kg, below the screening level of 57 mg/kg.

- Cadmium - Cadmium was detected in all solids samples at concentrations ranging from 1.5 to 6 mg/kg. The CB-1 solids sample is the only sample that exceeds the screening level of 5.1 mg/kg.

- Chromium - Chromium was detected in all solids samples at concentrations ranging from 48 to 69 mg/kg, below the screening level of 260 mg/kg.

- Copper - Chromium was detected in all solids samples at concentrations ranging from 127 to 149 mg/kg, below the screening level of 390 mg/kg.

- Lead - Lead was detected in all solids samples at concentrations ranging from 70 to 86 mg/kg, below the screening level of 450 mg/kg.

- Mercury - Mercury was detected in all solids samples at concentrations ranging from 0.07 to 0.14 mg/kg, below the screening level of 0.41 mg/kg.

- Silver - Silver was detected in all solids samples at concentrations ranging from 1.1 to 5.1 mg/kg, below the screening of 6.1 mg/kg.

- Zinc - Chromium was detected in all solids samples at concentrations ranging from 735 to 957 mg/kg, which exceeds the screening level of 410 mg/kg.

VOCs. All four solids samples had detections of multiple VOCs (Table 12). Detected VOC concentrations ranged from 1.1 to 99,000 mg/kg. Toluene concentrations in the four samples ranged from 45 to 99,000 mg/kg, the highest VOC analyte concentration. No screening levels have been established for toluene.

SVOCs. All four solids samples have detections of SVOCs of multiple analytes (Table 13). Detected SVOC concentrations range from 65 to 1,300 mg/kg and are below the screening levels. The categories of SVOCs are described below.

- Chlorinated Hydrocarbons – Chlorinated hydrocarbons were not detected above at the specified reporting limit in any of the four solids samples. The reporting limits were at or above the screening criteria.

- Phthalates - All four solids samples had phthalate detections at concentrations ranging from 110 to 8,400 ug/kg. All four sample concentrations exceeded screening levels for butyl benzyl phthalate (between 160 and 430 ug/kg) and bis(2-ethylhexyl)phthalate (between 6,300

and 8,400 ug/kg). CB-4 had a detected dimethyl phthalate concentration of 110 ug/kg, which exceeds the screening level of 71 ug/kg.

- Acid Extractables - All four solids samples had detections of acid extractables exceeding their respective screening criteria. Phenol was detected in CB-1, CB-2, and CB-4 at concentrations between 280 and 4,500 ug/kg. Catch basin samples CB-1 through CB-3 had 4-methylphenol detections at concentrations between 1,600 and 40,000 ug/kg. Benzyl alcohol was detected in catch basin sample CB-1 at a concentration of 1,800 ug/kg. Benzoic acid was detected in catch basin samples CB-1 and CB-2 at concentrations of 690 and 4,600 ug/kg, respectively.

- Miscellaneous Extractables - Only one solids sample (CB-2) had a detected concentration of a miscellaneous extractable (dibenzofuran at 160 mg/kg), below the screening level of 540 mg/kg.

PAHs. All four solids samples had detections of PAHs at concentrations ranging from 34 to 1,400 ug/kg, below the screening levels. Total LPAH and HPAH concentrations were below screening levels. PAH data is summarized on Table 13.

PCBs. All four solids samples had detections of PCBs (Table 14). Total PCB concentrations range from 120 to 3,690 ug/kg and all solids samples except CB-3 exceed the screening level of 130 ug/kg.

PDBEs. All four solids samples except CB-2 had detected concentrations of PDBEs that range from 5.4 to 61 ug/kg (Table 14). No screening levels have been established for PDBEs.

Dioxin/Furans. All four solids samples had detections of chlorinated dioxin/furan congeners with TEQ's ranging from 18.97 to 94.52 pg/g (Table 14). No screening levels have been established for dioxins or furans.

Pesticides. One sample (CB-1) had detected pesticide concentrations of 49, 89, and 110 mg/kg for 4,4'-DDT, endrin, and endrin aldehyde, respectively (Table 14). No screening levels have been established for these pesticide analytes.

7.0 SUMMARY OF FINDINGS

A number of constituents were identified at concentrations exceeding the most stringent screening levels for soil and groundwater without potable surface

water. However, only a limited number of soil samples exceed screening levels protective of sediment. These exceedances were for select metals and PAHs. No impacts were observed near the former heating oil tanks.

The historical review of the property did not indicate any activities that would be considered a source of soil metals contamination. Metals are typically naturally occurring in soil. The metals concentrations measured were within the range of expected natural background concentrations; therefore, we do not consider the WSLCB soil to be an ongoing source of metals contamination.

Several soil PAH concentrations along the southern boundary of the site exceeded screening levels protective of sediment. Groundwater from MW-4 was the only well with PAH concentrations exceeding the most stringent screening levels. Since there were no known sources for PAHs at this site, the PAHs could be related to the T-108 site contamination. However, as discussed below, there is limited risk for sediment recontamination from the elevated PAH concentrations

There is a potential that analytes that exceeded the soil screening levels may result in sediment recontamination, however, the pathway for these contaminants to reach the Lower Duwamish Waterway is not clearly established. The site is paved so rainwater infiltration is not likely to carry contaminants into groundwater or surface water. Also, concentrations in groundwater were below screening levels protective of sediment; therefore, groundwater at the site is not a likely risk for sediment contamination.

Arsenic was the only constituent with soil concentrations that exceeded the MTCA Method B screening level. This screening level is based on direct contact. Most of the soil samples with arsenic exceedances were located deeper than 15 feet below the ground surface and are all located in paved areas. In addition most are below published background levels for the Puget Sound Region. There is little risk posed by the elevated arsenic concentrations.

The catch basin sample analytical results indicated significantly elevated zinc concentrations. Zinc is a common contaminant of concern in urban stormwater and is typically related to vehicle traffic and galvanized buildings and fencing. Based on this data, improved routine catch basin and parking lot cleaning would likely reduce the zinc concentrations.

PCBs were also detected at concentrations exceeding the screening levels in three catch basins. The source of these PCBs is unknown, but could cause a potential risk to sediment recontamination if they discharge into the Lower Duwamish Waterway.

Low-level SVOC concentrations were identified in the catch basin samples. The chemicals identified are ubiquitous chemicals typically related to plasticizers.

8.0 REFERENCES

Harper-Owes, 1985. Duwamish Ground Water Studies, Waste Disposal Practices, and Dredge and Fill History. Prepared for Sweet Edwards and Associates. March 1985.

Hart Crowser, 2011a. Reconnaissance Plan, Washington State Liquor Control Board Site. Prepared for Washington State Department of Ecology. February 2011.

Hart Crowser, 2011b. Sampling and Analysis Plan/Quality Assurance Project Plan, Washington State Liquor Control Board Site. Prepared for Washington State Department of Ecology. April 15, 2011.

Hart Crowser, 2011c. Summary of Existing Information Report for Washington State Liquor Control Board Site. Prepared for Washington State Department of Ecology. February 2011.

Ecology 1994. Natural Background Soil Metals Concentrations in Washington State. Publication 94-115, Washington State Department of Ecology, Olympia, Washington.

WSLCB 1992. Contract and Construction Records. Washington State Liquor Control Board.

J:\Jobs\1733032\Data Report - WSLCB\Final\Final WSLCB Data Report.doc

Table 1 - Monitoring Well Completion Details amd Water Level Data

Well ID	Ecology Tag ID	Northing	Easting	TOC Elevation in Feet	Boring Depth in Feet	Well Screen Depth in Feet	Depth to Groundwater in Feet	Groundwater Elevation in Feet
MW-1	BBT 740	209510.62	1267514.51	14.67	21.5	4 to 14	4.93	9.74
MW-2	BBT 773	209462.42	1268351.38	14.80	21.5	7 to 17	9.06	5.74
MW-3	BBT 739	209324.44	1267441.43	15.05	21.5	4 to 14	5.6	9.45
MW-4	BBT 738	209139.65	1267478.98	16.43	21.5	7 to 17	7.44	8.99
MW-5	BBT 737	209111.12	1267715.75	19.25	21.5	10 to 20	10.94	8.31
MW-6	BBT 736	209107.34	1267906.21	19.11	26.5	8 to 18	10.7	8.41
MW-7	BBT 735	209137.25	1268290.15	18.29	21.5	7 to 17	8.96	9.33
MW-8	BBT 734	209125.88	1268492.75	14.50	21.5	5 to 15	6.16	8.34

Notes:
Northing and Easting are feet NAD 83/2007 datum.
TOC = top of casing.
GS = ground surface.
TOC, GS, and groundwater elevation are in NAVD 88 datum.
Depth to groundwater was measured on June 15, 2011.

This page is intentionally left blank
for double-sided printing.

Table 2 - Analytical Results for Soil Samples - Conventionals, TPH, and Metals

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW1-S2	MW1-S3	MW1-S7	MW-2-S2	MW-2-S3	MW-2-S6	MW-3-S2	MW-3-S3	MW3-S7
Sampling Date	Soil Protective	Soil Protective	Soil Standard to	Method B[d]	4/20/2011	4/20/2011	4/20/2011	4/18/2011	4/18/2011	4/18/2011	4/19/2011	4/19/2011	4/20/2011
Sample Depth in Feet	of SQS[b]	of SQS[b]	Protect Potable Ground Waters[c]		5 to 6.5 Saturated	7.5 to 9 Saturated	17.5 to 19 Saturated	5 to 6.5 Vadose	7.5 to 9 Saturated	15 to 17 Saturated	5 to 6.5 Vadose	7.5 to 9 Saturated	17.5 to 19 Saturated
Conventionals in %													
Total Solids					78.5	78.6	68.8	89.2	78.4	74.9	89.4	77.9	69.8
Total Organic Carbon					0.169	0.202	0.678	0.149	0.194	0.151	0.111	0.17	0.741
Petroleum Hydrocarbons in mg/kg													
Gasoline-range hydrocarbons			30/100[e]		7.9 U	7.4 U	10 U	8.4	7.5 U	7.5 U	9.5	8.4 U	8.6 U
Diesel-range hydrocarbons			200		6.2 U	6.1 U	7.2 U	5.9 U	8.5	6.4 U	5.5 U	6.3 U	6.8 U
Heavy oil			2000		12 U	12 U	14 U	12 U	15	13 U	11 U	15	14 U
Metals in mg/kg													
Arsenic			1.58E-04	0.667	*6.8 U*	*5.8 U*	**9.2**	*5.4 U*	*6.2 U*	*6.8 U*	*5.9 U*	*6.6 U*	**10**
Cadmium	26	1.3	0.001	80	*0.3 U*	*0.2 U*	*0.3 U*	*0.2 U*	*0.2 U*	*0.3 U*	*0.2 U*	*0.3 U*	*0.3 U*
Chromium	5201	260	42	240	11.5	10.2	14.6	9.5 J	10.1	9.7	8.8	8.5	16.4
Copper	780	39	0.053	3200	**10.4**	**8.5**	**20.2**	**8.9**	**8.7**	**9.6**	**7.5**	**9.4**	**23.2**
Lead	1133	57	5.4		3 U	2 U	3 U	2 U	2 U	3 U	2 U	3 U	3 U
Mercury	0.41	0.02	2.70E-04		**0.04**	*0.03 U*	**0.02**	*0.02 U*	*0.02 U*	*0.02 U*	*0.03 U*	*0.03 U*	**0.03**
Silver	12	0.61	0.013	400	*0.4 U*	*0.4 U*	*0.4 U*	*0.3 U*	*0.4 U*	*0.4 U*	*0.4 U*	*0.4 U*	*0.4 U*
Zinc	327	16	2.029	24000	**23**	**24**	**29**	**24**	**21**	**19**	**20**	**20**	**33**

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW-4-S2	MW-4-S3	MW-4-S7	MW-5-S2	MW-5-S5	MW-5-S8	MW-6-S2	MW-6-S4	MW-6-S7
Sampling Date	Soil Protective	Soil Protective	Soil Standard to	Method B[d]	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011
Sample Depth in Feet	of SQS[b]	of SQS[b]	Protect Potable Ground Waters[c]		5 to 6.5 Vadose	7.5 to 9 Saturated	17.5 to 19 Saturated	5 to 6.5 Vadose	12.5 to 14 Saturated	20 to 21.5 Saturated	5 to 6.5 Vadose	10 to 11.5 Vadose	17.5 to 19 Saturated
Conventionals in %													
Total Solids					83.4	73.6	69.8	92	65.6	69.9	92.4	79.5	71
Total Organic Carbon					0.502	2.17	0.697	1.07	5.73	0.713	0.53	1.02	0.586
Petroleum Hydrocarbons in mg/kg													
Gasoline-range hydrocarbons			30/100[e]		6.5 U	7.2 U	9.7 U	5.6 U	8.7 U	10 U	9.5	7.8 U	9.8 U
Diesel-range hydrocarbons			200		6.7	6.1 U	6.9 U	16	6.9 U	7.5 U	5.8 U	6.2 U	7 U
Heavy oil			2000		25	61	14 U	66	17	15 U	12 U	18	14 U
Metals in mg/kg													
Arsenic			1.58E-04	0.667	*4.9 U*	*6.5 U*	**10.8**	**8.1**	*19 U*	**10.5**	**17.1**	*6.3 U*	**9.4**
Cadmium	26	1.3	0.001	80	*0.2 U*	*0.3 U*	**0.3**	**0.8**	**1.9**	**0.3**	**1.3**	*0.3 U*	*0.3 U*
Chromium	5201	260	42	240	10.5	15.8	16.4	32	**49**	18.2	**51.8**	12.2	17.1
Copper	780	39	0.053	3200	**10.2**	**14**	**23.3**	**34.8**	**37.1**	**29.4**	**67.2**	**9.6**	**27.3**
Lead	1133	57	5.4		4 J	**6**	3	**71**	**29**	3	**240**	**6**	5
Mercury	0.41	0.02	2.70E-04		*0.02 U*	*0.03 U*	**0.04**	**0.13**	**0.07**	**0.03**	**0.36**	**0.05**	**0.04**
Silver	12	0.61	0.013	400	*0.3 U*	*0.4 U*	*0.4 U*	**1.2**	*1 U*	*0.4 U*	**1.3**	*0.4 U*	*0.4 U*
Zinc	327	16	2.029	24000	**28**	**40**	**33**	**85**	**191**	**37**	**203**	**30**	**36**

Table 2 - Analytical Results for Soil Samples - Conventionals, TPH, and Metals

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW-7-S1	MW-7-S4	MW-7-S7	MW-8-S1	MW-8-S3	MW-8-S6
Sampling Date	Soil Protective	Soil Protective	Soil Standard to	Method B[d]	4/18/2011	4/18/2011	4/18/2011	4/18/2011	4/18/2011	4/18/2011
Sample Depth in Feet	of SQS[b]	of SQS[b]	Protect Potable Ground Waters[c]		2.5 to 4 Vadose	5 to 6.5 Saturated	17.5 to 19 Saturated	2.5 to 4 Vadose	7.5 to 9 Saturated	15 to 16.5 Saturated
Conventionals in %										
Total Solids					91.3	80.8	70.8	80.8	78.9	74.8
Total Organic Carbon					0.518	0.571	0.683	0.133	0.276	0.294
Petroleum Hydrocarbons in mg/kg										
Gasoline-range hydrocarbons			30/100[e]		6.1 U	7 U	8.5 U	6.8 U	8.6 U	7.4 U
Diesel-range hydrocarbons			200		26 U	6.1 U	6.9 U	5.3 U	6.4 U	6.4 U
Heavy oil			2000		74	13	14 U	12	13 U	13 U
Metals in mg/kg										
Arsenic			1.58E-04	0.667	**5.7**	*6.1 U*	**7.9**	*6 U*	*6.1 U*	*6.8 U*
Cadmium	26	1.3	0.001	80	*0.2 U*	*0.2 U*	*0.3 U*	*0.2 U*	*0.2 U*	*0.3 U*
Chromium	5201	260	42	240	11.5	10.1	16	9.9	11.3	15.9
Copper	780	39	0.053	.3200	**13.2**	**9.2**	**23.8**	**8.3**	**13.5**	**18.8**
Lead	1133	57	5.4		5	2 U	3 U	2 U	2 U	3 U
Mercury	0.41	0.02	2.70E-04		*0.02 U*	*0.02 U*	*0.03 U*	*0.03 U*	*0.03 U*	*0.03 U*
Silver	12	0.61	0.013	400	*0.3 U*	*0.4 U*	*0.4 U*	*0.4 U*	*0.4 U*	*0.4 U*
Zinc	327	16	2.029	24000	**35**	**22**	**31**	**20**	**25**	**29**

Notes:

a) Default reporting limits may apply depending upon extraction methods.

b) Soil screening levels protective of sediment provided by Ecology in "Draft LDW Preliminary Screening Levels v12r7.xls" on April 13, 2011.

c) Most stringent soil standard to protect potable groundwater without potable surface water screening levels provided by Ecology in "Draft LDW Preliminary Screening Levels v12r7.xls" on April 13, 2011.

d) For MTCA Method B, the lower of the two values for carcinogenic and non-carcinogenic risk was used. Values from CLARC Database.

e) 30 mg/kg with benzene, 100 mg/kg without benzene.

U = Not detected at reporting limit indicated.

J = Estimated value.

T = Value is between the MDL and MRL.

Values that exceed the most stringent soil standard to protect potable groundwater are bolded.

Values that exceed screening levels protective of sediment standards are boxed.

Values that exceed MTCA Method B (Human Health Criteria) are shaded.

Italicized value has detection limit that exceeds one or more criteria.

Blank indicates sample not analyzed for specific analyte or no criteria available.

Table 3 - Analytical Results for Soil Samples - Volatile Organic Compounds

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW1-S2	MW1-S3	MW1-S7	MW-2-S2	MW-2-S3	MW-2-S6	MW-3-S2	MW-3-S3	MW3-S7	MW-4-S2
Sampling Date	Soil Protective	Soil Protective	Soil Standard to	Method B[d]	4/20/2011	4/20/2011	4/20/2011	4/18/2011	4/18/2011	4/18/2011	4/19/2011	4/19/2011	4/20/2011	4/19/2011
Sample Depth in Feet	of SQS[b]	of SQS[b]	Protect Potable Ground Waters[c]		5 to 6.5 Saturated	7.5 to 9 Saturated	17.5 to 19 Saturated	5 to 6.5 Vadose	7.5 to 9 Saturated	15 to 17 Saturated	5 to 6.5 Vadose	7.5 to 9 Saturated	17.5 to 19 Saturated	5 to 6.5 Vadose
Volatile Organic Compounds (VOCs) in ug/kg														
Dichlorodifluoromethane					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
Chloromethane			1.01		*1.2 U*	*1.1 U*	*1.5 U*	1 U	*1.3 U*	*1.2 U*	1 U	*1.1 U*	*1.2 U*	*1.1 U*
Vinyl Chloride			0.01	240000	*1.2 U*	*1.1 U*	*1.5 U*	*1 U*	*1.3 U*	*1.2 U*	*1 U*	*1.1 U*	*1.2 U*	*1.1 U*
Bromomethane				112000	1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
Chloroethane			10.55		1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
Trichlorofluoromethane					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
Acrolein				40000	60 U	57 U	75 U	48 U	64 U	60 U	52 U	53 U	57 U	54 U
Acetone			230.92	72000000	13	16	120	16	22	21	14	13	88	14
1,1,2-Trichloro-1,2,2-Trifluoroethane					2.4 U	2.3 U	3 U	1.9 U	2.5 U	2.4 U	2.1 U	2.1 U	2.3 U	2.2 U
1,1-Dichloroethylene			0.23		*1.2 U*	*1.1 U*	*1.5 U*	*1 U*	*1.3 U*	*1.2 U*	*1 U*	*1.1 U*	*1.2 U*	*1.1 U*
Bromoethane				112000	2.4 U	2.3 U	3 U	1.9 U	2.5 U	2.4 U	2.1 U	2.1 U	2.3 U	2.2 U
Iodomethane					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
Methylene Chloride			1.20	133330	**11**	**9.3**	**13**	**13**	**22**	**17**	**8**	**13**	**16**	**7.1**
Carbon Disulfide				8000000	1.2 U	8.3	17	1 U	9.9	7.4	1 U	1.1 U	10	1.1 U
Acrylonitrile				1850	6 U	5.7 U	7.5 U	4.8 U	6.4 U	6 U	5.2 U	5.3 U	5.7 U	5.4 U
Methyl-t-butyl ether (MTBE)					1.2 UJ	1.1 UJ	1.5 UJ	1 UJ	1.3 UJ	1.2 UJ	1 UJ	1.1 UJ	1.2 UJ	1.1 UJ
trans-1,2-Dichloroethene				1600000	1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
Vinyl Acetate				80000000	6 U	5.7 U	7.5 U	4.8 U	6.4 U	6 U	5.2 U	5.3 U	5.7 U	5.4 U
1,1-Dichloroethane			0.47		*1.2 U*	*1.1 U*	*1.5 U*	*1 U*	*1.3 U*	*1.2 U*	*1 U*	*1.1 U*	*1.2 U*	*1.1 U*
2-Butanone			1500		6 U	5.7 U	15	4.8 U	6.4 U	6 U	5.2 U	5.3 U	11	5.4 U
2,2-Dichloropropane					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
cis-1,2-Dichloroethene				160000	1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
Chloroform			0.05	800000	*1.2 U*	*1.1 U*	*1.5 U*	*1 U*	*1.3 U*	*1.2 U*	*1 U*	*1.1 U*	*1.2 U*	*1.1 U*
Bromochloromethane					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
1,1,1-Trichloroethane			95.73		1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
1,1-Dichloropropene					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
Carbon Tetrachloride			0.08	14300	*1.2 U*	*1.1 U*	*1.5 U*	*1 U*	*1.3 U*	*1.2 U*	*1 U*	*1.1 U*	*1.2 U*	*1.1 U*
1,2-Dichloroethane			0.04		*1.2 U*	*1.1 U*	*1.5 U*	*1 U*	*1.3 U*	*1.2 U*	*1 U*	*1.1 U*	*1.2 U*	*1.1 U*
Benzene			0.0002	18180	*1.2 U*	*1.1 U*	*1.5 U*	**1.3**	*1.3 U*	*1.2 U*	*1 U*	*1.1 U*	*1.2 U*	*1.1 U*
Trichloroethene			0.17		*1.2 U*	*1.1 U*	*1.5 U*	*1 U*	*1.3 U*	*1.2 U*	*1 U*	*1.1 U*	*1.2 U*	*1.1 U*
1,2-Dichloropropane					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
Bromodichloromethane					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
Dibromomethane					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
2-Chloroethyl Vinyl Ether					6 U	5.7 U	7.5 U	4.8 U	6.4 U	6 U	5.2 U	5.3 U	5.7 U	5.4 U
4-Methyl-2-Pentanone			450		6 U	5.7 U	7.5 U	4.8 U	6.4 U	6 U	5.2 U	5.3 U	5.7 U	5.4 U
cis-1,3-Dichloropropene				10000	1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
Toluene			698	6400000	1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2	1.1 U
trans-1,3-Dichloropropene				10000	1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
1,1,2-Trichloroethane			0.08		*1.2 U*	*1.1 U*	*1.5 U*	*1 U*	*1.3 U*	*1.2 U*	*1 U*	*1.1 U*	*1.2 U*	*1.1 U*
1,2-Dibromoethane					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
2-Hexanone					6 U	5.7 U	7.5 U	4.8 U	6.4 U	6 U	5.2 U	5.3 U	5.7 U	5.4 U
1,3-Dichloropropane					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
Tetrachloroethene			0.01	800000	*1.2 U*	*1.1 U*	*1.5 U*	*1 U*	*1.3 U*	*1.2 U*	*1 U*	*1.1 U*	*1.2 U*	*1.1 U*
Chlorobenzene			11.09	1600000	1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
1,1,1,2-Tetrachloroethane					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
Ethyl Benzene			1.70	8000000	1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	**5.3**	1.1 U	1.2 U	1.1 U
m,p-Xylene			200	16000000	1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	20	1.1 U	1.2 U	1.1 U
o-Xylene			200	16000000	1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	6.3	1.1 U	1.2 U	1.1 U

Table 3 - Analytical Results for Soil Samples - Volatile Organic Compounds

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW1-S2	MW1-S3	MW1-S7	MW-2-S2	MW-2-S3	MW-2-S6	MW-3-S2	MW-3-S3	MW3-S7	MW-4-S2
Sampling Date	Soil Protective	Soil Protective	Soil Standard to	Method B[d]	4/20/2011	4/20/2011	4/20/2011	4/18/2011	4/18/2011	4/18/2011	4/19/2011	4/19/2011	4/20/2011	4/19/2011
Sample Depth in Feet	of SQS[b]	of SQS[b]	Protect Potable Ground Waters[c]		5 to 6.5 Saturated	7.5 to 9 Saturated	17.5 to 19 Saturated	5 to 6.5 Vadose	7.5 to 9 Saturated	15 to 17 Saturated	5 to 6.5 Vadose	7.5 to 9 Saturated	17.5 to 19 Saturated	5 to 6.5 Vadose
Styrene			1.17	16000000	*1.2 U*	1.1 U	*1.5 U*	1 U	*1.3 U*	*1.2 U*	1 U	1.1 U	*1.2 U*	1.1 U
Bromoform				126580	1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
Isopropyl Benzene					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
1,1,2,2-Tetrachloroethane					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
1,2,3-Trichloropropane					2.4 U	2.3 U	3 U	1.9 U	2.5 U	2.4 U	2.1 U	2.1 U	2.3 U	2.2 U
trans-1,4-Dichloro-2-Butene					6 U	5.7 U	7.5 U	4.8 U	6.4 U	6 U	5.2 U	5.3 U	5.7 U	5.4 U
n-Propyl Benzene					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
Bromobenzene					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
1,3,5-Trimethylbenzene			50.99		1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
2-Chlorotoluene					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
4-Chlorotoluene					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
t-Butylbenzene					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
1,2,4-Trimethylbenzene					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
s-Butylbenzene					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
4-Isopropyl Toluene					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
1,3-Dichlorobenzene					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
1,4-Dichlorobenzene					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
n-Butylbenzene					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
1,2-Dichlorobenzene					1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U
1,2-Dibromo-3-Chloropropane					6 U	5.7 U	7.5 U	4.8 U	6.4 U	6 U	5.2 U	5.3 U	5.7 U	5.4 U
1,2,4-Trichlorobenzene	0.021	0.0011		34500	*6 U*	*5.7 U*	*7.5 U*	*4.8 U*	*6.4 U*	*6 U*	*5.2 U*	*5.3 U*	*5.7 U*	*5.4 U*
Hexachloro-1,3-Butadiene					6 U	5.7 U	7.5 U	4.8 U	6.4 U	6 U	5.2 U	5.3 U	5.7 U	5.4 U
Naphthalene	0.47	1600000			*6 U*	*5.7 U*	*7.5 U*	*4.8 U*	*6.4 U*	*6 U*	*5.2 U*	*5.3 U*	*5.7 U*	*5.4 U*
1,2,3-Trichlorobenzene					6 U	5.7 U	7.5 U	4.8 U	6.4 U	6 U	5.2 U	5.3 U	5.7 U	5.4 U
Ethylene Dibromide		500			1.2 U	1.1 U	1.5 U	1 U	1.3 U	1.2 U	1 U	1.1 U	1.2 U	1.1 U

Table 3 - Analytical Results for Soil Samples - Volatile Organic Compounds

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW-4-S3	MW-4-S7	MW-5-S2	MW-5-S5	MW-5-S8	MW-6-S2	MW-6-S4	MW-6-S7	MW-7-S1	MW-7-S4
Sampling Date	Soil Protective	Soil Protective	Soil Standard to	Method B[d]	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/18/2011	4/18/2011
Sample Depth in Feet	of SQS[b]	of SQS[b]	Protect Potable Ground Waters[c]		7.5 to 9 Saturated	17.5 to 19 Saturated	5 to 6.5 Vadose	12.5 to 14 Saturated	20 to 21.5 Saturated	5 to 6.5 Vadose	10 to 11.5 Vadose	17.5 to 19 Saturated	2.5 to 4 Vadose	5 to 6.5 Saturated
Volatile Organic Compounds (VOCs) in ug/kg														
Dichlorodifluoromethane					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
Chloromethane			1.01		1 U	*1.3 U*	1 U	*1.2 U*	*1.7 U*	1 U	*1.1 U*	*1.4 U*	*1.2 U*	*1.2 U*
Vinyl Chloride			0.01	240000	*1 U*	*1.3 U*	*1 U*	*1.2 U*	*1.7 U*	*1 U*	*1.1 U*	*1.4 U*	*1.2 U*	*1.2 U*
Bromomethane				112000	1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
Chloroethane			10.55		1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
Trichlorofluoromethane					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
Acrolein				40000	51 U	65 U	50 U	61 U	87 U	52 U	53 U	72 U	58 U	59 U
Acetone			230.92	72000000	14	130	58	45	200	34	22	76	42	34
1,1,2-Trichloro-1,2,2-Trifluoroethane					2 U	2.6 U	2 U	2.5 U	3.5 U	2.1 U	2.1 U	2.9 U	2.3 U	2.4 U
1,1-Dichloroethylene			0.23		*1 U*	*1.3 U*	*1 U*	*1.2 U*	*1.7 U*	*1 U*	*1.1 U*	*1.4 U*	*1.2 U*	*1.2 U*
Bromoethane				112000	2 U	2.6 U	2 U	2.5 U	3.5 U	2.1 U	2.1 U	2.9 U	2.3 U	2.4 U
Iodomethane					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
Methylene Chloride			1.20	133330	**10**	**10**	**6**	**16**	**23**	**9.1**	**8.7**	**9.8**	*11 U*	*8.2 U*
Carbon Disulfide				8000000	1 U	15	1 U	9.5	30	2	7.7	9.2	2.9	33
Acrylonitrile				1850	5.1 U	6.5 U	5 U	6.1 U	8.7 U	5.2 U	5.3 U	7.2 U	5.8 U	5.9 U
Methyl-t-butyl ether (MTBE)					1 UJ	1.3 UJ	1 UJ	1.2 UJ	1.7 UJ	1 UJ	1.1 UJ	1.4 UJ	1.2 UJ	1.2 UJ
trans-1,2-Dichloroethene				1600000	1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
Vinyl Acetate				80000000	5.1 U	6.5 U	5 U	6.1 U	8.7 U	5.2 U	5.3 U	7.2 U	5.8 U	5.9 U
1,1-Dichloroethane			0.47		*1 U*	*1.3 U*	*1 U*	*1.2 U*	*1.7 U*	*1 U*	*1.1 U*	*1.4 U*	*1.2 U*	*1.2 U*
2-Butanone			1500		5.1 U	16	5.2	6.1 U	22	5.2 U	5.3 U	8.3	5.8 U	5.9 U
2,2-Dichloropropane					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
cis-1,2-Dichloroethene				160000	1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
Chloroform			0.05	800000	*1 U*	*1.3 U*	*1 U*	*1.2 U*	*1.7 U*	*1 U*	*1.1 U*	*1.4 U*	*1.2 U*	*1.2 U*
Bromochloromethane					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
1,1,1-Trichloroethane			95.73		1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
1,1-Dichloropropene					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
Carbon Tetrachloride			0.08	14300	*1 U*	*1.3 U*	*1 U*	*1.2 U*	*1.7 U*	*1 U*	*1.1 U*	*1.4 U*	*1.2 U*	*1.2 U*
1,2-Dichloroethane			0.04		*1 U*	*1.3 U*	*1 U*	*1.2 U*	*1.7 U*	*1 U*	*1.1 U*	*1.4 U*	*1.2 U*	*1.2 U*
Benzene			0.0002	18180	*1 U*	*1.3 U*	*1 U*	*1.2 U*	*1.7 U*	*1 U*	*1.1 U*	*1.4 U*	*1.2 U*	*1.2 U*
Trichloroethene			0.17		*1 U*	*1.3 U*	*1 U*	*1.2 U*	*1.7 U*	*1 U*	*1.1 U*	*1.4 U*	*1.2 U*	*1.2 U*
1,2-Dichloropropane					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
Bromodichloromethane					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
Dibromomethane					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
2-Chloroethyl Vinyl Ether					5.1 U	6.5 U	5 U	6.1 U	8.7 U	5.2 U	5.3 U	7.2 U	5.8 U	5.9 U
4-Methyl-2-Pentanone			450		5.1 U	6.5 U	5 U	6.1 U	8.7 U	5.2 U	5.3 U	7.2 U	5.8 U	5.9 U
cis-1,3-Dichloropropene				10000	1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
Toluene			698	6400000	1 U	1.3 U	1.5	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
trans-1,3-Dichloropropene				10000	1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
1,1,2-Trichloroethane			0.08		*1 U*	*1.3 U*	*1 U*	*1.2 U*	*1.7 U*	*1 U*	*1.1 U*	*1.4 U*	*1.2 U*	*1.2 U*
1,2-Dibromoethane					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
2-Hexanone					5.1 U	6.5 U	5 U	6.1 U	8.7 U	5.2 U	5.3 U	7.2 U	5.8 U	5.9 U
1,3-Dichloropropane					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
Tetrachloroethene			0.01	800000	*1 U*	*1.3 U*	*1 U*	*1.2 U*	*1.7 U*	*1 U*	*1.1 U*	*1.4 U*	*1.2 U*	*1.2 U*
Chlorobenzene			11.09	1600000	1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
1,1,1,2-Tetrachloroethane					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
Ethyl Benzene			1.70	8000000	1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
m,p-Xylene			200	16000000	1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
o-Xylene			200	16000000	1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U

Table 3 - Analytical Results for Soil Samples - Volatile Organic Compounds

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW-4-S3	MW-4-S7	MW-5-S2	MW-5-S5	MW-5-S8	MW-6-S2	MW-6-S4	MW-6-S7	MW-7-S1	MW-7-S4
Sampling Date	Soil Protective	Soil Protective	Soil Standard to	Method B[d]	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/18/2011	4/18/2011
Sample Depth in Feet	of SQS[b]	of SQS[b]	Protect Potable Ground Waters[c]		7.5 to 9 Saturated	17.5 to 19 Saturated	5 to 6.5 Vadose	12.5 to 14 Saturated	20 to 21.5 Saturated	5 to 6.5 Vadose	10 to 11.5 Vadose	17.5 to 19 Saturated	2.5 to 4 Vadose	5 to 6.5 Saturated
Styrene			1.17	16000000	1 U	*1.3 U*	1 U	*1.2 U*	*1.7 U*	1 U	1.1 U	*1.4 U*	*1.2 U*	*1.2 U*
Bromoform				126580	1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
Isopropyl Benzene					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
1,1,2,2-Tetrachloroethane					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
1,2,3-Trichloropropane					2 U	2.6 U	2 U	2.5 U	3.5 U	2.1 U	2.1 U	2.9 U	2.3 U	2.4 U
trans-1,4-Dichloro-2-Butene					5.1 U	6.5 U	5 U	6.1 U	8.7 U	5.2 U	5.3 U	7.2 U	5.8 U	5.9 U
n-Propyl Benzene					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
Bromobenzene					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene			50.99		1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
2-Chlorotoluene					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
4-Chlorotoluene					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
t-Butylbenzene					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
1,2,4-Trimethylbenzene					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
s-Butylbenzene					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
4-Isopropyl Toluene					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
1,3-Dichlorobenzene					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
1,4-Dichlorobenzene					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
n-Butylbenzene					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
1,2-Dichlorobenzene					1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U
1,2-Dibromo-3-Chloropropane					5.1 U	6.5 U	5 U	6.1 U	8.7 U	5.2 U	5.3 U	7.2 U	5.8 U	5.9 U
1,2,4-Trichlorobenzene	0.021	0.0011		34500	*5.1 U*	*6.5 U*	*5 U*	*6.1 U*	*8.7 U*	*5.2 U*	*5.3 U*	*7.2 U*	*5.8 U*	*5.9 U*
Hexachloro-1,3-Butadiene					5.1 U	6.5 U	5 U	6.1 U	8.7 U	5.2 U	5.3 U	7.2 U	5.8 U	5.9 U
Naphthalene	0.47	1600000			*5.1 U*	*6.5 U*	*5 U*	*6.1 U*	*8.7 U*	*5.2 U*	*5.3 U*	*7.2 U*	*5.8 U*	*5.9 U*
1,2,3-Trichlorobenzene					5.1 U	6.5 U	5 U	6.1 U	8.7 U	5.2 U	5.3 U	7.2 U	5.8 U	5.9 U
Ethylene Dibromide		500			1 U	1.3 U	1 U	1.2 U	1.7 U	1 U	1.1 U	1.4 U	1.2 U	1.2 U

Table 3 - Analytical Results for Soil Samples - Volatile Organic Compounds

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW-7-S7	MW-8-S1	MW-8-S3	MW-8-S6
Sampling Date	Soil Protective	Soil Protective	Soil Standard to	Method B[d]	4/18/2011	4/18/2011	4/18/2011	4/18/2011
Sample Depth in Feet	of SQS[b]	of SQS[b]	Protect Potable Ground Waters[c]		17.5 to 19 Saturated	2.5 to 4 Vadose	7.5 to 9 Saturated	15 to 16.5 Saturated
Volatile Organic Compounds (VOCs) in ug/kg								
Dichlorodifluoromethane					1.4 U	1.1 U	1.2 U	1.2 U
Chloromethane			1.01		*1.4 U*	*1.1 U*	*1.2 U*	*1.2 U*
Vinyl Chloride			0.01	240000	*1.4 U*	*1.1 U*	*1.2 U*	*1.2 U*
Bromomethane				112000	1.4 U	1.1 U	1.2 U	1.2 U
Chloroethane			10.55		1.4 U	1.1 U	1.2 U	1.2 U
Trichlorofluoromethane					1.4 U	1.1 U	1.2 U	1.2 U
Acrolein				40000	72 U	57 U	58 U	60 U
Acetone			230.92	72000000	130	23	32	64
1,1,2-Trichloro-1,2,2-Trifluoroethane					2.9 U	2.3 U	2.3 U	2.4 U
1,1-Dichloroethylene			0.23		*1.4 U*	*1.1 U*	*1.2 U*	*1.2 U*
Bromoethane				112000	2.9 U	2.3 U	2.3 U	2.4 U
Iodomethane					1.4 U	1.1 U	1.2 U	1.2 U
Methylene Chloride			1.20	133330	*13 U*	**11**	**10**	*11 U*
Carbon Disulfide				8000000	18	1.1 U	4.8	5.6
Acrylonitrile				1850	7.2 U	5.7 U	5.8 U	6 U
Methyl-t-butyl ether (MTBE)					1.4 UJ	1.1 UJ	1.2 UJ	1.2 UJ
trans-1,2-Dichloroethene				1600000	1.4 U	1.1 U	1.2 U	1.2 U
Vinyl Acetate				80000000	7.2 U	5.7 U	5.8 U	6 U
1,1-Dichloroethane			0.47		*1.4 U*	*1.1 U*	*1.2 U*	*1.2 U*
2-Butanone			1500		16	5.7 U	5.8 U	7.3
2,2-Dichloropropane					1.4 U	1.1 U	1.2 U	1.2 U
cis-1,2-Dichloroethene				160000	1.4 U	1.1 U	1.2 U	1.2 U
Chloroform			0.05	800000	*1.4 U*	*1.1 U*	*1.2 U*	*1.2 U*
Bromochloromethane					1.4 U	1.1 U	1.2 U	1.2 U
1,1,1-Trichloroethane			95.73		1.4 U	1.1 U	1.2 U	1.2 U
1,1-Dichloropropene					1.4 U	1.1 U	1.2 U	1.2 U
Carbon Tetrachloride			0.08	14300	*1.4 U*	*1.1 U*	*1.2 U*	*1.2 U*
1,2-Dichloroethane			0.04		*1.4 U*	*1.1 U*	*1.2 U*	*1.2 U*
Benzene			0.0002	18180	*1.4 U*	*1.1 U*	*1.2 U*	*1.2 U*
Trichloroethene			0.17		*1.4 U*	*1.1 U*	*1.2 U*	*1.2 U*
1,2-Dichloropropane					1.4 U	1.1 U	1.2 U	1.2 U
Bromodichloromethane					1.4 U	1.1 U	1.2 U	1.2 U
Dibromomethane					1.4 U	1.1 U	1.2 U	1.2 U
2-Chloroethyl Vinyl Ether					7.2 U	5.7 U	5.8 U	6 U
4-Methyl-2-Pentanone			450		7.2 U	5.7 U	5.8 U	6 U
cis-1,3-Dichloropropene				10000	1.4 U	1.1 U	1.2 U	1.2 U
Toluene			698	6400000	1.4 U	1.1 U	1.2 U	1.2 U
trans-1,3-Dichloropropene				10000	1.4 U	1.1 U	1.2 U	1.2 U
1,1,2-Trichloroethane			0.08		*1.4 U*	*1.1 U*	*1.2 U*	*1.2 U*
1,2-Dibromoethane					1.4 U	1.1 U	1.2 U	1.2 U
2-Hexanone					7.2 U	5.7 U	5.8 U	6 U
1,3-Dichloropropane					1.4 U	1.1 U	1.2 U	1.2 U
Tetrachloroethene			0.01	800000	*1.4 U*	*1.1 U*	*1.2 U*	*1.2 U*
Chlorobenzene			11.09	1600000	1.4 U	1.1 U	1.2 U	1.2 U
1,1,1,2-Tetrachloroethane					1.4 U	1.1 U	1.2 U	1.2 U
Ethyl Benzene			1.70	8000000	1.4 U	1.1 U	1.2 U	1.2 U
m,p-Xylene			200	16000000	1.4 U	1.1 U	1.2 U	1.2 U
o-Xylene			200	16000000	1.4 U	1.1 U	1.2 U	1.2 U

Table 3 - Analytical Results for Soil Samples - Volatile Organic Compounds

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW-7-S7	MW-8-S1	MW-8-S3	MW-8-S6
Sampling Date	Soil Protective	Soil Protective	Soil Standard to	Method B[d]	4/18/2011	4/18/2011	4/18/2011	4/18/2011
Sample Depth in Feet	of SQS[b]	of SQS[b]	Protect Potable Ground Waters[c]		17.5 to 19 Saturated	2.5 to 4 Vadose	7.5 to 9 Saturated	15 to 16.5 Saturated
Styrene			1.17	16000000	*1.4 U*	1.1 U	*1.2 U*	*1.2 U*
Bromoform				126580	1.4 U	1.1 U	1.2 U	1.2 U
Isopropyl Benzene					1.4 U	1.1 U	1.2 U	1.2 U
1,1,2,2-Tetrachloroethane					1.4 U	1.1 U	1.2 U	1.2 U
1,2,3-Trichloropropane					2.9 U	2.3 U	2.3 U	2.4 U
trans-1,4-Dichloro-2-Butene					7.2 U	5.7 U	5.8 U	6 U
n-Propyl Benzene					1.4 U	1.1 U	1.2 U	1.2 U
Bromobenzene					1.4 U	1.1 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene			50.99		1.4 U	1.1 U	1.2 U	1.2 U
2-Chlorotoluene					1.4 U	1.1 U	1.2 U	1.2 U
4-Chlorotoluene					1.4 U	1.1 U	1.2 U	1.2 U
t-Butylbenzene					1.4 U	1.1 U	1.2 U	1.2 U
1,2,4-Trimethylbenzene					1.4 U	1.1 U	1.2 U	1.2 U
s-Butylbenzene					1.4 U	1.1 U	1.2 U	1.2 U
4-Isopropyl Toluene					1.4 U	1.1 U	1.2 U	1.2 U
1,3-Dichlorobenzene					1.4 U	1.1 U	1.2 U	1.2 U
1,4-Dichlorobenzene					1.4 U	1.1 U	1.2 U	1.2 U
n-Butylbenzene					1.4 U	1.1 U	1.2 U	1.2 U
1,2-Dichlorobenzene					1.4 U	1.1 U	1.2 U	1.2 U
1,2-Dibromo-3-Chloropropane					7.2 U	5.7 U	5.8 U	6 U
1,2,4-Trichlorobenzene	0.021	0.0011		34500	*7.2 U*	*5.7 U*	*5.8 U*	*6 U*
Hexachloro-1,3-Butadiene					7.2 U	5.7 U	5.8 U	6 U
Naphthalene	0.47	1600000			*7.2 U*	*5.7 U*	*5.8 U*	*6 U*
1,2,3-Trichlorobenzene					7.2 U	5.7 U	5.8 U	6 U
Ethylene Dibromide				500	1.4 U	1.1 U	1.2 U	1.2 U

Notes:

a) Default reporting limits may apply depending upon extraction methods.
b) Soil screening levels protective of sediment provided by Ecology in Draft LDW Preliminary Screening Levels v12r7.xls on April 13, 2011.
c) Most stringent soil standard to protect potable ground waters without potable surface water screening levels provided by Ecology in Draft LDW Preliminary Screening Levels v12r7.xls on April 13, 2011.
d) For MTCA Method B, the lower of the two values for carcinogenic and non-carcinogenic risk was used. Values from Clarc Database.
e) 30 mg/kg with benzene, 100 mg/kg without benzene.
U = Not detected at reporting limit indicated.
J = Estimated value.
T = Value is between the MDL and MRL.
Values that exceed the most stringent soil standard to protect potable ground waters are bolded.
Values that exceed screening levels protective of sediment standards are boxed.
Values that exceed MTCA Method B (Human Health Criteria) are shaded.
Italicized value has detection limit that exceeds one or more criteria.
Blank indicates sample not analyzed for specific analyte or no criteria available.

Table 4 - Analytical Results for Soil Samples - Semivolatile Organic Compounds and Dioxins

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW1-S2	MW1-S3	MW1-S7	MW-2-S2	MW-2-S3	MW-2-S6	MW-3-S2	MW-3-S3	MW3-S7	MW-4-S2
Sampling Date	Soil Protective	Soil Protective	Soil Standard to	Method B[d]	4/20/2011	4/20/2011	4/20/2011	4/18/2011	4/18/2011	4/18/2011	4/19/2011	4/19/2011	4/20/2011	4/19/2011
Sample Depth in Feet	of SQS[b]	of SQS[b]	Protect Potable Ground Waters[c]		5 to 6.5 Saturated	7.5 to 9 Saturated	17.5 to 19 Saturated	5 to 6.5 Vadose	7.5 to 9 Saturated	15 to 17 Saturated	5 to 6.5 Vadose	7.5 to 9 Saturated	17.5 to 19 Saturated	5 to 6.5 Vadose
Semivolatile Organics (SVOCs) in ug/kg														
LPAH														
Naphthalene	2197	114	0.47	1600000	*19 U*	*19 U*	*19 U*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
Acenaphthylene	1363	69	69.09		19 U	19 U	19 U	18 U	19 U	19 U	17 U	18 U	18 U	19 U
Acenaphthene	330	17	16.75	4800000	**19**	*19 U*	13 T	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
Fluorene	468	24	23.56	3200000	18 T	19 U	19 U	18 U	19 U	19 U	17 U	18 U	18 U	19 U
Phenanthrene	2019	101	101.38		55	19 U	17 JT	18 U	12 T	19 U	17 U	18 U	18 UJ	19 U
Anthracene	4443	223	223.09	24000000	9.5 T	19 U	19 U	18 U	19 U	19 U	17 U	18 U	18 U	19 U
2-Methylnaphthalene	833	43	43.21	320000	19 U	19 U	19 U	18 U	19 U	19 U	17 U	18 U	18 U	19 U
HPAH														
Fluoranthene	3209	161	160.53	3200000	17 T	19 U	19 U	18 U	10 T	12 T	17 U	18 U	18 U	19 U
Pyrene	20058	1004	684.43	2400000	15 J	19 U	19 U	18 U	9.6 J	19 U	17 U	18 U	18 U	19 U
Benzo(a)anthracene	2201	110	0.005	1370	*19 U*	*19 U*	*19 U*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
Chrysene	2202	110	0.27	137000	*19 U*	*19 U*	*19 UJ*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 UJ*	*19 U*
Benzofluoranthenes (b,k, j)			0.042		*19 U*	*19 U*	*19 U*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
Benzo(a)pyrene	1981	99	0.01	137	*19 U*	*19 U*	*19 U*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
Indeno(1,2,3-c,d)pyrene	680	34	0.06	1370	*19 U*	*19 U*	*19 U*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
Dibenzo(a,h)anthracene	240	12	0.07	137	*19 U*	*19 U*	*19 U*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
Benzo(g,h,i)perylene	620	31	31.00		19 U	19 U	19 U	18 U	19 U	19 U	17 U	18 U	18 U	19 U
Chlorinated Hydrocarbons in ug/kg														
1,3-Dichlorobenzene			275.20	7200000	19 U	19 U	19 U	18 U	19 U	19 U	17 U	18 U	18 U	19 U
1,4-Dichlorobenzene	92.0	5.1	0.41		*19 U*	*19 U*	*19 U*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
1,2-Dichlorobenzene	67.6	3.8	3.79		*19 U*	*19 U*	*19 U*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
1,2,4-Trichlorobenzene			0.40		*19 U*	*19 U*	*19 U*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
Phthalates in ug/kg														
Dimethyl phthalate	1631	94	40.95		19 U	19 U	19 U	18 U	19 U	19 U	17 U	18 U	18 U	19 U
Diethyl phthalate	3157	200	199.78	64000000	19 U	19 U	19 U	12 T	54	12 T	9.5 T	18 U	18 U	19 U
Di-n-butyl phthalate	5003	263	81.36		40 U	40 U	*89 U*	18 U	19 U	19 U	*100 U*	33 U	35 U	19 U
Butyl benzyl phthalate	100	5.1	3.95	526000	*19 U*	*19 U*	*19 UJ*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 UJ*	*19 U*
Bis(2-ethylhexyl)phthalate	941	47	47.08	71429	**100**	19 U	19 U	25 U	31 U	*57 U*	17 U	18 U	19 U	19 U
Di-n-octyl phthalate	1161	58	0.55		*19 U*	*19 U*	*19 U*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
Acid Extractables in ug/kg														
Phenol	733	43	23.88	24000000	19 U	19 U	18 T	18 U	12 T	17 T	17 U	18 U	10 T	19 U
2 Methylphenol	91	5.2	2.69		*19 U*	*19 U*	*19 U*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
4 Methylphenol	979	56	22.13		19 U	19 U	19 U	18 U	19 U	19 U	17 U	18 U	18 U	19 U
2,4-Dimethylphenol	37	2.0	2.03		*19 U*	*19 U*	*19 U*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
2,4,6-Trichlorophenol			0.82		*95 U*	*93 U*	*95 U*	*92 U*	*96 U*	*96 U*	*87 U*	*92 U*	*92 U*	*96 U*
Pentachlorophenol	381	20	2.56	2500	*95 UJ*	*93 UJ*	*95 UJ*	*92 UJ*	*96 UJ*	*96 UJ*	*87 UJ*	*92 UJ*	*92 UJ*	*96 UJ*
Benzyl alcohol	785	55	55.02	8000000	19 U	19 U	19 UJ	18 U	19 U	19 U	17 U	18 U	18 UJ	19 U
Benzoic acid	9622	675	644.32		190 U	190 U	92 T	180 U	190 U	190 U	170 U	180 U	45 T	190 U
Miscellaneous Extractables in ug/kg														
Dibenzofuran			15.37	80000	*19 U*	*19 U*	*19 U*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
N-Nitrosodiphenylamine			9.54	204000	*19 U*	*19 U*	*19 U*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
Hexachlorobenzene	8.1	0.4	0.24	625	*19 U*	*19 U*	*19 U*	*18 U*	*19 U*	*19 U*	*17 U*	*18 U*	*18 U*	*19 U*
Hexachlorobutadiene	97	5.0	1281.15	12820	*19 U*	*19 U*	*19 U*	18 U	*19 U*	*19 U*	17 U	*18 U*	*18 U*	19 U
Hexachloroethane				71429	19 U	19 U	19 U	18 U	19 U	19 U	17 U	18 U	18 U	19 U
1,4-Dioxane				10000	64 U	64 U	65 UJ	64 U	63 U	64 U	65 UJ	66 U	63 U	62 U

Table 4 - Analytical Results for Soil Samples - Semivolatile Organic Compounds and Dioxins

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW1-S2	MW1-S3	MW1-S7	MW-2-S2	MW-2-S3	MW-2-S6	MW-3-S2	MW-3-S3	MW3-S7	MW-4-S2
Sampling Date	Soil Protective	Soil Protective	Soil Standard to	Method B[d]	4/20/2011	4/20/2011	4/20/2011	4/18/2011	4/18/2011	4/18/2011	4/19/2011	4/19/2011	4/20/2011	4/19/2011
Sample Depth in Feet	of SQS[b]	of SQS[b]	Protect Potable Ground Waters[c]		5 to 6.5 Saturated	7.5 to 9 Saturated	17.5 to 19 Saturated	5 to 6.5 Vadose	7.5 to 9 Saturated	15 to 17 Saturated	5 to 6.5 Vadose	7.5 to 9 Saturated	17.5 to 19 Saturated	5 to 6.5 Vadose
PAHs (SIM) in ug/kg														
LPAHs														
Naphthalene	2197	114	0.47	1600000	*4.8 U*	*4.7 U*	*4.8 U*	*4.7 U*	**10**	*4.8 U*	**13**	*4.7 U*	*4.6 U*	*4.7 U*
Acenaphthylene	1363	69	69.09		4.8 U	4.7 U	4.8 U	4.7 U	4.9 U	4.8 U	4.5 U	4.7 U	4.6 U	4.7 U
Acenaphthene	330	17	16.75	4800000	4.8 U	9.5	7.9	4.7 U	10	4.8 U	9.3	11	4.6 U	4.7 U
Fluorene	468	24	23.56	3200000	4.8 U	5.7	4.8 U	4.7 U	4.9 U	4.8 U	6.2	12	4.6 U	4.7 U
Phenanthrene	2019	101	101.38		4.8 U	9.8	28	4.7 U	13	4.8 U	21	37	5.1	4.7 U
Anthracene	4443	223	223.09	24000000	4.8 U	4.7 U	4.8 U	4.7 U	4.9 U	4.8 U	4.5 U	9.4	4.6 U	4.7 U
1-Methylnaphthalene					4.8 U	4.7 U	4.8 U	4.7 U	12	4.8 U	7.9	4.7 U	4.6 U	4.7 U
2-Methylnaphthalene	833	43	43.21	320000	4.8 U	4.7 U	4.8 U	4.7 U	15	4.8 U	19	4.7 U	4.6 U	4.7 U
HPAHs														
Fluoranthene	3209	161	160.53	3200000	4.8 U	7.3	12	4.7 U	12	4.8 U	4.9	10	4.6 U	4.7 U
Pyrene	20058	1004	684.43	2400000	4.8 U	8	15	4.7 U	14	4.8 U	6.4	8.6	4.6 U	4.7 U
Benzo(a)anthracene	2201	110	0.005	1370	*4.8 U*	*4.7 U*	*4.8 U*	*4.7 U*	*4.9 U*	*4.8 U*	*4.5 U*	*4.7 U*	*4.6 U*	*4.7 U*
Chrysene	2202	110	0.27	137000	*4.8 U*	*4.7 U*	*4.8 U*	*4.7 U*	**5**	*4.8 U*	*4.5 U*	*4.7 U*	*4.6 U*	*4.7 U*
Total Benzofluoranthenes	4601	230	0.04		*4.8 U*	*4.7 U*	*4.8 U*	*4.7 U*	*4.9 U*	*4.8 U*	*4.5 U*	*4.7 U*	*4.6 U*	*4.7 U*
Benzo(a)pyrene	1981	99	0.01	137	*4.8 U*	*4.7 U*	*4.8 U*	*4.7 U*	**5.2**	*4.8 U*	*4.5 U*	*4.7 U*	*4.6 U*	*4.7 U*
Indeno(1,2,3-cd)pyrene	680	34	0.06	1370	*4.8 U*	*4.7 U*	*4.8 U*	*4.7 U*	*4.9 U*	*4.8 U*	*4.5 U*	*4.7 U*	*4.6 U*	*4.7 U*
Dibenz(a,h)anthracene	240	12	0.07	137	*4.8 U*	*4.7 U*	*4.8 U*	*4.7 U*	*4.9 U*	*4.8 U*	*4.5 U*	*4.7 U*	*4.6 U*	*4.7 U*
Benzo(g,h,i)perylene	620	31	31.00		4.8 U	4.7 U	4.8 U	4.7 U	4.9 U	4.8 U	4.5 U	4.7 U	4.6 U	4.7 U
Dibenzofuran			15.37	80000	4.8 U	4.7 U	4.8 U	4.7 U	6	4.8 U	4.5 U	4.7 U	4.6 U	4.7 U
Chlorinated Dioxin/Furan Congeners in pg/g														
2,3,7,8-TCDD	3.02E-05				*0.0737 U*		*0.052 U*		*0.0452 U*				*0.0918 UK*	
1,2,3,7,8-PeCDD					0.194 T		0.198 UK		0.0492 U				0.455 T	
1,2,3,4,7,8-HxCDD					0.0478 U		0.125 T		0.0497 U				0.222 T	
1,2,3,6,7,8-HxCDD					0.164 UK		0.214 T		0.102 UK				0.329 UK	
1,2,3,7,8,9-HxCDD					0.129 UK		0.287 UK		0.186 T				0.311 T	
1,2,3,4,6,7,8-HpCDD					0.716 U		1.81 T		1.39 U				3.58	
OCDD					3.65 T		11.2		6.33				20.1	
2,3,7,8-TCDF					0.087 UK		0.0555 UK		0.0556 T				0.395 UK	
1,2,3,7,8-PeCDF					0.0989 UK		0.129 UK		0.0518 T				0.471 T	
2,3,4,7,8-PeCDF					0.0851 UK		0.157 T		0.0575 UK				0.339 UK	
1,2,3,4,7,8-HxCDF					0.103 UK		0.143 T		0.033 U				0.317 T	
1,2,3,6,7,8-HxCDF					0.0354 U		0.0813 UK		0.0312 U				0.259 T	
1,2,3,7,8,9-HxCDF					0.0366 U		0.176 T		0.0453 U				0.154 UK	
2,3,4,6,7,8-HxCDF					0.0386 U		0.107 UK		0.0357 U				0.279 T	
1,2,3,4,6,7,8-HpCDF					0.188 T		1.04 U		0.0493 U				1.9 T	
1,2,3,4,7,8,9-HpCDF					0.0854 U		0.0609 U		0.0862 U				0.096 U	
OCDF					0.0941 U		1.85 T		0.135 U				4.59 T	
Total TCDD					0.969 U		0.456 U		0.307 U				4.67	
Total PeCDD					1.13		0.159 U		0.0492 U				4.21	
Total HxCDD					0.91 U		2.08		0.403				3.53	
Total HpCDD					1.47 U		4.35		3.34				7.45	
Total TCDF					0.0593		0.119		0.0556				8.2	
Total PeCDF					0.0593		0.337		0.0575				2.36	
Total HxCDF					0.0386 U		0.595 U		0.0453 U				2.71	
Total HpCDF					0.291		2.27		0.0862 U				5.24	
TEQ (ND = 1/2 MDL)					0.28416		0.29389		0.10593				0.81127	
TEQ (Detects only)					0.19698		0.13492		0.02761				0.67014	

Table 4 - Analytical Results for Soil Samples - Semivolatile Organic Compounds and Dioxins

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW-4-S3	MW-4-S7	MW-5-S2	MW-5-S5	MW-5-S8	MW-6-S2	MW-6-S4	MW-6-S7	MW-7-S1	MW-7-S4
Sampling Date	Soil Protective	Soil Protective	Soil Standard to	Method B[d]	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/18/2011	4/18/2011
Sample Depth in Feet	of SQS[b]	of SQS[b]	Protect Potable Ground Waters[c]		7.5 to 9 Saturated	17.5 to 19 Saturated	5 to 6.5 Vadose	12.5 to 14 Saturated	20 to 21.5 Saturated	5 to 6.5 Vadose	10 to 11.5 Vadose	17.5 to 19 Saturated	2.5 to 4 Vadose	5 to 6.5 Saturated
Semivolatile Organics (SVOCs) in ug/kg														
LPAH														
Naphthalene	2197	114	0.47	1600000	*18 U*	**11 T**	*18 U*	**100**	19 U	19 U	**90**	19 U	19 U	18 U
Acenaphthylene	1363	69	69.09		18 U	18 U	18 U	17 T	19 U	19 U	19 U	19 U	19 U	18 U
Acenaphthene	330	17	16.75	4800000	*18 U*	*18 U*	*18 U*	*19 U*	*19 U*	*19 U*	**43**	*19 U*	*19 U*	*18 U*
Fluorene	468	24	23.56	3200000	18 U	18 U	18 U	19 U	19 U	19 U	**41**	19 U	19 U	18 U
Phenanthrene	2019	101	101.38		18 U	18 U	57	78	19 U	25	**340**	19 U	19 U	18 U
Anthracene	4443	223	223.09	24000000	18 U	18 U	9.2 T	20	19 U	19 U	66	19 U	19 U	18 U
2-Methylnaphthalene	833	43	43.21	320000	18 U	18 U	18 U	26	19 U	19 U	**46**	19 U	19 U	18 U
HPAH														
Fluoranthene	3209	161	160.53	3200000	18 U	18 U	98	120	19 U	35	**290**	19 U	19 U	18 U
Pyrene	20058	1004	684.43	2400000	13 T	18 U	100	120	19 U	40	400	19 U	19 U	18 U
Benzo(a)anthracene	2201	110	0.005	1370	*18 U*	*18 U*	**48**	**77**	*19 U*	**19**	**140**	*19 U*	*19 U*	*18 U*
Chrysene	2202	110	0.27	137000	*18 U*	*18 U*	**64**	**140**	*19 U*	**23**	**160**	*19 U*	13 T	*18 U*
Benzofluoranthenes (b,k, j)			0.042		**10 T**	*18 U*	**100**	**190**	*19 U*	**35**	**200**	*19 U*	*15 T*	*18 U*
Benzo(a)pyrene	1981	99	0.01	137	*18 U*	*18 U*	**56**	**78**	*19 U*	**22**	**150**	*19 U*	*19 U*	*18 U*
Indeno(1,2,3-c,d)pyrene	680	34	0.06	1370	*18 U*	*18 U*	**44**	**66**	*19 U*	**14 T**	**89**	*19 U*	*19 U*	*18 U*
Dibenzo(a,h)anthracene	240	12	0.07	137	*18 U*	*18 U*	*18 U*	**23**	*19 U*	*19 U*	**23**	*19 U*	*19 U*	*18 U*
Benzo(g,h,i)perylene	620	31	31.00		18 U	18 U	**54**	**90**	19 U	16 T	**120**	19 U	19	18 U
Chlorinated Hydrocarbons in ug/kg														
1,3-Dichlorobenzene			275.20	7200000	18 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U	19 U	18 U
1,4-Dichlorobenzene	92.0	5.1	0.41		*18 U*	*18 U*	*18 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*18 U*
1,2-Dichlorobenzene	67.6	3.8	3.79		*18 U*	*18 U*	*18 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*18 U*
1,2,4-Trichlorobenzene			0.40		*18 U*	*18 U*	*18 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*18 U*
Phthalates in ug/kg														
Dimethyl phthalate	1631	94	40.95		18 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U	19 U	18 U
Diethyl phthalate	3157	200	199.78	64000000	18 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U	9.4 T	13 T
Di-n-butyl phthalate	5003	263	81.36		18 U	18 U	18 U	19 U	19 U	19 U	29 U	33 U	19 U	18 U
Butyl benzyl phthalate	100	5.1	3.95	526000	*18 U*	*18 U*	*18 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*18 U*
Bis(2-ethylhexyl)phthalate	941	47	47.08	71429	18 U	18 U	31 U	19 U	19 U	19 U	32 U	23 U	*69 U*	20 U
Di-n-octyl phthalate	1161	58	0.55		*18 U*	*18 U*	*18 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*18 U*
Acid Extractables in ug/kg														
Phenol	733	43	23.88	24000000	18 U	18 U	18 U	22	19 U	19 U	14 J	19 U	19 U	18 U
2 Methylphenol	91	5.2	2.69		*18 U*	*18 U*	*18 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*18 U*
4 Methylphenol	979	56	22.13		18 U	18 U	18 U	19 U	19 U	19 U	**24**	19 U	19 U	18 U
2,4-Dimethylphenol	37	2.0	2.03		*18 U*	*18 U*	*18 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*18 U*
2,4,6-Trichlorophenol			0.82		*91 U*	*90 U*	*92 U*	*95 U*	*93 U*	*94 U*	*94 U*	*94 U*	*94 U*	*91 U*
Pentachlorophenol	381	20	2.56	2500	*91 UJ*	*90 UJ*	*92 UJ*	*95 UJ*	*93 UJ*	*94 UJ*	*94 UJ*	*94 UJ*	*94 UJ*	*91 UJ*
Benzyl alcohol	785	55	55.02	8000000	18 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U	19 U	18 U
Benzoic acid	9622	675	644.32		180 U	31 T	180 U	160 T	43 T	190 U	51 T	62 T	190 U	180 U
Miscellaneous Extractables in ug/kg														
Dibenzofuran			15.37	80000	*18 U*	*18 U*	*18 U*	**23**	*19 U*	*19 U*	18 J	*19 U*	*19 U*	*18 U*
N-Nitrosodiphenylamine			9.54	204000	*18 U*	*18 U*	*18 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*18 U*
Hexachlorobenzene	8.1	0.4	0.24	625	*18 U*	*18 U*	*18 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*18 U*
Hexachlorobutadiene	97	5.0	1281.15	12820	*18 U*	*18 U*	18 U	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*19 U*	*18 U*
Hexachloroethane				71429	18 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U	19 U	18 U
1,4-Dioxane				10000	65 U	62 U	65 UJ	64 UJ	64 UJ	65 UJ	65 UJ	63 U	63 U	64 U

Table 4 - Analytical Results for Soil Samples - Semivolatile Organic Compounds and Dioxins

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW-4-S3	MW-4-S7	MW-5-S2	MW-5-S5	MW-5-S8	MW-6-S2	MW-6-S4	MW-6-S7	MW-7-S1	MW-7-S4
Sampling Date	Soil Protective of SQS[b]	Soil Protective of SQS[b]	Soil Standard to Protect Potable Ground Waters[c]	Method B[d]	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/18/2011	4/18/2011
Sample Depth in Feet					7.5 to 9 Saturated	17.5 to 19 Saturated	5 to 6.5 Vadose	12.5 to 14 Saturated	20 to 21.5 Saturated	5 to 6.5 Vadose	10 to 11.5 Vadose	17.5 to 19 Saturated	2.5 to 4 Vadose	5 to 6.5 Saturated
PAHs (SIM) in ug/kg														
LPAHs														
Naphthalene	2197	114	0.47	1600000	*4.8 U*	**14**	**12**	**42**	*4.6 U*	**5.1**	**60**	*4.6 U*	*4.7 U*	*4.6 U*
Acenaphthylene	1363	69	69.09		4.8 U	4.6 U	4.6 U	4.9 U	4.6 U	4.8 U	4.8 U	4.6 U	4.7 U	4.6 U
Acenaphthene	330	17	16.75	4800000	4.8 U	4.6 U	6.4	4.9 U	4.6 U	4.8 U	**57**	4.6 U	4.7 U	4.6 U
Fluorene	468	24	23.56	3200000	4.8 U	4.6 U	4.6 U	4.9 U	4.6 U	4.8 U	**42**	4.6 U	4.7 U	4.6 U
Phenanthrene	2019	101	101.38		5.1	9.8	52	32	15	40	450	9.5	4.7 U	4.6 U
Anthracene	4443	223	223.09	24000000	4.8 U	4.6 U	13	7.1	4.6 U	4.8 U	93	4.6 U	4.7 U	4.6 U
1-Methylnaphthalene					4.8 U	4.6 U	6.6	7.1	5.9	4.8 U	33	5.3	4.7 U	4.6 U
2-Methylnaphthalene	833	43	43.21	320000	4.8 U	4.6 U	12	13	4.6 U	4.8 U	35	5.7	4.7 U	4.6 U
HPAHs														
Fluoranthene	3209	161	160.53	3200000	7.9	5	**170**	36	5.4	49	**450**	6.6	6.9	4.6 U
Pyrene	20058	1004	684.43	2400000	11	4.7	160	37	6.6	54	540	6.9	8.2	4.6 U
Benzo(a)anthracene	2201	110	0.005	1370	*4.8 U*	*4.6 U*	**98**	**11**	*4.6 U*	**23**	**190**	*4.6 U*	*4.7 U*	*4.6 U*
Chrysene	2202	110	0.27	137000	**9.5**	*4.6 U*	**110**	**26**	*4.6 U*	**30**	**220**	*4.6 U*	**8.7**	*4.6 U*
Total Benzofluoranthenes	4601	230	0.04		**9.5**	*4.6 U*	**190**	**35**	*4.6 U*	**47**	**290**	*4.6 U*	**13**	*4.6 U*
Benzo(a)pyrene	1981	99	0.01	137	**6.6**	*4.6 U*	**93**	**16**	*4.6 U*	**30**	**230**	4.6 U	**7.2**	*4.6 U*
Indeno(1,2,3-cd)pyrene	680	34	0.06	1370	*4.8 U*	*4.6 U*	50	12	*4.6 U*	16	120	*4.6 U*	*4.7 U*	*4.6 U*
Dibenz(a,h)anthracene	240	12	0.07	137	*4.8 U*	*4.6 U*	**17**	*4.9 U*	*4.6 U*	*4.8 U*	**31**	*4.6 U*	*4.7 U*	*4.6 U*
Benzo(g,h,i)perylene	620	31	31.00		6.4	4.6 U	53	17	4.6 U	17	150	4.6 U	9.5	4.6 U
Dibenzofuran			15.37	80000	4.8 U	4.6 U	6.7	10	4.6 U	4.8 U	17	4.6 U	4.7 U	4.6 U
Chlorinated Dioxin/Furan Congeners in pg/g														
2,3,7,8-TCDD	3.02E-05				**0.551 T**	*0.17 UK*							*0.0591 UK*	
1,2,3,7,8-PeCDD					1.78	0.612 T							0.26 T	
1,2,3,4,7,8-HxCDD					1.71 T	0.525 T							0.173 UK	
1,2,3,6,7,8-HxCDD					17.8	3.95							0.589 T	
1,2,3,7,8,9-HxCDD					4.51	1.21 T							0.323 T	
1,2,3,4,6,7,8-HpCDD					472	100							11.9	
OCDD					4160	858							126	
2,3,7,8-TCDF					3.81	1.06							0.447 T	
1,2,3,7,8-PeCDF					1.33 UK	0.375 T							0.13 UK	
2,3,4,7,8-PeCDF					4.73	0.975							0.205 T	
1,2,3,4,7,8-HxCDF					11.7	2.13							0.329 T	
1,2,3,6,7,8-HxCDF					4.01	1.01 T							0.223 T	
1,2,3,7,8,9-HxCDF					2.4	0.432 T							0.106 UK	
2,3,4,6,7,8-HxCDF					7.2	1.81 T							0.225 T	
1,2,3,4,6,7,8-HpCDF					249	56.4							2.29	
1,2,3,4,7,8,9-HpCDF					11.2	2.25							0.175 UK	
OCDF					1170	206							6.12	
Total TCDD					12.7	4.58							1.69	
Total PeCDD					19	3.51							2.11	
Total HxCDD					84.6	21.4							5	
Total HpCDD					859	191							28	
Total TCDF					134	29.2							4.87	
Total PeCDF					106	26.1							2.98	
Total HxCDF					280	61.3							3.98	
Total HpCDF					1060	205							6.48	
TEQ (ND = 1/2 MDL)					18.005	4.11915							0.76296	
TEQ (Detects only)					17.985	4.03415							0.71664	

Table 4 - Analytical Results for Soil Samples - Semivolatile Organic Compounds and Dioxins

Sample ID Sampling Date Sample Depth in Feet	Vadose Zone Soil Protective of SQS[b]	Saturated Zone Soil Protective of SQS[b]	Most Stringent Soil Standard to Protect Potable Ground Waters[c]	MTCA Method B[d]	MW-7-S7 4/18/2011 17.5 to 19 Saturated	MW-8-S1 4/18/2011 2.5 to 4 Vadose	MW-8-S3 4/18/2011 7.5 to 9 Saturated	MW-8-S6 4/18/2011 15 to 16.5 Saturated
Semivolatile Organics (SVOCs) in ug/kg								
LPAH								
Naphthalene	2197	114	0.47	1600000	20 U	19 U	19 U	18 U
Acenaphthylene	1363	69	69.09		20 U	19 U	19 U	18 U
Acenaphthene	330	17	16.75	4800000	*20 U*	*19 U*	*19 U*	*18 U*
Fluorene	468	24	23.56	3200000	20 U	19 U	19 U	18 U
Phenanthrene	2019	101	101.38		20 U	19 U	38	18 U
Anthracene	4443	223	223.09	24000000	20 U	19 U	19 U	18 U
2-Methylnaphthalene	833	43	43.21	320000	20 U	19 U	19 U	18 U
HPAH								
Fluoranthene	3209	161	160.53	3200000	20 U	19 U	43	9.8 T
Pyrene	20058	1004	684.43	2400000	20 U	19 U	47	18 U
Benzo(a)anthracene	2201	110	0.005	1370	*20 U*	*19 U*	**19**	*18 U*
Chrysene	2202	110	0.27	137000	*20 U*	*19 U*	**20**	*18 U*
Benzofluoranthenes (b,k, j)			0.042		*20 U*	*19 U*	**27**	*18 U*
Benzo(a)pyrene	1981	99	0.01	137	*20 U*	*19 U*	**16 T**	*18 U*
Indeno(1,2,3-c,d)pyrene	680	34	0.06	1370	*20 U*	*19 U*	**11 JT**	*18 U*
Dibenzo(a,h)anthracene	240	12	0.07	137	*20 U*	*19 U*	*19 U*	*18 U*
Benzo(g,h,i)perylene	620	31	31.00		20 U	19 U	13 T	18 U
Chlorinated Hydrocarbons in ug/kg								
1,3-Dichlorobenzene			275.20	7200000	20 U	19 U	19 U	18 U
1,4-Dichlorobenzene	92.0	5.1	0.41		*20 U*	*19 U*	*19 U*	*18 U*
1,2-Dichlorobenzene	67.6	3.8	3.79		*20 U*	*19 U*	*19 U*	*18 U*
1,2,4-Trichlorobenzene			0.40		*20 U*	*19 U*	*19 U*	*18 U*
Phthalates in ug/kg								
Dimethyl phthalate	1631	94	40.95		20 U	19 U	19 U	18 U
Diethyl phthalate	3157	200	199.78	64000000	39	19 U	14 T	47
Di-n-butyl phthalate	5003	263	81.36		20 U	19 U	19 U	18 U
Butyl benzyl phthalate	100	5.1	3.95	526000	*20 U*	*19 U*	*19 U*	*18 U*
Bis(2-ethylhexyl)phthalate	941	47	47.08	71429	22 U	19 U	20 U	18 U
Di-n-octyl phthalate	1161	58	0.55		*20 U*	*19 U*	*19 U*	*18 U*
Acid Extractables in ug/kg								
Phenol	733	43	23.88	24000000	20 U	19 U	13 T	18 U
2 Methylphenol	91	5.2	2.69		*20 U*	*19 U*	*19 U*	*18 U*
4 Methylphenol	979	56	22.13		20 U	19 U	19 U	18 U
2,4-Dimethylphenol	37	2.0	2.03		*20 U*	*19 U*	*19 U*	*18 U*
2,4,6-Trichlorophenol			0.82		*98 U*	*94 U*	*96 U*	*90 U*
Pentachlorophenol	381	20	2.56	2500	*98 UJ*	*94 UJ*	*96 UJ*	*90 UJ*
Benzyl alcohol	785	55	55.02	8000000	20 U	19 U	19 U	18 U
Benzoic acid	9622	675	644.32		200 U	190 U	190 U	180 U
Miscellaneous Extractables in ug/kg								
Dibenzofuran			15.37	80000	*20 U*	*19 U*	*19 U*	*18 U*
N-Nitrosodiphenylamine			9.54	204000	*20 U*	*19 U*	*19 U*	*18 U*
Hexachlorobenzene	8.1	0.4	0.24	625	*20 U*	*19 U*	*19 U*	*18 U*
Hexachlorobutadiene	97	5.0	1281.15	12820	*20 U*	19 U	*19 U*	*18 U*
Hexachloroethane				71429	20 U	19 U	19 U	18 U
1,4-Dioxane				10000	64 U	62 U	64 U	63 U

Table 4 - Analytical Results for Soil Samples - Semivolatile Organic Compounds and Dioxins

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW-7-S7	MW-8-S1	MW-8-S3	MW-8-S6
Sampling Date	Soil Protective	Soil Protective	Soil Standard to	Method B[d]	4/18/2011	4/18/2011	4/18/2011	4/18/2011
Sample Depth in Feet	of SQS[b]	of SQS[b]	Protect Potable Ground Waters[c]		17.5 to 19 Saturated	2.5 to 4 Vadose	7.5 to 9 Saturated	15 to 16.5 Saturated
PAHs (SIM) in ug/kg								
LPAHs								
Naphthalene	2197	114	0.47	1600000	*4.7 U*	*4.8 U*	*4.9 U*	*4.6 U*
Acenaphthylene	1363	69	69.09		4.7 U	4.8 U	4.9 U	4.6 U
Acenaphthene	330	17	16.75	4800000	4.7 U	4.8 U	4.9 U	4.6 U
Fluorene	468	24	23.56	3200000	4.7 U	4.8 U	4.9 U	4.6 U
Phenanthrene	2019	101	101.38		10	4.8 U	16	5.1
Anthracene	4443	223	223.09	24000000	4.7 U	4.8 U	4.9 U	4.6 U
1-Methylnaphthalene					4.7 U	4.8 U	4.9 U	4.6 U
2-Methylnaphthalene	833	43	43.21	320000	4.7 U	4.8 U	4.9 U	4.6 U
HPAHs								
Fluoranthene	3209	161	160.53	3200000	7.5	4.8 U	20	6.8
Pyrene	20058	1004	684.43	2400000	6.8	4.8 U	23	6.4
Benzo(a)anthracene	2201	110	0.005	1370	*4.7 U*	*4.8 U*	**6.9**	*4.6 U*
Chrysene	2202	110	0.27	137000	*4.7 U*	*4.8 U*	**8.7**	*4.6 U*
Total Benzofluoranthenes	4601	230	0.04		*4.7 U*	*4.8 U*	12	*4.6 U*
Benzo(a)pyrene	1981	99	0.01	137	*4.7 U*	*4.8 U*	8.4	*4.6 U*
Indeno(1,2,3-cd)pyrene	680	34	0.06	1370	*4.7 U*	*4.8 U*	*4.9 U*	*4.6 U*
Dibenz(a,h)anthracene	240	12	0.07	137	*4.7 U*	*4.8 U*	*4.9 U*	*4.6 U*
Benzo(g,h,i)perylene	620	31	31.00		4.7 U	4.8 U	5.2	4.6 U
Dibenzofuran			15.37	80000	4.7 U	4.8 U	4.9 U	4.6 U
Chlorinated Dioxin/Furan Congeners in pg/g								
2,3,7,8-TCDD	3.02E-05				*0.0579 UK*			
1,2,3,7,8-PeCDD					0.253 T			
1,2,3,4,7,8-HxCDD					0.135 UK			
1,2,3,6,7,8-HxCDD					0.295 T			
1,2,3,7,8,9-HxCDD					0.284 T			
1,2,3,4,6,7,8-HpCDD					3.15			
OCDD					24.4			
2,3,7,8-TCDF					0.205 UK			
1,2,3,7,8-PeCDF					0.243 JT			
2,3,4,7,8-PeCDF					0.193 T			
1,2,3,4,7,8-HxCDF					0.166 T			
1,2,3,6,7,8-HxCDF					0.125 UK			
1,2,3,7,8,9-HxCDF					0.056 UK			
2,3,4,6,7,8-HxCDF					0.135 T			
1,2,3,4,6,7,8-HpCDF					0.842 U			
1,2,3,4,7,8,9-HpCDF					0.0461 U			
OCDF					1.95 T			
Total TCDD					7.12			
Total PeCDD					3.17			
Total HxCDD					2.78			
Total HpCDD					5.9			
Total TCDF					3.13			
Total PeCDF					1.04			
Total HxCDF					1.33 U			
Total HpCDF					2.09			
TEQ (ND = 1/2 MDL)					0.50504			
TEQ (Detects only)					0.4456			

Table 4 - Analytical Results for Soil Samples - Semivolatile Organic Compounds and Dioxins

Notes:

a) Default reporting limits may apply depending upon extraction methods.
b) Soil screening levels protective of sediment provided by Ecology in "Draft LDW Preliminary Screening Levels v12r7.xls" on April 13, 2011.
c) Most stringent soil standard to protect potable ground waters without potable surface water screening levels provided by Ecology in "Draft LDW Preliminary Screening Levels v12r7.xls" on April 13, 2011.
d) For MTCA Method B, the lower of the two values for carcinogenic and non-carcinogenic risk was used. Values from CLARC Database.
e) 30 mg/kg with benzene, 100 mg/kg without benzene.
U = Not detected at reporting limit indicated.
J = Estimated value.
T = Value is between the MDL and MRL.
Values that exceed the most stringent soil standard to protect potable groundwater are bolded.
Values that exceed screening levels protective of sediment standards are boxed.
Values that exceed MTCA Method B (Human Health Criteria) are shaded.
Italicized value has detection limit that exceeds one or more criteria.
Blank indicates sample not analyzed for specific analyte or no criteria available.

Table 5 - Analytical Results for Soil Samples - PCBs, PDBEs, and Pesticides

Sample ID Sampling Date Sample Depth in Feet	Vadose Zone Soil Protective of SQS[b]	Saturated Zone Soil Protective of SQS[b]	Most Stringent Soil Standard to Protect Potable Ground Waters[c]	MTCA Method B[d]	MW1-S2 4/20/2011 5 to 6.5 Saturated	MW1-S3 4/20/2011 7.5 to 9 Saturated	MW1-S7 4/20/2011 17.5 to 19 Saturated	MW-2-S2 4/18/2011 5 to 6.5 Vadose	MW-2-S3 4/18/2011 7.5 to 9 Saturated	MW-2-S6 4/18/2011 15 to 17 Saturated	MW-3-S2 4/19/2011 5 to 6.5 Vadose	MW-3-S3 4/19/2011 7.5 to 9 Saturated
PCBs in ug/kg												
Aroclor 1016	242	12	1.77	5600	*3.7 U*	*3.8 U*	*3.8 U*	*4 U*	*3.8 U*	*3.7 U*	*3.8 U*	*3.8 U*
Aroclor 1221			0.24		*3.7 U*	*3.8 U*	*3.8 U*	*4 U*	*3.8 U*	*3.7 U*	*3.8 U*	*3.8 U*
Aroclor 1232			120.00		3.7 U	3.8 U	3.8 U	4 U	3.8 U	3.7 U	3.8 U	3.8 U
Aroclor 1242			0.02		*3.7 U*	*3.8 U*	*3.8 U*	*4 U*	*3.8 U*	*3.7 U*	*3.8 U*	*3.8 U*
Aroclor 1248	241	12	1.02		*3.7 U*	*3.8 U*	*3.8 U*	*4 U*	*3.8 U*	*3.7 U*	*3.8 U*	*3.8 U*
Aroclor 1254	241	12	0.42	500	*3.7 U*	*3.8 U*	*3.8 U*	*4 U*	*3.8 U*	*3.7 U*	*3.8 U*	*3.8 U*
Aroclor 1260	240	12	4.77	500	3.7 U	3.8 U	3.8 U	4 U	3.8 U	3.7 U	3.8 U	3.8 U
Aroclor 1262					3.7 U	3.8 U	3.8 U	4 U	3.8 U	3.7 U	3.8 U	3.8 U
Aroclor 1268					3.7 U	3.8 U	3.8 U	4 U	3.8 U	3.7 U	3.8 U	3.8 U
Total PCBs	241	12	0.71		*3.7 U*	*3.8 U*	*3.8 U*	*4 U*	*3.8 U*	*3.7 U*	*3.8 U*	*3.8 U*
PDBEs in ug/kg												
2,2',4-Tribromodiphenyl ether (PBDE-17)					0.5 U			0.5 U			0.5 U	
2,4,4'-Tribromodiphenyl ether (PBDE-28)					0.5 U			0.5 U			0.5 U	
2,3',4',6-Tetrabromodiphenyl ether (PBDE-71)					0.5 U			0.5 U			0.5 U	
2,2',4,4'-Tetrabromodiphenyl ether (PBDE-47)					0.5 U			0.5 U			0.5 U	
2,3',4,4'-Tetrabromodiphenyl ether (PBDE-66)					0.5 U			0.5 U			0.5 U	
2,2',4,4',6-Pentabromodiphenyl ether (PBDE-100)					0.5 U			0.5 U			0.5 U	
2,2',4,4',5-Pentabromodiphenyl ether (PBDE-99)					0.5 U			0.5 U			0.5 U	
2,2,3,4,4-Pentabromodiphenyl ether (PBDE-85)					0.5 U			0.5 U			0.5 U	
2,2',3,4,4',5'-Hexabromodiphenyl ether (PBDE-138)					0.5 U			0.5 U			0.5 U	
2,2',4,4',5,6'-Hexabromodiphenyl ether (PBDE-154)					0.5 U			0.5 U			0.5 U	
2,2',4,4',5,5'-Hexabromodiphenyl ether (PBDE-153)					0.5 U			0.5 U			0.5 U	
2,2',3,4,4',5',6-Heptabromodiphenyl ether (PBDE-183)					0.5 U			0.5 U			0.5 U	
Pesticides in ug/kg												
Hexachlorobenzene (HCB)	8.1	0.4	0.24	625	*0.95 U*	*0.94 U*	*4.8 U*	*0.97 U*	*0.95 U*	*0.94 U*	*0.98 U*	*0.98 U*
Hexachlorobutadiene	97	5.0	1281.15	12821	0.95 U	0.94 U	4.8 U	0.97 U	0.95 U	0.94 U	0.98 U	0.98 U
Aldrin			0.61	58.82	*0.95 U*	*0.94 U*	*4.8 U*	*0.97 U*	*0.95 U*	*0.94 U*	*0.98 U*	*0.98 U*
alpha-BHC (Benzene HexaChloride)			2.47		0.95 U	0.94 U	*4.8 U*	0.97 U	0.95 U	0.94 U	0.98 U	0.98 U
beta-BHC			10.23		0.95 U	0.94 U	4.8 U	0.97 U	0.95 U	0.94 U	0.98 U	0.98 U
gamma-BHC (Lindane)			0.36	24000	*0.95 U*	*0.94 U*	*4.8 U*	*0.97 U*	*0.95 U*	*0.94 U*	*0.98 U*	*0.98 U*
Chlordane			10.32	2857								
cis-Chlordane					0.95 U	0.94 U	4.8 U	0.97 U	0.95 U	0.94 U	0.98 U	0.98 U
trans-Chlordane					0.95 U	0.94 U	4.8 U	0.97 U	0.95 U	0.94 U	0.98 U	0.98 U
4,4'-DDT			36.74	2941	1.9 U	1.9 U	9.5 U	1.9 U	1.9 U	1.9 UJ	2 U	2 U
4,4'-DDE			4.70	2941	1.9 U	1.9 U	9.5 U	1.9 U	1.9 U	1.9 U	2 U	2 U
4,4'-DDD			3.54	4167	1.9 U	1.9 U	*9.5 U*	1.9 U	1.9 U	1.9 U	2 U	2 U
Dieldrin			0.34	62.5	*1.9 U*	*1.9 U*	*9.5 U*	*1.9 U*	*1.9 U*	*1.9 U*	*2 U*	*2 U*
alpha-Endosulfan			20.24	480000	0.95 U	0.94 U	4.8 U	0.97 U	0.95 U	0.94 U	0.98 U	0.98 U
beta-Endosulfan			20.24	480000	1.9 U	1.9 U	9.5 U	1.9 U	1.9 U	1.9 U	2 U	2 U
Endosulfan Sulfate			20.24		1.9 U	1.9 U	9.5 U	1.9 U	1.9 U	1.9 UJ	2 U	2 U
Endrin			22.20	24000	1.9 U	1.9 U	9.5 U	1.9 U	1.9 U	1.9 U	2 U	2 U
Endrin Aldehyde			22.20		1.9 U	1.9 U	9.5 U	1.9 U	1.9 U	1.9 U	2 U	2 U
Heptachlor			0.19	222	*0.95 U*	*0.94 U*	*4.8 U*	*0.97 U*	*0.95 U*	*0.94 UJ*	*0.98 U*	*0.98 U*
Heptachlor Epoxide			0.81	109.89	*0.95 U*	*0.94 U*	*4.8 U*	*0.97 U*	*0.95 U*	*0.94 U*	*0.98 U*	*0.98 U*
Toxaphene			0.06	909	*95 U*	*94 U*	*480 U*	*97 U*	*95 U*	*94 U*	*98 U*	*98 U*

Table 5 - Analytical Results for Soil Samples - PCBs, PDBEs, and Pesticides

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW3-S7	MW-4-S2	MW-4-S3	MW-4-S7	MW-5-S2	MW-5-S5	MW-5-S8	MW-6-S2
Sampling Date	Soil Protective	Soil Protective	Soil Standard to	Method B[d]	4/20/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011	4/19/2011
Sample Depth in Feet	of SQS[b]	of SQS[b]	Protect Potable Ground Waters[c]		17.5 to 19 Saturated	5 to 6.5 Vadose	7.5 to 9 Saturated	17.5 to 19 Saturated	5 to 6.5 Vadose	12.5 to 14 Saturated	20 to 21.5 Saturated	5 to 6.5 Vadose
PCBs in ug/kg												
Aroclor 1016	242	12	1.77	5600	*3.8 U*	*3.7 U*	*3.7 U*	*3.9 U*	*3.7 U*	*3.8 U*	*3.9 U*	*3.9 U*
Aroclor 1221			0.24		*3.8 U*	*3.7 U*	*3.7 U*	*3.9 U*	*3.7 U*	*3.8 U*	*3.9 U*	*3.9 U*
Aroclor 1232			120.00		3.8 U	3.7 U	3.7 U	3.9 U	3.7 U	3.8 U	3.9 U	3.9 U
Aroclor 1242			0.02		*3.8 U*	*3.7 U*	*3.7 U*	*3.9 U*	*3.7 U*	*3.8 U*	*3.9 U*	*3.9 U*
Aroclor 1248	241	12	1.02		*3.8 U*	*3.7 U*	*3.7 U*	*3.9 U*	*73 U*	3.8 U	*3.9 U*	*12 U*
Aroclor 1254	241	12	0.42	500	*3.8 U*	*3.7 U*	*3.7 U*	*3.9 U*	**170**	*7.6 U*	*3.9 U*	**49**
Aroclor 1260	240	12	4.77	500	3.8 U	3.7 U	3.7 U	3.9 U	**140**	**12**	3.9 U	**38**
Aroclor 1262					3.8 U	3.7 U	3.7 U	3.9 U	3.7 U	3.8 U	3.9 U	3.9 U
Aroclor 1268					3.8 U	3.7 U	3.7 U	3.9 U	3.7 U	3.8 U	3.9 U	3.9 U
Total PCBs	241	12	0.71		*3.8 U*	*3.7 U*	*3.7 U*	*3.9 U*	**310**	**12**	*3.9 U*	**87**
PDBEs in ug/kg												
2,2',4-Tribromodiphenyl ether (PBDE-17)						0.5 U			17 U			3.7 U
2,4,4'-Tribromodiphenyl ether (PBDE-28)						0.5 U			4.6 U			0.5 U
2,3',4',6-Tetrabromodiphenyl ether (PBDE-71)						0.5 U			4.6 U			0.5 U
2,2',4,4'-Tetrabromodiphenyl ether (PBDE-47)						0.5 U			14 U			2.9 U
2,3',4,4'-Tetrabromodiphenyl ether (PBDE-66)						0.5 U			4.6 U			0.5 U
2,2',4,4',6-Pentabromodiphenyl ether (PBDE-100)						0.5 U			4.6 U			0.5 U
2,2',4,4',5-Pentabromodiphenyl ether (PBDE-99)						0.5 U			4.6 U			0.5 U
2,2,3,4,4-Pentabromodiphenyl ether (PBDE-85)						0.5 U			4.6 U			0.5 U
2,2',3,4,4',5'-Hexabromodiphenyl ether (PBDE-138)						0.5 U			4.6 U			0.5 U
2,2',4,4',5,6'-Hexabromodiphenyl ether (PBDE-154)						0.5 U			4.6 U			0.5 U
2,2',4,4',5,5'-Hexabromodiphenyl ether (PBDE-153)						0.5 U			4.6 U			0.5 U
2,2',3,4,4',5',6-Heptabromodiphenyl ether (PBDE-183)						0.5 U			4.6 U			0.5 U
Pesticides in ug/kg												
Hexachlorobenzene (HCB)	8.1	0.4	0.24	625	*4.8 U*	*0.93 U*	*4.7 U*	*4.9 U*	*4.6 U*	*0.95 U*	*4.9 U*	*0.99 U*
Hexachlorobutadiene	97	5.0	1281.15	12821	4.8 U	0.93 U	4.7 U	4.9 U	4.6 U	0.95 U	4.9 U	0.99 U
Aldrin			0.61	58.82	*4.8 U*	*0.93 U*	*4.7 U*	*4.9 U*	*4.6 U*	*0.95 U*	*4.9 U*	*0.99 U*
alpha-BHC (Benzene HexaChloride)			2.47		*4.8 U*	0.93 U	*4.7 UJ*	*4.9 U*	*4.6 U*	0.95 U	*4.9 U*	0.99 U
beta-BHC			10.23		4.8 U	0.93 U	4.7 U	4.9 U	4.6 U	0.95 U	4.9 U	0.99 U
gamma-BHC (Lindane)			0.36	24000	*4.8 U*	*0.93 U*	*4.7 U*	*4.9 U*	*4.6 U*	*0.95 U*	*4.9 U*	*0.99 U*
Chlordane			10.32	2857								
cis-Chlordane					4.8 U	0.93 U	4.7 U	4.9 U	4.6 U	0.95 U	4.9 U	0.99 U
trans-Chlordane					4.8 U	0.93 U	4.7 U	4.9 U	4.6 U	0.95 U	4.9 U	0.99 U
4,4'-DDT			36.74	2941	9.7 U	1.9 U	9.5 U	9.7 U	9.2 U	1.9 U	9.8 U	1.8 J
4,4'-DDE			4.70	2941	*9.7 U*	1.9 U	*9.5 U*	*9.7 U*	*9.2 U*	1.9 U	*9.8 U*	2 U
4,4'-DDD			3.54	4167	*9.7 U*	1.9 U	*9.5 U*	*9.7 U*	*9.2 U*	1.9 U	*9.8 U*	2 U
Dieldrin			0.34	62.5	*9.7 U*	*1.9 U*	*9.5 U*	*9.7 U*	*9.2 U*	*1.9 U*	*9.8 U*	*2 U*
alpha-Endosulfan			20.24	480000	4.8 U	0.93 U	4.7 U	4.9 U	4.6 U	0.95 U	4.9 U	0.99 U
beta-Endosulfan			20.24	480000	9.7 U	1.9 U	9.5 U	9.7 U	9.2 U	1.9 U	9.8 U	2 U
Endosulfan Sulfate			20.24		9.7 U	1.9 U	9.5 U	9.7 U	9.2 U	1.9 U	9.8 U	2 U
Endrin			22.20	24000	9.7 U	1.9 U	9.5 U	9.7 U	19	1.9 U	9.8 U	4.4
Endrin Aldehyde			22.20		9.7 U	1.9 U	9.5 U	9.7 U	9.2 U	1.9 U	9.8 U	2.4
Heptachlor			0.19	222	*4.8 U*	*0.93 U*	*4.7 U*	*4.9 U*	*4.6 U*	*0.95 U*	*4.9 U*	*0.99 U*
Heptachlor Epoxide			0.81	109.89	*4.8 U*	*0.93 U*	*4.7 U*	*4.9 U*	*9.6 U*	*0.95 U*	*4.9 U*	*1.3 U*
Toxaphene			0.06	909	*480 U*	*93 U*	*470 U*	*490 U*	*460 U*	*95 U*	*490 U*	*99 U*

Table 5 - Analytical Results for Soil Samples - PCBs, PDBEs, and Pesticides

Sample ID	Vadose Zone	Saturated Zone	Most Stringent	MTCA	MW-6-S4	MW-6-S7	MW-7-S1	MW-7-S4	MW-7-S7	MW-8-S1	MW-8-S3	MW-8-S6
Sampling Date	Soil Protective	Soil Protective	Soil Standard to	Method B[d]	4/19/2011	4/19/2011	4/18/2011	4/18/2011	4/18/2011	4/18/2011	4/18/2011	4/18/2011
Sample Depth in Feet	of SQS[b]	of SQS[b]	Protect Potable Ground Waters[c]		10 to 11.5 Vadose	17.5 to 19 Saturated	2.5 to 4 Vadose	5 to 6.5 Saturated	17.5 to 19 Saturated	2.5 to 4 Vadose	7.5 to 9 Saturated	15 to 16.5 Saturated
PCBs in ug/kg												
Aroclor 1016	242	12	1.77	5600	*3.8 U*	*3.9 U*	*3.8 U*	*3.8 U*	*3.8 U*	*3.8 U*	*3.7 U*	*3.8 U*
Aroclor 1221			0.24		*3.8 U*	*3.9 U*	*3.8 U*	*3.8 U*	*3.8 U*	*3.8 U*	*3.7 U*	*3.8 U*
Aroclor 1232			120.00		3.8 U	3.9 U	3.8 U	3.8 U	3.8 U	3.8 U	3.7 U	3.8 U
Aroclor 1242			0.02		*3.8 U*	*3.9 U*	*3.8 U*	*3.8 U*	*3.8 U*	*3.8 U*	*3.7 U*	*3.8 U*
Aroclor 1248	241	12	1.02		*5.6 U*	*3.9 U*	*3.8 U*	*3.8 U*	*3.8 U*	*3.8 U*	*3.7 U*	*3.8 U*
Aroclor 1254	241	12	0.42	500	**50**	*3.9 U*	**21**	**6.4**	*3.8 U*	*3.8 U*	*3.7 U*	*3.8 U*
Aroclor 1260	240	12	4.77	500	**26**	3.9 U	**4.8**	3.8 U	3.8 U	3.8 U	3.7 U	3.8 U
Aroclor 1262					3.8 U	3.9 U	3.8 U	3.8 U	3.8 U	3.8 U	3.7 U	3.8 U
Aroclor 1268					3.8 U	3.9 U	3.8 U	3.8 U	3.8 U	3.8 U	3.7 U	3.8 U
Total PCBs	241	12	0.71		**76**	*3.9 U*	**25.8**	**6.4**	*3.8 U*	*3.8 U*	*3.7 U*	*3.8 U*
PDBEs in ug/kg												
2,2',4-Tribromodiphenyl ether (PBDE-17)							0.5 U			0.5 U		
2,4,4'-Tribromodiphenyl ether (PBDE-28)							0.5 U			0.5 U		
2,3',4',6-Tetrabromodiphenyl ether (PBDE-71)							0.5 U			0.5 U		
2,2',4,4'-Tetrabromodiphenyl ether (PBDE-47)							0.5 U			0.5 U		
2,3',4,4'-Tetrabromodiphenyl ether (PBDE-66)							0.5 U			0.5 U		
2,2',4,4',6-Pentabromodiphenyl ether (PBDE-100)							0.5 U			0.5 U		
2,2',4,4',5-Pentabromodiphenyl ether (PBDE-99)							0.5 U			0.5 U		
2,2,3,4,4-Pentabromodiphenyl ether (PBDE-85)							0.5 U			0.5 U		
2,2',3,4,4',5'-Hexabromodiphenyl ether (PBDE-138)							0.5 U			0.5 U		
2,2',4,4',5,6'-Hexabromodiphenyl ether (PBDE-154)							0.5 U			0.5 U		
2,2',4,4',5,5'-Hexabromodiphenyl ether (PBDE-153)							0.5 U			0.5 U		
2,2',3,4,4',5',6-Heptabromodiphenyl ether (PBDE-183)							0.5 U			0.5 U		
Pesticides in ug/kg												
Hexachlorobenzene (HCB)	8.1	0.4	0.24	625	*0.98 U*	*0.99 U*	*9.5 U*	*0.96 U*	*0.96 U*	*0.92 U*	*0.94 U*	*0.95 U*
Hexachlorobutadiene	97	5.0	1281.15	12821	0.98 U	0.99 U	9.5 U	0.96 U	0.96 U	0.92 U	0.94 U	0.95 U
Aldrin			0.61	58.82	*0.98 U*	*0.99 U*	*9.5 U*	*0.96 U*	*0.96 U*	*0.92 U*	*0.94 U*	*0.95 U*
alpha-BHC (Benzene HexaChloride)			2.47		0.98 U	0.99 U	9.5 U	0.96 U	0.96 U	0.92 U	0.94 U	0.95 U
beta-BHC			10.23		0.98 U	0.99 U	9.5 U	0.96 U	0.96 U	0.92 U	0.94 U	0.95 U
gamma-BHC (Lindane)			0.36	24000	*0.98 U*	*0.99 U*	*9.5 U*	*0.96 U*	*0.96 U*	*0.92 U*	*0.94 U*	*0.95 U*
Chlordane			10.32	2857								
cis-Chlordane					0.98 U	0.99 U	9.5 U	0.96 U	0.96 U	0.92 U	0.94 U	0.95 U
trans-Chlordane					0.98 U	0.99 U	9.5 U	0.96 U	0.96 U	0.92 U	0.94 U	0.95 U
4,4'-DDT			36.74	2941	3.4	2 U	19 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
4,4'-DDE			4.70	2941	2 U	2 U	*19 U*	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
4,4'-DDD			3.54	4167	2 U	2 U	*19 U*	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
Dieldrin			0.34	62.5	*2 U*	*2 U*	*19 U*	*1.9 U*	*1.9 U*	*1.8 U*	*1.9 U*	*1.9 U*
alpha-Endosulfan			20.24	480000	0.98 U	0.99 U	9.5 U	0.96 U	0.96 U	0.92 U	0.94 U	0.95 U
beta-Endosulfan			20.24	480000	2 U	2 U	19 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
Endosulfan Sulfate			20.24		2 U	2 U	19 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
Endrin			22.20	24000	5	2 U	19 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
Endrin Aldehyde			22.20		4.2 U	2 U	19 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
Heptachlor			0.19	222	*0.98 U*	*0.99 U*	*9.5 U*	*0.96 U*	*0.96 U*	*0.92 U*	*0.94 U*	*0.95 U*
Heptachlor Epoxide			0.81	109.89	*1.4 U*	*0.99 U*	*9.5 U*	*0.96 U*	*0.96 U*	*0.92 U*	*0.94 U*	*0.95 U*
Toxaphene			0.06	909	*98 U*	*99 U*	*950 U*	*96 U*	*96 U*	*92 U*	*94 U*	*95 U*

Table 5 - Analytical Results for Soil Samples - PCBs, PDBEs, and Pesticides

Notes:

a) Default reporting limits may apply depending upon extraction methods.
b) Soil screening levels protective of sediment provided by Ecology in "Draft LDW Preliminary Screening Levels v12r7.xls" on April 13, 2011.
c) Most stringent soil standard to protect potable ground waters without potable surface water screening levels provided by Ecology in "Draft LDW Preliminary Screening Levels v12r7.xls" on April 13, 2011.
d) For MTCA Method B, the lower of the two values for carcinogenic and non-carcinogenic risk was used. Values from CLARC Database.
e) 30 mg/kg with benzene, 100 mg/kg without benzene.
U = Not detected at reporting limit indicated.
J = Estimated value.
T = Value is between the MDL and MRL.
Values that exceed the most stringent soil standard to protect potable groundwater are bolded.
Values that exceed screening levels protective of sediment standards are boxed.
Values that exceed MTCA Method B (Human Health Criteria) are shaded.
Italicized value has detection limit that exceeds one or more criteria.
Blank indicates sample not analyzed for specific analyte or no criteria available.

Table 6 - Analytical Results for Groundwater Samples - TPH and Metals

Sample ID Sampling Date	Groundwater Concentrations Protective of SQS[b]	Most Stringent Potable Ground Water Standard[c]	MW1 4/26/2011	MW-2 4/25/2011	MW3 4/26/2011	MW4 4/26/2011	MW5 4/26/2011	MW6 4/26/2011	MW-7 4/25/2011	MW-8 4/25/2011
Petroleum Hydrocarbons in mg/L										
Gasoline-range hydrocarbons		0.8/1.0[d]	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Diesel-range hydrocarbons		0.5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Heavy oil-range hydrocarbons		0.5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Dissolved Metals in ug/L										
Arsenic		0.05	**2**	**2.7**	**4.4**	**1.9**	0.5 U	**10.1**	**1.1**	**0.4**
Cadmium	2.56	0.21	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chromium	306	50	0.5 U	5.4	0.5 U	0.5 U	2	0.5	0.5 U	0.5 U
Copper	123	7.3	1.2	3.2	2.2	0.6	0.5 U	0.9	2.0	6.0
Lead	11.3	2.5	0.1 U	0.4	0.3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Mercury	0.0052	0.0052	0.00039 T	0.00479	0.00192	0.00016 T	0.00032 T	0.00104	0.00042	0.0026
Silver	1.53	1.53	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	32.6	32.57	4 U	5	4 U	9	4 U	4	4 U	4 U
Total Metals in ug/L										
Arsenic		0.05	**2.2**	**2.8**	**4.5**	**2.2**	0.5 U	**11.8**	**1.1**	**0.4**
Cadmium	2.56	0.21	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chromium	306	50	0.5	4.7	0.7	0.5 U	2.1	0.6	0.5 U	0.5 U
Copper	123	7.3	3.6	**7.8**	3.1	2.2	0.5 U	1.1	1.8	5.5
Lead	11.3	2.5	0.5	1.2	0.5	0.6	0.1 U	0.2	0.1 U	0.1 U
Mercury	0.0052	0.0052	0.00249	0.0028	0.00285	0.00173	0.00049	0.00229	0.00079	0.00276
Silver	1.53	1.53	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	32.6	32.57	4 U	12	8	4 U	4 U	4	4 U	4 U

Notes:

a) Default reporting limits may apply depending upon extraction methods.
b) Groundwater screening levels protective of SQS provided by Ecology in "Draft LDW Preliminary Screening Levels v12r7.xls" on April 13, 2011
c) Most stringent potable groundwater standared without potable surface water screening levels provided by Ecology in "Draft LDW Preliminary Screening Levels v12r7.xls" on April 13, 2011.
d) 0.8 mg/L with benzene, 1.0 mg/L without benzene.
U = Not detected at reporting limit indicated.
J = Estimated value.
T = Value is between the MDL and MRL.
Values that exceed the most stringent potable groundwater standard are bolded.
Values that exceed screening levels protective of sediment standards are boxed.
Italicized value has detection limit that exceeds one or more criteria.
Blank indicates sample not analyzed for specific analyte or no criteria available.

Table 7 - Analytical Results for Groundwater Samples - Volatile Organic Compounds

Sample ID Sampling Date	Groundwater Concentrations Protective of SQS[b]	Most Stringent Potable Ground Water Standard[c]	MW1 4/26/2011	MW-2 4/25/2011	MW3 4/26/2011	MW4 4/26/2011	MW5 4/26/2011	MW6 4/26/2011	MW-7 4/25/2011	MW-8 4/25/2011
Volatile Organic Compounds (VOCs) in ug/L										
Dichlorodifluoromethane			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chloromethane		3.37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl Chloride		0.02	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromomethane			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane		21000	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichlorofluoromethane			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Acrolein			5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone		800	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloro-1,2,2-Trifluoroethane			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethene		0.73	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromoethane			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Iodomethane			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride		5.0	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Disulfide			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Acrylonitrile			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl-t-butyl ether (MTBE)			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Vinyl Acetate			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane		1.0	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Butanone		4800	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,2-Dichloropropane			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
cis-1,2-Dichloroethene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chloroform		4.3	0.2 U	0.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromochloromethane			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane		200	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloropropene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon Tetrachloride		0.25	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethane		0.48	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzene		0.80	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene		0.49	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloropropane			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromodichloromethane			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Dibromomethane			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Chloroethyl Vinyl Ether			1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
4-Methyl-2-Pentanone		640	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Toluene		1000	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
trans-1,3-Dichloropropene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloroethane		0.77	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Hexanone			5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichloropropane			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Tetrachloroethene		0.02	*0.2 U*	*0.2 U*	*0.2 U*	*0.2 U*	*0.2 U*	*0.2 U*	*0.2 U*	*0.2 U*
Chlorodibromomethane			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chlorobenzene		100	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1,2-Tetrachloroethane			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Ethyl Benzene		700	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
m,p-Xylene		1000	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
o-Xylene		1000	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Styrene		1.5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromoform			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Isopropyl Benzene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2,2-Tetrachloroethane			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-Trichloropropane			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

Table 7 - Analytical Results for Groundwater Samples - Volatile Organic Compounds

Sample ID Sampling Date	Groundwater Concentrations Protective of SQS[b]	Most Stringent Potable Ground Water Standard[c]	MW1 4/26/2011	MW-2 4/25/2011	MW3 4/26/2011	MW4 4/26/2011	MW5 4/26/2011	MW6 4/26/2011	MW-7 4/25/2011	MW-8 4/25/2011
trans-1,4-Dichloro-2-Butene			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
n-Propyl Benzene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromobenzene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3,5-Trimethylbenzene		45.0	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Chlorotoluene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-Chlorotoluene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
t-Butylbenzene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trimethylbenzene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
s-Butylbenzene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-Isopropyl Toluene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichlorobenzene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,4-Dichlorobenzene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
n-Butylbenzene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichlorobenzene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dibromo-3-Chloropropane			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-Trichlorobenzene	1	1.13	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Hexachloro-1,3-Butadiene			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene		53.80	0.5 U	0.5 U	0.5 U	0.6	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-Trichlorobenzene			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylene Dibromide			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

Notes:

a) Default reporting limits may apply depending upon extraction methods.
b) Groundwater screening levels protective of SQS provided by Ecology in "Draft LDW Preliminary Screening Levels v12r7.xls" on April 13, 2011
c) Most stringent potable groundwater standared without potable surface water screenling levels provided by Ecology in "Draft LDW Preliminary Screening Levels v12r7.xls" on April 13, 2011.
d) 0.8 mg/L with benzene, 1.0 mg/L without benzene.
U = Not detected at reporting limit indicated.
J = Estimated value.
T = Value is between the MDL and MRL.
Values that exceed the most stringent potable groundwater standard are bolded.
Values that exceed screening levels protective of sediment standards are boxed.
Italicized value has detection limit that exceeds one or more criteria.
Blank indicates sample not analyzed for specific analyte or no criteria available.

Table 8 - Analytical Results for Groundwater Samples - Semivolatile Organic Compounds

Sample ID Sampling Date	Groundwater Concentrations Protective of SQS[b]	Most Stringent Potable Ground Water Standard[c]	MW1 4/26/2011	MW-2 4/25/2011	MW3 4/26/2011	MW4 4/26/2011	MW5 4/26/2011	MW6 4/26/2011	MW-7 4/25/2011	MW-8 4/25/2011
Semivolatile Organics (SVOCs) in ug/L										
LPAH										
Naphthalene	54	53.8	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acenaphthylene	11.0	10.8	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acenaphthene	3	2.6	1 U	1 U	1 U	0.9 T	1 U	1 U	1 U	1 U
Fluorene	2.0	2.0	1 U	1 U	1 U	0.5 T	1 U	1 U	1 U	1 U
Phenanthrene	4.8	4.8	1 U	1 U	1 U	0.6 T	1 U	1 U	1 U	1 U
Anthracene	11	10.8	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Methylnaphthalene	18	18.2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total LPAH										
HPAH										
Fluoranthene	2.3	2.26	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Pyrene	14.4	9.80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo(a)anthracene		1.12E-04	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*
Chrysene	0.47	1.12E-03	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*
Benzofluoranthenes (b,k, j)	0.29		*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*
Benzo(a)pyrene	0.13	6.59E-06	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*
Indeno(1,2,3-c,d)pyrene	0.013	2.27E-05	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*
Dibenzo(a,h)anthracene	0.005	2.72E-05	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*
Benzo(g,h,i)perylene	0.012	1.16E-02	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*
Benzo(b)fluoranthene	0.29	5.27E-05								
Benzo(k)fluoranthene	0.29	5.52E-05								
Total HPAH										
Chlorinated Hydrocarbons in ug/L										
1,3-Dichlorobenzene		600	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	7.1	4.0	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	5.2	5.19	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene		0.40	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*
Phthalates in ug/L										
Dimethyl phthalate	142.86	142.86	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Diethyl phthalate	484.13	484.13	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-butyl phthalate	150.68	46.58	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Butyl benzyl phthalate	0.52	0.52	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*
Bis(2-ethylhexyl)phthalate	0.28	0.28	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*
Di-n-octyl phthalate	0.30	0.30	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*
Acid Extractables in ug/L										
Phenol	78.36	78.36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2 Methylphenol	7.11	7.11	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4 Methylphenol	77.19	77.19	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,4-Dimethylphenol	2.02	2.02	*1 UJ*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*
2,4,6- Trichlorophenol		3.00	*5 U*	*5 U*	*5 U*	*5 U*	*5 U*	*5 U*	*5 U*	*5 U*
Pentachlorophenol	5.33	0.73	*5 U*	*5 U*	*5 U*	*5 U*	*5 U*	*5 U*	*5 U*	*5 U*
Benzyl alcohol	181.99	181.99	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzoic acid	2243	2242.93	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Miscellaneous Extractables in ug/L										
Dibenzofuran	1.33	1.33	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
N-Nitrosodiphenylamine	2.0	1.59	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobenzene	0.11	0.05	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*
Hexachlorobutadiene	3.92	0.9	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*	*1 U*
Hexachloroethane			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dioxane			1 UJ	1 UJ	1 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ

Table 8 - Analytical Results for Groundwater Samples - Semivolatile Organic Compounds

Sample ID Sampling Date	Groundwater Concentrations Protective of SQS[b]	Most Stringent Potable Ground Water Standard[c]	MW1 4/26/2011	MW-2 4/25/2011	MW3 4/26/2011	MW4 4/26/2011	MW5 4/26/2011	MW6 4/26/2011	MW-7 4/25/2011	MW-8 4/25/2011
PAHs (SIM) in ug/L										
LPAH										
Naphthalene	54	53.8	0.02	0.014	0.019	0.27	0.042	0.012	0.017	0.039
Acenaphthylene	11.0	10.8	0.01 U	0.01 U	0.01 U	0.0054 T	0.01 U	0.01 U	0.01 U	0.01 U
Acenaphthene	3	2.6	0.0074 T	0.01 U	0.0052 T	0.71	0.01 U	0.01 U	0.01 U	0.01 U
Fluorene	2.0	2.0	0.01 U	0.01 U	0.01 U	0.51	0.01 U	0.01 U	0.01 U	0.01 U
Phenanthrene	4.8	4.8	0.01 U	0.01 U	0.0074 T	0.44	0.0063 T	0.01 U	0.01 U	0.01 U
Anthracene	11	10.8	0.01 U	0.01 U	0.01 U	0.058	0.01 U	0.01 U	0.01 U	0.01 U
1-Methylnaphthalene			0.0064 T	0.01 U	0.0053 T	0.32	0.01 U	0.01 U	0.01 U	0.01 U
2-Methylnaphthalene	18	18.2	0.0072 T	0.01 U	0.01 U	0.037	0.01 U	0.01 U	0.01 U	0.01 U
Total LPAH										
HPAH										
Fluoranthene	2.3	2.26	0.01 U	0.01 U	0.01 U	0.17	0.01 U	0.0062 T	0.01 U	0.01 U
Pyrene	14.4	9.80	0.01 U	0.01 U	0.01 U	0.1	0.01 U	0.0067 T	0.01 U	0.01 U
Benzo(a)anthracene		1.12E-04	*0.01 U*	*0.01 U*	*0.01 U*	**0.012**	*0.01 U*	*0.01 U*	*0.01 U*	*0.01 U*
Chrysene	0.47	1.12E-03	*0.01 U*	*0.01 U*	*0.01 U*	**0.011**	*0.01 U*	*0.01 U*	*0.01 U*	*0.01 U*
Total Benzofluoranthenes	0.29		0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzo(a)pyrene	0.13	6.59E-06	*0.01 U*	*0.01 U*	*0.01 U*	**0.0054 T**	*0.01 U*	*0.01 U*	*0.01 U*	*0.01 U*
Indeno(1,2,3-cd)pyrene	0.013	2.27E-05	*0.01 U*	*0.01 U*	*0.01 U*	*0.01 U*	*0.01 U*	*0.01 U*	*0.01 U*	*0.01 U*
Dibenz(a,h)anthracene	0.005	2.72E-05	*0.01 U*	*0.01 U*	*0.01 U*	*0.01 U*	*0.01 U*	*0.01 U*	*0.01 U*	*0.01 U*
Benzo(g,h,i)perylene	0.012	1.16E-02	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Dibenzofuran	1.33	1.33	0.01 U	0.01 U	0.01 U	0.33	0.01 U	0.01 U	0.01 U	0.01 U
Total HPAH										

Notes:

a) Default reporting limits may apply depending upon extraction methods.
b) Groundwater screening levels protective of SQS provided by Ecology in "Draft LDW Preliminary Screening Levels v12r7.xls" on April 13, 2011
c) Most stringent potable groundwater standared without potable surface water screening levels provided by Ecology in "Draft LDW Preliminary Screening Levels v12r7.xls" on April 13, 2011.
d) 0.8 mg/L with benzene, 1.0 mg/L without benzene.
U = Not detected at reporting limit indicated.
J = Estimated value.
T = Value is between the MDL and MRL.
Values that exceed the most stringent potable groundwater standard are bolded.
Values that exceed screening levels protective of sediment standards are boxed.
Italicized value has detection limit that exceeds one or more criteria.
Blank indicates sample not analyzed for specific analyte or no criteria available.

Table 9 - Analytical Results for Groundwater Samples - Pesticides and PCBs

Sample ID Sampling Date	Groundwater Concentrations Protective of SQS[b]	Most Stringent Potable Ground Water Standard[c]	MW1 4/26/2011	MW-2 4/25/2011	MW3 4/26/2011	MW4 4/26/2011	MW5 4/26/2011	MW6 4/26/2011	MW-7 4/25/2011	MW-8 4/25/2011
PCBs in ug/L										
Aroclor 1016	0.44	6.41E-05	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*
Aroclor 1221		2.31E-05	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*
Aroclor 1232			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Aroclor 1242		2.31E-05	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*
Aroclor 1248	0.27	2.31E-05	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*
Aroclor 1254	0.16	5.49E-06	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*
Aroclor 1260	0.06	2.31E-05	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*
Aroclor 1262			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Aroclor 1268			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total PCBs	0.27	2.31E-05	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*
Pesticides in ug/L										
Hexachlorobenzene (HCB)	0.11	0.05	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U
Hexachlorobutadiene	3.92	0.9	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U
Aldrin		2.57E-03	*0.05 UJ*	*0.05 U*	*0.05 UJ*	*0.05 UJ*	*0.05 UJ*	*0.05 UJ*	*0.05 U*	*0.05 U*
alpha-BHC (Benzene HexaChloride)		1.39E-02	*0.05 UJ*	*0.05 U*	*0.05 UJ*	*0.05 UJ*	*0.05 UJ*	*0.05 UJ*	*0.05 U*	*0.05 U*
beta-BHC		4.86E-02	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U
gamma-BHC (Lindane)		2.00E-04	*0.05 UJ*	*0.05 U*	*0.05 UJ*	*0.05 UJ*	*0.05 UJ*	*0.05 UJ*	*0.05 U*	*0.05 U*
Chlordane		2.00E-03								
cis-Chlordane			0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U
trans-Chlordane			0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U
4,4'-DDT		0.26	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDE		0.26	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 U
4,4'-DDD		0.36	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dieldrin	0.01		*0.1 UJ*	*0.1 U*	*0.1 UJ*	*0.1 UJ*	*0.1 UJ*	*0.1 UJ*	*0.1 U*	*0.1 U*
alpha-Endosulfan	96.0		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
beta-Endosulfan	96.0		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Endosulfan Sulfate	96.0		0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 U
Endrin	2.00E-03		*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*
Endrin Aldehyde	2.00E-03		*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*	*0.1 U*
Heptachlor	4.00E-04		*0.05 UJ*	*0.05 U*	*0.05 UJ*	*0.05 UJ*	*0.05 UJ*	*0.05 UJ*	*0.05 U*	*0.05 U*
Heptachlor Epoxide	2.00E-04		*0.05 UJ*	*0.05 U*	*0.05 UJ*	*0.05 UJ*	*0.05 UJ*	*0.05 UJ*	*0.05 U*	*0.05 U*
Toxaphene			5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Notes:

a) Default reporting limits may apply depending upon extraction methods.

b) Groundwater screening levels protective of SQS provided by Ecology in "Draft LDW Preliminary Screening Levels v12r7.xls" on April 13, 2011

c) Most stringent potable groundwater standared without potable surface water screening levels provided by Ecology in "Draft LDW Preliminary Screening Levels v12r7.xls" on April 13, 2011.

d) 0.8 mg/L with benzene, 1.0 mg/L without benzene.

U = Not detected at reporting limit indicated.

J = Estimated value.

T = Value is between the MDL and MRL.

Values that exceed the most stringent potable groundwater standard are bolded.

Values that exceed screening levels protective of sediment standards are boxed.

Italicized value has detection limit that exceeds one or more criteria.

Blank indicates sample not analyzed for specific analyte or no criteria available.

This page is intentionally left blank for double-sided printing.

Table 10 - Catch Basin Solids Sampling Summary

Catch Basin ID	Catch Basin Shape	Catch Basin Dimensions in Feet (1)	Depth to Water in Feet	Depth to Sediment in Feet	Depth to Bottom of Catch Basin in Feet	Sediment Thickness in Feet
CB-1	Rectangular	2 x 1.5	2.4	4.4	5.6	1.2
CB-2	Rectangular	2 x 1.5	2.5	2.7	4.0	1.3
CB-3	Circular	3	3.4	4.2	5.0	0.8
CB-4	Circular	3	2.9	4.6	5.3	0.7

Notes:

Sediment samples were collected on April 21, 2011.

1) Dimensions are length x width for rectangular catch basins and diameter for circular catch basins.

All sediment samples consisted of wet, black, slightly sandy silt with organic matter containing leaves, twigs, and worms.

Table 11 - Analytical Results for Catch Basin Solids Samples - Conventionals, TPH, and Metals

Sample ID		CB-1	CB-2	CB-3	CB-4
Sampling Date	SQS Criteria[b]	4/19/2011	4/20/2011	4/20/2011	4/20/2011
Conventionals in %					
Total Solids		42.9	34.2	35.6	38.3
Total Organic Carbon		2.94	12	8.87	10.2
Petroleum Hydrocarbons in mg/kg					
Gasoline-range hydrocarbons		10 U	160	33	10 U
Diesel-range hydrocarbons		170	320	280	170
Heavy oil		1800	1400	2000	1700
Metals in mg/kg					
Arsenic	57	10	15 U	15	14
Cadmium	5.1	**6**	2	1.6	1.5
Chromium	260	48	65	69	53
Copper	390	134	149	143	127
Lead	450	70	86	76	71
Mercury	0.41	0.07	0.2	0.14	0.15
Silver	6.1	2.4	2	5.1	1.1
Zinc	410	**941**	**735**	**957**	**797**

Notes:

a) Default reporting limits may apply depending upon extraction methods.

b) Results are compared to applicable SMS screening criteria including the Sediment Quality Standards (SQS) listed in Chapter 173-204-WAC.

U = Not detected at reporting limit indicated.

J = Estimated value.

T = Value is between the MDL and MRL.

K = Ion ratios do not meet identification criteria acceptance limits for positive identification.

Values that exceed the SQS are bolded.

Italicized value has detection limit that exceeds one or more criteria.

Blank indicates sample not analyzed for specific analyte or no criteria available.

Table 12 - Analytical Results for Catch Basin Solids Samples - Volatile Organic Compounds

Sample ID		CB-1	CB-2	CB-3	CB-4
Sampling Date	SQS Criteria[b]	4/19/2011	4/20/2011	4/20/2011	4/20/2011
Volatile Organic Compounds (VOCs) in ug/kg					
Dichlorodifluoromethane		1.1 U	2 U	1 U	1.0 U
Chloromethane		1.1 U	2 U	1 U	1.0 U
Vinyl Chloride		1.1 U	2 U	1 U	1.0 U
Bromomethane		1.1 U	2 U	1 U	1.0 U
Chloroethane		1.1 U	2 U	1 U	1.0 U
Trichlorofluoromethane		7.7	4.3	1.5	1.0 U
Acrolein		56 U	100 U	52 U	52 U
Acetone		500	750	220	440
1,1,2-Trichloro-1,2,2-Trifluoroethane		2.2 U	4.1 U	2.1 U	2.1 U
1,1-Dichloroethylene		1.1 U	2 U	1 U	1.0 U
Bromoethane		2.2 U	4.1 U	2.1 U	2.1 U
Iodomethane		1.1 U	2 U	1 U	1.0 U
Methylene Chloride		7.8	15	2.5	7.8
Carbon Disulfide		26	15	9.8	11
Acrylonitrile		5.6 U	10 U	5.2 U	5.2 U
Methyl-t-butyl ether (MTBE)		1.1 UJ	2 UJ	1 UJ	1.0 UJ
trans-1,2-Dichloroethene		1.1 U	2 U	1 U	1.0 U
Vinyl Acetate		5.6 U	10 U	5.2 U	5.2 U
1,1-Dichloroethane		1.1 U	2 U	1 U	1.0 U
2-Butanone		100	220	44	78
2,2-Dichloropropane		1.1 U	2 U	1 U	1.0 U
cis-1,2-Dichloroethene		1.1 U	2 U	1 U	1.0 U
Chloroform		1.1 U	2 U	1 U	1.0 U
Bromochloromethane		1.1 U	2 U	1 U	1.0 U
1,1,1-Trichloroethane		1.1 U	2 U	1 U	1.0 U
1,1-Dichloropropene		1.1 U	2 U	1 U	1.0 U
Carbon Tetrachloride		1.1 U	2 U	1 U	1.0 U
1,2-Dichloroethane		1.1 U	2 U	1 U	1.0 U
Benzene		2.2	2 U	1.2	2.0
Trichloroethene		1.1 U	2 U	1 U	1.0 U
1,2-Dichloropropane		1.1 U	2 U	1 U	1.0 U
Bromodichloromethane		1.1 U	2 U	1 U	1.0 U
Dibromomethane		1.1 U	2 U	1 U	1.0 U
2-Chloroethyl Vinyl Ether		5.6 U	10 U	5.2 U	5.2 U
4-Methyl-2-Pentanone		19	26	11	15
cis-1,3-Dichloropropene		1.1 U	2 U	1 U	1.0 U
Toluene		1000	99000	18000	29
trans-1,3-Dichloropropene		1.1 U	2 U	1 U	1.0 U
1,1,2-Trichloroethane		1.1 U	2 U	1 U	1.0 U
1,2-Dibromoethane		1.1 U	2 U	1 U	1.0 U
2-Hexanone		5.6 U	10 U	5.2 U	5.2 U
1,3-Dichloropropane		1.1 U	2 U	1 U	1.0 U
Tetrachloroethene		1.1 U	2 U	1 U	1.0 U
Chlorodibromomethane					1.0 U
Chlorobenzene		1.1 U	2 U	1 U	1.0 U
1,1,1,2-Tetrachloroethane		1.1 U	2 U	1 U	1.0 U
Ethyl Benzene		3.2 J	2.9	2.6	2.9 J
m,p-Xylene		5.7 J	2.6	1.7	3.0 J
o-Xylene		3.5 J	2 U	1 U	2.5 J
Styrene		1.1 U	2 U	1 U	1.0 U
Bromoform		1.1 U	2 U	1 U	1.0 U
Isopropyl Benzene		2.2 J	2 U	1 U	1.7 J
1,1,2,2-Tetrachloroethane		1.1 U	2 U	1 U	1.0 U
1,2,3-Trichloropropane		2.2 U	4.1 U	2.1 U	2.1 U
trans-1,4-Dichloro-2-Butene		5.6 U	10 U	5.2 U	5.2 U
n-Propyl Benzene		1.1 U	2 U	1 U	1.0 U
Bromobenzene		1.1 U	2 U	1 U	1.0 U
1,3,5-Trimethylbenzene		4 J	2 U	1 U	5.6 J
2-Chlorotoluene		1.1 U	2 U	1 U	1.0 U
4-Chlorotoluene		1.1 U	2 U	1 U	1.0 U
t-Butylbenzene		1.1 U	2 U	1 U	1.0 U
1,2,4-Trimethylbenzene		6.2 J	2 U	1.1	5.0 J
s-Butylbenzene		1.1 U	2 U	1 U	1.6 J
4-Isopropyl Toluene		280 J	6	1.5	1.2 J
1,3-Dichlorobenzene		1.1 U	2 U	1 U	1.0 U
1,4-Dichlorobenzene	3	1.1 U	2 U	1 U	1.0 U
n-Butylbenzene		1.1 U	2 U	1 U	1.0
1,2-Dichlorobenzene		1.1 U	2 U	1 U	1.0 U
1,2-Dibromo-3-Chloropropane		5.6 U	10 U	5.2 U	5.2 U
1,2,4-Trichlorobenzene	1	5.6 U	10 U	5.2 U	5.2 U
Hexachloro-1,3-Butadiene		5.6 U	10 U	5.2 U	5.2 U
Naphthalene		5.6 U	10 U	5.2 U	5.2 U
1,2,3-Trichlorobenzene		5.6 U	10 U	5.2 U	5.2 U

Notes:

a) Default reporting limits may apply depending upon extraction methods.

b) Results are compared to applicable SMS screening criteria including the Sediment Quality Standards (SQS) listed in Chapter 173-204-WAC.

U = Not detected at reporting limit indicated.

J = Estimated value.

T = Value is between the MDL and MRL.

K = Ion ratios do not meet identification criteria acceptance limits for positive identification.

Values that exceed the SQS are bolded.

Italicized value has detection limit that exceeds one or more criteria.

Blank indicates sample not analyzed for specific analyte or no criteria available.

Table 13 - Analytical Results for Catch Basin Solids Samples - Semivolatile Organic Compounds

Sample ID		CB-1	CB-2	CB-3	CB-4
Sampling Date	SQS Criteria[b]	4/19/2011	4/20/2011	4/20/2011	4/20/2011
Semivolatile Organics (SVOCs) in ug/kg					
LPAH					
Naphthalene	2,100	89 T	260 T	290 U	110 T
Acenaphthylene	1,300	120 U	290 U	290 U	110 U
Acenaphthene	500	120 U	290 U	290 U	110 U
Fluorene	540	65 T	150 T	290 U	110 U
Phenanthrene	1,500	440	1300 J	420 J	310 J
Anthracene	960	120 U	290 U	290 U	110 U
2-Methylnaphthalene	670	65 T	160 T	290 U	79 T
Total LPAH	5,200	594	1710	420	420
HPAH					
Fluoranthene	1,700	460	1300	560	450
Pyrene	2,600	460	1000	530	480
Benzo(a)anthracene	1,300	180	370	190 T	130
Chrysene	1,400	350	930 J	530 J	410 J
Benzofluoranthenes (b,k, j)	3,200	390	940	430	380
Benzo(a)pyrene	1,600	180	440	190 T	140
Indeno(1,2,3-c,d)pyrene	600	130	320	170 T	130
Dibenzo(a,h)anthracene	230	120 U	*290 U*	*290 U*	110 U
Benzo(g,h,i)perylene	670	250	460	300	240
Benzo(b)fluoranthene					
Benzo(k)fluoranthene					
Total HPAH	12,000	2400	5760	2900	2360
Chlorinated Hydrocarbons in ug/kg					
1,3-Dichlorobenzene		120 U	290 U	290 U	110 U
1,4-Dichlorobenzene	110	*120 U*	*290 U*	*290 U*	110 U
1,2-Dichlorobenzene	35	*120 U*	*290 U*	*290 U*	*110 U*
1,2,4-Trichlorobenzene	31	*120 U*	*290 U*	*290 U*	*110 U*
Phthalates in ug/kg					
Dimethyl phthalate	71	*120 U*	*290 U*	*290 U*	**110 T**
Diethyl phthalate	200	120 U	*290 U*	*290 U*	110 U
Di-n-butyl phthalate	1,400	310 U	560 U	300 U	180 U
Butyl benzyl phthalate	63	**180 J**	**430 J**	**160 JT**	**250 J**
Bis(2-ethylhexyl)phthalate	1,300	**6500**	**7300**	**6300**	**8400**
Di-n-octyl phthalate	6,200	120 U	290 U	290 U	110 U
Acid Extractables in ug/kg					
Phenol	420	**280**	**4500**	230 T	**550**
2 Methylphenol	63	*120 U*	*290 U*	*290 U*	*110 U*
4 Methylphenol	670	**1600**	**40000**	**3200**	590
2,4-Dimethylphenol	29	*120 U*	*290 U*	*290 U*	*110 U*
2,4,6-Trichlorophenol		590 U	1500 U	1400 U	560 U
Pentachlorophenol	360	*590 UJ*	*1500 UJ*	*1400 UJ*	*560 UJ*
Benzyl alcohol	57	**1800**	*290 UJ*	*290 UJ*	*110 UJ*
Benzoic acid	650	**690 T**	**4600**	*2900 U*	540 T
Miscellaneous Extractables in ug/kg					
Dibenzofuran	540	120 U	160 T	290 U	110 U
N-Nitrosodiphenylamine	28	*120 U*	*290 U*	*290 U*	*110 U*
Hexachlorobenzene		120 U	290 U	290 U	110 U
Hexachlorobutadiene		120 U	290 U	290 U	110 U
Hexachloroethane		120 U	290 U	290 U	110 U
1,4-Dioxane		1900 U	2000 U	1900 U	980 U
PAHs (SIM) in ug/kg					
LPAHs					
Naphthalene	2,100	130	200	100	92
Acenaphthylene	1,300	34 U	34	30 U	20 U
Acenaphthene	500	56	150	69	26
Fluorene	540	94	160	64	50
Phenanthrene	1,500	680	1400	490	350
Anthracene	960	89	140	62	52
1-Methylnaphthalene		81	130	82	62
2-Methylnaphthalene	670	99	150	100	79
Total LPAH	5,200	1049	2084	785	570
HPAHs					
Fluoranthene	1,700	720	1400	540	480
Pyrene	2,600	700	970	550	28
Benzo(a)anthracene	1,300	260	330	160	140
Chrysene	1,400	550	740	450	380
Total Benzofluoranthenes	3,200	660	850	560	490
Benzo(a)pyrene	1,600	300	390	220	190
Indeno(1,2,3-cd)pyrene	600	150	210	130	86
Dibenz(a,h)anthracene	230	57	67	38	29
Benzo(g,h,i)perylene	670	260	280	230	160
Dibenzofuran	540	83	170	79	46
Total HPAH	12,000	3657	5237	2878	1983

Notes:

a) Default reporting limits may apply depending upon extraction methods.

b) Results are compared to applicable SMS screening criteria including the Sediment Quality Standards (SQS) listed in Chapter 173-204-WAC.

U = Not detected at reporting limit indicated.

J = Estimated value.

T = Value is between the MDL and MRL.

K = Ion ratios do not meet identification criteria acceptance limits for positive identification.

Values that exceed the SQS are bolded.

Italicized value has detection limit that exceeds one or more criteria.

Blank indicates sample not analyzed for specific analyte or no criteria available.

Table 14 - Analytical Results for Catch Basin Solids Samples - PCBs, Pesticides, PDBEs, and Dioxins

Sample ID		CB-1	CB-2	CB-3	CB-4
Sampling Date	SQS Criteria[b]	4/19/2011	4/20/2011	4/20/2011	4/20/2011
PCBs in ug/kg					
Aroclor 1016		200 U	4 U	3.8 U	3.9 U
Aroclor 1221		200 U	4 U	3.8 U	3.9 U
Aroclor 1232		200 U	4 U	3.8 U	3.9 U
Aroclor 1242		200 U	4 U	3.8 U	3.9 U
Aroclor 1248		200 U	40 U	19 U	29 U
Aroclor 1254		590 U	110	52	58 U
Aroclor 1260		3100	78	49	100
Aroclor 1262		200 U	4 U	3.8 U	3.9 U
Aroclor 1268		200 U	4 U	3.8 U	3.9 U
Total PCBs	130	**3100**	**188**	101	100
PDBEs in ug/kg					
2,2',4-Tribromodiphenyl ether (PBDE-17)		51 U	16 U	52 U	2.4 U
2,4,4'-Tribromodiphenyl ether (PBDE-28)		51 U	16 U	52 U	2.4 U
2,3',4',6-Tetrabromodiphenyl ether (PBDE-71)		51 U	16 U	52 U	2.4 U
2,2',4,4'-Tetrabromodiphenyl ether (PBDE-47)		200 U	16 U	52 U	4
2,3',4,4'-Tetrabromodiphenyl ether (PBDE-66)		51 U	16 U	52 U	2.4 U
2,2',4,4',6-Pentabromodiphenyl ether (PBDE-100)		51 U	16 U	52 U	2.4 U
2,2',4,4',5-Pentabromodiphenyl ether (PBDE-99)		51 U	16 U	52 U	5.2
2,2,3,4,4-Pentabromodiphenyl ether (PBDE-85)		51 U	16 U	52 U	2.4 U
2,2',3,4,4',5'-Hexabromodiphenyl ether (PBDE-138)		51 U	16 U	52 U	2.4 U
2,2',4,4',5,6'-Hexabromodiphenyl ether (PBDE-154)		51 U	16 U	52 U	2.4 U
2,2',4,4',5,5'-Hexabromodiphenyl ether (PBDE-153)		51 U	16 U	52 U	2.4 U
2,2',3,4,4',5',6-Heptabromodiphenyl ether (PBDE-183)		51 U	16 U	52 U	2.4 U
Chlorinated Dioxin/Furan Congeners in pg/g					
2,3,7,8-TCDD		0.599 UK	6.94	1.27	1.08
1,2,3,7,8-PeCDD		3.6	35.6	7.5	5.7
1,2,3,4,7,8-HxCDD		4.32	45.1	9.36	7.11
1,2,3,6,7,8-HxCDD		9.37	77	19.2	16.2
1,2,3,7,8,9-HxCDD		7.36	77.1	16.4	12.7
1,2,3,4,6,7,8-HpCDD		211	1630	386	367
OCDD		3190	11100	2760	3430
2,3,7,8-TCDF		15	13.2	8.2	5.98
1,2,3,7,8-PeCDF		4.95 J	6.23 J	2.78 J	2.38 J
2,3,4,7,8-PeCDF		22.3	9.31	3.95	3.69
1,2,3,4,7,8-HxCDF		9.95	16.8 J	4.94 J	4.8 J
1,2,3,6,7,8-HxCDF		7.75	14.3	4.76	3.96
1,2,3,7,8,9-HxCDF		1.33 T	4.71	1.39 JT	1.45 T
2,3,4,6,7,8-HxCDF		11.7	19.7	5.84 J	5.24
1,2,3,4,6,7,8-HpCDF		93.4	232	58.8	50.3
1,2,3,4,7,8,9-HpCDF		6.21	12.1	3.4	3.26
OCDF		366	466	126	116
Total TCDD		19.2	80.8	38.6	35.4
Total PeCDD		36.1	212	63.4	50.7
Total HxCDD		108	769	193	164
Total HpCDD		485	3310	847	814
Total TCDF		138	216	123	95.2
Total PeCDF		219	220	78.8	69.9
Total HxCDF		159	392	109	96.4
Total HpCDF		214	590	148	136
TEQ (ND = 1/2 MDL)		21.5889	94.5217	22.3952	18.9718
TEQ (Detects only)		21.2894	94.5217	22.3952	18.9718
Pesticides in ug/kg					
Hexachlorobenzene (HCB)	22	10 UJ	9.9 U	9.9 U	9.9 U
Hexachlorobutadiene	11	10 UJ	9.9 U	9.9 U	9.9 U
Aldrin		10 UJ	9.9 U	9.9 U	9.9 U
alpha-BHC (Benzene HexaChloride)		10 UJ	9.9 U	9.9 U	9.9 U
beta-BHC		10 UJ	9.9 U	9.9 U	9.9 U
gamma-BHC (Lindane)		10 UJ	9.9 U	9.9 U	9.9 U
Chlordane					
cis-Chlordane		10 UJ	9.9 U	9.9 U	9.9 U
trans-Chlordane		10 UJ	9.9 U	9.9 U	9.9 U
4,4'-DDT		49 J	20 U	20 U	20 U
4,4'-DDE		20 UJ	20 U	20 U	20 U
4,4'-DDD		20 UJ	20 U	20 U	20 U
Dieldrin		20 UJ	20 U	20 U	20 U
alpha-Endosulfan		10 UJ	9.9 U	9.9 U	9.9 U
beta-Endosulfan		20 UJ	20 U	20 U	20 U
Endosulfan Sulfate		20 UJ	20 U	20 U	20 U
Endrin		110 J	20 U	20 U	20 U
Endrin Aldehyde		89 UJ	20 U	20 U	20 U
Heptachlor		10 UJ	9.9 U	9.9 U	9.9 U
Heptachlor Epoxide		10 UJ	9.9 U	9.9 U	9.9 U
Toxaphene		1000 UJ	990 U	990 U	990 U

Notes:

a) Default reporting limits may apply depending upon extraction methods.

b) Results are compared to the Lowest Apparent Effects Threshold in accordance with the Sediment Quality Standards (SQS) listed in Chapter 173-204-WAC.

U = Not detected at reporting limit indicated.

J = Estimated value.

T = Value is between the MDL and MRL.

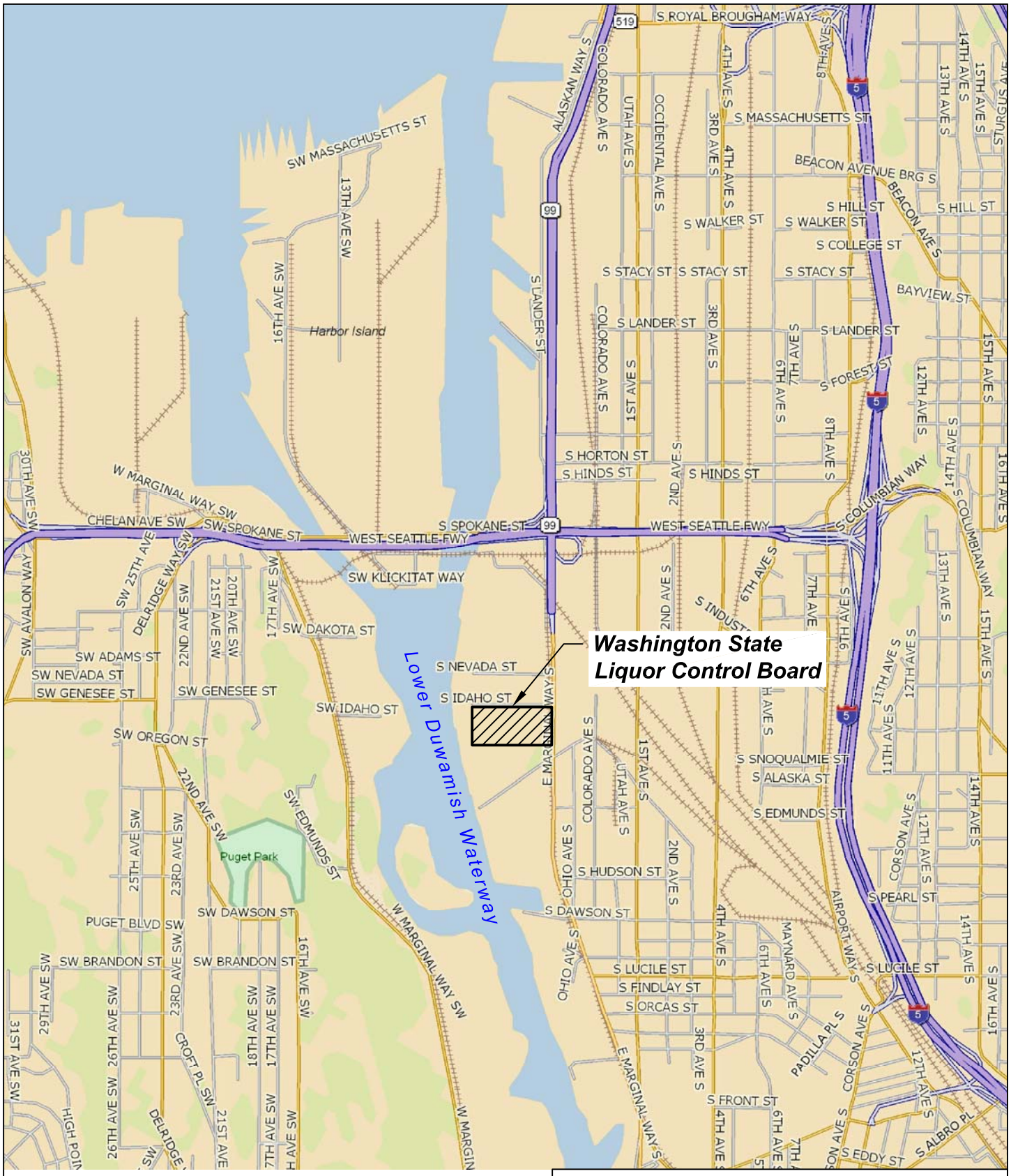
K = Ion ratios do not meet identification criteria acceptance limits for positive identification.

Values that exceed the SQS are bolded.

Italicized value has detection limit that exceeds one or more criteria.

Blank indicates sample not analyzed for specific analyte or no criteria available.

This page is intentionally left blank for double-sided printing.



Source: Base map prepared from DeLorme Topo 7.0, 2007.

0 2000 4000

Scale in Feet

N

Washington State Liquor Control Board
Seattle, Washington

Vicinity Map

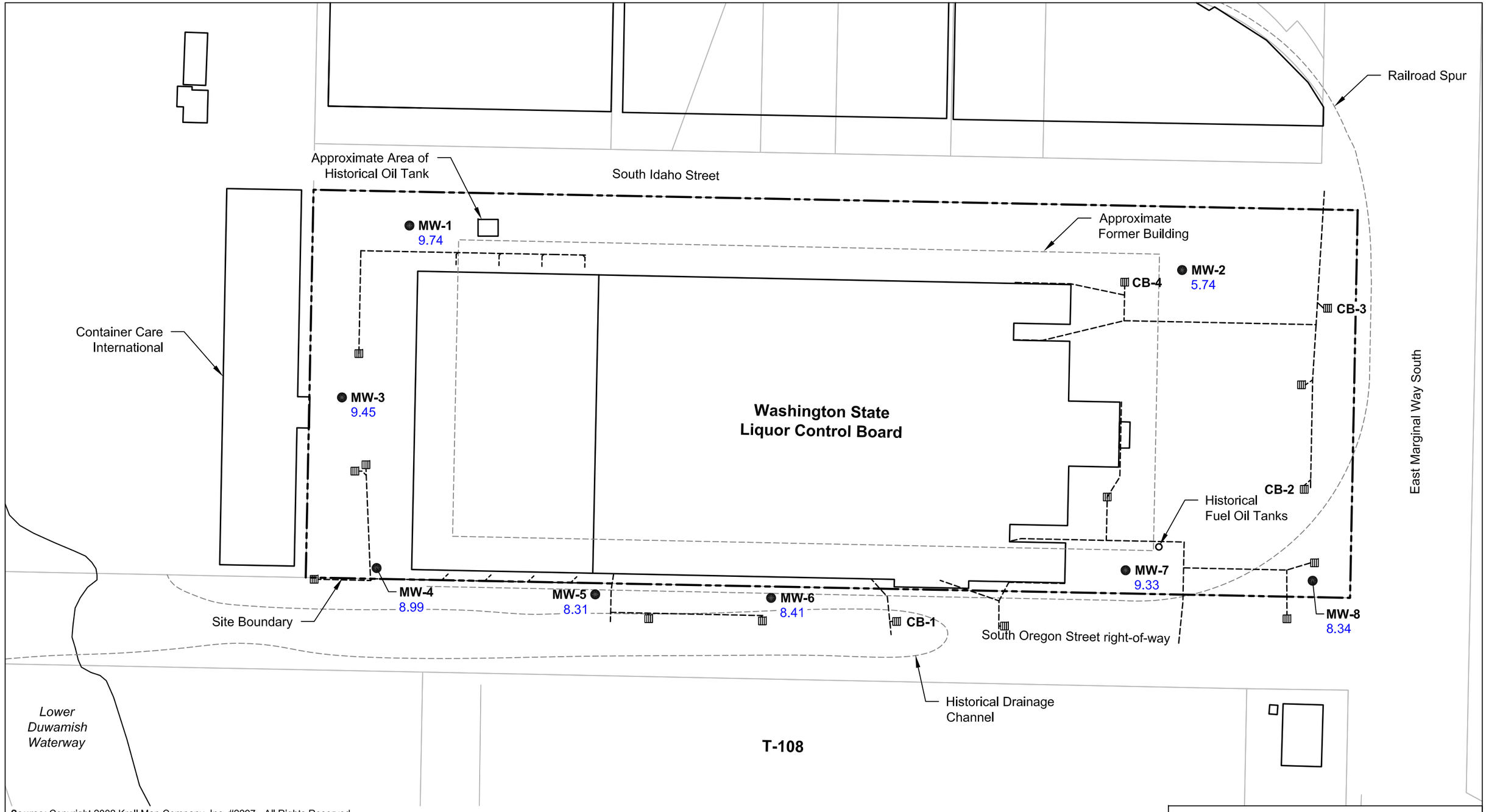
17330-32 6/11

HARTCROWSER

Figure
1

EAL 06/28/11 173303204-005.dwg

This page is intentionally left blank
for double-sided printing.



MW-1 ● Monitoring Well Location and Number

8.41 Groundwater Elevation in Feet

CB-1 ▥ Catch Basin Sampling Location and Number

Note: Approximate locations of historical features compiled from various sources. See text for details.

N

0 100 200

Scale in Feet

Washington State Liquor Control Board
Seattle, Washington

Site and Exploration Plan

17330-32 6/11

HARTCROWSER

Figure **2**

EAL 06/23/11 173303204-007.dwg

This page is intentionally left blank for double-sided printing.

APPENDIX A
FIELD METHODS AND EXPLORATION LOGS

APPENDIX A
FIELD METHODS AND EXPLORATION LOGS

This appendix describes the methods we used to advance the explorations, field screen the soil for sheen and headspace vapor, and to conduct soil, groundwater, and catch basin solids sampling.

The exploration logs at the end of this appendix show our interpretation of the drilling, sampling, and testing data. The logs indicate the depth where the soil change. Note that the change may be gradual. In the field, we classified the samples taken from the explorations according to the methods presented on Figure A-1 - Key to Exploration Logs. This figure also provides a legend explaining the symbols and abbreviations used in the logs.

General Field Activities

Soil Exploration Activities and Characterization. With depths ranging from 21.5 to 26.5 feet bgs, eight hollow-stem auger borings, designated MW-1 through MW-8, were drilled from April 18 to 19, 2011. Gregory Drilling, Inc. of Redmond, Washington, used a 4-inch inside diameter (ID) hollow-stem auger to advance the borings. Split-spoon soil samples were collected using a 1.5-inch-ID split-spoon driven by a 140-pound autohammer. Soil samples were classified in general accordance with ASTM Method D 2888 and field screened at 2.5-foot-depth intervals. The drilling was continuously observed by a Hart Crowser representative. Detailed field logs were prepared of each boring. The borings logs are presented on Figures A-2 through A-9 at the end of this appendix and are shown on Figure 2.

The exploration locations were completed as monitoring wells.

Soil Sampling. Soil samples were collected for chemical analysis directly from the split-spoon sampler with a clean stainless steel spoon and/or clean (new) disposable nitrile gloves and placed in precleaned, appropriately preserved, laboratory-supplied sample jars. Volatile samples (including VOC and NWTPH-Gx) were collected using EPA Method 5035 procedures.

Selecting samples for analytical testing was based on field screening, including PID measurement, discoloration, and sheen using the methods described below. Three soil samples per boring were selected for chemical analysis based on the following general protocol:

- When soil contamination appears present based on field screening, the soil samples exhibiting the most significant evidence of contamination from each boring location was submitted for chemical analysis.

- If no field indications of contamination were identified, one soil sample was collected near the surface to characterize the fill material, near the water table, and below the water table.

Soil analytical results are presented in Tables 2 through 5.

Soil Screening and Analysis. Field screening results was used as a general guideline to identify potential contamination in soil samples. In addition, field screening results were used as a basis for selecting soil samples for chemical analysis.

Soil samples were field screened for evidence of petroleum-related contamination using (1) visual examination, (2) sheen screening, and (3) headspace vapor screening using a photoionization detector (PID). Field screening results were site-specific. The effectiveness of field screening varies with temperature, moisture content, organic content, soil type, and age of the contaminant. The presence or absence of a sheen or headspace vapors does not necessarily indicate the presence or absence of petroleum hydrocarbons.

Visual examination consists of inspecting the soil for stains that may indicate contamination. Visual screening is generally more effective when contamination is related to heavy petroleum hydrocarbons, such as motor or hydraulic oil, or when hydrocarbon concentrations are high.

Water sheen testing involved placing a small volume of soil in a pan of water and observing the water surface for signs of sheen. Sheens were classified as follows:

No Sheen (NS)	No visible sheen on water surface.
Slight Sheen (SS)	Light colorless film, spotty to globular; spread was irregular, not rapid, areas of no sheen remain, film dissipates rapidly.
Moderate Sheen (MS)	Light to heavy film, may have some color or iridescence, globular to stringy, spread was irregular to flowing; few remaining areas of no sheen on water surface.

Heavy Sheen (HS)	Heavy colorful film with iridescence; stringy, spread was rapid; sheen flows off the sample; most of the water surface might be covered with sheen.

Headspace vapor screening was used to indicate the presence of volatile organic vapors and involved placing a soil sample in a plastic sample bag. Air was captured in the bag and the bag was shaken to expose the soil to the air trapped in the bag. The probe of the PID was inserted in the bag and the instrument measured the concentration of organic vapors in the air removed from the sample headspace. The highest vapor reading was recorded for each sample. The PID measures concentrations in ppm (parts per million) and is calibrated to isobutylene. The PID is typically designed to quantify organic vapors concentrations in the range of 0 to 1,000 ppm.

The results of field screening were recorded explorations logs at the end of this appendix.

Well Installation Activities. All eight borings had a 2-inch ID, Schedule-40 PVC casings and a 10-foot-long, 0.010-inch slot well screen installed. A filter pack of 10-20 silica sand was placed from the bottom of the well screen to a depth of up to 2 feet above the top of the well screen. A bentonite chip seal was placed immediately above the sand to a depth of 1 to 2 feet bgs. A concrete, flush-mounted well monument completed the installation.

The newly installed monitoring wells were developed to remove suspended material and drilling fluids from the surrounding formation. Wells were developed using a bailer and purging methods. Sediment was removed from the bottom of the wells using a stainless steel bailer and developed using a down-hole submersible pump. All well development equipment was decontaminated between monitoring wells to prevent cross-contamination. Well development continued until the removed water was clear and free of sediment or until a minimum of 10 casing volumes was removed.

Groundwater Sampling. Eight newly installed wells were sampled for groundwater on April 25 and 26, 2011. Upon arrival at the well, field personnel recorded conditions, depth to water, and depth to sediment in the wells using an electronic water level indicator.

Purging and sampling were conducted at a depth representing the middle of the screened interval of each well. Samples were obtained using a peristaltic pump. Groundwater samples were collected once the parameters pH, specific conductivity, and temperature were stabilized. The sample bottles were filled directly from the polyethylene tubing at relatively low flow rates. To prevent

cross-contamination of the wells, disposable polyethylene tubing was used for each groundwater sample and the electronic water level indicator was decontaminated between well locations using a non-phosphate-based cleaner and de-ionized water.

Groundwater analytical results are presented in Tables 6 through 9.

Catch Basin Solids Sampling. Catch basin sampling was performed using hand tools and a dredge sampler. When standing water was present, care was taken to prevent washout of sample material when the sampler is retrieved through the water column.

Catch basin solids were collected using a cleaned and decontaminated sampler. The sampler was advanced into the catch basin solids at each corner and center of the basin. After each sample was collected, the solids sample was homogenized using a decontaminated stainless steel bowl and spoon and placed into the precleaned, appropriately preserved, laboratory-supplied sample jars.

Solids analytical results are presented in Tables 10 through 14.

Laboratory Analysis and Sample Handling. Soil, groundwater, and solids samples collected during the April 2011 sampling event were submitted to Analytical Resources, Inc (ARI) of Tukwila, Washington, for the majority of the chemical analyses. ARI subcontracted the low-level mercury groundwater samples to Brooks Rand Labs, LLC of Seattle, Washington. Samples were delivered (by courier) to the laboratory under chain of custody protocols.

Soil, groundwater, and solids samples were analyzed for the following constituents:

- Semivolatile organic compounds (SVOCs);
- Volatile organic compounds (VOCs);
- Polychlorinated biphenyls (PCBs);
- Pesticides;
- Total petroleum hydrocarbons (TPH) including gasoline, diesel, and heavy-oil ranges;
- Metals (As, Cd, Cr, Cu, Pb, Hg, Ag, Zn); and
- Total organic carbon (TOC).

In addition to the analytes above, solids samples were analyzed for the following constituents:

- Dioxins and furans; and
- Polybrominated diethyl ethers (PBDEs).

Investigation-Derived Waste (IDW). Contaminated or potentially contaminated materials generated during field work were managed in accordance with applicable federal, state, and local regulations. The IDW was handled in accordance with applicable regulations in a manner consistent with ultimate disposition.

Soil cuttings and purge water generated during exploration activities, well development, and groundwater sampling were placed into separate labeled drums and left on site, pending analysis of soil and groundwater analytical results. Hart Crowser will coordinate the transportation and disposal of the IDW. Since Ecology is the generator, they will sign all manifests, bills of lading, profile sheets, and any other shipping documents.

J:\Jobs\1733032\Data Report - WSLCB\Final\Final WSLCB Data 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 and probes is estimated based on visual observation and is presented parenthetically on the 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 to 4	Very soft	0 to 2	<0.125
Loose	4 to 10	Soft	2 to 4	0.125 to 0.25
Medium dense	10 to 30	Medium stiff	4 to 8	0.25 to 0.5
Dense	30 to 50	Stiff	8 to 15	0.5 to 1.0
Very dense	>50	Very stiff	15 to 30	1.0 to 2.0
		Hard	>30	>2.0

Sampling Test Symbols

- 1.5" I.D. Split Spoon
- Grab (Jar)
- 3.0" I.D. Split Spoon
- Shelby Tube (Pushed)
- Bag
- Cuttings
- Core Run

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Moisture

Dry	Little perceptible moisture
Damp	Some perceptible moisture, likely below optimum
Moist	Likely near optimum moisture content
Wet	Much perceptible moisture, likely above optimum

Minor Constituents

Minor Constituents	Estimated Percentage
Trace	<5
Slightly (clayey, silty, etc.)	5 - 12
Clayey, silty, sandy, gravelly	12 - 30
Very (clayey, silty, etc.)	30 - 50

Laboratory Test Symbols

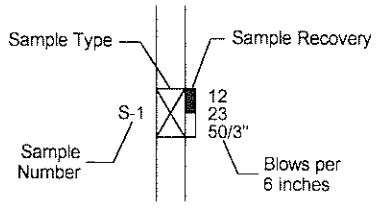
GS	Grain Size Classification
CN	Consolidation
UU	Unconsolidated Undrained Triaxial
CU	Consolidated Undrained Triaxial
CD	Consolidated Drained Triaxial
QU	Unconfined Compression
DS	Direct Shear
K	Permeability
PP	Pocket Penetrometer Approximate Compressive Strength in TSF
TV	Torvane Approximate Shear Strength in TSF
CBR	California Bearing Ratio
MD	Moisture Density Relationship
AL	Atterberg Limits
PID	Photoionization Detector Reading
CA	Chemical Analysis
DT	In Situ Density in PCF
OT	Tests by Others

Water Content in Percent
Liquid Limit
Natural
Plastic Limit

Groundwater Indicators

- Groundwater Level on Date or (ATD) At Time of Drilling
- Groundwater Seepage (Test Pits)

Sample Key



HARTCROWSER

17330-32 *4/11*

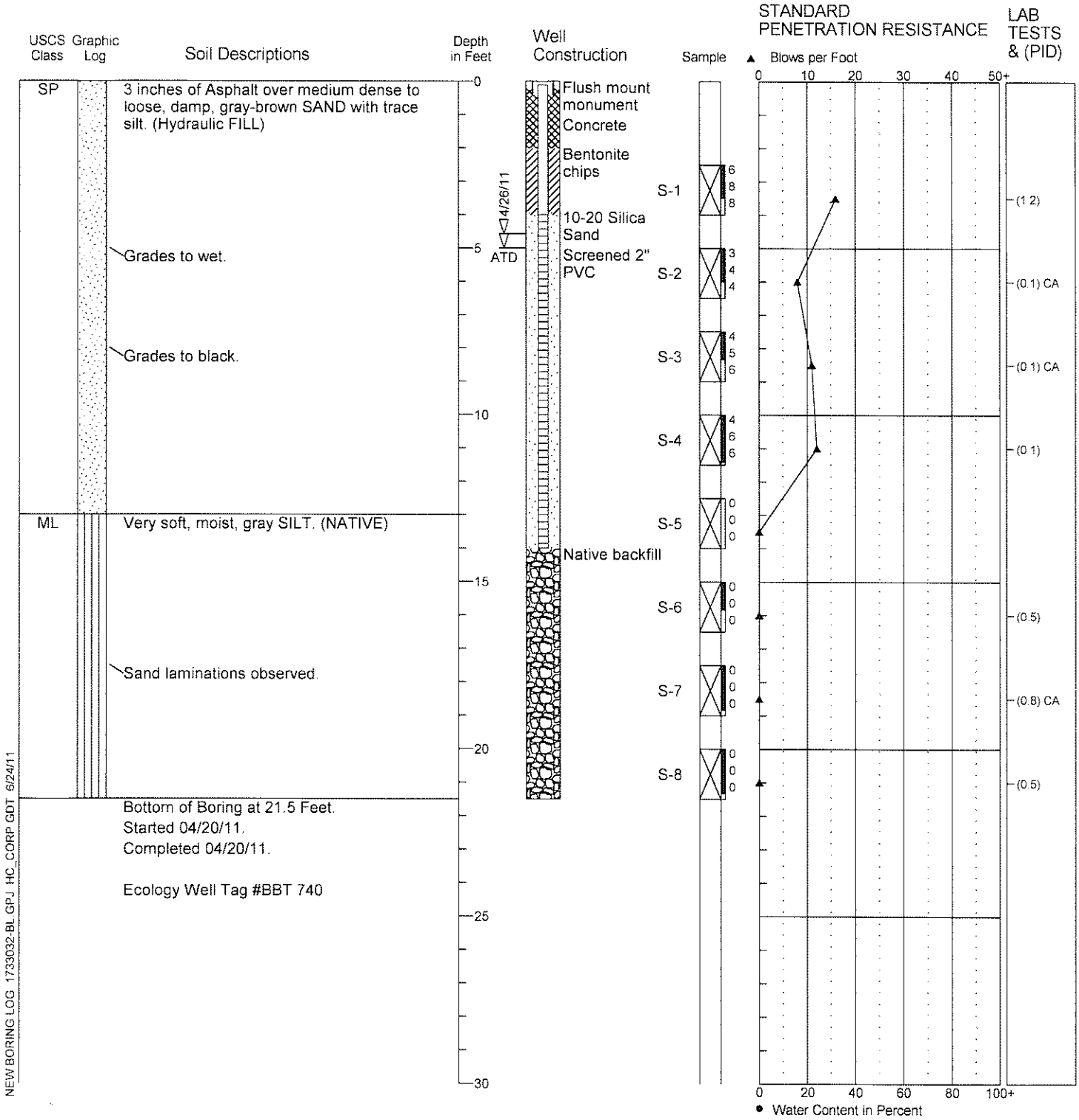
Figure A-1

KEY SHEET 1733032-BL.GPJ HC_CORP.GDT 6/24/11

Boring Log & Construction Data for Monitoring Well MW-1

Location: N 209510.62 E 1267514.51
Approximate Ground Surface Elevation: 15.11 Feet
Horizontal Datum: NAD83/2007
Vertical Datum: NAVD88

Drill Equipment: Hollow Stem Auger
Hammer Type: SPT w/140 lb. hammer
Hole Diameter: 10 inches
Logged By: B. Payne Reviewed By: A. Goodwin



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. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.
5. NS = No Sheen

HARTCROWSER

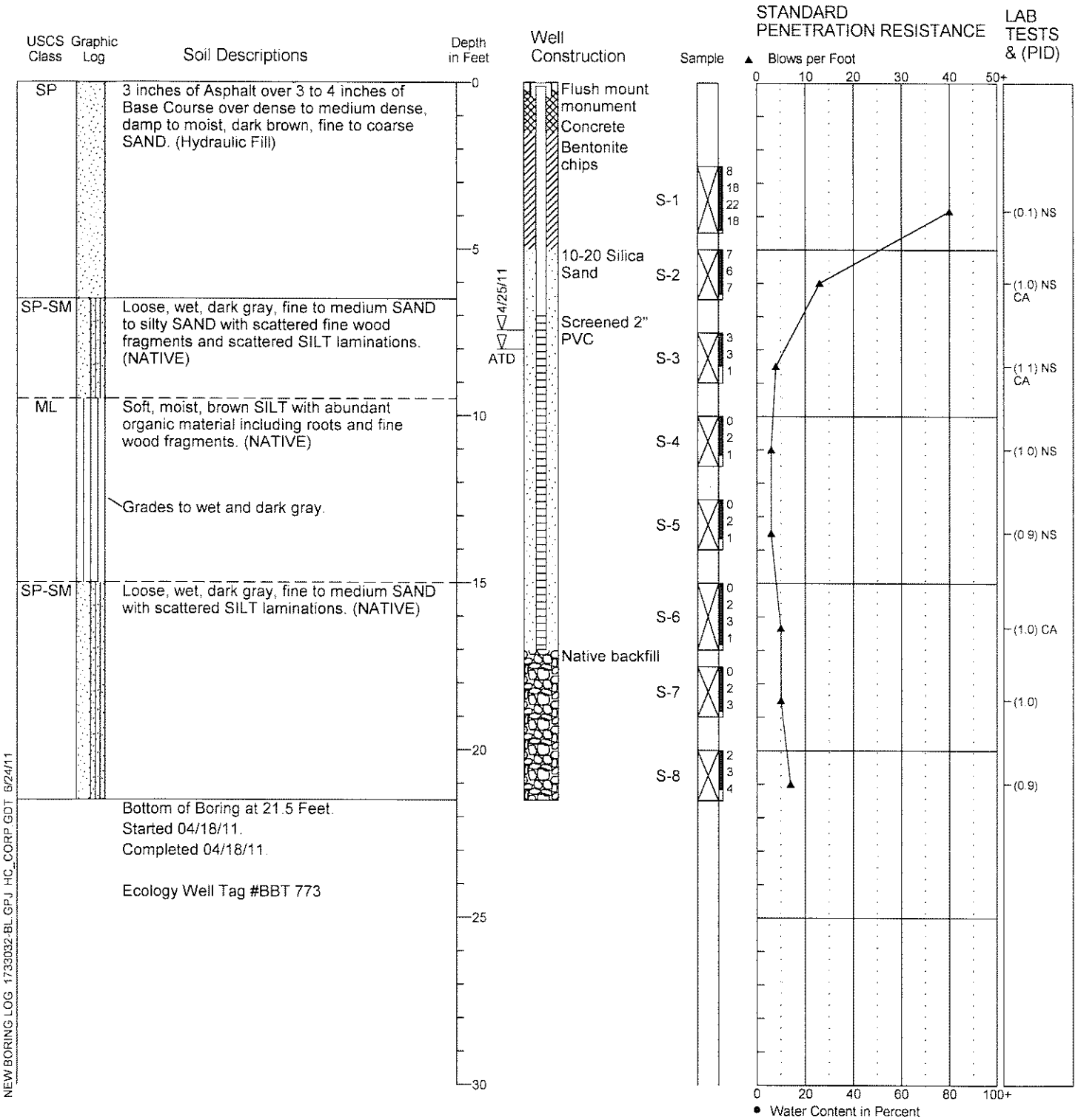
17330-32 4/11

Figure A-2

Boring Log & Construction Data for Monitoring Well MW-2

Location: N 209462.42 E 1268351.38
Approximate Ground Surface Elevation: 15.03 Feet
Horizontal Datum: NAD83/2007
Vertical Datum: NAVD88

Drill Equipment: Hollow Stem Auger
Hammer Type: SPT w/140 lb. hammer
Hole Diameter: 10 inches
Logged By: P. Cordell Reviewed By: A. Goodwin



NEW BORING LOG 1733032-BL.GPJ HC_CORP.GDT 6/24/11

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. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.
5. NS = No Sheen

HARTCROWSER

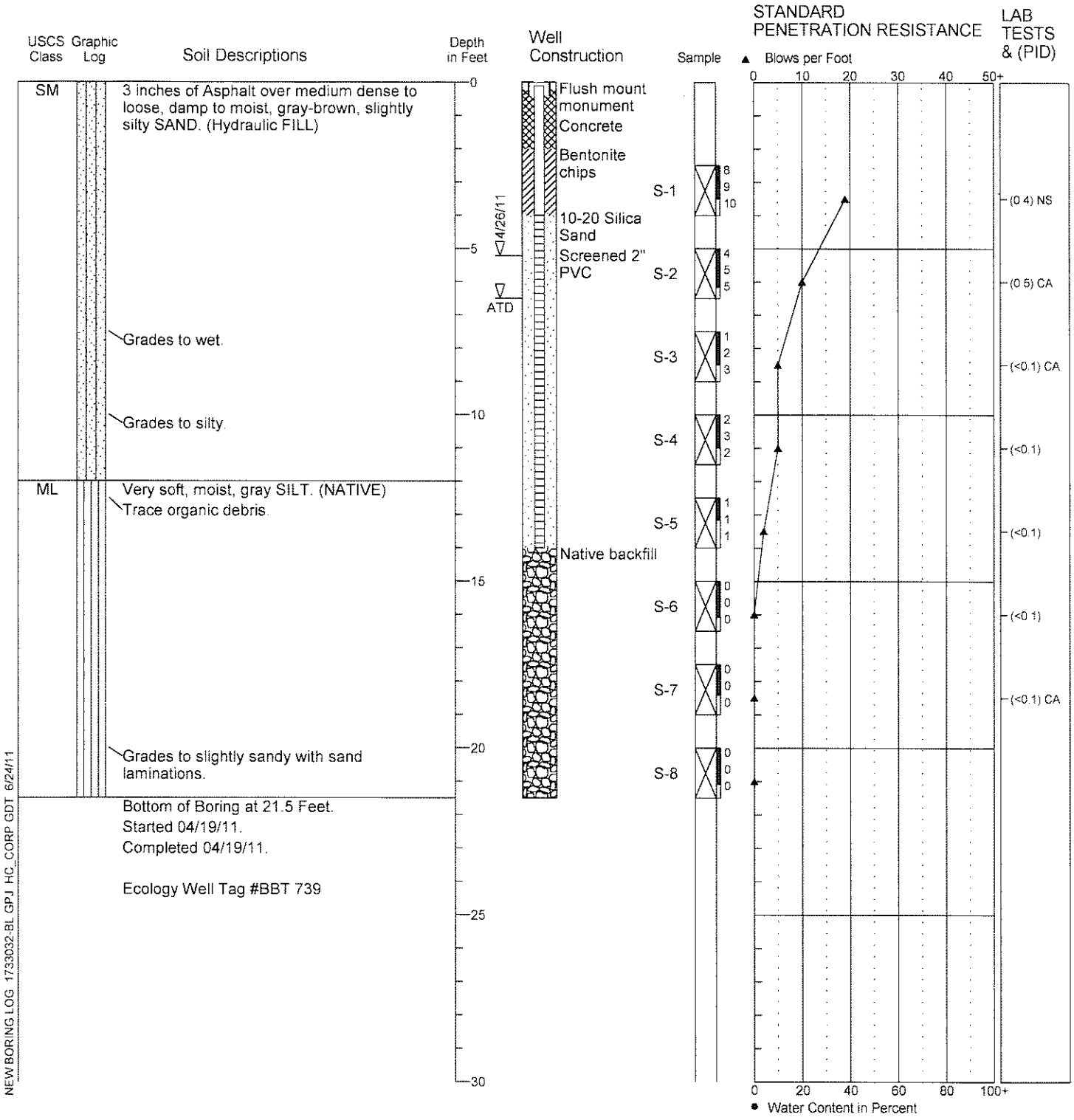
17330-32 4/11

Figure A-3

Boring Log & Construction Data for Monitoring Well MW-3

Location: N 209324.44 E 1267441.43
Approximate Ground Surface Elevation: 15.49 Feet
Horizontal Datum: NAD83/2007
Vertical Datum: NAVD88

Drill Equipment: Hollow Stem Auger
Hammer Type: SPT w/140 lb. hammer
Hole Diameter: 10 inches
Logged By: B. Payne Reviewed By: A. Goodwin



NEW BORING LOG 1733032-BL.GPJ HC_CORP.GDT 6/24/11

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. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.
5. NS = No Sheen

HARTCROWSER

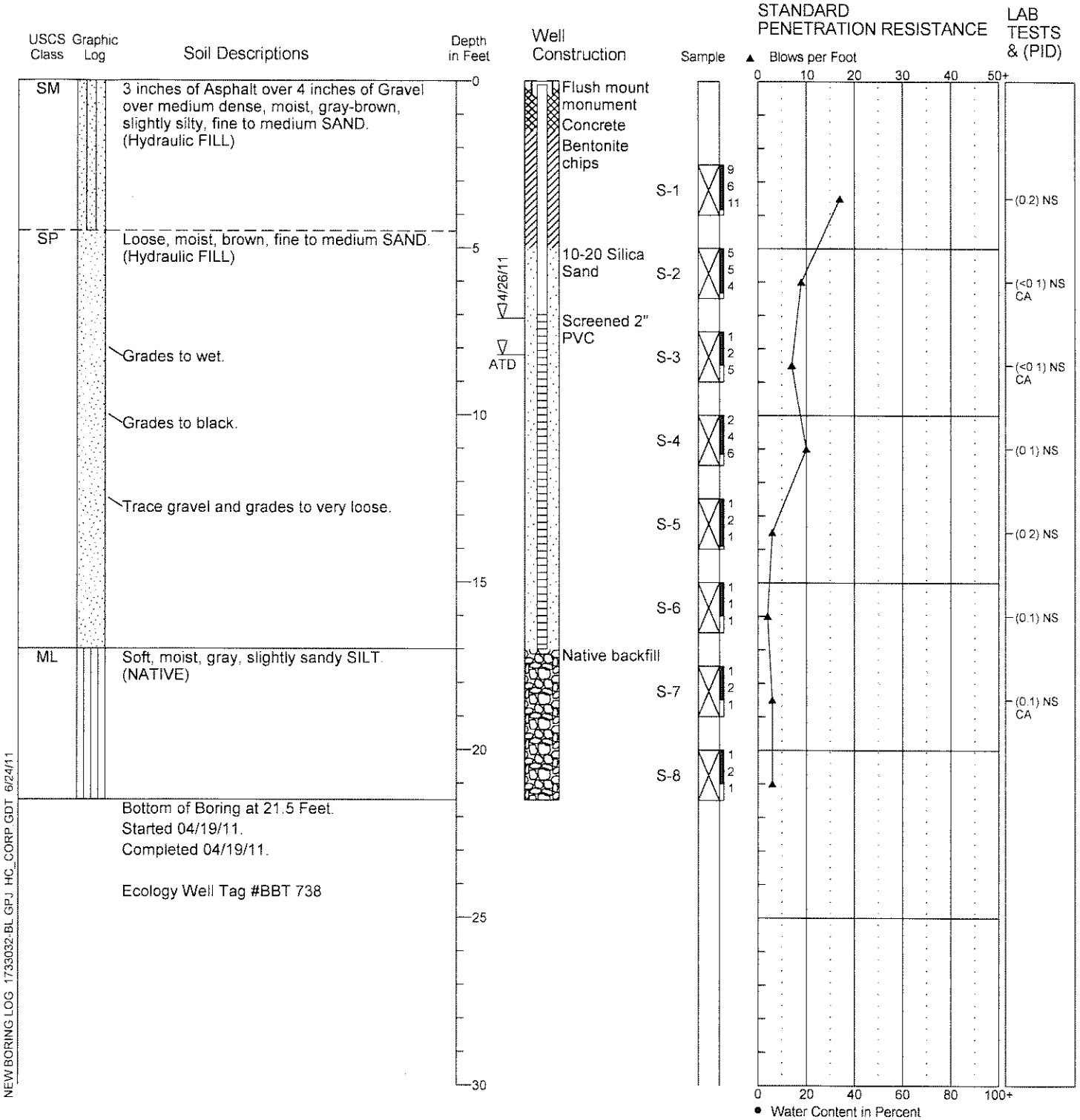
17330-32 *4/11*

Figure A-4

Boring Log & Construction Data for Monitoring Well MW-4

Location: N 209139.65 E 1267478.98
Approximate Ground Surface Elevation: 16.71 Feet
Horizontal Datum: NAD83/2007
Vertical Datum: NAVD88

Drill Equipment: Hollow Stem Auger
Hammer Type: SPT w/140 lb. hammer
Hole Diameter: 10 inches
Logged By: B. Payne Reviewed By: A. Goodwin



NEW BORING LOG 1733032-BL.GPJ HC_CORP.GDT 6/24/11

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. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.
5. NS = No Sheen

HARTCROWSER

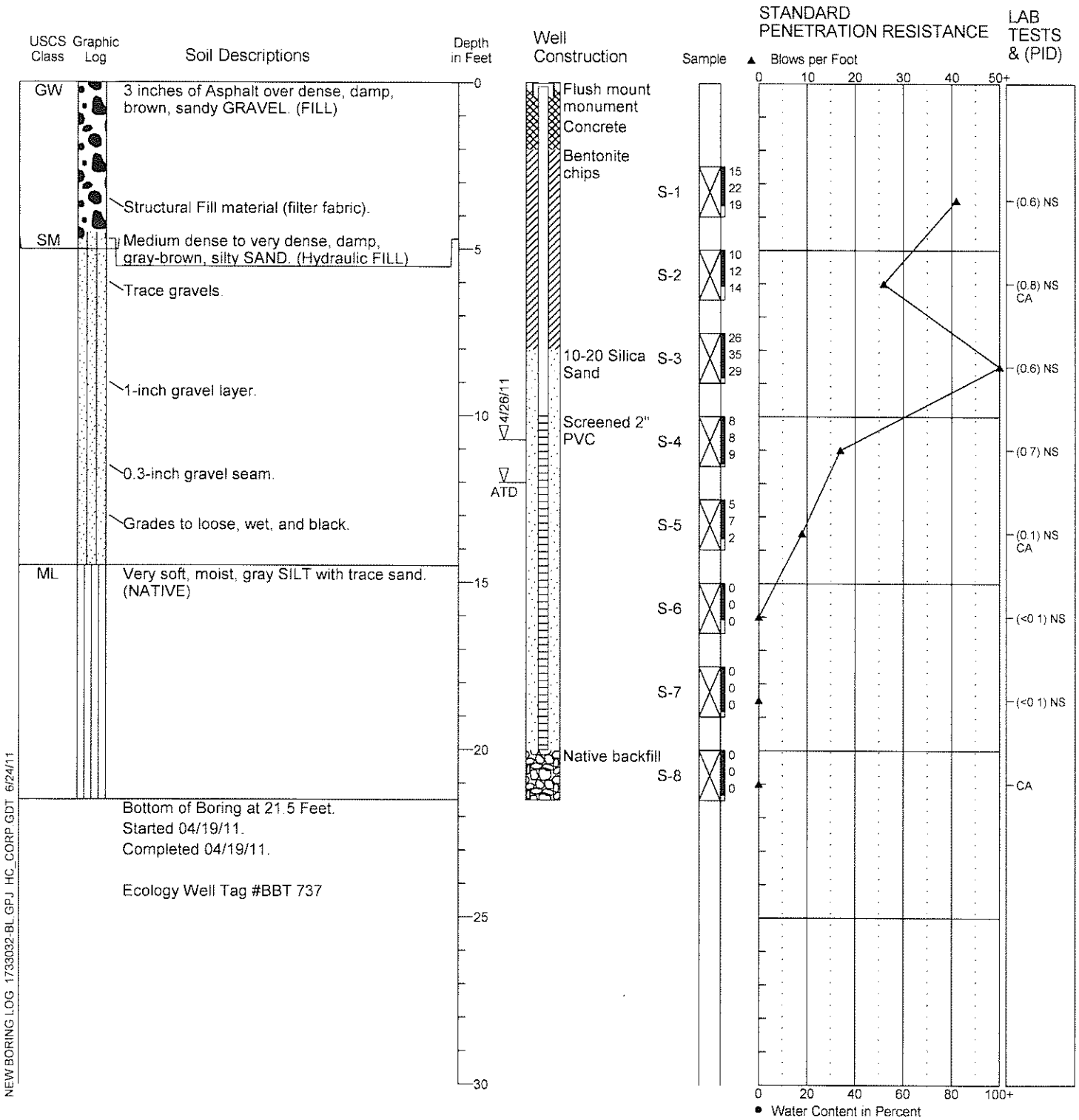
17330-32 4/11

Figure A-5

Boring Log & Construction Data for Monitoring Well MW-5

Location: N 209111.12 E 1267715.75
Approximate Ground Surface Elevation: 19.59 Feet
Horizontal Datum: NAD83/2007
Vertical Datum: NAVD88

Drill Equipment: Hollow Stem Auger
Hammer Type: SPT w/140 lb. hammer
Hole Diameter: 10 inches
Logged By: B. Payne/P. Cordell Reviewed By: A. Goodwin



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. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.
5. NS = No Sheen

HARTCROWSER

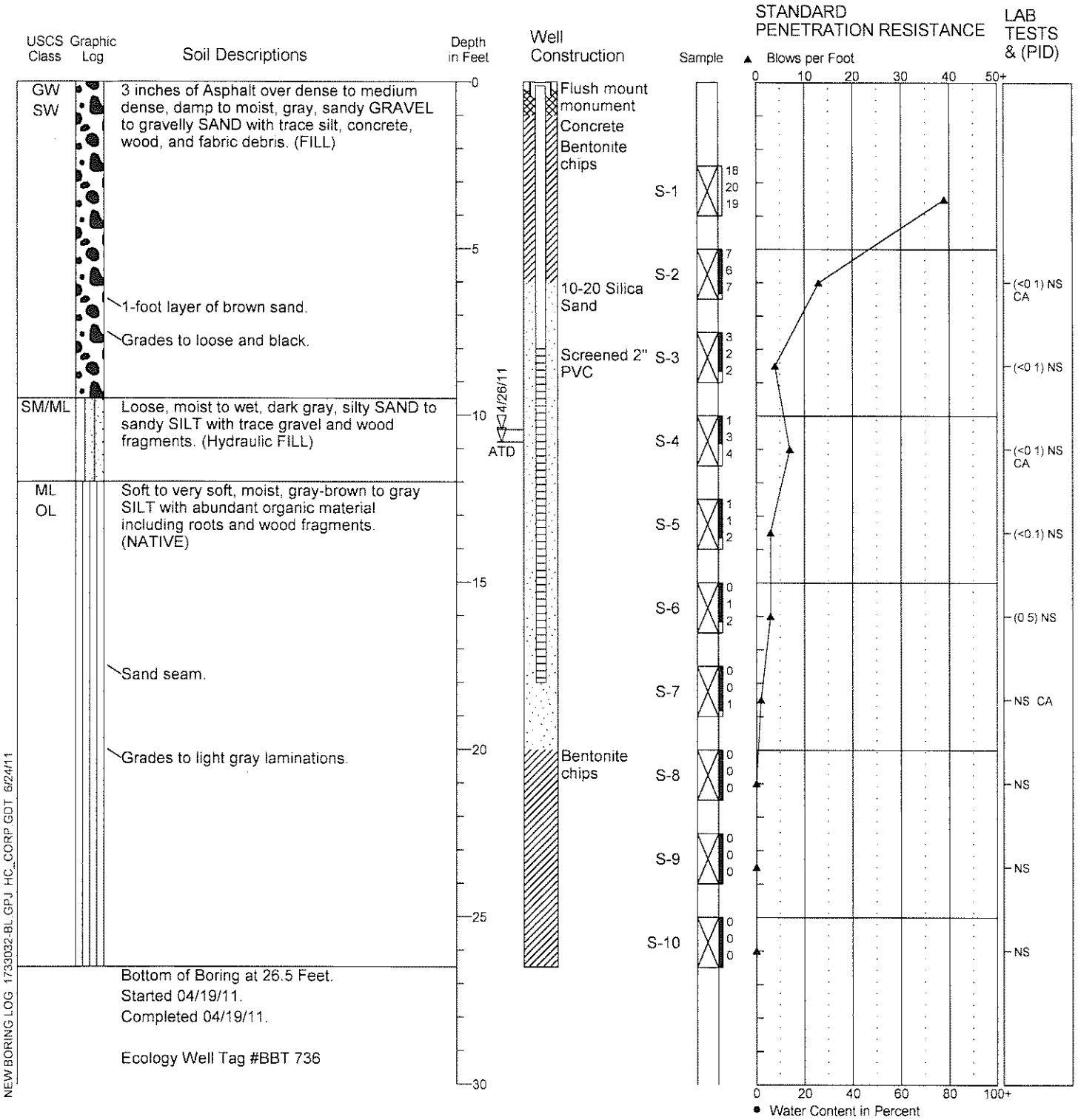
17330-32 4/11

Figure A-6

Boring Log & Construction Data for Monitoring Well MW-6

Location: N 209107.34 E 1267906.21
Approximate Ground Surface Elevation: 19.39 Feet
Horizontal Datum: NAD83/2007
Vertical Datum: NAVD88

Drill Equipment: Hollow Stem Auger
Hammer Type: SPT w/140 lb. hammer
Hole Diameter: 10 inches
Logged By: B. Payne/P. Cordell Reviewed By: A. Goodwin



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. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.
5. NS = No Sheen

HARTCROWSER

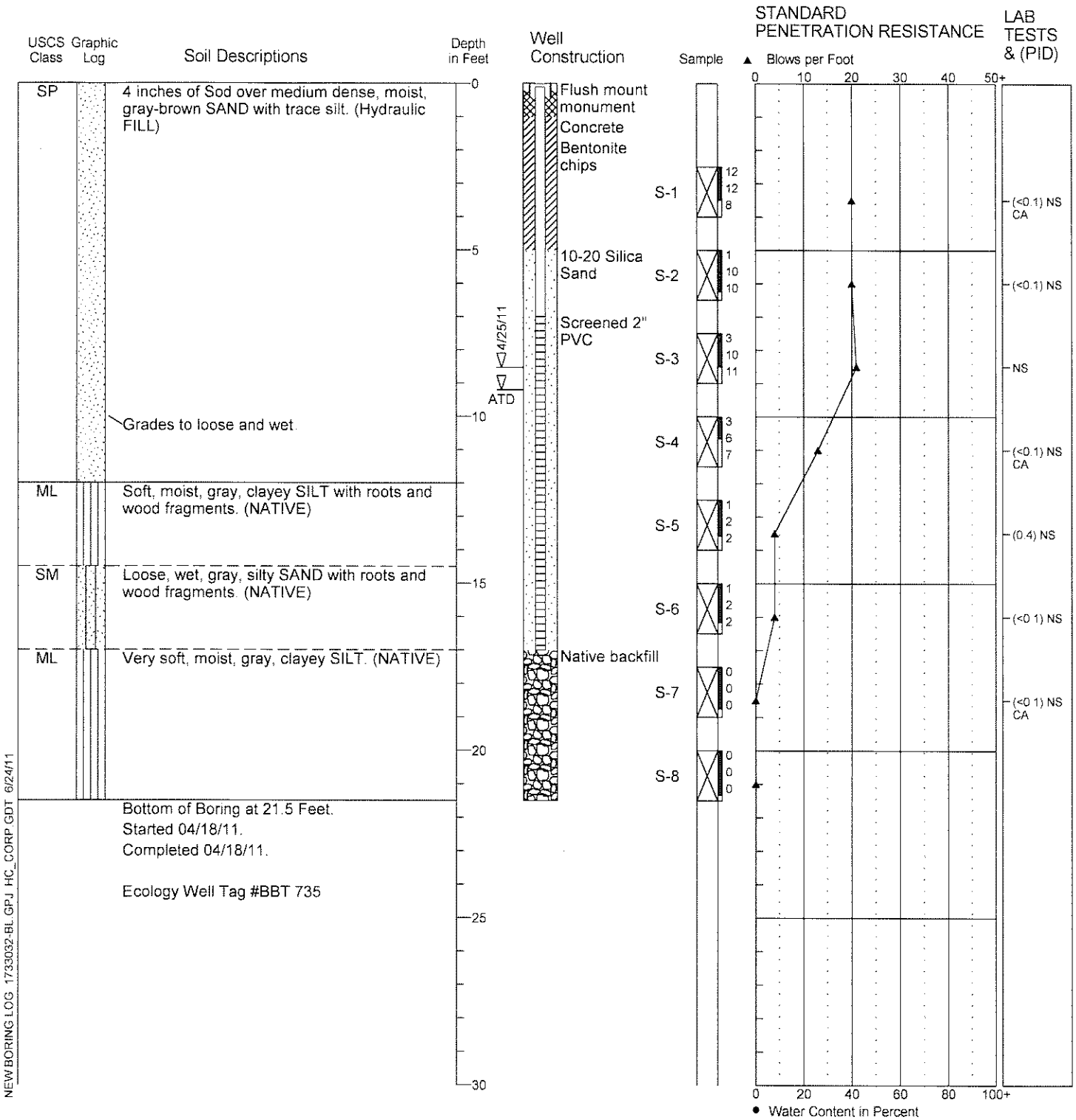
17330-32 *4/11*

Figure A-7

Boring Log & Construction Data for Monitoring Well MW-7

Location: N 209137.25 E 1268290.15
Approximate Ground Surface Elevation: 18.70 Feet
Horizontal Datum: NAD83/2007
Vertical Datum: NAVD88

Drill Equipment: Hollow Stem Auger
Hammer Type: SPT w/140 lb. hammer
Hole Diameter: 10 inches
Logged By: B. Payne Reviewed By: A. Goodwin



NEW BORING LOG 1733032-BL.GPJ HC_CORP.GDT 6/24/11

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. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.
5. NS = No Sheen

HARTCROWSER

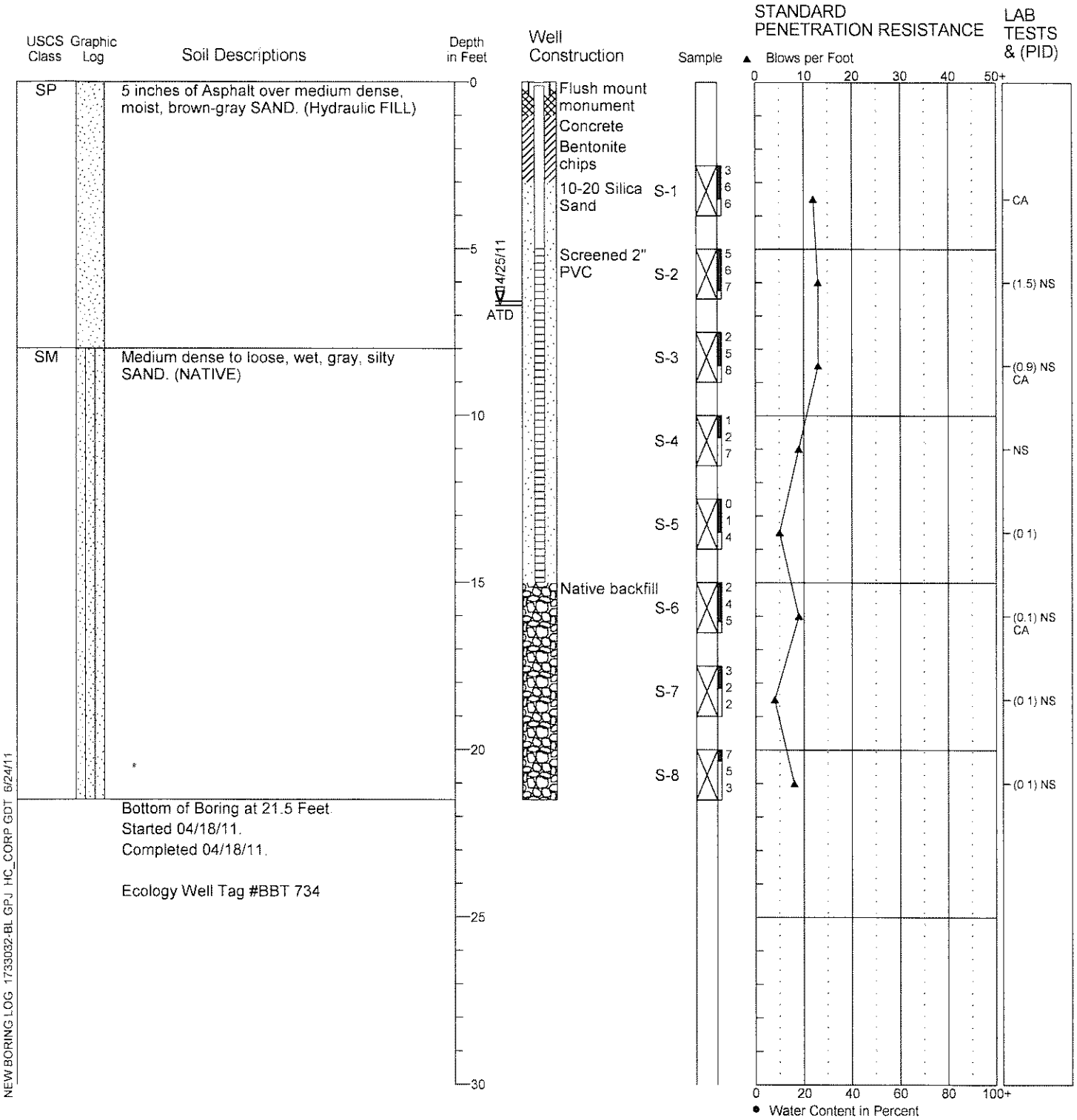
17330-32 4/11

Figure A-8

Boring Log & Construction Data for Monitoring Well MW-8

Location: N 209125.88 E 1268492.75
Approximate Ground Surface Elevation: 14.83 Feet
Horizontal Datum: NAD83/2007
Vertical Datum: NAVD88

Drill Equipment: Hollow Stem Auger
Hammer Type: SPT w/140 lb. hammer
Hole Diameter: 10 inches
Logged By: B. Payne/P. Cordell Reviewed By: A. Goodwin



NEW BORING LOG 1733032-BL.GPJ HC_CORP.GDT 6/24/11

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. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.
5. NS = No Sheen

HARTCROWSER

17330-32 4/11

Figure A-9

This page is intentionally left blank
for double-sided printing.

APPENDIX B
CHEMICAL DATA QUALITY REVIEW AND LABORATORY REPORTS

APPENDIX B
CHEMICAL DATA QUALITY REVIEW AND LABORATORY REPORTS

Chemical Data Quality Review for Upland and Catch Basin Soil Samples

Twenty-eight soil samples were collected from April 18 to April 21, 2011. The samples were submitted to Analytical Resources, Inc. (ARI), in Tukwila, Washington for analysis. The sample results were reported as ARI Job Nos. SS56 and ST05.

Quality assurance/quality control (QA/QC) reviews of laboratory procedures were performed on an ongoing basis by the laboratory. Hart Crowser reviewed the data, using laboratory quality control results summary sheets and raw data, as required, to ensure they met data quality objectives for the project. Data review followed the format outlined in the National Functional Guidelines for Organic Superfund Data Review (EPA 2008), National Functional Guidelines for Inorganic Superfund Data Review (EPA 2010), and the National Functional Guidelines for Chlorinated Dioxin/Furan Data Review (EPA 2005) modified to include specific criteria of the individual analytical methods. The following criteria were evaluated in the standard data quality review process:

- Holding times;
- Method blanks;
- Surrogate recoveries;
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries;
- Laboratory duplicate relative percent differences (RPDs);
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recoveries;
- Labeled compound recoveries;
- Ongoing precision and accuracy sample recoveries (OPR);
- Laboratory replicate relative standard deviation (RSD);
- Internal Standard recoveries;
- Calibration criteria (where applicable); and
- Reporting limits (RL).

The data were determined to be acceptable for use, as qualified. Full laboratory results are presented at the end of this appendix. Results of the data reviews, organized by analysis class, follow.

Sample Receiving Discrepancies

For ARI Job Nos. SS56 and ST05, 1,4-dioxane was not listed on the chain of custody (COC). Notes on the COC stated that the laboratory was to follow the Sampling and Analysis Plan (SAP), which listed 1,4-dioxane as a target analyte. The laboratory analyzed the associated samples MW-2-S2, MW-2-S3, MW-2-S6, MW-8-S1, MW-8-S3, MW-8-S6, MW-7-S1, MW-7-S4, MW-7-S7, MW1-S2, MW1-S3, MW1-S7, MW3-S7, CB-2, CB-3, CB-4, MW-4-S2, MW-4-S3, MW-4-S7, MW-5-S2, MW-5-S5, MW-5-S8, MW-6-S2, MW-6-S4, MW-6-S7, CB-1, MW-3-S2, and MW-3-S3 for 1,4-dioxane.

For ARI Job No. SS56, the laboratory inadvertently did not analyze the trip blank for VOCs.

For ARI Job No. ST05, the second page of the COC did not list collection dates or number of containers. Sample collection dates were identified from sample bottles for MW1-S2, MW1-S3, MW1-S7, MW3-S7, CB-2, CB-3, CB-4, and TB-3.

For ARI Job No. ST05, pea-sized bubbles were present in all seven VOA vials submitted for the trip blank (TB-3). The trip blank was prepared by the laboratory. No sample results were qualified.

For ARI Job No. ST05, receiving temperatures for two coolers fell below 2°C. Soil samples received at the laboratory were frozen to extend holding times, and no sample results were qualified.

Conventionals

Total Solids

Analytical Methods

Total solids were determined by modified EPA Method 160.3.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits were acceptable.

Blank Contamination

There was no method blank contamination.

Laboratory Replicate Sample Analysis

The relative standard deviation between replicate measurements met quality control limits.

Total Organic Carbon

Analytical Methods

Total organic carbon was determined by modified EPA Method 9060.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits were acceptable.

Blank Contamination

There was no method blank contamination.

Laboratory Control Sample (LCS)

The LCS was within laboratory control limits.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries

The MS/MSD recoveries were within laboratory control limits.

Standard Reference Material (SRM) Recovery

SRM recoveries were within quality control limits.

Laboratory Replicate Sample Analysis

The relative standard deviation between replicate measurements met quality control limits.

Initial Calibration Curves and Continuing Calibration Verification Checks (CCVs)

The initial calibration curves and CCVs were within acceptance criteria.

Petroleum Hydrocarbons

Gasoline-Range Hydrocarbons

Analytical Methods

The samples were analyzed by gas chromatography with a flame ionization detector (GC/FID) following the NWTPH-Gx method.

Sample Holding Times

The samples were prepared and analyzed within holding time limits.

Laboratory Detection Limits

Reported detection limits and analytical results were adjusted for moisture content and any required dilution factors.

Blank Contamination

There was no method or trip blank contamination.

Surrogate Recovery

Surrogate recoveries were within laboratory control limits.

Laboratory Control Samples (LCS)

LCS/LCSD recoveries were within laboratory control limits.

Initial Calibration Curves and Continuing Calibration Verification Checks (CCVs)

The initial calibration curves and CCVs were within acceptance criteria.

Diesel- and Motor Oil-Range Hydrocarbons

Analytical Methods

Soil samples were prepared by EPA Method 3546 (microwave) and the extracts were acid and silica gel cleaned. The samples were analyzed by GC/FID following the NWTPH-Dx method.

Sample Holding Times

The samples were prepared and analyzed within holding time limits.

Laboratory Detection Limits

Reported detection limits and analytical results were adjusted for moisture content and any required dilution factors.

Blank Contamination

There was no method blank contamination.

Surrogate Recovery

Surrogate recoveries were within laboratory control limits.

Laboratory Control Samples (LCS) and Duplicates (LCSD)

LCS and LSCD recoveries were within laboratory control limits.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recovery

MS and MSD recoveries were within laboratory control limits.

Initial Calibration Curves and Continuing Calibration Verification Checks (CCVs)

The initial calibration curves and CCVs were within acceptance criteria with the following exceptions:

- CCV 04/26/11 at 1040: The recovery for motor oil exceeded the control limits. The associated samples, CB-2, CB-3, and CB-4, were reanalyzed on April 28, 2011 with passing CCVs, and no results were qualified.

- CCV 04/27/11 at 0301: The surrogate n-Triacontane exceeded the control limits. The surrogate was not reported in the associated samples, and the sample results were not qualified.

Metals

Arsenic, Cadmium, Chromium, Copper, Lead, Silver, and Zinc

Analytical Methods

Soil samples for mercury were prepared and analyzed following EPA Method 7471A. Soil samples for arsenic, cadmium, chromium, copper, lead, silver, and zinc were analyzed following EPA Method 6010B.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits and analytical results were adjusted for moisture content and any required dilution factors.

Blank Contamination

There was no method blank contamination.

Laboratory Control Samples (LCS)

LCS recoveries were within method control limits.

Matrix Spike and Matrix Spike Duplicate Recoveries

The MS/MSD recoveries were within method control limits.

Laboratory Duplicate Sample Analysis

The relative percent differences (RPDs) between replicate measurements met quality control limits or were not applicable if the sample and duplicate were less than five times the reporting limit with the following exception:

- MW-2-S2 Dup: The RPD for chromium exceeds 20 percent. Results for chromium in the source sample MW-2-S2 were qualified as estimated (J).

- MW-4-S2 Dup: The RPD for lead exceeds 20 percent. Results for lead in the source sample MW-4-S2 were qualified as estimated (J).

Initial Calibration Curves (ICAL) and Continuing Calibration Verification Checks (CCVs)

The ICAL and CCVs were within acceptance criteria.

Volatile Organic Compounds

Volatile Organic Compounds (VOCs)

Analytical Methods

The samples were prepared by EPA Method 5035 (methanol). The samples were analyzed by gas chromatograph fitted with a mass spectrometer (GC/MS) following EPA Method 8260C.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits were generally acceptable. Some analyte reporting limits did not meet the practical quantitation limit in the Sampling and Analysis Plan.

- CB-1: The analytes toluene and 4-Isopropylbenzene were over-range at the instrument and flagged as "ES" and "E" by the laboratory. The samples were diluted and reanalyzed and toluene was reported from the reanalysis. The analyte 4-isopropyltoluene was non-detect in the diluted result for CB-1, and was reported from the initial analysis and qualified as estimated (J). The laboratory did not reanalyze the sample at the appropriate dilution for 4-isopropylbenzene due to the high levels of toluene present.

- CB-2: The analyte toluene was over-range at the instrument and flagged as "ES" by the laboratory. The sample was diluted and reanalyzed and toluene was reported from the reanalysis.

- CB-3: The analyte toluene was over-range at the instrument and flagged as "ES" by the laboratory. The sample was diluted and reanalyzed and toluene was reported from the reanalysis.

Blank Contamination

There was no method blank (MB) or trip blank (TB) contamination with the following exception:

- MB-042511 analyzed at 22:22: The MB contained methylene chloride ($MeCl_2$) above the reporting limit. The associated samples (MW-8-S6, MW-7-S1, MW-7-S4, and MW-7-S7) were flagged with a "B" by the laboratory. The levels of $MeCl_2$ in the samples were less than five times the amount in the MB, and were qualified as non-detect. The "B" qualifier was changed to "U."

The TB associated with ARI Job No. SS56 was not analyzed due to laboratory error.

Surrogate Recoveries

Surrogate recoveries are within laboratory control limits with the following exceptions:

- CB-1: The recovery of the surrogate d8-toluene fell below the control limits. The sample was reanalyzed at a dilution for toluene and 4-isopropyltoluene with all surrogate recoveries within control. Sample results were not qualified.

- CB-4: The surrogates d4-1,2-dichloroethane recovered high and d8-toluene recovered low for the initial analysis. The sample was reanalyzed due to internal standard (IS) failures and the surrogate d8-toluene was still below control limits. The sample results were reported from the reanalysis and qualified due to IS failures.

Laboratory Control Sample (LCS) and Duplicate (LCSD)

The LCS and LCSD were within laboratory control limits for the analytes of interest with the following exceptions:

- LCS/LCSD 04/27/11: The recoveries for trans-1,2-dichloroethene and tert-butylbenzene fell below the control limits in the LCS, but were within control for the LCSD. The RPDs for trichlorofluoromethane, 1,1,2-trichloro-1,2,2-trifluoroethane, and n-butylbenzene exceeded the 30 percent control limit. As the LCSD was within control and spike recoveries for trichlorofluoromethane, 1,1,2-trichloro-1,2,2-trifluoroethane, and n-butylbenzene were within control, the samples were not qualified.

- LCS/LCSD 04/28/11: The recoveries for bromomethane in the LCS and LCSD exceeded the control limits. Bromomethane was non-detect in the associated samples and, therefore, not qualified.

- LCS/LCSD 04/28/11: The recovery for naphthalene in the LCS fell below control limits, but was within control in the LCSD. The associated sample results were not qualified.

- LCS/LCSD 05/3/11: The recoveries for chloroethane and iodomethane in the LCS fell below the control limits, while the recoveries were within control in the LCSD. The recoveries for naphthalene in the LCS and LCSD fell below the control limits. The analyte acrolein was not reported for the LCS or LCSD, as the recoveries were below the reporting limit. Only toluene was reported from the associated sample, CB-1 reanalysis, and no results were qualified.

Internal Standards

Internal standards (IS) were within acceptance criteria with the following exceptions:

- CB-1: The recoveries of the IS d5-chlorobenzene and d4-1,4-dichlorobenzene fell below the acceptance criteria for the initial analysis. The sample was reanalyzed at dilution with all IS within acceptance criteria, but only toluene was reported from the reanalysis. A low bias in the IS results in a high bias in the associated analytes. Sample results for all compounds except toluene were reported from the initial analysis. The associated detected compounds (ethylbenzene, m,p-xylene, o-xylene, isopropyl benzene, p-isopropyltoluene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene) were qualified as estimated (J).

- CB-4: The recoveries of the IS d5-chlorobenzene and d4-1,4-dichlorobenzene fell below acceptance criteria for the initial analysis of CB-4. The sample was reanalyzed with the same IS failing. A low bias in the IS results in a high bias in the associated analytes. Sample results were reported from the CB-4 reanalysis, and the associated detected compounds (ethylbenzene, m,p-xylene, o-xylene, sec-butylbenzene, isopropyl benzene, p-isopropyltoluene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene) were qualified as estimated (J).

Initial Calibration Curves (ICAL) and Continuing Calibration Verification Checks (CCVs)

The ICAL was within method acceptance criteria. The CCVs were within control limits with the following exceptions:

- CCV 04/25/11 at 09:57: The recoveries for bromomethane, iodomethane, and 2-chloroethyl vinyl ether exceeded the control limits, while the recovery for methyl tert-butyl ether (MTBE) fell below the control limits. Results for bromomethane, iodomethane, and 2-chloroethyl vinyl ether were not qualified in the associated samples (MW-2-S2, MW-2-S3, MW-2-S6, MW-8-S1, and MW-8-S3) as the bias was high and samples were non-detect for those analytes. Results for MTBE were qualified as estimated (J) in the associated samples (MW-2-S2, MW-2-S3, MW-2-S6, MW-8-S1, and MW-8-S3) due to the low bias.

- CCV 04/25/11 at 20:19: The recovery for 2-chloroethyl vinyl ether exceeded the control limits, while the recovery for MTBE fell below the control limits. All associated samples (MW-8-S6, MW-7-S1, MW-7-S4, and MW-7-S7) were non-detect for 2-chloroethyl vinyl ether and MTBE. Results for MTBE were qualified as estimated (J) in the associated samples due to the low bias. Results for 2-chloroethyl vinyl ether were not qualified as the bias was high.

- CCV 04/27/11 at 0927: The recovery for 2-chloroethyl vinyl ether exceeded the control limit, while the recovery for MTBE fell below the control limit. All associated samples (MW1-S2, MW1-S3, MW1-S7, MW3-S7, CB-1, CB-2, CB-3, MW-4-S2, MW-4-S3, MW-4-S7, MW-5-S2, MW-5-S5, MW-5-S8, MW-6-S2, MW-6-S4, MW-6-S7, MW-3-S2, and MW-3-S3) were non-detect for 2-chloroethyl vinyl ether and MTBE. Results for MTBE were qualified as estimated (J) in the associated samples because of the low bias. Results for 2-chloroethyl vinyl ether were not qualified as the bias was high.

- CCV 04/28/11 at 0912: The recovery for 2-chloroethyl vinyl ether, bromomethane, and iodomethane exceeded the control limit, while the recovery for MTBE fell below the control limit. The associated samples (CB-4 and CB-4 Reanalysis) were non-detect for MTBE, bromomethane, iodomethane, and 2-chloroethyl vinyl ether. Sample results were reported from CB-4 Reanalysis. Results for MTBE were qualified as estimated (J) due to the low bias. Results for bromomethane, iodomethane, and 2-chloroethyl vinyl ether were not qualified as the bias was high.

- CCV 04/28/11 at 1118: The recovery for iodomethane and naphthalene fell below the control limits. The associated samples (TB-3, CB-2 Reanalysis, and CB-3 Reanalysis) were non-detect for iodomethane and naphthalene. Toluene only was reported for CB-2 Reanalysis and CB-3 Reanalysis. Results for iodomethane and naphthalene were qualified as estimated (J) in TB-3 due to the low bias.

- CCV 05/3/11 at 1205: The recovery for naphthalene fell below the control limits. Only toluene was reported for the associated sample, CB-1 Reanalysis.

Semivolatile Organic Compounds (SVOCs)

Semivolatile Organic Compounds (SVOCs)

Analytical Methods

The samples were extracted by EPA Method 3546 (microwave) following PSEP modifications to attain lower reporting limits. The samples were analyzed by GC/MS following EPA Method 8270D.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits and analytical results were adjusted for moisture content and any required dilution factors. Sample results between the method detection limit and the reporting limit were qualified by the laboratory as estimated (J). The "J" qualifiers were changed to "T" to be consistent with Ecology's Environmental Information Management (EIM) database.

Samples CB-3 and CB-4 were analyzed at three-fold dilutions due to high levels of target analytes. Sample CB-2 was analyzed at three-fold and six-fold dilutions due to high levels of target analytes. The analyte 4-methylphenol was reported from the six-fold dilution in CB-2. The reporting limits were raised due to the dilutions.

Blank Contamination

There was no method blank (MB) contamination with the following exceptions:

- MB-042711: The MB had a detection for bis(2-ethylhexyl)phthalate slightly above the reporting limit. The associated samples (MW-2-S2, MW-2-S3, MW-2-S6, MW-8-S3, MW-7-S1, MW-7-S4, and MW-7-S7) were qualified by the laboratory with "B." The concentrations of bis(2-Ethylhexyl)phthalate in the associated samples were less than five times the concentration in the MB, and the results were qualified as non-detect. The "B" qualifier was changed to "U."

- MB-050211: The MB had a detection for bis(2-ethylhexyl)phthalate below the reporting limit and di-n-butylphthalate above the reporting limit. Detections for those analytes in the associated samples (MW1-S2, MW1-S3, MW1-S7, MW3-S7, CB-2, CB-3, CB-4, MW-4-S2, MW-4-S3, MW-4-S7, MW-5-S2, MW-5-S5, MW-5-S8, MW-6-S2, MW-6-S4, MW-6-S7, CB-1, MW-3-S2, and MW-3-S3) were qualified by the laboratory with "B." Samples that were non-detect for those analytes were not qualified. Results for bis(2-ethylhexyl)phthalate and di-n-butylphthalate in samples that were less than five times the amount in the MB were qualified as non-detect and the "B" qualifier changed to "U" (bis(2-ethylhexyl)phthalate in samples MW-5-S2, MW-6-S4, MW-6-S7, and MW3-S7; di-n-butylphthalate in samples MW-6-S4, MW-6-S7, CB-1, MW-3-S2, MW-3-S3, MW1-S2, MW1-S3, MW1-S7, MW3-S7, CB-2, CB-3, and CB-4). Samples that had detections below the RL for bis(2-ethylhexyl)phthalate had the result raised to the RL and qualified as non-detect (U) (sample MW1-S7). Samples that had detections greater than five times the amount in the MB had the "B" qualifier removed (bis(2-ethylhexyl)phthalate in samples CB-1, MW1-S2, CB-2, CB-3, and CB-4).

Surrogate Recoveries

Surrogate recoveries are within laboratory control limits.

Laboratory Control Samples (LCS) and Duplicates (LCSD)

LCS and LCSD recoveries were within default laboratory control limits for the analytes of interest.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries

The MS/MSD recoveries were within default laboratory control limits.

Internal Standard

Internal standards were within acceptance criteria.

Initial Calibration Curves (ICAL) and Continuing Calibration Verification Checks (CCVs)

The ICAL was within acceptance criteria. The CCVs were within control limits with the following exceptions:

- CCV 05/02/11 at 12:17: The recoveries for 1,2,4-trichlorobenzene, pyrene, and 3,3′-dichlorobenzidine exceeded the control limits, while the recoveries for hexachlorocyclopentadiene, 2,4-dinitrophenol, pentachlorophenol (PCP), and benzidine fell below the control limits. Analytes 2,4-dinitrophenol, 3,3′-dichlorobenzidine, hexachlorocyclopentadiene, and benzidine were not target analytes, and sample results were not qualified. Results for 1,2,4-trichlorobenzene and pyrene in the associated samples MW-2-S2 and MW-2-S6 were non-detect and not qualified. Sample MW-2-S3 was non-detect for 1,2,4-trichlorobenzene and had a detection for pyrene. Results for 1,2,4-trichlorobenzene were not qualified, while pyrene was qualified as estimated (J). Results for PCP in the associated samples (MW-2-S2, MW-2-S3, and MW-2-S6) were qualified as estimated (J) due to the low bias.

- CCV 05/03/11 at 10:57: The recoveries for butylbenzylphthalate, 3,3′-dichlorobenzidine, indeno(1,2,3-cd)pyrene, and dibenzo(a,h)anthracene exceeded the control limits, while the recoveries for hexachlorocyclopentadiene, 2,4-dinitrophenol, PCP, and benzidine fell below the control limits. Analytes hexachlorocyclopentadiene, 2,4-ditnitrophenol, 3,3′-dichlorobenzidine, and benzidine were not target analytes, and sample results were not qualified. Results for butylbenzylphthalate, indeno(1,2,3-cd)pyrene, and dibenzo(a,h)anthracene in the associated samples MW-8-S1, MW-8-S6, MW-7-S1, MW-7-S4, and MW-7-S7 were non-detect and not qualified. Sample MW-8-S3 had a detection for indeno(1,2,3-cd)pyrene and was qualified by the laboratory incorrectly with a “B” flag, rather than “Q” flag. The “B” qualifier was changed to “J.” Results for PCP in the associated samples (MW-8-S1, MW-8-S3, MW-8-S6, MW-7-S1, MW-7-S4, and MW-7-S7) were qualified as estimated (J) due to the low bias.

- CCV 05/07/11: The recoveries for 1,3-dichlorobenzene and butylbenzylphthalate exceeded the control limits, while the recovery for PCP fell below the control limits. Results for 1,3-dichlorobenzene and butylbenzylphthalate in the associated samples (MW-4-S2, MW-4-S3, MW-4-S7, MW-5-S2, MW-5-S5, MW-5-S8, MW-6-S2, MW-6-S4, MW-6-S7, MW-3-S2, MW-3-S3, and MW1-S2) were non-detect in associated samples and not qualified. Sample CB-1 had a detection for butylbenzylphthalate, and was qualified by the laboratory with “Q.” The “Q” qualifier was changed to “J.”

Results for PCP in the associated samples (MW-4-S2, MW-4-S3, MW-4-S7, MW-5-S2, MW-5-S5, MW-5-S8, MW-6-S2, MW-6-S4, MW-6-S7, CB-1, MW-3-S2, MW-3-S3, and MW1-S2) were qualified as estimated (J) due to low bias.

- CCV 05/09/11: The recoveries for 1,4-dichlorobenzene, 2,4-dichlorophenol, 2-nitroaniline, 4-nitrophenol, and butylbenzylphthalate exceeded the control limits, while the recoveries for 4-nitroaniline, PCP, and benzidine fell below the control limits. Analytes 2,4-dichlorophenol, 2-nitroaniline, 4-nitrophenol, 4-nitroaniline, and benzidine were not target analytes. The associated sample, MW1-S3, was non-detect for 1,4-dichlorobenzene and butylbenzylphthalate, and not qualified. PCP was qualified as estimated (J) in the sample due to the low bias.

- CCV 05/11/11: The recoveries for nitrobenzene, 2-nitroaniline, 2,6-dinitrotoluene, 4-nitrophenol, chrysene, benzidine, azobenzene, and surrogates nitrobenzene-d5 and 2,4,6-tribromophenol exceeded the control limits; while the recoveries for benzyl alcohol, 2,4-dinitrophenol, PCP, phenanthrene, butylbenzylphthalate, and 3,3'-dichlorobenzidine fell below the control limits. Analytes nitrobenzene, 2-nitroaniline, 2,6-dinitrotoluene, 4-nitrophenol, benzidine, azobenzene, 2,4-dinitrophenol, and 3,3'-dichlorobenzidine were not target analytes. Detections for target analytes chrysene, benzyl alcohol, PCP, phenanthrene, and butylbenzylphthalate above the reporting limit in the associated samples (MW1-S7, MW3-S7, CB-2, CB-3, and CB-4) were qualified by the laboratory with "Q." The results for benzyl alcohol, PCP, phenanthrene, and butylbenzylphthalate were qualified as estimated (J) in the associated samples due to the low bias. The detections for chrysene in the associated samples were qualified as estimated (J). The "Q" qualifiers were changed to "J."

- CCV 05/12/11: The recoveries for 2-chlorophenol, 2-methylphenol, hexachloroethane, N-nitroso-di-n-propylamine, nitrobenzene, isophorone, 2-nitrophenol, 2,4-dimethylphenol, 2,4-dichlorophenol, 1,2,4-trichlorobenzene, 2-nitroaniline, 4-nitrophenol, di-n-butylphthalate, butylbenzylphthalate, benzidine, and azobenzene exceeded the control limits, while the recoveries for hexachlorocyclopentadiene, 2,4-dinitrophenol, 4,6-dinitro-2-methylphenol, PCP, and benzo(a)pyrene fell below the control limits. Only 4-methylphenol was reported for the associated sample, CB-2 Reanalysis, and no results were qualified.

Polycyclic aromatic hydrocarbons (PAHs)

Analytical Methods

The samples were extracted by EPA Method 3546 (microwave). The samples were analyzed by GC/MS with selected ion monitoring (SIM) following EPA Method SW8270D-SIM.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits and analytical results were adjusted for moisture content and any required dilution factors.

- MW-6-S4: The analyte pyrene was over-range at the instrument and flagged as "E" by the laboratory. The sample was diluted and reanalyzed and pyrene was reported from the reanalysis.

Blank Contamination

There was no method blank contamination.

Surrogate Recoveries

Surrogate recoveries are within laboratory control limits with the following exception:

- MW-7-S7: The recovery for the surrogate d10-2-methylnaphthalene fell below the control limits. The remaining surrogate was within control and the results were not qualified.

Laboratory Control Samples (LCS) and Duplicates (LCSD)

The LCS and LCSD recoveries were within laboratory control limits with the following exception:

- LCS/LCSD 050211: The RPDs for indeno(123-cd)pyrene, dibenz(ah)anthracene, and benzo(ghi)perylene exceeded the control limits. As the recoveries were within control, associated sample results were not qualified.

Matrix Spike and Matrix Spike Duplicate Recoveries

The MS/MSD recoveries were within laboratory control limits.

Internal Standards

Internal standards were within acceptance criteria.

Initial Calibration Curves (ICAL) and Continuing Calibration Verification Checks (CCVs)

ICAL and CCVs met acceptance criteria.

1,4-Dioxane

Analytical Methods

The samples were extracted by EPA Method 3550C (sonication). The samples were analyzed by GC/MS following EPA Method 8270D.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits and analytical results were adjusted for moisture content and any required dilution factors. Samples CB-1, CB-2, CB-3, and CB-4 were diluted three-fold due to matrix interferences and the reporting limits were adjusted accordingly.

Blank Contamination

There was no method blank contamination.

Surrogate Recoveries

Surrogate recoveries are within default laboratory control limits with the following exceptions:

- Samples MW-5-S2, MW-5-S5, MW-5-S8, MW-6-S2, MW-6-S4, and MW1-S7: The recoveries of the surrogate fell below the default control limits of 30 to 160 percent. The samples were qualified as estimated (J).

Laboratory Control Samples (LCS) and Duplicates (LCSD)

LCS and LCSD recoveries were within default laboratory control limits.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries

The MS/MSD recoveries were within default laboratory control limits with the following exception:

- MW-3-S2 MS/MSD: The recovery for 1,4-dioxane fell below the default control limits in the MS, and fell within the control limits in the MSD. The LCS/LCSD recoveries were within control, indicating a matrix effect. Results for 1,4-dioxane were qualified as estimated (J) in source sample MW-3-S2.

Internal Standards

Internal standards were within acceptance criteria.

Initial Calibration Curves (ICAL) and Continuing Calibration Verification Checks (CCVs)

The ICAL and CCVs were within acceptance criteria.

Polychlorinated Biphenyls (PCBs)

Analytical Methods

The samples were extracted by EPA Method 3546 (microwave) following PSEP modifications to attain lower reporting limits, and the extracts were acid, sulfur, and silica gel cleaned. The samples were analyzed by GC fitted with an Electron Capture Detector (ECD) following EPA Method 8082.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits were acceptable with the following exceptions:

- CB-1: The sample was analyzed at a 50-fold dilution due to high levels of target analytes, and reporting limits were raised due to the dilution.

- MW-5-S2, MW-5-S5, MW-6-S2, MW-6-S4, CB-1, CB-2, CB-3, and CB-4: The reporting limit was raised due to chromatographic interferences for multiple analytes. The laboratory qualified the analytes with "Y." The "Y" qualifier was changed to "U."

Blank Contamination

There was no method blank contamination.

Surrogate Recoveries

Surrogate recoveries were within laboratory control limits.

Laboratory Control Samples (LCS) and Duplicates

LCS and LCSD recoveries were within laboratory control limits.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries

The MS/MSD recoveries were within laboratory control limits.

Internal Standards

Internal standards were within acceptance criteria.

Initial Calibration Curves (ICAL) and Continuing Calibration Verification Checks (CCVs)

The ICAL was within acceptance criteria. The CCVs were within control limits.

Polybrominated diphenyl ethers (PBDEs)

Analytical Methods

The samples were extracted by EPA Method 3546 (microwave) and the extracts were silica gel cleaned. The samples were analyzed by GC/ECD following EPA Method 8082.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits were acceptable with the following exceptions:

- MW-5-S2: The sample was analyzed undiluted and at a ten-fold dilution. The reporting limits were raised due to the dilution.

- CB-1 and CB-3: The samples were analyzed at a five-fold and a 50-fold dilution. The reporting limits were raised due to the dilutions.

- CB-2: The sample was analyzed at a ten-fold dilution. The reporting limits were raised due to the dilution.

- CB-4: The sample was analyzed at a five-fold dilution. The reporting limits were raised due to the dilution.

- MW-5-S2, MW-6-S2, CB-1, and CB-3: The reporting limit was raised due to chromatographic interferences for multiple analytes. The laboratory qualified the analytes with "Y." The "Y" qualifier was changed to "U."

Blank Contamination

There was no method blank contamination.

Surrogate Recoveries

Surrogate recoveries are within default laboratory control limits with the following exceptions:

- MW-5-S2: The recovery of the surrogate PCB-195 fell below the control limits. The sample was reanalyzed at dilution due to internal standard failures and the recovery fell within control limits. The results are reported from the reanalysis.

- CB-1 and CB-3 50-fold dilutions: The recoveries for the surrogate were not reported due to the dilution. The five-fold dilutions had surrogate recoveries in control. No sample results were qualified.

Laboratory Control Samples (LCS) and Duplicates (LCSD)

LCS and LCSD recoveries were within default laboratory control limits.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries

The MS/MSD recoveries were within default laboratory control limits with the following exception:

- MW-8-S1 MS/MSD: The RPD for the analyte PBDE-99 exceeded the control limits. The source sample was non-detect for that analyte and results were not qualified.

Internal Standards

Internal standards (IS) were within acceptance criteria with the following exception:

- MW-5-S2: The recovery for the IS pentachlorobiphenyl exceeded the acceptance criteria on both chromatographic columns. The sample was reanalyzed at a dilution with passing IS and, therefore, the results were reported from the reanalysis.

- CB-1 and CB-3: The recoveries for the IS pentachlorobiphenyl fell below the acceptance criteria on the ZB-5 column for the 5-fold dilutions. The samples were reanalyzed at 50-fold dilution with internal standards in control on both columns. The results for CB-1 and CB-3 were reported from the 50-fold dilutions, as results were not confirmed on the second column for the 5-fold dilution analysis.

Initial Calibration Curves (ICAL) and Continuing Calibration Verification Checks (CCVs)

The ICAL and CCVs were within acceptance criteria with the following exceptions:

- Closing CCV 05/01/11 at 2201: The recovery for PBDE-190 fell below the control limits on the ZB-35 column, but fell within control limits on the ZB-5 column. As the associated samples were analyzed by the internal standard (IS) method, the CCV was not used.

- Closing CCV 05/10/11 at 1757: The recovery for PBDE-183 exceeded the control limit on the ZB-35 column, but fell within the control limit on the ZB-5 column. As the associated samples were analyzed by the IS method, the CCV was not used.

Dioxins/Furans by EPA 1613B

Analytical Methods

Dioxins/furans were prepared and analyzed by EPA Method 1613B.

Sample Holding Times

The samples were prepared and analyzed within holding time limits.

Laboratory Detection Limits

Reported detection limits and analytical results were adjusted for moisture content and any required dilution factors. Detections that fell between the RL and the Estimated Detection Limit (EDL) were qualified by the laboratory were qualified by the laboratory as estimated (J). J qualifiers were changed to T to be consistent with Ecology's Environmental Information Management (EIM) database.

Blank Contamination

The method blanks had detections for multiple analytes between the EDL and the RL. The laboratory qualified detections below the RL in the associated samples with B. Method blank results that did not meet ion ratio criteria (qualified as EMPC) were qualified as non-detected (U). The detections in the associated samples were evaluated and results modified as follows:

- MB-042011: The method blank had detections between the EDL and RL that met ion criteria for:
  - 1,2,3,4,6,7,8-HpCDF – 0.0880 ng/kg
  - OCDD – 0.440 ng/kg
  - Total TCDD – 0.100 ng/kg
  - Total PeCDD – 0.140 ng/kg
  - Total HxCDF – 0.0440 ng/kg
  - Total HpCDF – 0.0880 ng/kg

Results for those analytes in the associated samples that fell between the EDL and the RL were qualified as non-detected (U) at the value reported by the laboratory.

- MW-2-S2: 1,2,3,4,6,7,8-HpCDF, Total TCDD, total PeCDD, and total HxCDF
- MW-8-S1: 1,2,3,4,6,7,8-HpCDF and Total HxCDF

Results for those analytes in associated samples with detections above the RL and greater than five times the amount in the method blank (ten times for OCDD and OCDF) were not qualified and had the B qualifier removed (if present):

- MW-2-S2: OCDD and Total HpCDF
- MW-8-S1: OCDD, Total TCDD, Total PeCDD, and total HpCDF
- MW-7-S1: 1,2,3,4,6,7,8-HpCDF, OCDD, Total TCDD, Total PeCDD, total HxCDF, and total HpCDF

- MB-042611: The method blank had detections between the EDL and RL that met ion criteria for:
  - 1,2,3,4,6,7,8-HpCDD – 0.156 ng/kg
  - Total TCDD – 0.116 ng/kg
  - Total HpCDD – 0.156 ng/kg

Results for those analytes in the associated samples that fell between the EDL and the RL were qualified as non-detected (U) at the value reported by the laboratory.

- MW-3-S2: 1,2,3,4,6,7,8-HpCDD and total TCDD
- MW1-S2: 1,2,3,4,6,7,8-HpCDD, total TCDD, and total HpCDD

Results for those analytes in associated samples with detections above the RL and greater than five times the amount in the method blank (ten times for OCDD and OCDF) were not qualified and had the B qualifier removed (if present):

- MW-3-S2: total HpCDD
- CB-1: 1,2,3,4,6,7,8-HpCDD, total TCDD, and total HpCDD
- CB-2: 1,2,3,4,6,7,8-HpCDD, total TCDD, and total HpCDD
- CB-3: 1,2,3,4,6,7,8-HpCDD, total TCDD, and total HpCDD
- CB-4: 1,2,3,4,6,7,8-HpCDD, total TCDD, and total HpCDD
- MW-5-S2: 1,2,3,4,6,7,8-HpCDD, total TCDD, and total HpCDD
- MW-6-S2: 1,2,3,4,6,7,8-HpCDD, total TCDD, and total HpCDD
- MW-4-S2: 1,2,3,4,6,7,8-HpCDD, Total TCDD, and Total HpCDD

Labeled Compound Recoveries

The labeled compound recoveries were within control limits.

Ongoing Precision and Recovery

OPR recoveries were within QC limits.

Initial Calibration Curves and Continuing Calibration Verification Checks (CCVs)

The initial calibration curves and CCVs were within acceptance criteria.

Sample Qualifiers

Multiple compounds in the samples were qualified by the laboratory as estimated maximum possible concentrations (EMPC) when ion abundance ratios fell outside quality control limits. The EMPC qualifiers were reported as non-detect (U) for individual analytes and results qualified as UK in the following samples:

- MW-2-S2: 1,2,3,7,8-PeCDD, 1,2,3,7,8,9-HxCDD, 2,3,7,8-TCDF, 1,2,3,7,8-PeCDF, 1,2,3,6,7,8-HxCDF, and 2,3,4,6,7,8-HxCDF
- MW-7-S1: 2,3,7,8-TCDD, 1,2,3,4,7,8-HxCDD, 1,2,3,7,8-PeCDF, 1,2,3,7,8,9-HxCDF, and 1,2,3,4,7,8,9-HpCDF
- MW-8-S1: 2,3,7,8-TCDD, 1,2,3,4,7,8-HxCDD, 2,3,7,8-TCDF, 1,2,3,6,7,8-HxCDF, and 1,2,3,7,8,9-HxCDF
- CB-1: 2,3,7,8-TCDD
- MW-1-S2: 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9HxCDD, 2,3,7,8-TCDF, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF, and 1,2,3,4,7,8-HxCDF
- MW-3-S2: 1,2,3,6,7,8-HxCDD and 2,3,4,7,8-PeCDF
- MW-4-S2: 2,3,7,8-TCDD, 1,2,3,6,7,8-HxCDD, 2,3,7,8-TCDF, 2,3,4,7,8-PeCDF, and 1,2,3,7,8,9-HxCDF
- MW-5-S2: 1,2,3,7,8-PeCDF
- MW-6-S2: 2,3,7,8-TCDD

Multiple compounds were qualified by the laboratory with X due to interferences from chlorodiphenyl ethers. The X qualifiers were changed to J (estimated) in the following samples:

- CB-1: 1,2,3,7,8-PeCDF
- CB-2: 1,2,3,7,8-PeCDF and 1,2,3,4,7,8-HxCDF
- CB-3: 1,2,3,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 2,3,4,6,7,8-HxCDF, and 1,2,3,7,8,9-HxCDF
- CB-4: 1,2,3,7,8-PeCDF and 1,2,3,4,7,8-HxCDF
- MW-8-S1: 1,2,3,7,8-PeCDF

Pesticides

Analytical Methods

The samples were extracted by EPA Method 3546 (microwave), and the extracts were sulfur and silica gel cleaned. The samples were analyzed by GC/ECD) following EPA Method 8081.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits were acceptable with the following exceptions:

- MW-7-S1: The sample was analyzed at a 10-fold dilution due to matrix interferences from PCBs, and the associated reporting limits were raised due to the dilution.

- MW-4-S3, MW-4-S7, MW-5-S2, MW-5-S8, MW1-S7, and MW3-S7: The samples were analyzed at a five-fold dilution, and the associated reporting limits were raised due to the dilution.

- CB-1, CB-2, CB-3, and CB-4: The samples were analyzed at a 10-fold dilution and the associated reporting limits were raised due to the dilution.

- Sample results between the method detection limit and the reporting limit were qualified by the laboratory as estimated (J). The "J" qualifiers were changed to "T" to be consistent with Ecology's Environmental Information Management (EIM) database.

- MW-5-S2, MW-6-S2, MW-6-S4, CB-1: The reporting limit was raised due to chromatographic interferences for multiple analytes. The laboratory qualified the analytes with "Y." The "Y" qualifier was changed to "U."

Blank Contamination

There was no method blank contamination.

Surrogate Recoveries

Surrogate recoveries are within laboratory control limits with the following exceptions:

- MW-7-S1: The recovery of the surrogate decachlorobiphenyl (DCBP) exceeded the control limits. The recovery of the surrogate tetrachlorometaxylene (TCMX) fell within the control limits and the sample results were not qualified.

- CB-1: The surrogate TCMX was not reported and the surrogate DCBP exceeded the control limits. All analytes in CB-1 were qualified as estimated (J).

Laboratory Control Samples (LCS) and Duplicates (LCSD)

The LCS recoveries were within laboratory control limits with the following exception:

- LCS/LCSD-050211: The recovery for HCBD fell below the control limits in the LCS but fell within the control limits in the LCSD. Results in the associated samples were not qualified.

Matrix Spike and Matrix Spike Duplicate Recoveries

The MS/MSD recoveries were within laboratory control limits with the following exceptions:

- MW-2-S6 MS/MSD: The recoveries for gamma-BHC, heptachlor, and endosulfan sulfate fell below the control limits in the MS, but fell within the control limits in the MSD. The recovery for 4,4-DDT fell below the Marginal Exceedance (ME) limits in the MS and MSD. The RPD exceeds 20 percent for heptachlor, endosulfan sulfate, and 4,4-DDT. The LCS and LCSD were within control, implying a matrix effect. The results for analytes 4,4-DDT, heptachlor, and endosulfan sulfate were qualified as estimated in source sample MW-2-S6 due to the recovery and RPD failures.

- MW-4-S3 MS/MSD: The recoveries for alpha-BHC fell below the control limits in the MS and MSD. The recoveries for Endosulfan II exceeded the control limits in the MS but fell within the control limits in the MSD. Endosulfan II was not a target analyte. The analytes were within the ME limits. The LCS and LCSD were within control, implying a matrix effect. The

result for alpha-BHC in source sample MW-4-S3 was qualified as estimated (J).

Internal Standards

Internal standards were within acceptance criteria.

Initial Calibration Curves (ICAL) and Continuing Calibration Verification Checks (CCVs)

The ICALs were within acceptance criteria.

The CCVs were within control limits with the following exceptions:

- CCV 04/29/11 at 1327: The analyte methoxychlor fell below the 20 percent control criteria on the STX-CLP1 column, but passed on the STX-CLP2 column. As methoxychlor was not a target analyte, no qualification was made.

- CCV 04/29/11 at 1343: The target analyte toxaphene failed high on the STX-CLP2 column, but passed on the STX-CLP1 column. Sample results were reported from the passing column.

- CCV 04/29/11 at 1555: The analyte methoxychlor failed low on the STX-CLP1 column, but passed on the STX-CLP2 column. Hexachlorobutadiene (HCBD) failed low on the STX-CLP2 column, but passed on the STX-CLP1 column. Methoxychlor was not a target analyte, and the results were not qualified. HCBD results in the associated samples were non-detect and reported from the passing column without qualification.

- CCV 04/29/11 at 1611: The target analyte toxaphene failed high on the STX-CLP2 column, but passed on STX-CLP1 column. The associated sample results were non-detect and reported from the passing column.

- DDT Breakdown Check 04/29/11 at 2002: The DDT breakdown check exceeded 15 percent on both columns. Since the samples were analyzed by the internal standard method and the preceding breakdown check on 04/29/11 at 1538 was within control, the sample results were not qualified as the closing DDT breakdown check was not applicable.

- CCV 04/29/11 at 2019: The analytes 4,4-DDT and methoxychlor failed low on both columns. Methoxychlor was not a target analyte, and results were not qualified. Since the samples were analyzed by the internal standard

method, and the preceding CCV analyzed on 04/29/11 at 1555 was in control for 4,4-DDT, the sample results were not qualified as the closing CCV was not applicable.

- CCV 04/29/11 at 2035: The target analyte toxaphene failed high on both columns. The associated sample results were not qualified since the samples were analyzed by the internal standard method and the preceding CCV analyzed on 04/29/11 at 1611 had toxaphene passing on one column.

- Endrin Breakdown Check 05/05/11 at 1855: The endrin breakdown check exceeded 15 percent on both columns. There were no associated sample results. The subsequent breakdown check at 2319 was acceptable.

- CCV 05/05/11 at 2335: The analytes alpha-BHC and gamma-BHC failed high on the STX-CLP1 column but passed on the STX-CLP2 column. The analyte HCBD failed low on the STX-CLP-2 column but passed on the STX-CLP1 column. The associated samples (MW-4-S2, MW-4-S3, and MW-4-S7) were non-detect for those analytes and, therefore, not qualified.

- CCV 05/06/11 at 0343: The analytes alpha-BHC, endrin, and 4,4-DDD failed high on the STX-CLP1 column, but passed on the STX-CLP2 column. The analyte HCBD failed low on the STX-CLP2 column, but passed on the STX-CLP1 column. The associated sample, MW-5-S2, only had a detection for endrin, which was reported from the passing column.

- Closing CCV 05/06/11 at 0750: The analytes alpha-BHC, gamma-BHC, aldrin, endrin, and 4,4-DDD failed high on the STX-CLP1 column, but passed on the STX-CLP2 column. The analyte HCBD failed low on the STX-CLP2 column, but passed on the STX-CLP1 column. The samples were analyzed by internal standard method and, therefore, the CCV was not used.

- CCV 05/09/11 at 2059: The analyte Methoxychlor failed low on both columns. The analytes 4,4-DDT and endrin ketone failed low on the STX-CLP2 column, but passed on the STX-CLP1 column. Methoxychlor and endrin ketone were not target analytes. Associated samples MW3-S7, CB-2, CB-3, and CB-4 were non-detect for 4,4-DDT and were reported from the passing column.

- Closing CCV 05/10/11 at 0106: The analytes heptachlor, endosulfan sulfate, 4,4-DDT, methoxychlor, and endrin ketone failed low on the STX-CLP1 column. The analyte 4,4-DDD failed high on both columns. The analytes heptachlor, endosulfan I, endosulfan sulfate, 4,4-DDT, methoxychlor, endrin

ketone, and alpha-chlordane failed low on the STX-CLP2 column. Since the samples were analyzed by internal standard method, the CCV was not used.

- Closing CCV 05/10/11 at 0122: The analyte toxaphene failed low on both columns. Since the samples were analyzed by internal standard method, the CCV was not used.

Chemical Data Quality Review for Groundwater Samples

Eight groundwater samples were collected from monitoring wells at Washington State Liquor Control Board on April 25 and 26, 2011. The samples were submitted to ARI for chemical analysis. The sample results were reported as ARI Job Nos. SU04 and SU14. The samples were subcontracted to Brooks Rand for analysis of total and dissolved mercury by EPA Method 1631 and reported as Project ID ARI-TU1101.

Quality assurance/quality control (QA/QC) reviews of laboratory procedures were performed on an ongoing basis by the laboratory. Hart Crowser performed the data review, using laboratory quality control results summary sheets and raw data, as required, to ensure they met data quality objectives for the project. Data review followed the format outlined in the National Functional Guidelines for Inorganic Data Review (EPA 2010) and National Functional Guidelines for Organic Superfund Data Review (EPA 2008) modified to include specific criteria of the individual analytical methods. The following criteria were evaluated in the standard data quality review process:

- Holding times;
- Method blanks;
- Surrogate recoveries;
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries;
- Laboratory duplicate relative percent differences (RPDs);
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recoveries;
- Laboratory replicate relative standard deviation (RSD);
- Internal Standard recoveries;
- Calibration criteria (where applicable); and
- Reporting limits (RL).

The data were determined to be acceptable for use, as qualified. Full laboratory results are presented at the end of this appendix. Results of the data reviews, organized by analysis class, follow.

Sample Receiving Discrepancies

For ARI Job Nos. SU04 and SU14, 1,4-dioxane was not listed on the chain of custody (COC). Notes on the COC stated that the laboratory was to follow the Sampling and Analysis Plan (SAP), which listed 1,4-dioxane as a target analyte. The laboratory analyzed the associated samples MW-2, MW-7, MW-8, MW1, MW3, MW4, MW5, and MW6 for 1,4-Dioxane.

For ARI Job No. SU04, the trip blank (TB) had pea-sized bubbles in one VOA vial. The TB was prepared and shipped by the laboratory, and no sample results were qualified.

For ARI Job No. SU14, the samples subcontracted to Brooks Rand on April 27, 2011 for total and dissolved mercury analysis by EPA Method 1631, arrived at 12.0°C. The samples were oxidized within 28 days per the method and were not qualified.

Polycyclic aromatic hydrocarbons (PAHs)

Analytical Methods

The samples were extracted by EPA Method 3510C (separatory funnel). The samples were analyzed by GC/MS-SIM following EPA Method SW8270D-SIM.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits were acceptable. Sample results between the method detection limit and the reporting limit were qualified by the laboratory as estimated (J). The "J" qualifiers were changed to "T" to be consistent with Ecology's EIM database.

Blank Contamination

There was no method blank (MB) contamination with the following exception:

- MB-050211: The MB contained indeno(1,2,3-cd)pyrene between the method detection limit and reporting limit and benzo(g,h,i)perylene above the reporting limit. The laboratory qualified all detected sample results with a "B" qualifier. The concentrations of indeno(1,2,3-cd)pyrene and

benzo(g,h,i)perylene were non-detect in the associated samples (MW1-, MW3, MW4, MW5, and MW6) and no results were qualified.

Surrogate Recoveries

The surrogate recoveries are within laboratory control limits.

Laboratory Control Samples (LCS) and Duplicates (LCSD)

The LCS and LCSD recoveries were within laboratory control limits.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries

The MS/MSD recoveries were within laboratory control limits.

Internal Standards

Internal standards were within acceptance criteria.

Initial Calibration Curves (ICAL) and Continuing Calibration Verification Checks (CCVs)

ICAL and CCVs met acceptance criteria.

Pesticides

Analytical Methods

The samples were extracted by EPA Method 3510C (separatory funnel). The samples were analyzed by GC/ECD following EPA Method 8081.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits were acceptable.

Blank Contamination

There was no method blank contamination.

Surrogate Recoveries

Surrogate recoveries are within laboratory control limits with the following exceptions:

- MB-050211, LCS-050211, and LCSD-050211: The recoveries for the surrogate TCMX fell below control limits due to a laboratory extraction problem. The recoveries for the additional surrogate DCB fell within control limits for the MB, LCS, and LCSD. No sample volume remained for re-extraction.

  Surrogate recoveries for TCMX and DCB in the associated samples (MW1, MW3, MW4, MW5, and MW6) fell within control limits. Comparison of the surrogate recoveries of these samples with other samples in the project extracted separately (MW-2, MW-7, and MW-8) indicate that there was some possible loss of light-end pesticides due to the laboratory extraction problem. Recovery failures for the LCS, LCSD, MS, and MSD also indicate possible loss of analytes from the samples.

Laboratory Control Samples (LCS) and Duplicates (LCSD)

The LCS and LCSD recoveries were within laboratory control limits with the following exceptions:

- LCS/LCSD-043011: The recovery of 4,4-DDT exceeded the control limits in the LCS, while the recovery was within control in the LCSD. The RPDs for heptachlor epoxide and 4,4-DDT exceed the 20 percent control limit. The associated samples (MW-2, MW-7, and MW-8) were non-detect for those analytes and sample results were not qualified.

- LCS/LCSD-050211: The recoveries for alpha-BHC, beta-BHC, gamma-BHC, heptachlor, aldrin, heptachlor epoxide, endosulfan I, dieldrin, endosulfan sulfate, trans-chlordane, cis-chlordane, hexachlorobenzene, and hexachlorobutadiene fell below the control limits in the LCS. The recoveries for 4,4-DDE and endosulfan II fell below the control limits in the LCSD. The failures are associated with a laboratory extraction problem, and no sample volume remained for re-extraction. The analytes endosulfan I and endosulfan II were not target analytes and not qualified. Results for alpha-BHC, beta-BHC, gamma-BHC, heptachlor, aldrin, heptachlor epoxide, dieldrin, endosulfan sulfate, trans-chlordane, cis-chlordane, hexachlorobenzene, hexachlorobutadiene, and 4,4-DDE were qualified as estimated (J) in the associated samples MW1, MW3, MW4, MW5, and MW6.

Matrix Spike and Matrix Spike Duplicate Recoveries

The MS/MSD recoveries were within laboratory control limits with the following exceptions:

- MW1 MS/MSD: The recoveries for alpha-BHC, beta-BHC, gamma-BHC, heptachlor epoxide, endosulfan I, dieldrin, endosulfan sulfate, trans-chlordane, and cis-chlordane fell below the control limits due to a laboratory extraction problem. No sample volume remained for re-extraction.

Internal Standards

Internal standards were within acceptance criteria.

Initial Calibration Curves (ICAL) and Continuing Calibration Verification Checks (CCVs)

The ICAL was within acceptance criteria. The CCVs were within control limits.

Polychlorinated Biphenyls (PCBs)

Analytical Methods

The samples were extracted by EPA Method 3510C (separatory funnel). The samples were analyzed by GC/ECD following EPA Method 8082.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits were acceptable.

Blank Contamination

There was no method blank contamination.

Surrogate Recoveries

Surrogate recoveries were within laboratory control limits.

Laboratory Control Samples (LCS) and Duplicates (LCSD)

LCS and LCSD recoveries were within laboratory control limits.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries

Due to a laboratory error, the MS and MSD quality control samples were not spiked. The laboratory did not report the results.

Internal Standards

Internal standards were within acceptance criteria.

Initial Calibration Curves (ICAL) and Continuing Calibration Verification Checks (CCVs)

The ICAL was within acceptance criteria. The CCVs were within control limits with the following exceptions:

- CCV 05/13/11 at 0821: The analyte Aroclor 1248 failed high on the ZB5 column, but passed on the ZB35 column. Sample results were not qualified as the bias was high and the associated samples were non-detect.

- CCV 05/13/11 at 0845: The analytes Aroclors 1016 and 1260 failed high on the ZB5 column, but passed on the ZB35 column. Sample results were not qualified as the bias was high and the associated samples were non-detect.

- CCV 05/13/11 at 1220: The analyte Aroclor 1260 failed high on the ZB5 column, but passed on the ZB35 column. The analyte Aroclor 1016 failed high on both columns. Sample results were not qualified because the bias was high and the associated samples were non-detect.

- CCV 05/14/11 at 0346: The analyte Aroclor 1016 failed high on the ZB5 column, but passed on the ZB35 column. Sample results were not qualified because the bias was high and the associated samples were non-detect.

Volatile Organic Compounds (VOCs)

Analytical Methods

The samples were analyzed by GC/MS following EPA Method 8260C.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits were acceptable.

Blank Contamination

There was no method (MB) or trip blank (MB) contamination.

Surrogate Recoveries

Surrogate recoveries are within laboratory control limits.

Laboratory Control Sample (LCS) and Duplicate (LCSD)

The LCS and LCSD were within laboratory control limits for the analytes of interest with the following exceptions:

- LCS/LCSD-042811: The recoveries for 2-chloroethylvinylether fell below the control limits in the LCS and LCSD, while the recoveries for trans-1,4-dichloro-2-butene exceeded the control limits in the LCS and LCSD. All sample Results for 2-chloroethylvinylether in the associated samples (MW1, MW3, MW4, MW5, MW6, TB, MW-2, MW-7, MW-8, and trip blank) were qualified as estimated (J) due to the low bias. The associated samples were non-detect for trans-1,4-dichloro-2-butene, and the results were not qualified due to high bias.

Matrix Spike (MS) and Matrix Spike Duplicates (MSD) Recoveries

MS/MSD within laboratory control limits with the following exceptions:

- MW1 MS/MSD: The recoveries for 2-chloroethylvinylether fell below the reporting limit and were below the control limits and not reported in the MS/MSD. The recovery for 2,2-dichloropropane was slightly below control limits in the MSD, and within control in the MS. The recoveries for trans-1,4-dichloro-2-butene exceeded the control limits in the MS and MSD. The source sample MW1 was qualified as estimated (J) for 2-chloroethylvinylether due to the failing ICAL, CCV, LCS, and MS recoveries. The source sample was non-detect for trans-1,4-dichloro-2-butene and not qualified due to the high bias. The source sample was not qualified for

2,2-dichloropropane as the MS was within control limits, the MSD was within marginal exceedance (ME) limits, and the LCS and LCSD were within control.

Internal Standards

Internal standards (IS) were within acceptance criteria.

Initial Calibration Curves (ICAL) and Continuing Calibration Verification Checks (CCVs)

The ICAL was within method acceptance criteria with the following exception:

- ICAL 03/31/11: The ICAL is outside acceptance criteria for 2-chloroethylvinylether. The analyte 2-chloroethylvinylether was non-detect in the associated samples (MW1, MW2, MW3, MW4, MW5, MW6, MW7, MW8, and TB) and was qualified as estimated (J).

The CCVs were within control limits with the following exceptions:

- CCV 04/28/11 at 0922: The recovery for 2-chlorethylvinylether fell below the control limits, while the recovery for trans-1,4-dichloro-2-butene exceeded the control limits. The results for 2-chloroethyl vinyl ether were non-detect in the associated samples (MW1, MW2, MW3, MW4, MW5, MW6, MW7, MW8, and TB) and were qualified as estimated (J). The results for trans-1,4-dichloro-2-butene in the associated samples were non-detect and not qualified, as the bias was high.

Semivolatile Organic Compounds (SVOCs)

Analytical Methods

The samples were extracted by EPA Method 3510C (separatory funnel). The samples were analyzed by GC/MS following EPA Method 8270D.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits were acceptable. Sample results between the method detection limit and the reporting limit were qualified by the laboratory as

estimated (J). The "J" qualifiers were changed to "T" to be consistent with Ecology's EIM database.

Blank Contamination

There was no method blank contamination.

Surrogate Recoveries

Surrogate recoveries were within laboratory control limits with the following exception:

- MW-2, MW-7, and MW-8: The recovery of the surrogate d8-1,4-dioxane fell below the control limits. The surrogate is associated with 1,4-dioxane, and the samples were re-extracted for 1,4-dioxane and reported in a separate batch.

Laboratory Control Samples (LCS) and Duplicates (LCSD)

The laboratory extracted the samples by EPA Method 3510C at a 1000 mL to a 1 mL final volume. The laboratory did not have in-house control limits for that method using that sample volume. LCS and LCSD recoveries were compared to the EPA Method 3510C extraction using 500 mL to a 0.5 mL final volume. LCS and LCSD results fell within those control limits.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries

The MS/MSD recoveries were within laboratory control limits for EPA Method 3510C extraction using 500 mL to a 0.5 mL final volume with the following exceptions:

- MW1 MS/MSD: The recoveries 2,4-dimethylphenol fell below 10 percent in the MS and MSD. The recoveries for total benzofluoranthenes were not reported for the MSD, and the RPD for total benzofluoranthenes was subsequently not reported. The results for 2,4-dimethylphenol in the source sample MW1 were qualified as estimated (J) as LCS and LCSD results passed, indicating a matrix effect. A review of the MSD chromatogram showed the presence of total benzofluoranthenes, which had not been integrated by the instrument and missed by the analyst. The recoveries of benzo(b)fluoranthene and benzo(k)fluoranthene fell within control limits. The source sample results for total benzofluoranthenes were subsequently not qualified.

Internal Standard

Internal standards were within acceptance criteria.

Initial Calibration Curves (ICAL) and Continuing Calibration Verification Checks (CCVs)

The ICAL was within acceptance criteria. The CCVs were within acceptance criteria with the following exception:

- CCV 05/12/11: The recovery for dibenzo(a,h)anthracene failed high, while the recovery for 2,4-dinitrotoluene failed low. The compound 2,4-dinitrotoluene was not a target analyte and results were not qualified. The associated samples (MW2, MW7, and MW8) were non-detect for dibenzo(ah)anthracene and not qualified because of the high bias.

1,4-Dioxane

Analytical Methods

The samples were extracted by EPA Method 3510C (separatory funnel). The samples were analyzed by GC/MS following EPA Method 8270D.

Sample Holding Times

The samples met holding time limits with the following exceptions:

- MW-2, MW-7, and MW-8: The original extractions for 1,4-dioxane did not include an LCS and LCSD. The samples were re-extracted outside of the method recommended holding time with appropriate batch QC. Sample results for 1,4-dioxane in MW2, MW7, and MW8 were qualified as estimated (J).

Laboratory Detection Limits

Reported detection limits were acceptable.

Blank Contamination

There was no method blank contamination.

Surrogate Recoveries

Surrogate recoveries are within default laboratory control limits with the following exception:

- MW1, MW5, MW6, MW-2, MW-7, and MW-8: The recovery of the surrogate d8-1,4-dioxane fell below the default control limits. The results for 1,4-dioxane in the samples were qualified as estimated (J).

Laboratory Control Samples (LCS) and Duplicates (LCSD)

LCS and LCSD were within default laboratory control limits with the following exception:

- LCS/LCSD-043011: No LCS or LCSD was prepared for 1,4-dioxane for this batch. The associated samples (MW-2, MW-7, and MW-8) were re-extracted outside of the method recommended holding time. The LCS and LCSD recoveries and relative percent differences for the re-extraction fell within default laboratory control limits. The sample results were qualified due to holding time exceedances.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries

The MS/MSD recoveries were within default laboratory control limits.

Internal Standards

Internal standards were within acceptance criteria.

Initial Calibration Curves (ICAL) and Continuing Calibration Verification Checks (CCVs)

The ICAL and CCVs were within acceptance criteria.

Metals

Analytical Methods

Total and dissolved mercury were prepared and analyzed following EPA Method 1631. Total and dissolved metals for arsenic, cadmium, chromium, copper, lead, silver, and zinc were analyzed following EPA Method 200.8.

The results for dissolved mercury in MW2 were higher than the results for total mercury.

Sample Holding Times

The samples met holding time limits.

Laboratory Detection Limits

Reported detection limits were acceptable. Results for dissolved mercury in samples MW1, MW4, and MW5 fell between the method detection limit and the reporting limit and were qualified by the laboratory with "B." The "B" qualifier was changed to "T."

Blank Contamination

There was no method or filter blank contamination.

Laboratory Control Samples (LCS)

LCS recoveries were within method control limits.

Matrix Spike and Matrix Spike Duplicate Recoveries

The MS/MSD recoveries were within method control limits.

Laboratory Duplicate Sample Analysis

The relative percent differences between replicate measurements met quality control limits or were not applicable if the sample and duplicate were less than five times the reporting limit.

Standard Reference Material (SRM) Recoveries

SRM recovery within control limits.

Initial Calibration Curves (ICAL) and Continuing Calibration Verification Checks (CCVs)

The ICAL and CCVs were within acceptance criteria.

Diesel- and Motor Oil-Range Hydrocarbons

Analytical Methods

Water samples were prepared with EPA Method 3510C (separatory funnel) and the extracts were acid and silica gel cleaned. The samples were analyzed by GC/FID following the NWTPH-Dx method.

Sample Holding Times

The samples were prepared and analyzed within holding time limits.

Laboratory Detection Limits

Reported detection limits were acceptable.

Blank Contamination

There was no method blank contamination.

Surrogate Recovery

Surrogate recoveries were within laboratory control limits.

Laboratory Control Samples (LCS) and Duplicates (LCSD)

LCS and LSCD recoveries were within laboratory control limits.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recovery

MS and MSD recoveries were within laboratory control limits.

Initial Calibration Curves and Continuing Calibration Verification Checks (CCVs)

The initial calibration curves and CCVs were within acceptance criteria.

Gasoline Range Hydrocarbons

Analytical Methods

The samples were analyzed by GC/FID following the NWTPH-Gx method.

Sample Holding Times

The samples were prepared and analyzed within holding time limits.

Laboratory Detection Limits

Reported detection limits were acceptable.

Blank Contamination

There was no method or trip blank contamination.

Surrogate Recovery

Surrogate recoveries were within laboratory control limits with the following exception:

- Trip Blank: The recovery of the surrogate trifluorotoluene fell below the control limits. The trip blank was originally analyzed on April 29, 2011 at the incorrect purge volume. The trip blank was then reanalyzed from the same vial on May 1, 2011. The sample results for the trip blank were qualified as estimated (J). The results for the associated samples (MW-2, MW-7, and MW-8) were not qualified.

Laboratory Control Samples (LCS) and Duplicate (LSCD)

LCS and LCSD recoveries were within laboratory control limits.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recovery

MS and MSD recoveries were within control limits.

Initial Calibration Curves and Continuing Calibration Verification Checks (CCVs)

The initial calibration curves and CCVs were within acceptance criteria.

J:\Jobs\1733032\Data Report - WSLCB\Final\Final WSLCB Data Report.doc

APPENDIX B
LABORATORY REPORTS
(SEE ATTACHED DVD)

This page is intentionally left blank
for double-sided printing.