Compilation Report
Former Kaiser Aluminum Property
3400 Taylor Way
Tacoma, Washington

November 30, 2011

Prepared for

Port of Tacoma

LANDAU ASSOCIATES
130 2nd Avenue South
Edmonds, WA 98020
(425) 778-0907

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

Appendix	Title
A	Spent Pot Lining Area 1982-2004 Groundwater Analytical Results
B	Spent Pot Lining Area 2003 Soil Analytical Results
C	Spent Pot Lining Area 2008 Test Pit Logs
D	Spent Pot Lining Area 2008 Laboratory Analytical Results
E	Rod Mill Area Closed Landfill 2003-2007 Test Pit and Boring Logs
F	Rod Mill Area 2002-2003 Soil Analytical Results
G	Rod Mill Area 2003-2004 Groundwater Analytical Results
H	Rod Mill Area Closed Landfill 2008 Test Pit and Boring Logs
I	Rod Mill Area Closed Landfill 2008 Laboratory Analytical Results
J	Former Log Yard Area 2002 Analytical Results
K	Terrestrial Ecological Evaluation Exclusion Documentation
L	Statistical Evaluation of PCB Compliance with Terrestrial Ecological Receptor Cleanup Level

ABBREVIATION/ACRONYM LIST

ARI	Analytical Resources, Inc.
BGS	below ground surface
COC	constituent of concern
cPAHs	carcinogenic polycyclic aromatic hydrocarbons
DGPS	differential global positioning system
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ft	foot
ft^2	square foot
Kaiser Aluminum	Kaiser Aluminum & Chemical Corporation
LVI	large volume injection
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MTCA	Model Toxics Control Act
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PID	photoionization detector
Port	Port of Tacoma
PQL	practical quantitation limit
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
RI/FS	remedial investigation/feasibility study
RRI	Road/Rail/Infrastructure
SEPA	State Environmental Policy Act
SIM	selected ion monitoring
Site	former Kaiser property, not including the Former Wet Scrubber Sludge Pond Area
SPL	spent pot lining
SPL Area	Spent Pot Lining Area
SVOCs	semivolatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TEF	toxicity equivalency factor
TEQ	toxicity equivalency quotient
TSCA	Toxic Substances Control Act
VOCs	volatile organic compounds
WAD	weak acid dissociable
yd^3	cubic yard
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
µS	micro siemens

1.0 INTRODUCTION

This report provides a compilation of previous environmental investigations and interim actions conducted at the former Kaiser property (Site) located at 3400 Taylor Way in Tacoma, Washington (Figure 1). The 96 acre Site is currently owned by the Port of Tacoma (Port). For purposes of this report, the Site does not include the Former Wet Scrubber Sludge Pond Area.

In 2003, the Port purchased the smelter property from Kaiser Aluminum & Chemical Corporation (Kaiser Aluminum) for redevelopment. Between 2003 and 2010, the Port demolished the smelter complex, shipped thousands of tons of waste to approved disposal or treatment facilities, and placed a 2 to 6 foot (ft) thick layer of structural fill on approximately 80 of the 96 acres. In May 2011, an Agreed Order (No. DE-5698) between the Port and the Washington State Department of Ecology (Ecology) was signed, identifying six areas where contamination has been found and requiring the Port to conduct a Remedial Investigation and Feasibility Study (RI/FS) and prepare a Draft Cleanup Action Plan. The scope of the Order allows the Port to perform interim actions, provided Ecology approval is obtained in advance.

The purpose of the RI/FS is to determine the nature and extent of contamination within six specific areas of the Site. Because numerous environmental investigations and interim actions have previously been conducted on the property, and the results of these investigations and actions can be used to help define the nature and extent of contamination at the targeted areas, a compilation of the data and identification of any data gaps for determining the nature and extent of contamination was determined necessary prior to preparing an RI/FS work plan. The compilation of the data is a required deliverable under the Agreed Order.

1.1 HISTORICAL PROPERTY USE AND ALUMINUM PRODUCTION PROCESS

From 1941 to 1947, the Department of Defense built and operated the aluminum smelter. In 1947, Kaiser Aluminum purchased the Site and operated the aluminum production facility until 2001. In 2002, Kaiser Aluminum closed the plant.

Aluminum was produced at the facility through the electrolytic reduction of aluminum oxide (Al_2O_3). Aluminum oxide was placed in a reduction cell which contained molten synthetic cryolite (sodium aluminum fluoride), then charged with electricity which stripped out the oxygen, leaving molten aluminum. The aluminum metal was then either sold into the marketplace as ingots, or processed through the facility's Rod Mill which produced a value-added small diameter aluminum rod.

The reduction cells at this facility (commonly called "pots") were made of an outer steel shell lined with insulating refractory material and an inner lining of carbon-based materials, composed

primarily of anthracite coal, petroleum coke, and coal-tar pitch. A carbon anode made of the same basic materials and mounted in a steel frame was suspended above the cathode, completing the assembly. At the time the plant closed, Kaiser Aluminum was operating 400 of these reduction cells in four pot lines (long rows of individual reduction cells).

Over time, the carbon inner lining within the cathode of a reduction cell degraded and became less effective. When a pot "failed", the entire reduction cell assembly was temporarily removed from the pot line and rebuilt with new refractory materials and carbon lining. The removed inner carbon lining was then considered a waste and termed "spent pot lining" (SPL) (Beck 2001; EPA 1995; Landau Associates 2002a; Totten and Mackenzie 2003).

The SPL became classified as a regulated waste due to small amounts of cyanide which formed when nitrogen from the air reacted with carbon in the cathode. Since nitrogen in air is necessary for the formation of cyanide, cyanide was found only in portions of the SPL which were exposed to the atmosphere, typically around the perimeter sidewalls[1]. Carbon in the anodes was not exposed to the same conditions and therefore cyanide was not formed. Accordingly, spent anodes were not classified as regulated waste and were recycled or crushed and burned for energy recovery.

1.1.1 WASTES AND RECYCLABLES

Wastes produced at the facility, generated either during plant operations or facility deconstruction, included but were not limited to municipal solid waste, universal wastes (e.g., fluorescent tubes, mercury-containing devices, asbestos), wet scrubber sludge (historical), dry scrubber filters and dust, SPL, transformer oil contaminated with polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbon (PAH) contaminated wastes such as gutter dust, and "fines" from the extensive air handling duct systems. Wet scrubber sludge was managed at the Former Wet Scrubber Sludge Pond Area. Remediation of this area was conducted in 1990 to 1992 under a consent decree; therefore, this area is not included in the Agreed Order and will not be discussed further in this report. The types of wastes produced at the facility that may have been disposed of at the closed landfill in the Rod Mill Area are noted in the descriptions provided below. No SPL is known to have been placed in the Rod Mill Area Closed Landfill (Leber, B., 2005, personal communication).

During facility deconstruction, the Port made a significant effort to reuse or recycle as many items as possible; accordingly, tons of materials that could have ended up in a landfill were successfully put back into service or sent off site for recycling. Descriptions of several of the recycled materials are provided below.

---

1 Cyanide content in the cathode carbon materials typically varied from 0.03 to 0.6 percent (Landau Associates 2002a).

- Spent Pot Lining (SPL). As described above, SPL is the inner carbon-based lining of the aluminum reduction cells. It is a dark gray to black material composed of anthracite coal, petroleum coke, and coal-tar pitch. SPL is generated during reduction cell dismantling. It is considered a listed hazardous (dangerous) waste (K088), primarily due to the presence of cyanide. Spent SPL generated during plant deconstruction was sent to a Subtitle C Landfill near Arlington, Oregon where it was treated and placed into a lined landfill. During plant operations, Kaiser Aluminum also shipped SPL to this Oregon landfill.

- Anodes. The anodes are also composed of a mixture of carbon-based materials; however, as noted previously "working" anodes do not contain cyanide, thus spent anodes are not designated as a listed waste. The presence of carcinogenic polycyclic aromatic hydrocarbons (cPAHs) limits recycling/disposal options for spent anodes but affords more options than for SPL. For example, all anodes generated during plant deconstruction were sent to Longview, Washington where they were crushed and sent to a local industrial boiler (where the carbon was burned for energy recovery). It is likely that whole or partial anodes were placed into the Rod Mill Area Closed Landfill by Kaiser Aluminum.

- Refractory Brick and Alumina Ore. Refractory bricks were used as an insulating liner between the outer steel shell of the pot and the carbon inner lining. Alumina ore was also used as a "leveling course" or insulating material at times. Neither the refractory brick nor alumina ore contained cyanide or other contaminants at levels of concern, and thus could be managed as municipal solid waste. All of the refractory brick and any associated alumina ore generated during plant deconstruction were sent to a municipal landfill in Pierce County, Washington. It is likely that refractory brick and small quantities of alumina ore were placed into the Rod Mill Area Closed Landfill by Kaiser Aluminum.

- Duct Dust. This material is a combination of fine anode fumes, alumina dust, and bath particulates from the potroom air intakes. Due to elevated PAH concentrations, this dust and associated air handler filter bags generated during plant deconstruction were managed as dangerous waste and disposed of at the Subtitle C Landfill near Arlington, Oregon. The Port understands that Kaiser Aluminum managed duct dust generated during plant operations in a similar manner. During plant operations prior to construction of the wet scrubber system in circa 1952, emissions from the pot lines would have discharged to the air and may have been deposited on the ground surface in the vicinity of the pot line buildings.

- Asbestos. Over 300 tons of asbestos-containing materials were segregated and properly disposed of during plant deconstruction. This waste was properly labeled and sent to a municipal landfill in Pierce County, Washington.

- Universal Wastes. During plant deconstruction, several tons of fluorescent light tubes and ballasts, mercury-containing thermostats, and batteries were sent off site for proper management.

- Aluminum Oxide (alumina). This is the silt to sand sized white ore refined from bauxite and shipped to the Kaiser Aluminum property for use in producing metallic aluminum. The alumina consists of about equal weights of aluminum and oxygen. Alumina is a non-hazardous, inert substance. Approximately 6,000 tons of this material was on site at the time the Port purchased the property; the ore was collected and shipped to a smelter in Montana for production of aluminum. It is likely that small quantities of alumina ore were placed into the Rod Mill Area Closed Landfill by Kaiser Aluminum.

- Synthetic Cryolite (sodium aluminum fluoride). Molten cryolite is used as a catalyst to increase the efficiency of aluminum production. In its raw form it is whitish silt to sand sized material that is handled and stored in dry bulk form. Several hundred tons of the raw

synthetic cryolite were recovered by the Port prior to plant deconstruction and shipped to a smelter in Montana for use in the production of aluminum. It is likely that small amounts of synthetic cryolite were placed into the Rod Mill Area Closed Landfill by Kaiser Aluminum.

- Concrete and Brick. In excess of 35,000 tons of concrete and brick rubble was generated during plant deconstruction. These materials were crushed on site and reused as structural fill during subsequent grading operations. It is likely that Kaiser Aluminum placed similar waste construction materials in the Rod Mill Area Closed Landfill.

1.2 PROPERTY DESCRIPTION

The property encompasses approximately 96 acres of the Blair Hylebos Peninsula in Tacoma, Washington. The Hylebos Waterway is located northeast of the property and the Blair Waterway is located to the southwest (Figure 1). Currently, all but two of the Kaiser buildings (both used for offices) have been removed from the property; subsurface structures, such as footings and slabs, are still in place and in most areas have been covered with soil and a layer of gravel. Aerial photographs of the property in 2005 prior to demolition of the buildings, and in 2010 following demolition of the buildings, are shown on Figures 2 and 3, respectively.

Constituents of concern identified in the Agreed Order include PAHs, petroleum hydrocarbons, PCBs, metals, and cyanide. The six targeted areas where previous investigations (and in some areas, remedial actions) have been conducted are identified in the Agreed Order and include the Spent Pot Lining Area (SPL Area), the Rod Mill Area Closed Landfill, the Former Rectifier Yard Area, the Former Log Yard Area, the Rod Mill Former Demister Oil Area, and the Rod Mill Former Stormwater Ditch, South and East Sides. The six areas of interest are described below and are shown on Figures 2 and 3.

1.2.1 SPENT POT LINING AREA

The SPL Area consists of a portion of the property which was historically used to dismantle reduction cells, and temporarily store SPL and potroom duct dust. It is located within the eastern portion of the property, as shown on Figures 2 and 3. From 1943 to 1967, the area was not paved and for most of the earlier part of this period, the area was not at its present grade. In 1967, the SPL management facility was constructed in the SPL Area, and included a 19,500 square foot (ft^2) concrete pad, runoff sump, storage tanks, and associated piping. The approximate area that the SPL management facility encompassed is shown on Figures 2 and 3. From 1967 until 1985, SPL was temporarily stored on the SPL management facility pad until enough SPL was accumulated for shipment to an offsite disposal facility. During this time of operation, SPL was considered a state-only waste[2]. A Part A Dangerous

2 SPL was not listed as a federal hazardous waste until 1989 after the SPL management facility had ceased operation.

Waste Permit application identifying the SPL management facility as a regulated unit for storage of SPL prior to offsite shipment and disposal was submitted in about 1980 (Kaiser 1980). In December 1985, Kaiser removed all waste from the SPL management facility and ceased use of the facility, replacing it with an indoor facility (Building 65, Kaiser 2003). Subsequently, Kaiser reverted to generator status for management of SPL waste (Landau Associates 2004a).

The SPL management facility, a Resource Conservation and Recovery Act (RCRA) regulated unit, was decommissioned by Kaiser Aluminum in late 2002, per an Ecology-reviewed closure plan (Landau Associates 2003a). Ecology and the Port agreed that contamination in the SPL Area, and beneath and near the SPL management unit, will be addressed under the Agreed Order using the Washington State Model Toxics Control Act (MTCA), which will meet the requirements for corrective action and post closure of the SPL Area and will protect human health and the environment.

1.2.2 ROD MILL AREA

The Rod Mill Area is located within the southeastern portion of the facility as shown on Figures 2, 3, and 4. The Rod Mill Area contains three areas identified in the Agreed Order: 1) the Closed Landfill started by Kaiser Aluminum in about 1980; 2) the Former Stormwater Ditch south and east of the former Rod Mill building, remediated by the Port in 2008; and 3) the Former Demister Oil Area immediately north of the former Rod Mill building, also remediated by the Port in 2008.

1.2.2.1 Rod Mill Area Closed Landfill

In about 1980, an area located in the southeast corner of the former Kaiser property (southeast of the former Rod Mill building) was used by Kaiser Aluminum as a borrow source of sand; the excavated area was subsequently used for disposal of miscellaneous smelter wastes. Based on a review of aerial photographs, it appears that the landfill was covered and closed by Kaiser Aluminum by the mid-1980s. The materials in the Rod Mill Area Closed Landfill reportedly include anode butts, pitch, green cathode, coke, dirty ore, brick, mortar, rubber and plastic products, rain gutter dust, and general trash (Kennedy Jenks 2003). According to Kaiser Aluminum (Leber, B., 2005, personal communication), SPL is not known to have been placed in the Rod Mill Area Closed Landfill. The Rod Mill Area Closed Landfill is currently unlined and covered with a thin veneer of soil and gravel.

1.2.2.2 Rod Mill Former Demister Oil Area

During operation of the Rod Mill, a demister that discharged onto the roof of the building reportedly caused oil staining on soil located on the northern side of the former Rod Mill building (Figure 4). The stained area, formed because roof downspouts were disconnected from the buried conveyance

system, consisted of an approximately 270-ft-long by 33-ft-wide unpaved area between the former building and paved drive lane to the north.

The roof drain system within this area included gutters and several downspouts that originally discharged to buried lateral pipes connected to a stormwater collection and conveyance piping system buried along the northern side of the Rod Mill foundation. This stormwater piping system drained to the east and discharged into a concrete-lined monitoring impoundment located near the northeast corner of the Rod Mill Area (Figure 4). This impoundment, which is still present, flows eastward into an offsite southward-draining channel that ultimately discharges to Hylebos Creek. Note that the stormwater piping system along the northern side of the Rod Mill foundation is a separate system from the stormwater piping system along the southern side of the building, although both systems discharged to the offsite drainage channel. It is unknown when the downspouts were disconnected from the buried conveyance system.

Impacted soil in the Rod Mill Former Demister Oil Area was removed in 2008 as part of an interim action, which consisted of excavation and offsite disposal of impacted soil, confirmation soil sampling, and site restoration activities (Landau Associates 2009a). The interim action is discussed further in Section 2.3.3.

1.2.2.3 Rod Mill Former Stormwater Ditch, South and East Sides

A stormwater ditch existed in the middle of the Rod Mill Area (Figure 4). The southern segment of the ditch was approximately 630 ft long and drained stormwater runoff in a northeasterly direction. The eastern segment of the ditch was approximately 150 ft long and drained stormwater runoff in a southeasterly direction. The ditch segments intersect and a 40-ft-long combined ditch drains to the east into an offsite drainage channel that ultimately discharges to Hylebos Creek.

Impacted soil in the stormwater ditch was removed in 2008 as part of an interim action, which consisted of excavation and offsite disposal of impacted soil from the base of the ditch, confirmation soil sampling, and ditch regrading activities (Landau Associates 2009b). The interim action is discussed further in Section 2.4.3.

1.2.3 FORMER RECTIFIER YARD AREA

The Former Rectifier Yard Area is located within the southern portion of the facility (Figures 2 and 3). During the past 4 years, most of the area has been filled with clean (meets MTCA industrial standards) compacted soil imported from other Port projects. Ecology has monitored the work, after careful review of past soil and groundwater analytical data for the Rectifier Yard. Currently, a few concrete foundation elements and asphalt pavement remain.

Previously, the Former Rectifier Yard Area was occupied by rectifying and voltage regulating transformers, transformer coolant storage tanks, an oil-water separator, a rail line, and related equipment and structures. The yard was the site of a transformer oil spill (leak) in 1986. Photos and former Kaiser Aluminum personnel have indicated that stained soil and gravel fill previously existed on the property and were removed and replaced (Landau Associates 2003b).

1.2.4 FORMER LOG YARD AREA

The Former Log Yard Area is located on the northern portion of the property (Figures 2 and 3), and was used for log sorting activities in the 1980s. Investigations at the Former Log Yard Area were conducted in 2002 and 2003 primarily to characterize the impacts of the use of Asarco slag material as road ballast to support log yard operations. In 2007, the Port placed approximately 4 to 6 ft of fill material over the Log Yard Area in preparation for future site development. The fill material was imported primarily from the Port Blair Waterway widening project.

1.3 GEOLOGY/HYDROGEOLOGY

This section describes the geology and hydrogeology of the property. A more specific description of the lithology encountered within each area during recent and previous environmental investigations is provided in subsequent sections of this report.

The lithology of the soil beneath the property is well documented to a depth of about 100 ft based on data developed from borings, test pits, and soil probes installed since 1947. Geologic units beneath the property from shallowest to deepest have been defined as follows (Dames & Moore 1985):

- Unit A: Fill materials
- Unit B: Mudflat deposit, sandy to clayey silt
- Unit C: Fine to coarse silty sand
- Unit D: Sandy or clayey silt
- Unit E: Fine to coarse sand with occasional silt.

Descriptions of Unit A, Unit B, Unit C, Unit D, and Unit E are provided below.

1.3.1 GEOLOGIC UNIT A

Fill materials are encountered from the surface to depths ranging from about 5 ft to greater than 15 ft. Portions of the property have been filled with hydraulically dredged sand and silt (Rod Mill Area and along west margins of the parcel); wet scrubber sludge (west-central former impoundments); silt, sand, and gravel materials imported from off site (original smelter complex and elsewhere); and more

recently, Blair Waterway dredged silt and sand placed as structural fill over approximately 80 of the 96 acres.

Groundwater is present in this fill material (Unit A) across most of the property. The base of Unit A (shallow water-bearing zone) is at or slightly below the mean high water level in the Hylebos and Blair Waterways (Landau Associates 1987). An evaluation of groundwater levels in the vicinity of the SPL Area indicates shallow groundwater is influenced by tidal actions in the waterways (Landau Associates 2004a). The direction of groundwater flow within Unit A is variable. On the western portion of the property, groundwater elevations for shallow groundwater indicate groundwater flows east (Landau Associates 2010). Groundwater elevations for shallow groundwater in the SPL and Rod Mill Areas indicate groundwater flow within Unit A in the eastern portion of the property is to the northeast toward the Hylebos Waterway (Landau Associates 2004a). Shallow groundwater in the Rectifier Yard Area likely discharges to the wetland located south of the Rectifier Yard Area, which eventually discharges to the Blair Waterway. Recharge to the shallow water-bearing zone is mainly through infiltration of precipitation in unpaved areas (Landau Associates 1987).

1.3.2 GEOLOGIC UNIT B

Geologic Unit B comprises the uppermost layer of native soil and is typically soft mudflat deposits consisting of predominantly sandy to clayey organic silt with minor peat, woody debris, and shell fragments. Unit B is a confining unit separating the shallow aquifer in Unit A and the intermediate aquifer in Unit C (discussed below). The upper surface of this layer varies in elevation, probably because of surface drainages previously located throughout the tideflats (Bortleson et al. 1980).

1.3.3 GEOLOGIC UNIT C

Geologic Unit C comprises the sandy deltaic sediments underlying Unit B and is identified as the intermediate aquifer. The sands are described as fine to coarse and occasionally silty (Dames & Moore 1985). The thickness of this unit ranges from 3.5 to 38 ft (Dames & Moore 1985).

1.3.4 GEOLOGIC UNIT D

Geologic Unit D comprises the low permeability layer below the intermediate aquifer (Unit C). This low permeability layer consists of sandy silt or clayey silt deltaic sediments (Dames & Moore 1985). The thickness of this unit ranges from 3 to 32 ft (Dames & Moore 1985).

1.3.5 GEOLOGIC UNIT E

Geologic Unit E consists of alternating layers of silts and sands below Unit D that extend to a depth of at least 120 ft below ground surface (BGS) (Dames & Moore 1985). Unit E is identified as the deep aquifer.

1.4 CURRENT SITE USE

Current uses of the Site include staging of construction materials (primarily soil, crushed concrete, and asphalt), and short-term use by contractors for lay down and staging of materials. The Port is planning to redevelop the property for other maritime uses.

2.0 PREVIOUS INVESTIGATIONS

This section describes the various investigations which have been performed at the six areas of interest at the Site. Data from each of the six areas is summarized in Section 3.0, Nature and Extent of Contamination.

2.1 SPENT POT LINING AREA

Several environmental investigations have been conducted in the SPL Area, between about 1981 and 2008. These investigations included collection and analysis of soil and groundwater samples, and assessment of groundwater elevation/flow direction. The major investigations that the Port is aware of are summarized below.

2.1.1 1981-2004 INVESTIGATIONS

Between 1981 and 1984, an extensive groundwater quality investigation was conducted at the SPL Area to determine the nature and extent of groundwater contamination as a result of past SPL management activities (Dames & Moore 1985). Several shallow, intermediate, and deep wells were installed as part of that study, including MW-A(S), MW-B(S), MW-C(S), MW-C(I), MW-C(D), MW-D(S), MW-E(S), and MW-F(S) as shown on Figure 5. An intermediate well and a deep well, W-(I) and W-(D), were installed off the property and downgradient of the SPL Area (Figure 5). Two deep production wells (Well #1/P and Well #4/Q) were also used during the study of the SPL Area (Figure 5)[3]. At the location identified as MW-C, three wells [shallow (S), intermediate (I), and deep (D)] were installed.

The investigation identified concentrations of total cyanide up to 322 milligrams per liter (mg/L) at MW-F(S) and fluoride up to 1,570 mg/L at MW-F(S) in the shallow groundwater-bearing zone. Wells MW-D(S) and MW-E(S) were abandoned after the investigation was completed.

From December 1994 to December 1999, groundwater samples were collected on a semiannual basis from shallow wells MW-B(S), MW-C(S), and MW-F(S); intermediate wells MW-C(I) and W-(I); and deep wells MW-C(D) and W-(D). In 2000 through 2002, annual groundwater samples were collected from wells MW-B(S), MW-C(S), MW-F(S), and W-(I). The samples were analyzed for total cyanide, weak acid dissociable (WAD) cyanide, and fluoride during each of the events.

Analytical results for samples collected from wells within and adjacent to the SPL Area between 1982 and June 2001 were tabulated and documented in the *2001 Groundwater Monitoring Report*

3 Deep production wells 1, 2, 3, and 4 were decommissioned by the Port in 2009; water rights associated with the wells have been transferred to the City of Tacoma.

(Landau Associates 2002b). These tables are included in Appendix A of this report. Analytical results for 2002 were tabulated with data dating back to June 1997 and documented in a letter report (Landau Associates 2002c). These tables are also provided in Appendix A of this report.

In 2003 and 2004, an area-wide investigation was conducted in the SPL Area by Kaiser Aluminum (MFG 2005a). The investigation included completion of 18 test pits (SPL-MA1, SPL-MA2, SPL-MA3, SPL-MA4, SPL-MA5, SPL-MA7 through SPL-MA17, SPL-LA1, and SPL-LA2) and one direct-push soil boring (SPL-DPT6) at the locations shown on Figure 6. The MFG area-wide investigation also included collection of groundwater samples from the direct-push soil boring (SPL-DPT6), intermediate monitoring wells MW-C(I) and W-(I), and three direct-push soil borings located downgradient of the SPL Area (W-DPT1, W-DPT2, and W-DPT3). Groundwater samples collected at the direct-push soil borings were collected from the intermediate aquifer. Direct-push groundwater sampling locations are shown on Figure 5.

The purpose of the MFG 2003/2004 investigation was to evaluate the vertical and horizontal extent of SPL and characterize soil, groundwater, and other waste within the area. The results of the investigation identified cPAHs in soil within the SPL Area at concentrations ranging from not detected to 32.9 milligrams per kilogram (mg/kg) and total cyanide in soil at concentrations ranging from not detected to 31 mg/kg. Diesel- and motor oil-range petroleum hydrocarbons were also present in soil at concentrations ranging from not detected to 1,730 mg/kg. Analytical results for the soil samples are provided in Appendix B of this report. Analytical results for the 2003 and 2004 groundwater samples are provided in Appendix A. Because the cPAH toxicity equivalency factors (TEFs) used in the MFG report are different from the current TEFs, and the MFG report erroneously includes benzo(g,h,i)perylene as a cPAH, the cPAH toxicity equivalency quotients (TEQs) have been recalculated for each sample. The revised cPAH TEQs for groundwater samples are shown in Table A-1 in Appendix A; revised cPAH TEQs for soil samples are shown in Table B-1 of Appendix B.

2.1.2 2008 SUPPLEMENTAL INVESTIGATION

The supplemental investigation performed by the Port in the SPL Area in 2008 was conducted to evaluate the extent of carbon materials and other wastes remaining in the subsurface and to evaluate current groundwater conditions. The goal of the investigation was to obtain data that, when combined with previous investigation results, would be adequate for a complete remedial investigation and allow selection of a remedy. This section describes the activities conducted during the supplemental 2008 investigation.

2.1.2.1 Soil Investigation

Nineteen test pits were excavated during the 2008 supplemental soil investigation. The test pits were 8 to 15 ft long, 3 ft wide, and 4 to 6.5 ft deep in size. Six test pits were located in the central portion of the SPL Area. The other 13 test pits were located at or near the boundaries of the SPL Area, including two test pits, SPL-MA24 and SPL-MA26, which were located approximately 20 ft east of the historically identified SPL Area. The locations of the 2008 supplemental investigation test pits are shown on Figure 6. Where no carbon or other waste materials were identified, the test pits were excavated to the groundwater table or a few feet below the groundwater. Where carbon materials were identified, the test pits were excavated deep enough to determine the vertical extent of the waste materials, with one exception. At test pit SPL-MA25, the excavator encountered refusal at 4.75 ft BGS. Black carbon materials was encountered at this test pit from 1.5 ft BGS to the base of the excavation. Test pit logs are provided in Appendix C.

Five soil samples were collected from soil below the black carbon materials. One soil sample was collected from each of the following test pits: SPL-MA20, SPL-MA26, SPL-MA27, SPL-MA28, and SPL-MA29. Soil samples were collected from the test pit sidewall, or from the excavator bucket if the sample was collected from greater than 4 ft BGS. Each soil sample was analyzed for cPAHs using U.S. Environmental Protection Agency (EPA) Method 8270 with selected ion monitoring (SIM) and total cyanide using EPA Method 335.4.

2.1.2.2 Soil Investigation Results

This section presents the results of the physical observations and soil chemical analyses for the Port's 2008 supplemental investigation. To evaluate the extent of carbon materials and other wastes remaining in the subsurface, physical observations of the soil were documented. Additionally, soil representing the fill below the waste materials was sampled and submitted to Analytical Resources, Inc. (ARI) laboratory for chemical analysis to determine the vertical extent of contamination that may be associated with the carbon and/or other waste materials.

Physical Characterization

Physical observations were documented by Landau Associates personnel during implementation of the 2008 supplemental soil investigation. Observations included soil lithology and presence of black carbon materials and other wastes mixed in with the soil at identified depth intervals. Wastes were described and, to the extent practicable, identified as to source. These observations are documented in the test pit logs presented in Appendix C and summarized below.

Soil Lithology

The supplemental investigation test pits (shown on Figure 6) were completed within the fill material (identified as Unit A in Section 1.3). Native material (Unit B) was not encountered in any of the test pits. The fill material consisted of a fine to coarse sand and gravel, which is consistent with previous investigations. Generally, groundwater was encountered in the test pits at depths ranging between 4 to 6 ft BGS. Three north-south trending cross-sections (A-A', A-A", and A-A'") and two east-west trending cross-sections (B-B' and C-C') showing the subsurface lithology in the SPL Area were developed. The cross-section locations are identified on Figure 7. The cross sections are shown on Figures 8, 9, and 10.

Waste Materials

The primary waste materials encountered in the supplemental investigation test pits were black carbon materials, although other types of waste were encountered in a few of the test pits, as described below. The black carbon materials may include any of the carbon process wastes described in Section 1.1.1 (i.e., SPL, anode fragments, duct dust, coal, petroleum coke, coal tar pitch, etc.). These types of process wastes are impossible to distinguish visually in the field, especially when the materials are fine grained. The waste materials were typically encountered in the 1 to 2 ft depth interval, mixed with soil. The estimated percent volume of waste materials and soil encountered within a depth interval at each supplemental test pit is summarized in Table 1.

Black Carbon Materials

Black carbon materials were observed in 11 of the 19 supplemental investigation test pits. The black carbon materials were most often observed as 50 percent or less of the soil/waste mixture, at depth intervals between 0.5 ft and 2 ft BGS. At two locations, SPL-MA18 and SPL-MA19, the black carbon materials constituted 60 and 75 percent of the soil/waste mixture, respectively. At three locations, the presence of black carbon materials extended deeper than 2 ft BGS (to 3 ft BGS at SPL-MA26, to 3.75 ft BGS at SPL-MA25, and to 4.5 ft BGS at SPL-MA29). The black carbon materials ranged from gravel-sized fragments to cobble- and boulder-sized fragments. At two locations, SPL-MA1A and SPL-MA4A, much smaller dark gray to black materials were encountered in the soil. It was unclear whether or not this material was associated with SPL. Gravel-sized petroleum coke fragments imbedded in the black carbon materials were observed at test pits SPL-MA4A and SPL-MA29. Coal tar was also imbedded in the black carbon materials at test pit SPL-MA29. The boundary between soil containing the dark gray to black carbon materials and underlying visually "clean" soil was typically very sharp, occurring over a distance of less than 6 inches.

Other Waste Materials

Concrete and refractory brick were encountered at test pit SPL-MA25. A greenish-gray material with a moderate chemical order (most likely synthetic cryolite) was encountered at test pit SPL-MA29. Coal was encountered at test pit SPL-MA28.

Chemical Characterization

Five soil samples were collected from soil below the black carbon materials and analyzed for cPAHs and total cyanide. The soil samples were collected from test pits SPL-MA20, SPL-MA26, SPL-MA27, SPL-MA28, and SPL-MA29. The cPAH and total cyanide concentrations reported for each soil sample are summarized in Table 2. As shown in Table 2, the highest cPAH concentrations (1,664 and 4,404 mg/kg total cPAHs with TEFs applied) were detected at test pits SPL-MA20 and SPL-MA28; the highest cyanide concentrations [27.6 and 19.2 micrograms per kilogram (µg/kg)] were detected in the samples collected at test pits SPL-MA26 and SPL-MA28. The sample collected from test pit SPL-MA26 was collected at a depth directly below fill material containing black carbon materials. The depth below the black carbon materials from which the other samples were collected ranged from 0.25 ft to 2.25 ft. A comparison of the soil sample analytical results to preliminary soil screening levels and an evaluation of the depth of impacted soil relative to the depth of black carbon materials in the SPL Area subsurface are provided in Section 3.2.2. The laboratory analytical reports for the soil samples are provided in Appendix D.

2.1.2.3 Groundwater Investigation

During a reconnaissance of the SPL Area prior to the 2008 supplemental groundwater investigation, monitoring wells MW-A(S), MW-D(S), and MW-E(S) were observed to be either abandoned or no longer accessible. Monitoring wells MW-B(S), MW-C(S), MW-C(I), MW-C(D), and MW-F(S) remained. Groundwater samples were collected from each of the existing shallow and intermediate wells during the 2008 supplemental investigation. A groundwater sample was also collected from well W-(I), located across Taylor Way and downgradient from the SPL Area. Each groundwater sample was analyzed for total cyanide using EPA Method 335.4, WAD cyanide using Standard Method SM4500, and cPAHs and naphthalenes using EPA Method 8270D-SIM.

Cyanide forms complexes of various stabilities with metals and organic materials. Different cyanide analyses measure different forms of cyanide. Free cyanide includes HCN and CN. WAD cyanide includes weak and moderately strong metal complexes of silver, cadmium, copper, mercury, nickel, and zinc, in addition to free cyanide. Total cyanide also includes nitriles (organic cyanides) and stable metallocyanide complexes that are not included in WAD or free cyanide.

The samples were analyzed for both total and WAD cyanide because human health criteria for cyanide are often expressed as total cyanide (although the drinking water maximum contaminant level is expressed as free cyanide); whereas ecological criteria are expressed as WAD cyanide.

Groundwater levels for evaluating groundwater flow direction were measured at each well located within or adjacent to the SPL Area on July 1 and 2, 2008.

2.1.2.4 Groundwater Investigation Results

This section presents the results of the groundwater monitoring that was conducted during the 2008 supplemental investigation, which included groundwater level measurements at each of the existing shallow and intermediate aquifer groundwater monitoring wells and collection of groundwater samples at the shallow aquifer wells and two intermediate aquifer monitoring wells for laboratory analysis. The results for the groundwater level measurements are presented as water level elevations and were used to evaluate flow direction for the shallow aquifer groundwater.

Groundwater Elevations and Flow Direction

The depths to groundwater measured in the wells located within or adjacent to the SPL Area on June 3, 2008 ranged from approximately 4 to 10 ft BGS at the shallow monitoring wells and 8 ft at intermediate well MW-C(I). The depths to groundwater were converted to elevations, which are summarized in Table 3. The groundwater elevations for the shallow wells were contoured and are presented on Figure 11. As shown on Figure 11, groundwater flow direction for the shallow aquifer groundwater within the SPL Area is to the northeast toward the Hylebos Waterway.

Chemical Characterization

Groundwater samples collected from the existing wells located on the property and within or adjacent to the SPL Area [i.e., shallow aquifer wells MW-B(S), MW-F(S), and MW-C(S), and intermediate aquifer well MW-C(I)] and the off property intermediate well W-(I). The analytical results are summarized in Table 4 and shown on Figures 12 and 13 (shallow and intermediate aquifers respectively). A comparison of the groundwater sample analytical results to preliminary soil screening levels is provided in Section 3.2.3. The laboratory analytical reports for the groundwater samples are provided in Appendix D.

Shallow Aquifer Groundwater

Total and WAD cyanide were detected in all of the samples collected from the shallow aquifer wells. cPAHs were detected only in samples collected from wells MW-B(S) and MW-F(S). The highest

concentrations of total cyanide, WAD cyanide, and cPAHs occurred at well MW-F(S), which is the well located on the upgradient side of the SPL Area (Figure 11). The lowest concentrations reported for the samples collected from the shallow aquifer occurred at well MW-C(S), which is located downgradient of the SPL Area (Figure 11).

Intermediate Aquifer Groundwater

WAD cyanide and cPAHs were not detected in the groundwater samples collected from the intermediate aquifer wells MW-C(I) and W-(I) during the 2008 supplemental investigation. Total cyanide was detected at a concentration of 0.043 mg/L at well MW-C(I) and at a concentration of 0.023 mg/L at well W-(I), which are an order of magnitude lower than the concentrations reported for the shallow aquifer groundwater samples.

2.1.3 2008 BLAIR HYLEBOS PENINSULA TERMINAL REDEVELOPMENT PROJECT

In December 2008, six soil samples and five groundwater samples were collected from three locations in Taylor Way adjacent to the SPL Area as part of the road/rail/infrastructure (RRI) component of the proposed Blair Hylebos Peninsula Terminal Redevelopment Project. The RRI investigation was conducted to assist with determining appropriate management options for dewatering effluent during RRI project construction activities. The three locations (RRI-P-215, RRI-P-216, and RRI-P-217) are shown on Figures 5 and 6. The Blair Hylebos Peninsula Terminal Redevelopment Project has since been cancelled, but will continue to be referenced herein where relevant information is presented.

The six soil samples collected were analyzed for metals (arsenic, cadmium, chromium, lead, and mercury), total cyanide, and diesel- and motor oil-range petroleum hydrocarbons. The analytical results are presented in Table 5 and their comparison to the preliminary screening levels is discussed in Section 3.2.2.3. Chromium was detected in six soil samples at concentrations up to 47.9 mg/kg. Lead was detected in each of two soil samples at a concentration of 4 mg/kg. Total cyanide was detected in three soil samples at concentrations up to 3.83 mg/kg. Motor oil-range petroleum hydrocarbons were detected in one soil sample at a concentration of 15 mg/kg. Arsenic, cadmium, mercury, and diesel-range petroleum hydrocarbons were not detected in any of the six soil samples.

Two groundwater samples were collected from the shallow aquifer and three groundwater samples were collected from the intermediate aquifer during the RRI investigation. The groundwater samples were analyzed for total metals (arsenic, cadmium, chromium, lead, and mercury), total cyanide, WAD cyanide, and diesel- and motor oil-range petroleum hydrocarbons. The analytical results are presented in Table 6 and their comparison to the preliminary screening levels is discussed in Section 3.2.3. Chromium was detected in the three samples from the intermediate aquifer in concentrations

ranging from 0.023 mg/L to 0.038 mg/L. Total cyanide was detected in four samples, two from the shallow aquifer and two from the intermediate aquifer, in concentrations up to 1.90 mg/L. WAD cyanide was detected in the two samples from the shallow aquifer in concentrations up to 0.030 mg/L. Petroleum hydrocarbons and the other metals for which the samples were analyzed were not detected in any of the five groundwater samples.

2.2 ROD MILL AREA CLOSED LANDFILL

Previous environmental investigations within the Rod Mill Area Closed Landfill were conducted between 2003 and 2008. This section summarizes the investigation activities and results. The two other locations of environmental concern within the Rod Mill Area (Former Demister Oil Area and Former Stormwater Ditch) are addressed in separate sections of this report.

2.2.1 2003-2007 INVESTIGATIONS

In 2003 and 2004, an area-wide investigation was conducted in the Rod Mill Area by Kaiser Aluminum (MFG 2005b), including the Rod Mill Area Closed Landfill. In late 2003, 12 test pits (LF1 through LF12, shown on Figure 14) and one direct-push soil boring (DPT3) were completed by MFG in the southeastern portion of the Rod Mill Area where the closed landfill is located. The test pits and the direct-push soil boring were used to evaluate the approximate lateral and vertical extent of the landfill waste materials. More recently (November 2007), a soil boring, identified as RRI-B-23 on Figure 14, was completed in the Rod Mill Area Closed Landfill as part of the Port's Blair Hylebos Peninsula Terminal Redevelopment Project. Test pit and boring logs for previous explorations within and adjacent to the Rod Mill Area Closed Landfill are provided in Appendix E.

MFG observed waste materials in four of the test pits (LF8, LF9, LF10, and LF12), and at two of these test pits (LF9 and LF10) soil samples were collected for laboratory analysis from the depth interval where the waste materials were present. Soil samples were also collected from the upper 4 to 5 ft at three other test pits (LF1, LF4, and LF7) where waste materials were not observed and a groundwater sample was collected from direct-push soil boring, DPT3. All of the soil and groundwater samples were analyzed for anions; total and WAD cyanide; total metals; diesel-, motor oil-, and gasoline-range petroleum hydrocarbons; extractable petroleum hydrocarbons; PCBs; phenol; volatile organic compounds (VOCs); and semivolatile organic compounds (SVOCs). The soil samples were also analyzed for toxicity characteristic leaching procedure (TCLP) metals. The analytical results were tabulated and documented in the *Site Characterization Report, Rod Mill Area* (MFG 2005b). These tables are also provided in Appendices F (soil) and G (groundwater) of this compilation report.

The results of the investigation identified arsenic, cadmium, lead, petroleum hydrocarbons, naphthalenes, and cPAHs in the subsurface soil within and adjacent to the Rod Mill Area Closed Landfill and aluminum, arsenic, barium, cadmium, dibenzofuran, naphthalene, and PAHs (including cPAHs) in the groundwater. Because the cPAH TEFs used in the MFG reports are different from the current TEFs and the MFG report erroneously includes benzo(g,h,i)perylene as a cPAH, the cPAH TEQs were recalculated for each soil and groundwater sample. The revised soil sample cPAH TEQs are provided in Table F-1 of Appendix F and the revised groundwater sample cPAH TEQs are provided in Table G-1 of Appendix G.

2.2.2 2008 SUPPLEMENTAL INVESTIGATION

The Port's 2008 supplemental investigation included subsurface explorations in and adjacent to the Rod Mill Area Closed Landfill. The goal of the investigation in this area was to obtain data that, when combined with previous investigation results, would allow for the extent of waste material in the subsurface to be adequately delineated, support selection of an appropriate remedy, and determine impacts to groundwater by the waste materials, if any. The investigation included excavation of 17 test pits; installation of 4 wells in the shallow aquifer and 4 wells in the intermediate aquifer at locations upgradient, downgradient, and within the Rod Mill Area Closed Landfill; and collection of groundwater samples and water levels measurements at each well.

The data collected to characterize the Rod Mill Area Closed Landfill consisted primarily of physical observations of the soil and waste materials in 17 test pits and 8 monitoring well soil borings. Field-screening included visible observations for staining and the use of a portable photoionization detector (PID) for monitoring VOC soil vapors. The physical observations and PID readings were documented by Landau Associates personnel and are provided in the test pit logs presented in Appendix H. The 2008 test pit and monitoring well locations are shown on Figures 14 and 15, respectively.

The test pits were typically 8 to 14 ft long, 3 ft wide, and 4 to 10 ft deep. The length of test pits LF20, LF21, LF22, LF23, and LF29 was extended to determine the lateral limits of the Rod Mill Area Closed Landfill, and ranged from 19 to 37 ft. The lateral limits of the closed landfill are largely defined by these test pits, as shown on Figure 14. The depth of the test pits was determined based on the presence or absence of waste materials. Where waste materials were identified, the test pits were excavated deep enough (typically 8 ft BGS) to determine the vertical extent of the waste profile. At some test pits (i.e., LF21, LF22, LF28, and LF29) the waste materials were too large to be removed by the excavator and the full depth of the waste materials was not determined. Where no waste materials were observed, the depth of the test pits ranged from 4 to 8 ft BGS. The depth of the monitoring well soil borings ranged from 8.5 ft to 33 ft BGS.

In addition to the physical observations and field screening, five soil samples were collected and submitted to ARI laboratory for chemical analysis. These samples were collected from the soil borings associated with monitoring wells MW-6(S) and MW-6(I). Waste materials were encountered at both of these locations. The maximum depth at which waste materials were encountered was 5.25 ft at MW-6(S) and 4 ft at MW-6(I). The samples were collected at depth intervals below the waste materials. At boring MW-6(S), the soil samples were collected from depths of 5.5 ft BGS and 10 ft BGS. The shallow sample was collected from fill material consisting of sandy gravel and the deeper sample was collected from native material consisting of clayey silt. At boring MW-6(I), the soil samples were collected from depths of 7 ft BGS, 9 ft BGS, and 10.5 ft BGS. The two shallower samples were collected from fill material consisting of silty, gravelly sand and the deeper sample was collected from native material consisting of clayey silt.

Although no waste materials were encountered at the depth intervals at which the soil samples were collected, a strong petroleum odor and staining were present at these depths. Consequently, each soil sample was analyzed for diesel- and motor oil-range petroleum hydrocarbons (using Ecology's NWTPH-Dx Method) in addition to cPAHs (using EPA Method 8270-SIM) and total cyanide (using EPA Method 335.4).

2.2.2.1 Physical Characterization Results

Physical observations of the soil in the Rod Mill Area Closed Landfill were documented by Landau Associates personnel during implementation of the Port's 2008 supplemental investigation. Wastes were described and, to the extent practicable, identified. These observations are documented in the test pit logs presented in Appendix H and summarized below.

Soil Lithology

The 2008 supplemental investigation test pit excavations and the soil borings for the shallow and intermediate monitoring wells further defined the soil lithology within and adjacent to the Rod Mill Area Closed Landfill. Geologic units A, B, and C, described in Section 1.3, were encountered during the investigation. Each of these units, as observed at the closed landfill, is described below.

- **Geologic Unit A**. The fill material that comprises Unit A consisted of a fine to medium sand with varying amounts of gravel and silt, which is consistent with previous investigations and the description provided in Section 1.3.1. A sandy silt to silty sand layer was encountered at depths ranging from 2 to 5 ft BGS at test pits LF25, LF26, and LF27 and soil borings MW-3(S), MW-3(I), MW-4(S), and MW-4(I). This layer is most likely hydraulically dredged sand and silt from the Blair or Hylebos Waterways that was used to fill the Site prior to development (Dames & Moore 1985).

- **Geologic Unit B.** Unit B is a mudflat deposit and is the uppermost layer of native soil. Ten of the seventeen supplemental investigation test pits and each of the monitoring well soil borings extended through the fill material to the native mudflat deposits. The top of Unit B was encountered between 7.5 and 8 ft BGS at each location, except at test pit LF18 and soil boring MW-6(I) where it was encountered at depths of 9.5 and 9 ft BGS, respectively. The thickness of Unit B was defined at each intermediate monitoring well soil boring and ranged from 5 to 9 ft. In the Rod Mill Area Closed Landfill, Unit B consists of a gray, clayey silt with varying amounts of roots. This description is consistent with the description of Unit B provided in Section 1.3.2.
- **Geologic Unit C**. Unit C comprises the sandy deltaic sediments underlying Unit B and is identified as the intermediate water-bearing zone. The top of Unit C was encountered at depths ranging from 14 to 17 ft BGS during the 2008 supplemental investigation. At the intermediate monitoring well soil borings, Unit C consisted of brown and gray fine to medium sand with varying amounts of silt. This description is consistent with the description of Unit C provided in Section 1.3.3.

Three cross-sections showing the subsurface lithology in the Rod Mill Area Closed Landfill were developed. The cross-section locations are identified on Figure 16. The cross-sections are shown on Figures 17, 18, and 19.

Waste Materials

The primary types of waste materials encountered in the 2008 supplemental investigation test pits were black carbon materials, concrete, and, to a lesser extent, refractory brick, although other types of waste were encountered at a few of the test pits as described below. The black carbon materials may include some, but not all, of the dark gray to black carbon process wastes described in Section 1.1.1 (i.e., unused cathode rubble, anode fragments, alumina ore, petroleum coke, coal, coal tar pitch, etc.). SPL was reportedly not placed in the Rod Mill Area Closed Landfill.

The estimated percentage of each general type of waste material encountered at the closed landfill is summarized in Table 7. The types of waste materials encountered are summarized as follows:

- **Black Carbon Materials**. Black carbon materials were observed in 10 of the supplemental investigation test pits and in monitoring well soil borings MW-6(S) and MW-6(I). The black carbon materials were typically observed as 50 percent or less of a soil/waste mixture at depth intervals between 0.5 and 4.5 ft, but at test pits LF19, LF24, and boring MW-6(S), the black carbon materials were encountered in soil at depths up to 6 ft BGS, 7.5 ft BGS, and 5.25 ft BGS, respectively. Test pits LF19, LF24, and boring MW-6(S) are located in close proximity to each other within the eastern half of the Rod Mill Area Closed Landfill. The black carbon materials ranged from gravel-sized fragments to cobble- and boulder-sized fragments. Fragments of petroleum coke and coal tar pitch were found imbedded in the black carbon materials at soil boring MW-6(I).
- **Concrete and Refractory Brick.** Concrete and refractory brick were encountered at several 2008 supplemental investigation test pits. At some locations, the size of the concrete was too large to remove with the excavator.

- **Other Wastes.** Other types of waste materials encountered included rubber hoses, rebar, cloth fabric, and metal debris such as pipe elbows. At monitoring well soil boring MW-6(I), a gray silt/ash was encountered at a depth of 3.5 to 4 ft BGS.

Soil Contamination

A strong petroleum odor, staining, and/or sheen were observed at three locations: test pit LF13 and monitoring well borings MW-6(S) and MW-6(I). At test pit LF13, odor and sheen were observed from 1 to 8 ft BGS. At monitoring well borings MW-6(S) and MW-6(I), odor and staining were observed from 3.25 to 6 ft BGS and 6.75 to 9.5 ft BGS, respectively. Groundwater was encountered at each of these locations at depths ranging from 6 to 7.5 ft BGS. A sheen was observed on the groundwater at all three locations. The odor, staining, and sheen were all observed within the fill layer (Unit A).

PID readings at MW-6(S) and MW-6(I) were elevated and ranged from 28 parts per million (ppm) to 220 ppm at the depth intervals at which the petroleum hydrocarbon odor and staining were observed. At test pit LF13, the PID readings ranged from 0 to 18.3 ppm. At the majority of the remaining 2008 supplemental investigation explorations, no concentrations of volatile vapors were detected using the PID. At monitoring well boring MW-3(I), vapor concentrations ranging from 5 ppm to 35 ppm were detected within the lower portion of Unit B and within Unit C but no visual indications of contamination were observed. Concentrations of 17 ppm and 20 ppm were also detected at monitoring well soil boring MW-5(I) within Unit C but no visual indications of contamination were observed.

2.2.2.2 Chemical Characterization Results

Five soil samples were collected from two locations where waste materials were encountered, [monitoring wells MW-6(S) and MW-6(I)], but below the waste materials. The soil samples were analyzed for cPAHs and total cyanide to evaluate the impacts to underlying soil by the landfill wastes. The samples were also analyzed for diesel- and motor oil-range petroleum hydrocarbons due to the petroleum hydrocarbon odors, sheen, and/or staining observed at these locations.

The cPAH, total cyanide, and diesel- and motor oil-range petroleum hydrocarbon concentrations reported for each soil sample are summarized in Table 8. As shown in Table 8, cPAHs and petroleum hydrocarbons were detected in each sample and cyanide was detected in four of the five samples.

Total cPAHs with TEFs applied for the three shallowest soil samples (collected at depths of 5.5, 7, and 9 ft BGS) ranged from 18,580 µg/kg to 52,290 µg/kg. Diesel-range petroleum hydrocarbons for these shallower samples ranged from 3,400 mg/kg to 7,300 mg/kg. Concentrations of motor oil-range petroleum hydrocarbons ranged from 900 mg/kg to 1,500 mg/kg.

Elevated concentrations of cPAHs were detected in the deepest sample collected at location MW-6(S) but concentrations of petroleum hydrocarbons were low (100 mg/kg for diesel and 43 mg/kg

for motor oil). Concentrations of cPAHs and petroleum hydrocarbons were significantly less in the deepest sample collected at MW-6(I) than in any of the other samples. The deep samples at MW-6(S) and MW-6(I) were collected from 10 and 10.5 ft BGS, respectively.

Cyanide concentrations ranged from not detected in the deep sample at MW-6(I) to 0.209 mg/kg in the shallowest sample collected at MW-6(S).

A comparison of the soil sample analytical results to preliminary soil screening levels is provided in Section 3.3.2.1. The laboratory analytical reports for the soil samples are provided in Appendix I.

2.2.3 2008 GROUNDWATER INVESTIGATION

To determine if the waste materials in the Rod Mill Area Closed Landfill had impacted groundwater, a groundwater investigation was conducted consisting of four shallow and four intermediate wells and collection of groundwater samples from each of the new wells and one pre-existing well [MW-2(I)]. Water levels were also measured at each of the new and existing wells to determine groundwater flow direction within the closed landfill area. These activities are described below.

2.2.3.1 Monitoring Well Installation

All but one shallow well and one intermediate well were installed at locations outside the Rod Mill Area Closed Landfill. Two shallow wells, MW-3(S) and MW-4(S), and two intermediate wells, MW-3(I) and MW-4(I), were located northeast and east of the closed landfill because these locations were likely to be downgradient. One shallow well, MW-5(S), and one intermediate well, MW-5(I), were located near the southwest corner of the landfill, in an area expected to be upgradient. One shallow well, MW-6(S), and one intermediate well, MW-6(I), were located within the Rod Mill Area Closed Landfill. The locations of the new groundwater monitoring wells are shown on Figure 15. The boring logs and well as-builts are provided in Appendix H.

The shallow monitoring wells were installed within fill material (Geologic Unit A) and were terminated at the top of the native mudflat deposits at about 8 ft BGS. The intermediate monitoring wells were installed within the fine to coarse and occasionally silty sand deltaic sediments (Dames & Moore 1985) underlying the sandy to clayey mudflat deposits. The depth of the intermediate wells ranged from 26.5 ft to 33 ft. The wells were screened over a 10-ft interval in the intermediate water-bearing zone (Geologic Unit C). The monitoring wells were developed after construction to remove formation material from the well borehole and the filter pack prior to groundwater level measurement and sampling.

The location of each new well was surveyed using differential global positioning system (DGPS) equipment to facilitate accurate placement of these features on project figures and drawings, as well as for submittal to Ecology. Both the top of monitoring well casing elevation and ground surface elevation

adjacent to the monitoring well was obtained. This information was used to develop groundwater elevation contour maps (further described below in Section 2.2.3.2). Groundwater levels for evaluating groundwater flow direction were measured at each of the new and existing wells on July 1 and 2, 2008.

2.2.3.2 Groundwater Elevations and Flow Direction Results

The depths to groundwater ranged from approximately 5.7 to 7.0 ft BGS at the shallow monitoring wells and from approximately 8.7 to 10.1 ft BGS at the intermediate monitoring wells (July 2008). The depths to groundwater were converted to elevations, which are summarized in Table 9. The groundwater elevations for the shallow monitoring wells and intermediate monitoring wells were contoured and are presented on Figures 20 and 21, respectively. As shown on Figures 20 and 21, groundwater flow direction for the shallow and intermediate aquifers within the Rod Mill Area Closed Landfill is to the east, toward the Hylebos Waterway.

2.2.3.3 Groundwater Chemical Characterization Results

Groundwater samples were collected from each of the new wells and existing well MW-2(I) on July 1 and July 2, 2008. Each groundwater sample was analyzed for total cyanide using EPA Method 335.4, WAD cyanide using Standard Method SM4500CNI, PAHs using EPA Method 8270D-SIM and large volume injection (LVI), total metals (arsenic, cadmium, chromium, copper, lead, and zinc) using EPA Method 6020, mercury using EPA Method 7470, PCBs using EPA Method 8082 low level analysis, and diesel- and motor oil-range petroleum hydrocarbons using Ecology Method NWTPH-Dx. The analytical results for the constituents detected in the 2008 supplemental investigation groundwater samples are summarized in Table 10. The laboratory analytical reports for the groundwater samples are provided in Appendix I.

Shallow Aquifer Groundwater

Few constituents were detected in groundwater samples collected from the shallow aquifer wells, except in the groundwater sample collected at well MW-6(S), located within the landfill. Constituents detected at one or more of monitoring wells MW-3(S), MW-4(S), and MW-5(S) include VOCs (acetone, carbon disulfide, chloroform, 2-butanone, and vinyl chloride), PAHs (naphthalenes, acenaphthene, acenaphthylene, fluorene, anthracene, fluoranthene, pyrene, and dibenzofuran) and metals (arsenic, cadmium, chromium, copper, lead, and zinc). Total cyanide was detected at the reporting limit in well MW-3(S) but was not detected at wells MW-4(S) and MW-5(S). No cPAHs, WAD cyanide, PCBs, diesel- or motor oil-range petroleum hydrocarbons, or mercury were detected in wells MW-3(S), MW-4(S), and MW-5(S). Monitoring wells MW-3(S) and MW-4(S) are located downgradient of the Rod Mill

Area Closed Landfill, near the eastern property boundary. Monitoring well MW-5(S) is located upgradient of the Rod Mill Area Closed Landfill, near the southern property boundary (Figure 20).

Constituents detected at well MW-6(S) include VOCs, PAHs, metals, diesel-range petroleum hydrocarbons, PCBs, and total cyanide. As mentioned in Section 2.2.2.1, petroleum hydrocarbon odors, staining, and sheen were observed at this location.

A comparison of the shallow aquifer groundwater sample analytical results to preliminary groundwater screening levels is provided in Section 3.3.3.1.

Intermediate Aquifer Groundwater

Fewer constituents were detected in the intermediate aquifer wells located upgradient [MW-2(I) and MW-5(I); Figure 21] and downgradient [MW-3(I) and MW-4(I), Figure 21] of the Rod Mill Area Closed Landfill than in the shallow aquifer. The only VOCs detected were acetone and chloroform and these were only detected at well MW-4(I). Metals (arsenic, chromium, copper, and zinc) were detected in one or more of these wells. No PCBs, diesel- or motor oil-range petroleum hydrocarbons, total or WAD cyanide, or PAHs except naphthalene were detected in any of the intermediate aquifer wells.

At monitoring well MW-6(I), which is located within the boundaries of the landfill (Figure 21), VOCs, diesel- and motor oil-range petroleum hydrocarbons, total cyanide, WAD cyanide, cadmium, lead, mercury, and zinc were not detected in the intermediate aquifer groundwater. PAHs, including cPAHs, PCB Aroclor 1254, arsenic, chromium, and copper were detected.

A comparison of the intermediate aquifer groundwater sample analytical results to preliminary groundwater screening levels is provided in Section 3.3.3.2.

2.2.3.4 Field Parameters Results

Field parameters (pH, conductivity, dissolved oxygen, and temperature) were measured during the 2008 supplemental investigation groundwater investigation. Dissolved oxygen concentrations were very low in all wells. Conductivity measurements ranged from 430 to 3,712 micro siemens (µS) in the shallow aquifer, and from 1,340 to 7,181 µS in the intermediate aquifer. These results and other field parameter results are summarized in Table 11.

2.3 ROD MILL FORMER DEMISTER OIL AREA

Environmental investigations and an interim action were conducted in the Rod Mill Former Demister Oil Area between 2002 and 2008. This section summarizes the activities and results associated with the investigations and the interim action.

2.3.1 2002-2006 INVESTIGATIONS

During operation of the Rod Mill, a demister that discharged on the roof of the building reportedly caused oil staining on soil located on the north side of the former Rod Mill building (Figure 4). The impacted area was approximately 270 ft long by 33 ft wide and was a gravel surfaced area between the former building and a paved drive lane to the north.

In 2002, two near-surface soil samples, RM-1 and RM-2, were collected at locations within the Rod Mill Former Demister Oil Area where no visible soil staining was observed (Kennedy Jenks 2003). In 2003, two surface soil samples, RDA1 and RDA2, were collected by Kaiser Aluminum in areas within the Former Demister Oil Area where visible soil staining was observed (MFG 2005b). The sample locations are shown on Figure 22.

The 2002 samples were analyzed for diesel-, motor oil-, and gasoline-range petroleum hydrocarbons and PCBs. The 2003 soil samples were analyzed for diesel- and motor oil-range petroleum hydrocarbons, PAHs, and naphthalenes. The analytical results for the 2002 and 2003 samples were tabulated and documented in the *Preliminary Due Diligence Evaluation* (Kennedy Jenks 2003) and the *Site Characterization Report, Rod Mill Area* (MFG 2005b) reports, respectively. These tables are also provided in Appendix F of this compilation report.

As shown in Appendix F, diesel-, motor oil-, and gasoline-range petroleum hydrocarbons and PCBs were not detected in the two near surface soil samples, RM-1 and RM-2, collected outside the areas with visible soil staining. Diesel- and motor oil-range petroleum hydrocarbons, PAHs, and naphthalenes were detected in the two near-surface soil samples, RDA1 and RDA2, collected in areas with visible soil staining. The concentrations of total cPAHs with TEFs applied, and diesel- and motor oil-range petroleum hydrocarbons, which were determined to be indicators of the extent of contamination in the area for purposes of remediation, are summarized in Table 12. As shown in Table 12, concentrations of cPAHs and diesel- and motor oil-range petroleum hydrocarbons exceeded the interim action cleanup levels. The 2002 and 2003 soil sample locations are shown on Figure 22.

In addition to the four surface samples described above, soil samples were collected in 2005 and 2006 from the center of 22 grids located within the Rod Mill Former Demister Oil Area. The soil samples were collected from depth intervals of 0 to 1 ft BGS and 1 to 2 ft BGS. The locations of the grids and the identification of grids that contained soil with concentrations exceeding the interim action cleanup levels are shown on Figure 23. Based on information provided on this figure, soil exceeding the interim action cleanup levels was present to a depth of 1 ft BGS at eight grids located directly adjacent to the former Rod Mill building foundation, and to a depth of 2 ft BGS at one grid located directly adjacent to the former Rod Mill building foundation.

The comparison of analytical data from the previous investigations to the interim action cleanup levels provided the basis for the design and execution of an interim action in 2008.

2.3.2 2008 SUPPLEMENTAL INVESTIGATION

No investigation of the Rod Mill Former Demister Oil Area was conducted during the 2008 supplemental investigation because the already existing data was considered adequate to evaluate and select appropriate remedial measures.

2.3.3 2008 INTERIM ACTION

In discussions with the Port, Ecology agreed that the Rod Mill Former Demister Oil Area could be addressed as an independent interim action because it was a small, well-defined area and the cleanup alternatives were limited and obvious (Evans, W., 2008, personal communication). Excavation and offsite disposal of contaminated soil from the Rod Mill Former Demister Oil Area was conducted in 2008 (Landau Associates 2009a).

It was initially anticipated that the roof drain downspouts connected to a footing drain installed adjacent to the stem wall foundation present along the southern edge of the Rod Mill Former Demister Oil Area. To identify the actual piping layout and explore the depth and extent of soil contamination, four test pits were excavated within the anticipated cleanup area. It was determined that no footing drain was present and that the three downspouts discharged to buried lateral pipes connected directly to the stormwater collection and conveyance piping system that was present, as indicated on Figure 4. The test pits also indicated that surficial soil staining was generally limited to the upper 5 inches of soil near the downspouts and the area adjacent to the stem wall.

Surficial soil was removed across the entire width and length of the Rod Mill Former Demister Oil Area during the interim action, which was conducted during the period from September to December 2008. The soil removal depth varied based on the estimated depth of contamination and field observations during soil excavation. Onsite screening of soil exposed during excavation included visual, odor, and sheen observations supplemented with PID readings. Soil was typically excavated to a depth of approximately 12 inches BGS along the concrete stem wall and 6 inches BGS within the rest of the Rod Mill Former Demister Oil Area. As directed by the Port, the buried storm drain piping within the Rod Mill Former Demister Oil Area (including the lateral drainage pipes and the main conveyance pipe) was also removed, and additional soil was excavated below and around the lateral drainage pipes down to their connection with the main conveyance pipe. Storm drain piping at the west portion of this area did not contain visible contamination and was not removed.

Because water in the storm drain piping flowed to the east and discharged into the concrete-lined sampling station located near the northeast corner of the Rod Mill Area (see Figure 4), solids present within the concrete impoundment were also removed during the interim action.

As discussed in the following section, the results of confirmation soil sampling along the concrete stem wall near the western end of the Rod Mill Former Demister Oil Area indicated that some additional soil would need to be removed to meet the interim action cleanup level for cPAHs. Additional soil removal activities in this area were conducted on December 16, 2008. This included removal of a small concrete pad and a storm drain pipe located underneath the pad, and excavation of an additional 6 to 12 inches of soil [approximately 24 cubic yards (yd^3)] within a 10- to 11-ft-wide by approximately 100-ft-long zone along the stem wall.

In total, approximately 57 truckloads (850.65 tons) of soil were removed from the Rod Mill Former Demister Oil Area as part of this interim action. Following soil removal activities, the area was regraded and reshaped (using existing soil) to restore and promote stormwater drainage.

2.3.3.1 Confirmation Sampling

Following initial soil removal, nine confirmation samples (CS-12 through CS-20) were collected within the Rod Mill Former Demister Oil Area, at the locations shown on Figure 24. Each sample consisted of the upper 6 inches of soil exposed at the sample location. Samples CS-12 through CS-20 were analyzed for diesel- and motor oil-range hydrocarbons. Three additional confirmation soil samples (CS-21 through CS-23) were collected along the length of the Rod Mill Former Demister Oil Area and were analyzed for cPAHs. The analytical results for the interim action confirmation samples are summarized in Table 13.

The concentration of cPAHs in sample CS-23, located near the western end of the cleanup area, exceeded the interim action cleanup levels developed for the project. Due to the presence of a small concrete pad near this sampling location, the contractor experienced difficulty removing all of the surficial soil during the initial soil excavation. It was thus assumed that the cPAH contamination detected in sample CS-23 may have resulted from cross-contamination. Accordingly, four additional samples were collected at two locations (CS-24 and CS-25, as shown on Figure 24) along the stem wall to evaluate the cPAH concentrations in the soil present below the surficial soil layer that was removed during the initial excavation. Sample CS-24(0.5-1) consisted of soil present from 0.5 to 1.0 ft BGS at location CS-24, and sample CS-25(1-1.5) consisted of soil present from 1.0 to 1.5 ft BGS at location CS-25. Because samples CS-24(0.5-1) and CS-25(1-1.5) contained no detectable cPAHs (see Table 13), the underlying samples collected at these locations were not analyzed. As a precaution, the Port removed the top 6 to 12 inches of soil along the foundation stem wall, as described above.

2.4 ROD MILL AREA FORMER STORMWATER DITCH

Environmental investigations and an interim action were previously conducted in the Rod Mill Area Former Stormwater Ditch between 2002 and 2008. This section summarizes the activities and results associated with the investigations and the interim action.

2.4.1 2003/2004 INVESTIGATION

In 2003 and 2004, an area-wide investigation was conducted by Kaiser Aluminum in the Rod Mill Area (MFG 2005b), including the Former Stormwater Ditch as shown on Figure 2. Five samples of the soil present in the ditch were collected in 2003; sample locations are shown on Figure 25. The samples were collected from the upper 0.5 ft of soil and analyzed for petroleum hydrocarbons, PAHs, and VOCs. The analytical results were tabulated and documented in the *Site Characterization Report, Rod Mill Area* (MFG 2005b). The pertinent table from the 2005 MFG report is provided in Appendix F of this compilation report. However, as noted previously, the cPAH TEQs for the soil samples were recalculated using the current TEFs. The 2003 analytical results and the revised cPAH TEQs are provided in Table 14.

VOCs were not detected in any of the samples. Concentrations of petroleum hydrocarbons ranged from 13.3 mg/kg to 817 mg/kg, which was less than the interim action cleanup level developed at that time (2,000 mg/kg). Concentrations of total cPAHs with TEFs applied ranged from 141 µg/kg to 15,500 µg/kg; three samples had concentrations that exceeded the interim action cleanup level for cPAHs developed by MFG.

2.4.2 2008 SUPPLEMENTAL INVESTIGATION

The Port's 2008 supplemental investigation consisted of collection and analysis of additional soil samples within the Former Stormwater Ditch to further characterize suspect soil. Sixteen samples were collected from eight locations (identified as SCD1 through SCD8 on Figure 25). At each location, soil samples were collected from 0 to 1 ft BGS and 1 to 2 ft BGS. Soil samples collected from the 0 to 1 ft depth interval were analyzed for cPAHs. Soil samples collected from the 1 to 2 ft depth interval were frozen at the laboratory. Based on the analytical results for the samples collected from the 0 to 1 ft depth interval, samples collected from the 1 to 2 ft depth interval at locations SCD2, SCD5, SCD6, and SCD7 were analyzed for cPAHs.

The analytical results for the 12 soil samples are summarized in Table 15. As shown in Table 15, cPAHs were detected in each of the samples, ranging from 1.9 µg/kg at SCD3 to 24,370 µg/kg at SCD7. Four samples had concentrations that exceeded the interim action cleanup level for cPAHs (2,000 µg/kg).

The highest cPAH concentrations were detected in the upper depth interval (0 to 1 ft BGS) at sampling stations SCD2, SCD6, and SCD7 (10,940; 4,040; and 24,370 µg/kg total cPAHs with TEFs applied, respectively). Concentrations of cPAHs in the deeper samples from these locations were lower (2,174; 1,413; and 492 µg/kg total cPAHs with TEFs applied, respectively). As a result of these exceedances in soil cPAH concentrations, an interim action was performed to remove the impacted soil (Landau Associates 2009b). The interim action is discussed below.

2.4.3 2008 INTERIM ACTION

In discussions with the Port, Ecology agreed that the Former Stormwater Ditch could be addressed as an independent interim action because it was a small, well-defined area and the cleanup alternatives were limited and obvious (Evans, W., 2008, personal communication).

The interim action soil cleanup within the stormwater ditch was conducted during the period from September to November 2008, and primarily consisted of excavation and offsite disposal of impacted soil from the base of the ditch, confirmation soil sampling, and ditch regrading activities (Landau Associates 2009b). This cleanup action was conducted concurrently with the interim action soil cleanup within the Rod Mill Former Demister Oil Area located north of the Rod Mill foundation (Landau Associates 2009a). As discussed in Section 2.4.1, an interim action soil cleanup level of 2,000 µg/kg was developed for total cPAHs. This interim action cleanup level was used to guide soil cleanup activities as part of the Former Stormwater Ditch interim action.

The soil removal depth and width varied along the ditch segments based on the estimated depth of contamination and field observations during soil excavation. Onsite screening of soil exposed along the base of the ditch included visual, odor, and sheen observations supplemented with PID readings. The excavation width was typically about 3 ft wide; the excavation depth was typically 0.5 to 1 ft BGS along the southern ditch segment, 0.5 ft BGS along the eastern ditch segment, and up to 2.7 ft BGS between the confluence of the ditch segments and the fence line.

The greatest accumulation of contaminated soil occurred at the intersection of the two ditch segments, which was also immediately downstream of the storm drain line that ran east-west along the south side of the former Rod Mill building (Figure 4). The sandy soil removed from this area had a metallic sheen and chemical odor. Soil was removed to a depth of approximately 2.7 ft, at which depth the soil became light colored clayey silt that appeared “clean”. The upper zone of (contaminated) sandy soil from the ditch intersection to the east fence line was excavated to this clayey silt layer.

In total, approximately 17 truckloads (183.49 tons) of soil were removed from the Former Stormwater Ditch as part of this interim action. Following soil removal activities, the Former Stormwater Ditch was regraded and reshaped (using existing ditch soil) to restore and promote drainage.

As part of field activities, the Port directed Landau Associates to collect a sample of soil within the storm drain catch basin located nearest ditch sample SCD5 (Figure 26) and have it analyzed for disposal purposes. The sample (KAI-Stormdrain) was analyzed for cPAHs, diesel-range petroleum hydrocarbons, and TCLP metals; the results are presented in Table 16. Following receipt of the sample results, the Port directed Emerald Services to remove and dispose of the catch basin and storm drain line solids in conjunction with cleanout of the Rod Mill sumps. The storm drain line cleanout was conducted in fall 2008, separately from the Former Stormwater Ditch interim action (Landau Associates 2009b).

2.4.3.1 Confirmation Sampling

Following initial soil removal, 11 confirmation samples were collected along the ditch at the locations shown on Figure 26. Each sample consisted of the upper 6 inches of soil at the sample location. Sample CS-01, located at the ditch confluence and culvert discharge area, was analyzed for cPAHs and diesel-range petroleum hydrocarbons, while the remaining confirmation samples were analyzed for cPAHs. The analytical results for the interim action confirmation samples are summarized in Table 17.

The concentration of cPAHs in sample CS-08 exceeded the interim action cleanup level for total cPAHs. This sample was located near an old road crossing of the southern ditch segment in an area where soil had been removed to a depth of 1 ft BGS. Further visual investigation identified a small amount of contaminated material in this area, and additional ditch soil removal was conducted by hand. An additional confirmation sample (CS-08b) was collected and analyzed to confirm that the contaminated material in this area had been removed.

2.5 FORMER RECTIFIER YARD AREA

Environmental investigations were previously conducted in the Former Rectifier Yard Area between 1984 and 2008. This section summarizes the activities and results associated with the investigations.

2.5.1 1984 – 2004 INVESTIGATIONS

In 1984, more than 30 soil samples were collected by Kaiser Aluminum below and/or adjacent to transformers present at that time. The samples were collected from depths ranging from ground surface to 3 ft BGS (Landau Associates 2003b). The samples were analyzed for PCBs; the concentrations ranged from 29 to 412[4] mg/kg. Additional samples were collected and analyzed for PCBs in 2002, 2003, and

4 A higher concentration was previously reported (Landau Associates 2003b) but documentation of this higher concentration was not available during preparation of this draft report. Further information will be provided upon finalization of this report if documentation is available.

2004; all PCB concentrations were less than the MTCA Method A soil cleanup level for industrial properties (10 mg/kg), which indicates that soil cleanup was conducted at some time between 1984 and 2002. Approximate sampling locations are shown on Figure 27.

In October 2002, 16 surface soil samples (REC-1 through REC-16) were collected for the Port by Kennedy Jenks as part of the property transfer due diligence process (Kennedy Jenks 2003; Landau Associates 2003b). The samples were analyzed for PCBs and diesel- and motor oil-range petroleum hydrocarbons. PCB concentrations for these samples ranged from not detected to 1.16 mg/kg and were less than the MTCA Method A soil cleanup level for industrial properties. Diesel- and motor oil-range petroleum hydrocarbons ranged from not detected to 24,600 mg/kg; however, most of the reported diesel- and motor oil-range petroleum hydrocarbon concentrations (12 of the 16 sample results) were less than 200 mg/kg (Landau Associates 2003b). Approximate sampling locations are presented on Figure 27.

In 2003 and 2004, additional soil investigations were conducted by Kaiser Aluminum in the Former Rectifier Yard Area. The objectives of the investigations were to further characterize the extent of PCBs and petroleum hydrocarbons in soil in the general vicinity of the rectifying and voltage regulating transformers, in an area of stained surface soil identified in 1984, and in an area of a 1986 transformer oil spill where about 3,000 gallons of transformer fluid leaked from an underground transformer oil pipeline northeast of transformer VR-2A (Landau Associates 2004b).

The investigation conducted in 2003 included collection and laboratory analysis of shallow soil samples from locations where soil staining was visible and from locations beneath or adjacent to the transformers in areas where spills or leaks of transformer oil had the greatest potential to have occurred in the past (e.g., beneath or adjacent to fill connections, gaskets, valves, or overflows). Deep soil samples were collected from test pits within the area of the 1986 transformer oil spill and the 1984 surface soil staining. Soil samples were collected from 28 locations within the eastern portion of Former Rectifier Yard Area (including the 1986 spill area and the area to the south of the former oil storage building), and from 17 locations within the western portion of the Former Rectifier Yard Area. Samples were analyzed for petroleum hydrocarbons and PCBs. The approximate soil sample locations are shown on Figures 28 and 29.

The investigation conducted in 2004 focused on areas where the results from the 2003 soil investigation indicated that additional data were needed to characterize the horizontal and vertical extent of total petroleum hydrocarbons in soil or to confirm historical concentrations of PCBs in shallow soil. Soil samples were collected from 27 locations (16 in the eastern portion and 11 in the western portion). Fifty-one soil samples were analyzed for diesel-, motor oil-, and mineral oil-range petroleum hydrocarbons. Eleven soil samples were analyzed for PCBs. The approximate soil sample locations are shown on Figures 28 and 29.

Analytical results for soil samples collected during the 2003/2004 soil investigations are provided in Table 18 and presented on Figures 28 and 29. As shown in Table 18, diesel-range petroleum hydrocarbon concentrations ranged from not detected to 37,400 mg/kg, motor oil-range petroleum hydrocarbon concentrations ranged from not detected to 17,900 mg/kg, and mineral oil-range petroleum hydrocarbon concentrations ranged from not detected to 14,000 mg/kg. Concentrations of total PCBs ranged from not detected to 2.39 mg/kg.

A comparison of the soil sample analytical results to preliminary soil screening levels is provided in Section 3.6.

2.5.2 2008 SUPPLEMENTAL SOIL INVESTIGATION

In 2008, a supplemental soil investigation was conducted by the Port to determine to what extent petroleum hydrocarbons remained in soil within the Former Rectifier Yard Area (Landau Associates 2008). Soil explorations consisted of nine test pits; three test pits in the western portion of Former Rectifier Yard Area and six test pits in the eastern portion of the Former Rectifier Yard Area. The test pits were located near or downgradient of previous test pit locations where, in 2003 or 2004, concentrations of petroleum hydrocarbons were the highest. The approximate locations of the previous test pits are shown on Figure 30. Three test pits, one in the western portion and two in the eastern portion of the Former Rectifier Yard Area, were excavated near the southern property line and in the anticipated downgradient groundwater flow direction from previous test pit locations VR4-S, 86SPILL-1, and Trans2-N. The locations of the 2008 supplemental soil investigation test pits are shown on Figure 30. The 2008 test pits were 8 to 10 ft long, 3 ft wide, and 6 to 8.5 ft deep except test pit 2008-SupVR4SE-S, which was 33 ft long. Each of the 2008 supplemental investigation test pits was excavated to the groundwater table to determine if free phase product was present. One soil sample was collected from each test pit at a depth near the water table. Each soil sample was analyzed for diesel- and mineral oil-range petroleum hydrocarbons using Ecology Method NWTPH-Dx. An acid/silica gel cleanup was applied to each soil sample. After the excavation was complete and soil samples were collected, the excavated material was returned to the excavation in the order removed and compacted with the excavator bucket to the best of the operator's ability.

2.5.2.1 Results

Observations and analytical results demonstrate that no significant amount of petroleum hydrocarbons remain in the Former Rectifier Yard Area. Observations included soil lithology; depth to groundwater; and presence of sheen on the soil or at the water table, odor, and visible soil staining. These observations are documented in the test pit logs (Landau Associates 2008) and summarized below.

Soil Lithology and Depth to Groundwater

The soil lithology observed in the nine test pits excavated in the Former Rectifier Yard Area during the 2008 supplemental soil investigation is consistent with the lithology for this area described during previous investigations. In the western portion of the Former Rectifier Yard Area, a fill material consisting of sand with varying amounts of gravel and shell fragments is present to a depth of about 7 to 8 ft BGS. In the eastern portion of the Former Rectifier Yard Area, the fill material is more gravelly. The thickness of the material in the eastern portion of the Former Rectifier Yard Area was not confirmed during the 2008 supplemental soil investigation because the test pits did not extend to native material; however, the fill material extends to a depth of at least 6 ft BGS.

Generally, groundwater was encountered at depths ranging between 5 to 6 ft BGS during the 2008 supplemental soil investigation; however, at test pit 2008-86SPILL-1-S groundwater was encountered at 7 ft BGS.

Presence of Sheen, Odor, Staining, or Non-Soil Material

No free product was observed in any of the test pits. At the three test pits located in the western portion of the Former Rectifier Yard Area, no sheen or staining was observed on the soil or groundwater. A septic-like odor was detected at test pits 2008-SUPVR4SE-S and 2008-SUPVR4W. The odor at each test pit was associated with peat and/or native tide flat deposits. At test pit 2008-VRO-N, refractory bricks and chunks of concrete were encountered from a depth of 4.75 ft BGS to the bottom of the test pit (6 ft BGS).

In the eastern portion of the Former Rectifier Yard Area, a slight sheen was observed on the groundwater at test pits 2008-86SPILL-1-S and 2008-86SPILL-1-SE. Slight hydrocarbon odors were also detected at these test pits. No sheen or odors were observed at the other four test pits excavated in the East Former Rectifier Yard Area. Red brick fragments and/or concrete fragments were encountered in the fill material at test pits 2008-86SPILL-1-S, 2008-TRANS11-NE, and 2008-TRANS2-N. A concrete foundation extending from 1 ft BGS to the bottom of the test pit was encountered at the southern end of test pit 2008-TRANS2-N. No stained soil was observed at any of the test pits in the Former Rectifier Yard Area.

Analytical Results

Petroleum hydrocarbons in soil samples were either not detected or were detected at very low concentrations. Analytical results for the nine soil samples collected during the 2008 supplemental soil investigation are provided in Table 19 and presented on Figure 30.

As shown in Table 19, all of the diesel- and mineral oil-range petroleum hydrocarbon concentrations reported for the three samples collected in the western portion of the Former Rectifier Yard Area were either not detected or below a concentration of 20 mg/kg. Diesel- and mineral oil-range petroleum hydrocarbon concentrations reported for six soil samples collected in the eastern portion of the Former Rectifier Yard Area were either not detected or below a concentration of 410 mg/kg. Diesel-range petroleum hydrocarbon concentrations for those samples collected where a slight sheen was observed on the groundwater, 2008-86SPILL-1 S and 2008-86SPILL-1-SE, were 16 mg/kg and 11 mg/kg, respectively. Mineral oil-range hydrocarbon concentrations for these samples were 19 mg/kg and not detected.

A comparison of the soil sample analytical results to preliminary soil screening levels is provided in Section 3.6.

2.6 FORMER LOG YARD AREA

Environmental investigations were previously conducted by Kaiser Aluminum in the Former Log Yard Area between 1984 and 2008. This section summarizes the activities and results associated with the investigations.

2.6.1 2002 - 2003 INVESTIGATIONS

An inspection of the Former Log Yard Area conducted in October 2002 as part of a Preliminary Due Diligence Evaluation (Kennedy Jenks 2003) indicated the presence of slag used as road ballast. The slag was found only in limited areas of the Former Log Yard Area. As part of the October 2002 investigations, eight surface soil samples (LY-1 through LY-8) and one groundwater sample (MW-N) were collected (Figure 31). Analytical results from the October 2002 investigations were presented in the Preliminary Due Diligence Evaluation (Kennedy Jenks 2003). The soil samples were analyzed for diesel- and motor oil-range petroleum hydrocarbons and for metals including arsenic, copper, lead, and zinc. Analytical results for these eight soil samples are summarized in Table 20. The groundwater sample was analyzed for diesel- and motor oil-range petroleum hydrocarbons; PAHs; SVOCs; metals, including arsenic, copper, and zinc; PCBs; VOCs; cyanide; and fluoride. Analytical results for metals, PAHs, and cyanide for the groundwater sample are summarized in Table 21; a complete table of results from the Preliminary Due Diligence Evaluation is included in Appendix J.

Follow-up investigations were conducted in the Former Log Yard Area in 2003, subsequent to the Port's purchase of the property (Kennedy/Jenks Consultants 2005). A copy of the 2005 Kennedy/Jenks Consultants report was provided to Ecology, along with notice that the Port intended to fill the Former

Log Yard Area to raise grades to an elevation suitable for property redevelopment. The 2003 investigations included:

- **Shallow Soil Sampling**. A total of 43 soil samples were collected in linear transect lines and in areas where visual evidence of slag was present (Figure 31). These samples were collected at depths of 0 to 0.5 ft BGS and analyzed for diesel- and motor oil-range petroleum hydrocarbons using silica-gel cleanup and for metals including arsenic, copper, lead, and zinc. The analytical results for all constituents except arsenic were below the cleanup levels identified in the Kennedy/Jenks Consultants 2005 report. The maximum detected concentration of arsenic in the soil samples was 332 mg/kg with 13 of the 51 samples exceeding the identified cleanup level of 87.5 mg/kg (Method C Industrial Cleanup Level for protection of human health). The analytical results for these 43 soil samples are summarized in Table 22.

- **Soil Stockpile Sampling**. Three soil/debris stockpiles were observed on or near the western portion of the property during the 2003 site investigations, as shown on Figure 31. The origin of the stockpiles was not identified; however, very minor amounts of slag were observed in the stockpiles. Composite samples were collected from the stockpiles and analyzed for diesel- and motor oil-range petroleum hydrocarbons using silica-gel cleanup and for metals including arsenic, copper, lead, and zinc. All constituents were detected at levels below the Kennedy/Jenks Consultants 2005 report cleanup levels. The analytical results for these three composite soil samples are summarized in Table 22.

- **Direct-Push Soil Sampling**. Soil sampling was performed at nine additional boring locations using a direct-push sampling rig (Figure 31). The sampling locations were selected based on the results of the shallow soil surface sampling (i.e., in areas of higher arsenic soil concentrations). The direct-push sampling includes eight soil samples collected from a depth of 0.5 to 1.5 ft BGS (boring locations B1-B8) and one soil sample collected from a depth of 4 to 5 ft BGS (boring location B9)[5]. Soil samples were analyzed for diesel- and motor oil-range petroleum hydrocarbons using silica-gel cleanup and for metals including arsenic, copper, lead, and zinc. All constituents were detected at levels below the Kennedy/Jenks Consultants 2005 report cleanup levels. The analytical results for the nine direct-push soil samples are summarized in Table 22.

- **Direct-Push Groundwater Sampling**. Shallow groundwater samples collected through temporary well screens at boring locations B1 through B10 were analyzed for one or more of the following parameters: dissolved arsenic, lead, copper, and zinc; PAHs; VOCs; and free cyanide. All constituents were detected at levels below the Kennedy/Jenks Consultants 2005 report cleanup levels. The analytical results for the 10 groundwater samples collected using the temporary well screens are summarized in Table 21. These samples were considered useful for general reconnaissance and it was noted in the 2005 report that the results were likely biased high because of the potential for more turbidity in samples collected from temporary well screens.

- **Surface and Shallow Subsurface Slag Survey**. Each the 51 shallow soil sample locations (8 locations in 2002 and 43 locations in 2003) were inspected for the presence of slag material. In addition, 24 shallow test pits were excavated to further characterize the presence of slag. In general, the slag was not abundant on the site. Slag was most apparent in the central portion of the site but typically comprised less than 5 percent of the material in this

5 The soil boring log for B9 at the sampling depth (4-5 ft BGS) indicates native material with 10 to 20 percent wood material with a "hydrocarbon odor". This sample was analyzed only for petroleum hydrocarbons.

area. On the remaining portions of the Former Log Yard Area, slag was not present or comprised less than 1 percent of the material. When present, slag was generally not observed at depths deeper than 2 to 3 inches BGS. Figure 32 shows the distribution of slag developed based on these inspections along with concentrations of arsenic in the shallow soil samples. In general, areas of higher arsenic concentrations corresponded to the areas where slag was observed.

In 2007, the Port placed approximately 4 to 6 ft of fill material over the Former Log Yard Area, covering the sampling locations and any area of exposed slag material, reducing the risk of potential human exposure to this material. The fill material was imported primarily from the Port's Blair Waterway widening project and the deconstruction of the Kaiser Domes at Terminal 7. The dredge fill consisted of silty fine to medium sand; the under-slab Kaiser Dome soil consisted of well graded sand and gravel. Both fill materials were placed on the property in 2003 and 2004 to pre-load the Wet Scrubber Sludge impoundment areas and allow the imported fill materials to drain. Ecology was notified of the pre-load fill placement in 2004 (Port of Tacoma 2004), and later the 2007 site-wide filling and grading activity.

3.0 NATURE AND EXTENT OF CONTAMINATION

The results of the investigations noted above were used to evaluate the type and extent of waste materials present, the nature and extent of contaminated soil, and the nature and extent of contaminated groundwater at the six areas of interest indentified in Agreed Order DE 5698. The nature and extent of impacts to soil and groundwater were evaluated by developing preliminary soil and groundwater screening levels and comparing soil and groundwater analytical results to these screening levels. This section discusses development of the preliminary screening levels and the results of the data evaluation.

3.1 PRELIMINARY SCREENING LEVELS

The screening levels developed in this section are considered preliminary; however, because the screening levels were developed using criteria established under MTCA and other Washington State and federal regulations, and were developed to be protective of potential receptors, these screening levels are not expected to be different than the final cleanup levels established as part of the pending RI/FS.

The locations where the cleanup levels must be met (point of compliance) will be proposed in the remedial investigation (RI).

3.1.1 PRELIMINARY SOIL SCREENING LEVELS

The Site meets the MTCA criteria for an industrial property [WAC 173-340-745(1)]. The Site is currently zoned and used for industrial purposes, access to the Site by the general public is currently not allowed, and these conditions are not likely to change after redevelopment. MTCA Method A soil cleanup levels for industrial properties and standard Method C cleanup levels were used as preliminary soil screening levels, in accordance with WAC-173-340-745. Under MTCA Method C, soil cleanup levels must be as stringent as:

- Concentrations established under applicable state and federal laws
- Concentrations protective of terrestrial ecological receptors
- Concentrations protective of direct human contact with soil
- Concentrations protective of groundwater.

Preliminary soil screening levels were developed for those constituents detected in soil samples within the six areas of interest (cPAHs, diesel- and motor oil-range petroleum hydrocarbons, total cyanide, metals, and PCBs). The rationale for selecting the preliminary soil screening levels is summarized below:

- For each constituent detected in soil, except PCBs, MTCA is the only applicable law under which soil cleanup levels are established. MTCA Method A soil cleanup levels for PCBs are based on the federal Toxic Substances Control Act (TSCA; 40 C.F.R 761.61).

- Standard MTCA Method C soil cleanup levels protective of direct human contact were developed for cPAHs, total cyanide, and metals in accordance with WAC 173-340-745(5) using Ecology's on-line CLARC database (Ecology website 2011). Table 23 shows the preliminary soil screening levels for protection of direct human contact. The preliminary screening level for benzo(a)pyrene was used for the sum of cPAHs using TEFs in accordance with WAC 173-340-708(8)(e).
- MTCA Method A soil cleanup levels for total petroleum hydrocarbons were used as preliminary screening levels. The MTCA Method A soil cleanup levels are protective of direct human contact and groundwater as drinking water. Because the MTCA Method A groundwater cleanup levels for petroleum hydrocarbons may also be used as surface water cleanup levels (WAC 173-340-730(3)(b)(iii)(C), these soil cleanup levels are also protective of surface water.
- A terrestrial ecological evaluation is not required for the SPL Area, the Rod Mill Area Closed Landfill, the Rod Mill Former Demister Oil Area, the Rod Mill Area Former Stormwater Ditch, or the Former Log Yard Area because these areas meet the criteria for an exclusion in WAC 173-340-7491(1). Copies of the forms documenting this decision are included in Appendix K. As a result, these portions of the property meet the exclusion for a terrestrial ecological evaluation. Therefore, human contact and leaching to groundwater are the only applicable pathways for soil in these areas. A simplified terrestrial ecological evaluation approach was used for the Former Rectifier Yard Area.
- Preliminary soil screening levels that are protective of groundwater were determined for constituents detected in groundwater during previous investigations, including cPAHs, metals, PCBs, and total cyanide using the fixed parameter three-phase partitioning model in accordance with WAC 173-340-747(4). Because groundwater is not a current or likely future source of drinking water (due to the availability of a municipal water supply and proximity to marine surface water as discussed in Section 3.1.2), and because it discharges to marine surface water, marine surface water preliminary screening levels protective of human health and aquatic organisms developed in accordance with WAC 173-340-730 were used in the calculation (see Section 3.1.2), although there is no indication that contaminants from any of the six areas have reached or will reach marine surface water. Table 23 shows the preliminary soil screening levels for protection of groundwater as marine surface water.

For each constituent, a preliminary soil screening level was established based on the lowest applicable soil criteria. The selected criteria are the shaded values shown in Table 23. In accordance with WAC 173-340-745(6)(c), the preliminary soil screening levels may be adjusted to be no less than the practical quantitation limit (PQL) or natural background. PQLs were calculated by multiplying current method detection limits for each constituent by 10. PQLs are presented in Table 23. As indicated in Table 23, the preliminary soil screening levels are all greater than the applicable PQLs; therefore, no adjustments to the preliminary soil screening levels for PQLs are necessary. Background concentrations for metals were obtained from values identified for Puget Sound in Ecology's *Natural Background Soil Metals Concentrations in Washington State* (Ecology 1994). The preliminary soil screening level for copper was the only screening level adjusted upward to the natural background concentration.

The Method A soil cleanup levels for industrial properties for cPAHs and diesel- and motor oil-range petroleum hydrocarbons are also shown in Table 23.

3.1.2 PRELIMINARY GROUNDWATER SCREENING LEVELS

Shallow and intermediate zone groundwater at or potentially impacted by the six areas identified in the Agreed Order is not currently used for drinking water and is not a reasonable future source of drinking water due to the availability of a municipal water supply and, in accordance with WAC 173-340-720(2)(d), due to its proximity to marine surface water (which is not a suitable domestic water supply). As shown on Figures 2 and 3, the Rod Mill Area is approximately 950 ft, the SPL Area is approximately 875 ft, the Former Rectifier Yard Area is approximately 1,500 ft, and the Former Log Yard Area is approximately 950 ft from the Hylebos Waterway. The Rod Mill Area is approximately 1,800 ft, the SPL Area is approximately 2,100 ft, the Former Rectifier Yard Area is approximately 700 ft, and the Former Log Yard Area is approximately 950 ft from the Blair Waterway. Both waterways are marine surface water bodies that are not considered suitable as a domestic water supply. Because shallow and intermediate zone groundwater is not considered potable, the potential exposure pathways for groundwater at the Site include:

- Human ingestion of marine organisms contaminated by releases of impacted groundwater from the six areas of the Site to adjacent marine surface water
- Acute or chronic effects to aquatic organisms resulting from exposure to constituents in groundwater discharging to adjacent marine surface water.

Groundwater screening criteria that are developed based on the exposure pathways identified in this subsection must be adequately protective of aquatic organisms and of humans that ingest these marine organisms. MTCA Method B marine surface water cleanup levels were developed in accordance with WAC 173-340-730(3) for the groundwater constituents detected during the investigations cited previously. Preliminary groundwater screening levels and the development of these screening levels, including the concentrations established under applicable state and federal laws, are presented in Table 24. As described in Section 2.1.2.3, human health criteria for cyanide are often expressed as total cyanide (although the drinking water maximum contaminant level is expressed as free cyanide) and ecological criteria are expressed as WAD cyanide.

In accordance with WAC 173-340-740(5)(c), further adjustments to the preliminary groundwater screening levels were made as needed so that the preliminary screening levels are not less than the PQL. MTCA also allows adjustments to the screening levels so that they are not less than natural background. As shown in Table 24, preliminary screening levels for groundwater were adjusted upward to the PQL for benzo(a)anthracene, benzo(k)fluoranthene, chrysene, PCB Aroclor 1016, total PCBs, mercury, and WAD cyanide. Preliminary screening levels were adjusted upward to natural background for arsenic, copper, lead, and zinc. The MTCA Method A and Method B groundwater cleanup levels protective of drinking water are also shown in Table 24.

3.2 SPL AREA

The results of the 2008 supplemental investigation, combined with results from previous SPL Area investigations and an investigation conducted in late 2008 as part of the of the now-cancelled Blair Hylebos Peninsula Terminal Redevelopment Project, were used to evaluate the nature and extent of waste materials present in and adjacent to the SPL Area subsurface and to evaluate the nature and extent of impact to soil and groundwater by these waste materials.

3.2.1 WASTE MATERIALS IN SOIL

The primary wastes observed in the SPL Area are dark gray to black carbon materials that range from gravel-sized fragments to cobble- and boulder-sized rubble. In test pits where black carbon materials were observed, they are generally present in the upper 2 ft, and form a layer 1 to 2 ft thick. Explorations from 2008 where the black carbon materials were observed at depths greater than 2 ft BGS include test pits SPL-MA5, -MA10, -MA11, -MA12, -MA25, -MA26, and -MA29. The maximum depth that black carbon materials were observed in these test pits ranged between 3 and 4.5 ft BGS.

For each depth interval in which waste materials were observed in the 2008 supplemental investigation, the percent carbon materials relative to soil and other waste materials was estimated. The estimated percent of carbon materials ranged from less than 5 percent at test pit SPL-MA10A to 75 percent at test pit SPL-MA19, but generally constituted 50 percent or less of the soil/waste mixture. The estimated percentages of carbon materials and the depth intervals where carbon materials were observed are summarized in Table 1.

Of the waste materials generated at the facility, SPL is the only one known to contain cyanide. Accordingly, it is assumed that SPL waste is a component of the dark gray to black carbon materials found throughout the SPL Area, as evidenced by the presence of cyanide in soil and near surface groundwater. However, there is no practical way to distinguish SPL from the other carbon-containing wastes which were also managed at the SPL Area; therefore, the term “black carbon materials” rather than SPL is used throughout this report.

Other waste materials observed in the SPL Area subsurface include concrete, refractory brick (also recorded as cooker brick on logs for explorations conducted prior to the 2008 supplemental investigation), and metal (mostly scrap steel and aluminum dross). A greenish-gray material with a moderate chemical order (most likely synthetic cryolite) was encountered at test pit SPL-MA29. Other greenish-gray material was reportedly observed at test pits SPL-MA5 and -MA10. Layers of white material (most likely alumina ore) were reportedly observed at test pits SPL-MA4, -MA12, and -MA13. A small amount of coal tar pitch was encountered in addition to the black carbon materials at test pit SPL-

MA28 and was also imbedded in the black carbon materials at test pit SPL-MA29. Petroleum coke fragments were observed at test pits SPL-MA4A and SPL-MA29. The locations where the various waste materials were observed and the depth intervals of these waste materials are summarized in Table 1. For the 2008 supplemental investigation, the percent volume that these wastes accounted for was estimated and these estimates are summarized in Table 1.

3.2.2 SOIL

The evaluation of the nature and extent of soil impacted by waste materials present in the SPL Area subsurface is based primarily on the analytical results for the five soil samples collected below the waste materials during the 2008 supplemental investigation (see Section 2.1.2.2). The evaluation includes comparison of the analytical results for the five soil samples to the preliminary soil screening levels presented in Table 23.

In addition, soil samples from two other sampling events were considered in the evaluation. In 2003, soil samples were collected from test pit explorations located within the SPL Area. These samples were collected from the depth interval in which waste materials were encountered or, if no waste materials were encountered, the samples were collected from the entire depth interval containing fill material. In December 2008, six soil samples were collected as part of the Blair Hylebos Peninsula Terminal Redevelopment Project from three locations in Taylor Way, adjacent to the SPL Area. The three locations (RRI-P-215, RRI-P-216, and RRI-P-217) are shown on Figure 5. The results from both of these other sampling events are discussed briefly in this section.

3.2.2.1 2008 Soil Analytical Results

A comparison of the concentrations of detected constituents in these soil samples (cPAHs and total cyanide) to preliminary screening levels is presented in Table 2. The comparison shows that the concentrations of cyanide detected in soil below the waste materials are less than preliminary screening levels protective of direct human contact based on an industrial land use and of groundwater as marine surface water. The comparison also shows that the concentrations of cPAHs detected in soil below the waste materials are less than preliminary screening levels protective of direct human contact based on an industrial land use, but are not less than preliminary screening levels protective of groundwater as marine surface water. However, analytical results for the 2008 supplemental investigation groundwater samples show that cPAH concentrations above the preliminary groundwater screening level are not migrating off the property [see downgradient wells MW-C(S), MW-C(I), and W-(I)]. Analytical results for groundwater samples taken within the SPL Area are further discussed in Section 2.1.2.4.

3.2.2.2 2003 Soil Analytical Results

In 2003, soil samples were collected from 18 test pits and one direct push soil boring and submitted for laboratory analysis. The samples were analyzed for total and WAD cyanide, fluoride, metals, petroleum hydrocarbons, SVOCs, naphthalenes, and PAHs. The analytical results were summarized in the *Site Characterization Report, Spent PotLining Management Area* (MFG 2005a). Tables from the MFG report have been included in Appendix B of this report. Because the cPAH TEFs used in the MFG report are different from the current TEFs and the MFG report erroneously included benzo(g,h,i)perylene as a cPAH, the cPAH TEQs were recalculated for each sample. The revised cPAH TEQs are shown in Table B-1 in Appendix B.

As previously mentioned, the 2003 soil samples were collected from the depth interval at which waste materials were encountered or, if no waste materials were encountered, the samples were collected from the entire depth interval containing fill material. As shown in Appendix B, many of the constituents were not detected in the samples. Fluoride, petroleum hydrocarbons, naphthalenes, and cPAHs were the most frequently detected constituents, but the concentrations for most of these constituents were low (below screening levels used at the time). TCLP metals (barium, chromium, and lead) were also detected, but concentrations for these constituents were also low (below screening levels used at the time). The total cPAH concentrations ranged from not detected to 32.9 mg/kg, and in some of the samples exceeded the screening level of 2 mg/kg (the MTCA Method A soil cleanup level for industrial site use and the preliminary screening level developed in this report). WAD cyanide was detected in three of the samples (SPL-MA3, SPL-MA10, and DPT-6A) at concentrations of 0.01 mg/kg, 0.07 mg/kg, and 0.79 mg/kg, respectively. Total cyanide was detected in 13 of the samples at concentrations ranging from 0.3 mg/kg to 31 mg/kg. All of the detected cyanide concentrations are less than the preliminary screening levels developed in this report for protection of marine surface water and direct human contact. The highest total cyanide concentration was detected in the sample collected from test pit SPL-MA10. Waste materials were encountered in test pit SPL-MA10 and were described as dark gray to black and gray green fill with waste, cooker brick, wire, and metal.

3.2.2.3 Taylor Way Soil Sample Analytical Results

The six soil samples collected in 2008 as part of the Blair Hylebos Peninsula Terminal Redevelopment Project along Taylor Way were analyzed for metals (arsenic, cadmium, chromium, lead, and mercury), total cyanide, and diesel- and motor oil-range petroleum hydrocarbons. Only cyanide, chromium, lead, and motor-oil range petroleum hydrocarbons were detected. The detected concentrations for each of the constituents other than chromium were compared to the preliminary screening levels developed in this report. No preliminary screening level has been developed for chromium because it has

not been detected in soil at the six areas of interest. To evaluate the detected chromium concentrations, the concentrations were compared to MTCA Method A cleanup levels for industrial properties. The analytical results and the preliminary screening levels and Method A chromium cleanup level are presented in Table 5. Detected concentrations for all constituents were less than the preliminary screening levels.

3.2.2.4 Depth of Impacted Soil Relative to Waste Material

As described in Sections 3.2.2.1 and 3.2.2.2, concentrations of cPAHs in all soil samples meet preliminary soil screening levels protective of direct human contact. Although concentrations of cPAHs in some soil samples exceed the preliminary screening level protective of marine surface water, groundwater analytical results show that concentrations of cPAHs above the preliminary groundwater screening level are not migrating off the property which indicates that existing soil concentrations are protective of groundwater. Concentrations of cyanide in all soil samples meet the preliminary soil screening levels for cyanide.

The depth interval at which waste materials were observed in each of the five test pits where soil samples were collected during the 2008 supplemental soil investigation, the depth at which the soil samples were collected, the approximate amount of carbon materials observed in the soil (expressed in percent), and the total cyanide and cPAH concentrations reported for each soil sample are summarized in Table 25. As shown in Table 25, and presented in the following bullets, the concentration of cyanide detected in the underlying soil appears to be most directly related to proximity of the black carbon materials, and to a slightly lesser extent the amount of black carbon materials present.

- **0 to 0.25 ft Depth Below Black Carbon Materials.** The highest cyanide concentrations were detected in those samples collected from directly below the black carbon materials (i.e., at test pits SPL-MA26 and SPL-MA28).
- **0.75 ft Depth Below Black Carbon Materials.** The samples from test pits SPL-MA27 and SPL-MA29 were both collected at depths of 0.75 ft below the black carbon materials; however, the total cyanide concentrations reported for the two samples vary significantly. At test pit SPL-MA27, the total cyanide concentration reported is 0.594 mg/kg and at test pit SPL-MA29, the total cyanide concentration reported is 4.89 mg/kg. The difference in concentration may be related to the mass of the overlying black carbon materials present. At test pit SPL-MA27, black carbon materials were estimated to be 15 percent of the total volume in a 0.25 ft layer; whereas, at test pit SPL-MA29, the black carbon materials were estimated to be 50 to 60 percent of the total volume in a 4 ft layer.
- **2.25 ft Below Black Carbon Materials**. The soil sample from test pit SPL-MA20 was collected at a depth of 2.25 ft below the black carbon materials. The cyanide concentration was also one of the lowest concentrations (0.897 mg/kg). While this represents only one sampling point, the data suggests that cyanide concentrations decrease significantly with depth. The low cyanide concentrations in groundwater, and the limited size of the cyanide groundwater plume, support this hypothesis.

Based on the current limited data set, the concentrations of cPAHs in soil do not appear to be related to proximity of the black carbon materials, or to the mass of black carbon materials present. As an example, for soil samples collected directly below the black carbon materials, the benzo(a)pyrene TEQ results were very low in SPL-MA26 and much higher in SPL-MA28 (i.e., 8.39 mg/kg and 4,404 mg/kg, respectively).

3.2.3 GROUNDWATER

The evaluation of impacts to shallow and intermediate zone groundwater by waste materials found throughout the SPL Area is based on analytical results for groundwater samples collected from monitoring wells located within, adjacent to, and downgradient of the SPL Area, and groundwater samples collected from three direct-push soil borings performed in 2008 as part of the now-cancelled Blair Hylebos Peninsula Terminal Redevelopment Project. The RRI investigation was conducted to assist with determining appropriate management options for dewatering effluent during RRI project construction activities. The three direct-push soil borings were located in the Taylor Way right of way adjacent to the SPL Area, and are identified as RRI-P-215, RRI-P-216 and RRI-P-217, as shown on Figure 5. Two groundwater samples were collected from the shallow aquifer and three groundwater samples were collected from the intermediate aquifer during the investigation. The groundwater samples were analyzed for total metals (arsenic, cadmium, chromium, lead, and mercury), total cyanide, WAD cyanide, and diesel- and motor oil-range petroleum hydrocarbons.

The evaluation of impacts to groundwater by the SPL Area waste materials focuses primarily on groundwater samples collected during the 2008 supplemental investigation and the 2008 RRI investigation because these results are most representative of current groundwater quality conditions; however, analytical results for groundwater samples collected during previous investigations are discussed briefly to illustrate historical trends and are focused primarily on concentrations of cyanide in groundwater. The evaluation includes comparison of the 2008 analytical results to the preliminary groundwater screening levels presented in Table 24.

3.2.3.1 2008 Groundwater Analytical Results

A comparison of the concentrations of detected constituents in the 2008 supplemental investigation and the 2008 RRI investigation groundwater samples to the preliminary screening levels for total and WAD cyanide and cPAHs are presented in Tables 4 and 6, respectively. The comparisons show some exceedances of the preliminary screening levels within the SPL Area and a single exceedance of the preliminary screening levels in a sample from an RRI direct-push probe downgradient of the SPL Area, as described below. In addition to the SPL-related constituents, chromium was detected in a sample from

one RRI probe; that chromium concentration was compared to the MTCA Method B groundwater cleanup level protective of marine surface water developed using the process described in Section 3.1.2.

- **Groundwater Within the SPL Area.** cPAHs were detected at concentrations exceeding the preliminary screening levels in groundwater samples collected from the shallow aquifer at wells MW-B(S) and MW-F(S) (Figure 12). There were no exceedances of preliminary screening levels protective of drinking water (MTCA Method A).
- **Shallow Aquifer Groundwater Downgradient of the SPL Area.** cPAHs were not detected at downgradient well MW-C(S). Total and WAD cyanide were detected at concentrations below the preliminary screening levels at well MW-C(S) (Figure 12). There were no exceedances of preliminary screening levels protective of drinking water (MTCA Method A).
- **Direct-Push Probe Water Samples from the Shallow Aquifer Downgradient of the SPL Area.** Total and WAD cyanide were detected in two shallow aquifer direct-push probe water samples collected as part of the Blair Hylebos Peninsula Terminal Redevelopment Project (sample locations RRI-P-216 and RRI-P-217 shown on Figure 12). The WAD cyanide detections in the sample from RRI-P-217 slightly exceeded the preliminary groundwater screening level of 0.01 mg/L for protection of surface water. There were no exceedances of screening levels protective of drinking water (MTCA Method A).
- **Intermediate Aquifer Downgradient of the SPL Area**. cPAHs and WAD cyanide were not detected in the groundwater samples collected from the intermediate aquifer at wells MW-C(I) and W-(I) (Figure 13). Total cyanide was detected at each well but at concentrations below the preliminary screening level. There were no exceedances of preliminary screening levels protective of drinking water. In addition, WAD cyanide was not detected in groundwater samples collected from the intermediate aquifer from direct push borings RRI-P-215, RRI-P-216, and RRI-P-217. Total cyanide was detected in groundwater samples from direct push borings RRI-P-216 and RRI-P-217 at concentrations less than the preliminary groundwater screening level.

Total and WAD cyanide and cPAHs results for the shallow aquifer wells and direct-push groundwater sampling locations are provided in Tables 4 and 6 and on Figure 12. Total and WAD cyanide and cPAHs results for the intermediate aquifer wells and the direct-push groundwater sampling locations are provided in Tables 4 and 6 and on Figure 13.

3.2.3.2 Comparison of Historical Groundwater Cyanide Concentrations to Current Concentrations

Historical and current concentrations of cyanide detected in groundwater at monitoring wells located within, adjacent to, and downgradient of the SPL Area are summarized in Table 26. Analysis for cPAHs in groundwater was not conducted prior to 2008; therefore, cPAHs are not included in Table 26. As shown on this table, total and WAD cyanide have been consistently analyzed for at wells MW-B(S), MW-C(S), MW-C(I), MW-C(D), and MW-F(S) since 1982. The results for these analyses indicate significant decreases of total cyanide concentrations over time at each of these wells. The most significant decreases have occurred at wells MW-B(S) and MW-F(S), which are located within the SPL Area and have had the highest reported concentrations of total cyanide of all the wells in this area. At well MW-F(S), the total cyanide concentration has decreased from 322 mg/L in November 1982 to 1.02

mg/L in July 2008. At well MW-B(S), the total cyanide concentration has decreased from 99.3 mg/L in November 1982 to 0.37 mg/L in July 2008. At downgradient well MW-C(S), the total cyanide concentration has decreased from 5.5 mg/L in November 1982 to 0.029 mg/L in July 2008.

Similar decreasing trends are true for the concentrations of WAD cyanide in the SPL Area wells and downgradient wells; however, the trend is not as apparent due to the initial low concentrations of WAD cyanide. At well MW-F(S), the WAD cyanide concentration has decreased from 0.22 mg/L in November 1982 to 0.011 mg/L in July 2008. At well MW-B(S), the WAD cyanide concentration has decreased from 8.05 mg/L in November 1982 to 0.006 mg/L in July 2008.

Groundwater monitoring ceased at wells MW-D(S) and MW-E(S) after 1983 and the wells were removed. Concentrations of total and WAD cyanide in 1983 in these two wells were below the preliminary groundwater screening levels developed in this report. These wells were located east and southeast, respectively, of the SPL Area and assist with bounding the extent of cyanide in groundwater.

The historical concentrations of total and WAD cyanide for two wells, W-(I) and W-(D), located on the Weyerhaeuser property and downgradient of the SPL Area, are also provided in Table 26. All of the total and WAD cyanide concentrations that were detected at these wells are below the preliminary screening levels. The low concentrations of cyanide in 1983 at the Weyerhaeuser wells and in wells MW-D(S) and MW-E(S), combined with the decreasing concentration trends since then in all remaining monitoring wells, provide additional evidence that the cyanide groundwater plume is bounded in the downgradient direction.

3.3 ROD MILL AREA CLOSED LANDFILL

The results of the 2008 supplemental investigation, combined with results from previous investigations conducted within the Rod Mill Area Closed Landfill, were used to evaluate the nature and extent of waste materials present in the Rod Mill Area Closed Landfill subsurface and to evaluate the nature and extent of impacts to soil and groundwater by these wastes.

The evaluation of the type and extent of waste materials in the subsurface is based primarily on physical observations from the 2008 supplemental investigation, and to a lesser extent by previous investigations. The nature and extent of impacts to soil and groundwater was evaluated by comparing the preliminary screening levels to analytical results for soil and groundwater samples.

3.3.1 WASTE MATERIALS IN SOIL

Based on observations from subsurface explorations, landfill waste materials are present mixed with soil in an area approximately 240 ft by 180 ft in the southeastern portion of the Rod Mill Area, as

shown on Figure 14. The depth of the waste materials varies, but typically extends to 4.5 to 9.5 ft BGS. The lower portions of the wastes are in contact with shallow groundwater.

Wastes encountered in the closed landfill include black carbon materials and concrete that range from gravel-sized fragments to cobble- and boulder-sized rubble. At some locations (LF21, LF22, LF28, and LF29), the pieces of the black carbon materials and/or concrete were too large to remove with the excavator, indicating that anode butts and demolition debris are present. At these locations, the vertical extent of waste materials was estimated.

Black carbon materials were observed in 10 of the 2008 supplemental investigation test pits. This type of waste material was not documented in previous test pit explorations. The black carbon materials were most often observed in the upper 4.5 ft of soil, but at boring MW-6(S) and test pits LF19 and LF24, the black carbon materials were encountered in soil at depths up to 5.25, 6.0, and 7.5 ft BGS, respectively. As stated in Section 1.2.2.1, SPL is not known to have been placed in the Rod Mill Area Closed Landfill. Although no analytical testing of landfill waste materials for cyanide was conducted, significant concentrations of cyanide were not detected in soil or groundwater samples.

Other types of waste materials encountered in the Rod Mill Area Closed Landfill include alumina ore, synthetic cryolite, coal tar pitch, refractory brick, rubber hoses, rebar, cloth, wood cuttings, and metal debris such as pipe elbows. Possible pieces of asbestos were observed at test pit LF8. Kaiser Aluminum reported that used pallets, cable spools, and other similar wood debris were also placed into the landfill (Leber, B., 2005, personal communication). The locations where the various waste materials were observed and the depth intervals of these waste materials are summarized in Table 7. For the 2008 supplemental investigation, the percent volume that these wastes accounted for was estimated and these estimates are also summarized in Table 7.

3.3.2 SOIL

The evaluation of the nature and extent of soil impacted by waste materials present in the Rod Mill Area Closed Landfill is based on the analytical results for the five soil samples collected below the waste materials at soil borings MW-6(S) and MW-6(I) drilled during the 2008 supplemental investigation (see Section 2.2.2), soil samples collected from the depth intervals where waste materials were encountered at two previous investigation test pits located within the closed landfill (LF9 and LF10), and from the upper 4 or 5 ft of soil at three previous investigation test pits located just outside the limits of the landfill (LF1, LF4, and LF7). The evaluation includes comparison of the 2003 and 2008 analytical results to the preliminary screening levels.

3.3.2.1 2008 Soil Analytical Results

A comparison of the concentrations of detected constituents in the 2008 supplemental soil samples collected at monitoring well borings MW-6(S) and MW-6(I) to preliminary screening levels is presented in Table 8. The comparison shows the following:

- **Samples collected within the fill soil located below the waste materials**. Concentrations of cPAHs exceed the preliminary screening levels protective of human direct contact and marine surface water in the soil sample collected from 5.5 ft at soil boring MW-6(S) and in the soil samples collected from 7 and 9 ft BGS at soil boring MW-6(I). Concentrations of diesel-range petroleum hydrocarbons in these three samples also exceed the preliminary screening levels based on MTCA Method A.
- **Samples collected from native soil underlying the fill soil.** Only cPAHs exceed the preliminary screening levels in the deeper samples collected at soil borings MW-6(S) and MW-6(I). For both of the deeper samples, the cPAH concentrations are protective of human direct contact based on an industrial land use. Although the concentrations of cPAHs exceed preliminary screening levels protective of marine surface water, concentrations of cPAHs in groundwater samples from wells downgradient of the landfill [MW-3(S), MW-4(S), MW-3(I), and MW-4(I)] do not exceed the preliminary groundwater screening levels, indicating that concentrations of cPAHs above the preliminary groundwater screening levels are not migrating off the property. The sample at MW-6(S) was collected at the fill/native material contact (10 ft BGS). The sample at MW-6(I) was collected at 10.5 ft BGS (approximately 1 ft below the contact of the fill material and the native soil).

None of the cyanide concentrations detected in soil samples collected at monitoring well borings MW-6(S) and MW-6(I) exceed the preliminary soil screening level.

3.3.2.2 2003 Soil Analytical Results

As described in Section 2.2.1, soil samples were collected in 2003 from two test pits (LF9 and LF10) and one soil boring (DPT3) located within the Rod Mill Area Closed Landfill, from soil depth intervals that contained landfill wastes. Samples were also collected from three test pits (LF1, LF4, and LF7) located outside but adjacent to the closed landfill.

- **Soil samples collected from within the waste materials.** Concentrations of cPAHs exceed the preliminary screening levels developed in this report for protection of human direct contact and marine surface water. The concentrations of motor oil-range petroleum hydrocarbons detected in both of the samples collected from test pits LF9 and LF10 and the concentration of diesel-range petroleum hydrocarbons detected in the sample collected from test pit LF9 exceed the preliminary screening levels based on MTCA Method A. Neither total nor WAD cyanide were detected in any of the 2003 soil samples.
- **Samples collected from outside but adjacent to the Rod Mill Area Closed Landfill.** No constituents were detected at concentrations above preliminary screening levels developed in this report in samples LF1, LF4, and LF7.

3.3.3 GROUNDWATER

The evaluation of impacts to groundwater by waste materials in the Rod Mill Area Closed Landfill is based on a comparison of 2008 analytical results for groundwater samples collected from monitoring wells located within, upgradient, and downgradient of the Rod Mill Area Closed Landfill to the preliminary groundwater screening levels. The comparison, presented in Table 10, shows some exceedances of the preliminary screening levels for groundwater within the closed landfill, but not in groundwater upgradient or downgradient of the landfill, as described below.

3.3.3.1 2008 Shallow Groundwater Analytical Results

The evaluation of groundwater quality in the shallow aquifer within the Rod Mill Area Closed Landfill is based on the analytical results for monitoring well MW-6(S). The analytical results are summarized in Table 10, the location of well MW-6(S) is shown on Figure 15, and an as-built of the well construction is provided in Appendix H. Constituents detected in this sample at concentrations exceeding the preliminary screening levels are vinyl chloride, cPAHs, diesel-range petroleum hydrocarbons, PCB Aroclor 1254, total PCBs, and metals (arsenic, chromium, copper, lead, mercury, and zinc). During drilling of the soil boring for monitoring well MW-6(S), a strong petroleum odor and soil staining were observed. Sheen was also observed on the groundwater during sampling, suggesting the presence of petroleum hydrocarbon product such as waste coolant from the former Rod Mill.

The concentrations of organic constituents reported in the groundwater sample may be due to a petroleum product and/or mineral oil containing these constituents that is present in groundwater or organic constituents may be adsorbed to particulates that remained suspended in the groundwater sample. It should be noted, however, that the samples were stored at the laboratory undisturbed for 24 hours to allow suspended particulates to settle to the bottom of the sample container. An aliquot for analysis was obtained from the supernatant. Concentrations of metals detected in the groundwater are likely to be related to reducing conditions in groundwater caused by natural conditions related to hydraulic filling over tidelands or by petroleum hydrocarbons or other Rod Mill Area Closed Landfill materials.

Dissolved oxygen concentrations measured in the groundwater samples collected from the shallow aquifer during the 2008 groundwater sampling event ranged from 0.01 to 0.15 mg/L. Concentrations of dissolved oxygen less than 1.0 mg/L in groundwater are indicative of reducing conditions, which are often encountered at petroleum hydrocarbon release sites and solid waste landfills. Reducing conditions can result in metals dissolving into groundwater from the soil, which may explain some of the metals results shown in Table 10.

The evaluation of groundwater quality in the shallow aquifer downgradient of the Rod Mill Area Closed Landfill is based on analytical results for monitoring wells MW-3(S) and MW-4(S). Only arsenic

and copper exceeded the preliminary screening levels, in the sample from MW-3(S). The arsenic and copper concentrations reported for the sample [11 micrograms per liter (µg/L) and 51 µg/L, respectively] were not significantly greater than the preliminary screening levels of 8.0 µg/L and 20 µg/L, respectively, and as noted above, are likely related to reducing conditions in the groundwater.

The evaluation of groundwater quality in the shallow aquifer upgradient of the Rod Mill Area Closed Landfill is based on analytical results for monitoring well MW-5(S). Detected concentrations of all constituents in the sample from upgradient well MW-5(S) were below the preliminary screening levels.

WAD cyanide was not detected in any of the shallow aquifer wells. Total cyanide was only detected in monitoring wells MW-3(S) and MW-6(S). The concentrations reported (0.005 mg/L and 0.026 mg/L, respectively) are significantly less than the preliminary screening level of 16 mg/L. The source of low concentrations of cyanide detected in groundwater at the closed landfill is not known; however, the process of dismantling and rebuilding a reduction cell could result in minor cyanide cross-contamination of refractory materials and other reduction cell wastes, which in turn could impact soil or water in contact with such materials. As noted previously, the lower portions of the landfill wastes are below the water table.

3.3.3.2 2008 Intermediate Groundwater Analytical Results

The evaluation of groundwater quality in the intermediate aquifer within the Rod Mill Area Closed Landfill is based on the analytical results for the sample from monitoring well MW-6(I). The analytical results are summarized in Table 10, the location of well MW-6(I) is shown on Figure 15, and an as-built of the well construction is provided in Appendix H. Constituents detected in the groundwater sample at concentrations exceeding the preliminary screening levels were cPAHs, PCB Aroclor 1254, total PCBs, arsenic, and chromium. Groundwater concentrations in the intermediate aquifer are less than the concentrations in the shallow aquifer at this location. It is possible that the presence of these constituents in the intermediate aquifer is a result of cross-contamination during drilling and well installation. However, well installation procedures included a “step-down” in the well casing to prevent a permanent migration pathway for contaminants in the shallow aquifer to the intermediate aquifer.

Vinyl chloride and diesel-range petroleum hydrocarbons, which were present in the groundwater sample collected from the shallow aquifer at monitoring well MW-6(S) at concentrations exceeding the preliminary screening levels, were not detected in the groundwater sample collected at monitoring well MW-6(I). Also, the concentrations of cPAHs and PCBs detected in the intermediate aquifer at well MW-6(I) are an order of magnitude lower than the concentrations detected in the shallow aquifer at MW-6(S).

The evaluation of groundwater quality in the intermediate aquifer downgradient of the Rod Mill Area Closed Landfill is based on analytical results for monitoring wells MW-3(I) and MW-4(I) and upgradient is based on analytical results for monitoring wells MW-2(I) and MW-5(I). No constituents were detected at concentrations that exceeded the preliminary screening levels in either the downgradient or upgradient wells.

Total and WAD cyanide were not detected in any of the intermediate aquifer wells.

3.4 ROD MILL FORMER DEMISTER OIL AREA

As a result of the exceedances of interim action cleanup levels, an interim action was performed in 2008 at the Rod Mill Former Demister Oil Area. A total of 850.65 tons of soil was removed from the area and disposed at the LRI landfill under waste disposal authorization TPCHD WDA No. 1269. The evaluation of soil quality in the Rod Mill Former Demister Oil Area is based on comparison of the analytical results for the 14 confirmation surface soil samples collected and analyzed after the 2008 interim action to the interim action cleanup levels. The confirmation sample analytical results are provided in Table 13. With the exception of sample CS-23, the analytical results from the initial confirmation soil samples met the interim action cleanup levels for cPAHs (2,000 µg/kg) and diesel- and motor oil-range petroleum hydrocarbons (2,000 mg/kg), which were the primary constituents of concern (COCs) in this area.

The concentration of cPAHs in sample CS-23, located near the western end of the Rod Mill Former Demister Oil Area, exceeded the interim action cleanup level for cPAHs. The exceedance was thought to be a result of cross-contamination during initial regrading activities, and two additional confirmation samples [CS-24(0.5-1) and CS-25(1-1.5)] were collected and analyzed in the vicinity of CS-23. The analytical results from CS-24(0.5-1) and CS-25(1-1.5) demonstrate that all the soil remaining in the Rod Mill Former Demister Oil Area meets the interim action cleanup levels developed for cPAHs and diesel- and motor oil-range petroleum hydrocarbons.

3.5 ROD MILL AREA FORMER STORMWATER DITCH

As a result of the exceedances of the interim action cleanup levels, an interim action was performed in 2008 at the Rod Mill Area Former Stormwater Ditch. A total of 183.49 tons of soil was removed from the ditch and disposed of at the LRI landfill under waste disposal authorization TPCHD WDA No. 1269. The evaluation of soil quality in the stormwater ditch is based on comparison of the analytical results for the 11 confirmation soil samples collected after the 2008 interim action to interim action cleanup levels. The confirmation sample analytical results are provided in Table 17. With the exception of CS-08, the analytical results from the confirmation soil samples met the interim action

cleanup levels for cPAHs (2,000 µg/kg), which was the primary COC. The concentration of cPAHs in sample CS-08 exceeded the interim action cleanup level. Consequently, additional ditch soil was removed and an additional confirmation sample (CS-08b) was collected and analyzed. The analytical results from CS-08b demonstrate that the contamination was removed and all the soil remaining in the Rod Mill Area Former Stormwater Ditch meets the interim action cleanup level developed for cPAHs.

3.6 FORMER RECTIFIER YARD AREA

The results of the 2003 and 2004 soil investigations indicated that petroleum hydrocarbons were present in soil at concentrations exceeding the MTCA Method A soil cleanup levels for industrial properties (2,000 mg/kg for diesel- and motor oil-range petroleum hydrocarbons and 4,000 mg/kg for mineral oil-range petroleum hydrocarbons) in the Former Rectifier Yard Area, but that PCBs were not present at concentrations exceeding the MTCA Method A industrial soil cleanup level of 10 mg/kg in soil (Landau Associates 2005). A statistical evaluation of the PCB data also demonstrated that the detected PCB concentrations meet the concentrations protective of terrestrial ecological receptors using a simplified terrestrial ecological evaluation (2 mg/kg). The results of the 2003 and 2004 soil investigations are presented on Figures 28 and 29 and summarized in tabular format in Table 18. The PCB statistical evaluation is provided in Appendix L.

Based on the 2003 and 2004 investigation results, petroleum hydrocarbons were identified as the only COC in the Former Rectifier Yard Area and were the only constituents analyzed for during the 2008 supplemental soil investigation. During the 2008 study, both diesel- and mineral oil-range petroleum hydrocarbons were detected, but at concentrations less than the preliminary soil screening levels based on the MTCA Method A soil cleanup levels for industrial properties noted above, which are protective for direct human contact, surface water, and groundwater as a drinking water source. The detected concentrations of diesel-range petroleum hydrocarbons were also less than the preliminary soil screening level protective of terrestrial wildlife using a simplified terrestrial ecological evaluation approach (15,000 mg/kg).

Additionally, no visible signs of petroleum hydrocarbon contamination were observed at seven of the nine test pits excavated in 2008. At two of the test pits, 2008-86SPILL-1-S and2008-86SPILL-1-SE, located in the eastern portion of the Former Rectifier Yard (Figure 28), a slight sheen was observed on the groundwater, but soil samples collected from a depth immediately above the groundwater table and within the capillary fringe zone at both locations contained petroleum hydrocarbons at concentrations less than 20 mg/kg (shown on Figure 28 and Table 19). At a third test pit, 2008-86SPILL-1-ESE, located about 30 ft crossgradient from test pit 2008-86SPILL-1-SE and about 60 ft downgradient of the other test

pit, 2008-86SPILL-1-S, no visible signs of petroleum hydrocarbon contamination were observed. These results and observations indicate impacts by petroleum hydrocarbons are limited to soil.

3.7 FORMER LOG YARD AREA

The Former Log Yard Area studies concluded that there were minimal impacts to the environment resulting from the use of slag as road ballast (Kennedy/Jenks Consultants 2005), and that the presence of elevated arsenic in shallow soil generally corresponded to the areas where slag was observed. The potential for exposure to slag was further mitigated by the clean fill soil that was placed over the former log yard in 2007, subsequent to the site investigations. The preliminary screening levels developed in Section 3.1 of this report are, in some cases, more stringent than the cleanup levels identified in the 2005 report; however, the conclusions regarding the distribution of metals in the soil are still generally similar. The following is a summary of the soil and groundwater sampling results and a comparison to the preliminary Site screening levels.

3.7.1 SOIL

Soil in the upper foot of the Former Log Yard Area included gravel, sand, silt, and bark with minor amounts of slag. Below the upper foot, fill materials consisting of poorly graded sand and dense gravel with sand and silt were encountered. Native material was reported as encountered at a depth of approximately 10 ft BGS, with the exception of boring B9 located on the northern portion of the area, where native material was noted at 2.5 ft BGS.

Soil samples were analyzed for diesel- and motor oil-range petroleum hydrocarbons, arsenic, copper, lead, and zinc. A summary of the soil results is presented in Tables 20 and 22. Preliminary soil screening levels are presented in Table 23. Diesel- and motor oil-range petroleum hydrocarbons were detected in sample B9 (4-5 ft) at concentrations of 1,720 and 950 mg/kg, respectively. These concentrations are below the preliminary screening level of 2,000 mg/kg. Petroleum hydrocarbons were detected at lower concentrations, also below preliminary screening levels, in several other soil samples.

The concentrations of arsenic, copper, lead, and zinc follow the same general trends (e.g., soil samples with higher arsenic concentrations tend to have relatively higher concentrations of copper, zinc, and lead). The highest concentrations corresponded to the areas of observed slag in the central and eastern portion of the Former Log Yard Area, as shown on Figure 32. The concentrations of lead in all soil samples are below the preliminary screening level of 1,000 mg/kg. The concentrations of arsenic, copper, and zinc in several soil samples exceeded preliminary screening levels, which are based on protection of groundwater as marine surface water (adjusted for background for arsenic and copper). Because of the distance to the surface water receptor, these preliminary screening levels are considered to

be conservative. This is especially true for copper and zinc, which were generally not detected or detected below background levels in the groundwater as discussed in Section 3.7.2, indicating that these constituents are not leaching from the soil to the groundwater at levels of concern. For purposes of comparison, the soil concentrations were also compared to the MTCA Method C Industrial Soil Direct Contact cleanup levels (cleanup levels used in the 2005 report). The following is a summary of the concentrations of arsenic, copper, and zinc in soil.

- Arsenic. Concentrations of arsenic in the 51 shallow soil samples (0-0.5 ft) ranged from 2.57 mg/kg to 332 mg/kg. Thirty-two of these samples exceeded the preliminary screening level of 20 mg/kg. Concentrations in the eight deeper soil samples (1-1.5 ft) ranged from not detected to 31.1 mg/kg with two samples exceeding the preliminary screening level. The direct contact cleanup level of 88 mg/kg was exceeded in 13 of the shallow and none of the deeper soil samples.
- Copper. Concentrations of copper in the 51 shallow soil samples (0-0.5 ft) ranged from approximately 12 mg/kg to 531 mg/kg. Forty of these samples exceeded the preliminary screening level of 36 mg/kg. Concentrations in the eight deeper soil samples (1-1.5 ft) ranged from 1.6 mg/kg to 47.2 mg/kg with three samples exceeding the preliminary screening level. No samples exceeded the direct contact cleanup level of 140,000 mg/kg.
- Zinc. Concentrations of zinc in the 51 shallow soil samples (0-0.5 ft) ranged from approximately 16.6 mg/kg to 545 mg/kg. Twenty-seven of these samples exceeded the preliminary screening level of 100 mg/kg. Concentrations in the eight deeper soil samples (1-1.5 ft) ranged from 28.8 mg/kg to 84.2 mg/kg. No samples exceeded the direct contact cleanup level of 1,000,000 mg/kg.

3.7.2 GROUNDWATER

Groundwater was typically encountered at depths of 3 to 6 ft BGS. Shallow groundwater samples collected through temporary well screens at boring locations B1-B10 were analyzed for one or more of the following parameters: dissolved metals (arsenic, lead, copper, and zinc); PAHs; VOCs; and free cyanide. Kennedy/Jenks Consultants stated that these results were likely biased high because of the potential for more turbid samples from temporary well screens. A summary of the groundwater results is presented in Table 21. Preliminary groundwater screening levels are presented in Table 24. Trace levels of cyanide and PAHs were detected in the groundwater sample collected from B10 at concentrations below the preliminary screening levels.

Preliminary screening levels for metals (arsenic, copper, lead, and zinc) were developed based on marine surface water criteria adjusted for background as described in Section 3.1.2. Copper, lead, and zinc were generally not detected or were detected below preliminary screening levels. Concentrations of arsenic in the groundwater samples ranged from approximately 9 to 26 µg/L, which exceeds the preliminary screening level of 8 µg/L (based on background). However, as mentioned earlier, these results may be biased high because of the sampling method. In addition, concentrations of arsenic

detected in the groundwater are likely to be related to reducing conditions in groundwater caused by natural conditions from hydraulic filling over tidelands or by the presence of wood debris from past log yard activities. Reducing conditions may result in arsenic dissolving into groundwater from the soil.

3.7.3 SUMMARY OF RESULTS AND SITE DEVELOPMENT ACTIVITIES

As mentioned previously, the Former Log Yard Area was capped with 4 to 6 ft of clean soil fill material in preparation for future maritime-related development. The placement of fill on the site minimizes the potential for human contact with arsenic-impacted soil, and also reduces the potential for leaching of metals to shallow groundwater. The site is graded to allow drainage to the surrounding ditches and stormwater systems.

Based on the results of the groundwater sampling from temporary well screens, arsenic was the only constituent detected in shallow groundwater above the preliminary screening levels. With the discontinuation of the log yard operations and the placement of 4 to 6 ft of clean fill soil, conditions that would promote leaching from the slag have been minimized and the amount of surface infiltration into the soil (and the contact time of pore water with residual slag), has been substantially decreased.

4.0 PRELIMINARY CONCEPTUAL SITE MODEL

This section presents a preliminary conceptual site model that identifies COCs within the six areas on the property identified in Ecology Agreed Order DE-5698, describes which areas currently have sources of contaminants at levels of concern, and highlights potential contaminant migration pathways and receptors.

4.1 CONTAMINANTS OF CONCERN

The COCs for the six areas of concern are identified in the Agreed Order and include PAHs, petroleum hydrocarbons, PCBs, metals, and cyanide. As discussed previously in Sections 3.4, 3.5, and 3.6, no contaminants remain at concentrations exceeding the preliminary screening levels in the Rod Mill Former Demister Oil Area, the Rod Mill Former Stormwater Ditch, and the Former Rectifier Yard Area. The COCs that are currently present in the SPL Area at concentrations exceeding the preliminary screening levels are cPAHs in soil and shallow groundwater and WAD cyanide in shallow groundwater in Taylor Way. At the Rod Mill Area Closed Landfill, cPAHs and diesel- and motor oil-range petroleum hydrocarbons are present in soil and groundwater at concentrations exceeding the preliminary screening levels; vinyl chloride, cPAHs, diesel-range petroleum hydrocarbons, PCBs, and metals (arsenic, chromium, copper, lead, mercury, and zinc) are present in the shallow groundwater at concentrations exceeding the preliminary screening levels. In the Former Log Yard Area, arsenic, copper, and zinc are present in soil and arsenic is present in shallow groundwater at concentrations exceeding the preliminary screening levels. Based on these exceedances, the following constituents remain as COCs:

- cPAHs (SPL Area, Rod Mill Area Closed Landfill)
- Diesel-range petroleum hydrocarbons (Rod Mill Area Closed Landfill)
- PCBs (Rod Mill Area Closed Landfill)
- Metals (Rod Mill Area Closed Landfill and Former Log Yard Area)
- WAD Cyanide (SPL Area)

4.2 POTENTIAL CONTAMINANT SOURCES

Current potential sources for the contaminants detected at concentrations exceeding the preliminary screening levels in the SPL Area, the Rod Mill Area Closed Landfill, and the Former Log Yard Area include the following:

- Buried process waste materials such as SPL, rubble from unused cathodes, coal tar pitch, petroleum coke, coal, alumina ore, synthetic cryolite, and duct dust. As described in Sections 1.1.1 and 2.2.2.1, several of these wastes look similar and, for the purposes of this report, are classified as black carbon materials. Black carbon materials are present in the subsurface in

the SPL Area and the Rod Mill Area Closed Landfill (Note: SPL and duct dust are not known to have been disposed of at the Rod Mill Area Closed Landfill).

- Miscellaneous materials used and disposed of at the Rod Mill Area Closed Landfill also include, but are not limited to: used refractory materials, brick, mortar, concrete (as construction rubble), wood (as lumber and other forms), rubber and plastic products, rain gutter dust, floor/road sweepings, and general trash.
- Slag used as road ballast in the Former Log Yard Area.

4.3 CONTAMINANT MIGRATION PATHWAYS AND MEDIA OF CONCERN

As described in Section 1.3, the upper 3.5 to more than 10 ft of soil at the property is fill, and contains the shallow water bearing zone. The fill soil overlies the native mudflat deposits which act as a confining layer between the shallow and intermediate aquifers. Groundwater is typically encountered at depths between approximately 6 to 8 ft BGS. Groundwater in the shallow and intermediate aquifers migrates off site and eventually discharges to the Hylebos Waterway to the northeast, and the Blair Waterway to the southwest.

Based on the occurrence of groundwater discharge to the nearby waterways, the shallow nature of groundwater, and the presence of an unsaturated soil zone, the potential pathways for contaminant migration at the three areas of interest include leaching of contaminants from soil to groundwater and transport of contaminants in groundwater to nearby surface water.

Based on potential migration pathways, the media of potential concern at the three areas are soil and groundwater.

4.4 CURRENT AND FUTURE LAND AND GROUNDWATER USE

The current land use zoning is industrial and is planned to remain industrial. Near surface groundwater is not currently used for drinking water and is not a reasonable future source of drinking water due to the availability of a municipal water supply and, in accordance with WAC 173-340-720(2)(d), due to its proximity to the Hylebos and Blair Waterways (which consist of marine surface water). Consequently, the highest beneficial use for shallow groundwater at the property is considered to be discharge to surface water that is not a drinking water source.

4.5 POTENTIAL RECEPTORS AND EXPOSURE PATHWAYS

The potential receptors that may be exposed to the contaminants present at the three areas of interest, and the potential exposure pathways, depend primarily on current and future land use. This section identifies potential receptors and the potential exposure pathways for the receptors based on the current and future land uses described in Section 4.4.

4.5.1 POTENTIAL RECEPTORS

Potential receptors for contaminants within the SPL Area, the Rod Mill Area Closed Landfill, and the Former Log Yard Area were evaluated based on current and anticipated future land uses. They include humans, terrestrial ecological receptors (i.e., wildlife, soil biota, and plants), and aquatic organisms, as described below. The Rod Mill Former Demister Oil Area, Rod Mill Former Stormwater Ditch, and Former Rectifier Yard Area are excluded from this evaluation because no contaminants remain at concentrations exceeding the preliminary screening levels in these areas.

- **Humans.** Because people may work within each of the three areas (either as construction workers or employed in the future for industrial operations), humans are considered to be potential receptors. Site visitors are not considered to be likely potential receptors because the property is located in a heavily industrial area and access is limited by fencing around the property.
- **Terrestrial Ecological Receptors:** Each of the three areas cited above are entirely covered with sand and gravel, pavements, or 4 to 6 ft of structural fill; therefore, terrestrial ecological receptors (wildlife, soil biota, and plants) are not considered to be potential receptors. Also, in accordance with WAC 173-340-7491(1)(c)(i), sites that contain less than 1.5 acres of contiguous undeveloped area are excluded from having to conduct a terrestrial ecological evaluation. Because each of the three areas is entirely covered as noted previously, the areas meet the exclusion for a terrestrial ecological evaluation. Ecology's Terrestrial Ecological Exclusion form for each area is included as Appendix K.
- **Aquatic Organisms.** Due to the proximity of the three areas to the Hylebos and Blair Waterways, aquatic organisms in the waterways are considered to be potential receptors if contaminants from the areas reach the surface water or sediments of the waterways.

Based on the above evaluation, potential receptors for contaminants within the three areas of interest include humans and aquatic organisms.

4.5.2 POTENTIAL EXPOSURE PATHWAYS

Potential exposure pathways for the receptors identified in Section 4.5.1 are discussed by medium below.

4.5.2.1 Soil

The potential human health exposure pathways for soil in the SPL Area, the Rod Mill Area Closed Landfill, and the Former Log Yard Area are:

- Incidental ingestion and dermal contact with constituents in soil
- Exposure through inhalation of soil contaminants (as particulates) that have migrated to air as windblown or fugitive dust.

4.5.2.2 Groundwater

As discussed in Section 4.4, groundwater at or potentially affected by the areas of concern on the property is not currently used for drinking water and is not a reasonable future source of drinking water. However, the shallow and intermediate water bearing zones discharge to nearby surface water bodies; therefore, the potential exposure pathways for groundwater include:

- Human ingestion of marine organisms contaminated by releases of contaminated groundwater to nearby marine surface water
- Acute or chronic effects to aquatic organisms resulting from exposure to constituents in groundwater discharging to nearby marine surface water.

Because the Hylebos and Blair Waterways are neither current nor future drinking water sources, human ingestion of surface water is not considered a potential pathway.

5.0 SUMMARY AND CONCLUSIONS

Environmental investigations have been conducted in the SPL Area, the Rod Mill Area Closed Landfill, the Rod Mill Former Demister Oil Area, the Rod Mill Former Stormwater Ditch, the Former Rectifier Yard Area, and the Former Log Yard Area. Interim actions have been conducted in the Rod Mill Former Demister Oil Area and Rod Mill Former Stormwater Ditch. In addition, several feet of structural fill have been placed at the Former Rectifier Yard and Former Log Yard Areas. Based on the results of these investigations and interim/other actions, conclusions regarding the nature and extent of contamination at the six areas of interest are:

- **SPL Area**. Process wastes (including SPL and other carbon-containing materials) are present in the upper 1 to 5 ft of soil within and immediately adjacent to the SPL Area. However, cyanide, a contaminant associated with SPL, is not present in soil below the dark gray to black carbon materials which are present within the area at concentrations exceeding the preliminary screening level developed in Section 3.1.1 of this report. cPAHs are present in soil at concentrations exceeding the preliminary soil screening levels. At this time, the data do not allow a positive correlation between cPAH concentrations in soil and the proximity of the process wastes or the volume/mass of carbon containing wastes present. The data are also not consistent with our understanding that cPAHs are relatively immobile in soil and groundwater. WAD cyanide and cPAHs are present in shallow groundwater within the SPL Area at concentrations exceeding the preliminary groundwater screening levels developed in Section 3.1.2 of this report. However, concentrations of WAD cyanide and cPAHs above the preliminary groundwater screening levels do not appear to be migrating off the property, and the concentration of cyanide in shallow groundwater appears to be decreasing over time. Groundwater in the intermediate aquifer within the SPL Area is no longer being impacted by historical smelter operations or the presence of process wastes in the subsurface.
- **Rod Mill Area Closed Landfill**. Waste materials are present mixed with soil in the Rod Mill Area Closed Landfill at depths ranging between approximately 0.5 and 9.5 ft BGS. cPAHs and diesel-range petroleum hydrocarbons are present in the fill soil below the waste materials at concentrations exceeding the preliminary soil screening levels developed in Section 3.1.1 of this report, and cPAHs are present in the native soil below the fill material at concentrations exceeding the preliminary soil screening levels. Although diesel-range petroleum hydrocarbons, cPAHs, and other COCs (vinyl chloride, PCBs, and metals) are present in shallow and intermediate zone groundwater within the landfill at concentrations exceeding the preliminary screening levels, only arsenic and copper have been detected in the shallow groundwater at concentrations above the preliminary screening levels in groundwater downgradient of the landfill. The presence of cPAHs, PCBs, arsenic, and chromium in the intermediate aquifer in the Rod Mill Area Closed Landfill may be a result of cross-contamination during well installation; further investigation is needed to evaluate the source.
- **Rod Mill Former Demister Oil Area**. Soil in the Rod Mill Former Demister Oil Area containing cPAHs and diesel- and motor oil-range petroleum hydrocarbons at concentrations exceeding the interim action cleanup levels was removed during an interim action in 2008. Consequently no further investigation or remedial action is needed in this area.
- **Rod Mill Former Stormwater Ditch.** Soil in the Former Stormwater Ditch containing cPAHs at concentrations exceeding the interim action cleanup levels was removed during an

interim action in 2008. Consequently no further investigation or remedial action is needed in this area.

- **Former Rectifier Yard.** Elevated concentrations of PCBs were present in the soil in the Rectifier Yard in the early 1980s; however, these elevated concentrations were not detected in soil samples collected from the same area in the 2002, 2003, and 2004 investigations, indicating that soil cleanup was conducted by Kaiser Aluminum sometime between 1984 and 2002. PCB concentrations detected in soil collected in the latter sampling events were below preliminary screening levels protective of human health and the environment. Additionally, the results for soil samples collected in 2008 indicate that elevated concentrations of diesel- and mineral oil-range petroleum hydrocarbons are no longer present in the soil within the Former Rectifier Yard and that the remaining concentrations of these petroleum hydrocarbons are protective of human health and the environment. Consequently no further investigation or remedial action is needed in this area.

- **Former Log Yard Area.** Soil in the Former Log Yard Area contains arsenic, copper, and zinc at concentrations exceeding the preliminary screening level developed in Section 3.1.1 of this report for the protection of groundwater. Concentrations of copper and zinc do not exceed screening levels protective of direct contact, and groundwater concentrations are below preliminary groundwater screening levels, which demonstrates that soil concentrations are protective of groundwater and, therefore, are protective of human health and the environment. Arsenic concentrations in soil exceed the preliminary screening level protective of direct human contact and arsenic concentrations in shallow groundwater within the Former Log Yard Area exceed the preliminary groundwater screening levels developed in Section 3.1.2. The arsenic exceedances in groundwater may be biased high due to sampling methods. Current conditions in this area, which include 4 to 6 ft of clean structural fill placed after completion of previous investigations, minimizes the potential for human contact with arsenic-impacted soil and the potential for arsenic in soil to leach to groundwater. Previous investigations at the Site did not include collection and analysis of groundwater samples downgradient of the Former Log Yard Area.

Based on the evaluation of the nature and extent of contamination at each of the six areas of concern, additional data is needed in three of the areas, the SPL Area, the Rod Mill Area Closed Landfill, and the Former Log Yard Area, to adequately characterize the nature and extent of contamination to make remedial decisions. These data gaps include the following:

- Because there is not an apparent correlation between cPAH concentrations in soil in the SPL Area and proximity to or volume/mass of carbon-containing wastes, and distribution of cPAHs is not consistent with their typical migration, additional investigation of cPAH concentrations in soil is needed to evaluate the distribution and migration of cPAHs.

- Because cPAHs were detected at concentrations exceeding the preliminary screening levels in the shallow groundwater within the SPL Area in 2008 and because WAD cyanide was also detected at a concentration slightly above the preliminary screening level in shallow groundwater, additional groundwater monitoring is needed in the SPL Area to determine if contaminated groundwater is migrating off the property and to evaluate whether or not the concentrations have decreased since 2008.

- Because diesel-range petroleum hydrocarbons, cPAHs, and other contaminants (vinyl chloride, PCBs, and metals) were detected at concentrations exceeding the preliminary screening levels in shallow groundwater within the Rod Mill Area Closed Landfill in 2008, additional groundwater monitoring is needed in this area to determine if these concentrations

are migrating off the property and to evaluate whether or not the concentrations have decreased since 2008.

- Because cPAHs, PCBs, and metals were detected at concentrations exceeding the preliminary screening levels in the intermediate aquifer within the Rod Mill Area Closed Landfill in 2008, additional groundwater monitoring is needed in this area to evaluate the source of the contaminants and to determine if these contaminants are migrating off the property.
- Because arsenic was detected at concentrations exceeding the preliminary screening level in samples of shallow groundwater from temporary well screens in the Former Log Yard Area, additional groundwater monitoring is needed downgradient of this area to evaluate whether concentrations of arsenic above the preliminary screening levels are migrating off the property.

To address the data gaps identified above and evaluate the need for remedial actions in the SPL Area, the Rod Mill Area Closed Landfill, and the Former Log Yard Area., the RI is anticipated to include monitoring of groundwater in and/or downgradient of each of these three areas. The monitoring would be focused on evaluating the current extent of COCs in shallow groundwater downgradient of these three areas and determining the source and current extent of COCs in the intermediate aquifer at the Rod Mill Area Closed Landfill. The RI is anticipated to also include investigation in the SPL Area to evaluate the migration of cPAHs in soil. Based on the data presented in this document, no further investigations and no additional remedial actions are considered necessary for the Rod Mill Former Demister Oil Area, the Rod Mill Former Stormwater Ditch, and the Former Rectifier Yard.

6.0 USE OF THIS REPORT

This Compilation Report has been prepared for the exclusive use of the Port of Tacoma and applicable regulatory agencies for specific application to the six areas identified in Agreed Order DE-5698 at the former Kaiser Aluminum property in Tacoma, Washington. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of Landau Associates. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

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

LANDAU ASSOCIATES, INC.

Stacy J. Lane, L.G.
Senior Geologist

Kristy J. Hendrickson, P.E.
Principal

KJH/SJL/kes

7.0 REFERENCES

Beck, Theodore R. 2001 (2008). *Electrochemistry Encyclopedia, Electrolytic Production of Aluminum, Electrochemical Technology Corp*. Available at http://electrochem.cwru.edu/ed/encycl/. Accessed on October 6, 2008.

Bortleson, G.C. et al. 1980. *Historical Changes of Shoreline and Wetland at Puyallup River and Commencement Bay, Washington.* Hydraulic Investigations, Atlas HA-617 (Sheet 8).

Dames & Moore. 1985. *Report of Ground-Water Quality Related to Potlining Management for the Kaiser Aluminum and Chemical Corporation, Tacoma, Washington.* April 16.

Ecology. 1994. *Natural Background Soil Metals Concentrations in Washington State*. Publication No. 94-115. Washington State Department of Ecology, Toxics Cleanup Program. October.

Ecology website. 2011. *Cleanup Levels and Risk Calculations.* https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx. Washington State Department of Ecology. Accessed May.

EPA. 1995. Sector Notebook Project, Nonferrous Metals. September.

Evans, W. 2008. Personal communication (conversation with M. Coleman, Washington State Department of Ecology). William Evans, Port of Tacoma. Re: *Rod Mill Former Demister Oil Area and Former Stormwater Ditch Interim Action.*

Kaiser. 2003. Letter: *Kaiser Tacoma Former Spent Potlining Management Facility.* From Mr. Bernard P. Leber, Jr., Kaiser Aluminum to Mr. Eric Oie, Department of Ecology. February 17.

Kaiser. 1980. *Part A Hazardous Waste Permit Application.* October 30.

Kennedy/Jenks Consultants. 2005. *Summary of Findings, Former Kaiser Aluminum Log Yard, Tacoma, Washington.* Prepared for Port of Tacoma. July.

Kennedy Jenks. 2003. *Preliminary Due Diligence Evaluation Kaiser Aluminum Facility.* Prepared for Port of Tacoma. March.

Landau Associates. 2010. Letter Report: *Annual Groundwater Monitoring Report, June 2010, Former Kaiser Aluminum &Chemical Corporation – Tacoma Facility, Wet Scrubber Sludge Management Area*. Prepared for Port of Tacoma. November 1.

Landau Associates. 2009a. *Technical Memorandum: Interim Action Completion, Roof Drainage Area Cleanup Action, Rod Mill Area – Former Kaiser Property, Kaiser Redevelopment Project E2223, Tacoma, Washington.* Prepared for Port of Tacoma. November 3.

Landau Associates. 2009b. *Technical Memorandum: Interim Action Completion, Stormwater Conveyance Ditch Cleanup Action, Rod Mill Area – Former Kaiser Property, Kaiser Redevelopment Project E2223, Tacoma, Washington.* Prepared for Port of Tacoma. November 3.

Landau Associates. 2008. *Final Report, Supplemental Investigation, Kaiser Redevelopment Project E2223, Rectifier Yard Area, 3400 Taylor Way, Tacoma, Washington.* Prepared for Jacobs Engineering Group and Port of Tacoma. August 14.

Landau Associates. 2005. *Supplemental Soil Investigation Report, Rectifier Yard, Former Kaiser-Tacoma Works Facility, Tacoma, Washington.* January 11.

Landau Associates. 2004a. Letter Report: *Groundwater Monitoring Report, June and July 2004, Former Kaiser Aluminum & Chemical Corporation, Former Spent Potlining Management Area.* Prepared for the Port of Tacoma. November 19.

Landau Associates. 2004b. *Soil Investigation Report, Rectifier Yard, Kaiser-Tacoma Works Facility, Tacoma, Washington.* July 12.

Landau Associates. 2003a. *Decommissioning and Concrete Pad Sampling, Former Spent Potlining Facility, Kaiser Aluminum & Chemical Corp., Tacoma, Washington*. April 30.

Landau Associates. 2003b. *Rectifier Yard Sampling and Analysis Plan, Kaiser-Tacoma Works, Tacoma, Washington.* July 21.

Landau Associates. 2002a. *Closure Plan, Spent Potlining Management Facility, Kaiser Aluminum & Chemical Corporation, Tacoma Works*. June 6.

Landau Associates. 2002b. *2001 Groundwater Monitoring Report, Former Spent Potlining Management Area, Kaiser Tacoma Facility.* Prepared for the Kaiser Aluminum & Chemical Corporation. June 27.

Landau Associates. 2002c. *Letter Report: Groundwater Monitoring Report, June 2002, Former Spent Potlining Management Area, Kaiser Aluminum & Chemical Corporation – Tacoma Facility.* Prepared for Kaiser Aluminum & Chemical Corporation. December 13.

Landau Associates. 1987. *Final Ground Water Monitoring Report, Kaiser Wet Scrubber Sludge, Management Area, Kaiser Tacoma Works, Tacoma, Washington.* July.

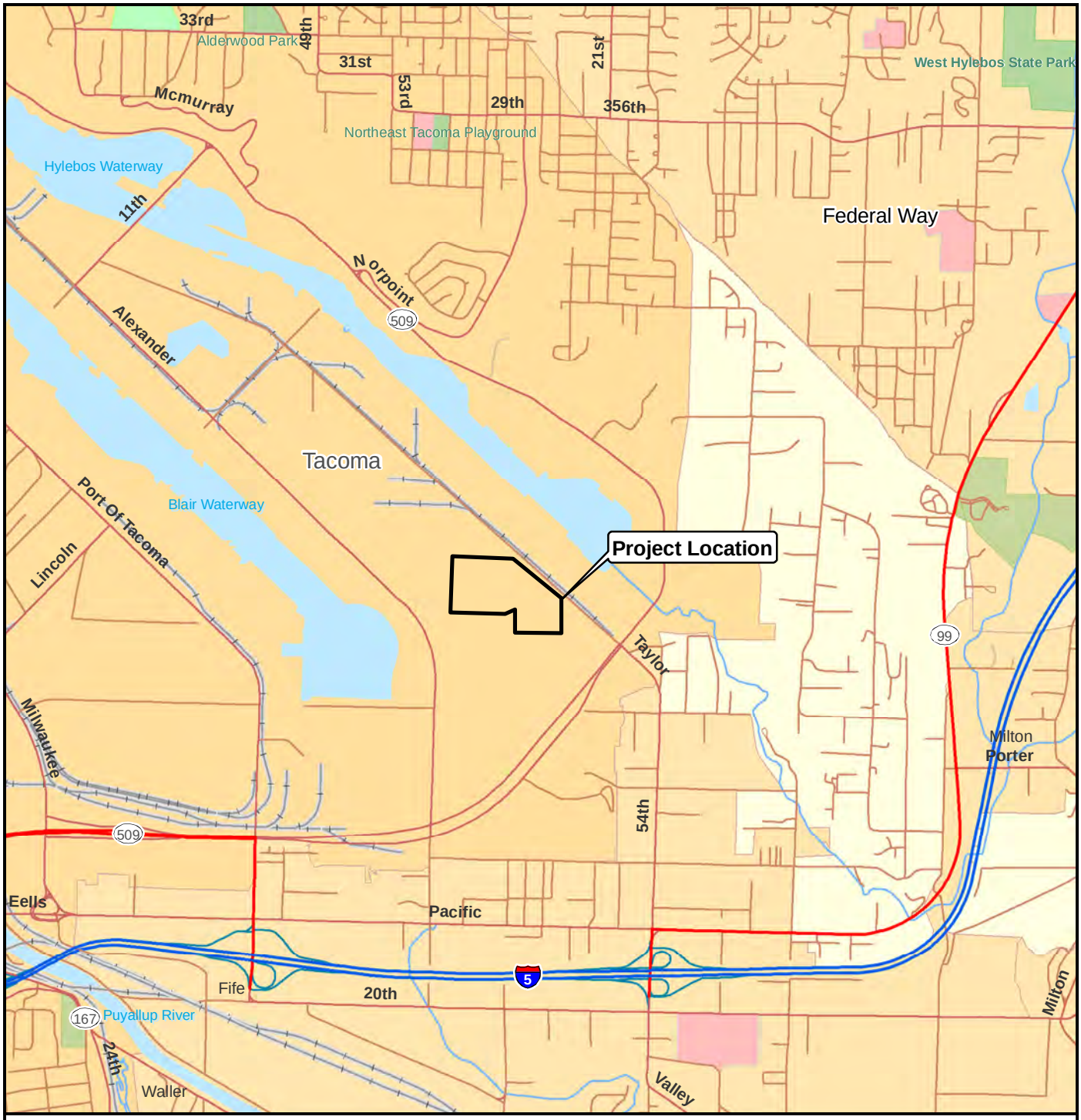
Leber, B. 2005. Personal communication (conversation with Bill Evans, Port of Tacoma). Bud Leber, Kaiser Aluminum. Re: *Rod Mill Area Closed Landfill.*

MFG. 2005a. *Site Characterization Report, Spent PotLining Management Area, Kaiser Aluminum & Chemical Corporation, Tacoma, Washington.* January.

MFG. 2005b. *Site Characterization Report, Rod Mill Area, Kaiser Aluminum & Chemical Corporation, Tacoma, Washington.* January.

Port of Tacoma. 2004. Letter: *Former Kaiser Aluminum Facility: Log Sort Yard and Wet Scrubber Sludge Consolidation Areas.* From Mr. William Evans, Port of Tacoma, to Mr. Marv Coleman, Washington State Department of Ecology. April 21.

Totten, George E. and Mackenzie, D. Scott. 2003. *Handbook of Aluminum*. CRC Press. New York, New York.



N

0 0.5 1

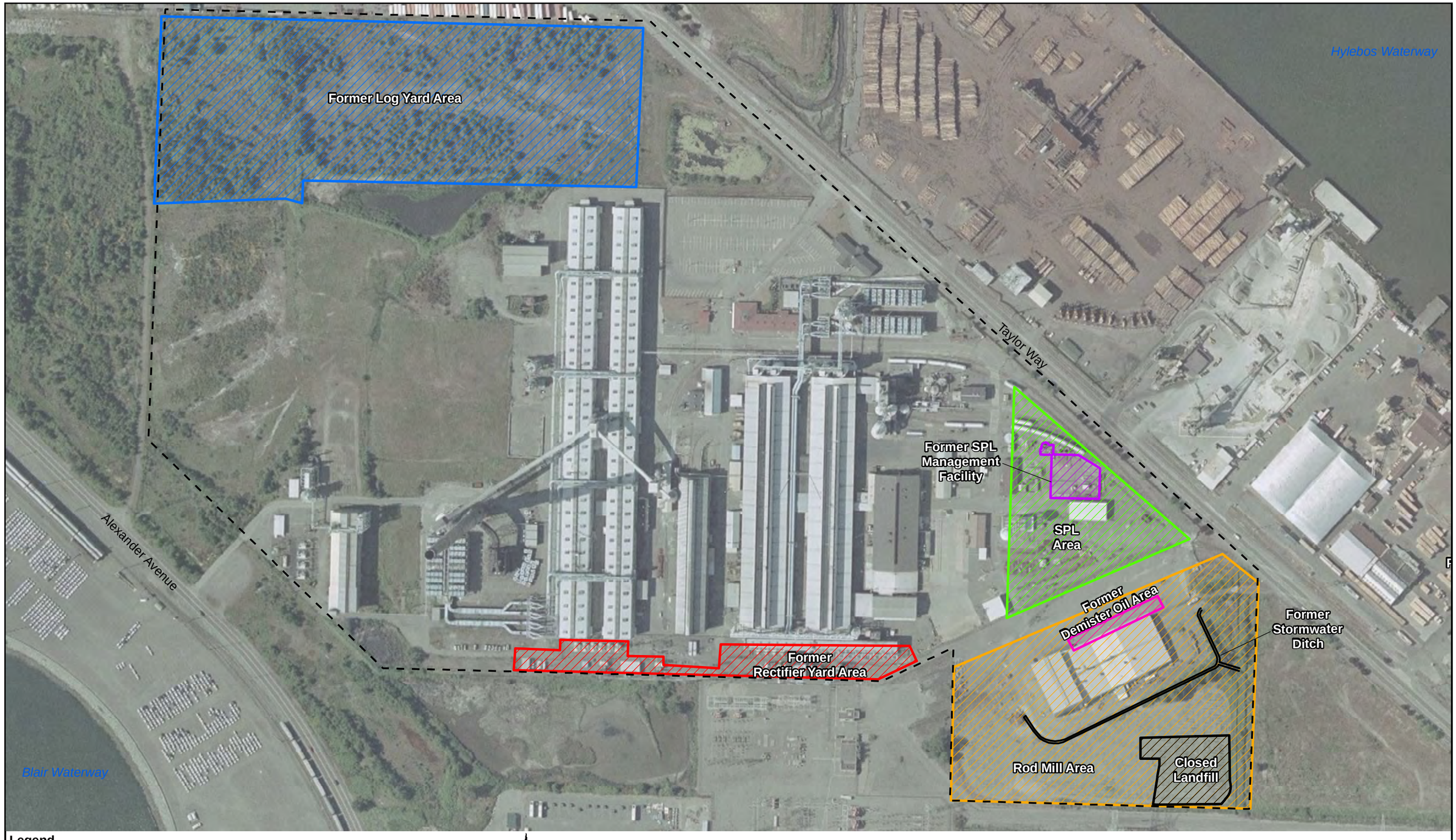
Miles

Data Source: ESRI 2006

Y:\Projects\118032\MapDocs\Fig1.mxd 5/24/2011

LANDAU ASSOCIATES

Kaiser Compilation Report Tacoma, Washington	**Vicinity Map**	Figure 1



Legend

Site Boundary

N

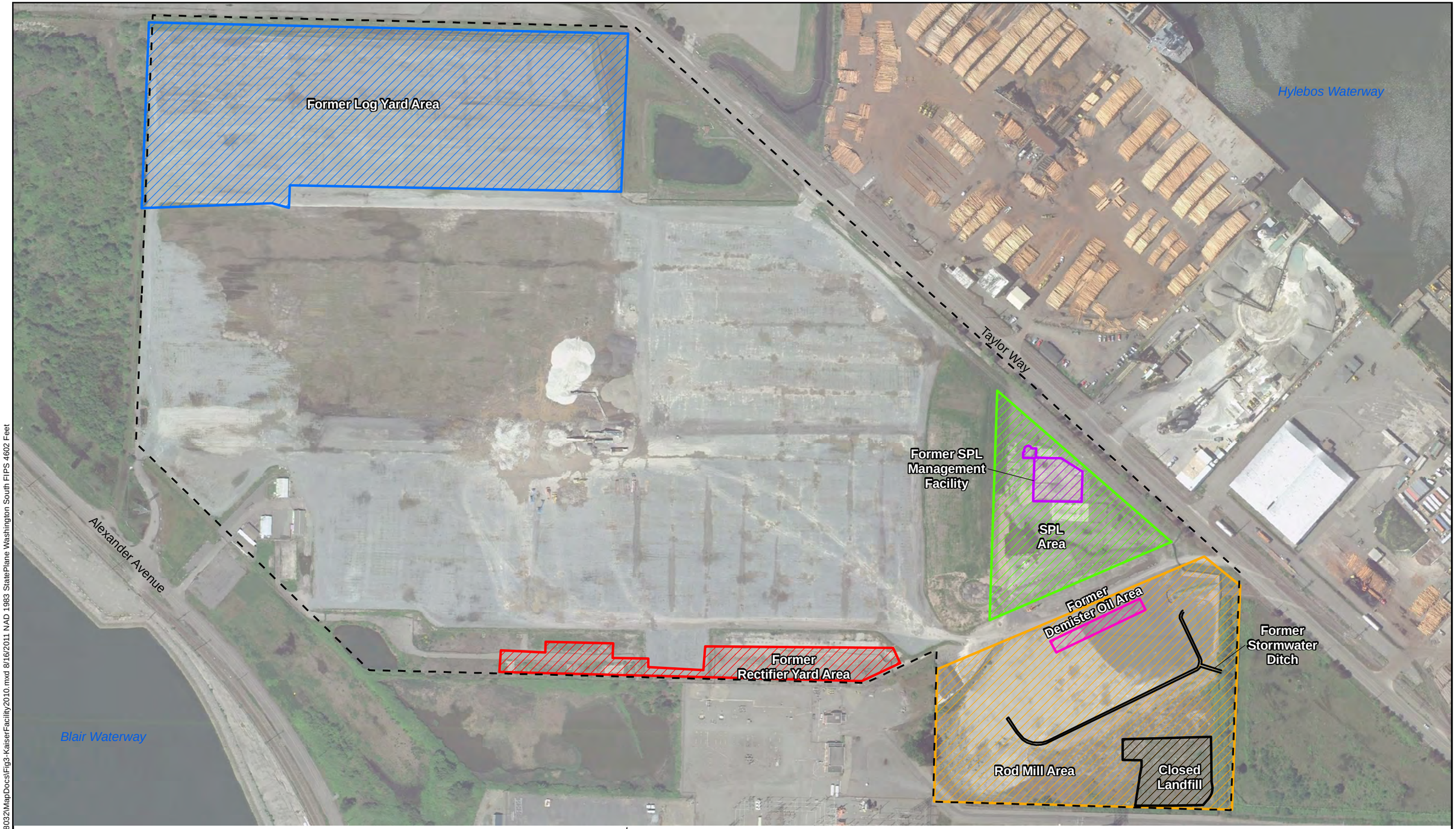
0 250 500

Scale in Feet

Data Source: Bing Aerials 2005; Pierce County Assesor

LANDAU ASSOCIATES

Kaiser Compilation Report Tacoma, Washington	**Site Plan with Historical Site Features**	Figure 2



Y:\Projects\118032\MapDocs\Fig3-KaiserFacility2010.mxd 8/16/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Legend

Site Boundary

N

0 250 500

Scale in Feet

Data Source: Jacobs Engineering; Pierce County Assesor; Google Earth Pro 2010

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

Current Site Plan

Figure 3

Concrete Impoundment and Sampling Station

Former Stormwater Ditch

Former Demister Oil Area

Stem Wall

Former Buried Storm Drain Piping

Former Concrete Pad

Former Rod Mill Building

Buried Storm Drain Piping

Closed Landfill

Legend

- Catch Basin
- Rod Mill Area
- Site Boundary

N

0 80 160

Scale in Feet

Data Source: Google Earth Pro 2010; Pierce County Assesor

LANDAU ASSOCIATES

Kaiser Compilation Report Tacoma, Washington	**Rod Mill Area With Current and Historical Site Features**	Figure 4

Y:\Projects\118032\MapDocs\Fig4-CurrentSitePlan.mxd 8/19/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Legend

- Existing Deep Aquifer Monitoring Well
- Existing Intermediate Aquifer Monitoring Well
- Existing Shallow Aquifer Monitoring Well
- Approximate Supply Well Location
- Approximate Former Monitoring Well Location
- Approximate 2003 Direct-Push Groundwater Sampling Location (Shallow Aquifer)
- Approximate 2003 Direct-Push Groundwater Sampling Location (Intermediate Aquifer)
- RRI 2008 Direct-Push Groundwater Sampling Location (Shallow/Intermediate Aquifer)
- Approximate Area of Former Spent Potlining Management Facility
- Spent Pot Lining Area (SPL Area)
- Site Boundary

N

0 140 280

Scale in Feet

Data Source: Port of Tacoma; Jacobs Engineering; Pierce County Assesor; Google Earth Pro 2010

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

SPL Area Previous Investigation Monitoring Well and Groundwater Sampling Locations

Figure 5

Y:\Projects\118032\MapDocs\Fig5-KaiserSPLMonitoringWell.mxd 8/18/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Notes:

1. White waste material reportedly encountered at test pits SPL-MA4, SPL-MA12, and SPL-MA13.
2. Petroleum coke fragments found imbedded in carbon waste material at test pits SPL-MA4A and SPL-MA29.
3. Concrete and discolored water (described as peagreen) encountered at exploration DPT-6.
4. A greenish gray material with a moderate chemical odor was encountered at test pit SPL-MA29. Other greenish gray material was reportedly encountered at test pits SPL-MA5 and SPL-MA10.

Taylor Way

RRI-P-215
RRI-P-216
RRI-B-19
RRI-P-217
RRI-P-106

MA30
MA1A
MA1
MA2
MA2A
MA24
MA3
MA23
MA7A
DPT6
MA7
MA5
MA4
MA4A
MA29
MA18
MA28
MA26
MA10A
MA8
MA9
MA10
MA11
MA25
MA12
Buried Storm Drain Piping
MA20
MA19
LA1
LA2
MA27
MA21
MA15
MA13
MA14
MA31
MA22
Concrete Impoundment and Sampling Station
MA16A
MA16
MA17

Legend

- 2008 Supplemental Investigation Test Pit Location Where Carbon Waste Materials Were Not Encountered
- 2008 Supplemental Investigation Test Pit Where Carbon Waste Materials Were Encountered
- Approximate 2003 Direct-Push Soil Boring Location
- Approximate 2003/2004 Test Pit Location Where No Carbon Waste Materials Were Observed in Subsurface Soil
- Approximate 2003/2004 Test Pit Location Where Carbon Waste Materials or Other Wastes Were Reported in Subsurface Soil
- 2007/2008 RRI Soil Boring Location
- Approximate Area of Former Spent Potlining Management Facility
- Approximate Spent Pot Lining Area (SPL Area)
- Site Boundary

N

0 100 200
Scale in Feet

Data Source: Port of Tacoma; Jacobs Engineering; Pierce County Assesor; Google Earth Pro 2010

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

SPL Area Previous Soil Exploration Locations

Figure 6

Y:\Projects\118032\MapDocs\Fig6-KaiserSPLSoilLocations.mxd 8/18/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Legend

- Existing Deep Aquifer Monitoring Well
- Existing Intermediate Aquifer Monitoring Well
- Existing Shallow Aquifer Monitoring Well
- 2008 Supplemental Investigation Test Pit Location Where Carbon Materials Or Other Waste Materials Were Not Encountered
- 2008 Supplemental Investigation Test Pit Where Carbon Materials Or Other Waste Materials Were Encountered
- Approximate Supply Well Location
- Approximate Former Monitoring Well Location
- Approximate 2003 Direct-Push Groundwater Sampling Location (Shallow Aquifer)
- Approximate 2003 Direct-Push Groundwater Sampling Location (Intermediate Aquifer)
- Approximate 2003/2004 Test Pit Location Where Carbon Materials Or Other Waste Materials Were Not Observed in Subsurface Soil
- Approximate 2003/2004 Test Pit Location Where Carbon Materials Or Other Waste Materials Were Observed in Subsurface Soil
- 2007/2008 RRI Soil Boring Location
- Approximate Area of Former Spent Potlining Management Facility
- Spent Pot Lining Area (SPL Area)
- Site Boundary
- Cross-Secton Location

N

0 150 300

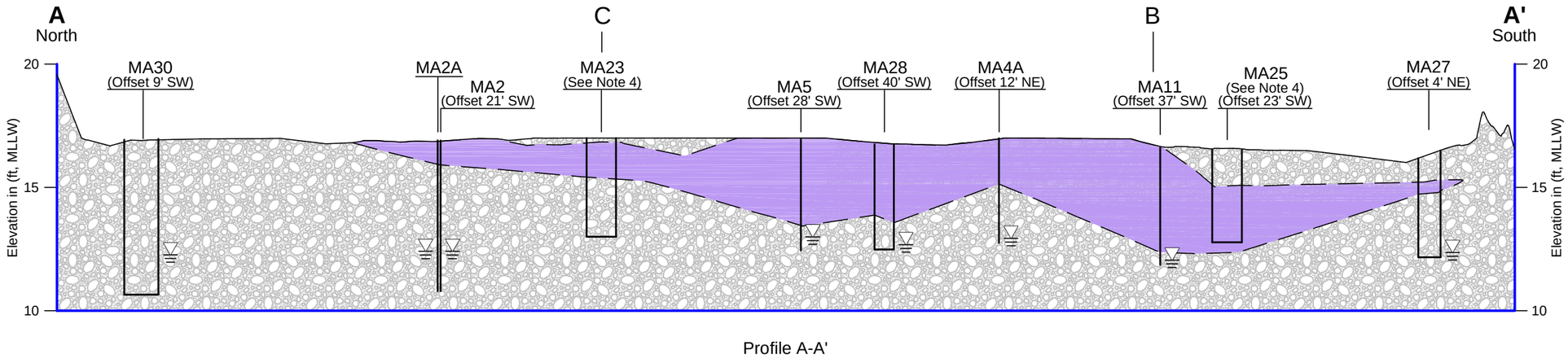
Scale in Feet

Data Source: Port of Tacoma; Jacobs Engineering; Pierce County Assesor; Google Earth Pro 2010

LANDAU ASSOCIATES

Kaiser Compilation Report Tacoma, Washington	**SPL Area Cross-Section Locations**	Figure 7

Y:\Projects\118032\MapDocs\Fig7-Cross-sectionLocations.mxd 8/19/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet



Profile A-A'

Legend

MA1 (Offset 16' W) — Project Exploration Designation; Offset Distance in Feet and Direction

Top of Exploration

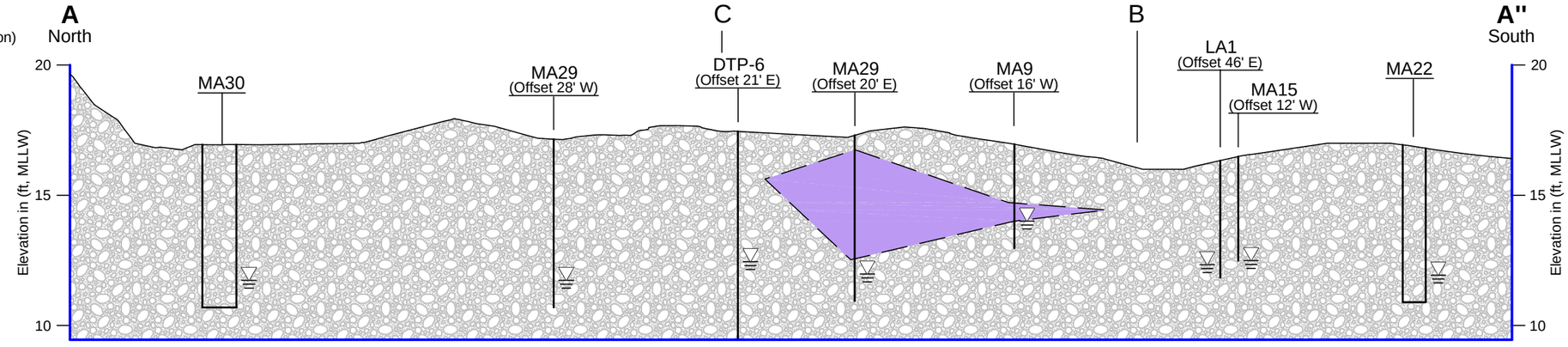
Groundwater Level (At time of excavation)

Inferred Geologic Contact

Bottom of Exploration

Soil Containing 5 to 40 Percent Black Carbon Materials

Unit A: Sand, Silt, and Gravel FILL; Shallow Water-bearing Zone



Profile A-A"

Notes

1. Soil descriptions are generalized, based on interpretation of field and laboratory data. Stratigraphic contacts are interpolated between borings and based on topographic features; actual conditions may vary.
2. For cross-section profile location, see Figure 7 of this report.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
4. No groundwater encountered at test pits MA23 and MA25

0 50 100

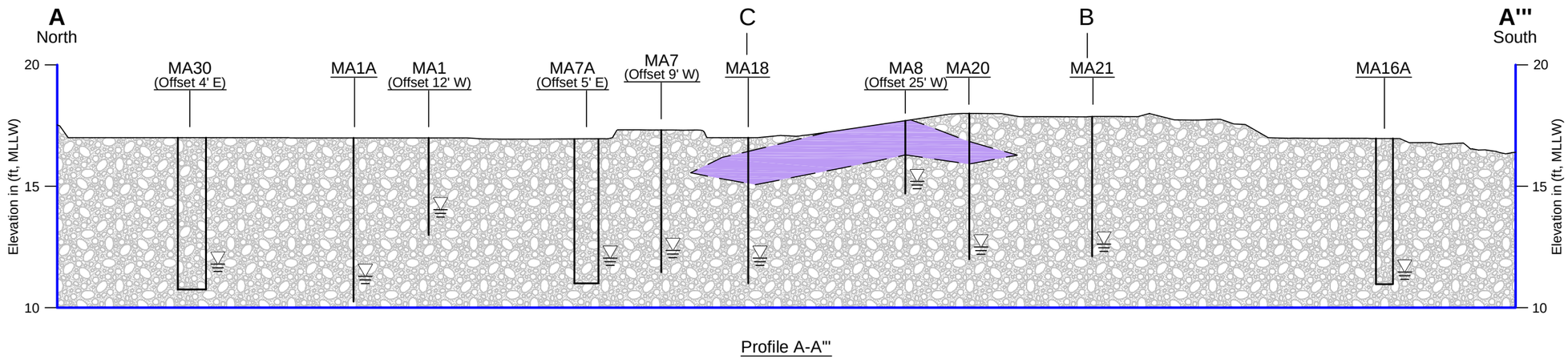
Horizontal Scale 1" = 50'
Vertical Scale 1" = 5'

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

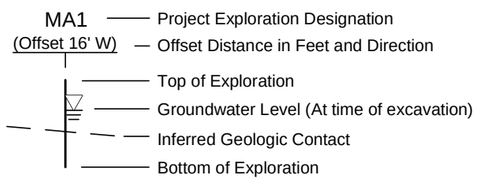
SPL Area
Geologic Profiles
A-A' and A-A"

Figure
8



Profile A-A'''

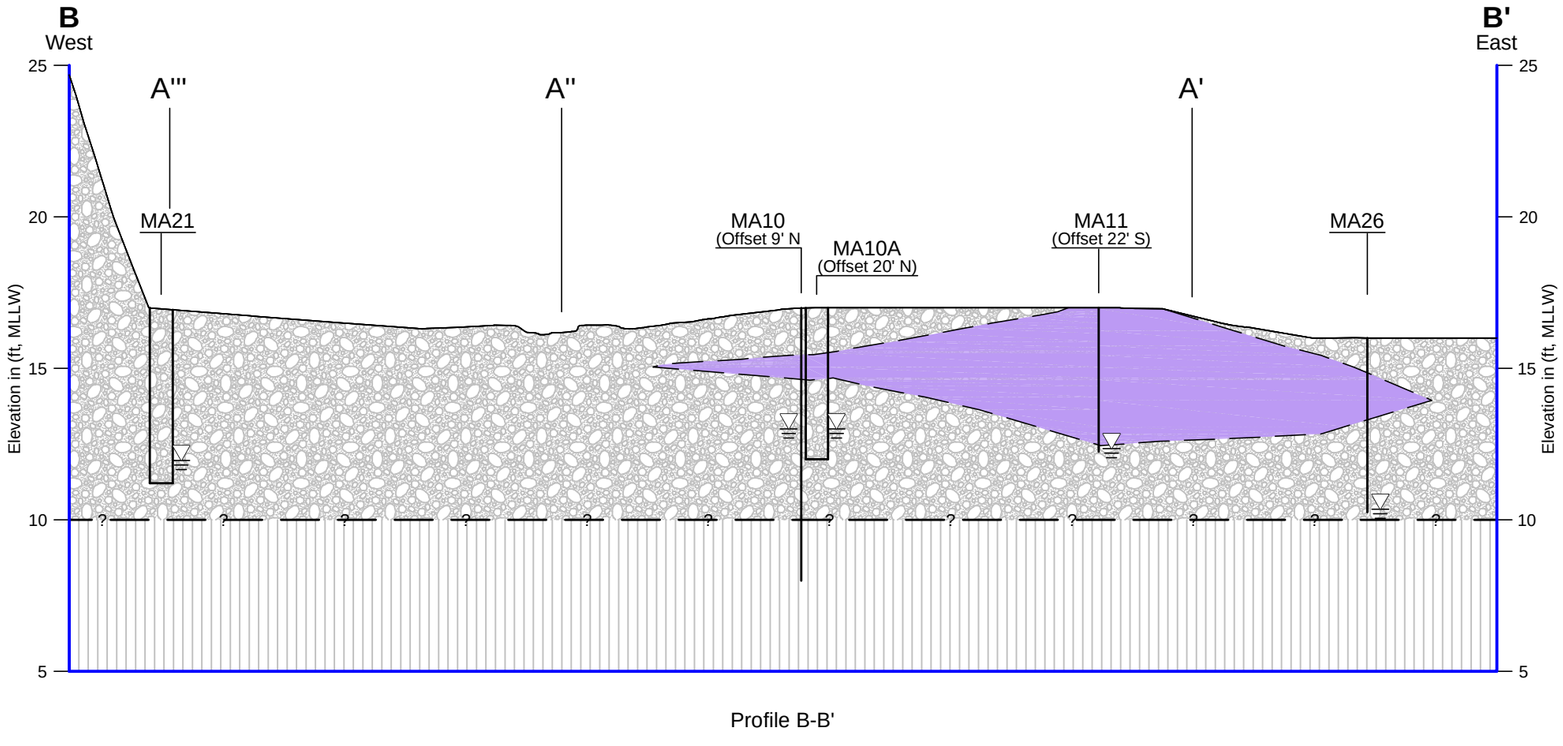
Legend



Soil Containing 5 to 50 Percent Black Carbon Materials

Unit A: Sand, Silt, and Gravel FILL; Shallow Water-bearing zone

Unit B: Sandy to Clayey Organic SILT with minor peat, woody debris, and shell fragments; native mudflat deposits.



Profile B-B'

Notes

1. Soil descriptions are generalized, based on interpretation of field and laboratory data. Stratigraphic contacts are interpolated between borings and based on topographic features; actual conditions may vary.
2. See report text for descriptions of geologic units.
3. For cross-section profile location, see Figure 7 of this report.
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 50 100

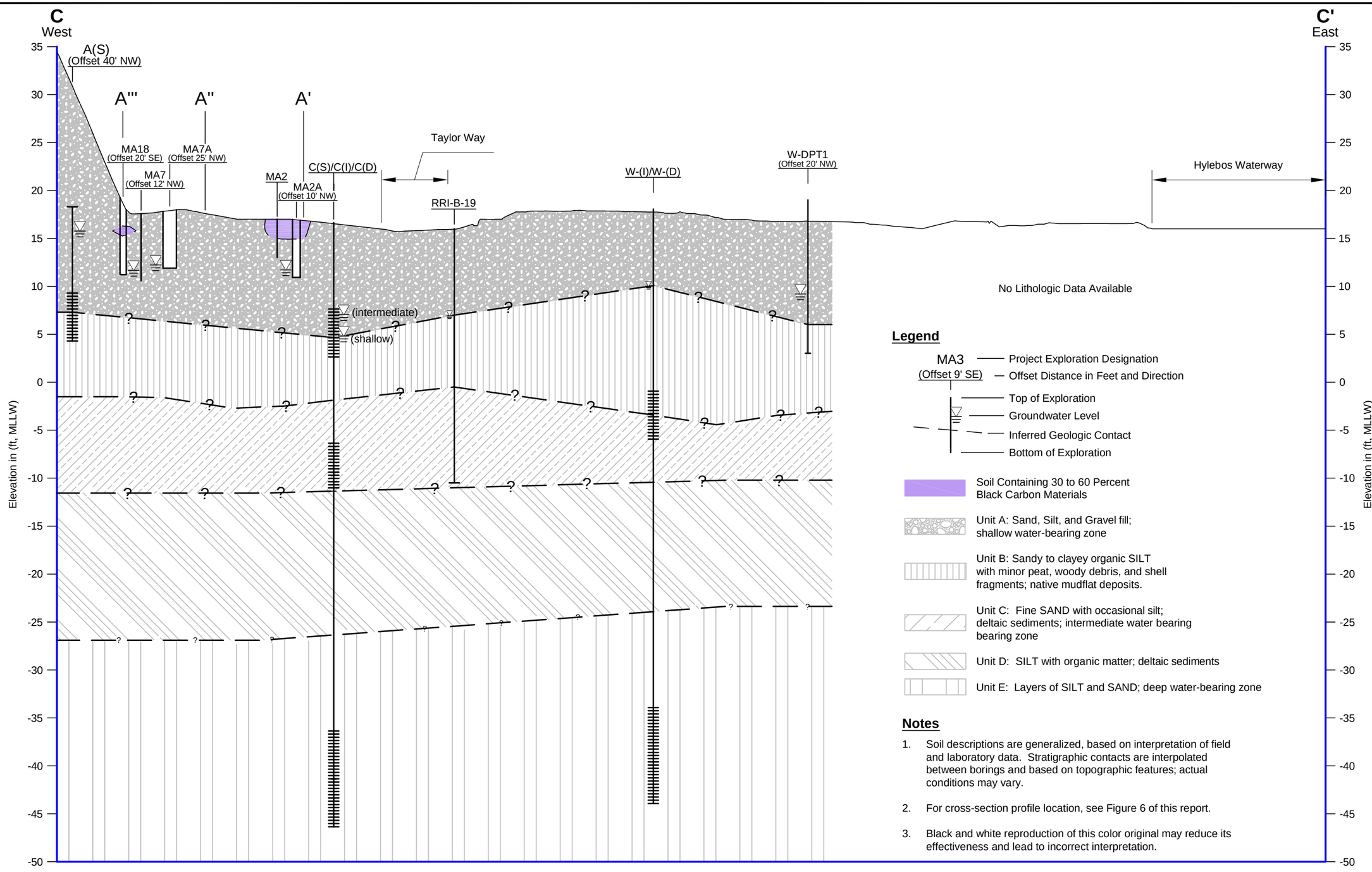
Horizontal Scale 1" = 50'
Vertical Scale 1" = 5'

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

SPL Area
Geologic Profiles
A-A''' and B-B'

Figure
9



Legend

MA3 (Offset 9' SE) — Project Exploration Designation; Offset Distance in Feet and Direction

- Top of Exploration
- Groundwater Level
- Inferred Geologic Contact
- Bottom of Exploration

- Soil Containing 30 to 60 Percent Black Carbon Materials
- Unit A: Sand, Silt, and Gravel fill; shallow water-bearing zone
- Unit B: Sandy to clayey organic SILT with minor peat, woody debris, and shell fragments; native mudflat deposits.
- Unit C: Fine SAND with occasional silt; deltaic sediments; intermediate water bearing bearing zone
- Unit D: SILT with organic matter; deltaic sediments
- Unit E: Layers of SILT and SAND; deep water-bearing zone

Notes

1. Soil descriptions are generalized, based on interpretation of field and laboratory data. Stratigraphic contacts are interpolated between borings and based on topographic features; actual conditions may vary.
2. For cross-section profile location, see Figure 6 of this report.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 100 200

Horizontal Scale 1" = 100'
Vertical Scale 1" = 10'

Kaiser Compilation Report
Tacoma, Washington

SPL Area
Geologic Profiles
A-A''' and B-B'

Figure
10

LANDAU ASSOCIATES

Y:\Projects\118032\MapDocs\Fig11-ShallowAquiferContours.mxd 8/16/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Data Source: Pierce County Assesor; Google Earth Pro 2010

LANDAU ASSOCIATES

Kaiser Compilation Reprt
Tacoma, Washington

SPL Area Shallow Aquifer Groundwater Elevation Contours July 2008

Figure 11

RRI-P-216(S)	12/3/2008
WAD Cyanide	0.013 mg/L
Total Cyanide	0.187 mg/L
Chrysene	NA

MW-C(S)	7/1/2008
WAD Cyanide	0.006 mg/L
Total Cyanide	0.029 mg/L
Chrysene	0.011 U µg/L

MW-B(S)	7/1/2008
WAD Cyanide	0.006 mg/L
Total Cyanide	0.37 mg/L
Chrysene	0.024 µg/L

RRI-P-217(S)	2/3/2008
WAD Cyanide	0.030 mg/L
Total Cyanide	1.90 mg/L
Chrysene	NA

MW-D	10/1/2002
WAD Cyanide	0.012 U mg/L
Total Cyanide	0.0728 mg/L
Chrysene	NA

MW-F(S)	7/1/2008
WAD Cyanide	0.011 mg/L
Total Cyanide	1.02 mg/L
Chrysene	0.062 µg/L

MW-E	10/1/2002
WAD Cyanide	0.019 mg/L
Total Cyanide	0.168 mg/L
Chrysene	NA

Legend

- Direct-Push Boring Groundwater Sample Location
- Former Monitoring Well
- Monitoring Well
- Approximate Area of Former Spent Potlining Management Facility
- Approximate Spent Pot Lining Area (SPL)
- Site Boundary
- Groundwater Flow Direction

Notes:

1. Concentration is highlighted where a preliminary screening level was exceeded.
   Cyanide Preliminary Screening Level = 0.01 mg/L (WAD), 16 mg/L (Total);
   Chrysene Preliminary Screening Level = 0.018 µg/L
2. The preliminary screening level for WAD cyanide (0.01 mg/L) has one significant figure. WAD cyanide concentrations < 0.015 mg/L are not considered to be exceedances.

N

0 100 200

Scale in Feet

Data Source: Jacobs Engineering; Google Earth Pro 2010

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

SPL Area
Cyanide and cPAH Results
Shallow Aquifer Groundwater

Figure
12

Y:\Projects\118032\MapDocs\Fig12-CyanideShallowAquifer.mxd 8/16/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

RRI-P-215(I)	12/3/2008
WAD Cyanide	0.005 U mg/L
Total Cyanide	0.005 U mg/L
Chrysene	NA

W-(I)	8/29/2008
WAD Cyanide	0.005 U mg/L
Total Cyanide	0.023 mg/L
Chrysene	0.010 U µg/L

RRI-P-216(I)	12/3/2008
WAD Cyanide	0.005 U mg/L
Total Cyanide	0.056 mg/L
Chrysene	NA

MW-C(I)	7/2/2008
WAD Cyanide	0.005 U mg/L
Total Cyanide	0.043 mg/L
Chrysene	0.010 U µg/L

RRI-P-217(I)	12/3/2008
WAD Cyanide	0.005 U mg/L
Total Cyanide	0.030 mg/L
Chrysene	NA

Legend

- Direct-Push Boring Groundwater Sample Location
- Monitoring Well
- Approximate Area of Former Spent Potlining Management Facility
- Approximate Spent Pot Lining Area (SPL)
- Site Boundary

Notes:

1. Concentration is highlighted where a preliminary screening level was exceeded.
   Cyanide Preliminary Screening Level = 0.01 mg/L (WAD), 16 mg/L (Total);
   Chrysene Preliminary Screening Level = 0.018 µg/L
2. The preliminary screening level for WAD cyanide (0.01 mg/L) has one significant figure. WAD cyanide concentrations < 0.015 mg/L are not considered to be exceedances.

N

0 100 200

Scale in Feet

Data Source: Port of Tacoma; Jacobs Engineering; Google Earth Pro 2010

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

SPL Area
Cyanide and cPAH Results
Intermediate Aquifer Groundwater

Figure
13

Y:\Projects\118032\MapDocs\Fig13-Intermediate_Cyanide.mxd 8/19/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Concrete Impoundment and Sampling Station
MA-16
Former Demister Oil Area
Former Stormwater Ditch
DPT5
RRI-P-106
Stem Wall
Former Buried Storm Drain Piping
Former Concrete Pad
Former Rod Mill Building
WCDA7
WCDA6
Buried Storm Drain Piping
DPT4
WCDA5
WCDA8
WCDA4
WCDA9
LF14
LF16
LF17
LF7
LF15
WCDA18
WCDA3
WCDA10
Closed Landfill
DPT3
LF18
LF26
WCDA2
DPT2
WCDA17
WCDA11
DPT1
LF12
LF8
LF6
LF13
LF27
WCDA1
WCDA12
RRI-B-23
LF28
WCDA19
WCDA13
LF24
LF19
LF29
LF25
WCDA14
WCDA16
LF11
LF10
LF9
LF23
LF5
WCDA15
LF22
LF21
LF20
LF1
LF2
LF3
LF4

Legend

- 2008 Supplemental Investigation Test Pit Location
- 2008 Supplemental Investigation Test Pit with Observed Waste Materials
- Direct-Push Boring Location With Observed Waste Materials
- 2003/2004 Test Pit Location With Observed Waste Materials
- 2007 RRI Soil Boring Location
- Approximate 2003/2004 Test Pit Location
- Approximate 2003/2004 Direct-Push Boring Location
- Catch Basin
- Rod Mill Area
- Site Boundary

N

0 80 160

Scale in Feet

Data Source: Google Earth Pro 2010; Pierce County Assesor

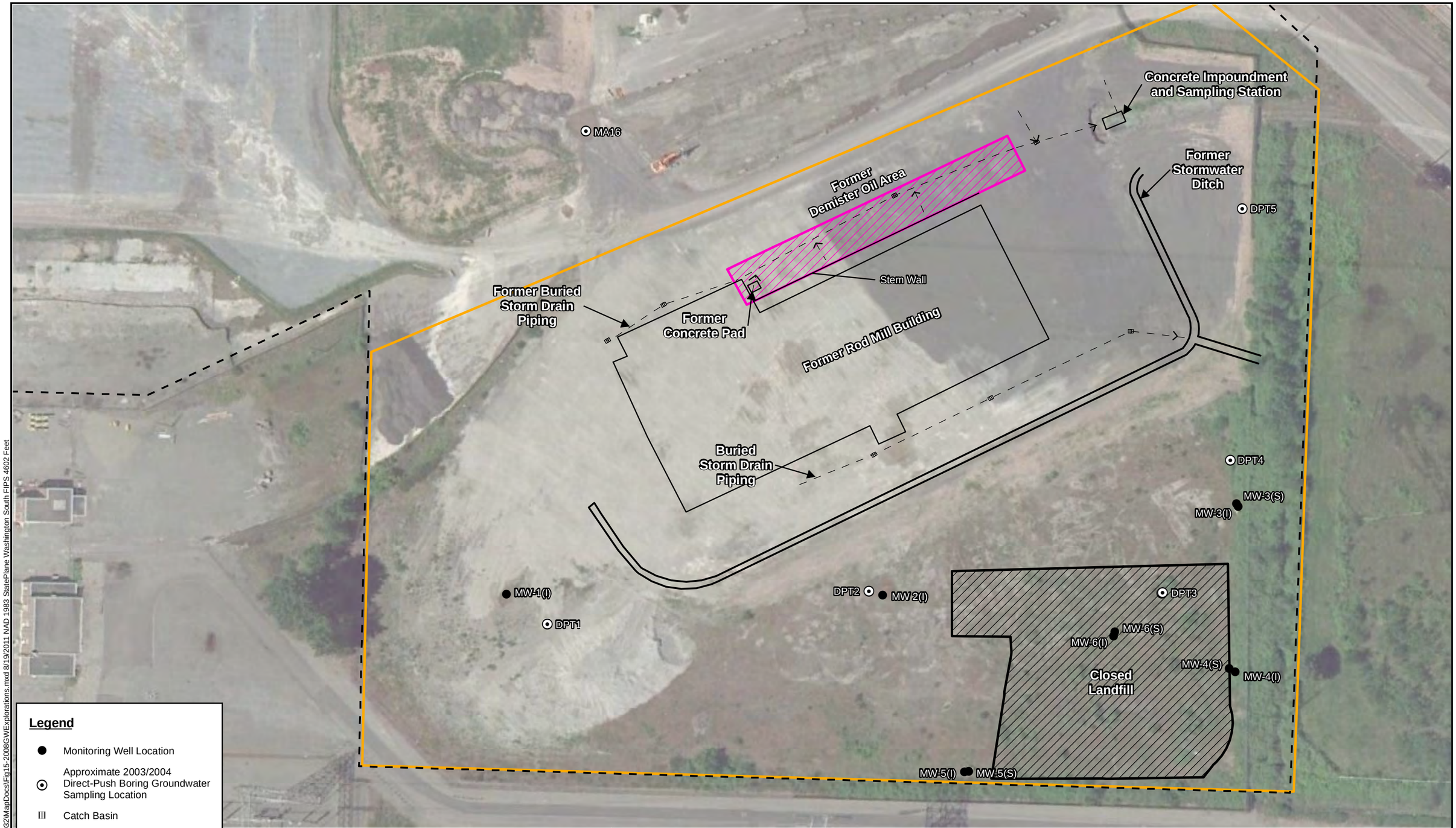
Y:\Projects\118032\MapDocs\Fig14-2008Explorations.mxd 8/19/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

Rod Mill Area
Previous and 2008 Investigation Soil Exploration Locations

Figure
14



Legend

- Monitoring Well Location
- Approximate 2003/2004 Direct-Push Boring Groundwater Sampling Location
- Catch Basin
- Rod Mill Area
- Site Boundary

N

0 80 160

Scale in Feet

Data Source: Google Earth Pro 2010; Pierce County Assesor

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

Rod Mill Area Previous and 2008 Investigation Monitoring Well And Groundwater Sampling Locations

Figure 15

Y:\Projects\118032\MapDocs\Fig15-2008GWExplorations.mxd 8/19/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Concrete Impoundment and Sampling Station
MA-16
Former Demister Oil Area
Former Stormwater Ditch
DPT5
RRI-P-106
Stem Wall
Former Buried Storm Drain Piping
Former Concrete Pad
Former Rod Mill Building
WCDA7
WCDA6
Buried Storm Drain Piping
DPT4
WCDA8
C'
MW-3(S)
MW-3(I)
WCDA5
WCDA9
WCDA4
B'
LF14
LF16
LF17
LF7
LF15
WCDA18
WCDA3
WCDA10
MW-1(I)
WCDA17
WCDA2
DPT2
MW-2(I)
WCDA11
LF18
LF26
DPT1
MW-6(S)
LF12
LF8
LF6
WCDA1
A
WCDA12
LF13
LF27
MW-6(I)
A'
RRI-B-23
LF28
MW-4(S)
WCDA19
WCDA13
LF19
MW-4(I)
LF24
LF29
LF25
WCDA14
WCDA16
LF11
LF10
Closed Landfill
LF9
LF23
LF5
WCDA15
MW-5(S)
C
LF22
LF21
LF20
MW-5(I)
LF1
LF2
B
LF3
LF4

Legend

- 2008 Supplemental Investigation Test Pit Location
- 2008 Supplemental Investigation Test Pit with Observed Waste Materials
- Direct-Push Boring Location With Observed Waste Materials
- Exploration Location With Observed Waste Materials
- 2007 RRI Soil Boring Location
- Approximate 2003/2004 Test Pit Location
- Approximate 2003/2004 Direct-Push Boring Location
- Catch Basin
- Rod Mill Area
- Site Boundary

N

0 80 160

Scale in Feet

Data Source: Google Earth Pro 2010; Pierce County Assesor

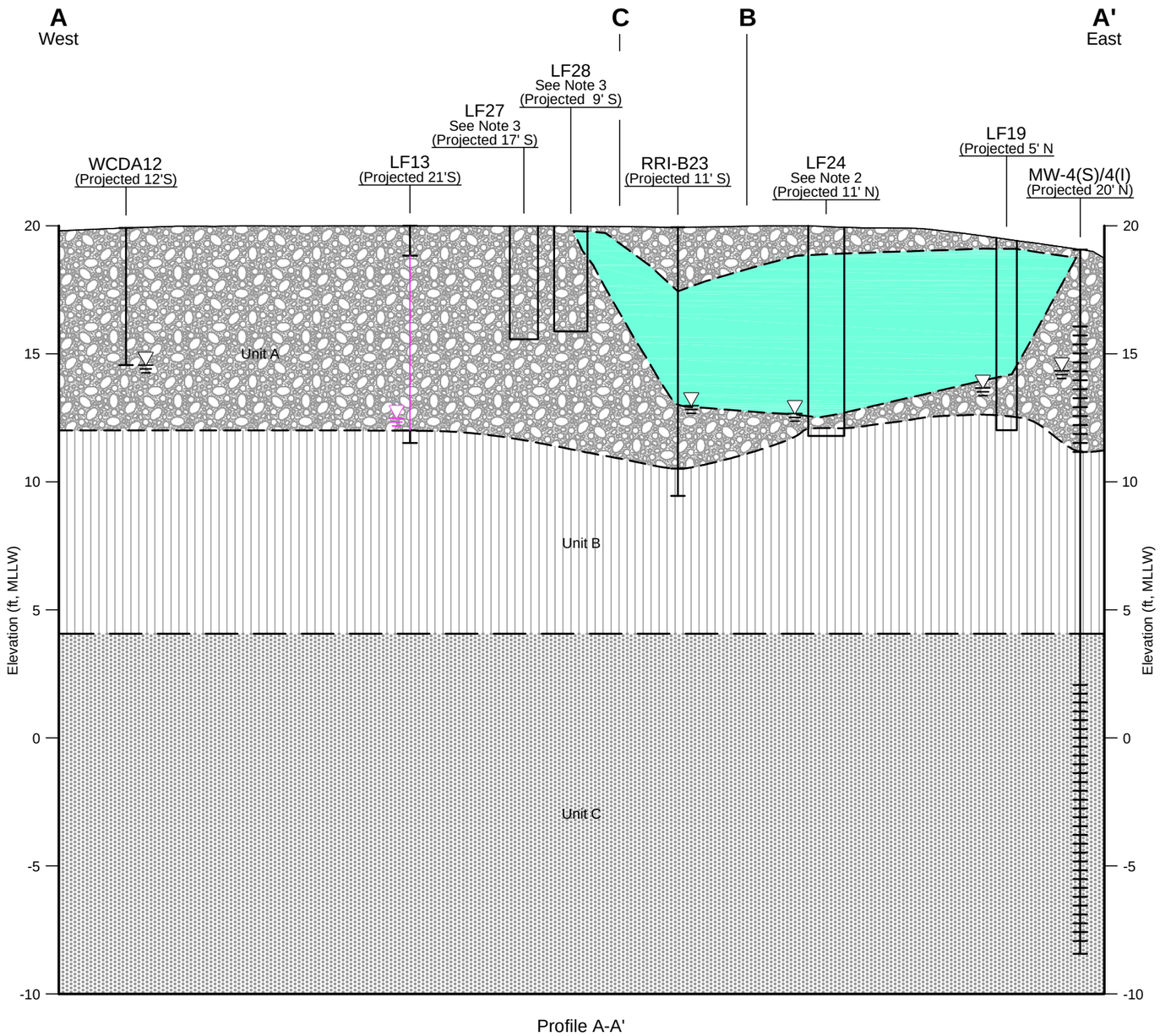
Y:\Projects\118032\MapDocs\Fig16-CrossSectionLocations.mxd 8/19/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

Rod Mill Area Closed Landfill Cross-Section Locations

Figure 16



Profile A-A'

Legend

LF24 (Offset 16' W) — Project Exploration Designation; Offset Distance in Feet and Direction

- Top of Exploration
- Groundwater Level (at time of drilling)
- Inferred Geologic Contact
- Well Screen Interval
- Petroleum Colored Staining Observed
- Sheen Observed On Water
- Bottom of Exploration

- Sand with Varying Amounts of Black Carbon Waste Materials, Concrete, Refactory Brick, Wood Debris, and Miscellaneous Debris
- Unit A: Sand, Silt, and Gravel Fill
- Unit B: Sandy to Clayey Organic Silt with minor peat, woody debris, and shell fragments; native mudflat deposits.
- Unit C: Fine to Medium Sand with Occasional Silt

Notes

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
2. White-gray chalk-like to clay-like mixture of cryolite and bauxite ore encountered at test pit LF24.
3. Groundwater not encountered at LF27 and LF28.
4. See report text for descriptions of geologic units.
5. For cross-section profile location, see Figure 16.

0 50 100

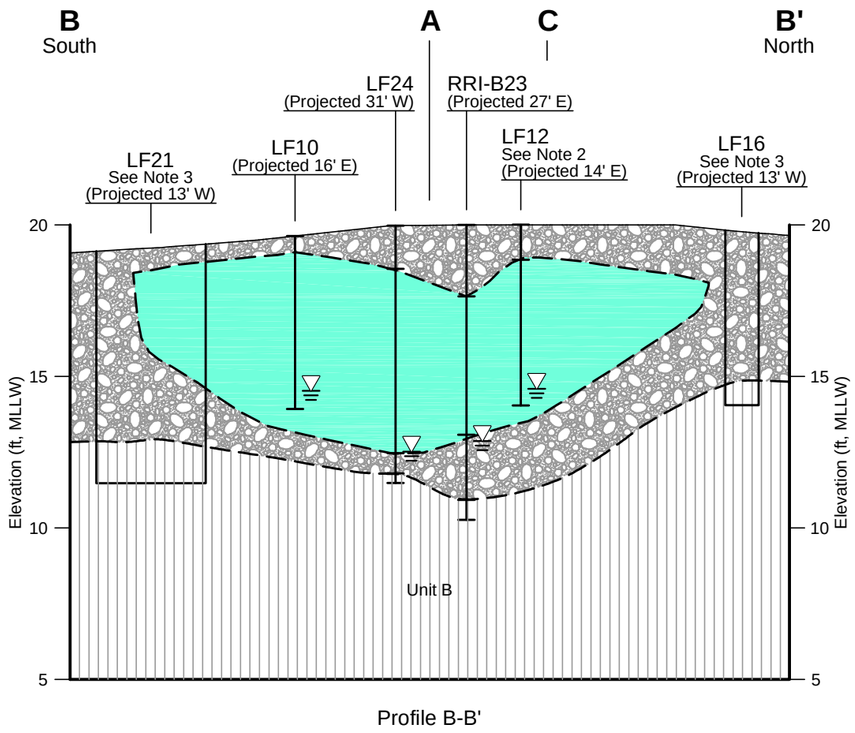
Horizontal Scale 1" = 50'
Vertical Scale 1" = 5'

Kaiser Compilation Report
Tacoma, Washington

Rod Mill Area Closed Landfill
Geologic Profile A-A'

Figure
17

LANDAU ASSOCIATES



Profile B-B'

Legend

LF24 — Project Exploration Designation
(Offset 16' W) — Offset Distance in Feet and Direction
Top of Exploration
Groundwater Level (at time of drilling)
Inferred Geologic Contact
Bottom of Exploration

Sand with Varying Amounts of Black Carbon Waste Materials, Concrete, Refactory Brick, Wood Debris, and Miscellaneous Debris

Unit A: Sand, Silt, and Gravel Fill

Unit B: Sandy to Clayey Organic Silt with minor peat, woody debris, and shell fragments; native mudflat deposits.

Notes

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
2. White-gray chalk-like to clay-like mixture of cryolite and bauxite ore encountered at test pit LF24.
3. Groundwater not encountered at LF27 and LF28.
4. See report text for descriptions of geologic units.
5. For cross-section profile location, see Figure 16.

0 50 100
Horizontal Scale 1" = 50'
Vertical Scale 1" = 5'

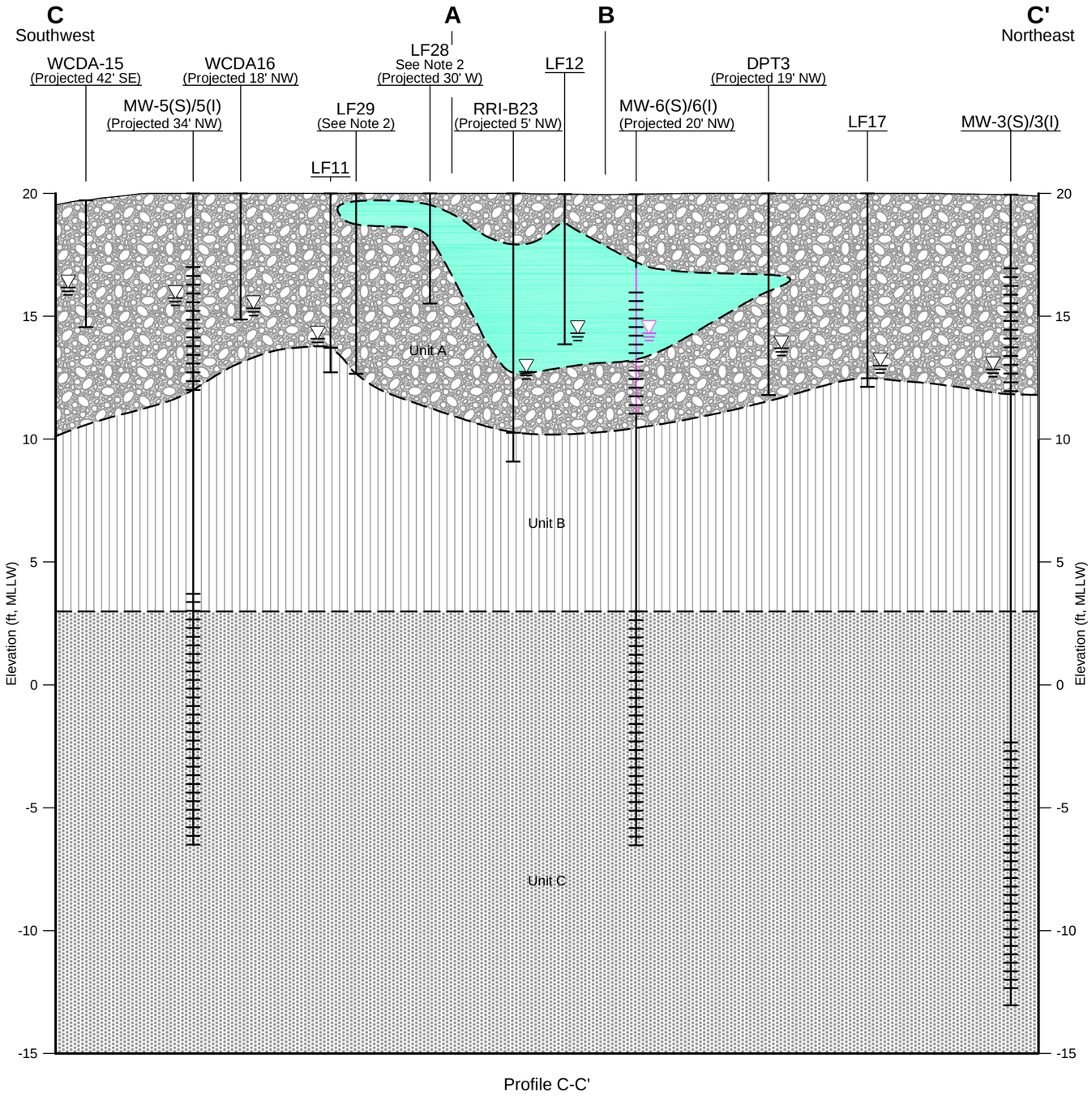
Kaiser Aluminum | V:\1181032\020.011\Figure 17_18_19.dwg (A) "Figure 18" 8/18/2011

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

Rod Mill Area Closed Landfill
Geologic Profile B-B'

Figure
18



Profile C-C'

0 50 100

Horizontal Scale 1" = 50'
Vertical Scale 1" = 5'

Legend

LF24 (Offset 16' W)

- Project Exploration Designation
- Offset Distance in Feet and Direction
- Top of Exploration
- Groundwater Level (at time of drilling)
- Inferred Geologic Contact
- Well Screen Interval
- Petroleum Colored Staining Observed
- Sheen Observed On Water
- Bottom of Exploration

- Sand with Varying Amounts of Black Carbon Waste Materials, Concrete, Refactory Brick, Wood Debris, and Miscellaneous Debris
- Unit A: Sand, Silt, and Gravel Fill
- Unit B: Sandy to Clayey Organic Silt with minor peat, woody debris, and shell fragments; native mudflat deposits.
- Unit C: Fine to Medium Sand with Occasional Silt

Notes

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
2. Groundwater not encountered at LF27 and LF28.
3. See report text for descriptions of geologic units.
4. For cross-section profile location, see Figure 16.

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

Rod Mill Area Closed Landfill
Geologic Profile C-C'

Figure
19

Concrete Impoundment and Sampling Station

Former Demister Oil Area

Former Stormwater Ditch

Former Buried Storm Drain Piping

Stem Wall

Former Concrete Pad

Former Rod Mill Building

Buried Storm Drain Piping

MW-3(S) 12.78

13.5

13.0

MW-6(S) 13.95

14.0

Closed Landfill

MW-4(S) 13.01

13.0

MW-5(S) 14.1

14.0

13.5

Legend

- Shallow Aquifer Groundwater Monitoring Well
- 14.0 Groundwater Elevation Contour (ft MLLW) Elevations Measured on July 1-2, 2008
- Catch Basin
- Rod Mill Area
- Site Boundary
- Groundwater Flow Direction

N

0 80 160

Scale in Feet

Data Source: Google Earth Pro 2010; Pierce County Assesor

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

Rod Mill Area Closed Landfill Shallow Aquifer Groundwater Elevation Contours, June 2008

Figure 20

Y:\Projects\118032\MapDocs\Fig20-ShallowGWContours.mxd 8/19/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Concrete Impoundment and Sampling Station

Former Demister Oil Area

Former Stormwater Ditch

Stem Wall

Former Buried Storm Drain Piping

Former Concrete Pad

Former Rod Mill Building

Buried Storm Drain Piping

10.6

10.4

10.2

10.0

MW-3(I) 9.63

10.8

MW-1(I) 10.83

MW 2(I) 10.75

MW-6(I) 10.54

Closed Landfill

MW-4(I) 9.91

MW-5(I) 10.65

10.0

10.2

10.4

10.6

10.8

Legend

- Intermediate Aquifer Groundwater Monitoring Well
- 10.8 Groundwater Elevation Contour (ft MLLW) Elevations Measured on July 1-2, 2008
- Catch Basin
- Rod Mill Area
- Site Boundary
- Groundwater Flow Direction

N

0 80 160

Scale in Feet

Data Source: Google Earth Pro 2010; Pierce County Assesor

LANDAU ASSOCIATES

Kaiser Compilation Report Tacoma, Washington	**Rod Mill Area Closed Landfill Intermediate Aquifer Groundwater Elevation Contours June, 2008**	Figure 21

Y:\Projects\118032\MapDocs\Fig21-IntermediateGWContours.mxd 8/19/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Concrete Impoundment and Sampling Station

Former Demister Oil Area

RM-2

RDA1

Former Stormwater Ditch

Former Buried Storm Drain Piping

RM-1

RDA2

Stem Wall

Former Concrete Pad

Former Rod Mill Building

Buried Storm Drain Piping

Closed Landfill

Legend

- 2002/2003 Surface Soil Sample Location
- Sample Location with cPAH Exceedance at 0-0.5 ft
- Catch Basin
- Rod Mill Area
- Site Boundary

N

0 80 160

Scale in Feet

Data Source: Google Earth Pro 2010; Pierce County Assesor

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

Rod Mill Former Demister Oil Area 2002 and 2003 Pre-Interim Action Sample Locations

Figure 22

Y:\Projects\118032\MapDocs\Fig22-DemisterOilArea.mxd 8/19/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Concrete Impoundment and Sampling Station

Former Stormwater Ditch

Former Demister Oil Area

Stem Wall

Former Buried Storm Drain Piping

Former Concrete Pad

Former Rod Mill Building

Buried Storm Drain Piping

Closed Landfill

Legend

- Soil Does Not Exceed Any Preliminary Screening Levels
- Soil Exceeds One or More Preliminary Screening Levels in 0-1 Foot Depth Interval
- Soil Exceeds One or More Preliminary Screening Levels in 1-2 Foot Depth Interval
- Catch Basin
- Rod Mill Area
- Site Boundary

N

0 80 160

Scale in Feet

Data Source: Google Earth Pro 2010; Pierce County Assesor

Y:\Projects\118032\MapDocs\Fig23SamplingGrid.mxd 8/19/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

LANDAU ASSOCIATES

Kaiser Compilation Report Tacoma, Washington	**Rod Mill Former Demister Oil Area 2005/2006 Pre-Interim Action Sampling Grid Locations**	Figure 23

Concrete Impoundment and Sampling Station

Former Stormwater Ditch

Former Demister Oil Area

KAI-LAI-CS-13
KAI-LAI-CS-14
KAI-LAI-CS-21
KAI-LAI-CS-12
KAI-LAI-CS-15
KAI-LAI-CS-17
KAI-LAI-CS-22
KAI-LAI-CS-19
KAI-LAI-CS-16
KAI-LAI-CS-24
KAI-LAI-CS-18
Stem Wall
KAI-LAI-CS-25
KAI-LAI-CS-23
KAI-LAI-CS-20

Former Buried Storm Drain Piping

Former Concrete Pad

Former Rod Mill Building

Buried Storm Drain Piping

Closed Landfill

Legend

- Confirmation Samples
- Catch Basin
- Rod Mill Area
- Site Boundary

N

0 80 160

Scale in Feet

Data Source: Google Earth Pro 2010; Pierce County Assesor

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

Rod Mill Former Demister Oil Area
2008 Post-Interim Action
Confirmation Sample Locations

Figure
24

Y:\Projects\118032\MapDocs\Fig24-DemisterOilAreaCSL.mxd 8/19/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Concrete Impoundment and Sampling Station

Former Stormwater Ditch

Former Demister Oil Area

Stem Wall

Former Buried Storm Drain Piping

Former Concrete Pad

Former Rod Mill Building

SCD3

SCD4

SCD2 0-1 1-2

SCD1

SCD1

SCD5

SCD2

Buried Storm Drain Piping

SCD6 0-1

SCD3 0-0.5

SCD5 0-0.5

SCD8

SCD4 0-0.5

SCD7 0-1

Closed Landfill

Legend

- 2008 Ditch Soil Sample Location
- Approximate 2003/2004 Ditch Soil Sample Location
- Sample Location with cPAH Exceedance and Depth of Exceedance
- Catch Basin
- Rod Mill Area
- Site Boundary

N

0 80 160

Scale in Feet

Data Source: Google Earth Pro 2010; Pierce County Assesor

Y:\Projects\118032\MapDocs\Fig25-DitchSamples.mxd 8/19/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

LANDAU ASSOCIATES

Kaiser Compilation Report Tacoma, Washington	**Rod Mill Area Former Stormwater Ditch South and East Sides Pre-Interim Action Sample Locations**	Figure 25

Concrete Impoundment and Sampling Station

Former Stormwater Ditch

Former Demister Oil Area

Stem Wall

Former Buried Storm Drain Piping

Former Concrete Pad

Former Rod Mill Building

KAI-LAI-CS-02

KAI-LAI-CS-03

KAI-Stormdrain

KAI-LAI-CS-01

KAI-LAI-CS-04

KAI-LAI-CS-05

KAI-LAI-CS-06

KAI-LAI-CS-8b

KAI-LAI-CS-07

KAI-LAI-CS-08

Buried Storm Drain Piping

KAI-LAI-CS-09

KAI-LAI-CS-10

KAI-LAI-CS-11

Closed Landfill

Legend

- Confirmation Samples
- Catch Basin
- Rod Mill Area
- Site Boundary

N

0 80 160

Scale in Feet

Data Source: Google Earth Pro 2010; Pierce County Assesor

LANDAU ASSOCIATES

Kaiser Compilation Report Tacoma, Washington	**Rod Mill Area Former Stormwater Ditch Post-Interim Action Confirmation Sample Locations**	Figure 26

Y:\Projects\118032\MapDocs\Fig26-StormwaterDitchCSL.mxd 8/19/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Notes:

1. Locations are approximate.
2. Depths of soil samples for 1984 investigation are shown in parentheses after PCB result. Soil samples for the 2002 investigation were all collected from the surface.
3. PCB results are the sum of detected Aroclor concentrations.
4. (s) = Surface Sample

Legend:

3 / 44(s) — 1984 Sample Location Identifier; Total PCB Result (mg/kg) and Sample Depth (ft)

REC-1 / 0.18(s) — 2002 Sample Location Identifier; Total PCB Result (mg/kg) and Sample Depth (ft)

0 100 200
Scale in Feet

Source: Landau Associates 2003

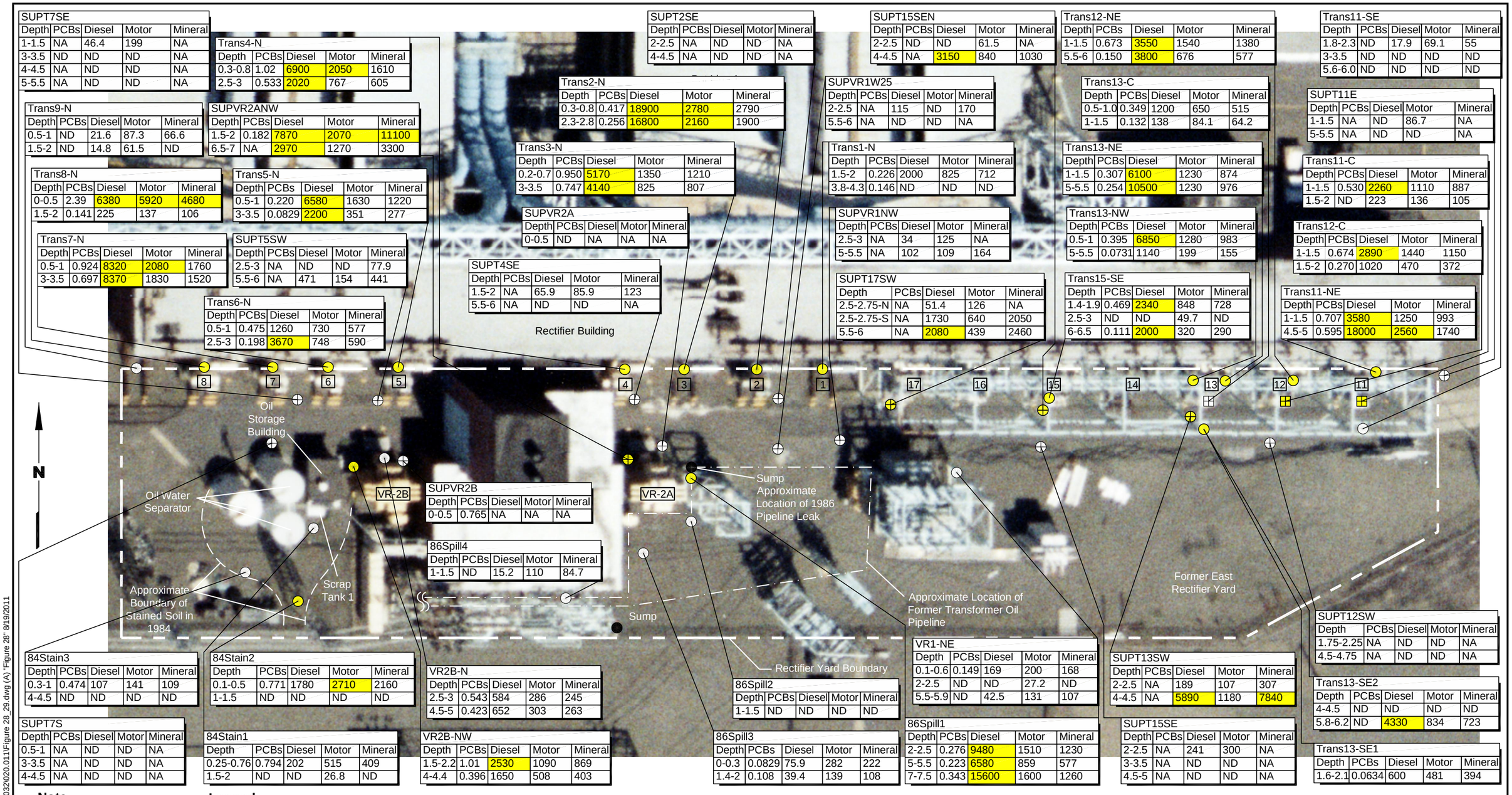
LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

Former Rectifier Yard Area 1984 and 2002 Soil Sample Locations and PCB Concentrations

Figure 27

Kaiser Aluminum | V:\1180\2020.011\Figure 27.dwg (A) "Figure 27" 8/18/2011



SUPT7SE

Depth	PCBs	Diesel	Motor	Mineral
1-1.5	NA	46.4	199	NA
3-3.5	ND	ND	ND	NA
4-4.5	NA	ND	ND	NA
5-5.5	NA	ND	ND	NA

Trans4-N

Depth	PCBs	Diesel	Motor	Mineral
0.3-0.8	1.02	6900	2050	1610
2.5-3	0.533	2020	767	605

Trans9-N

Depth	PCBs	Diesel	Motor	Mineral
0.5-1	ND	21.6	87.3	66.6
1.5-2	ND	14.8	61.5	ND

SUPVR2ANW

Depth	PCBs	Diesel	Motor	Mineral
1.5-2	0.182	7870	2070	11100
6.5-7	NA	2970	1270	3300

Trans8-N

Depth	PCBs	Diesel	Motor	Mineral
0-0.5	2.39	6380	5920	4680
1.5-2	0.141	225	137	106

Trans5-N

Depth	PCBs	Diesel	Motor	Mineral
0.5-1	0.220	6580	1630	1220
3-3.5	0.0829	2200	351	277

Trans7-N

Depth	PCBs	Diesel	Motor	Mineral
0.5-1	0.924	8320	2080	1760
3-3.5	0.697	8370	1830	1520

SUPT5SW

Depth	PCBs	Diesel	Motor	Mineral
2.5-3	NA	ND	ND	77.9
5.5-6	NA	471	154	441

Trans6-N

Depth	PCBs	Diesel	Motor	Mineral
0.5-1	0.475	1260	730	577
2.5-3	0.198	3670	748	590

SUPT2SE

Depth	PCBs	Diesel	Motor	Mineral
2-2.5	NA	ND	ND	NA
4-4.5	NA	ND	ND	NA

Trans2-N

Depth	PCBs	Diesel	Motor	Mineral
0.3-0.8	0.417	18900	2780	2790
2.3-2.8	0.256	16800	2160	1900

Trans3-N

Depth	PCBs	Diesel	Motor	Mineral
0.2-0.7	0.950	5170	1350	1210
3-3.5	0.747	4140	825	807

SUPVR2A

Depth	PCBs	Diesel	Motor	Mineral
0-0.5	ND	NA	NA	NA

SUPT4SE

Depth	PCBs	Diesel	Motor	Mineral
1.5-2	NA	65.9	85.9	123
5.5-6	NA	ND	ND	NA

SUPT15SEN

Depth	PCBs	Diesel	Motor	Mineral
2-2.5	ND	ND	61.5	NA
4-4.5	NA	3150	840	1030

SUPVR1W25

Depth	PCBs	Diesel	Motor	Mineral
2-2.5	NA	115	ND	170
5.5-6	NA	ND	ND	NA

Trans1-N

Depth	PCBs	Diesel	Motor	Mineral
1.5-2	0.226	2000	825	712
3.8-4.3	0.146	ND	ND	ND

SUPVR1NW

Depth	PCBs	Diesel	Motor	Mineral
2.5-3	NA	34	125	NA
5-5.5	NA	102	109	164

SUPT17SW

Depth	PCBs	Diesel	Motor	Mineral
2.5-2.75-N	NA	51.4	126	NA
2.5-2.75-S	NA	1730	640	2050
5.5-6	NA	2080	439	2460

Trans12-NE

Depth	PCBs	Diesel	Motor	Mineral
1-1.5	0.673	3550	1540	1380
5.5-6	0.150	3800	676	577

Trans13-C

Depth	PCBs	Diesel	Motor	Mineral
0.5-1.0	0.349	1200	650	515
1-1.5	0.132	138	84.1	64.2

Trans13-NE

Depth	PCBs	Diesel	Motor	Mineral
1-1.5	0.307	6100	1230	874
5-5.5	0.254	10500	1230	976

Trans13-NW

Depth	PCBs	Diesel	Motor	Mineral
0.5-1	0.395	6850	1280	983
5-5.5	0.0731	1140	199	155

Trans15-SE

Depth	PCBs	Diesel	Motor	Mineral
1.4-1.9	0.469	2340	848	728
2.5-3	ND	ND	49.7	ND
6-6.5	0.111	2000	320	290

Trans11-SE

Depth	PCBs	Diesel	Motor	Mineral
1.8-2.3	ND	17.9	69.1	55
3-3.5	ND	ND	ND	ND
5.6-6.0	ND	ND	ND	ND

SUPT11E

Depth	PCBs	Diesel	Motor	Mineral
1-1.5	NA	ND	86.7	NA
5-5.5	NA	ND	ND	NA

Trans11-C

Depth	PCBs	Diesel	Motor	Mineral
1-1.5	0.530	2260	1110	887
1.5-2	ND	223	136	105

Trans12-C

Depth	PCBs	Diesel	Motor	Mineral
1-1.5	0.674	2890	1440	1150
1.5-2	0.270	1020	470	372

Trans11-NE

Depth	PCBs	Diesel	Motor	Mineral
1-1.5	0.707	3580	1250	993
4.5-5	0.595	18000	2560	1740

SUPVR2B

Depth	PCBs	Diesel	Motor	Mineral
0-0.5	0.765	NA	NA	NA

86Spill4

Depth	PCBs	Diesel	Motor	Mineral
1-1.5	ND	15.2	110	84.7

84Stain3

Depth	PCBs	Diesel	Motor	Mineral
0.3-1	0.474	107	141	109
4-4.5	ND	ND	ND	ND

84Stain2

Depth	PCBs	Diesel	Motor	Mineral
0.1-0.5	0.771	1780	2710	2160
1-1.5	ND	ND	ND	ND

VR2B-N

Depth	PCBs	Diesel	Motor	Mineral
2.5-3	0.543	584	286	245
4.5-5	0.423	652	303	263

VR1-NE

Depth	PCBs	Diesel	Motor	Mineral
0.1-0.6	0.149	169	200	168
2-2.5	ND	ND	27.2	ND
5.5-5.9	ND	42.5	131	107

SUPT13SW

Depth	PCBs	Diesel	Motor	Mineral
2-2.5	NA	189	107	307
4-4.5	NA	5890	1180	7840

SUPT12SW

Depth	PCBs	Diesel	Motor	Mineral
1.75-2.25	NA	ND	ND	NA
4.5-4.75	NA	ND	ND	NA

Trans13-SE2

Depth	PCBs	Diesel	Motor	Mineral
4-4.5	ND	ND	ND	ND
5.8-6.2	ND	4330	834	723

SUPT7S

Depth	PCBs	Diesel	Motor	Mineral
0.5-1	NA	ND	ND	NA
3-3.5	NA	ND	ND	NA
4-4.5	NA	ND	ND	NA

84Stain1

Depth	PCBs	Diesel	Motor	Mineral
0.25-0.76	0.794	202	515	409
1.5-2	ND	ND	26.8	ND

VR2B-NW

Depth	PCBs	Diesel	Motor	Mineral
1.5-2.2	1.01	2530	1090	869
4-4.4	0.396	1650	508	403

86Spill2

Depth	PCBs	Diesel	Motor	Mineral
1-1.5	ND	ND	ND	ND

86Spill3

Depth	PCBs	Diesel	Motor	Mineral
0-0.3	0.0829	75.9	282	222
1.4-2	0.108	39.4	139	108

86Spill1

Depth	PCBs	Diesel	Motor	Mineral
2-2.5	0.276	9480	1510	1230
5-5.5	0.223	6580	859	577
7-7.5	0.343	15600	1600	1260

SUPT15SE

Depth	PCBs	Diesel	Motor	Mineral
2-2.5	NA	241	300	NA
3-3.5	NA	ND	ND	NA
4.5-5	NA	ND	ND	NA

Trans13-SE1

Depth	PCBs	Diesel	Motor	Mineral
1.6-2.1	0.0634	600	481	394

Note

1. Sample locations are approximate.

Legend

- Supplemental Soil Sample Location
- Initial Investigation Discrete Soil Sample Location
- Initial Investigation Composite Soil Sample Location
- 3 Transformer Number/ Identifier
- Sump

ND = Not Detected at Laboratory Reporting Limit
NA = Not Analyzed
Total PCBs = Sum of Detected PCB Concentrations
Diesel = Diesel Range Petroleum Hydrocarbons
Motor = Motor Oil Range Petroleum Hydrocarbons
Mineral = Mineral Oil Range Petroleum Hydrocarbons

11,100 = Exceeds Method A Cleanup Levels (2000 mg/kg for Diesel Range, 2000 mg/kg for Motor Oil Range, 4000 mg/kg for Mineral Oil Range Petroleum Hydrocarbons)

0 30 60
Scale in Feet

Source: Landau Associates 2005

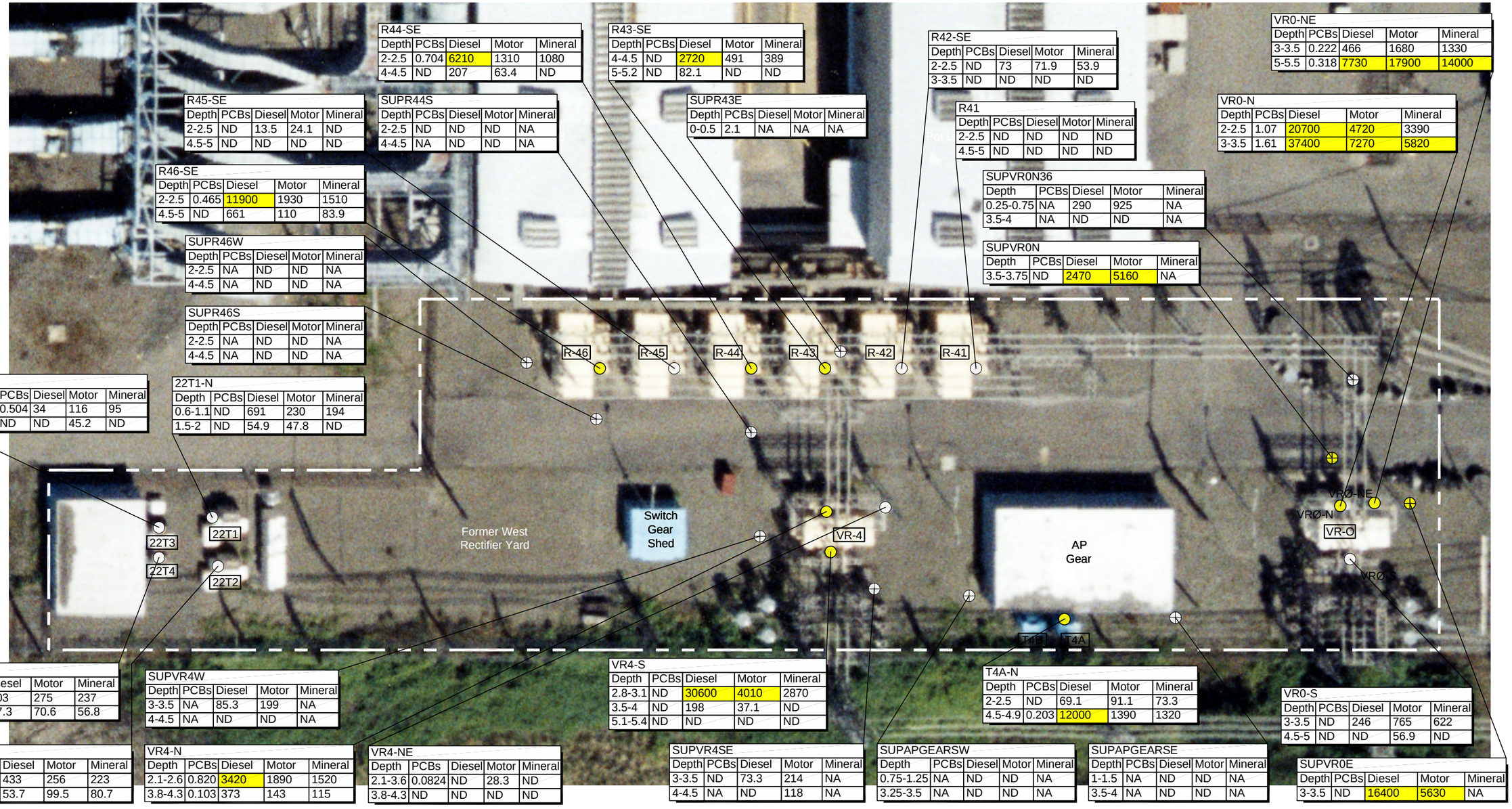
LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

East Former Rectifier Yard Area 2003 and 2004 Soil Investigation Sample Locations and Results

Figure 28

Kaiser Aluminum | V:\1180320\020.011\Figure 28_29.dwg (A) "Figure 28" 8/19/2011



Note

1. Sample locations are approximate.

Legend

- ⊕ Supplemental Soil Sample Location
- ○ Initial Investigation Discrete Soil Sample Location
- ⊞ Initial Investigation Composite Soil Sample Location
- R-44 Transformer Number/ Identifier

ND = Not Detected at Laboratory Reporting Limit
NA = Not Analyzed
Total PCBs = Sum of Detected PCB Concentrations
Diesel = Diesel Range Petroleum Hydrocarbons
Motor = Motor Oil Range Petroleum Hydrocarbons
Mineral = Mineral Oil Range Petroleum Hydrocarbons

○ 20,700 = Exceeds Method A Cleanup Levels (2000 mg/kg for Diesel Range, 2000 mg/kg for Motor Oil Range, 4000 mg/kg for Mineral Oil Range Petroleum Hydrocarbons)

Source: Landau Associates 2005

0 30 60
Scale in Feet

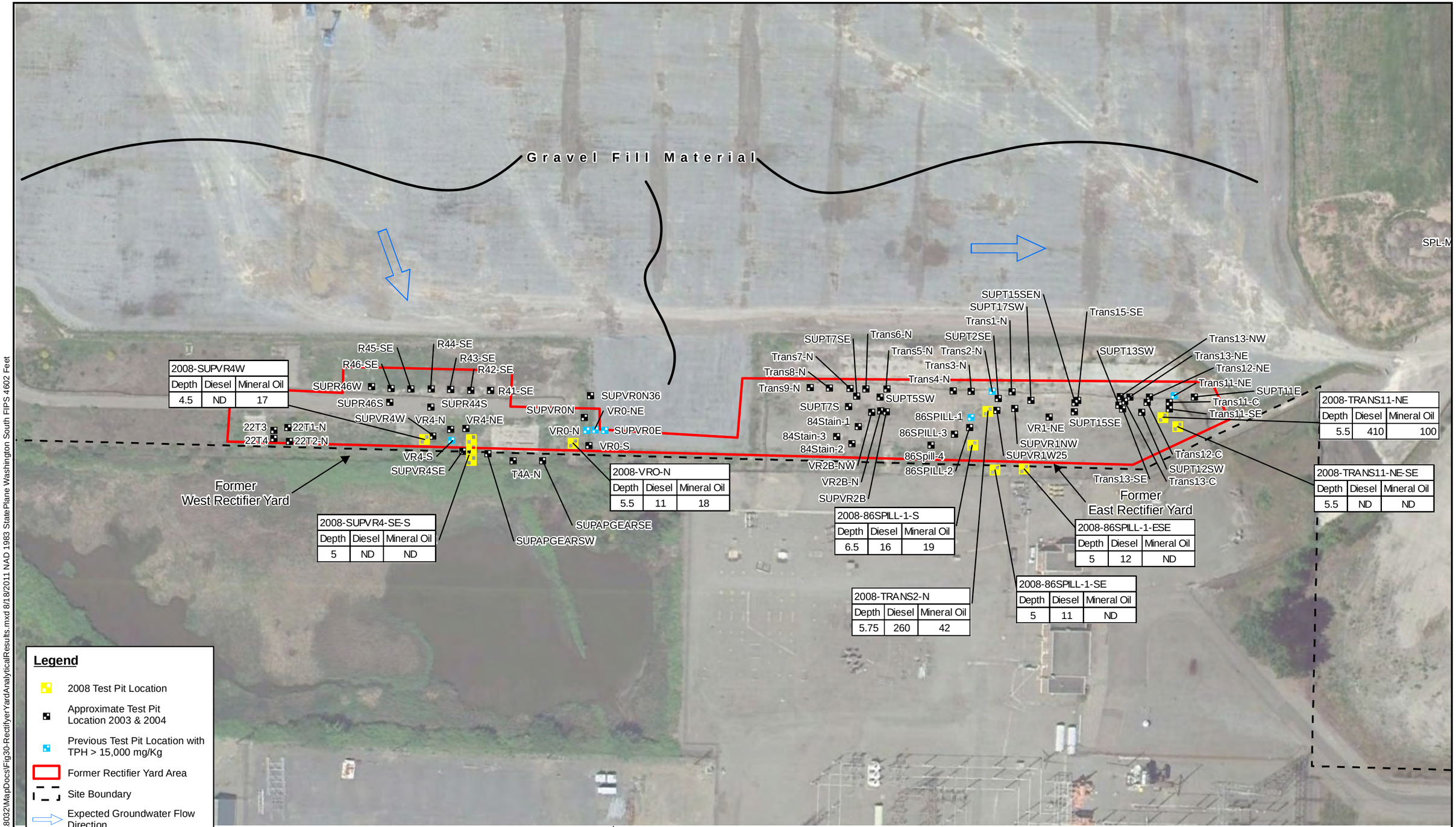
LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

West Former Rectifier Yard Area 2003 and 2004 Soil Investigation Sample Locations and Results

Figure 29

Kaiser Aluminum | V:\118\032\020.011\Figure 28_29.dwg (A) "Figure 29" 8/19/2011



Y:\Projects\118032\MapDocs\Fig30-RectifyerYardAnalyticalResults.mxd 8/18/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Data Source: Google Earth Pro 2010

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

Former Rectifier Yard Area
2008 Supplemental Soil Investigation
Analytical Results

Figure
30

Y:\Projects\118032\MapDocs\Fig31-2002-2003Samples.mxd 8/16/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Legend

- Former Fenceline
- Kennedy/Jenks 2003 Stockpile Sample Location
- Former Log Yard Area
- Site Boundary
- Kennedy/Jenks 2002 Surface Soil Sample Location
- Kennedy/Jenks 2003 Shallow Soil Test Pit Location
- Kennedy/Jenks 2003 Soil Boring Sample Location
- Monitoring Well Location
- Kennedy/Jenks 2003 Groundwater Sample Location

N

0 150 300

Scale in Feet

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

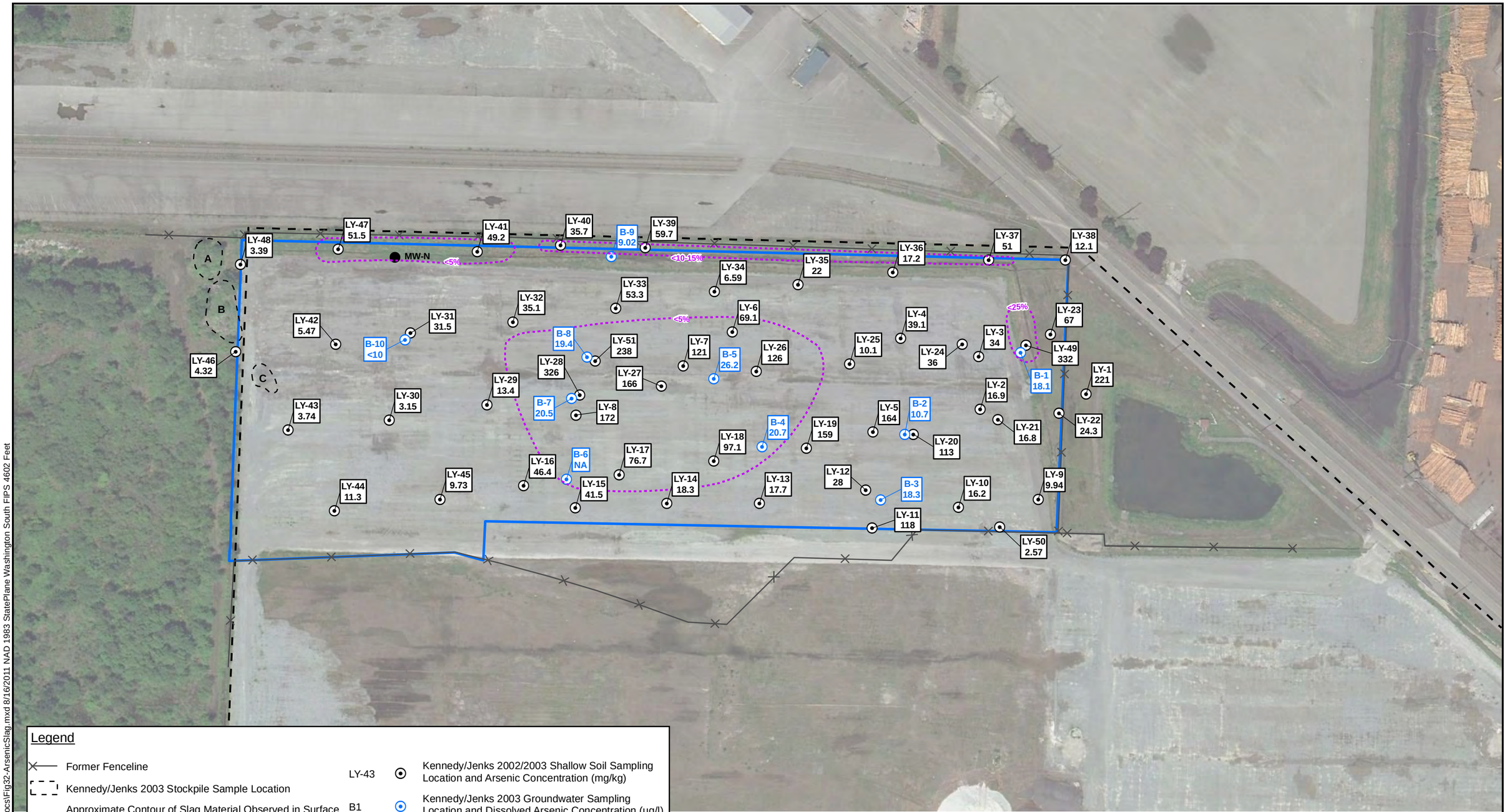
Data Source: Google Earth Pro Aerial Image 2010; Kennedy/Jenks

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

Former Log Yard Area
2002/2003 Sample Locations

Figure
31



Legend

- Former Fenceline
- Kennedy/Jenks 2003 Stockpile Sample Location
- Approximate Contour of Slag Material Observed in Surface and Shallow Subsurface Soil at >1% Abundance (Note: Slag Abundance is Based on a Brief Visual Assessement; No Quantitative Analyses were Performed.)
- Former Log Yard Area
- Site Boundary
- LY-43 — Kennedy/Jenks 2002/2003 Shallow Soil Sampling Location and Arsenic Concentration (mg/kg)
- B1 — Kennedy/Jenks 2003 Groundwater Sampling Location and Dissolved Arsenic Concentration (µg/l)
- MW-N — Monitoring Well Location

N

0 150 300

Scale in Feet

Data Source: Google Earth Pro Aerial Image 2010; Kennedy/Jenks

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

LANDAU ASSOCIATES

Kaiser Compilation Report
Tacoma, Washington

Former Log Yard Area
Arsenic Concentration and Slag Distribution Map

Figure 32

Y:\Projects\118032\MapDocs\Fig32-ArsenicSlag.mxd 8/16/2011 NAD 1983 StatePlane Washington South FIPS 4602 Feet

TABLE 1
SUMMARY OF WASTE MATERIALS OBSERVED IN 2008 SUPPLEMENTAL INVESTIGATION TEST PITS
SPENT POT LINING AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Exploration with Observed Waste Materials (a)	Depth Waste Materials Were Observed (ft BGS)	Percent Total Volume: Soil	Waste: Carbon Materials	Concrete	Refractory Brick	Coal	Gray Green Material	White Waste	Comments
2008 Supplemental Investigation									
SPL-MA2A	0 - 1	70	30	--	--	--	--	--	Approximately 30% of the gravel fill is dark gray to black in color. It was not determined if this may or may not be a crushed carbon material. The log for previous test pit SPL-MA2 identifies a dark gray sand-sized waste at 0-2 ft BGS.
SPL-MA4A-	0 - 0.5	70	30	--	--	--	--	--	Approximately 30% of the gravel fill is dark gray to black in color. It was not determined if this may or may not be a crushed carbon material. The log for previous test pit SPL-MA4 identifies non-continuous layers of white and gray waste from 0-1.5 ft BGS.
	0.5 - 2	95	5	--	--	--	--	--	Cobble to gravel-sized chunks with gravel-sized petroleum coke fragments imbedded in the carbon chunks.
SPL-MA10A	0.5 - 2.25	> 95	<5	--	--	--	--	--	Cobble to gravel-sized chunks of black carbon waste materials. The log for previous test pit SPL-MA10 identifies dark to black and gray green fill and waste, refractory brick, wire and metal from 0 to 4 ft BGS.
SPL-MA18	1 - 2	40	60	--	--	--	--	--	Cobble to gravel-sized chunks of black carbon waste materials
SPL-MA19	1 - 2	25	75	--	--	--	--	--	Cobble to gravel-sized chunks of black carbon waste materials.
SPL-MA20	1 - 2	80	20	--	--	--	--	--	Cobble to gravel-sized chunks of black carbon waste materials.
SPL-MA23	1 - 2	>80	10	5	<5	--	--	--	Black carbon waste materials (size not specified).
SPL-MA25	1.75 - 3.75	60	40	--	--	--	--	--	Chunks of black carbon waste materials (size not specified).
SPL- MA26	1 - 2	50	50	--	--	--	--	--	Cobble to boulder-sized chunks of carbon waste materials.
	2.5 - 3	50	50	--	--	--	--	--	Cobble to boulder-sized chunks of carbon waste materials.
SPl-MA27	1 - 1.5	85	15	--	--	--	--	--	Cobble sized fragments of carbon waste materials.
SPL-MA28	1.25 - 1.75	>95	5	--	--	<5	--	--	Black carbon waste materials (size not specified).
SPL-MA29	0.5 - 2	50	30	--	--	--	20		Black carbon waste materials with gravel-sized fragments of coal tar and petroleum coke imbedded in the carbon waste materials. Gray green silty chunks of waste materials with a moderate chemical order.
	2 - 4.5	40	60	--	--	--	--		Cobble to boulder-sized chunks of carbon waste materials.
Previous Investigations									
SPL-MA2	0 - 2	--	(b)	--	--	--	--	--	Dark gray to black, coarse sand-sized waste.
SPL-MA4	0 - 1.5	--	--	--	--	--	--	(b)	Some non-continuous layers of white and gray waste.
SPL-MA5	0 - 3.5	(b)	--	--	--	--	(b)	--	Dark gray to greenish gray waste.
SPL-MA8	0 - 1.25	(b)	(c)	(c)	(c)	(c)	(c)	(c)	Dark gray sandy gravel size fill/waste.
SPL-MA9	2.25 - 2.75	(b)	(c)	(c)	(c)	(c)	(c)	(c)	Waste layer.
SPL-MA10	0 - 4	(b)	(b)	--	(b)	--	(b)	--	Dark gray to black and gray-green fill and waste, cooker brick, wire, and metal.
SPL-MA11	0 - 4.5	(b)	(b)	--	(b)	--	--	--	Dark gray to black waste, cooker brick, and metal.
SPL-MA12	0 - 3.5	(b)	--	--	--	--	--	(b)	White waste; dark brown sandy gravel fill/waste.
SPL-MA13	2	(b)	--	--	--	--	--	(b)	White waste layer at 2 ft.
SPL-LA1	0.75 - 3.0	(b)	--	--	(b)	--	--	--	Fill material with cooker brick.
SPL-DPT-6	0.5 - 1.25	(b)	--	(b)	--	--	--	--	Concrete.
	5 - 8	--	--	--	--	--	--	--	Peagreen water.

(a) Explorations where no waste materials were observed include SPL-MA1, SPL-MA1A, SPL-MA3, SPL-MA5, SPL-MA6, SPL-MA7, SPL-MA7A, SPL-MA14, SPL-MA15, SPL-MA16, SPL-MA16A, SPL-MA17, SPL-MA21, SPL-MA22, SPL-MA24, SPL-MA30, SPL-MA31, and SPL-LA2.
(b) Percent total volume not estimated.
(c) Type of waste materials not described.
-- Indicates the material type was not encountered.

TABLE 2
2008 SUPPLEMENTAL INVESTIGATION SOIL ANALYTICAL RESULTS
SPENT POT LINING AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Preliminary Screening Levels (a)	SPL-MA20-2008(4.5) NC06L 6/18/2008	SPL-MA26-2008(3.5) NC06K 6/18/2008	SPL-MA27-2008(2) NC06J 6/18/2008	SPL-MA28-2008(2.5) NC06M 6/19/2008	SPL-MA29-2008(5.25) NC06N 6/19/2008
cPAHs (µg/kg)						
SW8270D-SIM						
Benzo(a)anthracene	130	1,100	4.9 U	12	3,400	5 U
Chrysene	140	1,500	26	28	8,200	6.4
Benzo(b)fluoranthene	440	1,300	8.8	20	6,300	6.9
Benzo(k)fluoranthene	440	1,100	8.8	13	4,300	5 U
Benzo(a)pyrene	350	1,200	4.9 U	5.9	2,600	5 U
Indeno(1,2,3-cd)pyrene	1,200	780	4.9 U	7.4	2,400	5 U
Dibenz(a,h)anthracene	640	210	4.9 U	4.9 U	820	5 U
TEQ	2,000	1,664	8.39	11.42	4,404	0.754
CONVENTIONALS (mg/kg)						
EPA335.4						
Cyanide	3,200	0.897	27.6	0.594	19.2	4.89

Boxed values indicate an exceedance of the preliminary screening level protective of marine surface water.
U = The analyte was not detected in the sample at the given reporting limit.
(a) Development of preliminary screening levels is presented in Table 23.

TABLE 3
SUMMARY OF SURVEYED ELEVATIONS AND CALCULATED GROUNDWATER ELEVATIONS
2008 SUPPLEMENTAL INVESTIGATION
SPENT POT LINING AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Well ID	Ground Surface Elevation (ft, MLLW)	Reference Point Elevation (a) (ft, MLLW)		7/1-7/2/2008 Measured Depth to Water from Reference Point (ft)	7/1-7/2/2008 Calculated Groundwater Elevation (ft, MLLW)	7/1-7/2/2008 Calculated Depth to Groundwater (ft, BGS)
Shallow Aquifer Wells						
SPL-MW-B(S)	17.82	17.88		7.00	10.88	6.94
SPL-MW-C(S)	16.85	18.09		11.03	7.06	9.79
SPL-MW-F(S)	17.28	16.98		4.22	12.76	4.52
Intermediate Aquifer Well						
SPL-MW-C(I)	16.85	19.48	(b)	10.69	8.79	8.06

(a) Top of PVC well casing unless otherwise noted.
(b) PVC well casing broken. Reference point at top of metal casing.

TABLE 4
2008 SUPPLEMENTAL INVESTIGATION GROUNDWATER ANALYTICAL RESULTS
SPENT POT LINING AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Preliminary Screening Levels (a)	Sample Identification: / Laboratory Identification: / Sample Collection Date:	SPL-MW-B(S) ND59F 7/1/2008	SPL-MW-C(S) ND59G 7/1/2008	SPL-MW-F(S) ND59H 7/1/2008	SPL-MW-C(I) ND73A 7/2/2008	W(I)-082908 NM70A 8/29/2008
cPAHs (µg/L)							
SW8270D-SIM							
Benzo(a)anthracene	0.020		0.016	0.011 U	0.018	0.010 U	0.010 U
Chrysene	0.019		0.024	0.011 U	0.062	0.010 U	0.010 U
Benzo(b)fluoranthene	0.018		0.010 U	0.011 U	0.045	0.010 U	0.010 U
Benzo(k)fluoranthene	0.036		0.010 U	0.011 U	0.045	0.010 U	0.010 U
Benzo(a)pyrene	0.018		0.010 U	0.011 U	0.014	0.010 U	0.010 U
Indeno(1,2,3-cd)pyrene	0.018		0.010 U	0.011 U	0.017	0.010 U	0.010 U
Dibenz(a,h)anthracene	0.018		0.010 U	0.011 U	0.010 U	0.010 U	0.010 U
TEQ	0.030		0.004	ND	0.020	ND	ND
CONVENTIONALS (mg/L)							
Total Cyanide (EPA 335.4)	16		0.37	0.029	1.02	0.043	0.023
WAD Cyanide (SM4500CNI)	0.01		0.006	0.006	0.011 (b)	0.005 U	0.005 U

U = The analyte was not detected in the sample at the given reporting limit.

Boxed cells indicate an exceedance of preliminary screening levelsprotective of marine surface water.

(a) Development of preliminary screening levels for groundwater is presented in Table 24.

(b) The MTCA Method B adjusted preliminary screening level for WAD cyanide (0.01 mg/L) has one significant figure. Therefore, values less than 0.015 mg/L are not considered exceedances of the preliminary screening level.

TABLE 5
DIRECT-PUSH BORING SOIL SAMPLE ANALYTICAL RESULTS
2008 BLAIR HYLEBOS PENINSULA TERMINAL REDEVELOPMENT PROJECT
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

		Taylor Way Adjacent to Kaiser SPL Area					
		RRI-P-215 (4-6)C OC66E	RRI-P-215 (19-23)C OC66E	RRI-P-216 (5-6)C OC34E	RRI-P-216 (20-22)C OC34F	RRI-P-217 (5-7)C OC34A	RRI-P-217 (19-24)C OC34B
	Preliminary Screening Levels (a)	12/4/2008	12/4/2008	12/3/2008	12/3/2008	12/3/2008	12/3/2008
TOTAL METALS (mg/kg)							
Method SW6010B/SW7471A							
Arsenic	---	6 U	6 U	6 U	6 U	6 U	5 U
Cadmium	---	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chromium	1,000,000	30.9	14.4	35.9	13.4	47.9 J	13.5
Lead	1,000	4	2 U	4	2 U	2	2 U
Mercury	---	0.04 U	0.05 U	0.04 U	0.05 U	0.05 U	0.05 U
CONVENTIONALS (mg/kg)							
Total Cyanide (EPA 335.4)	3,200	2.64	0.056 U	3.68	0.058 U	3.83	0.058 U
PETROLEUM HYDROCARBONS (mg/kg)							
NWTPH-Dx							
Diesel-Range	2,000	5.6 U	6.0 U	6.1 U	6.1 U	5.4 U	5.8 U
Motor Oil-Range	2,000	11 U	12 U	12 U	12 U	15	12 U

U = The analyte was not detected in the sample at the given reporting limit
(a) Development of preliminary soil screening levels is presented in Table 23.
--- = Constituent not detected; no preliminary screening level presented

TABLE 6
DIRECT-PUSH GROUNDWATER ANALYTICAL RESULTS
2008 BLAIR HYLEBOS PENINSULA TERMINAL REDEVELOPMENT PROJECT
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

		Taylor Way Adjacent to Kaiser SPL Area				
		RRI-P-215 (19-23)GW	RRI-P-216 (2-6.5)GW	RRI-P-216 (17-22)GW	RRI-P-217 (2-7)GW	RRI-P-217 (19-24)GW
	Preliminary	OC66O	OC34H	OC34G	OC34C	OC34D
	Screening Level (a)	12/4/2008	12/3/2008	12/8/2008	12/3/2008	12/3/2008
TOTAL METALS (mg/L)						
Method SW6010B/SW7471A						
Arsenic	---	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Cadmium	---	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Chromium	240	0.038	0.005 U	0.024	0.005 U	0.023
Lead	---	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Mercury	---	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
CONVENTIONALS (mg/L)						
Total Cyanide (EPA 335.4)	16	0.005 U	0.187	0.056	1.90	0.030
Weak Acid Dissociable Cyanide (SM4500CN-I)	0.01	0.005 U	0.013 (b)	0.005 U	0.030	0.005 U
PETROLEUM HYDROCARBONS (mg/L)						
NWTPH-Dx						
Diesel-Range	---	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Motor Oil-Range	---	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

Boxed cells indicate an exceedance of cyanide cleanup levels protective of marine surface water
U = The analyte was not detected in the sample at the given reporting limit
(a) Development of preliminary screening levels is presented in Table 24.
The chromium cleanup level is based on chromium (III) criterion protective of marine surface water
(b) The MTCA Method B adjusted preliminary screening level for WAD cyanide (0.01 mg/L) has one significant figure. Therefore, values less than 0.015 mg/L are not considered exceedances of the preliminary screening level
--- = Constituent not detected; no preliminary screening level presented

TABLE 7
SUMMARY OF WASTE MATERIAL OBSERVED IN ROD MILL AREA CLOSED LANDFILL EXPLORATIONS
2008 SUPPLEMENTAL INVESTIGATION
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

			Percent Total Volume									
				Waste								
Exploration with Observed Waste Materials (a)	Length of Test Pit	Depth Waste Materials Were Observed (ft BGS)	Soil	Carbon Materials	Concrete	Refractory Brick	Coal	Bauxite Ore	Wood Debris	Other	Comments
2008 Supplemental Investigation											
RM-LF-13	11	1 - 8	100	--	--	--	--	--	--	--	No waste encountered. Strong petroleum hydrocarbon odor/staining.
RM-LF18	10	1 - 4.5	30	40	--	10	--	<5	--	15	Cobble to boulder-sized chunks of carbon waste materials.
	9	4.5-9.5	70	--	--	--	--	--	--	30	Mixed waste.
RM-LF19	8	1-6	83	<5	--	<5	--	--	--	7	Cobble to boulder-sized chunks of carbon waste materials. Mixed waste includes rebar, cloth, metal debris (pipe elbows).
RM-LF20	19	3 - 6.5	70	--	25	<5	--	--	--	--	Cobble to boulder sized chunks of concrete. Waste not encountered in southeastern quarter of test pit.
RM-LF21	36	1 - 4.5	40	10	25	15	--	--	10	--	Cobble to boulder-sized chunks of black carbon waste materials and chunks of concrete. No waste materials encountered in southern quarter of test pit. Refusal encountered at varying depths. Depth of waste materials is an estimate.
RM-LF22	37	1 - 5	50	--	30	15	--	--	--	5	Cobble and boulder-sized chunks of concrete. Other waste is described as red brick or red chunks of concrete.
		>5	(b)	(b)	--	--	--	--	--	--	Waste materials encountered to a depth of 3 ft in northern half of test pit. Waste materials extended deeper in southern half of test pit; refusal encountered at 5 ft BGS due to large chunks of waste materials.
RM-LF23	22	0.5 - 1.75	70	--	30	--	--	--	--	--	Cobble to gravel-sized chunks of concrete.
		1.75 - 7	60	--	40	--	--	--	--	--	Cobble to gravel-sized chunks of concrete.
RM-LF24	14	1 - 2.25	>95	<5	--	--	--	--	--	--	Cobble-sized fragments of black carbon waste materials
		2.25 - 7.5	50 - 80	8-20	5-10	--	--	--	--	7-20	Cobble to boulder-sized chunks of black, light, and porous carbon. Other waste is 5-15% mixture of carbon and coal tar pitch with a vitreous texture and 2 - 5% white to gray chalk-like to clay-like mixture of cryolite and bauxite ore.
RM-LF28	13	>0.5	(b)	(b)	--	--	--	--	--	--	Refusal encountered at 0.5' BGS in eastern half of test pit due to large chunks of black carbon materials. No waste materials encountered in western half of test pit.
RM-LF29	35	>0.5	(b)	(b)	(b)	--	--	--	--	--	Refusal encountered at 0.5' BGS in eastern half of test pit due to large chunks of black carbon materials and concrete. No waste materials encountered in western half of test pit.
RM-MW-6(S)	NA	2.75 - 3.25	50	50	--	--	--	--	--	--	Black carbon materials.
	NA	3.25 - 3.75	0	--	--	--	--	--	100	--	Wood cuttings with slight hydrocarbon odor and staining.
		3.75 - 5.25	60	40	--	--	--	--	--	--	Black carbon materials. Moderate petroleum odor and staining.
		5.25 - 9.5	100	--	--	--	--	--	--	--	No waste encountered. Strong petroleum hydrocarbon odor/ staining.
RM-MW-6(I)	NA	3 - 3.5	25	75	--	--	--	--	--	--	Black carbon waste materials with fragments of petroleum coke and coal tar pitch.
		3.5 - 4	30	--	--	--	--	--	--	70	Other waste described as gray silt/ash.
		6.75 - 9.5	100	--	--	--	--	--	--	--	No waste encountered. Strong petroleum hydrocarbon odor/ staining.
Previous Investigations											
RM-LF8	NS	1-7	(b)	--	--	(b)	--	--	--	(b)	Other waste is described as white waste, blocky waste, and possible pieces of asbestos.
RM-LF9	NS	1-1.5	(b)	--	--	--	--	--	--	(b)	Yellowish (possible iron oxide stained) waste/fill
		1.5 -2.5	(b)	--	--	(b)	--	--	(b)	(b)	Other waste described as black, gray, and white sand-size waste and metal.
		2.5 - 8.5	(b)	--	--	--	--	--	--	(b)	Cemented black medium sand size waste.
RM-LF10	NS	1 - 6	(b)	--	--	--	--	--	(b)	(b)	Gray and white sand-sized waste, metal, cloth, and large blocks of angular waste up to 1.5 ft size, gray and white layered sand-sized waste toward bottom of hole.
RM-LF12	NS	1 - 5.5	(b)	--	--	--	(b)	--	--	(b)	Dark gray to black sandy waste with various sizes of shiny, black coal.
		5.5 - 6	(b)	--	--	--	--	--		(b)	Sand and silt-sized, white-gray, black waste.
RM-DPT3	NA	3.5 - 3.75	(b)	--	--	--	--	--		(b)	Gray and white, fine sand-sized waste.

-- Indicates waste type not encountered.
NA Indicates not applicable.
NS Indicates information on length of test pit not available.
(a) Explorations where no waste materials were observed include RM-LF1 through RM-LF7, RM-LF11, RM-LF14, RM-LF15, RM-LF16, RM-LF17, RM-LF25, RM-LF26, and RM-LF27.
(b) Percent total volume not estimated.

TABLE 8
SOIL ANALYTICAL RESULTS
2008 SUPPLEMENTAL INVESTIGATION
ROD MILL AREA CLOSED LANDFILL
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

		RM-MW-6I			RM-MW-6(S)	
		RM-MW-6(I) (7)	RM-MW-6(I) (9)	RM-MW-6(I) (10.5)	RM-MW-6(S) (5.5)	RM-MW-6(S) (10)
		7	9	10.5	5.5	10
	Preliminary Screening Levels (a)	ND16G 6/26/2008	ND16H 6/26/2008	ND16I 6/26/2008	ND16J 6/26/2008	ND16K 6/26/2008
cPAHs (µg/kg)						
SW8270-SIM						
Benzo(a)anthracene	130	54,000	17,000	460	26,000	4,000
Chrysene	140	100,000	24,000	640	31,000	4,600
Benzo(b)fluoranthene	440	52,000	15,000	340	18,000	3,100
Benzo(k)fluoranthene	440	42,000	12,000	340	19,000	3,000
Benzo(a)pyrene	350	34,000	13,000	320	19,000	3,200
Indeno(1,2,3-cd)pyrene	1,200	19,000	7,000	170	9,300	1,600
Dibenz(a,h)anthracene	640	5,900	2,400	63	3,200	430
Total cPAHs TEQ	2,000	52,290	18,580	464	26,860	4,459
PETROLEUM HYDROCARBONS (mg/kg)						
NWTPH-DxSG						
Diesel-Range	2,000	6,900	3,400	67	7,300	100
Motor Oil-Range	2,000	1,500	900	22	1,400	43
CONVENTIONALS (mg/kg)						
Cyanide (EPA 335.4)	3,200	0.124	0.127	0.071 U	0.209	0.149

U = The analyte was not detected in the sample at the given reporting limit.

Boxed values indicate an exceedance of the preliminary cleanup level protective of marine surface water.

(a) Development of preliminary screening levels for soil is presented in Table 23.

TABLE 9
SUMMARY OF SURVEYED ELEVATIONS AND CALCULATED GROUNDWATER ELEVATIONS
2008 SUPPLEMENTAL INVESTIGATION
ROD MILL AREA CLOSED LANDFILL
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Well ID	Ground Surface Elevation (ft, MLLW)	Reference Point Elevation (a) (ft, MLLW)	7/1-7/2/2008		
			Measured Depth to Water from Reference Point (ft)	Calculated Groundwater Elevation (ft, MLLW)	Calculated Depth to Groundwater (ft, BGS)
Shallow Aquifer Wells					
RM-MW-3(S)	19.79	19.68	6.90	12.78	7.01
RM-MW-4(S)	19.80	19.60	6.59	13.01	6.79
RW-MW-5(S)	19.78	19.90	5.80	14.10	5.68
RM-MW-6(S)	20.17	20.19	6.24	13.95	6.22
Intermediate Aquifer Wells					
RM-MW-1(I)	19.57	22.19	11.36	10.83	8.74
RM-MW 2(I)	19.47	21.83	11.08	10.75	8.72
RM-MW-3(I)	19.71	19.68	10.05	9.63	10.08
RM-MW-4(I)	19.89	20.05	10.14	9.91	9.98
RW-MW-5(I)	19.58	19.64	8.99	10.65	8.93
RM-MW-6(I)	20.13	20.10	9.56	10.54	9.59

(a) Top of PVC well casing unless otherwise noted.

TABLE 10
GROUNDWATER ANALYTICAL RESULTS
2008 SUPPLEMENTAL INVESTIGATION
ROD MILL AREA CLOSED LANDFILL
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Preliminary Screening Levels (a)	RM-MW-2(I)* ND73D 7/2/2008	RM-MW-3(S) ND59A (RE) 7/1/2008	RM-MW-3(I) ND73B 7/2/2008	RM-MW-4(S) ND59B (RE) 7/1/2008	RM-MW-4(I) ND73C 7/2/2008	RM-MW-5(S) ND59C (RE) 7/1/2008	RM-MW-5(I) ND73E 7/2/2008	RM-MW-6(S) ND59D (RE) 7/1/2008	Dup of RM-MW-6(S) RM-MW-6(D) ND59E (RE) 7/1/2008	RM-MW-6(I) ND73F 7/2/2008
VOLATILES (µg/L) SW8260B											
Vinyl Chloride	2.4	0.2 U	0.2 U	0.2 U	1.2	0.2 U	0.2 U	0.2 U	5.5 J	4 J	2 U
Methylene Chloride	590	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	23 J	11 J	5 U
Acetone	--	3 U	13	3 U	3 U	9.2	5.1	3 U	170 J	110 J	30 U
Carbon Disulfide	--	0.2 U	0.6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.8	0.7	2 U
1,1-Dichloroethane	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4	0.3	2 U
Chloroform	283	0.2 U	1.8	0.2 U	0.2 U	0.5	0.2 U	0.2 U	1.1	1.3	2 U
2-Butanone	--	2.5 U	3	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	21	18	25 U
Benzene	23	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	8.6 J	5.8 J	2 U
4-Methyl-2-Pentanone (MIBK)	--	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	9.8	7.7	25 U
Toluene	15,000	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	25 J	15 J	2 U
Ethylbenzene	2,100	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	32	29	2 U
m,p-Xylene	--	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	91	85	4 U
o-Xylene	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	26 J	21 J	2 U
Total Xylenes	--	ND	ND	ND	ND	ND	ND	ND	117	106	ND
1,3,5-Trimethylbenzene	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	36	40	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	99	110	2 U
Isopropylbenzene	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	4.4	4.8	2 U
n-Propylbenzene	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	7	7.6	2 U
sec-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	1.3 J	2 U
4-Isopropyltoluene	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.1	2.4	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	3.9	4.3	2 U
Naphthalene	4,900	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	260	240	5 U
VOLATILES (µg/L) SW8260SIM											
Vinyl Chloride	2.4	NA	0.02 UJ	NA	NA	NA	0.02 UJ	NA	NA	NA	NA

TABLE 10
GROUNDWATER ANALYTICAL RESULTS
2008 SUPPLEMENTAL INVESTIGATION
ROD MILL AREA CLOSED LANDFILL
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Preliminary Screening Levels (a)	RM-MW-2(I)* ND73D 7/2/2008	RM-MW-3(S) ND59A (RE) 7/1/2008	RM-MW-3(I) ND73B 7/2/2008	RM-MW-4(S) ND59B (RE) 7/1/2008	RM-MW-4(I) ND73C 7/2/2008	RM-MW-5(S) ND59C (RE) 7/1/2008	RM-MW-5(I) ND73E 7/2/2008	RM-MW-6(S) ND59D (RE) 7/1/2008	Dup of RM-MW-6(S) RM-MW-6(D) ND59E (RE) 7/1/2008	RM-MW-6(I) ND73F 7/2/2008
PAHs (µg/L) SW8270-SIM											
Naphthalene	4,900	0.031	0.010 UJ	0.033	0.030 J	0.029	0.047 J	0.030	110 J	120 J	0.32
2-Methylnaphthalene	--	0.010 U	0.010 UJ	0.010 U	0.010 UJ	0.010 U	0.012 UJ	0.010 U	57 J	54 J	0.099
1-Methylnaphthalene	--	0.010 U	0.010 UJ	0.010 U	0.014 J	0.010 U	0.012 UJ	0.010 U	56 J	52 J	0.077
Acenaphthylene	--	0.010 U	0.010 UJ	0.010 U	0.010 J	0.010 U	0.012 UJ	0.010 U	1.0 UJ	2.5 UJ	0.030 U
Acenaphthene	640	0.010 U	0.011 J	0.010 U	1.1 J	0.010 U	0.012 UJ	0.010 U	91 J	76 J	0.22
Fluorene	3,500	0.010 U	0.010 UJ	0.010 U	0.18 J	0.010 U	0.012 UJ	0.010 U	62 J	50 J	0.19
Phenanthrene	--	0.010 U	0.010 UJ	0.010 U	0.010 UJ	0.010 U	0.012 UJ	0.010 U	120 J	75 J	1
Anthracene	26,000	0.010 U	0.010 UJ	0.010 U	0.030 J	0.010 U	0.012 UJ	0.010 U	20 J	12 J	0.25
Fluoranthene	90	0.010 U	0.010 UJ	0.010 U	0.012 J	0.010 U	0.012 UJ	0.010 U	32 J	14 J	1.2
Pyrene	2,600	0.010 U	0.010 UJ	0.010 U	0.017 J	0.010 U	0.012 UJ	0.010 U	26 J	11 J	1.2
Benzo(g,h,i)perylene	--	0.010 U	0.010 UJ	0.010 U	0.010 UJ	0.010 U	0.012 UJ	0.010 U	1.0 UJ	2.5 UJ	0.23
Dibenzofuran	--	0.010 U	0.010 UJ	0.010 U	0.43 J	0.010 U	0.012 UJ	0.010 U	31 J	22 J	0.081
cPAHs (µg/L) SW8270-SIM											
Benzo(a)anthracene	0.020	0.010 U	0.010 UJ	0.010 U	0.010 UJ	0.010 U	0.012 UJ	0.010 U	3.4 J	2.5 UJ	0.48
Chrysene	0.019	0.010 U	0.010 UJ	0.010 U	0.010 UJ	0.010 U	0.012 UJ	0.010 U	7.0 J	2.5 UJ	0.52
Benzo(b)fluoranthene	0.018	0.010 U	0.010 UJ	0.010 U	0.010 UJ	0.010 U	0.012 UJ	0.010 U	2.3 J	2.5 UJ	0.28
Benzo(k)fluoranthene	0.036	0.010 U	0.010 UJ	0.010 U	0.010 UJ	0.010 U	0.012 UJ	0.010 U	1.8 J	2.5 UJ	0.28
Benzo(a)pyrene	0.018	0.010 U	0.010 UJ	0.010 U	0.010 UJ	0.010 U	0.012 UJ	0.010 U	1.3 J	2.5 UJ	0.37
Indeno(1,2,3-cd)pyrene	0.018	0.010 U	0.010 UJ	0.010 U	0.010 UJ	0.010 U	0.012 UJ	0.010 U	1.0 UJ	2.5 UJ	0.20
Dibenz(a,h)anthracene	0.018	0.010 U	0.010 UJ	0.010 U	0.010 UJ	0.010 U	0.012 UJ	0.010 U	1.0 UJ	2.5 UJ	0.080
TEQ	0.030	ND	ND	ND	ND	ND	ND	ND	1.45	ND	0.221
PCBs (µg/L) SW8082											
Aroclor 1016	0.020	0.010 U	0.011 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.030 U	0.032 U	0.010 U
Aroclor 1242	--	0.010 U	0.011 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.030 U	0.032 U	0.010 U
Aroclor 1248	--	0.010 U	0.011 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.73 J	1.2 J	0.010 U
Aroclor 1254	0.0017	0.010 U	0.011 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.77 J	1.3 J	0.033
Aroclor 1260	--	0.010 U	0.011 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.11 J	0.18 J	0.010 U
Aroclor 1221	--	0.010 U	0.011 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.030 U	0.032 U	0.010 U
Aroclor 1232	--	0.010 U	0.011 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.030 U	0.032 U	0.010 U
Total PCBs	0.020	ND	ND	ND	ND	ND	ND	ND	1.6	2.7	0.033

TABLE 10
GROUNDWATER ANALYTICAL RESULTS
2008 SUPPLEMENTAL INVESTIGATION
ROD MILL AREA CLOSED LANDFILL
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Preliminary Screening Levels (a)	RM-MW-2(I)* ND73D 7/2/2008	RM-MW-3(S) ND59A (RE) 7/1/2008	RM-MW-3(I) ND73B 7/2/2008	RM-MW-4(S) ND59B (RE) 7/1/2008	RM-MW-4(I) ND73C 7/2/2008	RM-MW-5(S) ND59C (RE) 7/1/2008	RM-MW-5(I) ND73E 7/2/2008	RM-MW-6(S) ND59D (RE) 7/1/2008	Dup of RM-MW-6(S) RM-MW-6(D) ND59E (RE) 7/1/2008	RM-MW-6(I) ND73F 7/2/2008
TOTAL METALS (µg/L) E200.8/SW7470A											
Arsenic	8.0	3	11	1 U	2.8	4	1.6	3.6	85 J	42 J	18
Cadmium	8.8	0.5 U	0.2	0.5 U	0.2 U	0.5 U	0.2 U	0.2 U	1	0.6	0.5 U
Chromium	50	5	21	1	2.8	11	0.5 U	15.4	74 J	27 J	88
Copper	20	1 U	51	2	6.1	3	0.5	4.3	201 J	68 J	6
Lead	10	2 U	7	2 U	1 U	2 U	1 U	1 U	52 J	14 J	2 U
Mercury	0.15	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.2	0.1 U	0.1 U
Zinc	160	10 U	60	10 U	10	10 U	4 U	6	340 J	90 J	10 U
PETROLEUM HYDROCARBONS (mg/L) NWTPH-DxSG											
Diesel-Range	0.5	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	7.4 J	15 J	0.25 U
Motor Oil-Range	0.5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	2.5 UJ	2.5 UJ	0.50 U
CONVENTIONALS (mg/L) EPA335.4											
Total Cyanide	16	0.005 U	0.005	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.026 J	0.036 J	0.005 U
WAD Cyanide	0.01	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U

-- Indicates no cleanup level criteria available.

Boxed cells indicate an exceedance of MTCA Method B preliminary screening levels protective of marine surface water.

U = The analyte was not detected in the sample at the given reporting limit.

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

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

*Samples for MW-2(I) were incorrectly labeled as MW-21(I) on the chain-of-custody report and the laboratory analytical results.

(a) Development of preliminary screening levels for groundwater is presented in Table 24.

TABLE 11
GROUNDWATER FIELD PARAMETERS
2008 SUPPLEMENTAL INVESTIGATION
ROD MILL AREA CLOSED LANDFILL
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Shallow Aquifer				Intermediate Aquifer				
	RM-MW-3(S) 7/1/2008	RM-MW-4(S) 7/1/2008	RM-MW-5(S) 7/1/2008	RM-MW-6(S) 7/1/2008	RM-MW-3(I) 7/2/2008	RM-MW-4(I) 7/2/2008	RM-MW-5(I) 7/2/2008	RM-MW-6(I) 7/2/2008	RM-MW-2(I) 7/2/2008
FIELD PARAMETERS									
pH	7.2	7.2	7.3	8.9	6.6	6.7	7.0	6.7	6.6
Conductivity (µS)	1094	1298	430	3712	5299	6912	1340	7181	5359
Dissolved Oxygen (mg/L)	0.09	0.15	0.02	0.01	0.04	0.03	0.01	0.03	0.04
Temperature (C)	14.7	14.0	14.8	14.5	13.3	14.2	13.7	14.5	14.9
ORP (mV)	-439	-440	-442	-443	-447	-447	-446	-446	-447

TABLE 12
ROD MILL FORMER DEMISTER OIL AREA SOIL ANALYTICAL RESULTS
2002 AND 2003 SAMPLING EVENTS
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Toxicity Equivalency Factors	Interim Action Cleanup Level (a)	RM-1 (near surface) 10/17/2002	RM-2 (near surface) 10/17/2002	RM-RDA1 (0-0.5) 12/1/2003	RM-RDA2 (0-0.5) 12/1/2003
cPAHs (µg/kg)						
SW8270-SIM						
Benzo(a)anthracene	0.1		NA	NA	297,000	40,600
Chrysene	0.01		NA	NA	347,000	64,700
Benzofluoranthenes (b)	0.1		NA	NA	395,000	748,000
Benzo(a)pyrene	1		NA	NA	259,000	45,700
Indeno(1,2,3-cd)pyrene	0.1		NA	NA	136,000	26,400
Dibenz(a,h)anthracene	0.1		NA	NA	57,700	10,700
TEQ (c)		2,000	NA	NA	351,000	61,600
PETROLEUM HYDROCARBONS (mg/kg)						
NWTPH-DxSG						
Diesel-Range		2,000	10 U	10 U	6,480	5,890
Motor Oil-Range		2,000	25 U	25 U	11,200	15,500
(d)		(d)	(d)	(d)		
(e)					(e)	(e)

Boxed cells indicate an exceedance of interim action cleanup levels.

NA = Not analyzed.

U = The analyte was not detected in the sample at the given reporting limit.

(a) Interim action cleanup levels developed for interim action and based on MTCA Method A criteria for industrial properties (WAC 173-340-745; Table 745-1).

(b) Concentrations reported as a total for benzo(b)fluoranthene and benzo(k)fluoranthene.

(c) Toxicity equivalency quotient (TEQ) determined in accordance with 173-340-708 (8)(e).

(d) Soil samples RM-1 and RM-2 were also analyzed for gasoline-range petroleum hydrocarbons and PCBs.
Neither PCBs nor gasoline-range petroleum hydrocarbons were detected above the reporting limit (Kennedy Jenks 2003).

(e) Soil samples RM-RDA1 and RM-RDA2 were also analyzed for extractable petroleum hydrocarbons, PAHs, and Naphthalenes. See Appendix F.

TABLE 13
ROD MILL FORMER DEMISTER OIL AREA SOIL ANALYTICAL RESULTS
2008 CONFIRMATION SAMPLES
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Location: Lab ID Collection Date:	Toxicity Equivalency Factors	Interim Action Cleanup Levels (a)	KAI-LAI-CS-12 NR93I 9/29/2008	KAI-LAI-CS-13 NR93H 9/29/2008	KAI-LAI-CS-14 NR93G 9/29/2008	KAI-LAI-CS-15 NR93F 9/29/2008	KAI-LAI-CS-16 NR93E 9/29/2008	KAI-LAI-CS-17 NR93D 9/29/2008	KAI-LAI-CS-18 NR93C 9/29/2008	KAI-LAI-CS-19 NR93B 9/29/2008	KAI-LAI-CS-20 NR93A 9/29/2008
cPAHs (µg/kg)											
SW8270D											
Benzo(a)anthracene	0.1		NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	0.01		NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	0.1		NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	0.1		NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	1		NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.1		NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	0.1		NA	NA	NA	NA	NA	NA	NA	NA	NA
Total cPAHs - TEQ (c)		2,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (mg/kg)											
NWTPH-DxSG											
Diesel-Range		2,000	6.4 U	5.9 U	5.0 U	6.2 U	6.3 U	5.1 U	30	9.9	5.1 U
Motor Oil-Range		2,000	13 U	12 U	10 U	12 U	12 U	10 U	65	13	10 U

TABLE 13
ROD MILL FORMER DEMISTER OIL AREA SOIL ANALYTICAL RESULTS
2008 CONFIRMATION SAMPLES
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Location: Lab ID Collection Date:	Toxicity Equivalency Factors	Interim Action Cleanup Levels (a)	KAI-LAI-CS-21 NY74A 11/5/2008	KAI-LAI-CS-22 NY74B 11/5/2008	KAI-LAI-CS-23 (b) NY74C 11/5/2008	KAI-LAI-CS-24(.5-OB62A 11/24/2008	KAI-LAI-CS-25(1-OB62C 11/24/2008
cPAHs (µg/kg)							
SW8270D							
Benzo(a)anthracene	0.1		400	59 U	2,500	60 U	59 U
Chrysene	0.01		430	59 U	2,600	60 U	59 U
Benzo(b)fluoranthene	0.1		280	59 U	1,300	60 U	59 U
Benzo(k)fluoranthene	0.1		260	59 U	1,800	60 U	59 U
Benzo(a)pyrene	1		380	59 U	2,100	60 U	59 U
Indeno(1,2,3-cd)pyrene	0.1		190	59 U	1,000	60 U	59 U
Dibenz(a,h)anthracene	0.1		66	59 U	370	60 U	59 U
Total cPAHs - TEQ (c)		2,000	504	ND	2,820 (d)	ND	ND
PETROLEUM HYDROCARBONS (mg/kg)							
NWTPH-DxSG							
Diesel-Range		2,000	NA	NA	NA	NA	NA
Motor Oil-Range		2,000	NA	NA	NA	NA	NA

Boxed cells indicate an exceedance of interim action cleanup levels.

NA = Not analyzed.

U = The analyte was not detected in the sample at the given reporting limit.

(a) Interim action cleanup levels developed for interim action and based on MTCA Method A criteria for industrial properties (WAC 173-340-745; Table 745-1).

(b) Soil represented by sample CS-23 was subsequently removed. See note d.

(c) Toxicity equivalency quotient (TEQ) determined in accordance with 173-340-708 (8)(e).

(d) Boxed cell result indicates an exceedance of interim action cleanup levels; soil was subsequently removed and additional confirmation samples [CS-24(.5-1) and CS-25(1-1.5)] were collected.

TABLE 14
ROD MILL FORMER STORMWATER DITCH SOIL ANALYTICAL RESULTS
2003 SAMPLING EVENT
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Toxicity Equivalency Factors	Interim Action Cleanup Levels (a)	Location:	MFG-SCD1	MFG-SCD2	MFG-SCD3	MFG-SCD4	MFG-SCD5
			Depth (ft BGS):	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
			Collection Date:	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003
cPAHs (µg/kg)								
SW8270D-SIM								
Benzo(a)anthracene	0.1			71.6	89.1	31,400	5,230	3,180
Chrysene	0.01			176	401	280,000	5,820	3,780
Benzofluoranthenes (b)	0.1			337	386	9,450	7,960	4,870
Benzo(a)pyrene	1			74.9	78.3	7,270	4,960	3,040
Indeno(1,2,3-cd)pyrene	0.1			78.4	77.7	8,640	2,710	1,620
Dibenz(a,h)anthracene	0.1			33.7	36.4	4,550	1,220	628
TEQ (c)		2,000		129	141	15,500	6,730	4,100
PETROLEUM HYDROCARBONS (mg/kg)								
NWTPH-DxSG								
Diesel-Range		2,000		15.9	27.3	149	13.3	53.9
Motor Oil-Range		2,000		240	182	817	53.1	275

Boxed cells indicate an exceedance of interim action cleanup levels.

(a) Interim action cleanup levels developed for interim action and based on MTCA Method A criteria for industrial properties (WAC 173-340-745; Table 745-1).

(b) Concentrations reported as a total for benzo(b)fluoranthene and benzo(k)fluoranthene.

(c) Toxicity equivalency quotient (TEQ) determined in accordance with 173-340-708 (8)(e).

TABLE 15
ROD MILL AREA FORMER STORMWATER DITCH SOIL ANALYTICAL RESULTS
2008 SUPPLEMENTAL INVESTIGATION
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Interim Action Cleanup Levels (a)	Location:	RM-SCD1	RM-SCD2		RM-SCD3	RM-SCD4	RM-SCD5		RM-SCD6	
		Depth (ft BGS):	0-1	0-1	1-2	0-1	0-1	0-1	1-2	0-1	1-2
		Collection Date:	7/1/2008	7/1/2008	7/1/2008	7/1/2008	7/1/2008	7/1/2008	7/1/2008	7/1/2008	7/1/2008
cPAHs (µg/kg)											
SW8270-SIM											
Benzo(a)anthracene			1,000	6,700	1,300	5 U	30	1,200	130	4,900	2,000
Chrysene			2,000	9,000	2,100	11	100	2,800	260	24,000	17,000
Benzofluoranthenes (b)			NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene			1,300	9,300	1,800	8.9	130	4,300	340	7,900	2,900
Benzo(k)fluoranthene			1,300	6,800	1,200	8.9	52	1,900	180	7,900	2,900
Benzo(a)pyrene			980	8,000	1,600	5 U	31	1,100	130	1,500	400
Indeno(1,2,3-cd)pyrene			720	3,900	870	5 U	27	840	95	1,600	420
Dibenz(a,h)anthracene			300	1,800	360	5 U	11	340	41	700	210
TEQ (c)	2,000		1,462	10,940	2,174	1.9	57	1,986	211	4,040	1,413
PETROLEUM HYDROCARBONS (mg/kg)											
NWTPH-DxSG											
Diesel-Range	2,000		NA	NA	NA	NA	NA	NA	NA	NA	NA
Motor Oil-Range	2,000		NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 15
ROD MILL AREA FORMER STORMWATER DITCH SOIL ANALYTICAL RESULTS
2008 SUPPLEMENTAL INVESTIGATION
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Interim Action Cleanup Levels (a)	Location:	RM-SCD7		RM-SCD8
		Depth (ft BGS):	0-1	1-2	0-1
		Collection Date:	7/1/2008	7/1/2008	7/1/2008
cPAHs (µg/kg)					
SW8270-SIM					
Benzo(a)anthracene			22,000	340	430
Chrysene			22,000	620	530
Benzofluoranthenes (b)			NA	NA	NA
Benzo(b)fluoranthene			13,000	430	460
Benzo(k)fluoranthene			18,000	320	460
Benzo(a)pyrene			18,000	350	440
Indeno(1,2,3-cd)pyrene			6,500	180	230
Dibenz(a,h)anthracene			2,000	89	100
TEQ (c)	2,000		24,370	492	613
PETROLEUM HYDROCARBONS (mg/kg)					
NWTPH-DxSG					
Diesel-Range	2,000		NA	NA	NA
Motor Oil-Range	2,000		NA	NA	NA

Boxed cells indicate an exceedance of interim action cleanup levels.

NA = Not analyzed.

U = The analyte was not detected in the sample at the given reporting limit.

(a) Preliminary screening levels developed for interim action and based on MTCA Method A cleanup levels for industrial properties (Table 745-1).

(b) Concentrations reported as a total for benzo(b)fluoranthene and benzo(k)fluoranthene.

(c) Toxicity equivalency quotient (TEQ) determined in accordance with 173-340-708 (8)(e).

TABLE 16
STORM DRAIN CATCH BASIN SOLIDS ANALYTICAL RESULTS
ROD MILL AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Location: Lab ID Collection Date:	Toxicity Equivalency Factors	Interim Action Cleanup Levels (a)	KAI-Storm Drain NR93U 9/26/2008
cPAHs (µg/kg)			
SW8270D-SIM			
Benzo(a)anthracene	0.1		7,000 J
Chrysene	0.01		24,000
Benzo(b)fluoranthene	0.1		13,000
Benzo(k)fluoranthene	0.1		14,000
Benzo(a)pyrene	1		13,000
Indeno(1,2,3-cd)pyrene	0.1		3,400
Dibenz(a,h)anthracene	0.1		1,600 J
TEQ (b)		2,000	17,100
PETROLEUM HYDROCARBONS (mg/kg)			
NWTPH-DxSG			
Diesel-Range		2,000	6,100
Motor Oil-Range		2,000	12,000
TCLP METALS (mg/L)			
Arsenic		For Disposal Evaluation Only	0.2 U
Barium			0.42
Cadmium			0.01
Chromium			0.46
Lead			0.1 U
Mercury			0.0001 U
Selenium			0.2 U
Silver			0.03 U

Boxed cells indicate an exceedance of interim action cleanup levels.

U = The analyte was not detected in the sample at the given reporting limit.

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

(a) Interim action cleanup levels developed for interim action and based on MTCA Method A criteria for industrial properties (WAC 173-340-745; Table 745-1).

(b) Toxicity equivalency quotient (TEQ) determined in accordance with 173-340-708 (8)(e).

TABLE 17
ROD MILL AREA FORMER STORMWATER DITCH ANALYTICAL RESULTS
CONFIRMATION SOIL SAMPLES
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Location: Lab ID Collection Date:	Toxicity Equivalency Factors	Preliminary Screening Levels (a)	KAI-LAI-CS-01 NR93T 9/25/2008	KAI-LAI-CS-02 NR93S 9/26/2008	KAI-LAI-CS-03 NR93R 9/26/2008	KAI-LAI-CS-04 NR93Q 9/29/2008	KAI-LAI-CS-05 NR93P 9/26/2008	KAI-LAI-CS-06 NR93O 9/29/2008	KAI-LAI-CS-07 NR93N 9/29/2008	KAI-LAI-CS-08 (b) NR93M 9/29/2008	KAI-LAI-CS-08b NY01A 11/3/2008	KAI-LAI-CS-09 NR93L 9/29/2008	KAI-LAI-CS-10 NR93K 9/29/2008	KAI-LAI-CS-11 NR93J 9/29/2008
cPAHs (µg/kg)														
SW8270D														
Benzo(a)anthracene	0.1		63 U	64 U	62 U	61 U	61 U	92 J	61 U	4,100 J	64 U	60 U	61 U	65 U
Chrysene	0.01		63 U	100	62 U	61 U	61 U	2,800	61 U	14,000	64 U	60 U	61 U	65 U
Benzo(b)fluoranthene	0.1		63 U	96	62 U	61 U	61 U	200	61 U	3,300	64 U	60 U	61 U	65 U
Benzo(k)fluoranthene	0.1		63 U	98	62 U	61 U	61 U	160	61 U	4,500	64 U	60 U	61 U	65 U
Benzo(a)pyrene	1		63 U	64 U	62 U	61 U	61 U	66 U	61 U	3,700	64 U	60 U	61 U	65 U
Indeno(1,2,3-cd)pyrene	0.1		63 U	64 U	62 U	61 U	61 U	66 U	61 U	2,100	64 U	60 U	61 U	65 U
Dibenz(a,h)anthracene	0.1		63 U	64 U	62 U	61 U	61 U	66 U	61 U	950 J	64 U	60 U	61 U	65 U
TEQ (c)		2,000	ND	20.4	ND	ND	ND	73	ND	5,335 (d)	ND	ND	ND	ND
PETROLEUM HYDROCARBONS (mg/kg)														
NWTPH-DxSG														
Diesel-Range		2,000	7.3 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Motor Oil-Range		2,000	15 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA = Not analyzed.

U = The analyte was not detected in the sample at the given reporting limit.

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

(a) Interim action cleanup levels developed for interim action and based on MTCA Method A criteria for industrial properties (WAC 173-340-745; Table 745-1).

(b) Soil represented by sample CS-08 was subsequently removed. See note d.

(c) Toxicity equivalency quotient (TEQ) determined in accordance with 173-340-708 (8)(e).

(d) Shaded cell result indicate an exceedance of interim action cleanup levels; soil removed and additional confirmation sample (CS-08b) was collected.

TABLE 18
2003-2004 SOIL SAMPLE RESULTS
FORMER RECTIFIER YARD AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

					PCBs (mg/kg)								NWTPH-Dx (mg/kg)		
Sample ID	Duplicate	Lab ID	Date Collected	Sample Depth (ft BGS)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	#2 Diesel	Motor Oil	Mineral Oil
East Rectifier Yard															
Trans1-N-1.5-2		116703-04	10/7/2003	1.5-2	0.108 U	0.216 U	0.108 U	0.108 U	0.108 U	0.108 U	0.226	0.226	**2000** X1	825 X1	712 X1
Trans1-N-3.8-4.3		116703-05	10/7/2003	3.8-4.3	0.104 U	0.208 U	0.104 U	0.104 U	0.104 U	0.104 U	0.146	0.146	23.2 U	46.5 U	46.5 U
Trans-2-N-0.3-0.8		116703-13	10/7/2003	0.3-0.8	0.112 U	0.224 U	0.112 U	0.112 U	0.112 U	0.112 U	0.417	0.417	**18900** J,X1	**2780** J,X1	**2790** J,X1
Trans-2-N-2.3-2.8		116703-20	10/7/2003	2.3-2.8	0.104 U	0.208 U	0.104 U	0.104 U	0.104 U	0.104 U	0.256	0.256	**16800** X1	**2160** X1	1900 X1
SUPT2SE-2-2.5		124077-41	9/30/2004	2-2.5	NA	NA	NA	NA	NA	NA	NA	NA	24.4 U	48.7 U	NA
SUPT2SE-4-4.5		124077-42	9/30/2004	4-4.5	NA	NA	NA	NA	NA	NA	NA	NA	26 U	52 U	NA
Trans-3-N-0.2-0.7		116703-14	10/7/2003	0.2-0.7	0.117 U	0.234 U	0.117 U	0.117 U	0.117 U	0.117 U	0.950	0.950	**5170** J,X1	1350 J,X1	1210 J,X1
Trans-3-N-3-3.5		116703-18	10/7/2003	3-3.5	0.109 U	0.218 U	0.109 U	0.109 U	0.109 U	0.109 U	0.747	0.747	**2590** J,X1	585 X1	459 J,X1
Trans-24-N-3-3.5	Duplicate of Trans3-N-3-3.5	116703-21	10/7/2003	3-3.5	0.106 U	0.212 U	0.106 U	0.106 U	0.106 U	0.106 U	0.708	0.708	**4140** J,X1	825 X1	807 J,X1
Trans-4-N-0.3-0.8		116703-22	10/7/2003	0.3-0.8	0.110 U	0.219 U	0.110 U	0.110 U	0.110 U	0.110 U	1.02	1.02	**6900** X1	**2050** X1	1610 X1
Trans-4-N-2.5-3		116703-19	10/7/2003	2.5-3	0.107 U	0.213 U	0.107 U	0.107 U	0.107 U	0.107 U	0.533	0.533	**2020** X1	767 X1	605 X1
SUPT4SE-1.5-2		124077-43	9/30/2004	1.5-2	NA	NA	NA	NA	NA	NA	NA	NA	65.9 X1	85.9 J, X1	123
SUPT4SE-5.5-6		124077-44	9/30/2004	5.5-6	NA	NA	NA	NA	NA	NA	NA	NA	26.4 U	52.8 U	NA
Trans5-N-0.5-1		116601-13	10/2/2003	0.5-1	0.100 U	0.200 U	0.100 U	0.100 U	0.100 U	0.100 U	0.220	0.220	**6580** X1	1630 X1	1220 X1
Trans5-N-3-3.5		116601-14	10/2/2003	3-3.5	0.104 U	0.207 U	0.104 U	0.104 U	0.104 U	0.104 U	0.0829 J	0.0829	**2200** X1	351 X1	277 X1
SUPT5SW-2.5-3		124077-21	9/29/2004	2.5-3	NA	NA	NA	NA	NA	NA	NA	NA	47.9 U	50.9 U	77.9
SUPT5SW-5.5-6		124077-20	9/29/2004	5.5-6	NA	NA	NA	NA	NA	NA	NA	NA	471 X1	154 X1	441
Trans6-N-0.5-1		116601-11	10/2/2003	0.5-1	0.107 U	0.214 U	0.107 U	0.107 U	0.107 U	0.107 U	0.475	0.475	1260 X1	730 X1	577 X1
Trans6-N-2.5-3		116601-12	10/2/2003	2.5-3	0.105 U	0.211 U	0.105 U	0.105 U	0.105 U	0.105 U	0.198	0.198	**3670** X1	748 X1	590 X1
Trans7-N-0.5-1		116601-17	10/2/2003	0.5-1	0.101 U	0.203 U	0.101 U	0.101 U	0.101 U	0.101 U	0.924	0.924	**8320** X1	**2080** X1	1760 X1
Trans7-N-3-3.5		116601-18	10/2/2003	3-3.5	0.102 U	0.204 U	0.102 U	0.102 U	0.102 U	0.102 U	0.697	0.697	**8370** X1	1830 X1	1520 X1
SUPT7S-0.5-1		124192-08	10/12/2004	0.5-1	NA	NA	NA	NA	NA	NA	NA	NA	26.3 U	52.6 U	NA
SUPT7S-3-3.5		124077-15	9/29/2004	3-3.5	NA	NA	NA	NA	NA	NA	NA	NA	24.8 U	49.6 U	NA
SUPT7S-4-4.5		124077-16	9/29/2004	4-4.5	NA	NA	NA	NA	NA	NA	NA	NA	25.9 U	51.8 U	NA
SUPT7SE-1-1.5		124192-09	10/12/2004	1-1.5	NA	NA	NA	NA	NA	NA	NA	NA	46.4 X2	199 J, X2	NA
SUPT7SE-3-3.5		124077-17	9/29/2004	3-3.5	0.0976 U	0.0976 U	0.0976 U	0.0976 U	0.0976 U	0.0976 U	0.0976 U	ND	25 U	49.9 U	NA
SUPT7SE-4-4.5		124077-18	9/29/2004	4-4.5	NA	NA	NA	NA	NA	NA	NA	NA	26.3 U	52.5 U	NA
SUPT7SE-5-5.5		124077-19	9/29/2004	5-5.5	NA	NA	NA	NA	NA	NA	NA	NA	25.9 U	51.8 U	NA
Trans8-N-0-0.5		116601-16	10/2/2003	0-0.5	0.112 U	0.223 U	0.112 U	0.112 U	0.112 U	0.112 U	2.39	2.39	**6380** X1	**5920** X1	**4680** X1
Trans8-N-1.5-2		116601-19	10/2/2003	1.5-2	0.0948 U	0.19 U	0.0948 U	0.0948 U	0.0948 U	0.0948 U	0.141	0.141	225 X1	137 X1	106 X1
Trans9-N-0.5-1		116601-05	10/2/2003	0.5-1	0.0999 U	0.2 U	0.0999 U	0.0999 U	0.0999 U	0.0999 U	0.0999 U	ND	21.6 J	87.3 X2	66.6 X2
Trans31-N-0.5-1	Duplicate of Trans9-N-0.5-1	116601-04	10/2/2003	0.5-1	0.100 U	0.200 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND	19.9 J	86.7 X2	66 X2
Trans9-N-1.5-2		116601-10	10/2/2003	1.5-2	0.106 U	0.212 U	0.106 U	0.106 U	0.106 U	0.106 U	0.106 U	ND	14.8 J	61.5	46.3 U
Trans11-C-1.5-2		116547-02	9/30/2003	1.5-2	0.109 U	0.218 U	0.109 U	0.109 U	0.109 U	0.109 U	0.109 U	ND	223 X1	136 X1	105 X1
Trans11-C-1-1.5		116547-01	9/30/2003	1-1.5	0.104 U	0.208 U	0.104 U	0.104 U	0.104 U	0.104 U	0.530	0.530	**2260** X1	1110 X1	887 X1
Trans11-NE-1-1.5		116547-03	9/30/2003	1-1.5	0.113	0.225 U	0.113 U	0.113 U	0.113 U	0.113 U	0.594	0.707	**3580** X1	1250 X1	993 X1
Trans11-NE-4.5-5		116547-06	9/30/2003	4.5-5	0.104 U	0.207 U	0.104 U	0.104 U	0.104 U	0.104 U	0.595	0.595	**18000** X1	**2560** X1	1740 X1
Trans-11-SE-1.8-2.3		116703-15	10/7/2003	1.8-2.3	0.107 U	0.214 U	0.107 U	0.107 U	0.107 U	0.107 U	0.107 U	ND	17.9 J	69.1 X2	55 X2
Trans-11-SE-3-3.5		116703-16	10/7/2003	3-3.5	0.0979 U	0.196 U	0.0979 U	0.0979 U	0.0979 U	0.0979 U	0.0979 U	ND	22.7 U	45.4 U	45.4 U
Trans-11-SE-5.6-6.0		116703-17	10/7/2003	5.6-6.0	0.117 U	0.234 U	0.117 U	0.117 U	0.117 U	0.117 U	0.117 U	ND	25 U	50 U	50 U
SUPT11E-1-1.5		124192-12	10/12/2004	1-1.5	NA	NA	NA	NA	NA	NA	NA	NA	26.5 U	86.7 J, X2	NA
SUPT11E-5-5.5		124077-23	9/29/2004	5-5.5	NA	NA	NA	NA	NA	NA	NA	NA	27.9 U	55.8 U	NA
Trans12-C-1.5-2		116547-11	9/30/2003	1.5-2	0.109 U	0.218 U	0.109 U	0.109 U	0.109 U	0.109 U	0.270	0.270	1020 X1	470 X1	372 X1
Trans12-C-1-1.5		116547-10	9/30/2003	1-1.5	0.108 U	0.216 U	0.108 U	0.108 U	0.108 U	0.108 U	0.674	0.674	**2890** X1	1440 X1	1150 X1
Trans12-NE-1-1.5		116547-09	9/30/2003	1-1.5	0.104 U	0.208 U	0.104 U	0.104 UJ	0.104 U	0.104 U	0.673 J	0.673 J	**3550** X1	1540 J,X1	1380 X1
Trans12-NE-5.5-6		116547-07	9/30/2003	5.5-6	0.119 U	0.237 U	0.119 U	0.119 U	0.119 U	0.119 U	0.150	0.150	**3800** X1	676 X1	577 X1
SUPT12SW-1.75-2.25		124077-29	9/30/2004	1.75-2.25	NA	NA	NA	NA	NA	NA	NA	NA	25.9 U	51.9 U	NA
SUPT12SW-4.5-4.75		124077-28	9/30/2004	4.5-4.75	NA	NA	NA	NA	NA	NA	NA	NA	26.1 U	52.2 U	NA
Trans13-C-0.5-1.0		116547-17	9/30/2003	0.5-0.1	0.114 U	0.229 U	0.114 U	0.114 U	0.114 U	0.114 U	0.349	0.349	1200 X1	650 X1	515 X1
Trans13-C-1-1.5		116547-13	9/30/2003	1-1.5	0.0972 U	0.194 U	0.0972 U	0.0972 U	0.0972 U	0.0972 U	0.132	0.132	138 X1	84.1 X1	64.2 X1
Trans13-NE-1-1.5		116547-18	9/30/2003	1-1.5	0.107 U	0.214 U	0.107 U	0.107 U	0.107 U	0.107 U	0.307	0.307	**6100** J,X1	1150 J,X1	874 J,X1

TABLE 18
2003-2004 SOIL SAMPLE RESULTS
FORMER RECTIFIER YARD AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

					PCBs (mg/kg)								NWTPH-Dx (mg/kg)		
Sample ID	Duplicate	Lab ID	Date Collected	Sample Depth (ft BGS)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	#2 Diesel	Motor Oil	Mineral Oil
Trans30-NE-0-0.5	Duplicate of Trans13-NE-1-1.5	116547-14	9/30/2003	0-0.5	0.0998 U	0.200 U	0.0998 U	0.0998 U	0.0998 U	0.0998 U	0.262	0.262	**5380** X1	1230 X1	792 X1
Trans13-NE-5-5.5		116547-12	9/30/2003	5-5.5	0.114 U	0.227 U	0.114 U	0.114 U	0.114 U	0.114 U	0.254	0.254	**10500** X1	1230 X1	976 X1
Trans13-NW-0.5-1		116580-05	10/1/2003	0.5-1	0.106 U	0.212 U	0.106 U	0.106 U	0.106 U	0.106 U	0.395	0.395	**6850** X1	1280 X1	983 X1
Trans13-NW-5-5.5		116547-15	9/30/2003	5-5.5	0.0943 U	0.189 U	0.0943 U	0.0943 U	0.0943 U	0.0943 U	0.0731 J	0.0731	1140 X1	199 X1	155 X1
Trans13-SE1-1.6-2.1		116703-01	10/7/2003	1.6-2.1	0.0948 U	0.19 U	0.0948 U	0.0948 U	0.0948 U	0.0948 U	0.0634 J	0.0634	600 X2	481 X2	394 X2
Trans13-SE2-4-4.5		116703-02	10/7/2003	4-4.5	0.102 U	0.205 U	0.102 U	0.102 U	0.102 U	0.102 U	0.102 U	ND	26 U	52.1 U	52.1 U
Trans13-SE2-5.8-6.2		116703-03	10/7/2003	5.8-6.2	0.107 U	0.213 U	0.107 U	0.107 U	0.107 U	0.107 U	0.107 U	ND	**4330** X1	834 X1	723 X1
SUPT13SW-2-2.5		124077-31	9/30/2004	2-2.5	NA	NA	NA	NA	NA	NA	NA	NA	189 X1	107 X1	307
SUPT13SW-4-4.5		124077-30	9/30/2004	4-4.5	NA	NA	NA	NA	NA	NA	NA	NA	**5890** X1	1180 X1	**7840**
Trans15-SE-1.4-1.9		116703-07	10/7/2003	1.4-1.9	0.102 U	0.205 U	0.102 U	0.102 U	0.102 U	0.102 U	0.469	0.469	**2340** X1	848 X1	728 X1
Trans15-SE-2.5-3		116703-08	10/7/2003	2.5-3	0.103 U	0.205 U	0.103 U	0.103 U	0.103 U	0.103 U	0.103 U	ND	26 U	39 J	52.1 U
Trans22-SE-2.5-3	Duplicate of Trans15-SE-2.5-3	116703-06	10/7/2003	2.5-3	0.106 U	0.211 U	0.106 U	0.106 U	0.106 U	0.106 U	0.106 U	ND	26 U	49.7 J	51.9 U
Trans15-SE-6.6.5		116703-09	10/7/2003	6.6.5	0.108 U	0.215 U	0.108 U	0.108 U	0.108 U	0.108 U	0.111	0.111	**2000** X1	320 X1	290 X1
SUPT15SE-2-2.5		124077-32	9/30/2004	2-2.5	NA	NA	NA	NA	NA	NA	NA	NA	241 X1	300 X1	NA
SUPT15SE-3-3.5		124077-33	9/30/2004	3-3.5	NA	NA	NA	NA	NA	NA	NA	NA	25 U	49.9 U	NA
SUPT15SE-4.5-5		124077-34	9/30/2004	4.5-5	NA	NA	NA	NA	NA	NA	NA	NA	25.9 U	51.8 U	NA
SUPT15SEN-2-2.5		124077-35	9/30/2004	2-2.5	0.106 U	0.106 U	0.106 U	0.106 U	0.106 U	0.106 U	0.106 U	ND	27 U	61.5 X2	NA
SUPT15SEN-4-4.5		124077-36	9/30/2004	4-4.5	NA	NA	NA	NA	NA	NA	NA	NA	**3150** X1	840 X1	1030
SUPT17SW-5.5-6		124077-40	9/30/2004	5.5-6	NA	NA	NA	NA	NA	NA	NA	NA	**2080** X1	439 X1	**2460**
SUPT17SW-N-2.5-2.75		124077-38	9/30/2004	2.5-2.75	NA	NA	NA	NA	NA	NA	NA	NA	25.8 U	53.8 X2	NA
SUPN17SW-N-2.5-2.75	Duplicate of SUPT17SW-N-2.5-2.75	124077-37	9/30/2004	2.5-2.75	NA	NA	NA	NA	NA	NA	NA	NA	51.4 X2	126 X2	NA
SUPT17SW-S-2.5-2.75		124077-39	9/30/2004	2.5-2.75	NA	NA	NA	NA	NA	NA	NA	NA	1730 X1	640 X1	**2050**
VR1-NE-0.1-0.6		116703-10	10/7/2003	0.1-0.6	0.103 U	0.205 U	0.103 U	0.103 U	0.103 U	0.103 U	0.149	0.149	169 X1	200 X1	168 X1
VR1-NE-2-2.5		116703-11	10/7/2003	2-2.5	0.0986 U	0.197 U	0.0986 U	0.0986 U	0.0986 U	0.0986 U	0.0986 U	ND	25.4 U	27.2 J	50.9 U
VR1-NE-5.5-5.9		116703-12	10/7/2003	5.5-5.9	0.110 U	0.221 U	0.110 U	0.110 U	0.110 U	0.110 U	0.110 U	ND	42.5 X2	131 X2	107 X2
SUPVR1NW-2.5-3		124077-24	9/29/2004	2.5-3	NA	NA	NA	NA	NA	NA	NA	NA	34 X2	125 J, X2	NA
SUPVR1NW-5-5.5		124077-25	9/29/2004	5-5.5	NA	NA	NA	NA	NA	NA	NA	NA	102 X1	109 X1	164
SUPVR1W25-2-2.5		124077-26	9/29/2004	2-2.5	NA	NA	NA	NA	NA	NA	NA	NA	115 X1	50 U	170
SUPVR1W25-5.5-6		124077-27	9/29/2004	5.5-6	NA	NA	NA	NA	NA	NA	NA	NA	25.2 U	50.4 U	NA
SUPVR2A-0-0.5		124192-11	10/12/2004	0-0.5	0.106 U	0.106 U	0.106 U	0.106 U	0.106 U	0.106 U	0.106 U	ND	NA	NA	NA
SUPVR2ANW-1.5-2		124077-45	9/30/2004	1.5-2	0.103 U	0.103 U	0.103 U	0.103 U	0.103 U	0.103 U	0.182	0.182	**7870** J, X1	**2070** J, X1	**11100** J
SUPVR2ANW-6.5-7		124077-46	9/30/2004	6.5-7	NA	NA	NA	NA	NA	NA	NA	NA	**2970** X1	1270 J, X1	**3300**
VR2B-N-2.5-3		116662-18	10/2/2003	2.5-3	0.100 U	0.201 U	0.100 U	0.100 U	0.100 U	0.100 U	0.543	0.543	584 X1	286 X1	245 X1
VR2B-N-4.5-5		116662-20	10/2/2003	4.5-5	0.107 U	0.213 U	0.107 U	0.107 U	0.107 U	0.107 U	0.423	0.423	652 X1	303 X1	263 X1
VR2B-NW-1.5-2.2		116601-02	10/2/2003	1.5-2.2	0.111 U	0.223 U	0.111 U	0.111 U	0.111 U	0.111 U	1.01	1.01	**2530** X1	1090 X1	869 X1
VR2B-NW-4-4.4		116601-01	10/2/2003	4-4.4	0.100 U	0.200 U	0.100 U	0.100 U	0.100 U	0.100 U	0.396	0.396	1650 X1	508 X1	403 X1
SUPVR2B-0-0.5		124192-10	10/12/2004	0-0.5	0.0982 U	0.0982 U	0.0982 U	0.0982 U	0.0982 U	0.0982 U	0.765 C1	0.765	NA	NA	NA
84Stain1-0.25-0.76		116601-08	10/2/2003	0.25-0.76	0.101 U	0.203 U	0.101 U	0.101 U	0.101 U	0.452	0.342	0.794	202 X2	515 X2	409 X2
84Stain1-1.5-2		116601-07	10/2/2003	1-1.5-2	0.104 U	0.209 U	0.104 U	0.104 U	0.104 U	0.104 U	0.104 U	ND	25.6 U	26.8 J	51.3 U
84Stain2-0.1-0.5		116601-09	10/2/2003	2-0.1-0.5	0.106 U	0.212 U	0.106 U	0.106 U	0.106 U	0.106 U	0.771	0.771	1780 X1	**2710** X1	**2160** X1
84Stain2-1-1.5		116601-06	10/2/2003	2-1-1.5	0.100 U	0.200 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND	23.7 U	47.4 U	47.4 U
84stain-3-0.3-1		116580-15	10/1/2003	0.3-1	0.102 U	0.203 U	0.102 U	0.102 U	0.102 U	0.102 U	0.474	0.474	107 X1	141 X1	109 X1
84stain-3-4-4.5		116580-18	10/1/2003	4-4.5	0.100 U	0.201 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND	24.7 U	49.3 U	49.3 U
86spill-1-2-2.5		116580-01	10/1/2003	2-2.5	0.106 U	0.212 U	0.106 U	0.106 U	0.106 U	0.106 U	0.276	0.276	**9480** X1	1510 X1	1230 X1
86spill-1-5-5.5		116580-03	10/1/2003	5-5.5	0.102 U	0.203 U	0.102 U	0.102 U	0.102 U	0.102 U	0.223	0.223	**6580** X1	859 X1	577 X1
86spill-1-7-7.5		116580-04	10/1/2003	7-7.5	0.103 U	0.205 U	0.103 U	0.103 U	0.103 U	0.103 U	0.291	0.291	**15600** X1	1470 X1	1010 X1
90spill-1-6-6.5	Duplicate of 86spill-1-7-7.5	116580-16	10/1/2003	6-6.5	0.103 U	0.205 U	0.103 U	0.103 U	0.103 U	0.103 U	0.343	0.343	**12700** X1	1600 X1	1260 X1
86spill-2-1-1.5		116580-06	10/1/2003	1-1.5	0.105 U	0.210 U	0.105 U	0.105 U	0.105 U	0.105 U	0.105 U	ND	23.3 U	46.6 U	46.6 U
86spill-3-0-0.3		116580-08	10/1/2003	0-0.3	0.104 U	0.209 U	0.104 U	0.104 U	0.104 U	0.104 U	0.0829 J	0.0829	75.9 X2	282 X2	222 X2
86spill-3-1.4-2		116580-09	10/1/2003	1.4-2	0.106 U	0.212 U	0.106 U	0.106 U	0.106 U	0.106 U	0.108	0.108	39.4 X2	139 X2	108 X2
86spill-4-1-1.5		116580-14	10/1/2003	1-1.5	0.0988 U	0.198 U	0.0988 U	0.0988 U	0.0988 U	0.0988 U	0.0988 U	ND	15.2 J	110 X2	84.7 X2

TABLE 18
2003-2004 SOIL SAMPLE RESULTS
FORMER RECTIFIER YARD AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

					PCBs (mg/kg)								NWTPH-Dx (mg/kg)		
Sample ID	Duplicate	Lab ID	Date Collected	Sample Depth (ft BGS)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	#2 Diesel	Motor Oil	Mineral Oil
West Rectifier Yard															
R41-2-2.5		116638-09	10/3/2003	2-2.5	0.101 U	0.202 U	0.101 U	0.101 U	0.101 U	0.101 U	0.101 U	ND	23.8 U	47.6 U	47.6 U
R41-4.5-5		116638-10	10/3/2003	4.5-5	0.108 U	0.216 U	0.108 U	0.108 U	0.108 U	0.108 U	0.108 U	ND	25.8 U	51.7 U	51.7 U
R42-SE-2-2.5		116638-11	10/3/2003	2-2.5	0.104 U	0.207 U	0.104 U	0.104 U	0.104 U	0.104 U	0.131	ND	73 X1	71.9 X1	53.9 X1
R42-SE-3-3.5		116638-12	10/3/2003	3-3.5	0.107 U	0.214 U	0.107 U	0.107 U	0.107 U	0.107 U	0.107 U	ND	26 U	51.9 U	51.9 U
R43-SE-4-4.5		116638-14	10/3/2003	4-4.5	0.104 U	0.209 U	0.104 U	0.104 U	0.104 U	0.104 U	0.120	ND	**2720** X1	491 X1	389 X1
R43-SE-5-5.2		116638-15	10/3/2003	5-5.2	0.115 U	0.230 U	0.115 U	0.115 U	0.115 U	0.115 U	0.115 U	ND	82.1 X1	58.3 U	58.3 U
SUPR43E-0-0.5		124192-07	10/12/2004	0-0.5	0.104 U	0.104 U	0.104 U	0.104 U	0.104 U	0.104 U	2.1	2.1	NA	NA	NA
R44-SE-2-2.5		116638-16	10/3/2003	2-2.5	0.103 U	0.205 U	0.103 U	0.103 U	0.103 U	0.103 U	0.704	0.704	**6210** X1	1310 X1	1080 X1
R44-SE-4-4.5		116638-17	10/3/2003	4-4.5	0.118 U	0.235 U	0.118 U	0.118 U	0.118 U	0.118 U	0.118 U	ND	207 X1	63.4 X1	54.6 U
R49-SE-4.5-5	Duplicate of R44-SE-4-4.5	116638-18	10/3/2003	4.5-5	0.110 U	0.220 U	0.110 U	0.110 U	0.110 U	0.110 U	0.110 U	ND	207 X1	64.4 X1	55.2 U
SUPR44S-1-1.5		Archived	10/12/2004	1-1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SUPR44S-2-2.5		124077-07	9/28/2004	2-2.5	0.107 U	0.107 U	0.107 U	0.107 U	0.107 U	0.107 U	0.107 U	ND	27.7 U	55.5 U	NA
SUPR44S-4-4.5		124077-08	9/28/2004	4-4.5	NA	NA	NA	NA	NA	NA	NA	NA	31.2 U	62.4 U	NA
R45-SE-2-2.5		116638-19	10/3/2003	2-2.5	0.103 U	0.207 U	0.103 U	0.103 U	0.103 U	0.103 U	0.0659	ND	13.5 J	24.1 J	48 U
R45-SE-4.5-5		116638-20	10/3/2003	4.5-5	0.118 U	0.236 U	0.118 U	0.118 U	0.118 U	0.118 U	0.118 U	ND	30.6 U	61.1 U	61.1 U
R46-SE-2-2.5		116638-21	10/3/2003	2-2.5	0.104 U	0.207 U	0.104 U	0.104 U	0.104 U	0.104 U	0.465	0.465	**11900** X1	1930 X1	1510 X1
R46-SE-4.5-5		116638-22	10/3/2003	4.5-5	0.120 U	0.241 U	0.120 U	0.120 U	0.120 U	0.120 U	0.120 U	ND	661	110	83.9
SUPR46S-1-1.5		Archived	10/12/2004	1-1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SUPR46S-2-2.5		124077-05	9/28/2004	2-2.5	NA	NA	NA	NA	NA	NA	NA	NA	28.1 U	56.1 U	NA
SUPR46S-4-4.5		124077-06	9/28/2004	4-4.5	NA	NA	NA	NA	NA	NA	NA	NA	27.2 U	54.4 U	NA
SUPR46W-1-1.5		Archived	10/12/2004	1-1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SUPR46W-2-2.5		124077-01	9/28/2004	2-2.5	NA	NA	NA	NA	NA	NA	NA	NA	27.7 U	55.3 U	NA
SUPR46W-4-4.5		124077-02	9/28/2004	4-4.5	NA	NA	NA	NA	NA	NA	NA	NA	29.5 U	59 U	NA
22T1-N-0.6-1.1		116662-09	10/6/2003	0.6-1.1	0.101 U	0.203 U	0.101 U	0.101 U	0.101 U	0.101 U	0.101 U	ND	691 X1	230 X1	194 X1
22T1-N-1.5-2		116662-10	10/6/2003	1.5-2	0.0972 U	0.194 U	0.0972 U	0.0972 U	0.0972 U	0.0972 U	0.0972 U	ND	54.9	47.8 J	48.4 U
22T2-N-0.3-0.8		116662-11	10/6/2003	0.3-0.8	0.0991 U	0.198 U	0.0991 U	0.0991 U	0.0991 U	0.0991 U	0.0513 J	0.0513	433 X1	256 X1	223 X1
22T2-N-1.5-2		116662-12	10/6/2003	1.5-2	0.105 U	0.211 U	0.105 U	0.283	0.105 U	0.105 U	0.210	0.493	53.7 X2	99.5 X2	80.7 X2
22T3-N-0.2-0.7		116662-15	10/6/2003	0.2-0.7	0.101 U	0.201 U	0.101 U	0.258	0.101 U	0.101 U	0.246	0.504	34 X2	116 X2	95 X2
22T3-N-1.5-2		116662-16	10/6/2003	1.5-2	0.106 U	0.213 U	0.106 U	0.106 U	0.106 U	0.106 U	0.106 U	ND	23.6 U	45.2 J	47.3 U
22T4-N-0.2-0.7		116662-13	10/6/2003	0.2-0.7	0.101 U	0.202 U	0.101 U	0.216	0.101 U	0.101 U	0.068 J	0.284	103 X2	275 X2	237 X2
22T4-N-1.5-2.0		116662-14	10/6/2003	1.5-2	0.0989 U	0.198 U	0.0989 U	0.0989 U	0.0989 U	0.0989 U	0.0989 U	ND	27.3 X2	70.6 X2	56.8 X2
VR0-N-2-2.5		116601-23	10/2/2003	2-2.5	0.120 U	0.239 U	0.120 U	0.120 U	0.120 U	0.120 U	1.07	1.07	**20700** J,X1	**3640** J,X1	**2920** J,X1
VR31-N-2-2.5	Duplicate of VR0-N-2-2.5	116601-24	10/2/2003	2-2.5	0.111 U	0.222 U	0.111 U	0.111 U	0.111 U	0.111 U	0.971	0.971	**18500** J,X1	**4720** J,X1	**3390** J,X1
VR0-N-3-3.5		116638-01	10/3/2003	3-3.5	0.128 U	0.256 U	0.128 U	0.128 U	0.128 U	0.128 U	1.61 J	1.61	**37400** X1	**7270** X1	**5820** X1
SUPVRON-3.5-3.75		124077-14	9/28/2004	3.5-3.75	0.111 U	0.111 U	0.111 U	0.111 U	0.111 U	0.111 U	0.111 U	ND	**2470** X2	**5160** X2	NA
SUPVR0N36-0.25-0.75		124192-06	10/12/2004	0.25-0.75	NA	NA	NA	NA	NA	NA	NA	NA	290 X2	925 J, X2	NA
SUPVR0N36-3.5-4		124077-22	9/29/2004	3.5-4	NA	NA	NA	NA	NA	NA	NA	NA	33.8 U	67.6 U	NA
VR0-NE-3-3.5		116601-21	10/2/2003	3-3.5	0.114 U	0.228 U	0.114 U	0.114 U	0.114 U	0.114 U	0.222 J	0.222	466 X2	1680 X2	1330 X2
VR0-NE-5-5.5		116601-20	10/2/2003	5-5.5	0.126 U	0.251 U	0.126 U	0.126 U	0.126 U	0.126 U	0.318 J	0.318	**7730** X2	**17900** X2	**14000** X2
VR0-S-3-3.5		116638-04	10/3/2003	3-3.5	0.104 U	0.208 U	0.104 U	0.104 U	0.104 U	0.104 U	0.0953 J	ND	246 X2	765 X2	622 X2
VR0-S-4.5-5		116638-05	10/3/2003	4.5-5	0.140 U	0.281 U	0.140 U	0.140 U	0.140 U	0.140 U	0.140 U	ND	37 UJ	52.4 J	73.9 UJ
VR32-4.5-5	Duplicate of VR0-S-4.5-5	116638-03	10/3/2003	4.5-5	0.147 U	0.294 U	0.147 U	0.147 U	0.147 U	0.147 U	0.147 U	ND	19.6 J	56.9 J	71.4 UJ
SUPVR0E-3-3.5		124077-13	9/29/2004	3-3.5	0.126 U	0.126 U	0.126 U	0.126 U	0.126 U	0.126 U	0.126 U	ND	**16400** X2	**5630** X2	NA
VR4-N-2.1-2.6		116662-04	10/6/2003	2.1-2.6	0.107 U	0.213 U	0.107 U	0.107 U	0.107 U	0.107 U	0.820	0.820	**3420** X1	1890 X1	1520 X1
VR4-N-4.8-5.3		116662-05	10/6/2003	3.8-4.3	0.124 U	0.247 U	0.124 U	0.124 U	0.124 U	0.124 U	0.103 J	0.103	355 X1	143 X1	115 X1
VR34-N-4.8-5.3	Duplicate of VR4-N-4.8-5.3	116662-03	10/6/2003	4.8-5.3	0.124 U	0.248 U	0.124 U	0.124 U	0.124 U	0.124 U	0.124 U	ND	373 X1	125 X1	101 X1
VR4-NE-2.1-2.6		116662-01	10/6/2003	2.1-3.6	0.106 U	0.212 U	0.106 U	0.106 U	0.106 U	0.106 U	0.0824 J	0.0824	26.5 U	28.3 J	52.9 U
VR4-NE-3.8-4.3		116662-03	10/6/2003	3.8-4.3	0.112 U	0.225 U	0.112 U	0.112 U	0.112 U	0.112 U	0.112 U	ND	28.1 U	56.2 U	56.2 U
VR4-S-2.8-3.1		116662-06	10/6/2003	2.8-3.1	0.114 U	0.228 U	0.114 U	0.114 U	0.114 U	0.114 U	0.114 U	ND	**30600** X1	**4010** X1	**2870** X1
VR4-S-3.5-4		116662-07	10/6/2003	3.5-4	0.112 U	0.224 U	0.112 U	0.112 U	0.112 U	0.112 U	0.112 U	ND	198	37.1 J	54.6 U
VR4-S-5.1-5.4		116662-08	10/6/2003	5.1-5.4	0.125 U	0.249 U	0.125 U	0.125 U	0.125 U	0.125 U	0.125 U	ND	29.3 U	58.6 U	58.6 U

TABLE 18
2003-2004 SOIL SAMPLE RESULTS
FORMER RECTIFIER YARD AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

					PCBs (mg/kg)								NWTPH-Dx (mg/kg)		
Sample ID	Duplicate	Lab ID	Date Collected	Sample Depth (ft BGS)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	#2 Diesel	Motor Oil	Mineral Oil
SUPVR4SE-3-3.5		124077-09	9/28/2004	3-3.5	0.11 U	0.11 U	0.11 U	0.11 U	1.38	0.11 U	0.11 U	ND	73.3 X2	214 X2	NA
SUPVR4SE-4-4.5		124077-10	9/28/2004	4-4.5	NA	NA	NA	NA	NA	NA	NA	NA	37.4 U	118 X2	NA
SUPVR4W-3-3.5		124077-03	9/28/2004	3-3.5	NA	NA	NA	NA	NA	NA	NA	NA	85.3 X2	199 X2	NA
SUPVR4W-4-4.5		124077-04	9/28/2004	4-4.5	NA	NA	NA	NA	NA	NA	NA	NA	29.9 U	59.8 U	NA
T4A-N-2-2.5		116638-06	10/3/2003	2-2.5	0.104 U	0.208 U	0.104 U	0.104 U	0.104 U	0.104 U	0.104 U	ND	69.1 X2	91.1 X2	73.3 X2
T4A-N-4.5-4.9		116638-07	10/3/2003	4.5-4.9	0.102 U	0.204 U	0.102 U	0.203	0.102 U	0.102 U	0.102 U	0.203	**12000** X1	1390 X1	1320 X1
SUPAPGEARSE-1-1.5		124192-05	10/12/2004	1-1.5	NA	NA	NA	NA	NA	NA	NA	NA	25.5 U	51.1 U	NA
SUPAPGEARSE-3.5-4		124077-12	9/28/2004	3.5-4	NA	NA	NA	NA	NA	NA	NA	NA	31.7 U	63.4 U	NA
SUPAPGEARSW-0.75-1.25		124192-04	10/12/2004	0.75-1.25	NA	NA	NA	NA	NA	NA	NA	NA	25.7 U	51.4 U	NA
SUPAPGEARSW-3.25-3.5		124077-11	9/28/2004	3.25-3.5	NA	NA	NA	NA	NA	NA	NA	NA	30.7 U	61.4 U	NA

Notes:
Bold values indicate an exceedance of MTCA Method A Cleanup Standards for Industrial Use. TPH cleanup standard = 2,000 mg/kg; PCB cleanup standard = 10 mg/kg.
U = Not detected.
J = Data validation flag indicating the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NA = Not analyzed.
UJ = The analyte was not detected in the sample; the reported sample detection limit is an estimate.
X1 = Laboratory flag indicating chromatogram suggests this might be transformer oil or similar product.
X2 = Laboratory flag indicating that contaminant does not appear to be "typical" product.

TABLE 19
SUMMARY OF 2008 SOIL INVESTIGATION SAMPLE RESULTS
FORMER RECTIFIER YARD AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	MTCA Method A Screening Levels	Terrestrial Ecological Screening Level (a)	Sample Identification:	West Rectifier Yard			East Rectifier Yard					
				2008-SUPVR4W(4.5)	2008-SUPVR4SE-S(5)	2008-VRO-N(5.5)	2008-86SPILL-1-S(6.5)	2008-86SPILL-1-SE(5)	2008-86SPILL-1-ESE(5)	2008-TRANS2-N(5.75)	2008-TRANS11-NE(5.5)	2008-TRANS11-NE-SE(5.5)
			Sample Depth (ft BGS):	4.5	5	5.5	6.5	5	5	5.75	5.5	5.5
			Laboratory Identification:	NC06B	NC06E	NC06A	NC06F	NC06I	NC06G	NC06C	NC06D	NC06H
			Sample Collection Date:	6/16/2008	6/17/2008	6/16/2008	6/17/2008	6/19/2008	6/19/2008	6/16/2008	6/16/2008	6/19/2008
PETROLEUM HYDROCARBONS (mg/kg)												
NWTPH-DxSG												
Diesel-Range	2,000	15,000		6.3 U	6.6 U	11	16	11	12	260	410	5.4 U
Mineral Oil	4,000	--		17	13 U	18	19	11 U	11 U	42	100	11 U

Notes:

U = The analyte was not detected in the sample at the given reporting limit.

(a) Concentration protective of wildlife using simplified terrestrial ecological evaluation approach.

TABLE 20
HISTORICAL SURFACE SOIL ANALYTICAL RESULTS
2002 KENNEDY/JENKS SOIL INVESTIGATION
FORMER LOG YARD AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Laboratory ID: / Sample Date:	Preliminary Screening Levels (a)	LY-1 Oct-02	LY-2 Oct-02	LY-3 Oct-02	LY-4 Oct-02	LY-5 Oct-02	LY-6 Oct-02	LY-7 Oct-02	LY-8 Oct-02
PETROLEUM HYDROCARBONS (mg/kg)									
NWTPH-Dx									
Diesel-Range	2,000	139	320	313	234	602	141	161	207
Motor Oil-Range	2,000	530	737	1,190	648	1,180	448	593	751
TOTAL METALS (mg/kg)									
Method EPA 6020									
Arsenic	20	221	16.9	34	39.1	164	69.1	121	172
Copper	36	73.3	44	51.6	49.1	158	157	217	400
Lead	1,000	28.5	28.9	36.7	35.1	179	74.5	127	145
Zinc	100	135	95.3	100	105	386	210	545	413

Notes:

Box = Exceedance of cleanup level.

U = The analyte was not detected in the sample at the given reporting limit.

(a) Development of preliminary soil screening levels is presented in Table 23.

TABLE 21
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
2002/2003 KENNEDY/JENKS GROUNDWATER INVESTIGATION
FORMER LOG YARD AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Laboratory ID: / Sample Date:	Preliminary Screening Levels (a)	MW-N Oct-02	B1 Jun-03	B2 Jun-03	B3 Jun-03	B4 Jun-03	B5 Jun-03	B6 Jun-03	B7 Jun-03	B8 Jun-03	B9 Jun-03	B10 Jun-03
DISSOLVED METALS (µg/L)												
Method EPA 6000 Series												
Arsenic	8	1.6 (b)	18.1	10.7	18.3	20.7	26.2	NA	20.5	19.4	9.02	10 U
Copper	20	1.59 (b)	10 U	10 U	10 U	10 U	10 U	NA	10 U	10 U	10 U	10 U
Lead	10	1 U (b)	10 U	10 U	10 U	10 U	10 U	NA	10 U	10 U	10 U	10 U
Zinc	160	10 U (b)	14.3	10 U	10 U	10 U	10 U	NA	10 U	10 U	10 U	10 U
PAHs (µg/L)												
EPA Method 8270												
2-Methylnaphthalene	---	0.100 (c)	0.278 U	0.262 U	0.307 U	0.263 U	0.29 U	NA	0.473 U	0.284 U	NA	0.194
Fluorene	3,500	0.100 (c)	0.111 U	0.105 U	0.123 U	0.105 U	0.116 U	NA	0.189 U	0.114 U	NA	0.0404
Phenanthrene	---	0.100 (c)	0.111 U	0.105 U	0.123 U	0.105 U	0.116 U	NA	0.189 U	0.114 U	NA	0.0751
CONVENTIONALS												
Free Cyanide (Method SM 4500 CN I; µg/L)	10 (d)(e)	5.0 U	5 U	5 U	5 U	5 U	5 U	NA	NA	5 U	NA	11

Notes:
Box = Exceedance of cleanup level.
U = The analyte was not detected in the sample at the given reporting limit.
NA = Not analyzed
--- = Indicates no criteria available.
(a) Development of preliminary groundwater screening levels is presented in Table 24.
(b) Sample was analyzed for total metals.
(c) Sample was analyzed by EPA Method 8270-SIM.
(d) Listed value is for WAD cyanide.
(e) The MTCA Method B adjusted preliminary screening level for WAD cyanide (10 µg/L) has one significant figure. Therefore, values less than 15 µg/L are not considered exceedances of the preliminary screening level.

TABLE 22
HISTORICAL SURFACE SOIL ANALYTICAL RESULTS
2003 KENNEDY/JENKS SOIL INVESTIGATION
FORMER LOG YARD AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Laboratory ID:	Preliminary	LY-9	LY-10	LY-11	LY-12	LY-13	LY-14	LY-15	LY-16
Sample Depth:	Screening	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Sample Date:	Levels (a)	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03
PETROLEUM HYDROCARBONS (mg/kg)									
NWTPH-Dx									
Diesel-Range	2,000	16.3	68	60.3	30.4	23.2	32.3	20.5	20.8
Motor Oil-Range	2,000	90.1	581	428	245	90.7	181	70.9	87.3
TOTAL METALS (mg/kg)									
Method EPA 6020									
Arsenic	20	9.94	16.2	118	28	17.7	18.3	41.5	46.4
Copper	36	37	47	205	50.7	35.7	49.2	55.9	94.5
Lead	1,000	15.5	60.6	69.6	60.1	24.5	29.4	17.5	41.6
Zinc	100	62.6	111	227	92.8	81.2	77.8	77.6	91.9

TABLE 22
HISTORICAL SURFACE SOIL ANALYTICAL RESULTS
2003 KENNEDY/JENKS SOIL INVESTIGATION
FORMER LOG YARD AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Laboratory ID:	Preliminary	LY-17	LY-18	LY-19	LY-20	LY-21	LY-22	LY-23	LY-24
Sample Depth:	Screening	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Sample Date:	Levels (a)	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03
PETROLEUM HYDROCARBONS (mg/kg)									
NWTPH-Dx									
Diesel-Range	2,000	113	54.1	165	79.5	27.7	34.1	23.2	68.6
Motor Oil-Range	2,000	856	392	906	873	213	152	110	535
TOTAL METALS (mg/kg)									
Method EPA 6020									
Arsenic	20	76.7	97.1	159	113	16.8	24.3	67	36
Copper	36	126	134	128	177	45.1	36.3	82.3	71.1
Lead	1,000	85.6	98	87.7	100	28	24.6	44.4	44.8
Zinc	100	104	227	189	245	82.4	174	121	115

TABLE 22
HISTORICAL SURFACE SOIL ANALYTICAL RESULTS
2003 KENNEDY/JENKS SOIL INVESTIGATION
FORMER LOG YARD AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Laboratory ID:	Preliminary	LY-25	LY-26	LY-27	LY-28	LY-29	LY-30	LY-31	LY-32
Sample Depth:	Screening	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Sample Date:	Levels (a)	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03
PETROLEUM HYDROCARBONS (mg/kg)									
NWTPH-Dx									
Diesel-Range	2,000	14.9	111	43	69.9	84.9	25.5 U	14.8	32.8
Motor Oil-Range	2,000	48	619	253	470	1,030	51 U	127	479
TOTAL METALS (mg/kg)									
Method EPA 6020									
Arsenic	20	10.1	126	166	326	13.4	3.15	31.5	35.1
Copper	36	34	179	174	474	51.8	13.6	90.9	58
Lead	1,000	14	101	133	178	44.4	5.74	59.8	34.2
Zinc	100	63.8	283	323	394	86	19.1	98.3	107

TABLE 22
HISTORICAL SURFACE SOIL ANALYTICAL RESULTS
2003 KENNEDY/JENKS SOIL INVESTIGATION
FORMER LOG YARD AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Laboratory ID:	Preliminary	LY-33	LY-34	LY-35	LY-36	LY-37	LY-38	LY-39	LY-40
Sample Depth:	Screening	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Sample Date:	Levels (a)	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03
PETROLEUM HYDROCARBONS (mg/kg)									
NWTPH-Dx									
Diesel-Range	2,000	21.7	25.9 U	34.7	43.4	29.6	24.2 U	55.6	20.1
Motor Oil-Range	2,000	212	27.4	293	487	178	121	175	106
TOTAL METALS (mg/kg)									
Method EPA 6020									
Arsenic	20	53.3	6.59	22	17.2	51	12.1	59.7	35.7
Copper	36	76.4	19.7	71.8	57.4	183	30.9	139	68.2
Lead	1,000	52	7.68	32.6	35.1	76.4	27.4	64.7	31.8
Zinc	100	132	35.7	93.3	97.7	202	144	238	90.7

TABLE 22
HISTORICAL SURFACE SOIL ANALYTICAL RESULTS
2003 KENNEDY/JENKS SOIL INVESTIGATION
FORMER LOG YARD AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Laboratory ID:	Preliminary	LY-41	LY-42	LY-43	LY-44	LY-45	LY-46	LY-47	LY-48
Sample Depth:	Screening	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Sample Date:	Levels (a)	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03
PETROLEUM HYDROCARBONS (mg/kg)									
NWTPH-Dx									
Diesel-Range	2,000	30.4	24.6 U	24.6 U	26.9 U	13.9	20.3	47.3	26.2
Motor Oil-Range	2,000	134	49.2 U	49.1 U	116	48.3 U	53.5 U	211	146
TOTAL METALS (mg/kg)									
Method EPA 6020									
Arsenic	20	49.2	5.47	3.74	11.3	9.73	4.32	51.5	3.39
Copper	36	130	15.1	12	36.4	22.4	23.6	221	23.9
Lead	1,000	86.2	10.2	6.44	38.8	11.4	8.62	70.6	7.47
Zinc	100	173	24	16.6	34.7	29.7	26.8	129	57.2

TABLE 22
HISTORICAL SURFACE SOIL ANALYTICAL RESULTS
2003 KENNEDY/JENKS SOIL INVESTIGATION
FORMER LOG YARD AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Laboratory ID:	Preliminary	LY-49	LY-50	LY-51	B1	B2	B3	B4	B5
Sample Depth:	Screening	0-0.5	0-0.5	0-0.5	1-1.5	1-1.5	1-1.5	1-1.5	1-1.5
Sample Date:	Levels (a)	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03
PETROLEUM HYDROCARBONS (mg/kg)									
NWTPH-Dx									
Diesel-Range	2,000	26.1 U	15.1	38.8	25.9 U	NA	NA	NA	NA
Motor Oil-Range	2,000	110	33	275	51.7 U	NA	NA	NA	NA
TOTAL METALS (mg/kg)									
Method EPA 6020									
Arsenic	20	332	2.57	238	6.41	31.1	3.59	13.7	2.04 U
Copper	36	531	21	320	21.7	47.2	19.3	40.2	1.6
Lead	1,000	211	7.89	162	6.79	26.9	7.43	19.7	2.72
Zinc	100	462	39	423	41.3	84.2	37.2	77.8	28.8

TABLE 22
HISTORICAL SURFACE SOIL ANALYTICAL RESULTS
2003 KENNEDY/JENKS SOIL INVESTIGATION
FORMER LOG YARD AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Laboratory ID:	Preliminary	B6	B7	B8	B9	SP-A	SP-B	SP-C
Sample Depth:	Screening	1-1.5	1-1.5	1-1.5	4-5			
Sample Date:	Levels (a)	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03	Jun-03
PETROLEUM HYDROCARBONS (mg/kg)								
NWTPH-Dx								
Diesel-Range	2,000	NA	NA	NA	1,720	19.9	31.7	44.8
Motor Oil-Range	2,000	NA	NA	NA	950	108	305	165.0
TOTAL METALS (mg/kg)								
Method EPA 6020								
Arsenic	20	2.18	28.3	11.5	NA	7.44	12	3.39
Copper	36	16.7	44.6	33	NA	25.8	26.8	35.1
Lead	1,000	4.05	15	12.5	NA	10.6	64.9	8.47
Zinc	100	30.2	59.3	58.5	NA	46.6	52	69.3

Notes:
Boxed cells indicate an exceedance of preliminary screening levels.
U = The analyte was not detected in the sample at the given reporting limit.
(a) Development of preliminary soil screening levels is presented in Table 23.

TABLE 23
PRELIMINARY SOIL SCREENING LEVELS FOR DETECTED CONSTITUENTS
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Constituent	MTCA Method A Industrial Land Use	MTCA Method C Soil-Direct Contact Industrial Land Use Carcinogen	MTCA Method C Soil-Direct Contact Industrial Land Use Non-Carcinogen	MTCA Method C Protective of Groundwater as Marine Surface Water (a)	Protective of Terrestrial Ecological Receptors for Industrial Sites (b)	Adjustments		MTCA Method C Preliminary Cleanup Level
						PQL (c)	Soil Background (d)	
Metals (mg/kg)								
Arsenic	20 (e)	88	1,100	0.082	NA	0.87	20 (e)	20
Copper	--	--	140,000	1.1	NA	0.36	36	36
Chromium (h)	2,000	--	1,000,000	1,000,000	NA	0.38	42	1,000,000
Lead	1,000	--	--	1,600	NA	0.47	17	1,000
Zinc	--	--	1,000,000	100	NA	3.4	86	100
PAHs (µg/kg)								
Benzo(a)pyrene	see total cPAHs	see total cPAHs	--	350	NA	24	--	350
Benzo(a)anthracene	see total cPAHs	see total cPAHs	--	130	NA	62	--	130
Benzo(b)fluoranthene	see total cPAHs	see total cPAHs	--	440	NA	60	--	440
Benzo(k)fluoranthene	see total cPAHs	see total cPAHs	--	440	NA	59	--	440
Chrysene	see total cPAHs	see total cPAHs	--	140	NA	27	--	140
Dibenzo(a,h)anthracene	see total cPAHs	see total cPAHs	--	640	NA	56	--	640
Indeno(1,2,3-cd)pyrene	see total cPAHs	see total cPAHs	--	1,200	NA	34	--	1,200
Total cPAH - benzo(a)pyrene TEQ (f)	2,000	18,000	--	--		--	--	2,000
PCBs (mg/kg)								
Total PCBs	10 (g)	66	--	NA	2.0	2.0	--	2.0
Petroleum Hydrocarbons (mg/kg)								
Diesel Range Organics	2,000	--	--	--	15,000	--	--	2,000
Oil Range Organics	2,000	--	--	--	--	--	--	2,000
Mineral Oil Range Organics	4,000	--	--	--	--	--	--	4,000
Conventionals (mg/kg)								
Cyanide	--	--	70,000	3,200	--	0.25	--	3,200

Shaded cell indicates basis for cleanup level

-- Indicates no criterion available

NA = Not Applicable. Cleanup levels protective of terrestrial ecological receptors were only developed for those constituents of concer in the Rectifier Yard. Also, no PCB soil cleanup levels protective of marine surface water were developed because PCBs were not detected at depth in Rectifier Yard

(a) Calculated using fixed parameter 3-phase partitioning model, WAC 173-340-747(4) and preliminary groundwater screening leve

(b) Cleanup levels protective of terrestrial ecological receptors are based on a simplified terrestrial ecological evaluation (MTCA Table 749-2

(c) Practical quantitation limit calculated using ten times ARI's 2011 method detection limit, unless otherwise note

(d) From Ecology's Natural Background Soil Metals Concentrations in Puget Sound (1994). Used 90th percentile for Puget Sound unless noted otherwis

(e) The MTCA Method A soil cleanup level for industrial properties was used for arsenic because it was established based on adjustments for backgrounc

(f) A toxicity equivalency quotient (TEQ) will be completed for each sample containing carcinogenic PAHs above reporting limits and compared to the benzo(a)pyre cleanup level in accordance with 173-340-708(8)(e).

(g) Cleanup level is based on applicable federal law (40 C.F.R. 761.61). This value may be used only if the PCB contaminated soils are capped and the ca maintained as required by 40. C.F.R 761.61

(h) Cleanup levels are for Chromium III

TABLE 24
PRELIMINARY GROUNDWATER WATER SCREENING LEVELS FOR DETECTED CONSTITUENTS
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	TSCA (i)		Protective of Drinking Water		Protective of Marine Surface Water											
								National Recommended Water Quality Criteria (c)								
Constituent	Discharge to Navigable Waters	Unrestricted Use	MTCA Method A	MTCA Method B	AWQC for Protection of Aquatic Life - Acute (a)	AWQC for Protection of Aquatic Life - Chronic (a)	AWQC for Protection of Human Health - Organisms Only (b)	Protection of Aquatic Life - Acute	Protection of Aquatic Life - Chronic	Protection of Human Health - Organisms Only	MTCA Method B Standard Formula Values Carcinogen	MTCA Method B Standard Formula Values Non Carcinogen	**MTCA Method B Unadjusted Preliminary Cleanup Level**	PQL (d)	Background (e)	**MTCA Method B Adjusted Preliminary Cleanup Level**
VOLATILES (µg/L)																
1,1-Dichloroethane	--	--	--	1,600	--	--	--	--	--	--	--	--	--	0.48	--	--
1,2,4-Trimethylbenzene	--	--	--	400	--	--	--	--	--	--	--	--	--	0.23	--	--
1,3,5-Trimethylbenzene	--	--	--	400	--	--	--	--	--	--	--	--	--	0.26	--	--
2-Butanone	--	--	--	4800	--	--	--	--	--	--	--	--	--	6.6	--	--
4-Isopropyltoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Methyl-2-Pentanone (MIBK)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	--	--	--	800	--	--	--	--	--	--	--	--	--	8.0	--	--
Benzene	--	--	5.0	5.0	--	--	71	--	--	51	23	2,000	23	0.30	--	23
Carbon Disulfide	--	--	--	800	--	--	--	--	--	--	--	--	--	0.49	--	--
Chloroform	--	--	--	7.2	--	--	470	--	--	470	283	6,900	283	0.42	--	283
Ethylbenzene	--	--	700	700	--	--	29,000	--	--	2,100	--	6,900	2,100	0.26	--	2,100
Isopropylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m,p-Xylene	--	--	--	10,000 (f)	--	--	--	--	--	--	--	--	--	0.44	--	--
Methylene Chloride	--	--	5.0	5.0	--	--	1,600	--	--	590	960	170,000	590	0.52	--	590
Naphthalene	--	--	160	160	--	--	--	--	--	--	--	4,900	4,900	0.39		4,900
n-Butylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Propylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	--	--	--	10,000 (f)	--	--	--	--	--	--	--	--	--	0.36	--	--
sec-Butylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	--	--	1,000	640	--	--	200,000	--	--	15,000	--	19,000	15,000	0.36	--	15,000
Total xylene	--	--	1,000	1,600 (f)	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	--	--	--	0.29	--	--	530	--	--	2.4	3.7	6,600	2.4	0.010	--	2.4

TABLE 24
PRELIMINARY GROUNDWATER WATER SCREENING LEVELS FOR DETECTED CONSTITUENTS
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

			Protective of Drinking Water		Protective of Marine Surface Water											
	TSCA (i)							National Recommended Water Quality Criteria (c)								
Constituent	Discharge to Navigable Waters	Unrestricted Use	MTCA Method A	MTCA Method B	AWQC for Protection of Aquatic Life - Acute (a)	AWQC for Protection of Aquatic Life - Chronic (a)	AWQC for Protection of Human Health - Organisms Only (b)	Protection of Aquatic Life - Acute	Protection of Aquatic Life - Chronic	Protection of Human Health - Organisms Only	MTCA Method B Standard Formula Values Carcinogen	MTCA Method B Standard Formula Values Non Carcinogen	**MTCA Method B Unadjusted Preliminary Cleanup Level**	PQL (d)	Background (e)	**MTCA Method B Adjusted Preliminary Cleanup Level**
PAHs (µg/L)																
1-Methylnaphthalene	--	--	160 (g)	--	--	--	--	--	--	--	--	--	--	0.41	--	--
2-Methylnaphthalene	--	--	160 (g)	--	--	--	--	--	--	--	--	--	--	0.32	--	--
Acenaphthene	--	--	--	960	--	--	--	--	--	990	--	640	640	0.42	--	640
Acenaphthylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	--	--	--	4,800	--	--	110,000	--	--	40,000	--	26,000	26,000	0.35	--	26,000
Benzo(g,h,i)perylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	--	--	--	32	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	--	--	640	--	--	370	--	--	140	--	90	90	0.26	--	90
Fluorene	--	--	--	640	--	--	14,000	--	--	5,300	--	3,500	3,500	0.39	--	3,500
Naphthalene	--	--	160 (g)	160	--	--	--	--	--	--	--	4,900	4,900	0.38	--	4,900
Phenanthrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	--	--	--	480	--	--	11,000	--	--	4,000	--	2,600	2,600	0.35	--	2,600
cPAHs (µg/L)																
Benzo(a)pyrene	--	--	see total cPAHs	see total cPAHs	--	--	0.031	--	--	0.018	see total cPAHs	--	0.018 (h)	0.014	--	0.018
Benzo(a)anthracene	--	--	see total cPAHs	see total cPAHs	--	--	0.031	--	--	0.018	see total cPAHs	--	0.018 (h)	0.020	--	0.020
Benzo(b)fluoranthene	--	--	see total cPAHs	see total cPAHs	--	--	0.031	--	--	0.018	see total cPAHs	--	0.018 (h)	0.017	--	0.018
Benzo(k)fluoranthene	--	--	see total cPAHs	see total cPAHs	--	--	0.031	--	--	0.018	see total cPAHs	--	0.018 (h)	0.036	--	0.036
Chrysene	--	--	see total cPAHs	see total cPAHs	--	--	0.031	--	--	0.018	see total cPAHs	--	0.018 (h)	0.019	--	0.019
Dibenzo(a,h)anthracene	--	--	see total cPAHs	see total cPAHs	--	--	0.031	--	--	0.018	see total cPAHs	--	0.018 (h)	0.014	--	0.018
Indeno(1,2,3-cd)pyrene	--	--	see total cPAHs	see total cPAHs	--	--	0.031	--	--	0.018	see total cPAHs	--	0.018 (h)	0.017	--	0.018
TEQ (h)	--	--	0.1	0.12	--	--	--	--	--	--	0.030	--	0.030	--	--	0.030
PCBs (µg/L)																
Aroclor 1016	--	--	--	1.1	--	--	--	--	--	--	--	0.0058	0.0058	0.020	--	0.020
Aroclor 1242	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1248	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1254	--	--	--	0.32	--	--	--	--	--	--	--	0.0017	0.0017	0.020 (k)	--	0.020
Aroclor 1260	--	--	--	--	--	--	--	--	--	--	--	--	--	0.014	--	--
Aroclor 1221	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE 24
PRELIMINARY GROUNDWATER WATER SCREENING LEVELS FOR DETECTED CONSTITUENTS
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

			Protective of Drinking Water		Protective of Marine Surface Water											
	TSCA (i)							National Recommended Water Quality Criteria (c)								
Constituent	Discharge to Navigable Waters	Unrestricted Use	MTCA Method A	MTCA Method B	AWQC for Protection of Aquatic Life - Acute (a)	AWQC for Protection of Aquatic Life - Chronic (a)	AWQC for Protection of Human Health - Organisms Only (b)	Protection of Aquatic Life - Acute	Protection of Aquatic Life - Chronic	Protection of Human Health - Organisms Only	MTCA Method B Standard Formula Values Carcinogen	MTCA Method B Standard Formula Values Non Carcinogen	**MTCA Method B Unadjusted Preliminary Cleanup Level**	PQL (d)	Background (e)	**MTCA Method B Adjusted Preliminary Cleanup Level**
Aroclor 1232	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PCBs	3.0	0.50	0.1	0.44	10	0.03	0.00017	--	0.03	0.000064	0.00011	--	0.000064	0.020	--	0.020
TOTAL METALS (µg/L)																
Arsenic	--	--	5	0.58	69	36	0.14	69	36	0.14	0.098	18	0.14	0.39	8.0	8.0
Cadmium	--	--	5	5	42	9.3	--	40	8.8	--	--	20	8.8	0.11	2.0	8.8
Chromium (total)	--	--	50	100	--	--	--	--	--	--	--	--	50	0.44	10	50
Chromium III	--	--	100	100	--	--	--	--	--	--	--	240,000	240,000	0.44	--	240,000
Chromium VI	--	--		48	1,100	50	--	1,100	50	--	--	490	50	0.44	--	50
Copper	--	--		590	2.4 (b)	2.4 (b)	--	4.8	3.1	--	--	2,700	2.4	0.43	20	20
Lead	--	--	15		210	8.1	--	210	8.1	--	--	--	8.1	1.0	10	10
Mercury	--	--	2.0	2.0	1.8	0.025	0.15	1.8	0.94	0.3	--	--	0.025	0.15	--	0.15
Zinc	--	--		4,800	90	81	--	90	81	26,000	--	17,000	81	4.0	160	160
PETROLEUM HYDROCARBONS (mg/L)																
Diesel-Range	--	--	0.5	--	--	--	--	--	--	--	--	--	0.5	0.12	--	0.5
Motor Oil-Range	--	--	0.5	--	--	--	--	--	--	--	--	--	0.5	0.49	--	0.5
CONVENTIONALS (mg/L)																
Total Cyanide	--	--	--	--	--	--	220	--	--	16	--	52	16	0.01		16
WAD Cyanide (j)	--	--	--	0.20	0.0091	0.0028	--	1,000	1,000	--	--	--	0.0028	0.01	--	0.01

Shaded cell indicates basis for cleanup level.

-- Indicates no cleanup level criteria available.

(a) Ambient water quality criteria for protection of aquatic life from WAC 173-201A-240; values listed for WAD cyanide are for Puget Sound.

(b) Ambient water quality criteria for protection of human health from 40 CFR Part 131d (National Toxics Rule).

(c) National Recommended Water Quality Criteria (EPA 2006).

(d) PQL calculated from laboratory method detection limit (MDL); PQL = 10x MDL.

(e) PTI 1989. Background Concentrations of Selected Chemicals in Water, Soil, Sediments, and Air of Washington State, Draft Report. April.

(f) Xylene preliminary Method B groundwater as drinking water value is for total of xylenes not individual xylenes based on MCL. MCL for xylenes cannot be exceeded by sum of xylene concentrations.

(g) Cleanup level is a total value for naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.

(h) A toxicity equivalency quotient (TEQ) would be completed for each sample containing carcinogenic PAHs above reporting limits and compared to the benzo(a)pyrene cleanup level in accordance with 173-340-708(8)(e). However, federal criteria are established for individual cPAHs.

(I) Toxics Substances Control Act 40 C.F.R Part 761.61

(j) National Recommended Water Quality Criteria is expressed as free cyanide.

(k) Practical quantitation limit is 10 times the MDL for Aroclor 1016.

TABLE 25
SUMMARY OF 2008 SUPPLEMENTAL INVESTIGATION SOIL SAMPLES COLLECTED BELOW WASTE MATERIALS
SPENT POT LINING AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Test Pit	Carbon Waste Materials Depth Interval (ft BGS)	Percent Carbon Waste	Sample Depth (ft BGS)	Depth of Sample Below Waste Materials (ft)	Total Cyanide Concentration (mg/kg)	Total cPAH Concentration (µg/kg)
Preliminary Screening Level:					**3,200 (a)**	**2,000/18,000 (b)**
SPL-MA20	1-2	20	4.5	2.25	0.897	1,664
SPL-MA26	1-3.5	50	3.5	0	27.6	8.39
SPL-MA27	1-1.25	15	2	0.75	0.594	11.42
SPL-MA28	1.75-2.25	4	2.5	0.25	19.2	4,404
SPL-MA29	0.5-4.5	50-60	5.25	0.75	4.89	0.754

(a) MTCA Method C cleanup level protective of marine surface water.
(b) MTCA Method A cleanup level / MTCA Method C direct contact cleanup level.

TABLE 26
SUMMARY OF HISTORICAL AND 2008 SUPPLEMENTAL INVESTIGATION CYANIDE ANALYTICAL RESULTS SHALLOW, INTERMEDIATE, AND DEEP AQUIFER GROUNDWATER
SPENT POT LINING AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Sample Collection Date	Shallow Aquifer							Intermediate Aquifer					Deep Aquifer	
	Well A	Well B	Well C(S)	Well D	Well E	Well F	DPT-6	Well C(I)	Well W(I)	DPT-1	DPT-2	DPT-3	Well C(D)	Well W(D)
Total Cyanide (mg/L)														
Feb-82	0.1	6.63	0.09	0.46	0.69	48	--	--	--	--	--	--	--	--
Mar-82	0.42 / 1.1	19.2 / 33.33	0.09 / 0.31	0.48 / 0.85	0.58 / 22.40	190 / 230	--	--	--	--	--	--	--	--
Apr-82	--	27.8 / 32	--	--	16.40 / 2.40	318.1 / 250	--	--	--	--	--	--	--	--
Sep-82	--	--	--	--	--	--	--	--	--	--	--	--	0.006	0.008
Oct-82	--	--	--	--	--	--	--	--	--	--	--	--	0.09	<0.003
Nov-82	26.1	99.3	5.5	3.62	5.25	322	--	0.55	--	--	--	--	0.08	0.003
Dec-82	--	--	--	--	--	--	--	--	--	--	--	--	0.01	<0.003
Mar-83	8.8	4.02	3.72	1.69	4.2	254	--	0.56	--	--	--	--	--	--
Jun-83	5.67	3.02	0.8	0.72	2.75	285	--	0.35	--	--	--	--	--	--
Oct-83	3.4	22	3.2	0.51	1.6	266	--	0.26	--	--	--	--	--	--
Jan-86	--	--	--	--	--	--	--	--	--	--	--	--	<0.003	<0.003
Dec-94	--	2.0 / 2.0	0.062 / 0.19	--	--	26 / 30	--	0.055 / 0.078	0.031 / 0.055	--	--	--	0.002	0.001
Jun-95	--	1.8 / 1.5	0.035 / 0.034	--	--	11 / 14	--	0.067 / 0.066	0.036 / 0.03	--	--	--	<0.005	0.015
Dec-95	--	1.5 / 1.3	0.078 / 0.068	--	--	16 / 14	--	0.064 / 0.07	0.081 / 0.06	--	--	--	<0.005	<0.005
Jun-96	--	1.4 / 1.5	0.058 / 0.065	--	--	7.3 / 7.3	--	0.072 / 0.073	0.042 / 0.042	--	--	--	<0.004	<0.004
Dec-96	--	2.1	0.073	--	--	9.7	--	0.08	0.042	--	--	--	0.005	0.006
Jun-97	--	1.5 / 1.4	0.055 / 0.059	--	--	4.6 / 4.7	--	0.076 / 0.077	0.032 / 0.033	--	--	--	<0.004	<0.004
Dec-97	--	1.3 / 1.3	0.070 / 0.076	--	--	6.9 / 6.4	--	0.064	0.046 / 0.040	--	--	--	<0.004	0.004
Jun-98	--	2.0 / 2.0	0.081 / 0.080	--	--	5.3 / 5.1	--	0.066	0.042 / 0.043	--	--	--	<0.004	0.043
Dec-98	--	1.9 / 1.7	0.054 / 0.068 J	--	--	4.1 / 3.3 J	--	0.083	0.038 / 0.034	--	--	--	<0.004	0.038
Jun-99	--	1.6 / 1.7	0.065 / 0.057	--	--	2.8 / 6.4 J	--	0.064	0.036 / 0.035	--	--	--	<0.005	0.036
Dec-99	--	1.6 / 1.5	0.063 / 0.066	--	--	4.8 / 5.1	--	0.11	0.037 / 0.037	--	--	--	<0.005	0.037
Jul-00	--	1.7 / 1.7	0.065 / 0.047	--	--	3.3 / 3.3	--	0.053	0.034 / 0.035	--	--	--	<0.005	0.035
Dec-00	--	1.7	0.13	--	--	4.1 / 4.6	--	--	0.05 U	--	--	--	--	--
Jun-01	--	0.9 / 0.8	0.02 U	--	--	3.7	--	--	0.2 U	--	--	--	--	--
Jun-02	--	1.1	0.16	--	--	ND	--	--	ND	--	--	--	--	--
Oct-02	--	--	0.0733	0.0728	0.168	1.28	--	--	--	--	--	--	--	--
Dec-03	--	--	--	--	--	--	0.38	--	--	--	--	--	--	--
Nov-04	--	--	--	--	--	--	--	0.05 U	--	< 0.05	< 0.05	< 0.05	--	--
Jul/Aug-08	--	0.37	0.029	--	--	1.02	--	0.043	0.023	--	--	--	--	--

TABLE 26
SUMMARY OF HISTORICAL AND 2008 SUPPLEMENTAL INVESTIGATION CYANIDE ANALYTICAL RESULTS SHALLOW, INTERMEDIATE, AND DEEP AQUIFER GROUNDWATER
SPENT POT LINING AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

Sample Collection Date	Shallow Aquifer							Intermediate Aquifer					Deep Aquifer	
	Well A	Well B	Well C(S)	Well D	Well E	Well F	DPT-6	Well C(I)	Well W(I)	DPT-1	DPT-2	DPT-3	Well C(D)	Well W(D)
WAD Cyanide / Free Cyanide (mg/L)														
Feb-82	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mar-82	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Apr-82	--	3.5 / 1.6	--	--	0.01	0.10 / 0.01	--	--	--	--	--	--	--	--
Nov-82	0.003 U	8.05	0.003 U	0.003 U	0.014	0.22	--	0.003 U	--	--	--	--	--	--
Mar-83	0.006	0.005	0.003 U	0.04	0.004	0.16	--	0.003 U	--	--	--	--	<0.003	--
Jun-83	0.004	0.012	0.004	0.008	0.002 U	0.006	--	0.002 U	--	--	--	--	<0.002	--
Oct-83	0.003 U	0.012	0.003 U	0.003 U	0.003 U	0.005	--	0.003 U	--	--	--	--	--	--
Dec-94	--	0.01	< 0.01	--	--	0.08	--	< 0.01	< 0.01	--	--	--	<0.01	<0.01
Jun-95	--	0.014 / 0.014 J	<0.005 / <0.005 J	--	--	0.035 / 0.013 J	--	<0.005 / <0.005 J	<0.005 / <0.019 J	--	--	--	<0.005	<0.005
Dec-95	--	0.014 / 0.02	0.024 / <0.01	--	--	<0.01 / 0.04	--	<0.01 / <0.01	<0.01 / <0.01	--	--	--	<0.01	<0.01
Jun-96	--	0.062 / 0.065	0.023 / 0.014	--	--	0.10 / 0.13	--	0.008 / 0.010	0.009 / 0.008	--	--	--	<0.004	<0.004
Dec-96	--	0.016 / 0.022	0.019 / 0.017	--	--	0.075 / 0.070	--	0.010 / 0.011	0.006 / 0.006	--	--	--	<0.004	<0.004
Jun-97	--	0.060 / 0.073	0.020 / 0.024	--	--	0.051 / 0.100 J	--	0.009 / 0.010	0.010 / 0.009	--	--	--	<0.004	<0.004
Dec-97	--	0.010 / 0.010	0.020 / 0.019	--	--	0.095 / 0.095	--	0.007	0.007 / 0.007	--	--	--	<0.004	0.004
Jun-98	--	0.026 / 0.022	0.017 / 0.019	--	--	0.041 / 0.038	--	0.01	0.010 / 0.007	--	--	--	<0.004	0.01
Dec-98	--	0.017 / 0.013	0.010 / 0.015	--	--	0.073 / <0.010	--	0.012	0.006 / 0.007	--	--	--	<0.004	0.007
Jun-99	--	0.036 / <0.005	0.009 / 0.016 J	--	--	0.053 / 0.074 J	--	0.02	0.006 / 0.008	--	--	--	<0.005	0.008
Dec-99	--	0.011 / 0.005 J	0.014 / 0.015	--	--	0.046 / 0.055	--	0.008	0.005 / 0.006	--	--	--	<0.005	0.006
Jul-00	--	0.046 / 0.044	0.010 / 0.009	--	--	0.026 / 0.030	--	0.006	0.005 U / 0.005 U	--	--	--	<0.005	<0.005
Dec-00	--	0.006	0.01	--	--	0.005 U / 0.02	--	--	0.005 U	--	--	--	--	--
Jun-01	--	0.01 U / 0.01	0.01 U	--	--	0.03	--	--	0.01 U	--	--	--	--	--
Jun-02	--	0.012	ND	--	--	ND	--	--	ND	--	--	--	--	--
Oct-02	--	--	<0.012	<0.012	0.019	0.05	--	--	--	--	--	--	--	--
Dec-03	--	--	--	--	--	--	0.04	--	--	--	--	--	--	--
Nov-04	--	--	--	--	--	--	--	0.01 U	--	< 0.01	< 0.01	< 0.01	--	--
Jul/Aug-08	--	0.006	0.006	--	--	0.011	--	0.005 U	<0.005	--	--	--	--	--

U = The analyte was not detected in the sample at the given reporting limit.
J = The analyte is estimated as indicated in the data quality evaluation
0.42 / 1.1 = Interlaboratory comparison or blind duplicate comparison

APPENDIX A

Spent Pot Lining Area 1982-2004 Groundwater Analytical Results

TABLE 1
ANALYTICAL RESULTS
TOTAL CYANIDE CONCENTRATIONS IN GROUNDWATER[a]

Former Spent Potlining Management Area
Kaiser Tacoma Works

Date Sampled				1982-1986 (a,b)					1994-1997 (a,c)													82-86	94-2001
Well #	Feb-82	May-82	Aug-82	Sep-82	Oct-82	Nov-82	Dec-82	Jan-86	Dec-94	Jun-95	Dec-95	Jun-96	Dec-96	Jun-97	Dec-97	Jun-98	Dec-98	Jun-99	Dec-99	Jul-00	Jun-01	Avg.	Avg.
Shallow Zone Wells near Former Spent Potlining Management Area																							
A-4s	0.10	0.76		26.10	8.80	5.67	3.40					1.50	1.20									7.47	1.35
B-3s	6.63	26.27	29.90	99.30	4.02	3.02	22.00	11.00	2.00	1.80	1.50	0.07	2.10	1.50	1.30	2.0	1.9	1.7	1.6	1.7	0.9	25.27	1.54
C-1s	0.09	0.20		5.50	3.72	0.80	3.20	1.60	0.02	0.04	0.08		0.07	0.06	0.08	0.08	0.068	0.065	0.015	0.010	< 0.02	2.16	0.05
D-2s	0.46	0.67		3.62	1.69	0.72	0.51						0.10									1.28	0.10
E-6s	0.69	11.49	9.40	5.25	4.20	2.75	1.60						0.21									5.05	0.21
F-5s	48.0	210.0	284.0	322.0	254.0	285.0	266.0	163.0	30.0	14.0	16.0	7.30	9.70	4.70	6.90	5.30	4.1	6.40	5.10	3.30	3.70	229.00	8.96
B,C,F Avg.	18.24	78.82		142.27	87.25	96.27	97.07	58.53	10.67	5.28	5.86	2.96	3.96	2.09	2.76	2.5	2.0	2.7	2.2	1.67	1.54	82.64	2.04
Shallow Zone Wells Outside of Former Spent Potlining Management Area																							
H-8s				0.054	0.003	0.030	0.004															0.023	
I-11s				0.008	0.010	0.008	0.004															0.008	
J-7s				0.460	0.490	0.710	0.240															0.475	
N12ps				< 0.003	< 0.003			< 0.003	0.001	0.028	0.011	< 0.004	< 0.004	0.008	< 0.004	< 0.004	< 0.004	< 0.005	< 0.005	< 0.005	< 0.02	0.002	0.006
Average				0.131	0.126	0.249	0.083	0.0015	0.001	0.028	0.011	0.002	0.002	0.008	0.002	0.002	0.002	0.0025	0.0025	0.0025	0.01	0.118	0.006
Intermediate Zone Wells near Former Spent Potlining Management Area																							
C-13i				0.078	0.56	0.35	0.26	1.2	0.078	0.067	0.064	0.073	0.08	0.077	0.064	0.066	0.083	0.064	0.11	0.053		0.49	0.073
W-24i				0.053	0.052	0.031	0.036	0.03	0.031	0.036	0.081	0.042	0.042	0.032	0.046	0.043	0.038	0.036	0.037	0.035	< 0.2	0.04	0.046
Average				0.066	0.31	0.19	0.15	0.62	0.055	0.052	0.073	0.058	0.06	0.055	0.055	0.055	0.061	0.050	0.07	0.044	0.1	0.27	0.060
Intermed. Zone Wells Outside of Former Spent Potlining Management Area																							
H-9i				0.075	0.003	0.006	0.007															0.023	
I-12i				0.081	0.073	0.077	0.077															0.077	
J-15i				0.004	0.025	0.016	0.012															0.014	
N-22i				< 0.003	< 0.003			0.004	< 0.005	0.02	0.019	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	0.013	< 0.005	< 0.005		0.002	0.01
Average				0.040	0.026	0.033	0.032	0.004	0.0025	0.02	0.019	0.002	0.002	0.002	0.002	0.002	0.002	0.013	0.0025	0.0025		0.029	0.01
Deep Zone Wells near Former Spent Potlining Management Area																							
C-14d				0.006	0.09	0.08	0.01	< 0.003	0.002	< 0.005	< 0.005	< 0.004	0.005	< 0.004	< 0.004	< 0.004	< 0.004	< 0.005	< 0.005	< 0.005		0.038	0.002
W-25d				0.008	< 0.003	0.003	< 0.003	< 0.003	0.001	0.015	< 0.005	< 0.004	0.006	< 0.004	0.004	0.043	0.038	0.036	0.037	0.035		0.003	0.018
Average				0.007	0.05	0.04	0.01	0.0015	0.002	0.009	0.0025	0.002	0.006	0.002	0.003	0.023	0.020	0.019	0.020	0.019		0.020	0.010
Deep Zone Outside of Former Spent Potlining Management Area																							
L-20d																							
N-23d				< 0.003	< 0.003			< 0.003	0.001	< 0.021	< 0.005	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	0.021	< 0.005	< 0.005		0.0015	0.004
Average				0.0015	0.0015			0.0015	0.001	0.011	0.0025	0.002	0.002	0.002	0.002	0.002	0.002	0.021	0.0025	0.0025		0.0015	0.004

Note: (a) For results below the detection limit, 1/2 the detection limit is used to compute averages. All values reported in mg/kg.
(b) Sample results for March and April 1982 are averaged with duplicate samples results.
(c) When more than one result is available for 1994 -2001 samples, the highest concentrations has been entered in the table.

TABLE 2
ANALYTICAL RESULTS
FREE CYANIDE CONCENTRATIONS IN GROUNDWATER[A]

Former Spent Potlining Management Area
Kaiser Tacoma Works

Date Sampled				1982-1986 (a,b)					1994-1997 (a,c)												82-86	94-2001
Well #	Feb-82	Mar-82	Apr-82	Nov-82	Mar-83	Jun-83	Oct-83	Jan-86	Dec-94	Jun-95	Dec-95	Jun-96	Dec-96	Jun-97	Dec-97	Jun-98	Dec-98	Jun-99	Dec-99	Jul-00	Jun-01	Avg.	Avg.
Shallow Zone Wells near Former Spent Potlining Management Area																						
A-4s				< 0.003	0.006	0.004	< 0.003															0.003	
B-3s			2.550	8.050	0.005	0.012	0.012		0.010	0.014	0.020	0.065	0.022	0.073	0.010	0.026	0.017	0.036	0.011	0.046	0.01	2.126	0.03
C-1s				< 0.003	< 0.003	0.004	< 0.003		< 0.001	< 0.005	0.024	0.023	0.019	0.024	0.020	0.019	0.015	0.016	0.015	0.010	< 0.01	0.002	0.01
D-2s				< 0.003	0.040	0.008	< 0.003															0.013	
E-6s				0.014	0.004	< 0.002	< 0.003															0.005	
F-5s			0.055	0.220	0.160	0.006	0.005		0.080	0.035	0.040	0.130	0.075	0.010	0.095	0.041	0.073	0.074	0.055	0.030	0.030	0.09	0.059
B,C,F Avg.			1.303	2.757	0.056	0.007	0.006		0.030	0.017	0.028	0.073	0.039	0.036	0.042	0.029	0.035	0.042	0.027	0.029	0.02	0.826	0.03
Shallow Zone Wells Outside of Former Spent Potlining Management Area																						
H-8s				< 0.003			< 0.002															0.001	
I-11s																							
J-7s				< 0.003	< 0.003	< 0.003																0.002	
N12ps									< 0.01	< 0.005	< 0.01	< 0.004	0.004	< 0.004	< 0.004	< 0.004	< 0.004	0.006	< 0.005	< 0.005	< 0.01		0.003
Average				0.0015	0.0015	0.0015	0.001		0.005	0.0025	0.005	0.002	0.004	0.002	0.002	0.002	0.002	0.006	0.0025	0.0025	0.005	0.001	0.003
Intermediate Zone Wells near Former Spent Potlining Management Area																						
C-13i				< 0.003	< 0.003	< 0.002	< 0.003		< 0.01	< 0.005	< 0.01	0.01	0.011	0.01	0.007	0.01	0.012	0.02	0.008	0.006		0.001	0.01
W-24i									< 0.01	< 0.005	< 0.01	< 0.004	< 0.004	< 0.004	0.007	0.01	0.007	0.008	0.006	< 0.005	< 0.01		0.005
Average				0.0015	0.0015	0.001	0.0015		0.005	0.0025	0.005	0.01	0.007	0.01	0.007	0.01	0.010	0.01	0.007	0.004	0.005	0.001	0.01
Intermed. Zone Wells Outside of Former Spent Potlining Management Area																						
H-9i				< 0.003																		0.0015	
I-12i				< 0.003	< 0.003	< 0.002																0.0013	
J-15i																							
N-22i									< 0.01	< 0.019	< 0.01	0.009	0.006	0.01	< 0.004	< 0.004	< 0.004	0.006	< 0.005	< 0.005			0.01
Average				0.0015	0.0015	0.001			0.005	0.0095	0.005	0.009	0.006	0.01	0.002	0.002	0.002	0.006	0.0025	0.0025		0.001	0.01
Deep Zone Wells near Former Spent Potlining Management Area																						
C-14d					< 0.003	< 0.002			< 0.01	< 0.005	< 0.01	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.005	< 0.005	< 0.005		0.001	0.003
W-25d									< 0.01	< 0.005	< 0.01	< 0.004	< 0.004	< 0.004	0.004	0.01	0.007	0.008	0.006	< 0.005			0.005
Average					0.0015	0.001			0.005	0.0025	0.005	0.002	0.002	0.002	0.003	0.006	0.0045	0.00525	0.00425	0.0025		0.001	0.004
Deep Zone Outside of Former Spent Potlining Management Area																						
N-23d									< 0.01	0.006	0.01	< 0.004	< 0.004	0.006	< 0.004	< 0.004	< 0.004	< 0.005	< 0.005	< 0.005			0.004
Average									0.005	0.006	0.01	0.002	0.002	0.006	0.002	0.002	0.002	0.0025	0.0025	0.0025			0.004

Note: (a) For results below the detection limit, 1/2 the detection limit is used to compute averages. All values are reported in mg/kg.
(b) Sample results for March and April 1982 are averaged with duplicate samples results.
(c) When more than one result is available for 1994 -2001 samples, the highest concentrations has been entered in the table.

TABLE 3
ANALYTICAL RESULTS
FLUORIDE CONCENTRATIONS IN GROUNDWATER[a]

Former Spent Potlining Management Area
Kaiser Tacoma Works

Date Sampled				1982-1986 (a,b)					1994-1997 (a,c)													82-86	94-2001
Well #	Feb-82	Mar-82	Apr-82	Nov-82	Mar-83	Jun-83	Oct-83	Jan-86	Dec-94	Jun-95	Dec-95	Jun-96	Dec-96	Jun-97	Dec-97	Jun-98	Dec-98	Jun-99	Dec-99	Jul-00	01-Jun	Avg.	Avg.
Shallow Zone Wells near Former Spent Potlining Management Area																							
A-4s	550	217		389	434	487	168															374	
B-3s	280	283	274.5	653	129	175	162	240	200	130	190	127	140	130	132	130	170	140	110	158	110	275	144
C-1s	12	12		20	15	25	20	21	31	36	31	31	30	29	32	29	42	30	30	34	27	18	32
D-2s	150	145		170	173	214	135															164	
E-6s	140	116	191.0	156	116	201	116															148	
F-5s	1570	661	805.5	828	864	1230	812	715	750	740	1000	700	640	680	540	491	520	510	450	690	430	936	626
B,C,F Avg.	621	318		500	336	477	331	325	327	302	407	286	270	280	235	217	244	227	197	294	189	416	267
Shallow Zone Wells Outside of Former Spent Potlining Management Area																							
H-8s				3.5	0.8	1.4	0.4															1.5	
I-11s				4.6	7.1	11.1	10.8															8.4	
J-7s				12.8	15.9	32.4	12.7															18.5	
N12ps				0.7	0.9			0.9	2.6	3.5	3.6	4.0	4.2	4.5	3.64	4.1	3.7	4.5	3.2	3.5	2.9	0.8	3.7
Average				5.4	6.2	15.0	8.0	0.9	2.6	3.5	3.6	4.0	4.2	4.5	3.64	4.1	3.7	4.5	3.2	3.5	2.9	7.3	3.7
Intermediate Zone Wells near Former Spent Potlining Management Area																							
C-13i				30.3	46.4	58.9	35.7	33.0	42.0	42.0	39.0	42.0	34.0	34.0	32.3	33	36	42	34	44.2		40.9	38
W-24i				2.2	1.5	1.6	2.2	1.9	25.0	36.0	27.0	27.0	26.4	23.4	25.4	26	28	26	25	28.4	17	1.9	26
Average				16.3	24.0	30.3	19.0	17.5	33.5	39	33	34.5	30.2	28.7	28.9	29.5	32	34	29.5	36.3	17	21.4	31
Intermed. Zone Wells Outside of Former Spent Potlining Management Area																							
H-9i				6.6	1.6	3	2.6															3.5	
I-12i				19.4	19.5	33.5	20.4															23.2	
J-15i				0.8	0.8	1.2	0.8															0.9	
N-22i				1.9	1.2				2.5	2.3	2.3	2.3	2.4	2.0	2.05	2.4	2.5	2.6	2.1	1.9		1.6	2.3
Average				7.2	5.8	13	7.9		2.5	2.3	2.3	2.3	2.4	2.0	2.05	2.4	2.5	2.6	2.1	1.9		7.3	2.3
Deep Zone Wells near Former Spent Potlining Management Area																							
C-14d	0.4	0.7	0.8	0.4	0.4	0.4	0.6	0.5	0.5	0.5	0.4	0.5	0.5	0.6	0.61	0.48	0.98					0.54	0.5
W-25d	0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.2	0.2	0.3	0.2	0.2	0.2	0.2	26	28	26	25	28.4					0.40	11
Average	0.4	0.6	0.6	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.3	0.4	13	14	13	13	14.7					0.47	6
Deep Zone Outside of Former Spent Potlining Management Area																							
N-23d	0.6	0.4			0.4	0.4	0.4	3.4	0.4	0.3	0.3	0.34	0.4	0.3	0.47	0.35	0.3					0.47	0.6
Average	0.6	0.4			0.4	0.4	0.4	3.4	0.4	0.3	0.3	0.34	0.4	0.3	0.47	0.35	0.3					0.47	0.6

Note: (a) For results below the detection limit, 1/2 the detection limit is used to compute averages. All values reported in mg/kg.
(b) Sample results for March and April 1982 are averaged with duplicate samples results.
(c) When more than one result is available for 1994 -2001 samples, the highest concentrations has been entered in the table.

TABLE 1
FORMER SPENT POTLINING MANAGEMENT AREA
KAISER ALUMINUM & CHEMICAL CORPORATION
SUMMARY DATA FOR WELL B(S)

Analyte (mg/L)	6/97	12/97	6/98	12/98	6/99	12/99	7/00	6/01	6/02
Total cyanide	1.3/1.3 (a)	1.3/1.3 (a)	2.0/2.0 (a)	1.9/1.7 (a)	1.6/1.7 (a)	1.6/1.5 (a)	1.7/1.7 (a)	0.9/0.8 (a)	1.1
Weak acid dissociable cyanide (free)	0.010/01.010 (a)	0.010/0.010 (a)	0.026/0.022 (a)	0.017/0.013 (a)	0.036/<0.005 (a)	0.011J/0.005J (a)	0.046/0.044 (a)	<0.01/0.01 (a)	0.012
Fluoride	130/132 (b)	130/132 (b)	130/128 (b)	170	140 J /114 J (b)	110	130/158 (b)	110/110 (a)	92.6 J
pH	9.6	9.6	9.2	9.3	9.3	9.2	9.4	9.6	9.0
Specific conductivity (µmhos/cm)	1,300	1,300	1,300	1,300	910	1,100	1,230	925	779.3
Temperature (°C)	12.6	12.6	13.7	11.5	15.2	11.0	16.2	18.4	16.1
Water level elevation (ft Kaiser datum)	17.54	17.54	16.22	17.64	15.86	16.98	16.09	16.58	15.43

J = The flag J indicates the analyte of interest is estimated, as indicated in the data quality evaluation.
(a) Blind duplicate result and sample result.
(b) Interlaboratory comparison by Analytical Resources, Inc./Kaiser Aluminum's Tacoma laboratory.

TABLE 2
FORMER SPENT POTLINING MANAGEMENT AREA
KAISER ALUMINUM & CHEMICAL CORPORATION
SUMMARY DATA FOR WELL C(S)

Analyte (mg/L)	6/97	12/97	6/98	12/98	6/99	12/99	7/00	6/01	6/02
Total cyanide	0.055/0.059 (a)	0.070/0.076 (a)	0.081/0.080 (a)	0.054 J/0.068 J (a)	0.065/0.057 (a)	0.063/0.066 (a)	0.065/0.047 (a)	<0.2	0.16
Weak acid dissociable cyanide (free)	0.020/0.024 (a)	0.020/0.019 (a)	0.017/0.019 (a)	0.010/0.015 (a)	0.009 J/0.016 J (a)	0.014/0.015 (a)	0.010/0.009 (a)	<0.01	ND
Fluoride	29/28.8 (b)	32/31 (b)	29/29.4 (b)	42	30/28.2 (b)	30	28/34.2 (b)	27	23.6 J
pH	7.2	6.9	6.9	7.3	7.2	7.0	6.9	7.0	7.0
Specific conductivity (µmhos/cm)	3,300	3,100	3,100	1,700	1,400	3,100	3,650	3,120	3005
Temperature (°C)	13.6	13.4	15.2	12.9	16.6	11.5	15.9	17.7	14.6
Water level elevation (ft Kaiser datum)	13.69	13.78	12.75	14.43	12.95	13.82	12.62	12.91	12.53

J = The flag J indicates the analyte of interest is estimated, as indicated in the data quality evaluation.
(a) Blind duplicate comparison by Analytical Resources, Inc.
(b) Interlaboratory comparison by Analytical Resources, Inc./Kaiser Aluminum's Tacoma laboratory.

TABLE 3
FORMER SPENT POTLINING MANAGEMENT AREA
KAISER ALUMINUM & CHEMICAL CORPORATION
SUMMARY DATA FOR WELL F(S)

Analyte (mg/L)	6/97	12/97	6/98	12/98	6/99	12/99	7/00	6/01	6/02
Total cyanide	4.6 /4.7(a)	6.9/6.4(a)	5.3/5.1(a)	4.1J/3.3 J(a)	2.8J/6.4J(a)	4.8/5.1(a)	3.3/3.3(a)	3.7	ND
Weak acid dissociable cyanide (free)	0.051J/0.100J(a)	0.095/0.095(a)	0.041/0.038(a)	0.073/<0.010(a)	0.053J/0.074J(a)	0.046/0.055(a)	0.026/0.030(a)	0.03	ND
Fluoride	680/595(b)	540/535(b)	470/491(b)	520	510/472(b)	450	500J/690J(b)	430	396 J
pH	8.8	9.0	8.7	9.0	8.9	8.7	8.8	8.7	8.8
Specific conductivity (µmhos/cm)	5,500	5,800	5,500	5,000	4,000	5,800	5,700	6,160	5290
Temperature (°C)	14.1	14.2	14.0	13.3	15.6	11.8	16.4	19.1	16.5
Water level elevation (ft Kaiser datum)	17.95	17.65	16.87	17.63	16.43	17.31	16.61	16.88	16.07

J = The flag J indicates the analyte of interest is estimated, as indicated in the data quality evaluation.
(a) Blind duplicate comparison by Analytical Resources, Inc.
(b) Interlaboratory comparison by Analytical Resources, Inc./Kaiser Aluminum's Tacoma laboratory.
(c) Blind duplicate comparison by Sound Analytical Services.

TABLE 5
FORMER SPENT POTLINING MANAGEMENT AREA
KAISER ALUMINUM & CHEMICAL CORPORATION
SUMMARY DATA FOR WELL W(I)

Analyte (mg/L)	6/97	12/97	6/98	12/98	6/99	12/99	7/00	6/01	6/02
Total cyanide	0.032/0.033(a)	0.046/0.040(a)	0.042/0.043(a)	0.038/0.034(a)	0.036/0.035(a)	0.037/0.037(a)	0.034/0.035(a)	<0.2	ND
Weak acid dissociable cyanide (free)	0.010/0.009(a)	0.007/0.007(a)	0.010/0.007(a)	0.006/0.007(a)	0.006/0.008(a)	0.005/0.006(a)	<0.005/<0.005(a)	<0.01	ND
Fluoride	22/23.4(b)	24/25.4(b)	26/22.9(b)	28	26/23.4(b)	25J/19J(a)	24/28.4(b)	17	2.7 J
pH	7.2	7.2	7.0	7.3	7.1	6.9	6.9	7.1	7.2
Specific conductivity (µmhos/cm)	2,200	1,800	1,800	1,300	910	190	2,000	1,822	1491
Temperature (°C)	13.3	12.4	13.7	12.1	14.1	12.6	13.6	17.2	14.1
Water level elevation (ft Kaiser datum)	11.59	13.11	10.92	12.14	12.28	11.97	11.95	10.34	10.88

J = The flag J indicates the analyte of interest is estimated, as indicated in the data quality evaluation.
(a) Blind duplicate comparison by Analytical Resources, Inc.
(b) Interlaboratory comparison by Analytical Resources, Inc./Kaiser Aluminum's Tacoma laboratory.

TABLE 5
2003 and 2004 Groundwater Analytical Results
Spent Potliner Managment Area - Kaiser-Tacoma Facility

ANALYTE (in mg/L except where noted)	MTCA Method A Groundwater Cleanup Level (mg/L)	SPL MANAGEMENT AREA			WEYERHAEUSER FACILITY						
SAMPLE NUMBER		SPL-DPT6	MW-C13I (total)	MW-C13I (dissolved)	MW-W24I (total)	MW-W24I (dissolved)	W-DPT1 / WEYCO (total)	W-DPT1 / WEYCO (dissolved)	W-DPT2 / WYECO (total)	W-DPT2 / WYECO (dissolved)	WDPT3 / WEYCO (total)
GROUNDWATER SAMPLE DEPTH INTERVAL (feet bgs)		4 - 8					8-12	8-12	8-12	8-12	7-11
DATE COLLECTED		12/4/2003	11/12/2004	11/12/2004	11/12/2004	11/12/2004	11/11/2004	11/11/2004	11/11/2004	11/11/2004	11/11/2004
FIELD PARAMETERS											
pH (standard units)			nr		nr		6.15		5.77		
Specific Conductance (uS/cm²)			1,303		1,760		5,250		1,782		
Temperature (°C)			11.6		10.1		12.9		13.2		
ANIONS (Method 300.0)											
Fluoride	[1]0.96	484	34.7[4]		24.3		1.42[4]		0.68[4]		0.94[4]
Chloride		12.8	120[4]		205		2,230[5]		157[4]		713[5]
Nitrite as N		<0.015	<0.031		<0.031		<0.031		<0.031		<0.031
Bromide		0.364	1.05		1.37		7.02[4]		1.74		4.86
Nitrate as N		<0.015	<0.03		<0.03		0.022 J		<0.03		<0.03
Phosphate as P		0.58	0.857		2.99		<0.15		<0.15		<0.15
Sulfate		15.9	0.23 J		0.322		1.29		1.09		234[4]
CYANIDE (Method 9012/9013)	[2]0.320	0.38	<0.05		<0.05		<0.05		<0.05		<0.05
WAD CYANIDE (Method SM45CNI)	[3]0.0052	0.04	<0.01		<0.01		<0.01		<0.01		<0.01
METALS (Method SW846 6010/7470)											
Arsenic	0.005	0.0394	0.00983		0.0106		0.0255		0.022		
Barium	ns	0.0444	0.0277		0.0296		0.167		0.231		
Cadmium	0.005	0.00127	<0.005		<0.005		<0.005		<0.005		
Chromium	0.050	0.0143	0.0861		0.0861		0.0706		0.0815		
Copper	ns		0.0676		0.0296						
Lead	0.015	<0.01	<0.01		<0.01		<0.005		<0.005		
Mercury	0.002	0.000323			<0.0002		<0.0002		<0.0002		
Selenium	ns	<0.05	<0.05		<0.05		0.0228		0.0245		
Silver	ns	<0.01	0.0212		<0.01		<0.005		<0.005		
DIESEL RANGE PETROLEUM HYDROCARBONS (Method NWTPH-Dx)											
#2 Diesel	0.500	0.336	<0.24		<0.237		0.0277[6]		0.282[6]		
Motor Oil	0.500	0.587	<0.481		<0.474		<0.484		<0.482		
SEMI-VOLATILE ORGANIC COMPOUNDS (Method 8270C)											
Phenol		<0.00104	0.000267	<0.000214	0.000355	<0.000193	0.000471	<0.00019	<0.000189	<0.000197	
bis(2-Chloroethyl)ether		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
2-Chlorophenol		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
1,3-Dichlorobenzene		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
1,4-Dichlorobenzene		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
Benzyl Alcohol		<0.00104	0.00217	0.00025	0.00189	0.000238	0.00047	0.000223	0.000531	<0.000197	
1,2-Dichlorobenzene		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
2-Methylphenol		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
bis(2-Chloroisopropyl)ether		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
3-&4-Methylphenol		<0.00209	<0.00038	<0.000429	<0.00038	<0.000386	<0.000377	<0.00038	<0.000378	<0.000394	
N-nitroso-di-n-propylamine		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
Hexachloroethane		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
Nitrobenzene		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
Isophorone		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
2-Nitrophenol		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
2,4-Dimethylphenol		<0.00522	<0.00095	<0.00107	<0.000949	<0.000965	<0.000942	<0.00095	<0.000946	<0.000985	
Benzoic Acid		<0.00522	<0.00095	0.00109	<0.00949	0.00141	<0.000942	0.000345 J	<0.000946	<0.000985	
bis(2-Chloroethoxy)methane		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
2,4-Dichlorophenol		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	0.0000782 J	<0.00019	<0.000189	<0.000197	
1,2,4-Trichlorobenzene		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
4-Chloroaniline		<0.00157	<0.000285	<0.000322	<0.000285	<0.00029	<0.000282	<0.000285	<0.000284	<0.000296	
Hexachlorobutadiene		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	

TABLE 5
2003 and 2004 Groundwater Analytical Results
Spent Potliner Managment Area - Kaiser-Tacoma Facility

ANALYTE (in mg/L except where noted)	MTCA Method A Groundwater Cleanup Level (mg/L)	SPL MANAGEMENT AREA			WEYERHAEUSER FACILITY						
SAMPLE NUMBER		SPL-DPT6	MW-C13I (total)	MW-C13I (dissolved)	MW-W24I (total)	MW-W24I (dissolved)	W-DPT1 / WEYCO (total)	W-DPT1 / WEYCO (dissolved)	W-DPT2 / WYECO (total)	W-DPT2 / WYECO (dissolved)	WDPT3 / WEYCO (total)
GROUNDWATER SAMPLE DEPTH INTERVAL (feet bgs)		4 - 8					8-12	8-12	8-12	8-12	7-11
DATE COLLECTED		12/4/2003	11/12/2004	11/12/2004	11/12/2004	11/12/2004	11/11/2004	11/11/2004	11/11/2004	11/11/2004	11/11/2004
4-Chloro-3-methylphenol		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
Hexachlorocyclopentadiene		<0.00522	<0.00095	<0.00107	<0.000949	<0.000965	<0.000942	<0.00095	<0.000946	<0.000985	
2,4,6-Trichlorophenol		**0.00156 J**	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
2,4,5-Trichlorophenol		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
2-Nitroaniline		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
Dimethylphthalate		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
2,6-Dinitrotoluene		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
3-Nitroaniline		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
2,4-Dinitrophenol		<0.00522	<0.00095	<0.00107	<0.000949	<0.000965	<0.000942	<0.00095	<0.000946	<0.000985	
4-Nitrophenol		<0.00522	<0.00095	<0.00107	<0.000949	<0.000965	<0.000942	<0.00095	<0.000946	<0.000985	
Dibenzofuran		<0.00104	<0.00095	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
2,4-Dinitrotoluene		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
Diethylphthalate		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
4-Chlorophenylphenylether		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
4-Nitroaniline		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
4,6-Dinitro-2-methylphenol		<0.00522	<0.00095	<0.00107	<0.000949	<0.000965	<0.000942	<0.00095	<0.000946	<0.000985	
N-Nitrosodiphenylamine		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
4-Bromophenylphenylether		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
Hexachlorobenzene		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
Pentachlorophenol		<0.0034	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
Di-n-butylphthalate		<0.00104	<0.00019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
Butylbenzylphthalate		<0.00157	**0.000302**	<0.000322	<0.000285	<0.00029	<0.000282	<0.000285	<0.000284	<0.000296	
3,3'-Dichlorobenzidine		<0.00522	<0.00095	<0.00107	<0.000949	<0.000965	<0.000942	<0.00095	<0.000946	<0.000985	
bis(2-Ethylhexyl)phthalate		<0.00784	<0.00142	<0.00161	<0.00142	<0.00145	<0.00141	<0.00142	<0.00142	<0.00149	
Di-n-octylphthalate		<0.00104	<0.019	<0.000214	<0.00019	<0.000193	<0.000188	<0.00019	<0.000189	<0.000197	
NAPHTHALENES											
2-Methylnaphthalene		**0.00158**	<0.0000475	<0.0000536	<0.0000474	<0.0000483	**0.0000652**	<0.0000475	<0.0000473	**0.000396**	
Naphthalene	0.160	**0.00677**	<0.0000475	<0.0000536	<0.0000474	<0.0000483	**0.000167**	**0.0000499**	<0.0000473	**0.0000553**	
2-Chloronaphthalene		<0.000261	<0.000019	<0.0000214	<0.000019	<0.0000193	<0.0000188	<0.000019	<0.0000189	<0.0000197	
Total Naphthalenes	0.160	**0.00835**									
POLYNUCLEAR AROMATIC HYDROCARBONS (Method 8270C)											
Acenaphthene		**0.00614**	<0.019	<0.0000214	<0.000019	<0.0000193	<0.0000188	<0.000019	<0.0000189	<0.0000197	
Acenaphthylene		<0.000261	<0.000019	<0.0000214	<0.000019	<0.0000193	<0.0000188	<0.000019	<0.0000189	<0.0000197	
Anthracene		**0.00246**	<0.000019	<0.0000214	<0.000019	<0.0000193	<0.0000188	<0.000019	<0.0000189	<0.0000197	
Benzo(a)anthracene[C]		**0.00266**	<0.000019	<0.0000214	<0.000019	<0.0000193	<0.0000188	<0.000019	<0.0000189	<0.0000197	
Benzo(a)pyrene[C]	0.0001	**0.00309**	<0.000019	<0.0000214	<0.000019	<0.0000193	<0.0000188	<0.000019	<0.0000189	<0.0000197	
Benzo(g,h,i)perylene[C]		**0.00245**	<0.000019	<0.0000214	<0.000019	<0.0000193	<0.0000188	<0.000019	<0.0000189	<0.0000197	
Benzofluoranthenes[C]		**0.0043**	<0.000095	<0.000107	<0.0000949	<0.0000965	<0.0000942	<0.000095	<0.0000946	<0.0000985	
Chrysene[C]		**0.00329**	<0.000019	<0.0000214	<0.000019	<0.000193	<0.0000188	<0.000019	<0.0000189	<0.0000197	
Dibenz(a,h)anthracene[C]		**0.000753**	<0.000019	<0.0000214	<0.000019	<0.0000193	<0.0000188	<0.000019	<0.0000189	<0.0000197	
Fluoranthene		**0.00758**	<0.000019	<0.0000214	<0.000019	<0.000193	<0.0000188	<0.000019	<0.0000189	<0.0000197	
Fluorene		**0.00212**	**0.0000327**	<0.0000214	<0.000019	<0.0000193	<0.0000188	<0.000019	<0.0000189	<0.0000197	
Indeno(1,2,3-cd)pyrene[C]		**0.00209**	<0.000019	<0.0000214	<0.000019	<0.0000193	<0.0000188	<0.000019	<0.0000189	<0.0000197	
Phenanthrene		**0.0112**	<0.000019	<0.0000214	<0.000019	<0.0000193	**0.0000525**	<0.000019	<0.0000189	<0.0000197	
Pyrene		**0.00909**	<0.000019	<0.0000214	<0.000019	<0.0000193	**0.000156**	<0.00019	<0.0000189	<0.0000197	
Total PAHs		**0.057223**	**0.0000327**	---	---	---	**0.0002085**	---	---	---	
Total Carcinogenic PAHs	0.0001	**0.018633**	0	---	---	---	---	---	---	---	

TABLE 5
2003 and 2004 Groundwater Analytical Results
Spent Potliner Managment Area - Kaiser-Tacoma Facility

ANALYTE (in mg/L except where noted)	MTCA Method A Groundwater Cleanup Level (mg/L)	SPL MANAGEMENT AREA			WEYERHAEUSER FACILITY						
SAMPLE NUMBER		SPL-DPT6	MW-C13I (total)	MW-C13I (dissolved)	MW-W24I (total)	MW-W24I (dissolved)	W-DPT1 / WEYCO (total)	W-DPT1 / WEYCO (dissolved)	W-DPT2 / WYECO (total)	W-DPT2 / WYECO (dissolved)	WDPT3 / WEYCO (total)
GROUNDWATER SAMPLE DEPTH INTERVAL (feet bgs)		4 - 8					8-12	8-12	8-12	8-12	7-11
DATE COLLECTED		12/4/2003	11/12/2004	11/12/2004	11/12/2004	11/12/2004	11/11/2004	11/11/2004	11/11/2004	11/11/2004	11/11/2004

ns = no MTCA Groundwater Cleanup Level for that metal

WAD = Weak and Dissociable Cyanide

TCLP = Toxicity Characteristic Leaching Procedure (Method 1311)

< = analyte was not detected at or above the method detection limit or laboratory practical quantitation limit

J = analyte detected above the method detection limit but below the laboratory practical quantitation limit

[1] = MTCA Method B Groundwater Cleanup Level

[2] = MTCA Method B Groundwater Cleanup Level

[3]= Chronic Freshwater Aquatic Life Criterion for free cyanide, EPA National Recommended Water Quality Criteria: 2002

[4] = Sample required 10 times dilution

[5] = Sample required 100 times dilution

[6] = Hydrocarbon elution pattern did not match any disel pattern in the analytical laboratory's library. Per laboratory, hydrocarbons detected may be from other organics, such as tannins

Blank = Not analyzed

Bold = analyte detected at or above method detection limit

Bold + shaded = result exceeds one or more cleanup level

[c] = carcinogenic PAH

Total carcinogenic PAHs cleanup level
MTCA Method A Soil Cleanup Levels =

nr = pH meter inoperable, pH not recorded

TABLE A-1
2003 AND 2004 GROUNDWATER ANALYTICAL RESULTS
SPENT POTLINING AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Preliminary Cleanup Levels (a)						
	MTCA Method A/B Protective of Drinking Water	Protective of Marine Surface Water	SPL-DPT6 (4-8) 12/4/2003	MW-C131 11/12/2004	MW-W241 11/12/2004	W-DPT1/WEYCO 8-12 11/11/2004	W-DPT2/WEYCO 8-12 11/11/2004
cPAHs (µg/L)							
SW8270C							
Benzo(a)anthracene	see total cPAHs	0.018	**2.56**	0.019 U	0.019 U	0.0188 U	0.0189 U
Chrysene	see total cPAHs	0.040	**3.29**	0.019 U	0.019 U	0.0188 U	0.0189 U
Benzofluoranthenes (b)	see total cPAHs	-- (c)	**4.3**	0.095 U	0.0949 U	0.095 U	0.0945 U
Benzo(a)pyrene	see total cPAHs	0.035	**3.09**	0.019 U	0.019 U	0.0188 U	0.0189 U
Indeno(1,2,3-cd)pyrene	see total cPAHs	0.018	**2.09**	0.019 U	0.019 U	0.0188 U	0.0189 U
Dibenz(a,h)anthracene	see total cPAHs	0.018	**0.753**	0.019 U	0.019 U	0.0188 U	0.0189 U
TEQ	0.1 / 0.12	0.030	**4.0932**	ND	ND	ND	ND

U = The analyte was not detected in the sample at the given reporting limit.

Boxed cells indicate an exceedance of site cleanup levels.

(a) Development of preliminary screening levels for groundwater is presented in Table 24 of the main text.

(b) Concentrations reported as a total for benzo(b)fluoranthene and benzo(k)fluoranthene.

(c) No cleanup level protective of marine surface water is available for total Benzofluoranthenes.

APPENDIX B

Spent Pot Lining Area 2003 Soil Analytical Results

TABLE 3

SPL Management Area Soil Results
Spent Potliner Managment Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level (mg/kg)	SPL Management Area Test Pit Samples															
SAMPLE NUMBER		SPL-MA1	SPL-MA2	SPL-MA3	SPL-MA4	SPL-MA5	SPL-MA7	SPL-MA8	SPL-MA9	SPL-MA10	SPL-MA11	SPL-MA12	SPL-MA13	SPL-MA14	SPL-MA15	SPL-MA16	SPL-MA17
SAMPLE DEPTH INTERVAL (feet bgs)		0 - 2	0 - 2	0 - 0.75	0 - 1.5	0 - 3.5	0 - 1.5	0 - 1.25	0 - 2.75	0 - 4	0 - 4.5	0 - 3.5	0 - 2	0 - 4	0 - 2	0 - 1	0 - 1
DATE COLLECTED		12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/3/2003	12/3/2003
ANIONS (Method 300.0)																	
Fluoride	ns	2,420	1,890	128	1,760	1,630	1,750	1,910	469	1,220	1,630	-1,560	69.4	346	662	32.2	126
CYANIDE (Method 9012/9013)	ns	<0.2	<0.2	8.3	<0.2	3.4	<0.2	1.5	0.8	31	0.3	2.5	<0.2	3.9	5.4	<0.2	<0.2
WAD CYANIDE (Method SM45CNI)	ns	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.07	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
TCLP 8 RCRA METALS in mg/L (Method 1311 and SW846 6010/7470)																	
Arsenic	[1]5.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.01
Barium	[1]100.0	0.262	0.181	0.294	0.106	0.144	0.194	0.698	0.232	0.269	0.0468	0.151	0.143	0.208	0.249	0.191	0.185
Cadmium	[1]1.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005
Chromium	[1]5.0	<0.01	<0.01	<0.01	<0.01	<0.01	0.0287	0.149	0.0263	0.0102	<0.01	<0.01	0.011	0.0217	0.029	0.021	0.0261
Lead	[1]5.0	<0.1	<0.1	<0.1	<0.1	<0.1	0.00635	0.308	0.00769	<0.1	<0.1	<0.1	<0.1	0.0173	0.0112	0.0248	0.00713
Mercury	[1]0.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Selenium	[1]1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.03	<0.03	<0.03	<0.1	<0.1	<0.1	<0.1	<0.03	<0.03	<0.03	<0.03
Silver	[1]5.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.005	<0.005	<0.005	<0.2	<0.2	<0.2	<0.2	<0.005	<0.005	<0.005	<0.005
DIESEL RANGE PETROLEUM HYDROCARBONS (Method NWTPH-Dx)																	
#2 Diesel	2,000	145	60	612	49.9	84.7	160	53.3	176	<13.7	55.8	<12.9	218	320	341	19	203
Motor Oil	2,000	596	212	1,550	195	169	362	229	1,730	100	236	35.2 J	750	1,320	1,310	126	735
SEMI-VOLATILE ORANGIC COMPOUNDS (Method 8270C)																	
Phenol	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
bis(2-Chloroethyl)ether	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
2-Chlorophenol	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
1,3-Dichlorobenzene	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
1,4-Dichlorobenzene	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
Benzyl Alcohol	ns	<0.201	<0.179	<0.195	<0.180	<0.196	<0.682	<0.144	<0.133	<0.189	<0.187	<0.176	<0.186	<0.132	<0.137	<0.130	<0.132
1,2-Dichlorobenzene	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
2-Methylphenol	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
bis(2-Chloroisopropyl)ether	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
3-&4-Methylphenol	ns	<0.321	<0.286	<0.312	<0.288	<0.314	<1.090	<0.23	<0.212	<0.302	<0.299	<0.282	<0.297	<0.212	<0.219	<0.208	<0.212
N-nitroso-di-n-propylamine	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
Hexachloroethane	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
Nitrobenzene	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
Isophorone	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
2-Nitrophenol	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
2,4-Dimethylphenol	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
Benzoic Acid	ns	<0.803	<0.716	<0.779	<0.720	<0.784	<2.730	<0.575	<0.53	<0.755	<0.748	<0.705	<0.744	<0.529	<0.546	<0.521	<0.529
bis(2-Chloroethoxy)methane	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
2,4-Dichlorophenol	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
1,2,4-Trichlorobenzene	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
4-Chloroaniline	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
Hexachlorobutadiene	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
4-Chloro-3-methylphenol	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
Hexachlorocyclopentadiene	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
2,4,6-Trichlorophenol	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
2,4,5-Trichlorophenol	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
2-Nitroaniline	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
Dimethylphthalate	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
2,6-Dinitrotoluene	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
3-Nitroaniline	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
2,4-Dinitrophenol	ns	<0.803	<0.716	<0.779	<0.720	<0.784	<2.730	<0.575	<0.53	<0.755	<0.748	<0.705	<0.744	<0.529	<0.546	<0.521	<0.529
4-Nitrophenol	ns	<0.402	<0.358	<0.390	<0.360	<0.392	<1.360	<0.287	<0.265	<0.378	<0.374	<0.352	<0.372	<0.265	<0.273	<0.261	<0.265
Dibenzofuran	ns	0.174 J	0.339	1.26	0.187 J	0.250 J	<0.546	<0.115	0.137 J	0.179 J	0.669	<0.141	0.817	0.384	0.503	<0.104	<0.106
2,4-Dinitrotoluene	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
Diethylphthalate	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
4-Chlorophenylphenylether	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
4-Nitroaniline	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106

TABLE 3

SPL Management Area Soil Results
Spent Potliner Managment Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level (mg/kg)	SPL Management Area Test Pit Samples															
SAMPLE NUMBER		SPL-MA1	SPL-MA2	SPL-MA3	SPL-MA4	SPL-MA5	SPL-MA7	SPL-MA8	SPL-MA9	SPL-MA10	SPL-MA11	SPL-MA12	SPL-MA13	SPL-MA14	SPL-MA15	SPL-MA16	SPL-MA17
SAMPLE DEPTH INTERVAL (feet bgs)		0 - 2	0 - 2	0 - 0.75	0 - 1.5	0 - 3.5	0 - 1.5	0 - 1.25	0 - 2.75	0 - 4	0 - 4.5	0 - 3.5	0 - 2	0 - 4	0 - 2	0 - 1	0 - 1
DATE COLLECTED		12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/3/2003	12/3/2003
4,6-Dinitro-2-methylphenol	ns	<0.803	<0.716	<0.779	<0.720	<0.784	<2.73	<0.575	<0.53	<0.755	<0.748	<0.705	<0.744	<0.529	<0.546	<0.521	<0.529
N-Nitrosodiphenylamine	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
4-Bromophenylphenylether	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
Hexachlorobenzene	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
Pentachlorophenol	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
Di-n-butylphthalate	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	<0.104	<0.106
Butylbenzylphthalate	ns	<0.201	<0.179	<0.195	<0.180	<0.196	<0.682	<0.144	<0.133	<0.189	<0.187	<0.176	<0.186	<0.132	<0.137	<0.130	<0.132
3,3'-Dichlorobenzidine	ns	<0.321	<0.286	<0.312	<0.288	<0.314	<1.090	<0.23	<0.212	<0.302	<0.299	<0.282	<0.297	<0.212	<0.109	<0.208	<0.212
bis(2-Ethylhexyl)phthalate	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	0.632	<0.151	<0.150	<0.141	**1.02**	**0.239**	<0.109	**1.71**	<0.106
Di-n-octylphthalate	ns	<0.161	<0.143	<0.156	<0.144	<0.157	<0.546	<0.115	<0.106	<0.151	<0.150	<0.141	<0.149	<0.106	<0.109	**0.602**	<0.106
NAPHTHALENES																	
1-Methylnaphthalene	ns	NA	NA	NA	NA	NA	**0.621**	**0.162**	**0.0528**	NA	NA	NA	NA	**0.174**	**0.125**	**0.0473**	<0.265
2-Methylnaphthalene	ns	0.254	**0.52**	**1.17**	**0.232**	**0.202**	**0.790**	**0.225**	**0.0482 J**	**0.0845**	**0.446**	**0.0752**	**0.421**	**0.218**	**0.165**	<0.0261	<0.265
Naphthalene	5	**0.556**	**1.24**	**1.46**	**0.391**	**0.343**	**1.12**	**0.250**	**0.060**	**0.142**	**0.778**	**0.154**	**1.17**	**0.696**	**0.177**	**0.0409 J**	<0.265
2-Chloronaphthalene	ns	<0.0402	<0.0358	<0.039	<0.036	<0.0392	<0.136	<0.0287	<0.0265	<0.0378	<0.0374	<0.0352	<0.0372	<0.0265	<0.0273	<0.0261	<0.265
Total Naphthalenes	5	**0.556**	**1.76**	**2.63**	**0.623**	**0.545**	**2.531**	**0.637**	**0.595**	**0.2265**	**1.224**	**0.2292**	**1.591**	**1.088**	**0.467**	**0.0882**	---
POLYNUCLEAR AROMATIC HYDROCARBONS (Method 8270C)																	
Acenaphthene	ns	**0.744**	**2.35**	**3.97**	**0.619**	**0.694**	<0.136	**0.978**	**0.194**	**0.455**	**1.84**	**0.162**	**3.18**	**0.857**	<0.0273	**0.149**	<0.265
Acenaphthylene	ns	**0.197**	**0.218**	**0.324**	**0.149**	**0.0722 J**	**3.75**	<0.0287	<0.0265	**0.117 J**	**0.275**	**0.037 J**	**0.463**	**0.186**	**1.59**	<0.0261	<0.265
Anthracene	ns	**3.52**	**2.86**	**5.7**	**1.1**	**1.11**	**6.53**	**1.55**	**0.663**	**1.01**	**4.07**	**0.390**	**4.57**	**1.33**	**2.17**	**0.777**	<0.265
Benzo(a)anthracene[C]	ns	**22.4**	**8.1**	**22.7**	**6.8**	**5.02**	**12.2**	**3.86**	**26.9**	**11.1**	**12.7**	**1.17**	**20.1**	**4.77**	**5.82**	**2.03**	<0.265
Benzo(a)pyrene[C]	2	**16.2**	**8.86**	**21.4**	**6.61**	**4.47**	**13.9**	**4.13**	<0.0265	**4.82**	**10.6**	**0.697**	**19.9**	**6.0**	**6.39**	**1.69**	<0.265
Benzo(g,h,i)perylene[C]	ns	**22.6**	**9.99**	**18.5**	**13.4**	**5.05**	**8.76**	**3.42**	**16.9**	**9.02**	**9.02**	**0.544**	**17.9**	**5.96**	**3.08**	**1.11**	<0.265
Benzofluoranthenes[C]	ns	**56.6**	**17.7**	**64.2**	**24.7**	**17.9**	**17.5**	**6.32**	**15.1**	**39.0**	**25.1**	**2.24**	**36**	**12.2**	**11.7**	**3.17**	<0.52.9
Chrysene[C]	ns	**49.8**	**13.9**	**63.2**	**15.7**	**11.7**	**14.2**	**5.48**	**17.5**	**70.2**	**25.1**	**3.04**	**27.1**	**6.65**	**7.42**	**3.07**	<0.265
Dibenz(a,h)anthracene[C]	ns	**4.33**	**2.27**	**7.15**	**4.39**	**1.69**	**2.73**	**0.996**	**4.79**	**2.81**	**2.67**	**0.180**	**6.37**	**1.78**	**1.42**	**0.500**	<0.265
Fluoranthene	ns	**54.3**	**22.0**	**51.6**	**11.3**	**9.6**	**24.5**	**5.35**	**19.8**	**11.3**	**36.0**	**3.63**	**37.3**	**9.87**	**17.5**	**3.69**	<0.265
Fluorene	ns	**0.524**	**1.14**	**2.91**	**0.371**	**0.465**	**2.01**	<0.522	**0.107**	**0.330**	**1.23**	**0.0856**	**1.61**	**0.702**	**1.23**	**0.0994**	<0.265
Indeno(1,2,3-cd)pyrene[C]	ns	**12.7**	**7.2**	**14.7**	**9.1**	**4.00**	**7.1**	**2.55**	**10.4**	**6.86**	**7.51**	**0.371**	**13.6**	**4.75**	**3.08**	**1.12**	<0.265
Phenanthrene	ns	**26.2**	**19.5**	**32.5**	**6.09**	**6.71**	**28.7**	**6.87**	**5.69**	**4.25**	**21.7**	**2.44**	**19.3**	**6.11**	**13.6**	**3.48**	<0.265
Pyrene	ns	**61.5**	**23.4**	**46.1**	**11.4**	**9.63**	**36.2**	**7.81**	**19.8**	**13.6**	**30.1**	**3.89**	**35.6**	**13.4**	**18.3**	**4.19**	<0.265
Total PAHs	[1]1%	**332**	**139**	**355**	**112**	**78.0**	**178**	**49.3**	**138**	**175**	**188**	**18.8**	**243**	**74.6**	**93.3**	**25.1**	---
Total Carcinogenic PAHs	2	**185**	**68.0**	**211.9**	**80.7**	**49.8**	**76.4**	**26.8**	**111**	**144**	**92.7**	**8.24**	**141**	**42.1**	**38.9**	**12.7**	---

WAD = Weak and Dissociable Cyanide
TCLP = Toxicity Characteristic Leaching Procedure (Method 1311)
< = analyte was not detected at or above the method detection limit or laboratory practical quantitation limit
J = analyte detected above the method detection limit but below the laboratory practical quantitation limit
[1] = Dangerous Waste criteria (WAC 173-303)
ns = no standard
Bold = analyte detected at or above method detection limit
Bold + shaded = exceeded MTCA Method A cleanup level (WAC 173-340) or Dangerous Waste criteria (WAC 173-303)
[C] = carcinogenic PAH
Total carcinogenic PAHs cleanup level assumes entire carcinogenic PAH mixture is as toxic as benzo(a)pyrene, WAC 173-340-708(8)
MTCA Method A Soil Cleanup Levels = standards are listed for analytes detected above method detection limits

TABLE 4

DPT Boring Subsurface Soil Results
Spent Potliner Managment Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	SPL DPT Boring	
SAMPLE NUMBER		**SPL-DPT6A**	**SPL-DPT6B**
SAMPLE DEPTH INTERVAL (feet bgs)		1.25 - 1.75	3.5 - 4.5
DATE COLLECTED		12/4/2003	12/4/2003
ANIONS *(Method 300.0)*			
Fluoride	ns	**254**	**410**
Chloride	ns	**22.1**	**2.65**
Nitrite as N	ns	**0.275**	**0.415**
Bromide	ns	<0.55	<0.576
Nitrate as N	ns	**0.924**	<0.173
Phosphate as P	ns	**1.07**	**3.94**
Sulfate	ns	**117**	**10.1**
CYANIDE (Method 9012/9013)	ns	**7.1**	**3.3**
WAD CYANIDE (Method SM45CNI)	ns	**0.79**	<0.02
TOTAL METALS *(Method SW846 6010/7470)*			
Arsenic	ns	<2.26	<2.09
Barium	ns	**87.3**	**41.4**
Cadmium	ns	<1.13	<1.05
Chromium	2,000	**12.2**	**20.1**
Lead	1,000	**20.5**	<2.09
Mercury	2	**0.0412**	<0.0215
Selenium	ns	<11.3	<10.5
Silver	ns	<2.26	<2.09
TCLP 8 RCRA METALS in mg/L *(Method SW846 6010/7470)*			
Arsenic	[1]5.0	<0.01	<0.01
Barium	[1]100.0	**0.318**	**0.0964**
Cadmium	[1]1.0	<0.005	<0.005
Chromium	[1]5.0	**0.0263**	**0.026**
Lead	[1]5.0	<0.005	**0.00505**
Mercury	[1]0.2	<0.002	<0.002
Selenium	[1]1.0	<0.03	<0.03
Silver	[1]5.0	<0.005	<0.005
DIESEL RANGE PETROLEUM HYDROCARBONS *(Method NWTPH-Dx)*			
#2 Diesel	2,000	**16.7 J**	<13.7
Motor Oil	2,000	**43 J**	<27.5
SEMI-VOLATILE ORANGIC COMPOUNDS *(Method 8270C)*			
Phenol		<0.111	<0.119
bis(2-Chloroethyl)ether		<0.111	<0.119
2-Chlorophenol		<0.111	<0.119
1,3-Dichlorobenzene		<0.111	<0.119
1,4-Dichlorobenzene		<0.111	<0.119
Benzyl Alcohol		<0.139	<0.148
1,2-Dichlorobenzene		<0.111	<0.119
2-Methylphenol		<0.111	<0.119
bis(2-Chloroisopropyl)ether		<0.111	<0.119
3-&4-Methylphenol		<0.222	<0.237
N-nitroso-di-n-propylamine		<0.111	<0.119
Hexachloroethane		<0.111	<0.119
Nitrobenzene		<0.111	<0.119
Isophorone		<0.111	<0.119

TABLE 4

DPT Boring Subsurface Soil Results
Spent Potliner Managment Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	SPL DPT Boring	
SAMPLE NUMBER		**SPL-DPT6A**	**SPL-DPT6B**
SAMPLE DEPTH INTERVAL (feet bgs)		1.25 - 1.75	3.5 - 4.5
DATE COLLECTED		12/4/2003	12/4/2003
2-Nitrophenol		<0.111	<0.119
2,4-Dimethylphenol		<0.111	<0.119
Benzoic Acid		<0.556	<0.594
bis(2-Chloroethoxy)methane		<0.111	<0.119
2,4-Dichlorophenol		<0.111	<0.119
1,2,4-Trichlorobenzene		<0.111	<0.119
4-Chloroaniline		<0.111	<0.119
Hexachlorobutadiene		<0.111	<0.119
4-Chloro-3-methylphenol		<0.111	<0.119
Hexachlorocyclopentadiene		<0.111	<0.119
2,4,6-Trichlorophenol		<0.111	<0.119
2,4,5-Trichlorophenol		<0.111	<0.119
2-Nitroaniline		<0.111	<0.119
Dimethylphthalate		<0.111	<0.119
2,6-Dinitrotoluene		<0.111	<0.119
3-Nitroaniline		<0.111	<0.119
2,4-Dinitrophenol		<0.556	<0.594
4-Nitrophenol		<0.278	<0.297
Dibenzofuran		<0.111	<0.119
2,4-Dinitrotoluene		<0.111	<0.119
Diethylphthalate		<0.111	<0.119
4-Chlorophenylphenylether		<0.111	<0.119
4-Nitroaniline		<0.111	<0.119
4,6-Dinitro-2-methylphenol		<0.556	<0.594
N-Nitrosodiphenylamine		<0.111	<0.119
4-Bromophenylphenylether		<0.111	<0.119
Hexachlorobenzene		<0.111	<0.119
Pentachlorophenol		<0.111	<0.119
Di-n-butylphthalate		<0.111	<0.119
Butylbenzylphthalate		<0.139	<0.148
3,3'-Dichlorobenzidine		<0.222	<0.237
bis(2-Ethylhexyl)phthalate		<0.111	<0.119
Di-n-octylphthalate		<0.111	<0.119
NAPHTHALENES			
2-Methylnaphthalene		<0.0278	<0.0297
Naphthalene	5	<0.0278	<0.0297
2-Chloronaphthalene		<0.0278	<0.0297
Total Naphthalenes	5	---	---

TABLE 4

DPT Boring Subsurface Soil Results
Spent Potliner Managment Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	SPL DPT Boring	
SAMPLE NUMBER		**SPL-DPT6A**	**SPL-DPT6B**
SAMPLE DEPTH INTERVAL (feet bgs)		1.25 - 1.75	3.5 - 4.5
DATE COLLECTED		12/4/2003	12/4/2003
POLYNUCLEAR AROMATIC HYDROCARBONS *(Method 8270C)*			
Acenaphthene		<0.0278	<0.0297
Acenaphthylene		<0.0278	<0.0297
Anthracene	ns	**0.0442 J**	<0.0297
Benzo(a)anthracene[C]	ns	**0.141**	**0.0298 J**
Benzo(a)pyrene[C]	2	**0.15**	**0.0298 J**
Benzo(g,h,i)perylene[C]	ns	**0.102**	<0.0297
Benzofluoranthenes[C]	ns	**0.312**	**0.0452 J**
Chrysene[C]	ns	**0.894**	**0.0325 J**
Dibenz(a,h)anthracene[C]	ns	**0.0299 J**	<0.0297
Fluoranthene	ns	**0.211**	**0.059 J**
Fluorene		<0.0278	<0.0297
Indeno(1,2,3-cd)pyrene[C]	ns	**0.0913**	<0.0297
Phenanthrene	ns	**0.197**	**0.0922**
Pyrene	ns	**0.254**	**0.0894**
Total PAHs	[1]1%	**2.43**	**0.3779**
Total Carcinogenic PAHs	2	**1.72**	**0.1373**

WAD = Weak and Dissociable Cyanide
TCLP = Toxicity Characteristic Leaching Procedure (Method 1311)

< = analyte was not detected at or above the method detection limit or laboratory practical quantitation limit

J = analyte detected above the method detection limit but below the laboratory practical quantitation limit

[1] = Dangerous Waste criteria (WAC 173-303)
ns = no standard
Bold = analyte detected at or above method detection limit

Bold + shaded = exceeded MTCA Method A cleanup level (WAC 173-340) or Dangerous Waste criteria (WAC 173-303)

[C] = carcinogenic PAH
Total carcinogenic PAHs cleanup level assumes entire carcinogenic PAH mixture is as toxic as benzo(a)pyrene, WAC 173-340-708(8)

MTCA Method A Soil Cleanup Levels = standards are listed for analytes detected above method detection limits

TABLE 6
Low Area Soil Results
Spent Potliner Managment Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	SPL Low Area Test Pit Samples	
SAMPLE NUMBER		SPL-LA1	SPL-LA2
SAMPLE DEPTH INTERVAL (feet bgs)		0 - 3	0 - 2.5
DATE COLLECTED		12/3/2003	12/3/2003
ANIONS *(Method 300.0)*			
Fluoride	ns	**453**	**672**
Chloride	ns	**13.5**	**7.13**
Nitrite as N	ns	**0.168**	**0.41**
Bromide		<0.561	<0.539
Nitrate as N	ns	**2.97**	**2.16**
Phosphate as P		<0.842	1.51
Sulfate	ns	**58.6**	**46.4**
CYANIDE (Method 9012/9013)	ns	**0.7**	**21**
WAD CYANIDE (Method SM45CNI)		<0.0.1	<0.01
TOTAL METALS *(Method SW846 6010/7470)*			
Aluminum	ns	**36,700**	**28,000**
Arsenic	20	**17.8**	**6.33**
Barium	ns	**78.3**	**68.4**
Cadmium	2	<1.07	<1.08
Chromium	2,000	**74.4**	**44.5**
Lead	1,000	**53.8**	**22.1**
Mercury	2	**0.141**	**0.329**
Selenium	ns	<10.7	<10.8
Silver	ns	<2.14	<2.16
TCLP 8 RCRA METALS in mg/L *(Method SW846 6010/7470)*			
Arsenic	[1]5.0	<0.01	<0.01
Barium	[1]100.0	**0.251**	**0.282**
Cadmium	[1]1.0	<0.005	<0.005
Chromium	[1]5.0	**0.0315**	**0.0201**
Lead	[1]5.0	**0.00581**	**0.00576**
Mercury	[1]0.2	<0.002	<0.002
Selenium	[1]1.0	<0.03	<0.03
Silver	[1]5.0	<0.005	<0.005
DIESEL RANGE PETROLEUM HYDROCARBONS *(Method NWTPH-Dx)*			
#2 Diesel	2,000	**119**	**85.5**
Motor Oil	2,000	**783**	**418**
GASOLINE RANGE PETROLEUM HYDROCARBONS *(Method NWTPH-Gx)*			
Gasoline		<4.49	<4.35
POLYCHLORINATED BIPHENYLS *(Method SW846 8082)*			
Aroclor 1016		<0.0514	<0.0553
Aroclor 1221		<0.103	<0.111
Aroclor 1232		<0.0514	<0.0553
Aroclor 1242	ns	**0.239**	**0.139**
Aroclor 1248		<0.0514	<0.0553
Aroclor 1254	ns	**0.859**	**0.338**
Aroclor 1260		<0.0514	<0.0553
Total PCBs	10	**1.10**	**0.477**
TOTAL PHENOLS *(EPA Method 9066)*		<5	<5
VOLATILE ORGANIC COMPOUNDS *(Method 8260B)*			
Dichlorodifluoromethane		<0.224	<0.218
Chloromethane		<0.561	<0.544
Vinyl chloride		<0.224	<0.218

TABLE 6
Low Area Soil Results
Spent Potliner Managment Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	SPL Low Area Test Pit Samples	
SAMPLE NUMBER		SPL-LA1	SPL-LA2
SAMPLE DEPTH INTERVAL (feet bgs)		0 - 3	0 - 2.5
DATE COLLECTED		12/3/2003	12/3/2003
Bromomethane		<0.449	<0.435
Chloroethane		<0.224	<0.218
Trichlorofluoromethane		<0.224	<0.218
1,1-Dichloroethene		<0.224	<0.218
Methylene chloride		<0.224	<0.218
trans-1,2-Dichloroethene		<0.224	<0.218
1,1-Dichloroethane		<0.224	<0.218
2,2-Dichloropropane		<0.224	<0.218
cis-1,2-Dichloroethene		<0.224	<0.218
Bromochloromethane		<0.224	<0.218
Chloroform		<0.224	<0.218
1,1,1-Trichloroethane		<0.224	<0.218
Carbon Tetrachloride		<0.224	<0.218
1,1-Dichloropropene		<0.224	<0.218
Benzene		<0.224	<0.218
1,2-Dichloroethane		<0.224	<0.218
Trichloroethene		<0.224	<0.218
1,2-Dichloropropane		<0.224	<0.218
Dibromomethane		<0.224	<0.218
Bromodichloromethane		<0.224	<0.218
cis-1,3-Dichloropropene		<0.224	<0.218
Toluene		<0.224	<0.218
trans-1,3-Dichloropropene		<0.224	<0.218
1,1,2-Trichloroethane		<0.224	<0.218
Tetrachloroethene		<0.224	<0.218
1,3-Dichloropropane		<0.224	<0.218
Dibromochloromethane		<0.224	<0.218
1,2-Dibromoethane		<0.224	<0.218
Chlorobenzene		<0.224	<0.218
Ethylbenzene		<0.224	<0.218
1,1,1,2-Tetrachloroethane		<0.224	<0.218
m,p-Xylene		<0.449	<0.435
o-Xylene		<0.224	<0.218
Styrene		<0.224	<0.218
Bromoform		<0.224	<0.218
Isopropylbenzene		<0.224	<0.218
Bromobenzene		<0.224	<0.218
n-Propylbenzene		<0.224	<0.218
1,1,2,2-Tetrachloroethane		<0.224	<0.218
1,2,3-Trichloropropane		<0.224	<0.218
2-Chlorotoluene		<0.224	<0.218
1,3,5-Trimethylbenzene		<0.224	<0.218
4-Chlorotoluene		<0.224	<0.218
t-Butylbenzene		<0.224	<0.218
1,2,4-Trimethylbenzene		<0.224	<0.218
sec-Butylbenzene		<0.224	<0.218
1,3-Dichlorobenzene		<0.224	<0.218
4-Isopropyltoluene		<0.224	<0.218

TABLE 6
Low Area Soil Results
Spent Potliner Managment Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	SPL Low Area Test Pit Samples	
SAMPLE NUMBER		SPL-LA1	SPL-LA2
SAMPLE DEPTH INTERVAL (feet bgs)		0 - 3	0 - 2.5
DATE COLLECTED		12/3/2003	12/3/2003
1,4-Dichlorobenzene		<0.224	<0.218
n-Butylbenzene		<0.224	<0.218
1,2-Dichlorobenzene		<0.224	<0.218
1,2-Dibromo-3-chloropropane		<0.449	<0.435
1,2,4-Trichlorobenzene		<0.224	<0.218
Hexachlorobutadiene		<0.224	<0.218
Naphthalene		<0.224	<0.218
1,2,3-Trichlorobenzene		<0.224	<0.218
SEMI-VOLATILE ORANGIC COMPOUNDS *(Method 8270C)*			
Phenol		<0.112	<0.108
bis(2-Chloroethyl)ether		<0.112	<0.108
2-Chlorophenol		<0.112	<0.108
1,3-Dichlorobenzene		<0.112	<0.108
1,4-Dichlorobenzene		<0.112	<0.108
Benzyl Alcohol		<0.140	<0.135
1,2-Dichlorobenzene		<0.112	<0.108
2-Methylphenol		<0.112	<0.108
bis(2-Chloroisopropyl)ether		<0.112	<0.108
3-&4-Methylphenol		<0.224	<0.215
N-nitroso-di-n-propylamine		<0.112	<0.108
Hexachloroethane		<0.112	<0.108
Nitrobenzene		<0.112	<0.108
Isophorone		<0.112	<0.108
2-Nitrophenol		<0.112	<0.108
2,4-Dimethylphenol		<0.112	<0.108
Benzoic Acid		<0.561	<0.538
bis(2-Chloroethoxy)methane		<0.112	<0.108
2,4-Dichlorophenol		<0.112	<0.108
1,2,4-Trichlorobenzene		<0.112	<0.108
4-Chloroaniline		<0.112	<0.108
Hexachlorobutadiene		<0.112	<0.108
4-Chloro-3-methylphenol		<0.112	<0.108
Hexachlorocyclopentadiene		<0.112	<0.108
2,4,6-Trichlorophenol		<0.112	<0.108
2,4,5-Trichlorophenol		<0.112	<0.108
2-Nitroaniline		<0.112	<0.108
Dimethylphthalate		<0.112	<0.108
2,6-Dinitrotoluene		<0.112	<0.108
3-Nitroaniline		<0.112	<0.108
2,4-Dinitrophenol		<0.561	<0.538
4-Nitrophenol		<0.281	<0.269
Dibenzofuran	ns	**1.11**	<0.108
2,4-Dinitrotoluene		<0.112	<0.108
Diethylphthalate		<0.112	<0.108
4-Chlorophenylphenylether		<0.112	<0.108
4-Nitroaniline		<0.112	<0.108
4,6-Dinitro-2-methylphenol		<0.561	<0.538
N-Nitrosodiphenylamine		<0.112	<0.108

TABLE 6
Low Area Soil Results
Spent Potliner Managment Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	SPL Low Area Test Pit Samples	
SAMPLE NUMBER		SPL-LA1	SPL-LA2
SAMPLE DEPTH INTERVAL (feet bgs)		0 - 3	0 - 2.5
DATE COLLECTED		12/3/2003	12/3/2003
4-Bromophenylphenylether		<0.112	<0.108
Hexachlorobenzene		<0.112	<0.108
Pentachlorophenol		<0.112	<0.108
Di-n-butylphthalate		<0.112	<0.108
Butylbenzylphthalate		<0.140	<0.135
3,3'-Dichlorobenzidine		<0.224	<0.215
bis(2-Ethylhexyl)phthalate	ns	**0.298**	<0.108
Di-n-octylphthalate		<0.112	<0.108
NAPHTHALENES			
1-Methylnaphthalene	ns	**0.294**	<0.0269
2-Methylnaphthalene	5	**0.408**	<0.0269
Naphthalene	ns	**0.791**	**0.0938**
2-Chloronaphthalene		<0.0281	<0.0269
Total Naphthalenes	5	**1.49**	**0.0938**
POLYNUCLEAR AROMATIC HYDROCARBONS *(Method 8270C)*			
Acenaphthene	ns	**2.85**	**0.244**
Acenaphthylene	ns	**0.0427 J**	<0.0269
Anthracene	ns	**4.34**	**0.942**
Benzo(a)anthracene[c]	ns	**18.2**	**3.17**
Benzo(a)pyrene[c]	2	**8.01**	**2.41**
Benzo(g,h,i)perylene[c]	ns	**5.66**	**2.48**
Benzofluoranthenes[c]	ns	**45.3**	**11.3**
Chrysene[c]	ns	**59.0**	**3.09**
Dibenz(a,h)anthracene[c]	ns	**2.86**	**1.02**
Fluoranthene	ns	**20.0**	**3.69**
Fluorene	ns	**2.40**	**0.172**
Indeno(1,2,3-cd)pyrene[c]	ns	**5.74**	**2.23**
Phenanthrene	ns	**16.3**	**2.05**
Pyrene	ns	**21.8**	**4.21**
Total PAHs	[1]1%	**213**	**37.0**
Total Carcinogenic PAHs	2	**145**	**25.7**

WAD = Weak and Dissociable Cyanide
TCLP = Toxicity Characteristic Leaching Procedure (Method 1311)

< = analyte was not detected at or above the method detection limit or laboratory practical quantitation limit

J = analyte detected above the method detection limit but below the laboratory practical quantitation limit

[1] = Dangerous Waste criteria (WAC 173-303)
ns = no standard
Bold = analyte detected at or above method detection limit

Bold + shaded = exceeded MTCA Method A cleanup level (WAC 173-340) or Dangerous Waste criteria (WAC 173-303)

[c] = carcinogenic PAH
Total carcinogenic PAHs cleanup level assumes entire carcinogenic PAH mixture is as toxic as benzo(a)pyrene, WAC 173-340-708(8)

MTCA Method A Soil Cleanup Levels = standards are listed for analytes detected above method detection limits

TABLE B-1
2003 SOIL ANALYTICAL RESULTS
SPENT POTLINING AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Preliminary Cleanup Levels (a)							
	MTCA Method A	MTCA Method C Protective of Human Direct Contact	Protective of Marine Surface Water	SPL-MA1 0-2 12/2/2003	SPL-MA2 0-2 12/2/2003	SPL-MA3 0-0.75 12/2/2003	SPL-MA4 0-1.5 12/2/2003	SPL-MA5 0-3.5 12/2/2003
cPAHs (mg/kg)								
SW8270C								
Benzo(a)anthracene	see total cPAHs	see total cPAHs	0.13	22.4	8.1	22.7	6.8	5.02
Chrysene	see total cPAHs	see total cPAHs	0.14	49.8	13.9	63.2	15.7	11.7
Benzofluoranthenes	see total cPAHs	see total cPAHs	0.44	56.6	17.7	64.2	24.7	17.9
Benzo(a)pyrene	see total cPAHs	see total cPAHs	0.35	16.2	8.86	21.4	6.61	4.47
Indeno(1,2,3-cd)pyrene	see total cPAHs	see total cPAHs	1	12.7	7.2	14.7	9.1	4.00
Dibenz(a,h)anthracene	see total cPAHs	see total cPAHs	0.64	4.33	2.27	7.15	4.39	1.69
TEQ	2	18	--	26.3	12.5	32.9	11.3	7.4

TABLE B-1
2003 SOIL ANALYTICAL RESULTS
SPENT POTLINING AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Preliminary Cleanup Levels (a)							
	MTCA Method A	MTCA Method C Protective of Human Direct Contact	Protective of Marine Surface Water	SPL-MA7 0-1.5 12/2/2003	SPL-MA8 0-1.25 12/2/2003	SPL-MA9 0-2.75 12/2/2003	SPL-MA10 0-4 12/2/2003	SPL-MA11 0-4.5 12/2/2003
cPAHs (mg/kg)								
SW8270C								
Benzo(a)anthracene	see total cPAHs	see total cPAHs	0.13	12.2	3.86	26.9	11.1	12.7
Chrysene	see total cPAHs	see total cPAHs	0.14	14.2	5.48	17.5	70.2	25.1
Benzofluoranthenes	see total cPAHs	see total cPAHs	0.44	17.5	6.32	15.1	39.0	25.1
Benzo(a)pyrene	see total cPAHs	see total cPAHs	0.35	13.9	4.13	0.0265 U	4.82	10.6
Indeno(1,2,3-cd)pyrene	see total cPAHs	see total cPAHs	1	7.1	2.55	10.4	6.86	7.51
Dibenz(a,h)anthracene	see total cPAHs	see total cPAHs	0.64	2.73	0.996	4.79	2.81	2.67
TEQ	2	18	--	18.0	5.56	5.89	11.5	15.6

TABLE B-1
2003 SOIL ANALYTICAL RESULTS
SPENT POTLINING AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Preliminary Cleanup Levels (a)							
	MTCA Method A	MTCA Method C Protective of Human Direct Contact	Protective of Marine Surface Water	SPL-MA12 0-3.5 12/2/2003	SPL-MA13 0-2 12/2/2003	SPL-MA14 0-4 12/2/2003	SPL-MA15 0-2 12/2/2003	SPL-MA16 0-1 12/3/2003
cPAHs (mg/kg)								
SW8270C								
Benzo(a)anthracene	see total cPAHs	see total cPAHs	0.13	1.17	20.1	4.77	5.82	2.03
Chrysene	see total cPAHs	see total cPAHs	0.14	3.04	27.1	6.65	7.42	3.07
Benzofluoranthenes	see total cPAHs	see total cPAHs	0.44	2.24	36	12.2	11.7	3.17
Benzo(a)pyrene	see total cPAHs	see total cPAHs	0.35	0.697	19.9	6.0	6.39	1.69
Indeno(1,2,3-cd)pyrene	see total cPAHs	see total cPAHs	1	0.371	13.6	4.75	3.08	1.12
Dibenz(a,h)anthracene	see total cPAHs	see total cPAHs	0.64	0.180	6.37	1.78	1.42	0.500
TEQ	2	18	--	1.12	27.8	8.42	8.67	2.40

TABLE B-1
2003 SOIL ANALYTICAL RESULTS
SPENT POTLINING AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Preliminary Cleanup Levels (a)							
	MTCA Method A	MTCA Method C Protective of Human Direct Contact	Protective of Marine Surface Water	SPL-MA17 0-1 12/3/2003	SPL-DPT6A 1.25-1.75 12/4/2003	SPL-DPT6B 3.5-4.5 12/4/2003	SPL-LA1 0-3 12/3/2003	SPL-LA2 0-2.5 12/3/2003
cPAHs (mg/kg)								
SW8270C								
Benzo(a)anthracene	see total cPAHs	see total cPAHs	0.13	0.265 U	0.141	0.0298 J	18.2	3.17
Chrysene	see total cPAHs	see total cPAHs	0.14	0.265 U	0.894	0.0325 J	59.0	3.09
Benzofluoranthenes	see total cPAHs	see total cPAHs	0.44	0.529 U	0.312	0.0452 J	45.3	11.3
Benzo(a)pyrene	see total cPAHs	see total cPAHs	0.35	0.265 U	0.15	0.0298 J	8.01	2.41
Indeno(1,2,3-cd)pyrene	see total cPAHs	see total cPAHs	1	0.265 U	0.0913	0.0297 U	5.74	2.23
Dibenz(a,h)anthracene	see total cPAHs	see total cPAHs	0.64	0.265 U	0.0299 J	0.0297 U	2.86	1.02
TEQ	2	18	--	NA	0.22	0.038	15.8	4.21

Boxed values indicate an exceedance of the preliminary cleanup level protective of marine surface water.

-- Indicates no cleanup level criteria available.

U = The analyte was not detected in the sample at the given reporting limit.

(a) Development of preliminary soil screening levels is presented in Table 23 of the main text.

APPENDIX C

Spent Pot Lining Area 2008 Test Pit Logs

Soil Classification System

MAJOR DIVISIONS			GRAPHIC SYMBOL	USCS LETTER SYMBOL(1)	TYPICAL DESCRIPTIONS (2)(3)
COARSE-GRAINED SOIL (More than 50% of material is larger than No. 200 sieve size)	GRAVEL AND GRAVELLY SOIL (More than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (Little or no fines)		GW	Well-graded gravel; gravel/sand mixture(s); little or no fines
				GP	Poorly graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)		GM	Silty gravel; gravel/sand/silt mixture(s)
				GC	Clayey gravel; gravel/sand/clay mixture(s)
	SAND AND SANDY SOIL (More than 50% of coarse fraction passed through No. 4 sieve)	CLEAN SAND (Little or no fines)		SW	Well-graded sand; gravelly sand; little or no fines
				SP	Poorly graded sand; gravelly sand; little or no fines
		SAND WITH FINES (Appreciable amount of fines)		SM	Silty sand; sand/silt mixture(s)
				SC	Clayey sand; sand/clay mixture(s)
FINE-GRAINED SOIL (More than 50% of material is smaller than No. 200 sieve size)	SILT AND CLAY (Liquid limit less than 50)			ML	Inorganic silt and very fine sand; rock flour; silty or clayey fine sand or clayey silt with slight plasticity
				CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay
				OL	Organic silt; organic, silty clay of low plasticity
	SILT AND CLAY (Liquid limit greater than 50)			MH	Inorganic silt; micaceous or diatomaceous fine sand
				CH	Inorganic clay of high plasticity; fat clay
				OH	Organic clay of medium to high plasticity; organic silt
	HIGHLY ORGANIC SOIL			PT	Peat; humus; swamp soil with high organic content

OTHER MATERIALS	GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
PAVEMENT		AC or PC	Asphalt concrete pavement or Portland cement pavement
ROCK		RK	Rock (See Rock Classification)
WOOD		WD	Wood, lumber, wood chips
DEBRIS		DB	Construction debris, garbage

Notes:
1. USCS letter symbols correspond to symbols used by the Unified Soil Classification System and ASTM classification methods. Dual letter symbols (e.g., SP-SM for sand or gravel) indicate soil with an estimated 5-15% fines. Multiple letter symbols (e.g., ML/CL) indicate borderline or multiple soil classifications.
2. Soil descriptions are based on the general approach presented in the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), outlined in ASTM D 2488. Where laboratory index testing has been conducted, soil classifications are based on the Standard Test Method for Classification of Soils for Engineering Purposes, as outlined in ASTM D 2487.
3. Soil description terminology is based on visual estimates (in the absence of laboratory test data) of the percentages of each soil type and is defined as follows:

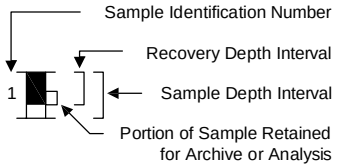
Primary Constituent:	> 50% - "GRAVEL," "SAND," "SILT," "CLAY," etc.
Secondary Constituents:	> 30% and ≤ 50% - "very gravelly," "very sandy," "very silty," etc.
	> 15% and ≤ 30% - "gravelly," "sandy," "silty," etc.
Additional Constituents:	> 5% and ≤ 15% - "with gravel," "with sand," "with silt," etc.
	≤ 5% - "trace gravel," "trace sand," "trace silt," etc., or not noted.

Drilling and Sampling Key

SAMPLER TYPE

Code	Description
a	3.25-inch O.D., 2.42-inch I.D. Split Spoon
b	2.00-inch O.D., 1.50-inch I.D. Split Spoon
c	Shelby Tube
d	Grab Sample
e	Single-Tube Core Barrel
f	Double-Tube Core Barrel
g	Other - See text if applicable
1	300-lb Hammer, 30-inch Drop
2	140-lb Hammer, 30-inch Drop
3	Pushed
4	Rotosonic
5	Air Rotary (Rock)
6	Wash Rotary (Rock)
7	Other - See text if applicable

SAMPLE NUMBER & INTERVAL



Field and Lab Test Data

Code	Description
PP = 1.0	Pocket Penetrometer, tsf
TV = 0.5	Torvane, tsf
PID = 100	Photoionization Detector VOC screening, ppm
W = 10	Moisture Content, %
D = 120	Dry Density, pcf
-200 = 60	Material smaller than No. 200 sieve, %
GS	Grain Size - See separate figure for data
AL	Atterberg Limits - See separate figure for data
GT	Other Geotechnical Testing
CA	Chemical Analysis

Groundwater

▽ ATD — Approximate water elevation at time of drilling (ATD) or on date noted. Groundwater levels can fluctuate due to precipitation, seasonal conditions, and other factors.

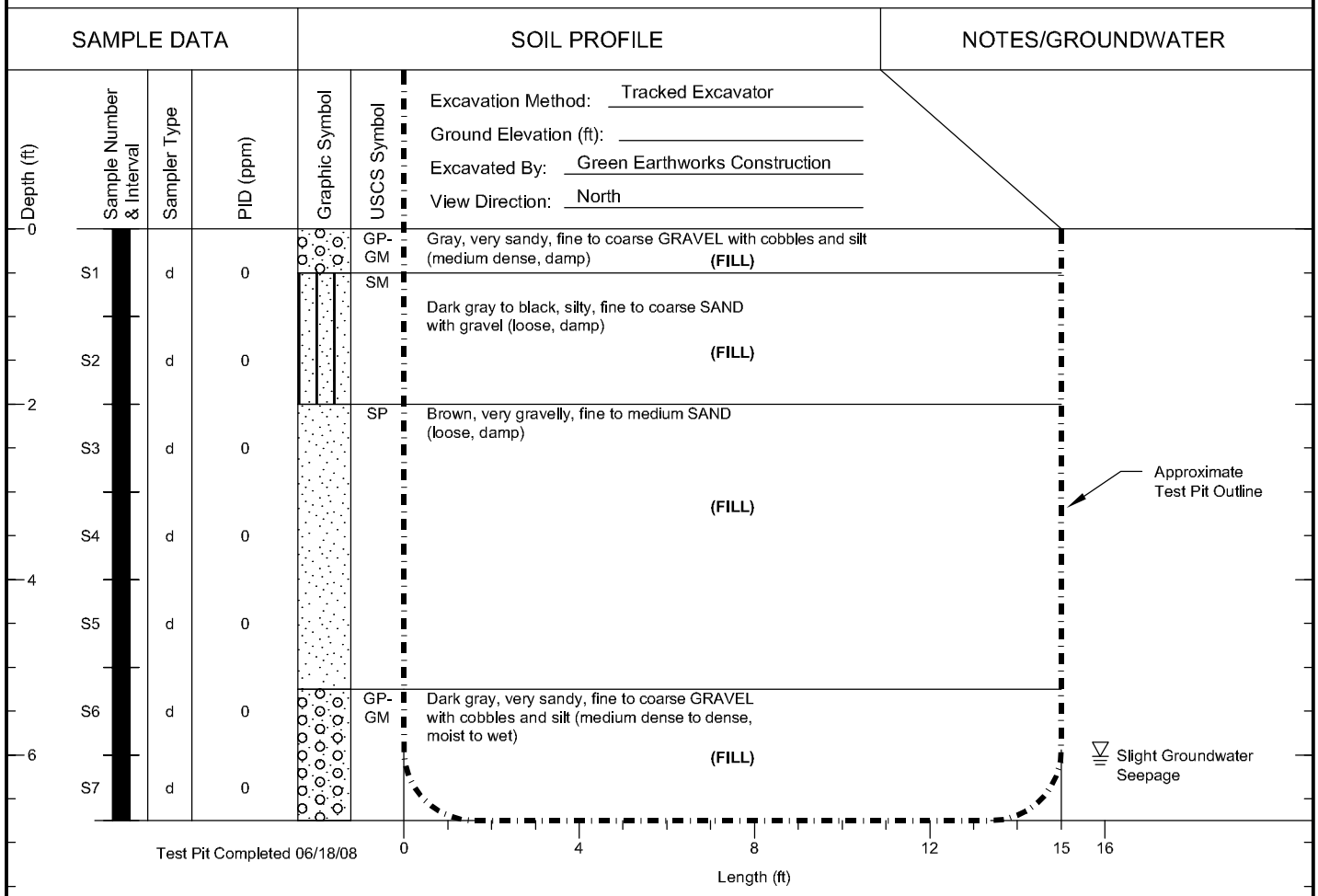
LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Soil Classification System and Key

Figure C-1

SPL-MA1A-2008



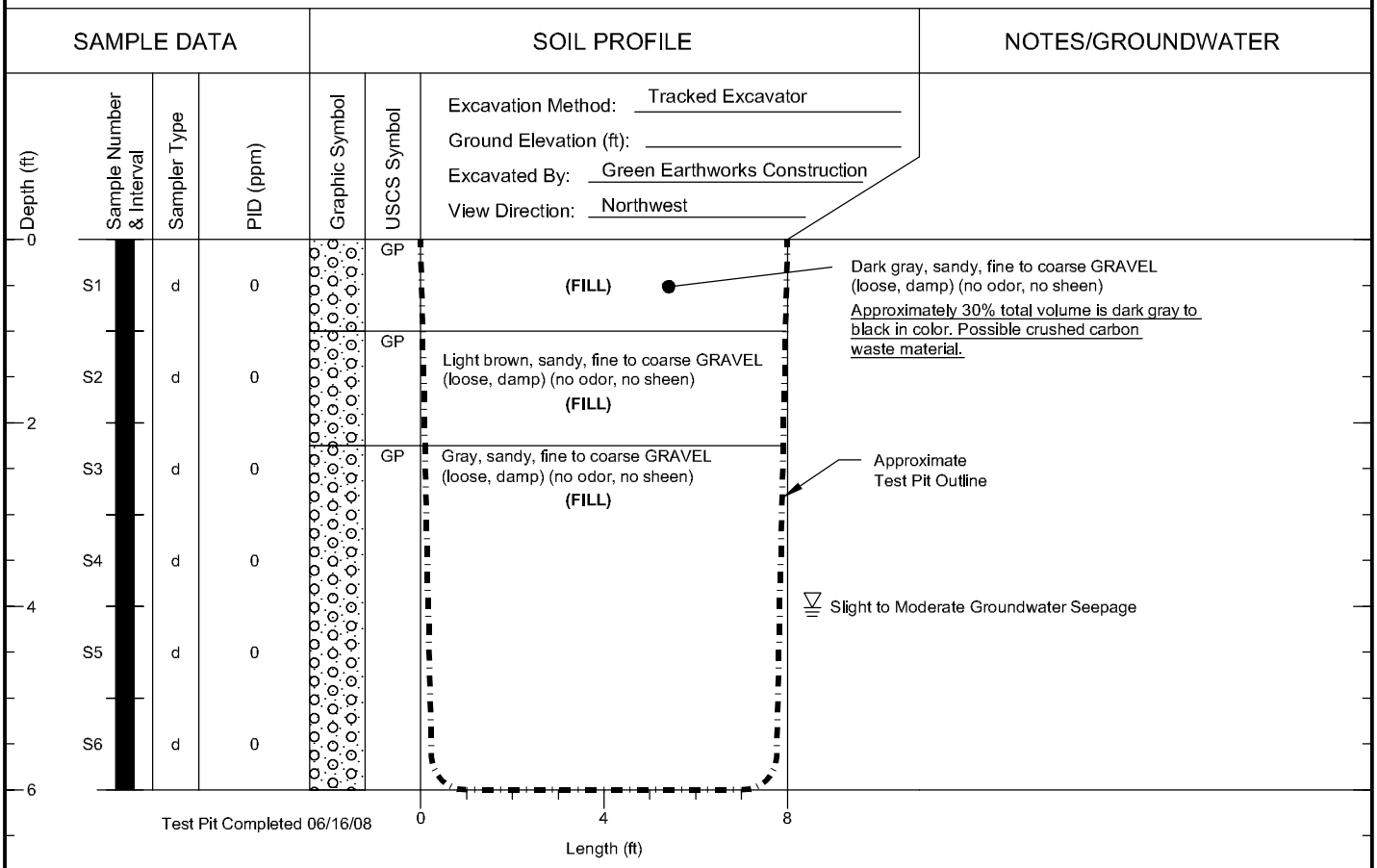
Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs New Project.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA1A-2008	Figure C-2

SPL-MA2A-2008

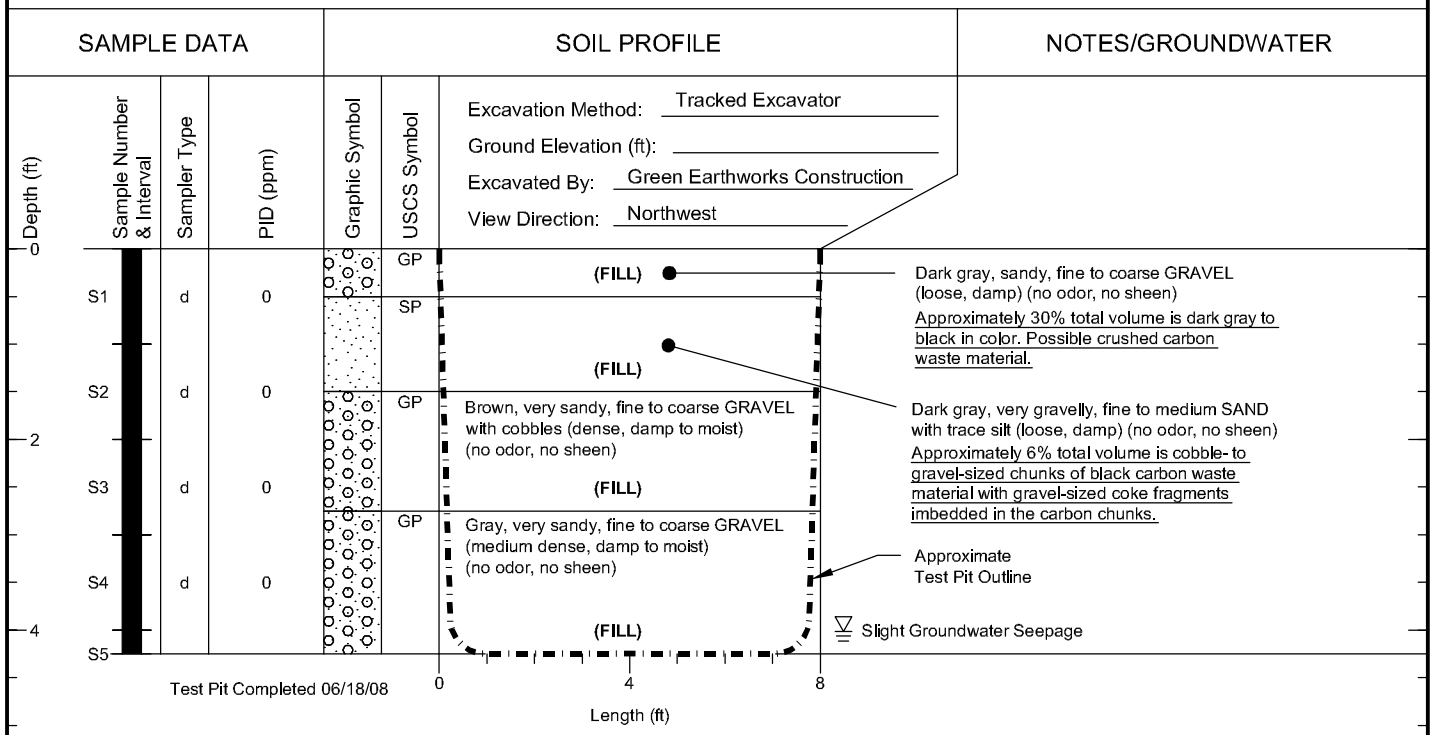


Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA2A-2008	Figure C-3

SPL-MA4A-2008

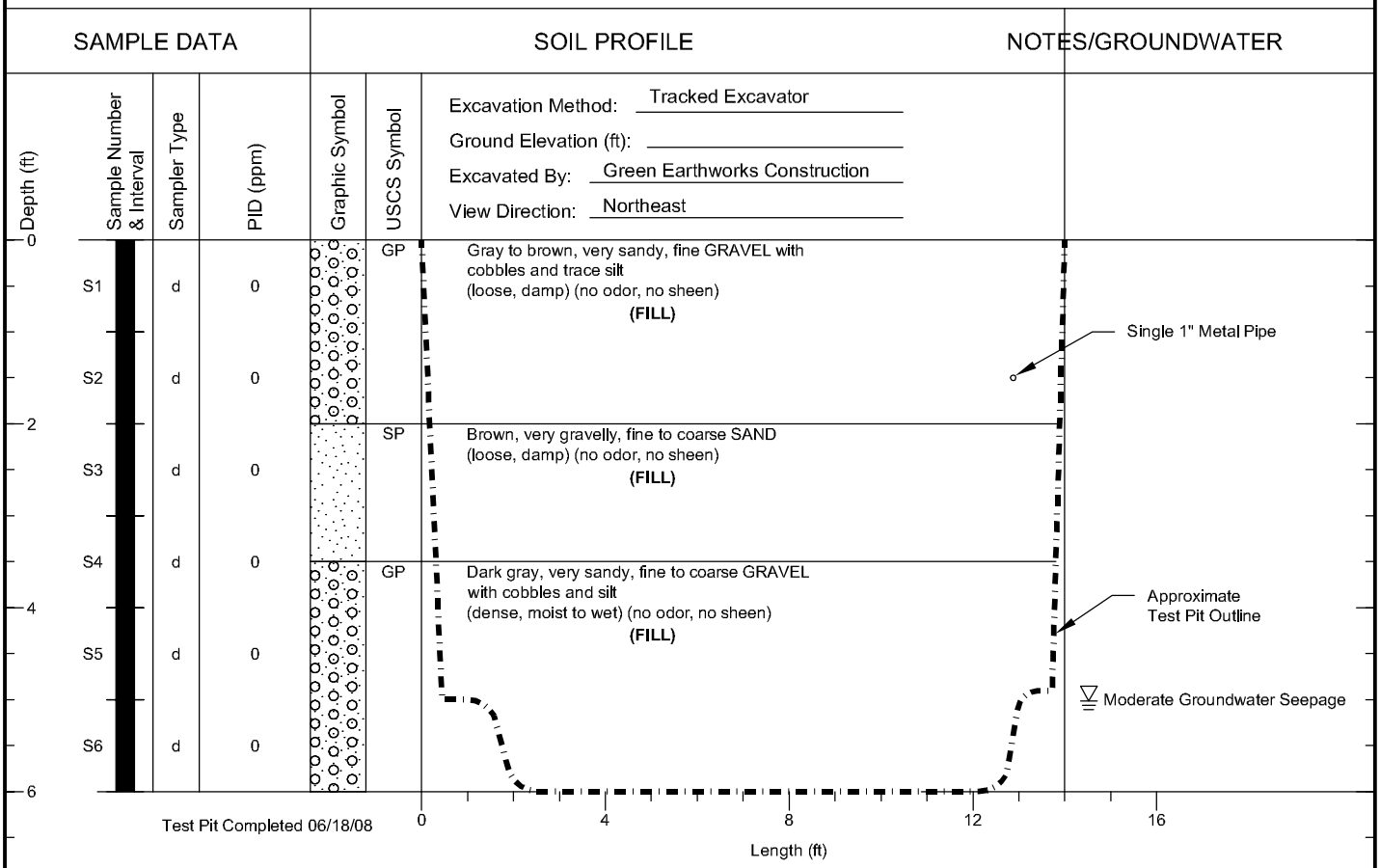


Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA4A-2008	Figure C-4

SPL-MA7A-2008



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs New Project.dwg (A) 7/29/2011

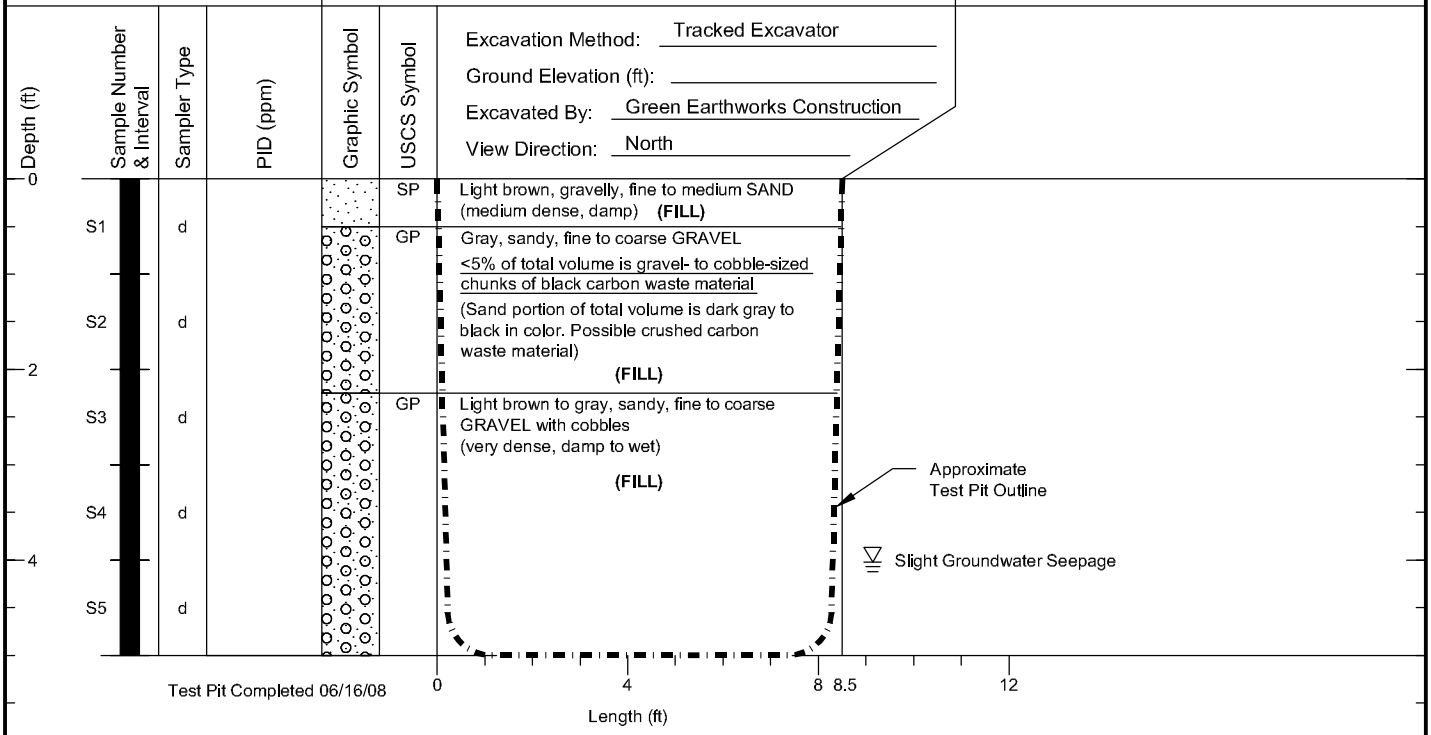
LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA7A-2008	Figure C-5

SPL-MA10A-2008

SAMPLE DATA | SOIL PROFILE | NOTES/GROUNDWATER

Excavation Method: Tracked Excavator
Ground Elevation (ft): _____
Excavated By: Green Earthworks Construction
View Direction: North



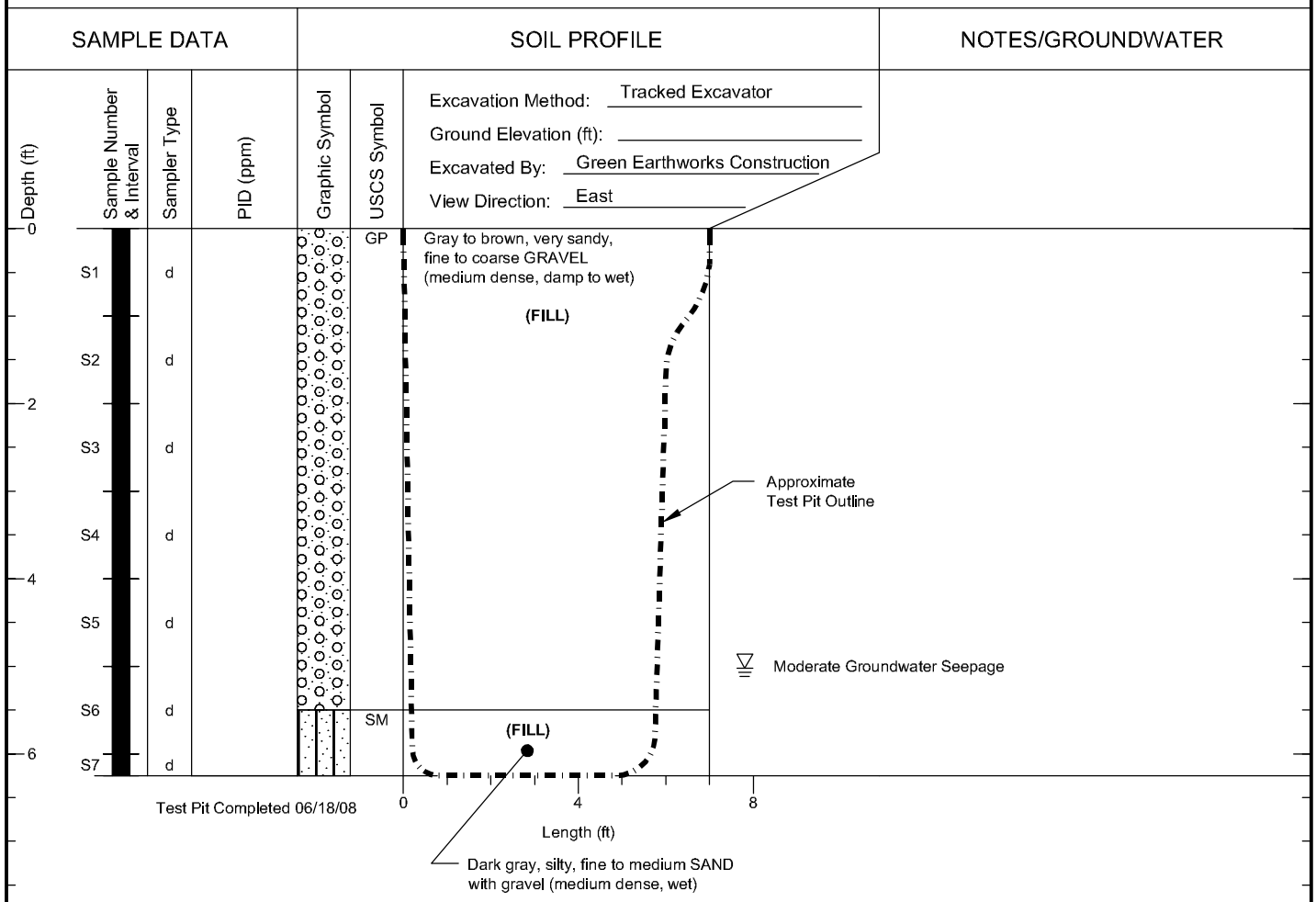
Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs New Project.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA10A-2008	Figure C-6

SPL-MA16A-2008

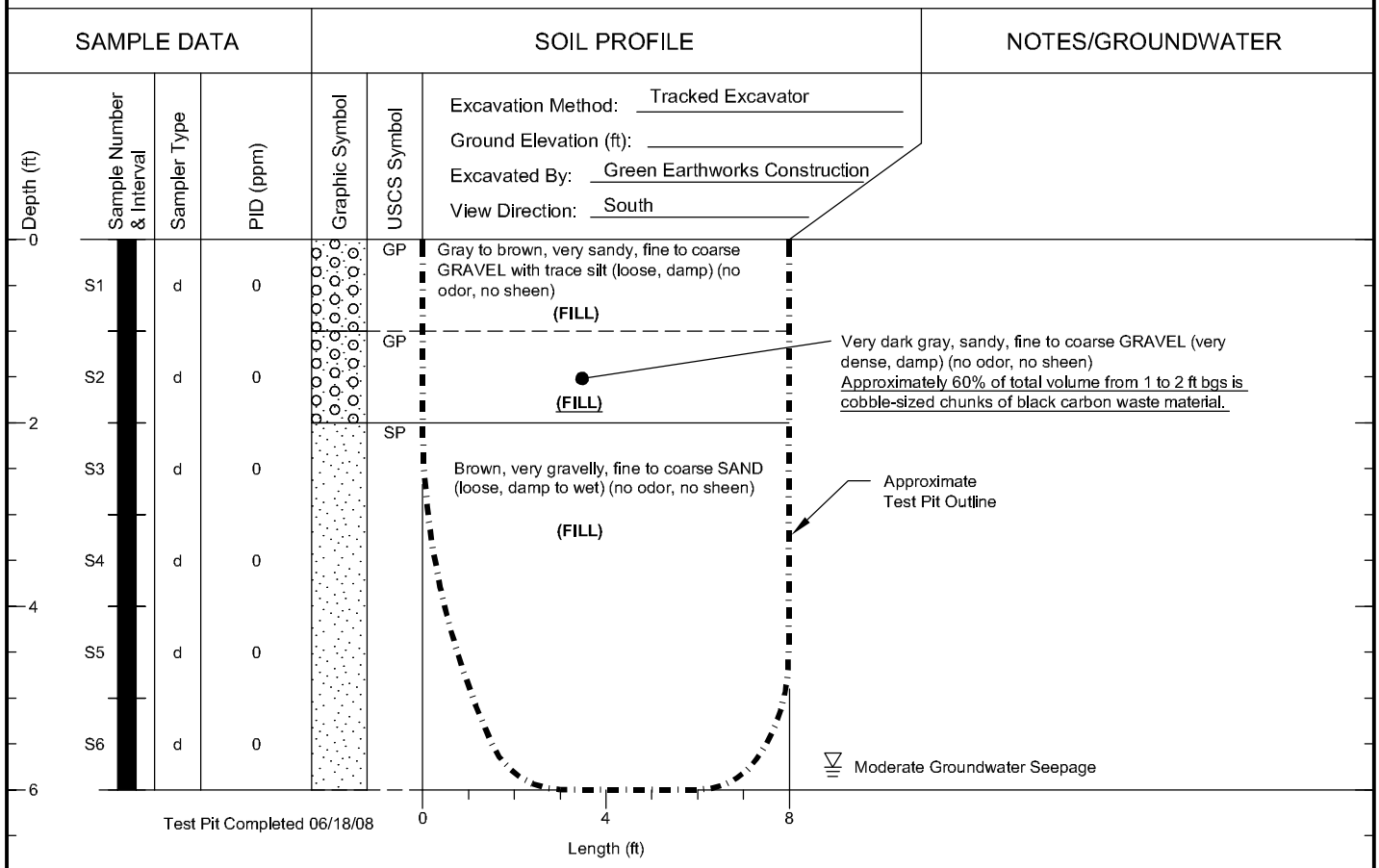


Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA16A-2008	Figure C-7

SPL-MA18-2008



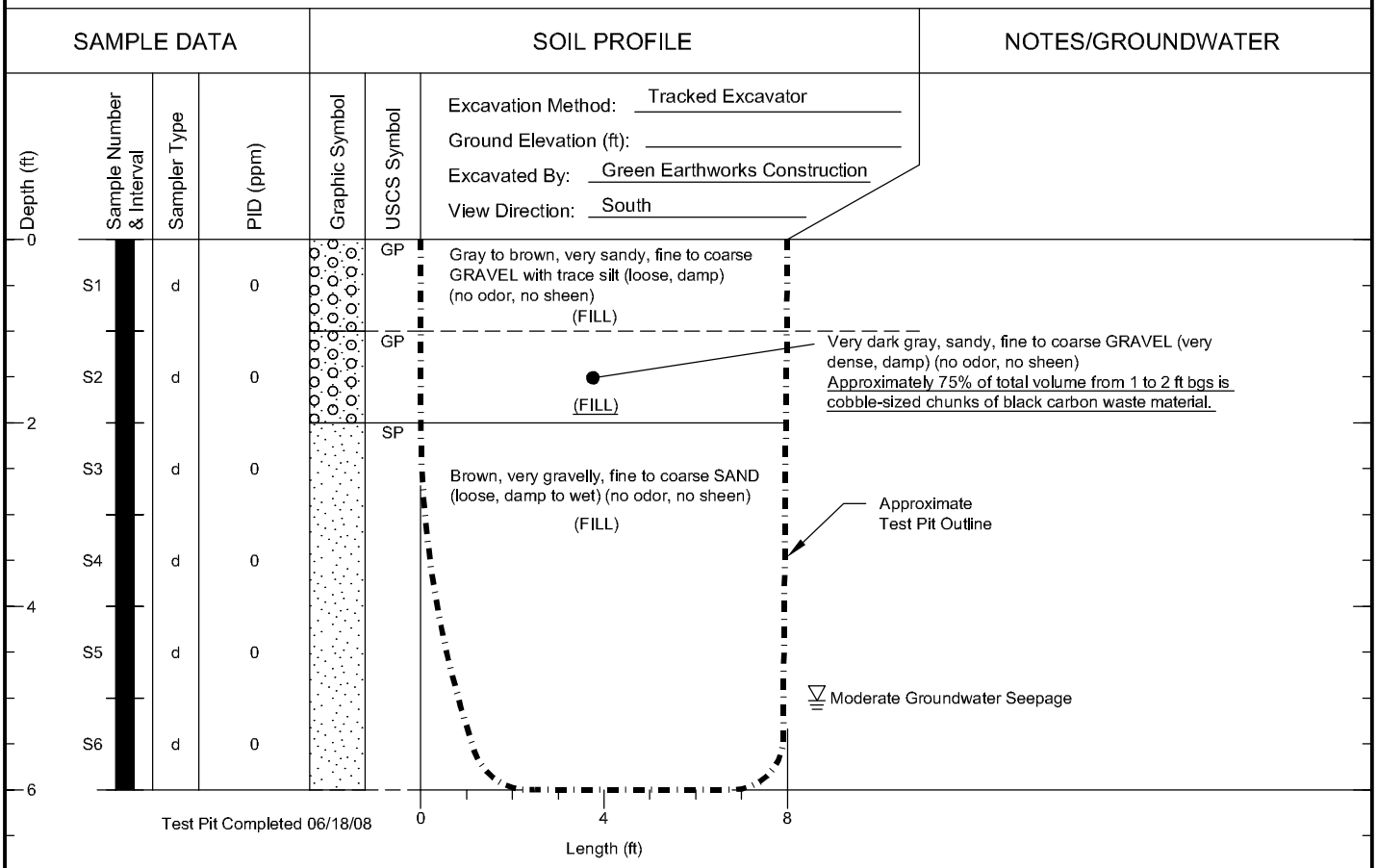
Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs New Project.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA18-2008	Figure C-8

SPL-MA19-2008

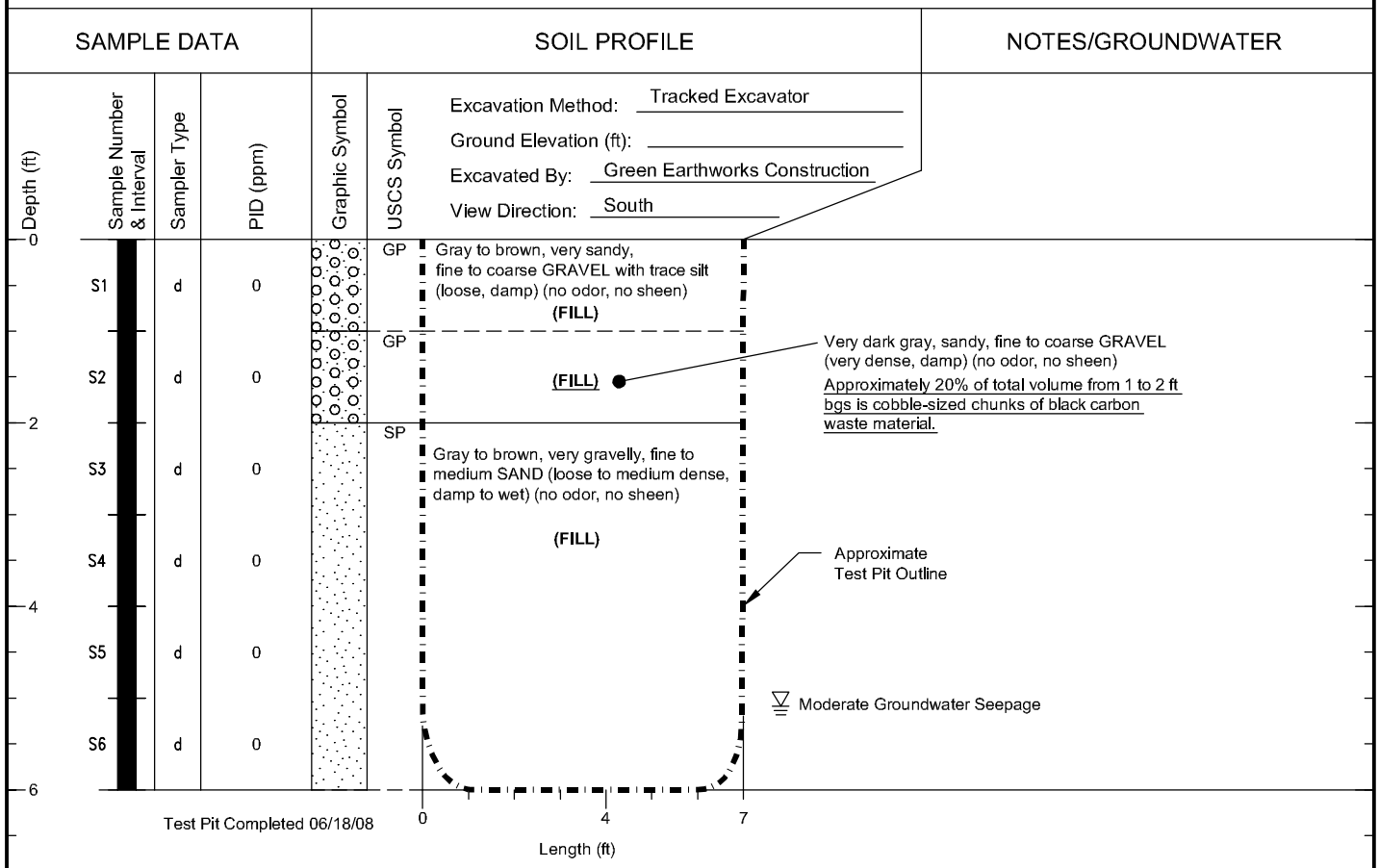


Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA19-2008	Figure C-9

SPL-MA20-2008



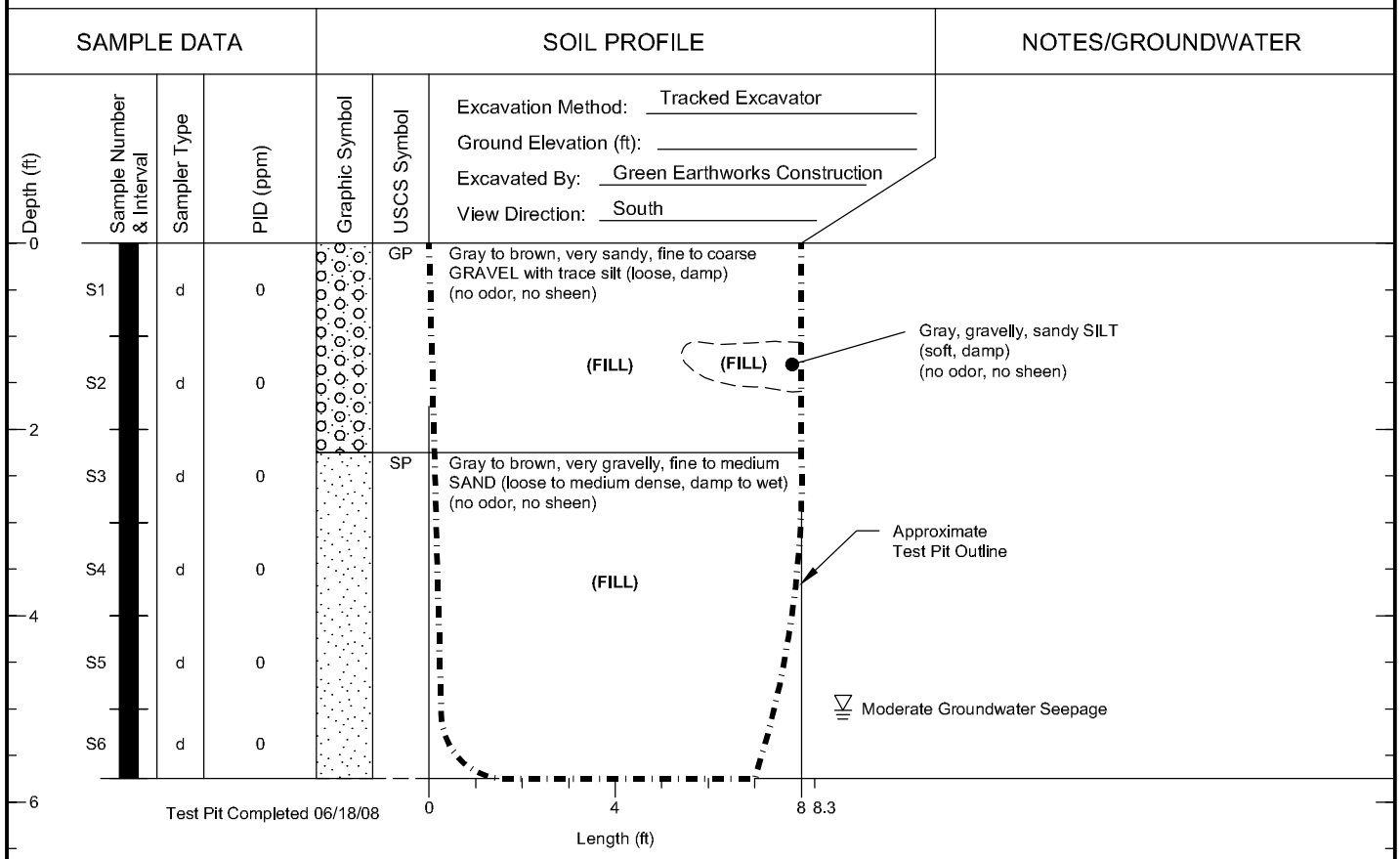
Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs New Project.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA20-2008	Figure C-10

SPL-MA21-2008



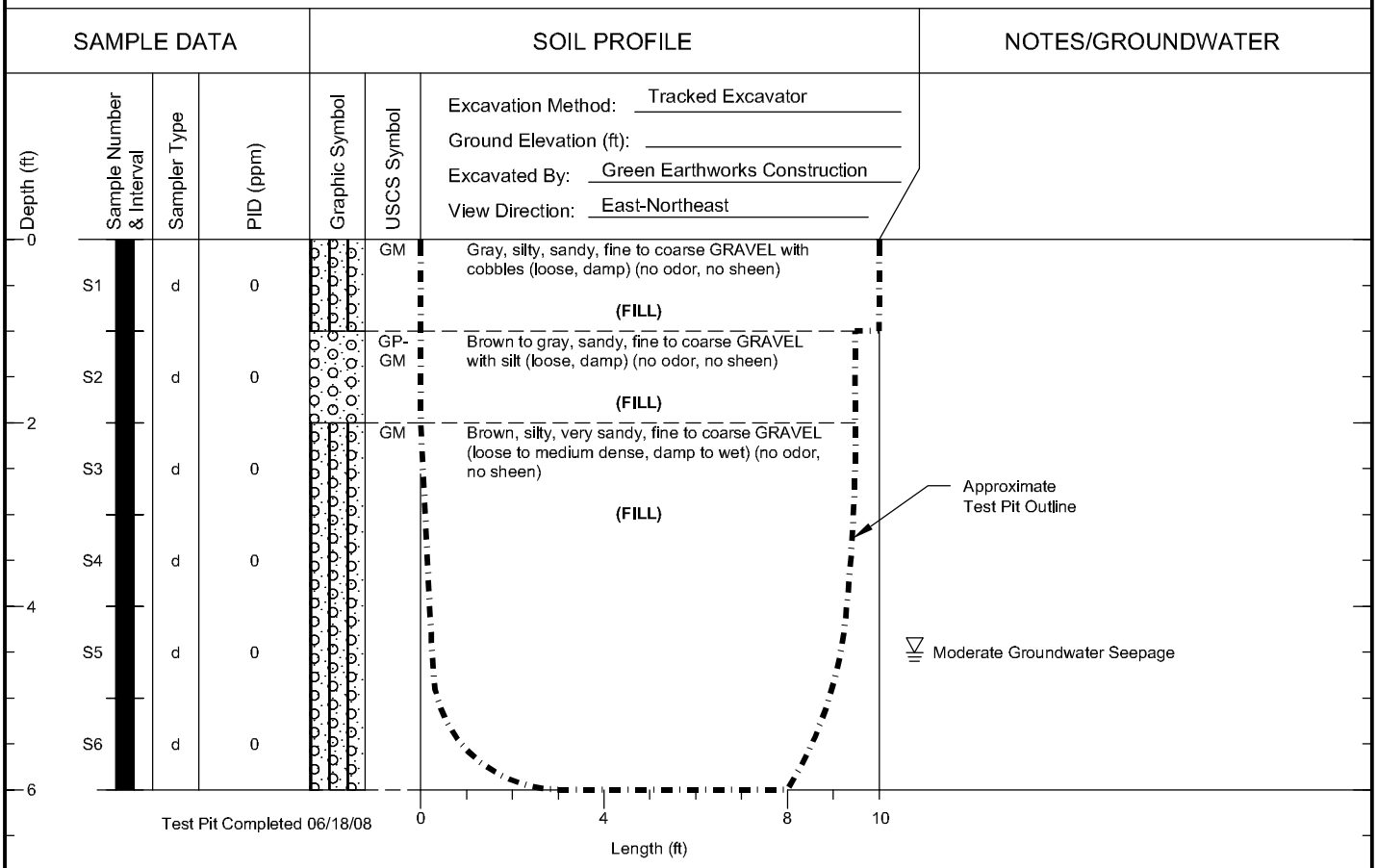
Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs New Project.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA21-2008	Figure C-11

SPL-MA22-2008



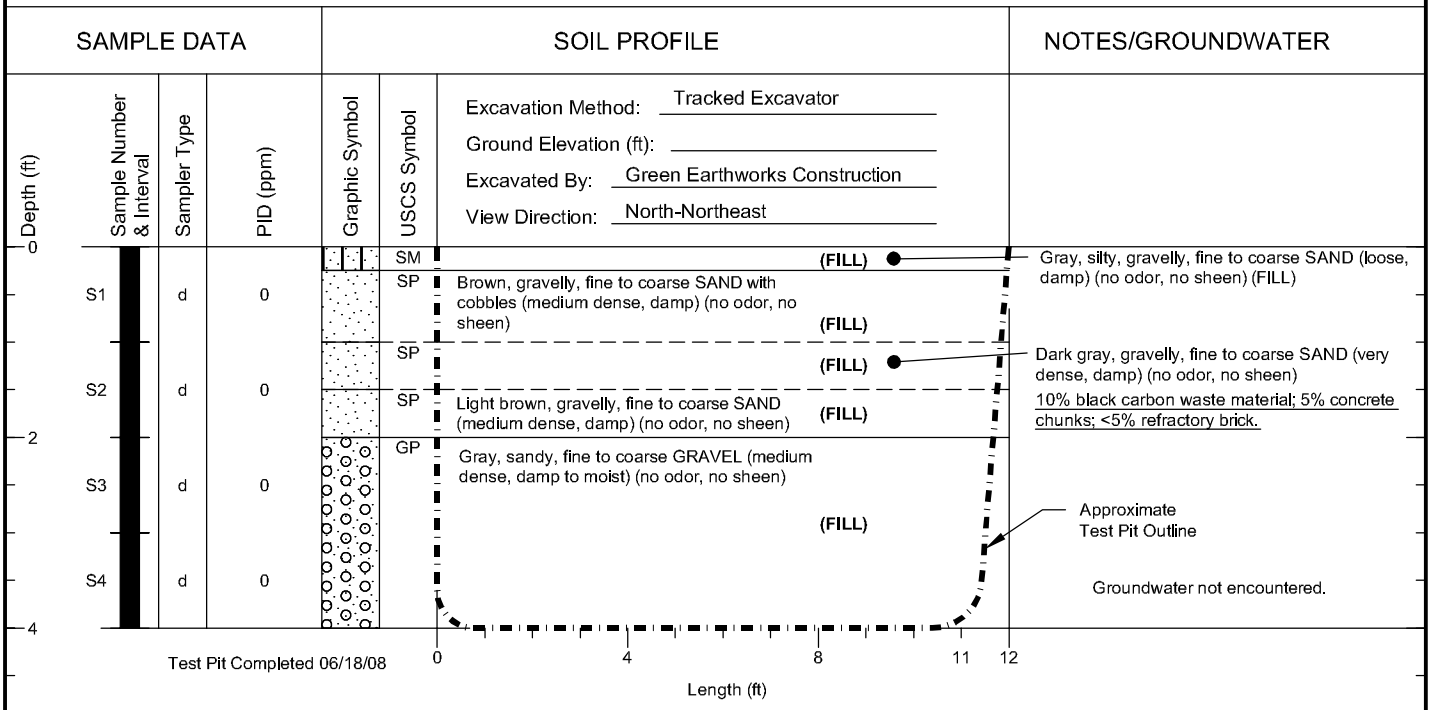
Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs New Project.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA22-2008	Figure C-12

SPL-MA23-2008



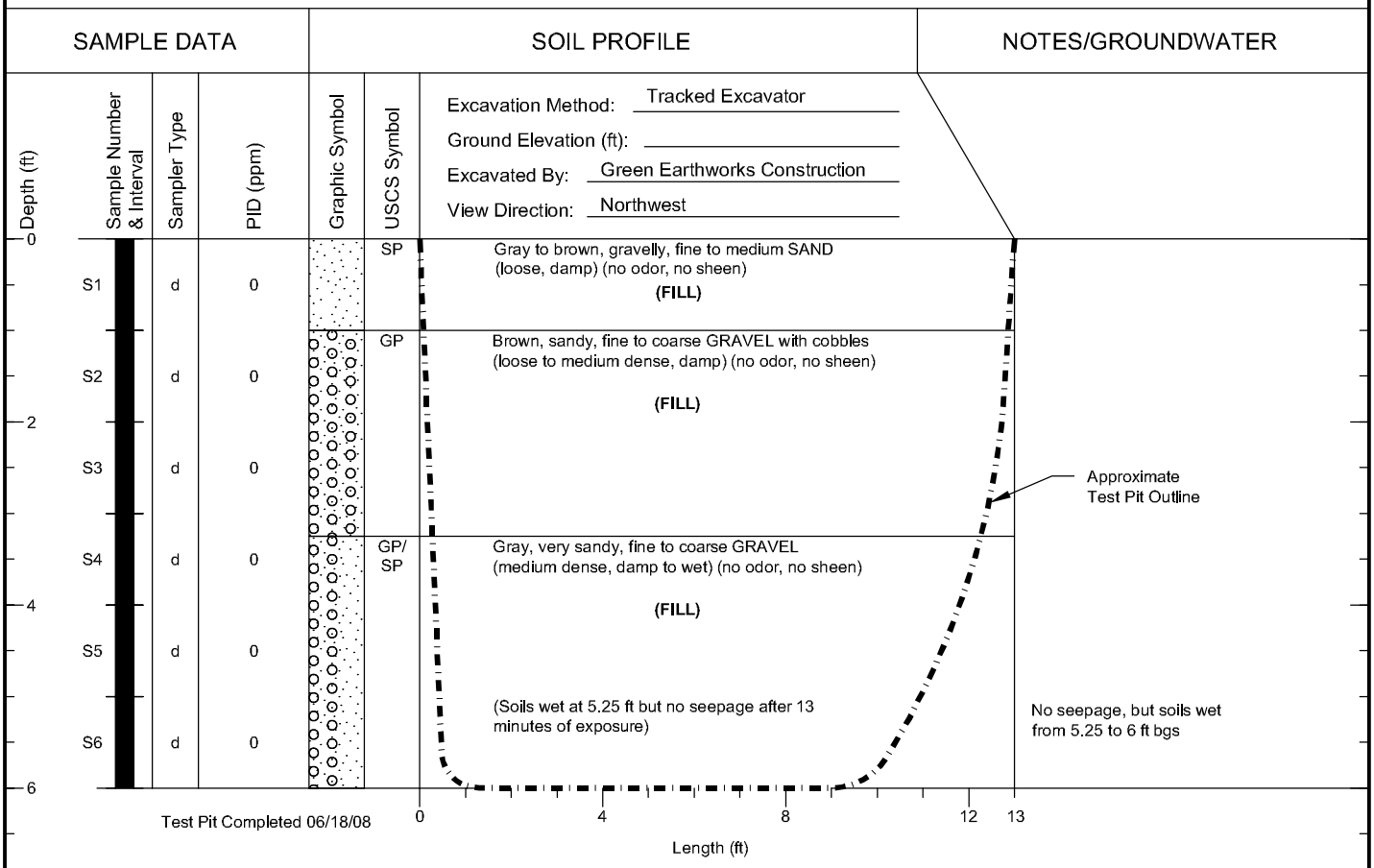
Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs New Project.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA23-2008	Figure C-13

SPL-MA24-2008



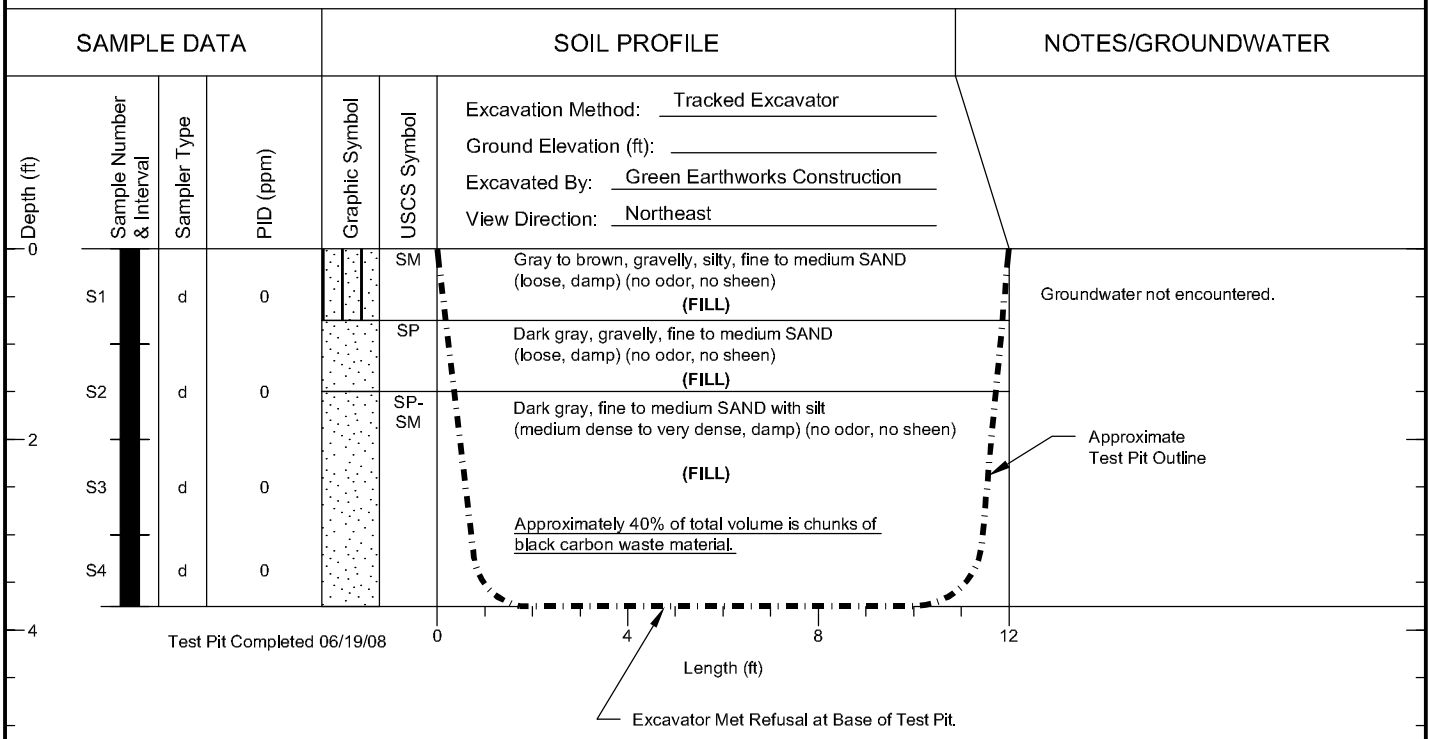
Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs New Project.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA24-2008	Figure C-14

SPL-MA25-2008

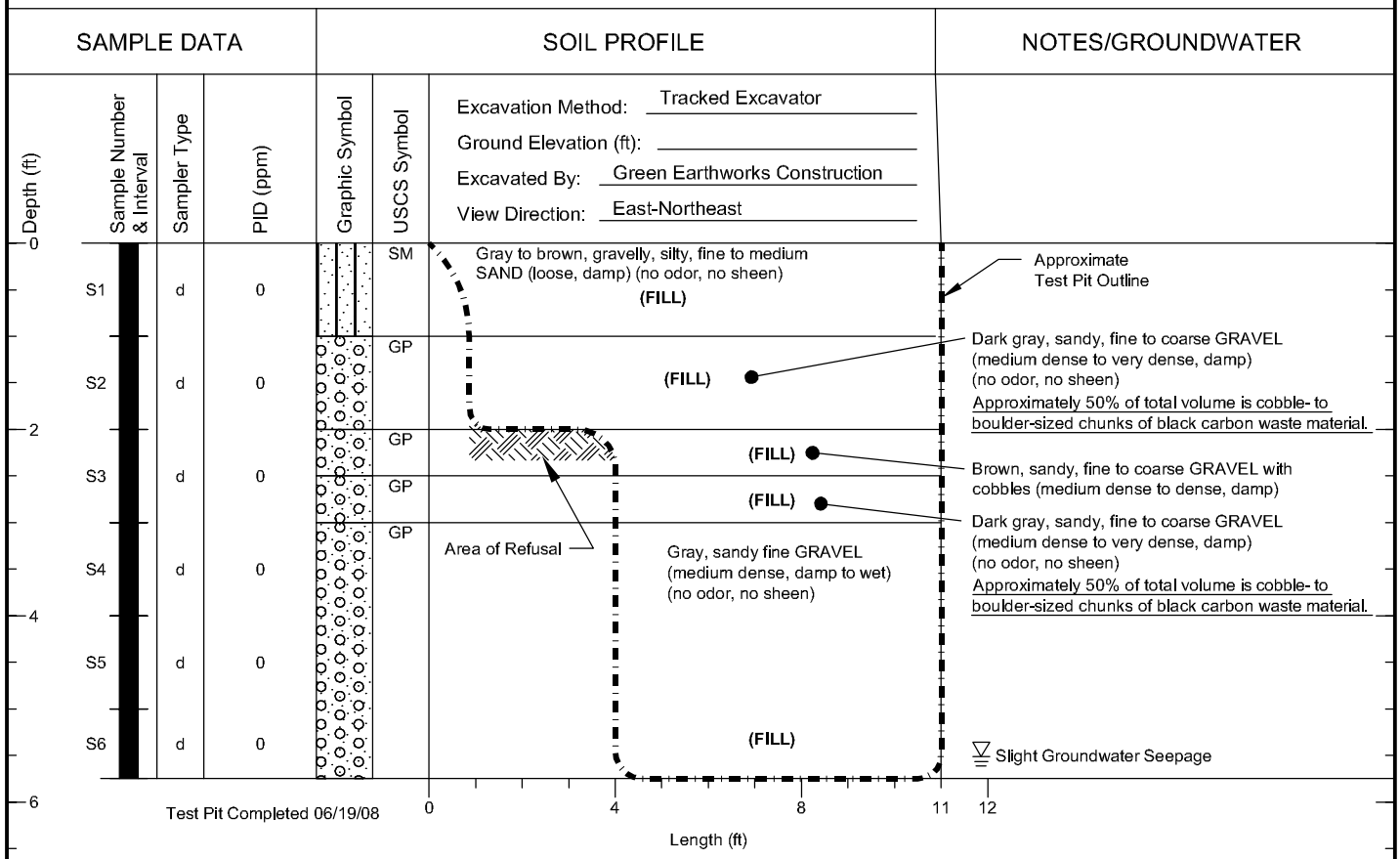


Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA25-2008	Figure C-15

SPL-MA26-2008

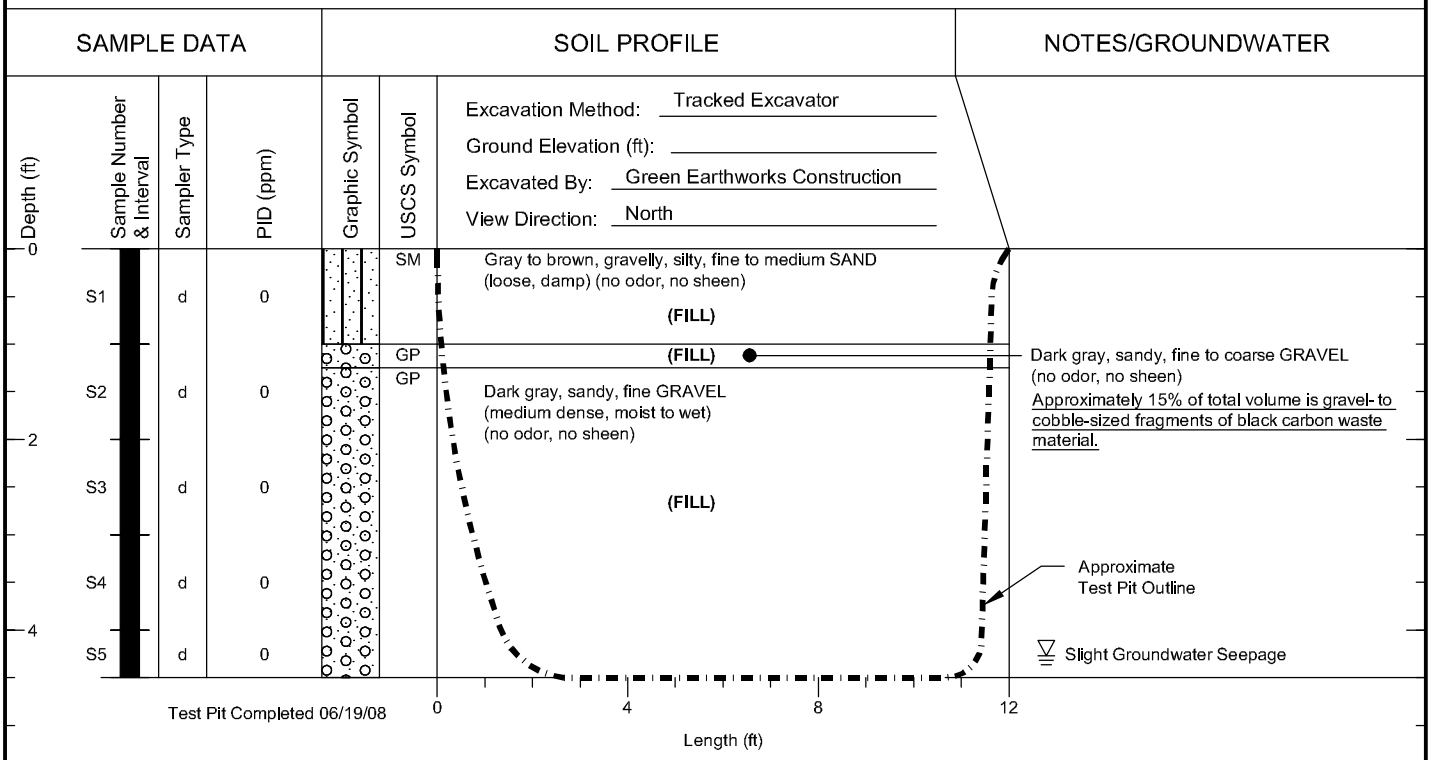


Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA26-2008	Figure C-16

SPL-MA27-2008

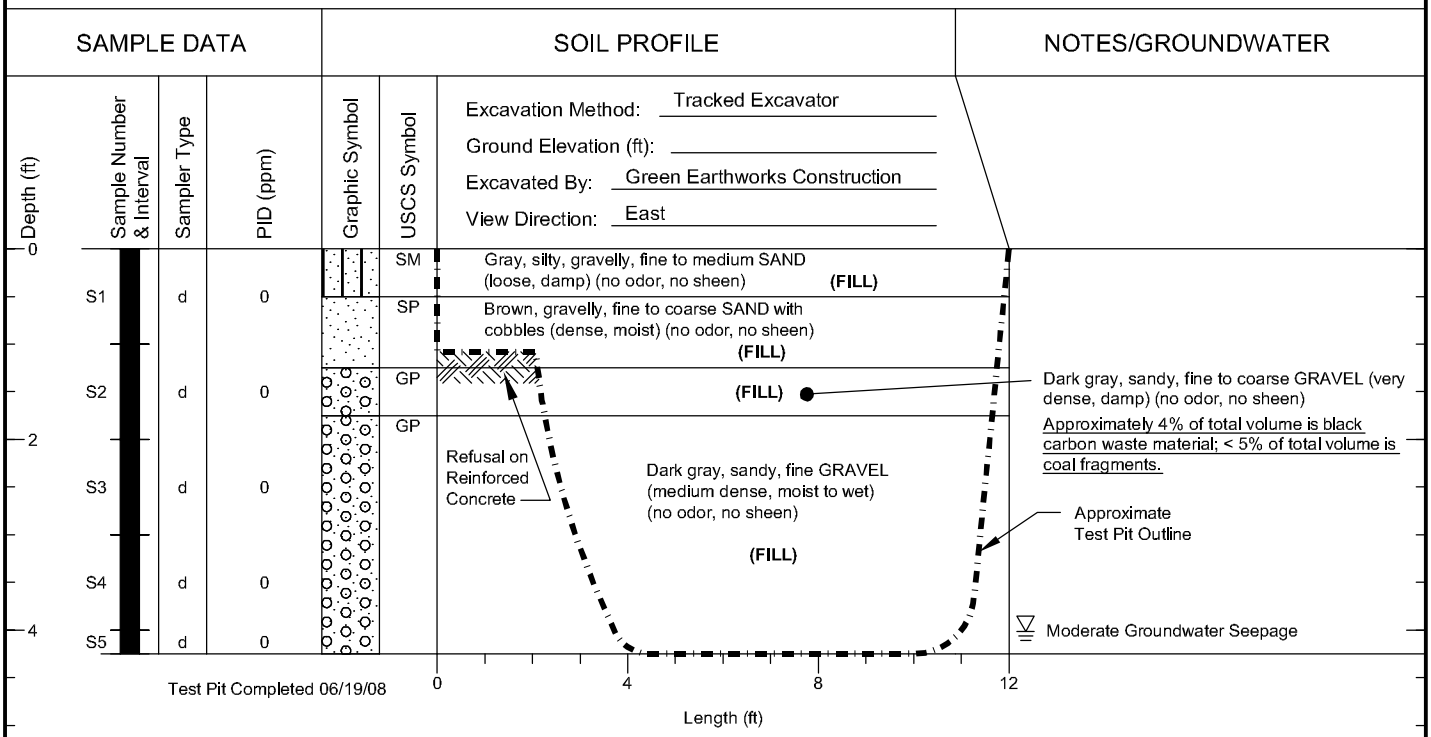


Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA27-2008	Figure C-17

SPL-MA28-2008

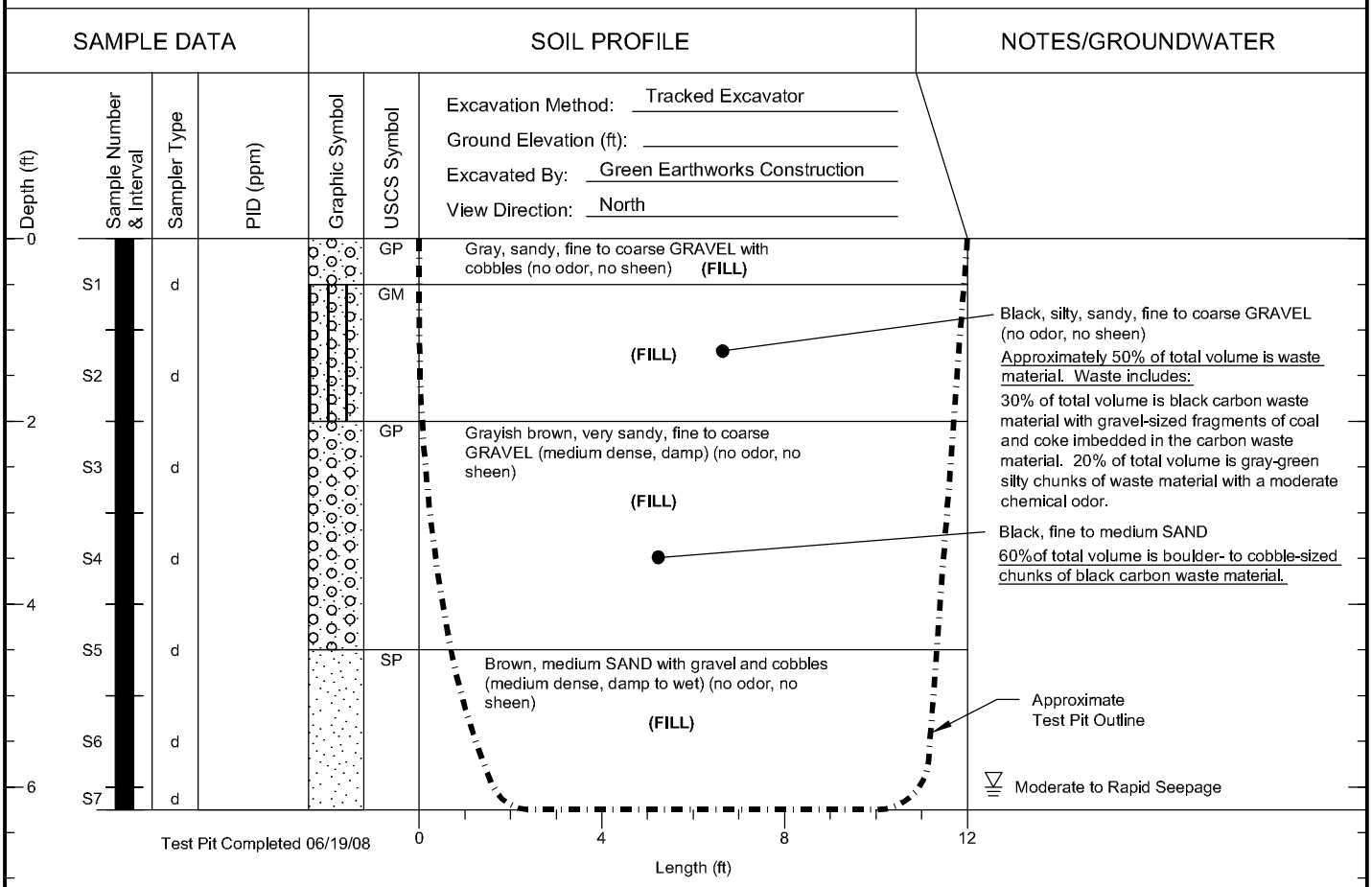


Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA28-2008	Figure C-18

SPL-MA29-2008



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

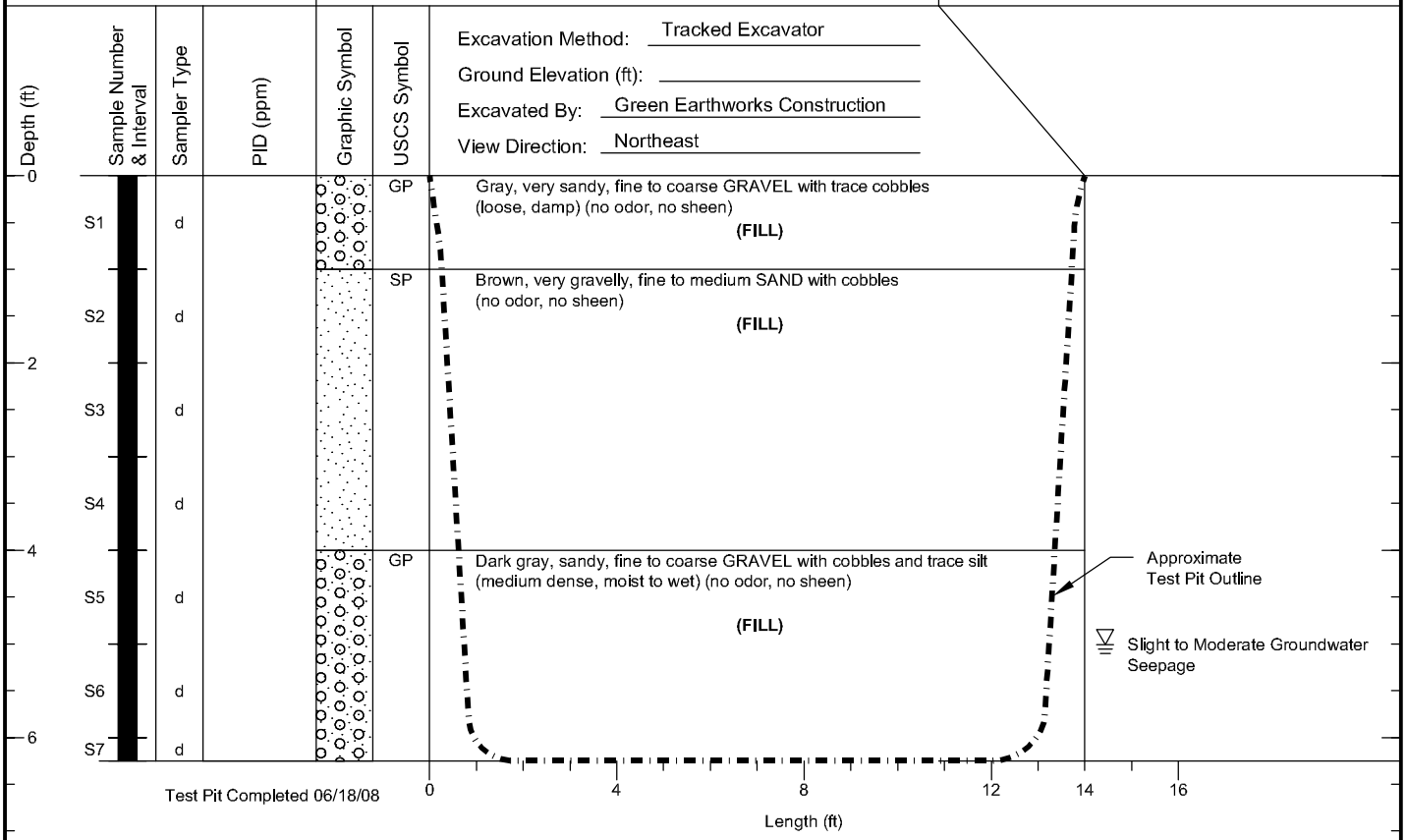
LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA29-2008	Figure C-19

SPL-MA30-2008

SAMPLE DATA | SOIL PROFILE | NOTES/GROUNDWATER

Excavation Method: Tracked Excavator
Ground Elevation (ft): _____
Excavated By: Green Earthworks Construction
View Direction: Northeast



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

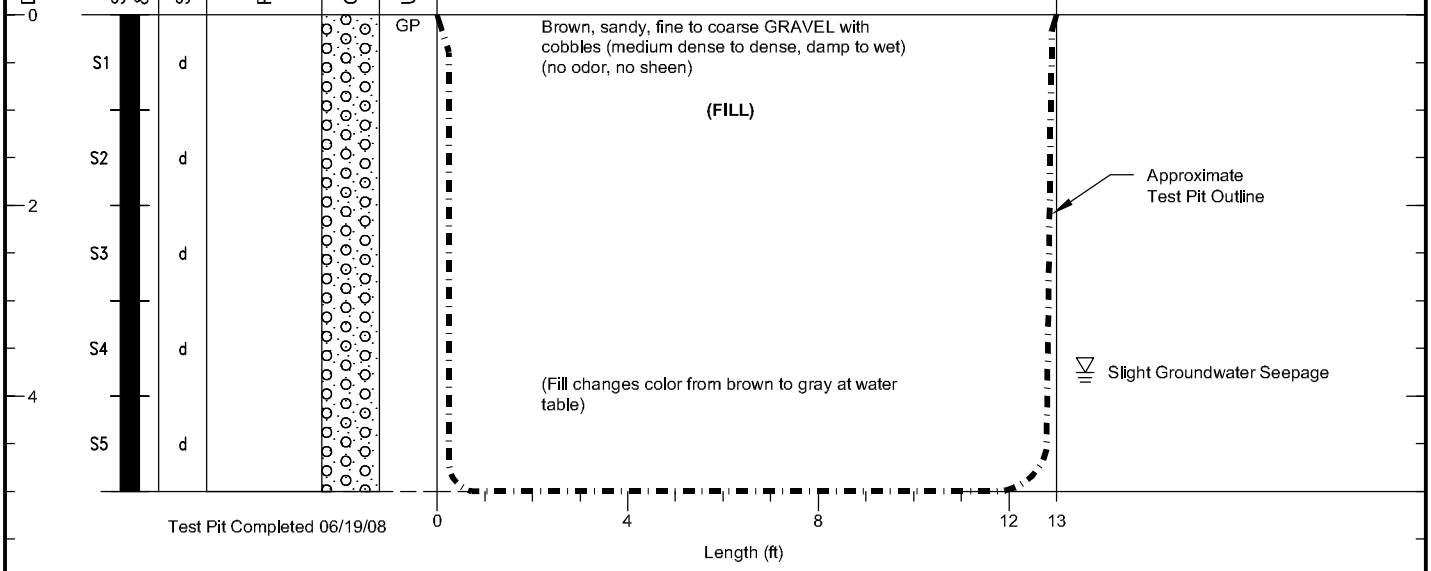
LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA30-2008	Figure C-20

SPL-MA31-2008

SAMPLE DATA | SOIL PROFILE | NOTES/GROUNDWATER

Excavation Method: Tracked Excavator
Ground Elevation (ft): _____
Excavated By: Green Earthworks Construction
View Direction: South-Southeast



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit SPL-MA31-2008	Figure C-21

APPENDIX D

Spent Pot Lining Area 2008 Laboratory Analytical Reports

Analytical Resources, Incorporated
Analytical Chemists and Consultants

July 3, 2008

Stacy Pischer
Landau Associates, Inc.
130 Second Avenue South
Edmonds, WA 98020-9129

RE: Project: P.O.T. Kaiser
ARI Job No: NC06

Dear Stacy:

Please find enclosed the original chain of custody (COCs) records and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted fourteen soil samples on June 20, 2008 in good condition. There were no discrepancies between the COC and the sample containers' labels.

The samples were analyzed for SIM cPAHs, NWTPH-Dx and Total Cyanide, as requested on the COC.

No analytical complications were noted. A copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

LANDAU ASSOCIATES

☑ **Seattle (Edmonds)** (425) 778-0907
☐ **Tacoma** (253) 926-2493
☐ **Spokane** (509) 327-9737
☐ **Portland (Tigard)** (503) 443-6010
☐ _____

4.2°c

NC06

Date 6/20/08

Page 1 of _____

Chain-of-Custody Record

Project Name P.O.T. Kaiser Project No. 168004

Project Location/Event 3400 Taylor Way, Tacoma

Sampler's Name David Nelson

Project Contact Stacy Pischer, Kris Hendrickson

Send Results To "

Turnaround Time
☑ Standard
☐ Accelerated
☐ _____

Sample I.D.	Date	Time	Matrix	No. of Containers	NWTPH-Dx + Mineral Oil	cPAHs (EPA 8270SIM)	Total Cyanide (EPA 335.4)	Observations/Comments
2008-VRO-N(5.5)	6/16/08	1305	S	1	X			
2008-SUPVR4W(4.5)		1315		1	X			
2008-TRANS2-N(5.75)		1408		1	X			
2008-TRANS11-NE(5.5)		1530		1	X			
~~2008-SUPVR4-SE DMN~~								
2008-SUPVR4SE-S(5)	6/17/08	1020		1	X			
2008-86SPILL-1-S(6.5)		1100		1	X			
2008-86SPILL-1-ESE(5)	6/19/08	1620		2	X			
2008-TRANS11-NE-SE(5.5)		1645		2	X			
2008-86SPILL-1-SE(5)		1545		2	X			
SPL-MA27-2008(2)	6/18/08	0910		1		X	X	
SPL-MA26-2008(3.5)		0945		1		X	X	
SPL-MA20-2008(4.5)		1230		1		X	X	
SPL-MA28-2008(2.5)	6/19/08	1000				X	X	
SPL-MA29-2008(5.25)		1045				X	X	

Testing Parameters

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

NWTPH-Dx:
✓ run acid wash/silica gel cleanup
___ run samples standardized to _____ product

___ Analyze for EPH if no specific product identified

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

___ Dissolved metal water samples field filtered

Other _____

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature: David M. Nelson	Signature: ERIC BRANSON	Signature	Signature
Printed Name: David M. Nelson	Printed Name: ERIC BRANSON	Printed Name	Printed Name
Company: LAI	Company: ARI	Company	Company
Date: 6/20/08 Time: 1005	Date: 6/20/08 Time: 1300	Date _____ Time _____	Date _____ Time _____

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

Rev 4/01

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau
COC No: —
Assigned ARI Job No: NC06

Project Name: POT Kaiser
Delivered by: ARI
Tracking No: —

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	(YES) NO
Were custody papers included with the cooler?	(YES) NO
Were custody papers properly filled out (ink, signed, etc.)	(YES) NO
Record cooler temperature (recommended 2.0-6.0 °C for chemistry	4.2 °C

Cooler Accepted by: EB Date: 6/20/08 Time: 1300

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?	YES (NO)
What kind of packing material was used?	ice
Was sufficient ice used (if appropriate)?	(YES) NO
Were all bottles sealed in individual plastic bags?	YES (NO)
Did all bottle arrive in good condition (unbroken)?	(YES) NO
Were all bottle labels complete and legible?	(YES) NO
Did all bottle labels and tags agree with custody papers?	(YES) NO
Were all bottles used correct for the requested analyses?	(YES) NO
Do any of the analyses (bottles) require preservation? (attach preservation checklist)	YES (NO)
Were all VOC vials free of air bubbles? (NA)	YES NO
Was sufficient amount of sample sent in each bottle?	(YES) NO

Samples Logged by: Bob Congleton Date: 6/20/08 Time: 1435

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

Explain discrepancies or negative responses:

By: Date:

ANALYTICAL RESOURCES INCORPORATED

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

QC Report No: NC06-Landau Associates, Inc.
Project: P.O.T. Kaiser
168004

Data Release Authorized:
Reported: 07/03/08

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-062508	Method Blank	06/25/08	06/28/08	1.00	Diesel	5.0	< 5.0 U
08-13248	HC ID: ---		FID3A	1.0	Mineral Oil	10	< 10 U
					o-Terphenyl		80.0%
NC06A	2008-VRO-N(5.5)	06/25/08	06/28/08	1.00	**Diesel**	**5.4**	**11**
08-13248	HC ID: **DRO/RRO**		FID3A	1.0	**Mineral Oil**	**11**	**18**
					o-Terphenyl		77.3%
NC06B	2008-SUPVR4W(4.5)	06/25/08	06/28/08	1.00	Diesel	6.3	< 6.3 U
08-13249	HC ID: **MINERAL OIL**		FID3A	1.0	**Mineral Oil**	**12**	**17**
					o-Terphenyl		79.3%
NC06C	2008-TRANS2-N(5.75)	06/25/08	06/28/08	1.00	**Diesel**	**5.6**	**260**
08-13250	HC ID: **DRO/RRO**		FID3A	1.0	**Mineral Oil**	**11**	**42**
					o-Terphenyl		86.2%
NC06D	2008-TRANS11-NE(5.5)	06/25/08	07/02/08	1.00	**Diesel**	**27**	**410**
08-13251	HC ID: **DRO/MINERAL OIL**		FID3A	5.0	**Mineral Oil**	**55**	**100**
					o-Terphenyl		69.0%
NC06E	2008-SUPVR4SE-S(5)	06/25/08	06/28/08	1.00	Diesel	6.6	< 6.6 U
08-13252	HC ID: ---		FID3A	1.0	Mineral Oil	13	< 13 U
					o-Terphenyl		76.0%
NC06F	2008-86SPILL-1-S(6.5)	06/25/08	06/28/08	1.00	**Diesel**	**5.4**	**16**
08-13253	HC ID: **DRO/MOTOR OIL**		FID3A	1.0	**Mineral Oil**	**11**	**19**
					o-Terphenyl		78.7%
NC06G	2008-86SPILL-1-ESE(5)	06/25/08	06/28/08	1.00	**Diesel**	**5.3**	**12**
08-13254	HC ID: **DRO**		FID3A	1.0	Mineral Oil	11	< 11 U
					o-Terphenyl		88.4%
NC06H	2008-TRANS11-NE-SE(5.	06/25/08	06/28/08	1.00	Diesel	5.4	< 5.4 U
08-13255	HC ID: ---		FID3A	1.0	Mineral Oil	11	< 11 U
					o-Terphenyl		78.9%
NC06I	2008-86SPILL-1-SE(5)	06/25/08	06/28/08	1.00	**Diesel**	**5.3**	**11**
08-13256	HC ID: **DRO**		FID3A	1.0	Mineral Oil	11	< 11 U
					o-Terphenyl		86.0%

Reported in mg/kg (ppm)

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

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

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: NC06-Landau Associates, Inc.
Project: P.O.T. Kaiser
168004

Client ID	OTER	TOT OUT
MB-062508	80.0%	0
LCS-062508	73.8%	0
LCSD-062508	77.6%	0
2008-VRO-N(5.5)	77.3%	0
2008-SUPVR4W(4.5)	79.3%	0
2008-TRANS2-N(5.75	86.2%	0
2008-TRANS11-NE(5.	69.0%	0
2008-SUPVR4SE-S(5)	76.0%	0
2008-86SPILL-1-S(6	78.7%	0
2008-86SPILL-1-ESE	88.4%	0
2008-TRANS11-NE-SE	78.9%	0
2008-86SPILL-1-SE(	86.0%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(62-118)	(49-125)

Prep Method: SW3550B
Log Number Range: 08-13248 to 08-13256

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-062508**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-062508
LIMS ID: 08-13248
Matrix: Soil
Data Release Authorized:
Reported: 07/03/08

QC Report No: NC06-Landau Associates, Inc.
Project: P.O.T. Kaiser
168004
Date Sampled: 06/16/08
Date Received: 06/20/08

Date Extracted LCS/LCSD: 06/25/08
Date Analyzed LCS: 06/28/08 08:02
LCSD: 06/28/08 08:17
Instrument/Analyst LCS: FID/MS
LCSD: FID/MS

Sample Amount LCS: 10.0 g
LCSD: 10.0 g
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.0
LCSD: 1.0

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	102	150	68.0%	94.2	150	62.8%	8.0%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	73.8%	77.6%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: NC06
Matrix: Soil Project: P.O.T. Kaiser
Date Received: 06/20/08 168004

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
08-13248-062508MB1	Method Blank	10.0 g	1.00 mL	-	06/25/08
08-13248-062508LCS1	Lab Control	10.0 g	1.00 mL	-	06/25/08
08-13248-062508LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	06/25/08
08-13248-NC06A	2008-VRO-N(5.5)	9.23 g	1.00 mL	D	06/25/08
08-13249-NC06B	2008-SUPVR4W(4.5)	7.99 g	1.00 mL	D	06/25/08
08-13250-NC06C	2008-TRANS2-N(5.75)	8.99 g	1.00 mL	D	06/25/08
08-13251-NC06D	2008-TRANS11-NE(5.5	9.13 g	1.00 mL	D	06/25/08
08-13252-NC06E	2008-SUPVR4SE-S(5)	7.62 g	1.00 mL	D	06/25/08
08-13253-NC06F	2008-86SPILL-1-S(6.	9.32 g	1.00 mL	D	06/25/08
08-13254-NC06G	2008-86SPILL-1-ESE(	9.44 g	1.00 mL	D	06/25/08
08-13255-NC06H	2008-TRANS11-NE-SE(	9.19 g	1.00 mL	D	06/25/08
08-13256-NC06I	2008-86SPILL-1-SE(5	9.37 g	1.00 mL	D	06/25/08

Basis: D=Dry Weight W=As Received

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

ANALYTICAL RESOURCES INCORPORATED

Sample ID: SPL-MA27-2008(2)
SAMPLE

Lab Sample ID: NC06J
LIMS ID: 08-13257
Matrix: Soil
Data Release Authorized: MW
Reported: 06/30/08

QC Report No: NC06-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004
Date Sampled: 06/18/08
Date Received: 06/20/08

Date Extracted: 06/25/08
Date Analyzed: 06/27/08 20:41
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.2 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 8.1%

CAS Number	Analyte	RL	Result
56-55-3	**Benzo(a)anthracene**	**4.9**	**12**
218-01-9	**Chrysene**	**4.9**	**28**
205-99-2	**Benzo(b)fluoranthene**	**4.9**	**20**
207-08-9	**Benzo(k)fluoranthene**	**4.9**	**13**
50-32-8	**Benzo(a)pyrene**	**4.9**	**5.9**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**4.9**	**7.4**
53-70-3	Dibenz(a,h)anthracene	4.9	< 4.9 U

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	59.3%
d14-Dibenzo(a,h)anthracen	62.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: SPL-MA26-2008(3.5)
SAMPLE

Lab Sample ID: NC06K
LIMS ID: 08-13258
Matrix: Soil
Data Release Authorized: MW
Reported: 06/30/08

QC Report No: NC06-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004
Date Sampled: 06/18/08
Date Received: 06/20/08

Date Extracted: 06/25/08
Date Analyzed: 06/27/08 21:07
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.2 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 7.2%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	4.9	< 4.9 U
218-01-9	**Chrysene**	**4.9**	**26**
205-99-2	**Benzo(b)fluoranthene**	**4.9**	**8.8**
207-08-9	**Benzo(k)fluoranthene**	**4.9**	**8.8**
50-32-8	Benzo(a)pyrene	4.9	< 4.9 U
193-39-5	Indeno(1,2,3-cd)pyrene	4.9	< 4.9 U
53-70-3	Dibenz(a,h)anthracene	4.9	< 4.9 U

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	65.7%
d14-Dibenzo(a,h)anthracen	71.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: SPL-MA20-2008(4.5)
SAMPLE

Lab Sample ID: NC06L
LIMS ID: 08-13259
Matrix: Soil
Data Release Authorized: MW
Reported: 06/30/08

QC Report No: NC06-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004
Date Sampled: 06/18/08
Date Received: 06/20/08

Date Extracted: 06/25/08
Date Analyzed: 06/27/08 21:33
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 8.9%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	5.0	1,000 E
218-01-9	Chrysene	5.0	1,300 E
205-99-2	Benzo(b)fluoranthene	5.0	1,300 E
207-08-9	Benzo(k)fluoranthene	5.0	1,000 E
50-32-8	Benzo(a)pyrene	5.0	1,200 E
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	760 E
53-70-3	Dibenz(a,h)anthracene	5.0	210

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	57.0%
d14-Dibenzo(a,h)anthracen	53.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: SPL-MA20-2008(4.5)
DILUTION

Lab Sample ID: NC06L
LIMS ID: 08-13259
Matrix: Soil
Data Release Authorized: MW
Reported: 06/30/08

QC Report No: NC06-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004
Date Sampled: 06/18/08
Date Received: 06/20/08

Date Extracted: 06/25/08
Date Analyzed: 06/28/08 11:44
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 5.00
Percent Moisture: 8.9%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	25	1,100
218-01-9	Chrysene	25	1,500
205-99-2	Benzo(b)fluoranthene	25	1,300
207-08-9	Benzo(k)fluoranthene	25	1,100
50-32-8	Benzo(a)pyrene	25	1,200
193-39-5	Indeno(1,2,3-cd)pyrene	25	780
53-70-3	Dibenz(a,h)anthracene	25	190

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	55.0%
d14-Dibenzo(a,h)anthracen	48.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: SPL-MA28-2008(2.5)
SAMPLE

Lab Sample ID: NC06M
LIMS ID: 08-13260
Matrix: Soil
Data Release Authorized:
Reported: 06/30/08

QC Report No: NC06-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004
Date Sampled: 06/19/08
Date Received: 06/20/08

Date Extracted: 06/25/08
Date Analyzed: 06/28/08 12:10
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.2 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 20.0
Percent Moisture: 2.9%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	98	3,400
218-01-9	Chrysene	98	8,200
205-99-2	Benzo(b)fluoranthene	98	6,300
207-08-9	Benzo(k)fluoranthene	98	4,300
50-32-8	Benzo(a)pyrene	98	2,600
193-39-5	Indeno(1,2,3-cd)pyrene	98	2,400
53-70-3	Dibenz(a,h)anthracene	98	820

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

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

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

ANALYTICAL RESOURCES INCORPORATED

Sample ID: SPL-MA29-2008(5.25)
SAMPLE

Lab Sample ID: NC06N
LIMS ID: 08-13261
Matrix: Soil
Data Release Authorized: MW
Reported: 06/30/08

QC Report No: NC06-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004
Date Sampled: 06/19/08
Date Received: 06/20/08

Date Extracted: 06/25/08
Date Analyzed: 06/28/08 12:36
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 15.6%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	5.0	< 5.0 U
218-01-9	**Chrysene**	**5.0**	**6.4**
205-99-2	**Benzo(b)fluoranthene**	**5.0**	**6.9**
207-08-9	Benzo(k)fluoranthene	5.0	< 5.0 U
50-32-8	Benzo(a)pyrene	5.0	< 5.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	< 5.0 U
53-70-3	Dibenz(a,h)anthracene	5.0	< 5.0 U

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	65.3%
d14-Dibenzo(a,h)anthracen	75.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-062508
METHOD BLANK

Lab Sample ID: MB-062508
LIMS ID: 08-13257
Matrix: Soil
Data Release Authorized:
Reported: 06/30/08

QC Report No: NC06-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004
Date Sampled: NA
Date Received: NA

Date Extracted: 06/25/08
Date Analyzed: 06/27/08 15:53
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	5.0	< 5.0 U
218-01-9	Chrysene	5.0	< 5.0 U
205-99-2	Benzo(b)fluoranthene	5.0	< 5.0 U
207-08-9	Benzo(k)fluoranthene	5.0	< 5.0 U
50-32-8	Benzo(a)pyrene	5.0	< 5.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	< 5.0 U
53-70-3	Dibenz(a,h)anthracene	5.0	< 5.0 U

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	47.3%
d14-Dibenzo(a,h)anthracen	70.0%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: NC06-Landau Associates, Inc.
Project: P.O.T. Kaiser
168004

Client ID	MNP	DBA	TOT OUT
MB-062508	47.3%	70.0%	0
LCS-062508	62.7%	71.0%	0
LCSD-062508	67.0%	67.3%	0
SPL-MA27-2008(2)	59.3%	62.3%	0
SPL-MA26-2008(3.5)	65.7%	71.3%	0
SPL-MA20-2008(4.5)	57.0%	53.0%	0
SPL-MA20-2008(4.5) DL	55.0%	48.3%	0
SPL-MA28-2008(2.5)	66.7%	66.7%	0
SPL-MA29-2008(5.25)	65.3%	75.3%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(44-100)	(37-106)
(DBA) = d14-Dibenzo(a,h)anthracene	(46-121)	(16-118)

Prep Method: SW3550B
Log Number Range: 08-13257 to 08-13261

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: LCS-062508
LAB CONTROL SAMPLE

Lab Sample ID: LCS-062508
LIMS ID: 08-13257
Matrix: Soil
Data Release Authorized: MW
Reported: 06/30/08

QC Report No: NC06-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004
Date Sampled: NA
Date Received: NA

Date Extracted: 06/25/08

Date Analyzed LCS: 06/27/08 16:19
LCSD: 06/27/08 16:45
Instrument/Analyst LCS: NT1/VTS
LCSD: NT1/VTS

Sample Amount LCS: 10.0 g-dry-wt
LCSD: 10.0 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	113	150	75.3%	105	150	70.0%	7.3%
Chrysene	110	150	73.3%	103	150	68.7%	6.6%
Benzo(b)fluoranthene	118	150	78.7%	114	150	76.0%	3.4%
Benzo(k)fluoranthene	120	150	80.0%	112	150	74.7%	6.9%
Benzo(a)pyrene	99.0	150	66.0%	95.0	150	63.3%	4.1%
Indeno(1,2,3-cd)pyrene	106	150	70.7%	99.5	150	66.3%	6.3%
Dibenz(a,h)anthracene	110	150	73.3%	106	150	70.7%	3.7%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	62.7%	67.0%
d14-Dibenzo(a,h)anthracen	71.0%	67.3%

SAMPLE RESULTS-CONVENTIONALS
NC06-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/02/08

Project: P.O.T. Kaiser
Event: 168004
Date Sampled: 06/18/08
Date Received: 06/20/08

Client ID: SPL-MA27-2008(2)
ARI ID: 08-13257 NC06J

Analyte	Date	Method	Units	RL	Sample
Total Solids	06/23/08 062308#4	EPA 160.3	Percent	0.01	90.20
Total Cyanide	06/30/08 063008#1	EPA 335.4	mg/kg	0.053	0.594

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
NC06-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/02/08

Project: P.O.T. Kaiser
Event: 168004
Date Sampled: 06/18/08
Date Received: 06/20/08

Client ID: SPL-MA26-2008(3.5)
ARI ID: 08-13258 NC06K

Analyte	Date	Method	Units	RL	Sample
Total Solids	06/23/08 062308#4	EPA 160.3	Percent	0.01	92.50
Total Cyanide	06/30/08 063008#1	EPA 335.4	mg/kg	1.06	27.6

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
NC06-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/02/08

Project: P.O.T. Kaiser
Event: 168004
Date Sampled: 06/18/08
Date Received: 06/20/08

Client ID: SPL-MA20-2008(4.5)
ARI ID: 08-13259 NC06L

Analyte	Date	Method	Units	RL	Sample
Total Solids	06/23/08 062308#4	EPA 160.3	Percent	0.01	92.00
Total Cyanide	06/30/08 063008#1	EPA 335.4	mg/kg	0.051	0.897

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
NC06-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/02/08

Project: P.O.T. Kaiser
Event: 168004
Date Sampled: 06/19/08
Date Received: 06/20/08

Client ID: SPL-MA28-2008(2.5)
ARI ID: 08-13260 NC06M

Analyte	Date	Method	Units	RL	Sample
Total Solids	06/23/08 062308#4	EPA 160.3	Percent	0.01	88.70
Total Cyanide	06/30/08 063008#1	EPA 335.4	mg/kg	0.557	19.2

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
NC06-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/02/08

Project: P.O.T. Kaiser
Event: 168004
Date Sampled: 06/19/08
Date Received: 06/20/08

Client ID: SPL-MA29-2008(5.25)
ARI ID: 08-13261 NC06N

Analyte	Date	Method	Units	RL	Sample
Total Solids	06/23/08 062308#4	EPA 160.3	Percent	0.01	85.40
Total Cyanide	06/30/08 063008#1	EPA 335.4	mg/kg	0.291	4.89

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
NC06-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/02/08

Project: P.O.T. Kaiser
Event: 168004
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	06/23/08	Percent	< 0.01 U
Total Cyanide	06/30/08	mg/kg	< 0.050 U

STANDARD REFERENCE RESULTS-CONVENTIONALS
NC06-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/02/08

Project: P.O.T. Kaiser
Event: 168004
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
Total Cyanide EPA #03026	06/30/08	mg/kg	0.152	0.150	101.3%

REPLICATE RESULTS-CONVENTIONALS
NC06-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/02/08

Project: P.O.T. Kaiser
Event: 168004
Date Sampled: 06/18/08
Date Received: 06/20/08

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: NC06J Client ID: SPL-MA27-2008(2)					
Total Solids	06/23/08	Percent	90.20	90.70 91.30	0.6%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

July 28, 2008

Stacy Pischer
Landau Associates, Inc.
130 Second Avenue South
Edmonds, WA 98020-9129

RE: Project: P.O.T. Kaiser
ARI Job No: ND59

Dear Stacy:

Please find enclosed the original chain of custody (COCs) records and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted eight water samples and a trip blank on July 1, 2008 in good condition. There were no discrepancies between the COC and the sample containers' labels.

The samples were analyzed for Low Level SIM PAHs, SIM cPAHs NWTPH-Dx, Low Level PCBs, Total Metals, VOCs, SIM VOCs and Total Cyanide and WAD Cyanide, as requested on the COC.

The surrogate o-Terphenyl is out of control low due to matrix effects for the NWTPH-Dx analysis.

The method blank for the LL SIM PAH analysis contained contamination of several analytes. All associated samples that contained associated analyte detections have been flagged with a "B" flag qualifier. The samples were originally analyzed within the method recommended holding time and flagged with "B" flags. All associated samples were re-extracted and re- analyzed outside of the method recommended holding time and both sets of data have been included for your review.

The surrogate DCE is out of control high in sample **RM-MW-3(S)** for the 8260 SIM analysis. The associated sample was non-detect, therefore no further corrective action was taken.

Due to a laboratory error the samples for the sim VOC analysis were analyzed outside of the method recommended holding time.

No other analytical complications were noted. A copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

LANDAU ASSOCIATES

- [x] **Seattle (Edmonds)** (425) 778-0907
- [ ] **Tacoma** (253) 926-2493
- [ ] **Spokane** (509) 327-9737
- [ ] **Portland (Tigard)** (503) 443-6010
- [ ] _____

ND 59

Chain-of-Custody Record

Date 7-1-08

Page 1 of 1

Project Name Port of Tacoma Kaiser Project No. 168004.020

Project Location/Event Tacoma, WA

Sampler's Name Brett Borgeson / Jacob Stokes

Project Contact Stacy Pischer

Send Results To Above + Anne Halvorsen

Testing Parameters

Turnaround Time
- [x] Standard
- [ ] Accelerated
- [ ] _____

Sample I.D.	Date	Time	Matrix	No. of Containers	CPAH's (Method 8270 SIM)	WAD Cyanide SM4500	Total Cyanide Method 335.4	Naphthalenes (Method 8270 SIM & ULV)	NWTPH-Dx	PCB's Low Level Method 8082	VOC's *	Total metals* (Method 6020/7470)	Observations/Comments
RM-MW-3(S)	7-1-08	1130	H2O	11	X	X	X	X	X	X	X	X	As, Cd, Cr, Cu, Pb, Hg, Zn
RM-MW-4(S)		1200		11									
RM-MW-5(S)		1240		11									
RM-MW-6(S)		1345		11									
RM-MW-6(D)		1100		11									
SPL-MW-B(S)		1530		3	X	X	X						
SPL-MW-C(S)		1600		3	X	X	X						
SPL-MW-F(S)		1640		3	X	X	X						

- [x] Allow water samples to settle, collect aliquot from clear portion

NWTPH-Dx:
- ___ run acid wash/silica gel cleanup
- ___ run samples standardized to _____ product

___ Analyze for EPH if no specific product identified

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

___ Dissolved metal water samples field filtered

Other * VOC's by method 8260 w/ 20-ml purge & vinyl chloride by SIM if not detected in initial analysis
* metals were not field filtered.

Special Shipment/Handling or Storage Requirements: Store below 4°C

Method of Shipment:

Relinquished by	Received by	Relinquished by	Received by
Signature: Brett Borgeson	Signature: Brian Ilegel	Signature:	Signature:
Printed Name: Brett Borgeson	Printed Name: Brian Ilegel	Printed Name:	Printed Name:
Company: Landau	Company: ARI	Company:	Company:
Date: 7-1-08 Time: 1720	Date: 7/1/08 Time: 1720	Date: Time:	Date: Time:

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

Rev 4/01

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Can Tan
Project Name: Port of Tacoma Kaiser
COC No: —
Delivered by: Hand
Assigned ARI Job No: ND 59
Tracking No: —

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Record cooler temperature (recommended 2.0-6.0 °C for chemistry	8.1, 10.0, 8.1 °C	

Cooler Accepted by: JL Date: 7/1/08 Time: 1720

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?		Bag	
Was sufficient ice used (if appropriate)?		YES	(NO)
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottle arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation checklist)		(YES)	NO
Were all VOC vials free of air bubbles?	NA	YES	(NO)
Was sufficient amount of sample sent in each bottle?		(YES)	NO

Samples Logged by: JL Date: 7/2/08 Time: 1053

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

Explain discrepancies or negative responses:

ND 59 D2 — peabubble

By: Date:

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-3(S)**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ND59A
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/02/08 19:10

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	**Acetone**	**3.0**	**13**	
75-15-0	**Carbon Disulfide**	**0.2**	**0.6**	
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	**Chloroform**	**0.2**	**1.8**	
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	**2-Butanone**	**2.5**	**3.0**	
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-3(S)**
 SAMPLE

Lab Sample ID: ND59A
LIMS ID: 08-14247
Matrix: Water
Date Analyzed: 07/02/08 19:10

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%
d8-Toluene	100%
Bromofluorobenzene	93.2%
d4-1,2-Dichlorobenzene	105%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-4(S)**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ND59B
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/02/08 19:38

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	**Vinyl Chloride**	**0.2**	**1.2**	
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-4(S)**
 SAMPLE

Lab Sample ID: ND59B
LIMS ID: 08-14248
Matrix: Water
Date Analyzed: 07/02/08 19:38

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	102%
Bromofluorobenzene	94.5%
d4-1,2-Dichlorobenzene	106%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-5(S)**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ND59C
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/02/08 20:05

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	**Acetone**	**3.0**	**5.1**	
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-5(S)**
 SAMPLE

Lab Sample ID: ND59C
LIMS ID: 08-14249
Matrix: Water
Date Analyzed: 07/02/08 20:05

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	108%
d8-Toluene	99.2%
Bromofluorobenzene	92.2%
d4-1,2-Dichlorobenzene	107%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(S)**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/02/08 20:32

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	**Vinyl Chloride**	**0.2**	**5.5**	
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	**Methylene Chloride**	**0.5**	**16**	**E**
67-64-1	**Acetone**	**3.0**	**130**	**E**
75-15-0	**Carbon Disulfide**	**0.2**	**0.8**	
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	**1,1-Dichloroethane**	**0.2**	**0.4**	
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	**Chloroform**	**0.2**	**1.1**	
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	**2-Butanone**	**2.5**	**21**	
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	**Benzene**	**0.2**	**8.6**	
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	**4-Methyl-2-Pentanone (MIBK)**	**2.5**	**9.8**	
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	**Toluene**	**0.2**	**23**	**E**
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	**Ethylbenzene**	**0.2**	**21**	**E**
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	**m,p-Xylene**	**0.4**	**56**	**ES**
95-47-6	**o-Xylene**	**0.2**	**24**	**E**
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(S)**

SAMPLE

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Date Analyzed: 07/02/08 20:32

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	**1,3,5-Trimethylbenzene**	**0.2**	**23**	**E**
95-63-6	**1,2,4-Trimethylbenzene**	**0.2**	**32**	**ES**
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	**Isopropylbenzene**	**0.2**	**4.4**	
103-65-1	**n-Propylbenzene**	**0.2**	**7.0**	
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	**4-Isopropyltoluene**	**0.2**	**2.1**	
104-51-8	**n-Butylbenzene**	**0.2**	**3.9**	
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	**Naphthalene**	**0.5**	**36**	**ES**
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	106%
Bromofluorobenzene	113%
d4-1,2-Dichlorobenzene	106%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(S)**
Page 1 of 2 **DILUTION**

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/03/08 13:27

Sample Amount: 2.00 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	2.0	< 2.0	U
74-83-9	Bromomethane	5.0	< 5.0	U
75-01-4	**Vinyl Chloride**	**2.0**	**2.3**	
75-00-3	Chloroethane	2.0	< 2.0	U
75-09-2	**Methylene Chloride**	**5.0**	**23**	
67-64-1	**Acetone**	**30**	**170**	
75-15-0	Carbon Disulfide	2.0	< 2.0	U
75-35-4	1,1-Dichloroethene	2.0	< 2.0	U
75-34-3	1,1-Dichloroethane	2.0	< 2.0	U
156-60-5	trans-1,2-Dichloroethene	2.0	< 2.0	U
156-59-2	cis-1,2-Dichloroethene	2.0	< 2.0	U
67-66-3	Chloroform	2.0	< 2.0	U
107-06-2	1,2-Dichloroethane	2.0	< 2.0	U
78-93-3	**2-Butanone**	**25**	**30**	
71-55-6	1,1,1-Trichloroethane	2.0	< 2.0	U
56-23-5	Carbon Tetrachloride	2.0	< 2.0	U
108-05-4	Vinyl Acetate	10	< 10	U
75-27-4	Bromodichloromethane	2.0	< 2.0	U
78-87-5	1,2-Dichloropropane	2.0	< 2.0	U
10061-01-5	cis-1,3-Dichloropropene	2.0	< 2.0	U
79-01-6	Trichloroethene	2.0	< 2.0	U
124-48-1	Dibromochloromethane	2.0	< 2.0	U
79-00-5	1,1,2-Trichloroethane	2.0	< 2.0	U
71-43-2	**Benzene**	**2.0**	**9.3**	
10061-02-6	trans-1,3-Dichloropropene	2.0	< 2.0	U
110-75-8	2-Chloroethylvinylether	10	< 10	U
75-25-2	Bromoform	2.0	< 2.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	25	< 25	U
591-78-6	2-Hexanone	25	< 25	U
127-18-4	Tetrachloroethene	2.0	< 2.0	U
79-34-5	1,1,2,2-Tetrachloroethane	2.0	< 2.0	U
108-88-3	**Toluene**	**2.0**	**25**	
108-90-7	Chlorobenzene	2.0	< 2.0	U
100-41-4	**Ethylbenzene**	**2.0**	**32**	
100-42-5	Styrene	2.0	< 2.0	U
75-69-4	Trichlorofluoromethane	2.0	< 2.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	2.0	< 2.0	U
1330-20-7	**m,p-Xylene**	**4.0**	**91**	
95-47-6	**o-Xylene**	**2.0**	**26**	
95-50-1	1,2-Dichlorobenzene	2.0	< 2.0	U
541-73-1	1,3-Dichlorobenzene	2.0	< 2.0	U
106-46-7	1,4-Dichlorobenzene	2.0	< 2.0	U
107-02-8	Acrolein	50	< 50	U
74-88-4	Methyl Iodide	10	< 10	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	10	< 10	U
563-58-6	1,1-Dichloropropene	2.0	< 2.0	U
74-95-3	Dibromomethane	2.0	< 2.0	U
630-20-6	1,1,1,2-Tetrachloroethane	2.0	< 2.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(S) DILUTION**

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Date Analyzed: 07/03/08 13:27

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	10	< 10	U
108-67-8	**1,3,5-Trimethylbenzene**	**2.0**	**36**	
95-63-6	**1,2,4-Trimethylbenzene**	**2.0**	**99**	
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	Ethylene Dibromide	2.0	< 2.0	U
74-97-5	Bromochloromethane	2.0	< 2.0	U
594-20-7	2,2-Dichloropropane	2.0	< 2.0	U
142-28-9	1,3-Dichloropropane	2.0	< 2.0	U
98-82-8	**Isopropylbenzene**	**2.0**	**4.7**	
103-65-1	**n-Propylbenzene**	**2.0**	**7.6**	
108-86-1	Bromobenzene	2.0	< 2.0	U
95-49-8	2-Chlorotoluene	2.0	< 2.0	U
106-43-4	4-Chlorotoluene	2.0	< 2.0	U
98-06-6	tert-Butylbenzene	2.0	< 2.0	U
135-98-8	sec-Butylbenzene	2.0	< 2.0	U
99-87-6	**4-Isopropyltoluene**	**2.0**	**2.2**	
104-51-8	**n-Butylbenzene**	**2.0**	**4.4**	
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	**Naphthalene**	**5.0**	**260**	**E**
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	119%
d8-Toluene	102%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	108%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(S)**
Page 1 of 2 **DILUTION**

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/03/08 15:18

Sample Amount: 0.500 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	8.0	< 8.0	U
74-83-9	Bromomethane	20	< 20	U
75-01-4	Vinyl Chloride	8.0	< 8.0	U
75-00-3	Chloroethane	8.0	< 8.0	U
75-09-2	**Methylene Chloride**	**20**	**32**	
67-64-1	**Acetone**	**120**	**160**	
75-15-0	Carbon Disulfide	8.0	< 8.0	U
75-35-4	1,1-Dichloroethene	8.0	< 8.0	U
75-34-3	1,1-Dichloroethane	8.0	< 8.0	U
156-60-5	trans-1,2-Dichloroethene	8.0	< 8.0	U
156-59-2	cis-1,2-Dichloroethene	8.0	< 8.0	U
67-66-3	Chloroform	8.0	< 8.0	U
107-06-2	1,2-Dichloroethane	8.0	< 8.0	U
78-93-3	2-Butanone	100	< 100	U
71-55-6	1,1,1-Trichloroethane	8.0	< 8.0	U
56-23-5	Carbon Tetrachloride	8.0	< 8.0	U
108-05-4	Vinyl Acetate	40	< 40	U
75-27-4	Bromodichloromethane	8.0	< 8.0	U
78-87-5	1,2-Dichloropropane	8.0	< 8.0	U
10061-01-5	cis-1,3-Dichloropropene	8.0	< 8.0	U
79-01-6	Trichloroethene	8.0	< 8.0	U
124-48-1	Dibromochloromethane	8.0	< 8.0	U
79-00-5	1,1,2-Trichloroethane	8.0	< 8.0	U
71-43-2	**Benzene**	**8.0**	**8.4**	
10061-02-6	trans-1,3-Dichloropropene	8.0	< 8.0	U
110-75-8	2-Chloroethylvinylether	40	< 40	U
75-25-2	Bromoform	8.0	< 8.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	100	< 100	U
591-78-6	2-Hexanone	100	< 100	U
127-18-4	Tetrachloroethene	8.0	< 8.0	U
79-34-5	1,1,2,2-Tetrachloroethane	8.0	< 8.0	U
108-88-3	**Toluene**	**8.0**	**21**	
108-90-7	Chlorobenzene	8.0	< 8.0	U
100-41-4	**Ethylbenzene**	**8.0**	**28**	
100-42-5	Styrene	8.0	< 8.0	U
75-69-4	Trichlorofluoromethane	8.0	< 8.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	8.0	< 8.0	U
1330-20-7	**m,p-Xylene**	**16**	**76**	
95-47-6	**o-Xylene**	**8.0**	**21**	
95-50-1	1,2-Dichlorobenzene	8.0	< 8.0	U
541-73-1	1,3-Dichlorobenzene	8.0	< 8.0	U
106-46-7	1,4-Dichlorobenzene	8.0	< 8.0	U
107-02-8	Acrolein	200	< 200	U
74-88-4	Methyl Iodide	40	< 40	U
74-96-4	Bromoethane	8.0	< 8.0	U
107-13-1	Acrylonitrile	40	< 40	U
563-58-6	1,1-Dichloropropene	8.0	< 8.0	U
74-95-3	Dibromomethane	8.0	< 8.0	U
630-20-6	1,1,1,2-Tetrachloroethane	8.0	< 8.0	U
96-12-8	1,2-Dibromo-3-chloropropane	20	< 20	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(S)**
 DILUTION

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Date Analyzed: 07/03/08 15:18

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

CAS Number	Analyte	RL	Result	Q
96-18-4	1,2,3-Trichloropropane	20	< 20	U
110-57-6	trans-1,4-Dichloro-2-butene	40	< 40	U
108-67-8	**1,3,5-Trimethylbenzene**	**8.0**	**34**	
95-63-6	**1,2,4-Trimethylbenzene**	**8.0**	**95**	
87-68-3	Hexachlorobutadiene	20	< 20	U
106-93-4	Ethylene Dibromide	8.0	< 8.0	U
74-97-5	Bromochloromethane	8.0	< 8.0	U
594-20-7	2,2-Dichloropropane	8.0	< 8.0	U
142-28-9	1,3-Dichloropropane	8.0	< 8.0	U
98-82-8	Isopropylbenzene	8.0	< 8.0	U
103-65-1	**n-Propylbenzene**	**8.0**	**8.0**	
108-86-1	Bromobenzene	8.0	< 8.0	U
95-49-8	2-Chlorotoluene	8.0	< 8.0	U
106-43-4	4-Chlorotoluene	8.0	< 8.0	U
98-06-6	tert-Butylbenzene	8.0	< 8.0	U
135-98-8	sec-Butylbenzene	8.0	< 8.0	U
99-87-6	4-Isopropyltoluene	8.0	< 8.0	U
104-51-8	n-Butylbenzene	8.0	< 8.0	U
120-82-1	1,2,4-Trichlorobenzene	20	< 20	U
91-20-3	**Naphthalene**	**20**	**260**	
87-61-6	1,2,3-Trichlorobenzene	20	< 20	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	116%
d8-Toluene	102%
Bromofluorobenzene	96.5%
d4-1,2-Dichlorobenzene	99.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(D)**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/02/08 20:59

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	**Vinyl Chloride**	**0.2**	**4.0**	
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	**Methylene Chloride**	**0.5**	**11**	
67-64-1	**Acetone**	**3.0**	**100**	**E**
75-15-0	**Carbon Disulfide**	**0.2**	**0.7**	
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	**1,1-Dichloroethane**	**0.2**	**0.3**	
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	**Chloroform**	**0.2**	**1.3**	
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	**2-Butanone**	**2.5**	**18**	
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	**Benzene**	**0.2**	**5.8**	
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	**4-Methyl-2-Pentanone (MIBK)**	**2.5**	**7.7**	
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	**Toluene**	**0.2**	**15**	
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	**Ethylbenzene**	**0.2**	**20**	**E**
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	**m,p-Xylene**	**0.4**	**56**	**ES**
95-47-6	**o-Xylene**	**0.2**	**22**	**E**
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(D)**

SAMPLE

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Date Analyzed: 07/02/08 20:59

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	**1,3,5-Trimethylbenzene**	**0.2**	**25**	**E**
95-63-6	**1,2,4-Trimethylbenzene**	**0.2**	**34**	**ES**
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	**Isopropylbenzene**	**0.2**	**4.8**	
103-65-1	**n-Propylbenzene**	**0.2**	**7.6**	
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	**sec-Butylbenzene**	**0.2**	**1.3**	
99-87-6	**4-Isopropyltoluene**	**0.2**	**2.4**	
104-51-8	**n-Butylbenzene**	**0.2**	**4.3**	
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	**Naphthalene**	**0.5**	**34**	**ES**
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	101%
Bromofluorobenzene	115%
d4-1,2-Dichlorobenzene	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(D)**
Page 1 of 2 **DILUTION**

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/03/08 13:55

Sample Amount: 2.00 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	2.0	< 2.0	U
74-83-9	Bromomethane	5.0	< 5.0	U
75-01-4	Vinyl Chloride	2.0	< 2.0	U
75-00-3	Chloroethane	2.0	< 2.0	U
75-09-2	**Methylene Chloride**	**5.0**	**17**	
67-64-1	**Acetone**	**30**	**110**	
75-15-0	Carbon Disulfide	2.0	< 2.0	U
75-35-4	1,1-Dichloroethene	2.0	< 2.0	U
75-34-3	1,1-Dichloroethane	2.0	< 2.0	U
156-60-5	trans-1,2-Dichloroethene	2.0	< 2.0	U
156-59-2	cis-1,2-Dichloroethene	2.0	< 2.0	U
67-66-3	Chloroform	2.0	< 2.0	U
107-06-2	1,2-Dichloroethane	2.0	< 2.0	U
78-93-3	2-Butanone	25	< 25	U
71-55-6	1,1,1-Trichloroethane	2.0	< 2.0	U
56-23-5	Carbon Tetrachloride	2.0	< 2.0	U
108-05-4	Vinyl Acetate	10	< 10	U
75-27-4	Bromodichloromethane	2.0	< 2.0	U
78-87-5	1,2-Dichloropropane	2.0	< 2.0	U
10061-01-5	cis-1,3-Dichloropropene	2.0	< 2.0	U
79-01-6	Trichloroethene	2.0	< 2.0	U
124-48-1	Dibromochloromethane	2.0	< 2.0	U
79-00-5	1,1,2-Trichloroethane	2.0	< 2.0	U
71-43-2	**Benzene**	**2.0**	**6.1**	
10061-02-6	trans-1,3-Dichloropropene	2.0	< 2.0	U
110-75-8	2-Chloroethylvinylether	10	< 10	U
75-25-2	Bromoform	2.0	< 2.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	25	< 25	U
591-78-6	2-Hexanone	25	< 25	U
127-18-4	Tetrachloroethene	2.0	< 2.0	U
79-34-5	1,1,2,2-Tetrachloroethane	2.0	< 2.0	U
108-88-3	**Toluene**	**2.0**	**15**	
108-90-7	Chlorobenzene	2.0	< 2.0	U
100-41-4	**Ethylbenzene**	**2.0**	**29**	
100-42-5	Styrene	2.0	< 2.0	U
75-69-4	Trichlorofluoromethane	2.0	< 2.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	2.0	< 2.0	U
1330-20-7	**m,p-Xylene**	**4.0**	**85**	
95-47-6	**o-Xylene**	**2.0**	**21**	
95-50-1	1,2-Dichlorobenzene	2.0	< 2.0	U
541-73-1	1,3-Dichlorobenzene	2.0	< 2.0	U
106-46-7	1,4-Dichlorobenzene	2.0	< 2.0	U
107-02-8	Acrolein	50	< 50	U
74-88-4	Methyl Iodide	10	< 10	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	10	< 10	U
563-58-6	1,1-Dichloropropene	2.0	< 2.0	U
74-95-3	Dibromomethane	2.0	< 2.0	U
630-20-6	1,1,1,2-Tetrachloroethane	2.0	< 2.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(D) DILUTION**

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Date Analyzed: 07/03/08 13:55

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	10	< 10	U
108-67-8	**1,3,5-Trimethylbenzene**	**2.0**	**40**	
95-63-6	**1,2,4-Trimethylbenzene**	**2.0**	**110**	
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	Ethylene Dibromide	2.0	< 2.0	U
74-97-5	Bromochloromethane	2.0	< 2.0	U
594-20-7	2,2-Dichloropropane	2.0	< 2.0	U
142-28-9	1,3-Dichloropropane	2.0	< 2.0	U
98-82-8	**Isopropylbenzene**	**2.0**	**5.2**	
103-65-1	**n-Propylbenzene**	**2.0**	**8.3**	
108-86-1	Bromobenzene	2.0	< 2.0	U
95-49-8	2-Chlorotoluene	2.0	< 2.0	U
106-43-4	4-Chlorotoluene	2.0	< 2.0	U
98-06-6	tert-Butylbenzene	2.0	< 2.0	U
135-98-8	sec-Butylbenzene	2.0	< 2.0	U
99-87-6	**4-Isopropyltoluene**	**2.0**	**2.6**	
104-51-8	**n-Butylbenzene**	**2.0**	**4.9**	
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	**Naphthalene**	**5.0**	**250**	**E**
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	111%
d8-Toluene	103%
Bromofluorobenzene	104%
d4-1,2-Dichlorobenzene	99.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(D) DILUTION**

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/03/08 15:45

Sample Amount: 0.500 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	8.0	< 8.0	U
74-83-9	Bromomethane	20	< 20	U
75-01-4	Vinyl Chloride	8.0	< 8.0	U
75-00-3	Chloroethane	8.0	< 8.0	U
75-09-2	**Methylene Chloride**	**20**	**25**	
67-64-1	Acetone	120	< 120	U
75-15-0	Carbon Disulfide	8.0	< 8.0	U
75-35-4	1,1-Dichloroethene	8.0	< 8.0	U
75-34-3	1,1-Dichloroethane	8.0	< 8.0	U
156-60-5	trans-1,2-Dichloroethene	8.0	< 8.0	U
156-59-2	cis-1,2-Dichloroethene	8.0	< 8.0	U
67-66-3	Chloroform	8.0	< 8.0	U
107-06-2	1,2-Dichloroethane	8.0	< 8.0	U
78-93-3	2-Butanone	100	< 100	U
71-55-6	1,1,1-Trichloroethane	8.0	< 8.0	U
56-23-5	Carbon Tetrachloride	8.0	< 8.0	U
108-05-4	Vinyl Acetate	40	< 40	U
75-27-4	Bromodichloromethane	8.0	< 8.0	U
78-87-5	1,2-Dichloropropane	8.0	< 8.0	U
10061-01-5	cis-1,3-Dichloropropene	8.0	< 8.0	U
79-01-6	Trichloroethene	8.0	< 8.0	U
124-48-1	Dibromochloromethane	8.0	< 8.0	U
79-00-5	1,1,2-Trichloroethane	8.0	< 8.0	U
71-43-2	Benzene	8.0	< 8.0	U
10061-02-6	trans-1,3-Dichloropropene	8.0	< 8.0	U
110-75-8	2-Chloroethylvinylether	40	< 40	U
75-25-2	Bromoform	8.0	< 8.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	100	< 100	U
591-78-6	2-Hexanone	100	< 100	U
127-18-4	Tetrachloroethene	8.0	< 8.0	U
79-34-5	1,1,2,2-Tetrachloroethane	8.0	< 8.0	U
108-88-3	**Toluene**	**8.0**	**14**	
108-90-7	Chlorobenzene	8.0	< 8.0	U
100-41-4	**Ethylbenzene**	**8.0**	**25**	
100-42-5	Styrene	8.0	< 8.0	U
75-69-4	Trichlorofluoromethane	8.0	< 8.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	8.0	< 8.0	U
1330-20-7	**m,p-Xylene**	**16**	**66**	
95-47-6	**o-Xylene**	**8.0**	**17**	
95-50-1	1,2-Dichlorobenzene	8.0	< 8.0	U
541-73-1	1,3-Dichlorobenzene	8.0	< 8.0	U
106-46-7	1,4-Dichlorobenzene	8.0	< 8.0	U
107-02-8	Acrolein	200	< 200	U
74-88-4	Methyl Iodide	40	< 40	U
74-96-4	Bromoethane	8.0	< 8.0	U
107-13-1	Acrylonitrile	40	< 40	U
563-58-6	1,1-Dichloropropene	8.0	< 8.0	U
74-95-3	Dibromomethane	8.0	< 8.0	U
630-20-6	1,1,1,2-Tetrachloroethane	8.0	< 8.0	U
96-12-8	1,2-Dibromo-3-chloropropane	20	< 20	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(D)**
 DILUTION

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Date Analyzed: 07/03/08 15:45

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020

CAS Number	Analyte	RL	Result	Q
96-18-4	1,2,3-Trichloropropane	20	< 20	U
110-57-6	trans-1,4-Dichloro-2-butene	40	< 40	U
108-67-8	**1,3,5-Trimethylbenzene**	**8.0**	**35**	
95-63-6	**1,2,4-Trimethylbenzene**	**8.0**	**91**	
87-68-3	Hexachlorobutadiene	20	< 20	U
106-93-4	Ethylene Dibromide	8.0	< 8.0	U
74-97-5	Bromochloromethane	8.0	< 8.0	U
594-20-7	2,2-Dichloropropane	8.0	< 8.0	U
142-28-9	1,3-Dichloropropane	8.0	< 8.0	U
98-82-8	Isopropylbenzene	8.0	< 8.0	U
103-65-1	n-Propylbenzene	8.0	< 8.0	U
108-86-1	Bromobenzene	8.0	< 8.0	U
95-49-8	2-Chlorotoluene	8.0	< 8.0	U
106-43-4	4-Chlorotoluene	8.0	< 8.0	U
98-06-6	tert-Butylbenzene	8.0	< 8.0	U
135-98-8	sec-Butylbenzene	8.0	< 8.0	U
99-87-6	4-Isopropyltoluene	8.0	< 8.0	U
104-51-8	n-Butylbenzene	8.0	< 8.0	U
120-82-1	1,2,4-Trichlorobenzene	20	< 20	U
91-20-3	**Naphthalene**	**20**	**240**	
87-61-6	1,2,3-Trichlorobenzene	20	< 20	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	119%
d8-Toluene	102%
Bromofluorobenzene	96.2%
d4-1,2-Dichlorobenzene	102%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: TRIP BLANK SAMPLE**

Lab Sample ID: ND59I
LIMS ID: 08-14281
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/02/08 16:08

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: TRIP BLANK SAMPLE**

Lab Sample ID: ND59I
LIMS ID: 08-14281
Matrix: Water
Date Analyzed: 07/02/08 16:08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	98.8%
Bromofluorobenzene	92.8%
d4-1,2-Dichlorobenzene	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-070208**

METHOD BLANK

Lab Sample ID: MB-070208
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/02/08 13:47

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-070208**

METHOD BLANK

Lab Sample ID: MB-070208
LIMS ID: 08-14247
Matrix: Water
Date Analyzed: 07/02/08 13:47

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	109%
d8-Toluene	100%
Bromofluorobenzene	96.8%
d4-1,2-Dichlorobenzene	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-070308**

METHOD BLANK

Lab Sample ID: MB-070308
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/03/08 12:48

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-070308**

METHOD BLANK

Lab Sample ID: MB-070308
LIMS ID: 08-14250
Matrix: Water
Date Analyzed: 07/03/08 12:48

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	115%
d8-Toluene	99.0%
Bromofluorobenzene	94.8%
d4-1,2-Dichlorobenzene	101%

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-070208	Method Blank	20	109%	100%	96.8%	101%	0
LCS-070208	Lab Control	20	107%	101%	99.0%	97.0%	0
LCSD-070208	Lab Control Dup	20	106%	100%	97.0%	99.2%	0
ND59A	RM-MW-3(S)	20	110%	100%	93.2%	105%	0
ND59B	RM-MW-4(S)	20	107%	102%	94.5%	106%	0
ND59C	RM-MW-5(S)	20	108%	99.2%	92.2%	107%	0
MB-070308	Method Blank	20	115%	99.0%	94.8%	101%	0
LCS-070308	Lab Control	20	115%	102%	101%	99.2%	0
LCSD-070308	Lab Control Dup	20	119%	98.0%	100%	98.2%	0
ND59D	RM-MW-6(S)	20	106%	106%	113%	106%	0
ND59DRE	RM-MW-6(S)	20	119%	102%	103%	108%	0
ND59DDL	RM-MW-6(S)	20	116%	102%	96.5%	99.0%	0
ND59E	RM-MW-6(D)	20	106%	101%	115%	104%	0
ND59ERE	RM-MW-6(D)	20	111%	103%	104%	99.2%	0
ND59EDL	RM-MW-6(D)	20	119%	102%	96.2%	102%	0
ND59I	TRIP BLANK	20	106%	98.8%	92.8%	104%	0

SW8260B	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	70-131	64-146
(TOL) = d8-Toluene	80-120	78-125
(BFB) = Bromofluorobenzene	74-121	71-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-121

Prep Method: SW5030B
Log Number Range: 08-14247 to 08-14281

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-070208**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-070208
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: FINN3/JZ
LCSD: FINN3/JZ
Date Analyzed LCS: 07/02/08 11:47
LCSD: 07/02/08 12:32

Sample Amount LCS: 20.0 mL
LCSD: 20.0 mL
Purge Volume LCS: 20.0 mL
LCSD: 20.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	3.5	4.0	87.5%	3.6	4.0	90.0%	2.8%
Bromomethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
Vinyl Chloride	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
Chloroethane	3.8	4.0	95.0%	3.9	4.0	97.5%	2.6%
Methylene Chloride	4.7	4.0	118%	4.6	4.0	115%	2.2%
Acetone	19.3	20.0	96.5%	20.5	20.0	102%	6.0%
Carbon Disulfide	4.6	4.0	115%	4.6	4.0	115%	0.0%
1,1-Dichloroethene	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
1,1-Dichloroethane	3.9	4.0	97.5%	3.8	4.0	95.0%	2.6%
trans-1,2-Dichloroethene	4.1	4.0	102%	4.0	4.0	100%	2.5%
cis-1,2-Dichloroethene	3.6	4.0	90.0%	3.6	4.0	90.0%	0.0%
Chloroform	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%
1,2-Dichloroethane	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
2-Butanone	21.0	20.0	105%	17.9	20.0	89.5%	15.9%
1,1,1-Trichloroethane	3.7	4.0	92.5%	3.7	4.0	92.5%	0.0%
Carbon Tetrachloride	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
Vinyl Acetate	4.6	4.0	115%	4.7	4.0	118%	2.2%
Bromodichloromethane	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%
1,2-Dichloropropane	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
cis-1,3-Dichloropropene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
Trichloroethene	3.5	4.0	87.5%	3.4	4.0	85.0%	2.9%
Dibromochloromethane	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
1,1,2-Trichloroethane	3.9	4.0	97.5%	3.5	4.0	87.5%	10.8%
Benzene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
trans-1,3-Dichloropropene	3.9	4.0	97.5%	3.7	4.0	92.5%	5.3%
2-Chloroethylvinylether	4.4	4.0	110%	3.7	4.0	92.5%	17.3%
Bromoform	4.0	4.0	100%	3.6	4.0	90.0%	10.5%
4-Methyl-2-Pentanone (MIBK)	20.1	20.0	100%	17.4	20.0	87.0%	14.4%
2-Hexanone	19.9	20.0	99.5%	16.9	20.0	84.5%	16.3%
Tetrachloroethene	3.5	4.0	87.5%	3.5	4.0	87.5%	0.0%
1,1,2,2-Tetrachloroethane	3.8	4.0	95.0%	3.5	4.0	87.5%	8.2%
Toluene	3.6	4.0	90.0%	3.6	4.0	90.0%	0.0%
Chlorobenzene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
Ethylbenzene	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
Styrene	3.9	4.0	97.5%	3.8	4.0	95.0%	2.6%
Trichlorofluoromethane	3.9	4.0	97.5%	3.9	4.0	97.5%	0.0%
1,1,2-Trichloro-1,2,2-trifluoroetha	4.6	4.0	115%	4.7	4.0	118%	2.2%
m,p-Xylene	7.5	8.0	93.8%	7.3	8.0	91.2%	2.7%
o-Xylene	3.7	4.0	92.5%	3.5	4.0	87.5%	5.6%
1,2-Dichlorobenzene	4.1	4.0	102%	3.9	4.0	97.5%	5.0%
1,3-Dichlorobenzene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
1,4-Dichlorobenzene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
Acrolein	21.0	20.0	105%	19.1	20.0	95.5%	9.5%
Methyl Iodide	4.5	4.0	112%	4.4	4.0	110%	2.2%
Bromoethane	4.5	4.0	112%	4.3	4.0	108%	4.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-070208**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-070208 QC Report No: ND59-Landau Associates
LIMS ID: 08-14247 Project: PORT OF TACOMA KAISER
Matrix: Water 168004.020

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Acrylonitrile	4.8	4.0	120%	4.5	4.0	112%	6.5%
1,1-Dichloropropene	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
Dibromomethane	3.7	4.0	92.5%	3.5	4.0	87.5%	5.6%
1,1,1,2-Tetrachloroethane	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
1,2-Dibromo-3-chloropropane	4.2	4.0	105%	3.9	4.0	97.5%	7.4%
1,2,3-Trichloropropane	4.4	4.0	110%	3.8	4.0	95.0%	14.6%
trans-1,4-Dichloro-2-butene	4.4	4.0	110%	3.6	4.0	90.0%	20.0%
1,3,5-Trimethylbenzene	3.9	4.0	97.5%	3.8	4.0	95.0%	2.6%
1,2,4-Trimethylbenzene	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%
Hexachlorobutadiene	3.5	4.0	87.5%	3.7	4.0	92.5%	5.6%
Ethylene Dibromide	3.6	4.0	90.0%	3.4	4.0	85.0%	5.7%
Bromochloromethane	3.6	4.0	90.0%	3.4	4.0	85.0%	5.7%
2,2-Dichloropropane	3.7	4.0	92.5%	3.9	4.0	97.5%	5.3%
1,3-Dichloropropane	3.9	4.0	97.5%	3.6	4.0	90.0%	8.0%
Isopropylbenzene	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
n-Propylbenzene	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
Bromobenzene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
2-Chlorotoluene	3.7	4.0	92.5%	3.7	4.0	92.5%	0.0%
4-Chlorotoluene	4.0	4.0	100%	3.8	4.0	95.0%	5.1%
tert-Butylbenzene	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%
sec-Butylbenzene	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
4-Isopropyltoluene	3.9	4.0	97.5%	3.8	4.0	95.0%	2.6%
n-Butylbenzene	4.0	4.0	100%	4.0	4.0	100%	0.0%
1,2,4-Trichlorobenzene	3.6	4.0	90.0%	3.6	4.0	90.0%	0.0%
Naphthalene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
1,2,3-Trichlorobenzene	3.7	4.0	92.5%	3.5	4.0	87.5%	5.6%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	107%	106%
d8-Toluene	101%	100%
Bromofluorobenzene	99.0%	97.0%
d4-1,2-Dichlorobenzene	97.0%	99.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-070308**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-070308
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: FINN3/JZ
LCSD: FINN3/JZ
Date Analyzed LCS: 07/03/08 11:48
LCSD: 07/03/08 12:13

Sample Amount LCS: 20.0 mL
LCSD: 20.0 mL
Purge Volume LCS: 20.0 mL
LCSD: 20.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	3.6	4.0	90.0%	3.6	4.0	90.0%	0.0%
Bromomethane	3.9	4.0	97.5%	4.0	4.0	100%	2.5%
Vinyl Chloride	3.8	4.0	95.0%	4.0	4.0	100%	5.1%
Chloroethane	4.1	4.0	102%	4.1	4.0	102%	0.0%
Methylene Chloride	4.4	4.0	110%	4.4	4.0	110%	0.0%
Acetone	20.5	20.0	102%	21.8	20.0	109%	6.1%
Carbon Disulfide	4.3	4.0	108%	4.5	4.0	112%	4.5%
1,1-Dichloroethene	4.0	4.0	100%	4.0	4.0	100%	0.0%
1,1-Dichloroethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
trans-1,2-Dichloroethene	4.2	4.0	105%	4.3	4.0	108%	2.4%
cis-1,2-Dichloroethene	3.6	4.0	90.0%	3.6	4.0	90.0%	0.0%
Chloroform	3.9	4.0	97.5%	3.9	4.0	97.5%	0.0%
1,2-Dichloroethane	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
2-Butanone	19.4	20.0	97.0%	19.7	20.0	98.5%	1.5%
1,1,1-Trichloroethane	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
Carbon Tetrachloride	3.7	4.0	92.5%	3.7	4.0	92.5%	0.0%
Vinyl Acetate	4.4	4.0	110%	4.6	4.0	115%	4.4%
Bromodichloromethane	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
1,2-Dichloropropane	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
cis-1,3-Dichloropropene	3.7	4.0	92.5%	3.5	4.0	87.5%	5.6%
Trichloroethene	3.5	4.0	87.5%	3.4	4.0	85.0%	2.9%
Dibromochloromethane	3.7	4.0	92.5%	3.7	4.0	92.5%	0.0%
1,1,2-Trichloroethane	3.5	4.0	87.5%	3.5	4.0	87.5%	0.0%
Benzene	3.6	4.0	90.0%	3.5	4.0	87.5%	2.8%
trans-1,3-Dichloropropene	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
2-Chloroethylvinylether	3.6	4.0	90.0%	3.5	4.0	87.5%	2.8%
Bromoform	3.6	4.0	90.0%	3.8	4.0	95.0%	5.4%
4-Methyl-2-Pentanone (MIBK)	17.4	20.0	87.0%	16.2	20.0	81.0%	7.1%
2-Hexanone	16.7	20.0	83.5%	17.5	20.0	87.5%	4.7%
Tetrachloroethene	3.3	4.0	82.5%	3.4	4.0	85.0%	3.0%
1,1,2,2-Tetrachloroethane	3.6	4.0	90.0%	3.9	4.0	97.5%	8.0%
Toluene	3.6	4.0	90.0%	3.4	4.0	85.0%	5.7%
Chlorobenzene	3.4	4.0	85.0%	3.6	4.0	90.0%	5.7%
Ethylbenzene	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
Styrene	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
Trichlorofluoromethane	4.1	4.0	102%	4.2	4.0	105%	2.4%
1,1,2-Trichloro-1,2,2-trifluoroetha	4.2	4.0	105%	4.4	4.0	110%	4.7%
m,p-Xylene	7.3	8.0	91.2%	7.5	8.0	93.8%	2.7%
o-Xylene	3.5	4.0	87.5%	3.6	4.0	90.0%	2.8%
1,2-Dichlorobenzene	3.7	4.0	92.5%	4.2	4.0	105%	12.7%
1,3-Dichlorobenzene	3.5	4.0	87.5%	3.9	4.0	97.5%	10.8%
1,4-Dichlorobenzene	3.4	4.0	85.0%	3.8	4.0	95.0%	11.1%
Acrolein	19.3	20.0	96.5%	19.5	20.0	97.5%	1.0%
Methyl Iodide	4.0	4.0	100%	4.1	4.0	102%	2.5%
Bromoethane	4.2	4.0	105%	4.1	4.0	102%	2.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-070308**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-070308 QC Report No: ND59-Landau Associates
LIMS ID: 08-14250 Project: PORT OF TACOMA KAISER
Matrix: Water 168004.020

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Acrylonitrile	4.6	4.0	115%	4.3	4.0	108%	6.7%
1,1-Dichloropropene	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
Dibromomethane	3.8	4.0	95.0%	3.5	4.0	87.5%	8.2%
1,1,1,2-Tetrachloroethane	3.5	4.0	87.5%	3.8	4.0	95.0%	8.2%
1,2-Dibromo-3-chloropropane	3.9	4.0	97.5%	4.2	4.0	105%	7.4%
1,2,3-Trichloropropane	3.9	4.0	97.5%	4.1	4.0	102%	5.0%
trans-1,4-Dichloro-2-butene	3.6	4.0	90.0%	4.2	4.0	105%	15.4%
1,3,5-Trimethylbenzene	3.6	4.0	90.0%	4.2	4.0	105%	15.4%
1,2,4-Trimethylbenzene	3.6	4.0	90.0%	4.2	4.0	105%	15.4%
Hexachlorobutadiene	3.3	4.0	82.5%	3.9	4.0	97.5%	16.7%
Ethylene Dibromide	3.7	4.0	92.5%	3.4	4.0	85.0%	8.5%
Bromochloromethane	3.5	4.0	87.5%	3.4	4.0	85.0%	2.9%
2,2-Dichloropropane	3.9	4.0	97.5%	4.0	4.0	100%	2.5%
1,3-Dichloropropane	3.6	4.0	90.0%	3.7	4.0	92.5%	2.7%
Isopropylbenzene	3.7	4.0	92.5%	4.0	4.0	100%	7.8%
n-Propylbenzene	3.8	4.0	95.0%	4.3	4.0	108%	12.3%
Bromobenzene	3.4	4.0	85.0%	3.7	4.0	92.5%	8.5%
2-Chlorotoluene	3.5	4.0	87.5%	4.1	4.0	102%	15.8%
4-Chlorotoluene	3.9	4.0	97.5%	4.3	4.0	108%	9.8%
tert-Butylbenzene	3.6	4.0	90.0%	4.1	4.0	102%	13.0%
sec-Butylbenzene	3.8	4.0	95.0%	4.3	4.0	108%	12.3%
4-Isopropyltoluene	3.7	4.0	92.5%	4.2	4.0	105%	12.7%
n-Butylbenzene	3.8	4.0	95.0%	4.4	4.0	110%	14.6%
1,2,4-Trichlorobenzene	3.4	4.0	85.0%	3.8	4.0	95.0%	11.1%
Naphthalene	3.6	4.0	90.0%	4.0	4.0	100%	10.5%
1,2,3-Trichlorobenzene	3.3	4.0	82.5%	3.8	4.0	95.0%	14.1%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	115%	119%
d8-Toluene	102%	98.0%
Bromofluorobenzene	101%	100%
d4-1,2-Dichlorobenzene	99.2%	98.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260 SIM **Sample ID: RM-MW-3(S)**
Page 1 of 1 **SAMPLE**

Lab Sample ID: ND59A
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized: VTS
Reported: 07/25/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: NT7/JZ
Date Analyzed: 07/25/08 14:41

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	< 0.020	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	152%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260 SIM **Sample ID: RM-MW-5(S)**
Page 1 of 1 **SAMPLE**

Lab Sample ID: ND59C
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized: VJS
Reported: 07/25/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: NT7/JZ
Date Analyzed: 07/25/08 15:06

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	< 0.020	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	126%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260 SIM **Sample ID: MB-072508**
Page 1 of 1 **METHOD BLANK**

Lab Sample ID: MB-072508
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized: VTS
Reported: 07/25/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT7/JZ
Date Analyzed: 07/25/08 13:45

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	< 0.020	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	119%

ANALYTICAL RESOURCES INCORPORATED

SW8260-SIM SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

Client ID	DCE	TOT OUT
RM-MW-3(S)	152%*	1
MB-072508	119%	0
LCS-072508	117%	0
LCSD-072508	114%	0
RM-MW-5(S)	126%	0

	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	(80-133)	(80-136)

Prep Method: SW5030
Log Number Range: 08-14247 to 08-14249

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260 SIM **Sample ID: LCS-072508**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-072508
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized: VTS
Reported: 07/25/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT7/JZ
LCSD: NT7/JZ
Date Analyzed LCS: 07/25/08 12:40
LCSD: 07/25/08 13:12

Sample Amount LCS: 10.0 mL
LCSD: 10.0 mL
Purge Volume LCS: 10.0 mL
LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Vinyl Chloride	1.18	1.00	118%	1.05	1.00	105%	11.7%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	117%	114%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: RM-MW-3(S)**
Page 1 of 1 **SAMPLE**

Lab Sample ID: ND59A
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized: VTS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/10/08 16:53
Instrument/Analyst: NT2/YZ

Sample Amount: 410 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.012**	**0.36 B**
91-57-6	**2-Methylnaphthalene**	**0.012**	**0.11 B**
90-12-0	**1-Methylnaphthalene**	**0.012**	**0.099 B**
208-96-8	Acenaphthylene	0.012	< 0.012 U
83-32-9	**Acenaphthene**	**0.012**	**0.070 B**
86-73-7	**Fluorene**	**0.012**	**0.041**
85-01-8	**Phenanthrene**	**0.012**	**0.040 B**
120-12-7	Anthracene	0.012	< 0.012 U
206-44-0	**Fluoranthene**	**0.012**	**0.015**
129-00-0	**Pyrene**	**0.012**	**0.012**
56-55-3	Benzo(a)anthracene	0.012	< 0.012 U
218-01-9	Chrysene	0.012	< 0.012 U
205-99-2	Benzo(b)fluoranthene	0.012	< 0.012 U
207-08-9	Benzo(k)fluoranthene	0.012	< 0.012 U
50-32-8	Benzo(a)pyrene	0.012	< 0.012 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.012	< 0.012 U
53-70-3	Dibenz(a,h)anthracene	0.012	< 0.012 U
191-24-2	Benzo(g,h,i)perylene	0.012	< 0.012 U
132-64-9	**Dibenzofuran**	**0.012**	**0.025**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	60.7%
d14-Dibenzo(a,h)anthracene	42.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-3(S) REEXTRACT

Lab Sample ID: ND59A
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/15/08
Date Analyzed: 07/23/08 14:48
Instrument/Analyst: NT2/PK

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

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	< 0.010 U
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	**Acenaphthene**	**0.010**	**0.011**
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	70.7%
d14-Dibenzo(a,h)anthracene	38.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: RM-MW-4(S)
SAMPLE

Lab Sample ID: ND59B
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized: VTS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/10/08 17:17
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.011**	**0.15 B**
91-57-6	**2-Methylnaphthalene**	**0.011**	**0.041 B**
90-12-0	**1-Methylnaphthalene**	**0.011**	**0.045 B**
208-96-8	Acenaphthylene	0.011	< 0.011 U
83-32-9	**Acenaphthene**	**0.011**	**0.70 B**
86-73-7	**Fluorene**	**0.011**	**0.19**
85-01-8	**Phenanthrene**	**0.011**	**0.025 B**
120-12-7	**Anthracene**	**0.011**	**0.042**
206-44-0	**Fluoranthene**	**0.011**	**0.018**
129-00-0	**Pyrene**	**0.011**	**0.022**
56-55-3	**Benzo(a)anthracene**	**0.011**	**0.012**
218-01-9	Chrysene	0.011	< 0.011 U
205-99-2	Benzo(b)fluoranthene	0.011	< 0.011 U
207-08-9	Benzo(k)fluoranthene	0.011	< 0.011 U
50-32-8	Benzo(a)pyrene	0.011	< 0.011 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.011	< 0.011 U
53-70-3	Dibenz(a,h)anthracene	0.011	< 0.011 U
191-24-2	Benzo(g,h,i)perylene	0.011	< 0.011 U
132-64-9	**Dibenzofuran**	**0.011**	**0.37**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	66.0%
d14-Dibenzo(a,h)anthracene	63.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-4(S) REEXTRACT

Lab Sample ID: ND59B
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/15/08
Date Analyzed: 07/23/08 15:12
Instrument/Analyst: NT2/PK

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.030**
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	**1-Methylnaphthalene**	**0.010**	**0.014**
208-96-8	**Acenaphthylene**	**0.010**	**0.010**
83-32-9	**Acenaphthene**	**0.010**	**1.0 E**
86-73-7	**Fluorene**	**0.010**	**0.18**
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	**Anthracene**	**0.010**	**0.030**
206-44-0	**Fluoranthene**	**0.010**	**0.012**
129-00-0	**Pyrene**	**0.010**	**0.017**
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	**Dibenzofuran**	**0.010**	**0.43**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	73.3%
d14-Dibenzo(a,h)anthracene	73.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-4(S)
REEXTRACT DL

Lab Sample ID: ND59B
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/15/08
Date Analyzed: 07/23/08 18:02
Instrument/Analyst: NT2/PK

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.030**	**0.037**
91-57-6	2-Methylnaphthalene	0.030	< 0.030 U
90-12-0	1-Methylnaphthalene	0.030	< 0.030 U
208-96-8	Acenaphthylene	0.030	< 0.030 U
83-32-9	**Acenaphthene**	**0.030**	**1.1**
86-73-7	**Fluorene**	**0.030**	**0.18**
85-01-8	Phenanthrene	0.030	< 0.030 U
120-12-7	**Anthracene**	**0.030**	**0.030**
206-44-0	Fluoranthene	0.030	< 0.030 U
129-00-0	Pyrene	0.030	< 0.030 U
56-55-3	Benzo(a)anthracene	0.030	< 0.030 U
218-01-9	Chrysene	0.030	< 0.030 U
205-99-2	Benzo(b)fluoranthene	0.030	< 0.030 U
207-08-9	Benzo(k)fluoranthene	0.030	< 0.030 U
50-32-8	Benzo(a)pyrene	0.030	< 0.030 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.030	< 0.030 U
53-70-3	Dibenz(a,h)anthracene	0.030	< 0.030 U
191-24-2	Benzo(g,h,i)perylene	0.030	< 0.030 U
132-64-9	**Dibenzofuran**	**0.030**	**0.37**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	69.2%
d14-Dibenzo(a,h)anthracene	45.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-5(S)
SAMPLE

Lab Sample ID: ND59C
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized: VJS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/10/08 17:41
Instrument/Analyst: NT2/YZ

Sample Amount: 490 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.12 B**
91-57-6	**2-Methylnaphthalene**	**0.010**	**0.015 B**
90-12-0	**1-Methylnaphthalene**	**0.010**	**0.013 B**
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	**Acenaphthene**	**0.010**	**0.014 B**
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	66.3%
d14-Dibenzo(a,h)anthracene	89.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: RM-MW-5(S) REEXTRACT

Lab Sample ID: ND59C
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/15/08
Date Analyzed: 07/23/08 15:37
Instrument/Analyst: NT2/PK

Sample Amount: 425 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.012**	**0.047**
91-57-6	2-Methylnaphthalene	0.012	< 0.012 U
90-12-0	1-Methylnaphthalene	0.012	< 0.012 U
208-96-8	Acenaphthylene	0.012	< 0.012 U
83-32-9	Acenaphthene	0.012	< 0.012 U
86-73-7	Fluorene	0.012	< 0.012 U
85-01-8	Phenanthrene	0.012	< 0.012 U
120-12-7	Anthracene	0.012	< 0.012 U
206-44-0	Fluoranthene	0.012	< 0.012 U
129-00-0	Pyrene	0.012	< 0.012 U
56-55-3	Benzo(a)anthracene	0.012	< 0.012 U
218-01-9	Chrysene	0.012	< 0.012 U
205-99-2	Benzo(b)fluoranthene	0.012	< 0.012 U
207-08-9	Benzo(k)fluoranthene	0.012	< 0.012 U
50-32-8	Benzo(a)pyrene	0.012	< 0.012 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.012	< 0.012 U
53-70-3	Dibenz(a,h)anthracene	0.012	< 0.012 U
191-24-2	Benzo(g,h,i)perylene	0.012	< 0.012 U
132-64-9	Dibenzofuran	0.012	< 0.012 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	74.0%
d14-Dibenzo(a,h)anthracene	76.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-6(S)
SAMPLE

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized: VTS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/10/08 18:05
Instrument/Analyst: NT2/YZ

Sample Amount: 10.0 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.50**	**120 EB**
91-57-6	**2-Methylnaphthalene**	**0.50**	**48 B**
90-12-0	**1-Methylnaphthalene**	**0.50**	**49 B**
208-96-8	Acenaphthylene	0.50	< 0.50 U
83-32-9	**Acenaphthene**	**0.50**	**75 EB**
86-73-7	**Fluorene**	**0.50**	**58**
85-01-8	**Phenanthrene**	**0.50**	**85 EB**
120-12-7	**Anthracene**	**0.50**	**15**
206-44-0	**Fluoranthene**	**0.50**	**16**
129-00-0	**Pyrene**	**0.50**	**12**
56-55-3	**Benzo(a)anthracene**	**0.50**	**1.3**
218-01-9	**Chrysene**	**0.50**	**1.6**
205-99-2	**Benzo(b)fluoranthene**	**0.50**	**0.60**
207-08-9	**Benzo(k)fluoranthene**	**0.50**	**0.60**
50-32-8	Benzo(a)pyrene	0.50	< 0.50 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.50	< 0.50 U
53-70-3	Dibenz(a,h)anthracene	0.50	< 0.50 U
191-24-2	Benzo(g,h,i)perylene	0.50	< 0.50 U
132-64-9	**Dibenzofuran**	**0.50**	**28**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	57.7%
d14-Dibenzo(a,h)anthracene	87.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-6(S)
DILUTION

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized: VTS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/14/08 14:11
Instrument/Analyst: NT2/YZ

Sample Amount: 10.0 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 5.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**2.5**	**130 B**
91-57-6	**2-Methylnaphthalene**	**2.5**	**49 B**
90-12-0	**1-Methylnaphthalene**	**2.5**	**48 B**
208-96-8	Acenaphthylene	2.5	< 2.5 U
83-32-9	**Acenaphthene**	**2.5**	**65 B**
86-73-7	**Fluorene**	**2.5**	**45**
85-01-8	**Phenanthrene**	**2.5**	**77 B**
120-12-7	**Anthracene**	**2.5**	**11**
206-44-0	**Fluoranthene**	**2.5**	**14**
129-00-0	**Pyrene**	**2.5**	**10**
56-55-3	Benzo(a)anthracene	2.5	< 2.5 U
218-01-9	Chrysene	2.5	< 2.5 U
205-99-2	Benzo(b)fluoranthene	2.5	< 2.5 U
207-08-9	Benzo(k)fluoranthene	2.5	< 2.5 U
50-32-8	Benzo(a)pyrene	2.5	< 2.5 U
193-39-5	Indeno(1,2,3-cd)pyrene	2.5	< 2.5 U
53-70-3	Dibenz(a,h)anthracene	2.5	< 2.5 U
191-24-2	Benzo(g,h,i)perylene	2.5	< 2.5 U
132-64-9	**Dibenzofuran**	**2.5**	**26**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	57.0%
d14-Dibenzo(a,h)anthracene	66.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: RM-MW-6(S)**
Page 1 of 1 **REEXTRACT**

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/15/08
Date Analyzed: 07/23/08 16:01
Instrument/Analyst: NT2/PK

Sample Amount: 475 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 100

CAS Number	Analyte	RL	Result	
91-20-3	**Naphthalene**	**1.0**	**120**	**E**
91-57-6	**2-Methylnaphthalene**	**1.0**	**57**	
90-12-0	**1-Methylnaphthalene**	**1.0**	**56**	
208-96-8	Acenaphthylene	1.0	< 1.0	U
83-32-9	**Acenaphthene**	**1.0**	**91**	
86-73-7	**Fluorene**	**1.0**	**62**	
85-01-8	**Phenanthrene**	**1.0**	**120**	**E**
120-12-7	**Anthracene**	**1.0**	**20**	
206-44-0	**Fluoranthene**	**1.0**	**32**	
129-00-0	**Pyrene**	**1.0**	**26**	
56-55-3	**Benzo(a)anthracene**	**1.0**	**3.4**	
218-01-9	**Chrysene**	**1.0**	**7.0**	
205-99-2	**Benzo(b)fluoranthene**	**1.0**	**2.3**	
207-08-9	**Benzo(k)fluoranthene**	**1.0**	**1.8**	
50-32-8	**Benzo(a)pyrene**	**1.0**	**1.3**	
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0	U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0	U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0	U
132-64-9	**Dibenzofuran**	**1.0**	**31**	

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: RM-MW-6(S)**
Page 1 of 1 **REEXTRACT DL**

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/15/08
Date Analyzed: 07/24/08 10:41
Instrument/Analyst: NT2/PK

Sample Amount: 475 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 200

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**2.1**	**110**
91-57-6	**2-Methylnaphthalene**	**2.1**	**53**
90-12-0	**1-Methylnaphthalene**	**2.1**	**52**
208-96-8	Acenaphthylene	2.1	< 2.1 U
83-32-9	**Acenaphthene**	**2.1**	**89**
86-73-7	**Fluorene**	**2.1**	**62**
85-01-8	**Phenanthrene**	**2.1**	**120**
120-12-7	**Anthracene**	**2.1**	**21**
206-44-0	**Fluoranthene**	**2.1**	**33**
129-00-0	**Pyrene**	**2.1**	**27**
56-55-3	**Benzo(a)anthracene**	**2.1**	**4.0**
218-01-9	**Chrysene**	**2.1**	**8.2**
205-99-2	**Benzo(b)fluoranthene**	**2.1**	**3.1**
207-08-9	**Benzo(k)fluoranthene**	**2.1**	**2.1**
50-32-8	Benzo(a)pyrene	2.1	< 2.1 U
193-39-5	Indeno(1,2,3-cd)pyrene	2.1	< 2.1 U
53-70-3	Dibenz(a,h)anthracene	2.1	< 2.1 U
191-24-2	Benzo(g,h,i)perylene	2.1	< 2.1 U
132-64-9	**Dibenzofuran**	**2.1**	**28**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-6(D)
SAMPLE

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized: VTS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/14/08 14:59
Instrument/Analyst: NT2/YZ

Sample Amount: 480 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 10.0

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	0.10	71 EB
91-57-6	**2-Methylnaphthalene**	0.10	58 EB
90-12-0	**1-Methylnaphthalene**	0.10	55 EB
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	**Acenaphthene**	0.10	80 EB
86-73-7	**Fluorene**	0.10	57 E
85-01-8	**Phenanthrene**	0.10	130 EB
120-12-7	**Anthracene**	0.10	34 E
206-44-0	**Fluoranthene**	0.10	54 E
129-00-0	**Pyrene**	0.10	46 E
56-55-3	**Benzo(a)anthracene**	0.10	9.0
218-01-9	**Chrysene**	0.10	16 E
205-99-2	**Benzo(b)fluoranthene**	0.10	4.0
207-08-9	**Benzo(k)fluoranthene**	0.10	4.0
50-32-8	**Benzo(a)pyrene**	0.10	2.8
193-39-5	**Indeno(1,2,3-cd)pyrene**	0.10	1.5
53-70-3	**Dibenz(a,h)anthracene**	0.10	0.66
191-24-2	**Benzo(g,h,i)perylene**	0.10	1.7
132-64-9	**Dibenzofuran**	0.10	31 E

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	81.7%
d14-Dibenzo(a,h)anthracene	28.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: RM-MW-6(D)**
Page 1 of 1 **DILUTION**

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized: VTS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/15/08 10:30
Instrument/Analyst: NT2/YZ

Sample Amount: 480 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 300

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**3.1**	**170 B**
91-57-6	**2-Methylnaphthalene**	**3.1**	**87 B**
90-12-0	**1-Methylnaphthalene**	**3.1**	**82 B**
208-96-8	Acenaphthylene	3.1	< 3.1 U
83-32-9	**Acenaphthene**	**3.1**	**120 B**
86-73-7	**Fluorene**	**3.1**	**91**
85-01-8	**Phenanthrene**	**3.1**	**180 B**
120-12-7	**Anthracene**	**3.1**	**39**
206-44-0	**Fluoranthene**	**3.1**	**60**
129-00-0	**Pyrene**	**3.1**	**49**
56-55-3	**Benzo(a)anthracene**	**3.1**	**8.2**
218-01-9	**Chrysene**	**3.1**	**16**
205-99-2	**Benzo(b)fluoranthene**	**3.1**	**3.8**
207-08-9	**Benzo(k)fluoranthene**	**3.1**	**3.8**
50-32-8	Benzo(a)pyrene	3.1	< 3.1 U
193-39-5	Indeno(1,2,3-cd)pyrene	3.1	< 3.1 U
53-70-3	Dibenz(a,h)anthracene	3.1	< 3.1 U
191-24-2	Benzo(g,h,i)perylene	3.1	< 3.1 U
132-64-9	**Dibenzofuran**	**3.1**	**50**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: RM-MW-6(D)**
Page 1 of 1 **REEXTRACT**

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/15/08
Date Analyzed: 07/23/08 16:25
Instrument/Analyst: NT2/PK

Sample Amount: 10.0 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 5.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**2.5**	**120**
91-57-6	**2-Methylnaphthalene**	**2.5**	**54**
90-12-0	**1-Methylnaphthalene**	**2.5**	**52**
208-96-8	Acenaphthylene	2.5	< 2.5 U
83-32-9	**Acenaphthene**	**2.5**	**76**
86-73-7	**Fluorene**	**2.5**	**50**
85-01-8	**Phenanthrene**	**2.5**	**75**
120-12-7	**Anthracene**	**2.5**	**12**
206-44-0	**Fluoranthene**	**2.5**	**14**
129-00-0	**Pyrene**	**2.5**	**11**
56-55-3	Benzo(a)anthracene	2.5	< 2.5 U
218-01-9	Chrysene	2.5	< 2.5 U
205-99-2	Benzo(b)fluoranthene	2.5	< 2.5 U
207-08-9	Benzo(k)fluoranthene	2.5	< 2.5 U
50-32-8	Benzo(a)pyrene	2.5	< 2.5 U
193-39-5	Indeno(1,2,3-cd)pyrene	2.5	< 2.5 U
53-70-3	Dibenz(a,h)anthracene	2.5	< 2.5 U
191-24-2	Benzo(g,h,i)perylene	2.5	< 2.5 U
132-64-9	**Dibenzofuran**	**2.5**	**22**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	62.5%
d14-Dibenzo(a,h)anthracene	43.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: SPL-MW-B(S)
SAMPLE

Lab Sample ID: ND59F
LIMS ID: 08-14252
Matrix: Water
Data Release Authorized:
Reported: 07/28/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/10/08 18:53
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result	TEQ
56-55-3	**Benzo(a)anthracene**	**0.010**	**0.016**	**0.0016**
218-01-9	**Chrysene**	**0.010**	**0.024**	**0.0002**
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U	
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U	
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U	
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U	
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U	

cPAH TEQ 0.0018

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	50.0%
d14-Dibenzo(a,h)anthracene	27.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: SPL-MW-C(S)
SAMPLE

Lab Sample ID: ND59G
LIMS ID: 08-14253
Matrix: Water
Data Release Authorized:
Reported: 07/28/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/14/08 13:47
Instrument/Analyst: NT2/YZ

Sample Amount: 465 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result	TEQ
56-55-3	Benzo(a)anthracene	0.011	< 0.011 U	
218-01-9	Chrysene	0.011	< 0.011 U	
205-99-2	Benzo(b)fluoranthene	0.011	< 0.011 U	
207-08-9	Benzo(k)fluoranthene	0.011	< 0.011 U	
50-32-8	Benzo(a)pyrene	0.011	< 0.011 U	
193-39-5	Indeno(1,2,3-cd)pyrene	0.011	< 0.011 U	
53-70-3	Dibenz(a,h)anthracene	0.011	< 0.011 U	
			cPAH TEQ	NA

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	58.3%
d14-Dibenzo(a,h)anthracene	21.5%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: SPL-MW-F(S)
SAMPLE

Lab Sample ID: ND59H
LIMS ID: 08-14254
Matrix: Water
Data Release Authorized:
Reported: 07/28/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/10/08 19:41
Instrument/Analyst: NT2/YZ

Sample Amount: 490 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result	TEQ
56-55-3	**Benzo(a)anthracene**	0.010	0.018	0.0018
218-01-9	**Chrysene**	0.010	0.062	0.0006
205-99-2	**Benzo(b)fluoranthene**	0.010	0.045	0.0045
207-08-9	**Benzo(k)fluoranthene**	0.010	0.045	0.0045
50-32-8	**Benzo(a)pyrene**	0.010	0.014	0.0139
193-39-5	**Indeno(1,2,3-cd)pyrene**	0.010	0.017	0.0017
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U	

cPAH TEQ 0.0270

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	56.3%
d14-Dibenzo(a,h)anthracene	14.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: MB-070308**
Page 1 of 1 **METHOD BLANK**

Lab Sample ID: MB-070308
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized: VNS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted: 07/03/08
Date Analyzed: 07/10/08 15:41
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.050**
91-57-6	**2-Methylnaphthalene**	**0.010**	**0.015**
90-12-0	**1-Methylnaphthalene**	**0.010**	**0.013**
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	**Acenaphthene**	**0.010**	**0.012**
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	**Phenanthrene**	**0.010**	**0.013**
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	72.7%
d14-Dibenzo(a,h)anthracene	86.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: MB-071508**
Page 1 of 1 **METHOD BLANK**

Lab Sample ID: MB-071508
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted: 07/15/08
Date Analyzed: 07/23/08 13:36
Instrument/Analyst: NT2/PK

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

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	< 0.010 U
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	84.0%
d14-Dibenzo(a,h)anthracene	83.0%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

Client ID	MNP	DBA	TOT OUT
MB-070308	72.7%	86.7%	0
LCS-070308	63.0%	89.7%	0
LCSD-070308	66.7%	94.3%	0
RM-MW-3(S)	60.7%	42.7%	0
RM-MW-3(S) RE	70.7%	38.0%	0
MB-071508	84.0%	83.0%	0
LCS-071508	84.3%	99.3%	0
LCSD-071508	83.7%	100%	0
RM-MW-4(S)	66.0%	63.0%	0
RM-MW-4(S) RE	73.3%	73.0%	0
RM-MW-5(S)	66.3%	89.0%	0
RM-MW-5(S) RE	74.0%	76.3%	0
RM-MW-6(S)	57.7%	87.7%	0
RM-MW-6(S) DL	57.0%	66.8%	0
RM-MW-6(S) RE	D	D	0
RM-MW-6(D)	81.7%	28.8%	0
RM-MW-6(D) DL	D	D	0
RM-MW-6(D) RE	62.5%	43.7%	0
SPL-MW-B(S)	50.0%	27.3%	0
SPL-MW-B(S) DL	51.3%	22.8%	0
SPL-MW-B(S) RE	74.3%	20.7%	0
SPL-MW-C(S)	58.3%	21.5%	0
SPL-MW-C(S) RE	64.3%	16.3%	0
SPL-MW-F(S)	56.3%	14.4%	0
SPL-MW-F(S) DL	53.0%	10.0%	0
SPL-MW-F(S) RE	57.7%	D	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(49-113)	(44-112)
(DBA) = d14-Dibenzo(a,h)anthracene	(49-132)	(10-138)

Prep Method: SW3520C
Log Number Range: 08-14247 to 08-14254

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: LCS-070308
LAB CONTROL SAMPLE

Lab Sample ID: LCS-070308
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized: VTS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 07/03/08

Date Analyzed LCS: 07/10/08 16:05
LCSD: 07/10/08 16:29
Instrument/Analyst LCS: NT2/YZ
LCSD: NT2/YZ

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

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	0.214	0.300	71.3%	0.262	0.300	87.3%	20.2%
2-Methylnaphthalene	0.170	0.300	56.7%	0.206	0.300	68.7%	19.1%
1-Methylnaphthalene	0.185	0.300	61.7%	0.207	0.300	69.0%	11.2%
Acenaphthylene	0.190	0.300	63.3%	0.203	0.300	67.7%	6.6%
Acenaphthene	0.197	0.300	65.7%	0.214	0.300	71.3%	8.3%
Fluorene	0.247	0.300	82.3%	0.260	0.300	86.7%	5.1%
Phenanthrene	0.233	0.300	77.7%	0.258	0.300	86.0%	10.2%
Anthracene	0.249	0.300	83.0%	0.268	0.300	89.3%	7.4%
Fluoranthene	0.285	0.300	95.0%	0.306	0.300	102%	7.1%
Pyrene	0.282	0.300	94.0%	0.310	0.300	103%	9.5%
Benzo(a)anthracene	0.266	0.300	88.7%	0.272	0.300	90.7%	2.2%
Chrysene	0.243	0.300	81.0%	0.260	0.300	86.7%	6.8%
Benzo(b)fluoranthene	0.265	0.300	88.3%	0.302	0.300	101%	13.1%
Benzo(k)fluoranthene	0.209	0.300	69.7%	0.216	0.300	72.0%	3.3%
Benzo(a)pyrene	0.158	0.300	52.7%	0.0852	0.300	28.4%	59.9%
Indeno(1,2,3-cd)pyrene	0.242	0.300	80.7%	0.260	0.300	86.7%	7.2%
Dibenz(a,h)anthracene	0.222	0.300	74.0%	0.242	0.300	80.7%	8.6%
Benzo(g,h,i)perylene	0.245	0.300	81.7%	0.234	0.300	78.0%	4.6%
Dibenzofuran	0.173	0.300	57.7%	0.186	0.300	62.0%	7.2%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	63.0%	66.7%
d14-Dibenzo(a,h)anthracene	89.7%	94.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: LCS-071508
LAB CONTROL SAMPLE

Lab Sample ID: LCS-071508
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 07/15/08

Date Analyzed LCS: 07/23/08 14:00
LCSD: 07/23/08 14:24
Instrument/Analyst LCS: NT2/PK
LCSD: NT2/PK

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

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	0.220	0.300	73.3%	0.232	0.300	77.3%	5.3%
2-Methylnaphthalene	0.228	0.300	76.0%	0.233	0.300	77.7%	2.2%
1-Methylnaphthalene	0.238	0.300	79.3%	0.240	0.300	80.0%	0.8%
Acenaphthylene	0.235	0.300	78.3%	0.245	0.300	81.7%	4.2%
Acenaphthene	0.248	0.300	82.7%	0.259	0.300	86.3%	4.3%
Fluorene	0.249	0.300	83.0%	0.258	0.300	86.0%	3.6%
Phenanthrene	0.260	0.300	86.7%	0.264	0.300	88.0%	1.5%
Anthracene	0.238	0.300	79.3%	0.215	0.300	71.7%	10.2%
Fluoranthene	0.289	0.300	96.3%	0.295	0.300	98.3%	2.1%
Pyrene	0.283	0.300	94.3%	0.286	0.300	95.3%	1.1%
Benzo(a)anthracene	0.287	0.300	95.7%	0.287	0.300	95.7%	0.0%
Chrysene	0.290	0.300	96.7%	0.294	0.300	98.0%	1.4%
Benzo(b)fluoranthene	0.270	0.300	90.0%	0.271	0.300	90.3%	0.4%
Benzo(k)fluoranthene	0.268	0.300	89.3%	0.274	0.300	91.3%	2.2%
Benzo(a)pyrene	0.189	0.300	63.0%	0.150	0.300	50.0%	23.0%
Indeno(1,2,3-cd)pyrene	0.267	0.300	89.0%	0.275	0.300	91.7%	3.0%
Dibenz(a,h)anthracene	0.266	0.300	88.7%	0.271	0.300	90.3%	1.9%
Benzo(g,h,i)perylene	0.264	0.300	88.0%	0.272	0.300	90.7%	3.0%
Dibenzofuran	0.172	0.300	57.3%	0.179	0.300	59.7%	4.0%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	84.3%	83.7%
d14-Dibenzo(a,h)anthracene	99.3%	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-3(S)
SAMPLE

Lab Sample ID: ND59A
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 15:05
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 910 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.011	< 0.011 U
53469-21-9	Aroclor 1242	0.011	< 0.011 U
12672-29-6	Aroclor 1248	0.011	< 0.011 U
11097-69-1	Aroclor 1254	0.011	< 0.011 U
11096-82-5	Aroclor 1260	0.011	< 0.011 U
11104-28-2	Aroclor 1221	0.011	< 0.011 U
11141-16-5	Aroclor 1232	0.011	< 0.011 U

Reported in µg/L (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	65.8%
Tetrachlorometaxylene	78.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-4(S)
SAMPLE

Lab Sample ID: ND59B
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 15:23
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 980 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	73.8%
Tetrachlorometaxylene	77.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-5(S)
SAMPLE

Lab Sample ID: ND59C
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 15:40
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 960 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	65.8%
Tetrachlorometaxylene	84.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-6(S)
SAMPLE

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/07/08
Date Analyzed: 07/11/08 15:14
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 1000 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 3.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.030	< 0.030 U
53469-21-9	Aroclor 1242	0.030	< 0.030 U
12672-29-6	**Aroclor 1248**	**0.030**	**0.73**
11097-69-1	**Aroclor 1254**	**0.030**	**0.77**
11096-82-5	**Aroclor 1260**	**0.030**	**0.11**
11104-28-2	Aroclor 1221	0.030	< 0.030 U
11141-16-5	Aroclor 1232	0.030	< 0.030 U

Reported in µg/L (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	62.6%
Tetrachlorometaxylene	64.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-6(D)
SAMPLE

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/07/08
Date Analyzed: 07/11/08 15:49
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 950 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 3.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.032	< 0.032 U
53469-21-9	Aroclor 1242	0.032	< 0.032 U
12672-29-6	**Aroclor 1248**	**0.032**	**1.2**
11097-69-1	**Aroclor 1254**	**0.032**	**1.3**
11096-82-5	**Aroclor 1260**	**0.032**	**0.18**
11104-28-2	Aroclor 1221	0.032	< 0.032 U
11141-16-5	Aroclor 1232	0.032	< 0.032 U

Reported in µg/L (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	64.0%
Tetrachlorometaxylene	68.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082

Sample ID: MB-070708
METHOD BLANK

Lab Sample ID: MB-070708
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 14:13
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 1000 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	64.2%
Tetrachlorometaxylene	80.8%

ANALYTICAL RESOURCES INCORPORATED

SW8082/PCB WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

Client ID	DCBP % REC	DCBP LCL-UCL	TCMX % REC	TCMX LCL-UCL	TOT OUT
MB-070708	64.2%	36-102	80.8%	34-93	0
LCS-070708	65.0%	36-102	83.0%	34-93	0
LCSD-070708	66.0%	36-102	73.0%	34-93	0
RM-MW-3(S)	65.8%	19-121	78.2%	30-98	0
RM-MW-4(S)	73.8%	19-121	77.8%	30-98	0
RM-MW-5(S)	65.8%	19-121	84.0%	30-98	0
RM-MW-6(S)	62.6%	19-121	64.5%	30-98	0
RM-MW-6(D)	64.0%	19-121	68.6%	30-98	0

Prep Method: SW3510C
Log Number Range: 08-14247 to 08-14251

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082 **Sample ID: LCS-070708**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-070708
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 07/07/08

Date Analyzed LCS: 07/10/08 14:30
LCSD: 07/10/08 14:47
Instrument/Analyst LCS: ECD5/JGR
LCSD: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount LCS: 1000 mL
LCSD: 1000 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Silica Gel: No
Acid Cleanup: Yes

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Aroclor 1016	0.048	0.050	96.0%	0.049	0.050	98.0%	2.1%
Aroclor 1260	0.046	0.050	92.0%	0.047	0.050	94.0%	2.2%

PCB Surrogate Recovery

	LCS	LCSD
Decachlorobiphenyl	65.0%	66.0%
Tetrachlorometaxylene	83.0%	73.0%

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

ANALYTICAL RESOURCES INCORPORATED

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

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

Data Release Authorized:
Reported: 07/15/08

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-070308	Method Blank	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14247	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		87.1%
ND59A	RM-MW-3(S)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14247	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		73.1%
ND59B	RM-MW-4(S)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14248	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		82.7%
ND59C	RM-MW-5(S)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14249	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		86.2%
ND59D	RM-MW-6(S)	07/03/08	07/09/08	1.00	**Diesel**	**1.2**	**7.4**
08-14250	HC ID: **DIESEL**		FID3A	5.0	Motor Oil	2.5	< 2.5 U
					o-Terphenyl		32.9%
ND59E	RM-MW-6(D)	07/03/08	07/09/08	1.00	**Diesel**	**1.2**	**15**
08-14251	HC ID: **DIESEL**		FID3A	5.0	Motor Oil	2.5	< 2.5 U
					o-Terphenyl		16.9%

Reported in mg/L (ppm)

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

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

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

Client ID	OTER	TOT OUT
MB-070308	87.1%	0
LCS-070308	91.3%	0
LCSD-070308	89.3%	0
RM-MW-3(S)	73.1%	0
RM-MW-4(S)	82.7%	0
RM-MW-5(S)	86.2%	0
RM-MW-6(S)	32.9%*	1
RM-MW-6(D)	16.9%*	1

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(49-118)	(45-112)

Prep Method: SW3510C
Log Number Range: 08-14247 to 08-14251

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-070308**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-070308 QC Report No: ND59-Landau Associates
LIMS ID: 08-14247 Project: PORT OF TACOMA KAISER
Matrix: Water 168004.020
Data Release Authorized: Date Sampled: 07/01/08
Reported: 07/15/08 Date Received: 07/01/08

Date Extracted LCS/LCSD: 07/03/08 Sample Amount LCS: 500 mL
LCSD: 500 mL
Date Analyzed LCS: 07/09/08 16:27 Final Extract Volume LCS: 1.0 mL
LCSD: 07/09/08 16:43 LCSD: 1.0 mL
Instrument/Analyst LCS: FID/MS Dilution Factor LCS: 1.00
LCSD: FID/MS LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.52	3.00	84.0%	2.39	3.00	79.7%	5.3%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	91.3%	89.3%

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

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Water
Date Received: 07/01/08

ARI Job: ND59
Project: PORT OF TACOMA KAISER
168004.020

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
08-14247-070308MB1	Method Blank	500 mL	1.00 mL	07/03/08
08-14247-070308LCS1	Lab Control	500 mL	1.00 mL	07/03/08
08-14247-070308LCSD1	Lab Control Dup	500 mL	1.00 mL	07/03/08
08-14247-ND59A	RM-MW-3(S)	470 mL	1.00 mL	07/03/08
08-14248-ND59B	RM-MW-4(S)	500 mL	1.00 mL	07/03/08
08-14249-ND59C	RM-MW-5(S)	490 mL	1.00 mL	07/03/08
08-14250-ND59D	RM-MW-6(S)	485 mL	1.00 mL	07/03/08
08-14251-ND59E	RM-MW-6(D)	500 mL	1.00 mL	07/03/08

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: RM-MW-3(S)
ARI ID: 08-14247 ND59A

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.005	0.005
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: RM-MW-4(S)
ARI ID: 08-14248 ND59B

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.005	< 0.005 U
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: RM-MW-5(S)
ARI ID: 08-14249 ND59C

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.005	< 0.005 U
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: RM-MW-6(S)
ARI ID: 08-14250 ND59D

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.005	0.026
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: RM-MW-6(D)
ARI ID: 08-14251 ND59E

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.005	0.036
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: SPL-MW-B(S)
ARI ID: 08-14252 ND59F

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.025	0.370
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	0.006

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: SPL-MW-C(S)
ARI ID: 08-14253 ND59G

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.005	0.029
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	0.006

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: SPL-MW-F(S)
ARI ID: 08-14254 ND59H

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.100	1.02
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	0.011

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: NA
Date Received: NA

Analyte	Method	Date	Units	Blank
Total Cyanide	EPA 335.4	07/09/08	mg/L	< 0.005 U
Weak Acid Dissoc. Cyanide	SM4500CN-I	07/12/08	mg/L	< 0.005 U

STANDARD REFERENCE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
Total Cyanide SPEX #33-6AS	EPA 335.4	07/09/08	mg/L	0.138	0.150	92.0%
Weak Acid Dissoc. Cyanide SPEX #33-6AS	SM4500CN-I	07/12/08	mg/L	0.147	0.150	98.0%

REPLICATE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: ND59A Client ID: RM-MW-3(S)						
Total Cyanide	EPA 335.4	07/09/08	mg/L	0.005	< 0.005	NA
Weak Acid Dissoc. Cyani	SM4500CN-I	07/12/08	mg/L	< 0.005	< 0.005	NA

MS/MSD RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: ND59A Client ID: RM-MW-3(S)							
Total Cyanide	EPA 335.4	07/09/08	mg/L	0.005	0.134	0.150	86.0%
Weak Acid Dissoc. Cyanid	SM4500CN-I	07/12/08	mg/L	< 0.005	0.116	0.147	78.9%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: RM-MW-3(S)
SAMPLE

Lab Sample ID: ND59A
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/11/08	**7440-38-2**	**Arsenic**	1	**11**	
200.8	07/08/08	200.8	07/14/08	**7440-43-9**	**Cadmium**	0.2	**0.2**	
200.8	07/08/08	200.8	07/11/08	**7440-47-3**	**Chromium**	2	**21**	
200.8	07/08/08	200.8	07/11/08	**7440-50-8**	**Copper**	2	**51**	
200.8	07/08/08	200.8	07/11/08	**7439-92-1**	**Lead**	5	**7**	
7470	07/16/08	7470A	07/18/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/11/08	**7440-66-6**	**Zinc**	20	**60**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: RM-MW-4(S)
SAMPLE

Lab Sample ID: ND59B
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/15/08	**7440-38-2**	**Arsenic**	0.2	**2.8**	
200.8	07/08/08	200.8	07/14/08	7440-43-9	Cadmium	0.2	0.2	U
200.8	07/08/08	200.8	07/14/08	**7440-47-3**	**Chromium**	0.5	**2.8**	
200.8	07/08/08	200.8	07/15/08	**7440-50-8**	**Copper**	0.5	**6.1**	
200.8	07/08/08	200.8	07/14/08	7439-92-1	Lead	1	1	U
7470	07/16/08	7470A	07/18/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/15/08	**7440-66-6**	**Zinc**	4	**10**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: RM-MW-5(S)
SAMPLE

Lab Sample ID: ND59C
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/15/08	**7440-38-2**	**Arsenic**	0.2	**1.6**	
200.8	07/08/08	200.8	07/14/08	7440-43-9	Cadmium	0.2	0.2	U
200.8	07/08/08	200.8	07/14/08	7440-47-3	Chromium	0.5	0.5	U
200.8	07/08/08	200.8	07/15/08	**7440-50-8**	**Copper**	0.5	**0.5**	
200.8	07/08/08	200.8	07/14/08	7439-92-1	Lead	1	1	U
7470	07/16/08	7470A	07/18/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/15/08	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: RM-MW-6(S)
SAMPLE

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/11/08	**7440-38-2**	**Arsenic**	2	**85**	
200.8	07/08/08	200.8	07/11/08	**7440-43-9**	**Cadmium**	1	**1**	
200.8	07/08/08	200.8	07/14/08	**7440-47-3**	**Chromium**	5	**74**	
200.8	07/08/08	200.8	07/11/08	**7440-50-8**	**Copper**	2	**201**	
200.8	07/08/08	200.8	07/11/08	**7439-92-1**	**Lead**	5	**52**	
7470	07/16/08	7470A	07/18/08	**7439-97-6**	**Mercury**	0.1	**0.2**	
200.8	07/08/08	200.8	07/11/08	**7440-66-6**	**Zinc**	20	**340**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: RM-MW-6(D)
SAMPLE

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/11/08	**7440-38-2**	**Arsenic**	1	**42**	
200.8	07/08/08	200.8	07/14/08	**7440-43-9**	**Cadmium**	0.2	**0.6**	
200.8	07/08/08	200.8	07/11/08	**7440-47-3**	**Chromium**	2	**27**	
200.8	07/08/08	200.8	07/11/08	**7440-50-8**	**Copper**	2	**68**	
200.8	07/08/08	200.8	07/11/08	**7439-92-1**	**Lead**	5	**14**	
7470	07/16/08	7470A	07/18/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/11/08	**7440-66-6**	**Zinc**	20	**90**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: METHOD BLANK

Lab Sample ID: ND59MB
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/11/08	7440-38-2	Arsenic	0.2	0.2	U
200.8	07/08/08	200.8	07/11/08	7440-43-9	Cadmium	0.2	0.2	U
200.8	07/08/08	200.8	07/11/08	7440-47-3	Chromium	0.5	0.5	U
200.8	07/08/08	200.8	07/11/08	7440-50-8	Copper	0.5	0.5	U
200.8	07/08/08	200.8	07/11/08	7439-92-1	Lead	1	1	U
7470	07/16/08	7470A	07/18/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/11/08	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: LAB CONTROL**

Lab Sample ID: ND59LCS
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	200.8	26.4	25.0	106%	
Cadmium	200.8	25.1	25.0	100%	
Chromium	200.8	26.0	25.0	104%	
Copper	200.8	27.5	25.0	110%	
Lead	200.8	25.7	25.0	103%	
Mercury	7470A	2.32	2.00	116%	
Zinc	200.8	83.7	80.0	105%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

July 22, 2008

Stacy Pischer
Landau Associates, Inc.
130 Second Avenue South
Edmonds, WA 98020-9129

RE: Project: P.O.T. Kaiser
ARI Job No: ND73

Dear Stacy:

Please find enclosed the original chain of custody (COCs) records and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted six water samples and a trip blank on July 2, 2008 in good condition. There were no discrepancies between the COC and the sample containers' labels.

The samples were analyzed for Low Level SIM PAHs, NWTPH-Dx, Low Level PCBs, Total Metals, VOCs and Total Cyanide and WAD Cyanide, as requested on the COC.

Sample **RN-MW-6-(I)** required a dilution for VOCs due to matrix foaming.

No other analytical complications were noted. A copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

ND73

LANDAU ASSOCIATES

- [x] **Seattle (Edmonds)** (425) 778-0907
- [ ] **Tacoma** (253) 926-2493
- [ ] **Spokane** (509) 327-9737
- [ ] **Portland (Tigard)** (503) 443-6010
- [ ] _____

9° C, 10°

Chain-of-Custody Record

Date 7-2-08

Page 1 of 1

Project Name Port of Tacoma Kaiser Project No. 168004.020

Project Location/Event Tacoma, WA

Sampler's Name Brett Borgeson / Jacob Stokes

Project Contact Stacy Pischer

Send Results To Above + Anne Halvorsen

Testing Parameters

Turnaround Time
- [x] Standard
- [ ] Accelerated
- [ ] _____

Sample I.D.	Date	Time	Matrix	No. of Containers	cPAHs (method 8270 SIM LVI)	WAD Cyanide SM4500	Total Cyanide (method 335.4)	Naphthalenes (method 8270 SIM & LVI)	NWTPH-Dx	PCB's Low level (method 8082 LVI)	VOC's (method 8260)	Total Metals (method 6020/7470)	Observations/Comments
SPL-MW-C(I)	7-2-08	0850	H2O	3	X	X	X	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	
RM-MW-3(I)		0935		11	X	X	X	X	X	X	X	X	
RM-MW-4(I)		1030											
RM-MW-21(I)		1125											
RM-MW-5(I)		1210											
RM-MW-6(I)		1255											
Trip Blank				2									

- [x] Allow water samples to settle, collect aliquot from clear portion

NWTPH-Dx:
- ___ run acid wash/silica gel cleanup
- ___ run samples standardized to _____ product

___ Analyze for EPH if no specific product identified

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

___ Dissolved metal water samples field filtered

Other Metals: arsenic, cadmium, chromium, copper, lead, mercury, zinc.

Special Shipment/Handling or Storage Requirements: Store below 4°C

Method of Shipment:

Relinquished by	Received by	Relinquished by	Received by
Signature: Brett Borgeson	Signature: Bob Congleton	Signature:	Signature:
Printed Name: Brett Borgeson	Printed Name: Bob Congleton	Printed Name:	Printed Name:
Company: Landau	Company: ARI	Company:	Company:
Date: 7-2-08 Time: 1340	Date: 7/2/08 Time: 1340	Date: Time:	Date: Time:

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

Rev 4/01

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: LAT Project Name: P.T. KAISER

COC No: _____ Delivered by: HAND

Assigned ARI Job No: ND73 Tracking No: _____

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Record cooler temperature (recommended 2.0-6.0 °C for chemistry	9° 10° °C	

Cooler Accepted by: BB Engle Date: 7/2/08 Time: 1340

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?		ICE	
Was sufficient ice used (if appropriate)?		YES	(NO)
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottle arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation checklist)		(YES)	NO
Were all VOC vials free of air bubbles?	NA	YES	(NO)*
Was sufficient amount of sample sent in each bottle?		(YES)	NO

Samples Logged by: BC Date: 7/2/08 Time: 1435

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

Explain discrepancies or negative responses:

*- LARGE BUBBLE IN 1 of 3 VIALS SAMPLE KM-MW-5(I).

By: Date:

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-3(I)**
 SAMPLE

Lab Sample ID: ND73B
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Instrument/Analyst: NT5/JZ
Date Analyzed: 07/02/08 19:23

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-3(I)**
 SAMPLE

Lab Sample ID: ND73B
LIMS ID: 08-14329
Matrix: Water
Date Analyzed: 07/02/08 19:23

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	98.5%
d8-Toluene	100%
Bromofluorobenzene	94.0%
d4-1,2-Dichlorobenzene	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-4(I)**
 SAMPLE

Lab Sample ID: ND73C
LIMS ID: 08-14330
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Instrument/Analyst: NT5/JZ
Date Analyzed: 07/02/08 19:50

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	**Acetone**	**3.0**	**9.2**	
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	**Chloroform**	**0.2**	**0.5**	
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-4(I)**
 SAMPLE

Lab Sample ID: ND73C
LIMS ID: 08-14330
Matrix: Water
Date Analyzed: 07/02/08 19:50

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	102%
d8-Toluene	101%
Bromofluorobenzene	94.0%
d4-1,2-Dichlorobenzene	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-21(I)**
 SAMPLE

Lab Sample ID: ND73D
LIMS ID: 08-14331
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Instrument/Analyst: NT5/JZ
Date Analyzed: 07/02/08 20:16

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-21(I)**

SAMPLE

Lab Sample ID: ND73D
LIMS ID: 08-14331
Matrix: Water
Date Analyzed: 07/02/08 20:16

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	99.2%
d8-Toluene	101%
Bromofluorobenzene	91.5%
d4-1,2-Dichlorobenzene	102%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2

Sample ID: RM-MW-5(I)
SAMPLE

Lab Sample ID: ND73E
LIMS ID: 08-14332
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Instrument/Analyst: NT5/JZ
Date Analyzed: 07/02/08 20:42

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	**cis-1,2-Dichloroethene**	**0.2**	**0.8**	
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-5(I)**
Page 2 of 2 **SAMPLE**

Lab Sample ID: ND73E
LIMS ID: 08-14332
Matrix: Water
Date Analyzed: 07/02/08 20:42

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	98.8%
d8-Toluene	101%
Bromofluorobenzene	91.2%
d4-1,2-Dichlorobenzene	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: RM-MW-6(I)
SAMPLE

Lab Sample ID: ND73F
LIMS ID: 08-14333
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Instrument/Analyst: NT5/JZ
Date Analyzed: 07/02/08 21:09

Sample Amount: 2.00 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	2.0	< 2.0	U
74-83-9	Bromomethane	5.0	< 5.0	U
75-01-4	Vinyl Chloride	2.0	< 2.0	U
75-00-3	Chloroethane	2.0	< 2.0	U
75-09-2	Methylene Chloride	5.0	< 5.0	U
67-64-1	Acetone	30	< 30	U
75-15-0	Carbon Disulfide	2.0	< 2.0	U
75-35-4	1,1-Dichloroethene	2.0	< 2.0	U
75-34-3	1,1-Dichloroethane	2.0	< 2.0	U
156-60-5	trans-1,2-Dichloroethene	2.0	< 2.0	U
156-59-2	cis-1,2-Dichloroethene	2.0	< 2.0	U
67-66-3	Chloroform	2.0	< 2.0	U
107-06-2	1,2-Dichloroethane	2.0	< 2.0	U
78-93-3	2-Butanone	25	< 25	U
71-55-6	1,1,1-Trichloroethane	2.0	< 2.0	U
56-23-5	Carbon Tetrachloride	2.0	< 2.0	U
108-05-4	Vinyl Acetate	10	< 10	U
75-27-4	Bromodichloromethane	2.0	< 2.0	U
78-87-5	1,2-Dichloropropane	2.0	< 2.0	U
10061-01-5	cis-1,3-Dichloropropene	2.0	< 2.0	U
79-01-6	Trichloroethene	2.0	< 2.0	U
124-48-1	Dibromochloromethane	2.0	< 2.0	U
79-00-5	1,1,2-Trichloroethane	2.0	< 2.0	U
71-43-2	Benzene	2.0	< 2.0	U
10061-02-6	trans-1,3-Dichloropropene	2.0	< 2.0	U
110-75-8	2-Chloroethylvinylether	10	< 10	U
75-25-2	Bromoform	2.0	< 2.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	25	< 25	U
591-78-6	2-Hexanone	25	< 25	U
127-18-4	Tetrachloroethene	2.0	< 2.0	U
79-34-5	1,1,2,2-Tetrachloroethane	2.0	< 2.0	U
108-88-3	Toluene	2.0	< 2.0	U
108-90-7	Chlorobenzene	2.0	< 2.0	U
100-41-4	Ethylbenzene	2.0	< 2.0	U
100-42-5	Styrene	2.0	< 2.0	U
75-69-4	Trichlorofluoromethane	2.0	< 2.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	2.0	< 2.0	U
1330-20-7	m,p-Xylene	4.0	< 4.0	U
95-47-6	o-Xylene	2.0	< 2.0	U
95-50-1	1,2-Dichlorobenzene	2.0	< 2.0	U
541-73-1	1,3-Dichlorobenzene	2.0	< 2.0	U
106-46-7	1,4-Dichlorobenzene	2.0	< 2.0	U
107-02-8	Acrolein	50	< 50	U
74-88-4	Methyl Iodide	10	< 10	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	10	< 10	U
563-58-6	1,1-Dichloropropene	2.0	< 2.0	U
74-95-3	Dibromomethane	2.0	< 2.0	U
630-20-6	1,1,1,2-Tetrachloroethane	2.0	< 2.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: RM-MW-6(I) SAMPLE

Lab Sample ID: ND73F
LIMS ID: 08-14333
Matrix: Water
Date Analyzed: 07/02/08 21:09

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	10	< 10	U
108-67-8	1,3,5-Trimethylbenzene	2.0	< 2.0	U
95-63-6	1,2,4-Trimethylbenzene	2.0	< 2.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	Ethylene Dibromide	2.0	< 2.0	U
74-97-5	Bromochloromethane	2.0	< 2.0	U
594-20-7	2,2-Dichloropropane	2.0	< 2.0	U
142-28-9	1,3-Dichloropropane	2.0	< 2.0	U
98-82-8	Isopropylbenzene	2.0	< 2.0	U
103-65-1	n-Propylbenzene	2.0	< 2.0	U
108-86-1	Bromobenzene	2.0	< 2.0	U
95-49-8	2-Chlorotoluene	2.0	< 2.0	U
106-43-4	4-Chlorotoluene	2.0	< 2.0	U
98-06-6	tert-Butylbenzene	2.0	< 2.0	U
135-98-8	sec-Butylbenzene	2.0	< 2.0	U
99-87-6	4-Isopropyltoluene	2.0	< 2.0	U
104-51-8	n-Butylbenzene	2.0	< 2.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	101%
d8-Toluene	101%
Bromofluorobenzene	93.0%
d4-1,2-Dichlorobenzene	105%

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B

ANALYTICAL RESOURCES INCORPORATED

Sample ID: TRIP BLANK SAMPLE

Lab Sample ID: ND73G
LIMS ID: 08-14334
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Instrument/Analyst: NT5/JZ
Date Analyzed: 07/02/08 18:57

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: TRIP BLANK SAMPLE**

Lab Sample ID: ND73G
LIMS ID: 08-14334
Matrix: Water
Date Analyzed: 07/02/08 18:57

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	95.8%
d8-Toluene	102%
Bromofluorobenzene	96.5%
d4-1,2-Dichlorobenzene	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-070208**
Page 1 of 2 **METHOD BLANK**

Lab Sample ID: MB-070208
LIMS ID: 08-14334
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT5/JZ
Date Analyzed: 07/02/08 18:17

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-070208**

METHOD BLANK

Lab Sample ID: MB-070208
LIMS ID: 08-14334
Matrix: Water
Date Analyzed: 07/02/08 18:17

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.8%
d8-Toluene	99.8%
Bromofluorobenzene	95.2%
d4-1,2-Dichlorobenzene	101%

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
ND73B	RM-MW-3(I)	20	98.5%	100%	94.0%	104%	0
ND73C	RM-MW-4(I)	20	102%	101%	94.0%	104%	0
ND73D	RM-MW-21(I)	20	99.2%	101%	91.5%	102%	0
ND73E	RM-MW-5(I)	20	98.8%	101%	91.2%	104%	0
ND73F	RM-MW-6(I)	20	101%	101%	93.0%	105%	0
MB-070208	Method Blank	20	92.8%	99.8%	95.2%	101%	0
LCS-070208	Lab Control	20	92.2%	99.0%	101%	99.0%	0
LCSD-070208	Lab Control Dup	20	92.5%	97.5%	102%	101%	0
ND73G	TRIP BLANK	20	95.8%	102%	96.5%	104%	0

SW8260B	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	70-131	64-146
(TOL) = d8-Toluene	80-120	78-125
(BFB) = Bromofluorobenzene	74-121	71-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-121

Prep Method: SW5030B
Log Number Range: 08-14329 to 08-14334

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-070208**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-070208
LIMS ID: 08-14334
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT5/JZ
LCSD: NT5/JZ
Date Analyzed LCS: 07/02/08 17:14
LCSD: 07/02/08 17:51

Sample Amount LCS: 20.0 mL
LCSD: 20.0 mL
Purge Volume LCS: 20.0 mL
LCSD: 20.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	3.4	4.0	85.0%	3.2	4.0	80.0%	6.1%
Bromomethane	3.8	4.0	95.0%	3.5	4.0	87.5%	8.2%
Vinyl Chloride	3.4	4.0	85.0%	3.2	4.0	80.0%	6.1%
Chloroethane	3.3	4.0	82.5%	3.2	4.0	80.0%	3.1%
Methylene Chloride	3.7	4.0	92.5%	3.3	4.0	82.5%	11.4%
Acetone	17.6	20.0	88.0%	17.5	20.0	87.5%	0.6%
Carbon Disulfide	3.4	4.0	85.0%	3.6	4.0	90.0%	5.7%
1,1-Dichloroethene	3.4	4.0	85.0%	3.2	4.0	80.0%	6.1%
1,1-Dichloroethane	3.2	4.0	80.0%	3.1	4.0	77.5%	3.2%
trans-1,2-Dichloroethene	3.4	4.0	85.0%	3.2	4.0	80.0%	6.1%
cis-1,2-Dichloroethene	3.5	4.0	87.5%	3.2	4.0	80.0%	9.0%
Chloroform	3.3	4.0	82.5%	3.1	4.0	77.5%	6.2%
1,2-Dichloroethane	3.4	4.0	85.0%	3.2	4.0	80.0%	6.1%
2-Butanone	17.4	20.0	87.0%	17.4	20.0	87.0%	0.0%
1,1,1-Trichloroethane	3.3	4.0	82.5%	3.2	4.0	80.0%	3.1%
Carbon Tetrachloride	3.6	4.0	90.0%	3.8	4.0	95.0%	5.4%
Vinyl Acetate	3.4	4.0	85.0%	3.6	4.0	90.0%	5.7%
Bromodichloromethane	3.4	4.0	85.0%	3.3	4.0	82.5%	3.0%
1,2-Dichloropropane	3.4	4.0	85.0%	3.2	4.0	80.0%	6.1%
cis-1,3-Dichloropropene	3.6	4.0	90.0%	3.3	4.0	82.5%	8.7%
Trichloroethene	3.4	4.0	85.0%	3.4	4.0	85.0%	0.0%
Dibromochloromethane	3.7	4.0	92.5%	3.4	4.0	85.0%	8.5%
1,1,2-Trichloroethane	3.5	4.0	87.5%	3.2	4.0	80.0%	9.0%
Benzene	3.4	4.0	85.0%	3.3	4.0	82.5%	3.0%
trans-1,3-Dichloropropene	3.6	4.0	90.0%	3.3	4.0	82.5%	8.7%
2-Chloroethylvinylether	3.6	4.0	90.0%	3.6	4.0	90.0%	0.0%
Bromoform	3.6	4.0	90.0%	3.2	4.0	80.0%	11.8%
4-Methyl-2-Pentanone (MIBK)	17.4	20.0	87.0%	18.0	20.0	90.0%	3.4%
2-Hexanone	16.7	20.0	83.5%	17.3	20.0	86.5%	3.5%
Tetrachloroethene	3.5	4.0	87.5%	3.5	4.0	87.5%	0.0%
1,1,2,2-Tetrachloroethane	4.1	4.0	102%	3.6	4.0	90.0%	13.0%
Toluene	3.4	4.0	85.0%	3.3	4.0	82.5%	3.0%
Chlorobenzene	3.5	4.0	87.5%	3.4	4.0	85.0%	2.9%
Ethylbenzene	3.6	4.0	90.0%	3.6	4.0	90.0%	0.0%
Styrene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
Trichlorofluoromethane	3.4	4.0	85.0%	3.2	4.0	80.0%	6.1%
1,1,2-Trichloro-1,2,2-trifluoroetha	3.5	4.0	87.5%	3.7	4.0	92.5%	5.6%
m,p-Xylene	7.3	8.0	91.2%	7.2	8.0	90.0%	1.4%
o-Xylene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
1,2-Dichlorobenzene	3.5	4.0	87.5%	3.3	4.0	82.5%	5.9%
1,3-Dichlorobenzene	3.5	4.0	87.5%	3.4	4.0	85.0%	2.9%
1,4-Dichlorobenzene	3.5	4.0	87.5%	3.3	4.0	82.5%	5.9%
Acrolein	17.8	20.0	89.0%	17.2	20.0	86.0%	3.4%
Methyl Iodide	3.7	4.0	92.5%	3.9	4.0	97.5%	5.3%
Bromoethane	3.6	4.0	90.0%	3.8	4.0	95.0%	5.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-070208**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-070208 QC Report No: ND73-Landau Associates
LIMS ID: 08-14334 Project: Port of Tacoma Kaiser
Matrix: Water 168004.020

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Acrylonitrile	3.3	4.0	82.5%	3.4	4.0	85.0%	3.0%
1,1-Dichloropropene	3.5	4.0	87.5%	3.5	4.0	87.5%	0.0%
Dibromomethane	3.5	4.0	87.5%	3.2	4.0	80.0%	9.0%
1,1,1,2-Tetrachloroethane	3.6	4.0	90.0%	3.4	4.0	85.0%	5.7%
1,2-Dibromo-3-chloropropane	3.7	4.0	92.5%	3.3	4.0	82.5%	11.4%
1,2,3-Trichloropropane	3.6	4.0	90.0%	3.3	4.0	82.5%	8.7%
trans-1,4-Dichloro-2-butene	3.5	4.0	87.5%	3.4	4.0	85.0%	2.9%
1,3,5-Trimethylbenzene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
1,2,4-Trimethylbenzene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
Hexachlorobutadiene	3.6	4.0	90.0%	3.4	4.0	85.0%	5.7%
Ethylene Dibromide	3.5	4.0	87.5%	3.2	4.0	80.0%	9.0%
Bromochloromethane	3.4	4.0	85.0%	3.1	4.0	77.5%	9.2%
2,2-Dichloropropane	3.2	4.0	80.0%	3.3	4.0	82.5%	3.1%
1,3-Dichloropropane	3.6	4.0	90.0%	3.3	4.0	82.5%	8.7%
Isopropylbenzene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
n-Propylbenzene	3.6	4.0	90.0%	3.5	4.0	87.5%	2.8%
Bromobenzene	3.6	4.0	90.0%	3.3	4.0	82.5%	8.7%
2-Chlorotoluene	3.6	4.0	90.0%	3.4	4.0	85.0%	5.7%
4-Chlorotoluene	3.6	4.0	90.0%	3.4	4.0	85.0%	5.7%
tert-Butylbenzene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
sec-Butylbenzene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
4-Isopropyltoluene	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
n-Butylbenzene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
1,2,4-Trichlorobenzene	3.7	4.0	92.5%	3.4	4.0	85.0%	8.5%
Naphthalene	4.0	4.0	100%	3.4	4.0	85.0%	16.2%
1,2,3-Trichlorobenzene	3.8	4.0	95.0%	3.5	4.0	87.5%	8.2%

Reported in μg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	92.2%	92.5%
d8-Toluene	99.0%	97.5%
Bromofluorobenzene	101%	102%
d4-1,2-Dichlorobenzene	99.0%	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: SPL-MW-C(I)
SAMPLE

Lab Sample ID: ND73A
LIMS ID: 08-14328
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/14/08 17:22
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.026**
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	70.3%
d14-Dibenzo(a,h)anthracene	30.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-3(I)
SAMPLE

Lab Sample ID: ND73B
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/14/08 17:46
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.033**
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	84.3%
d14-Dibenzo(a,h)anthracene	96.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-4(I)
SAMPLE

Lab Sample ID: ND73C
LIMS ID: 08-14330
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/14/08 18:10
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.029**
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	76.7%
d14-Dibenzo(a,h)anthracene	59.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-21(I)
SAMPLE

Lab Sample ID: ND73D
LIMS ID: 08-14331
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/14/08 18:34
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.031**
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	77.7%
d14-Dibenzo(a,h)anthracene	93.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: RM-MW-5(I)
SAMPLE

Lab Sample ID: ND73E
LIMS ID: 08-14332
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/14/08 18:58
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.030**
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	81.7%
d14-Dibenzo(a,h)anthracene	62.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-6(I)
SAMPLE

Lab Sample ID: ND73F
LIMS ID: 08-14333
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/15/08 10:06
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	0.030	0.32
91-57-6	**2-Methylnaphthalene**	0.030	0.099
90-12-0	**1-Methylnaphthalene**	0.030	0.077
208-96-8	Acenaphthylene	0.030	< 0.030 U
83-32-9	**Acenaphthene**	0.030	0.22
86-73-7	**Fluorene**	0.030	0.19
85-01-8	**Phenanthrene**	0.030	1.0
120-12-7	**Anthracene**	0.030	0.25
206-44-0	**Fluoranthene**	0.030	1.2
129-00-0	**Pyrene**	0.030	1.2
56-55-3	**Benzo(a)anthracene**	0.030	0.48
218-01-9	**Chrysene**	0.030	0.52
205-99-2	**Benzo(b)fluoranthene**	0.030	0.28
207-08-9	**Benzo(k)fluoranthene**	0.030	0.28
50-32-8	**Benzo(a)pyrene**	0.030	0.37
193-39-5	**Indeno(1,2,3-cd)pyrene**	0.030	0.20
53-70-3	**Dibenz(a,h)anthracene**	0.030	0.080
191-24-2	**Benzo(g,h,i)perylene**	0.030	0.23
132-64-9	**Dibenzofuran**	0.030	0.081

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	71.7%
d14-Dibenzo(a,h)anthracene	41.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: MB-070708
METHOD BLANK

Lab Sample ID: MB-070708
LIMS ID: 08-14328
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted: 07/07/08
Date Analyzed: 07/14/08 16:11
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	< 0.010 U
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	68.7%
d14-Dibenzo(a,h)anthracene	58.0%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

Client ID	MNP	DBA	TOT OUT
MB-070708	68.7%	58.0%	0
LCS-070708	80.0%	81.7%	0
LCSD-070708	75.3%	94.0%	0
SPL-MW-C(I)	70.3%	30.3%	0
RM-MW-3(I)	84.3%	96.7%	0
RM-MW-4(I)	76.7%	59.7%	0
RM-MW-21(I)	77.7%	93.3%	0
RM-MW-5(I)	81.7%	62.3%	0
RM-MW-6(I)	71.7%	41.6%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(49-113)	(44-112)
(DBA) = d14-Dibenzo(a,h)anthracene	(49-132)	(10-138)

Prep Method: SW3520C
Log Number Range: 08-14328 to 08-14333

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: LCS-070708**
Page 1 of 1 **LAB CONTROL SAMPLE**

Lab Sample ID: LCS-070708
LIMS ID: 08-14328
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 07/07/08

Date Analyzed LCS: 07/14/08 16:34
LCSD: 07/14/08 16:58
Instrument/Analyst LCS: NT2/YZ
LCSD: NT2/YZ

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

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	0.218	0.300	72.7%	0.208	0.300	69.3%	4.7%
2-Methylnaphthalene	0.220	0.300	73.3%	0.212	0.300	70.7%	3.7%
1-Methylnaphthalene	0.222	0.300	74.0%	0.214	0.300	71.3%	3.7%
Acenaphthylene	0.222	0.300	74.0%	0.216	0.300	72.0%	2.7%
Acenaphthene	0.211	0.300	70.3%	0.208	0.300	69.3%	1.4%
Fluorene	0.240	0.300	80.0%	0.239	0.300	79.7%	0.4%
Phenanthrene	0.235	0.300	78.3%	0.230	0.300	76.7%	2.2%
Anthracene	0.217	0.300	72.3%	0.221	0.300	73.7%	1.8%
Fluoranthene	0.296	0.300	98.7%	0.300	0.300	100%	1.3%
Pyrene	0.282	0.300	94.0%	0.285	0.300	95.0%	1.1%
Benzo(a)anthracene	0.270	0.300	90.0%	0.285	0.300	95.0%	5.4%
Chrysene	0.240	0.300	80.0%	0.253	0.300	84.3%	5.3%
Benzo(b)fluoranthene	0.232	0.300	77.3%	0.277	0.300	92.3%	17.7%
Benzo(k)fluoranthene	0.226	0.300	75.3%	0.247	0.300	82.3%	8.9%
Benzo(a)pyrene	0.122	0.300	40.7%	0.118	0.300	39.3%	3.3%
Indeno(1,2,3-cd)pyrene	0.221	0.300	73.7%	0.247	0.300	82.3%	11.1%
Dibenz(a,h)anthracene	0.201	0.300	67.0%	0.233	0.300	77.7%	14.7%
Benzo(g,h,i)perylene	0.210	0.300	70.0%	0.234	0.300	78.0%	10.8%
Dibenzofuran	0.192	0.300	64.0%	0.191	0.300	63.7%	0.5%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	80.0%	75.3%
d14-Dibenzo(a,h)anthracene	81.7%	94.0%

ANALYTICAL RESOURCES INCORPORATED

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

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

Data Release Authorized:
Reported: 07/11/08

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-070308	Method Blank	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14329	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		87.1%
ND73B	RM-MW-3(I)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14329	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		76.9%
ND73C	RM-MW-4(I)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14330	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		82.4%
ND73D	RM-MW-21(I)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14331	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		87.6%
ND73E	RM-MW-5(I)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14332	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		52.4%
ND73F	RM-MW-6(I)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14333	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		63.8%

Reported in mg/L (ppm)

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

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

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

Client ID	OTER	TOT OUT
MB-070308	87.1%	0
LCS-070308	91.3%	0
LCSD-070308	89.3%	0
RM-MW-3(I)	76.9%	0
RM-MW-4(I)	82.4%	0
RM-MW-21(I)	87.6%	0
RM-MW-5(I)	52.4%	0
RM-MW-6(I)	63.8%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(49-118)	(45-112)

Prep Method: SW3510C
Log Number Range: 08-14329 to 08-14333

FORM-II TPHD

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned
Page 1 of 1

Sample ID: LCS-070308
LCS/LCSD

Lab Sample ID: LCS-070308
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/11/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted LCS/LCSD: 07/03/08

Date Analyzed LCS: 07/09/08 16:27
LCSD: 07/09/08 16:43
Instrument/Analyst LCS: FID/MS
LCSD: FID/MS

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

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.52	3.00	84.0%	2.39	3.00	79.7%	5.3%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	91.3%	89.3%

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

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: ND73
Project: Port of Tacoma Kaiser 168004.020

Matrix: Water
Date Received: 07/02/08

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
08-14329-070308MB1	Method Blank	500 mL	1.00 mL	07/03/08
08-14329-070308LCS1	Lab Control	500 mL	1.00 mL	07/03/08
08-14329-070308LCSD1	Lab Control Dup	500 mL	1.00 mL	07/03/08
08-14329-ND73B	RM-MW-3(I)	500 mL	1.00 mL	07/03/08
08-14330-ND73C	RM-MW-4(I)	500 mL	1.00 mL	07/03/08
08-14331-ND73D	RM-MW-21(I)	500 mL	1.00 mL	07/03/08
08-14332-ND73E	RM-MW-5(I)	500 mL	1.00 mL	07/03/08
08-14333-ND73F	RM-MW-6(I)	500 mL	1.00 mL	07/03/08

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-3(I)
SAMPLE

Lab Sample ID: ND73B
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 16:33
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 1000 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	56.2%
Tetrachlorometaxylene	71.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082

Sample ID: RM-MW-4(I)
SAMPLE

Lab Sample ID: ND73C
LIMS ID: 08-14330
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 16:50
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 980 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	41.0%
Tetrachlorometaxylene	62.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082

Sample ID: RM-MW-21(I)
SAMPLE

Lab Sample ID: ND73D
LIMS ID: 08-14331
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 17:07
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 1000 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	54.5%
Tetrachlorometaxylene	70.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-5(I)
SAMPLE

Lab Sample ID: ND73E
LIMS ID: 08-14332
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 17:25
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 1000 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	41.5%
Tetrachlorometaxylene	61.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-6(I)
SAMPLE

Lab Sample ID: ND73F
LIMS ID: 08-14333
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 17:43
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 1000 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	**Aroclor 1254**	**0.010**	**0.033**
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	19.9%
Tetrachlorometaxylene	35.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082

Sample ID: MB-070708
METHOD BLANK

Lab Sample ID: MB-070708
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: NA
Date Received: NA

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 14:13
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 1000 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	64.2%
Tetrachlorometaxylene	80.8%

ANALYTICAL RESOURCES INCORPORATED

SW8082/PCB WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

Client ID	DCBP % REC	DCBP LCL-UCL	TCMX % REC	TCMX LCL-UCL	TOT OUT
MB-070708	64.2%	36-102	80.8%	34-93	0
LCS-070708	65.0%	36-102	83.0%	34-93	0
LCSD-070708	66.0%	36-102	73.0%	34-93	0
RM-MW-3(I)	56.2%	19-121	71.5%	30-98	0
RM-MW-4(I)	41.0%	19-121	62.8%	30-98	0
RM-MW-21(I)	54.5%	19-121	70.0%	30-98	0
RM-MW-5(I)	41.5%	19-121	61.8%	30-98	0
RM-MW-6(I)	19.9%	19-121	35.5%	30-98	0

Prep Method: SW3510C
Log Number Range: 08-14329 to 08-14333

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: LCS-070708
LCS/LCSD

Lab Sample ID: LCS-070708
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 07/07/08

Date Analyzed LCS: 07/10/08 14:30
LCSD: 07/10/08 14:47
Instrument/Analyst LCS: ECD5/JGR
LCSD: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount LCS: 1000 mL
LCSD: 1000 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Silica Gel: No
Acid Cleanup: Yes

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Aroclor 1016	0.048	0.050	96.0%	0.049	0.050	98.0%	2.1%
Aroclor 1260	0.046	0.050	92.0%	0.047	0.050	94.0%	2.2%

PCB Surrogate Recovery

	LCS	LCSD
Decachlorobiphenyl	65.0%	66.0%
Tetrachlorometaxylene	83.0%	73.0%

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

SAMPLE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Client ID: SPL-MW-C(I)
ARI ID: 08-14328 ND73A

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/11/08 071108#1	EPA 335.4	mg/L	0.005	0.043
Weak Acid Dissoc. Cyanide	07/10/08 071008#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Client ID: RM-MW-3(I)
ARI ID: 08-14329 ND73B

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/11/08 071108#1	EPA 335.4	mg/L	0.005	< 0.005 U
Weak Acid Dissoc. Cyanide	07/10/08 071008#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Client ID: RM-MW-4(I)
ARI ID: 08-14330 ND73C

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/11/08 071108#1	EPA 335.4	mg/L	0.005	< 0.005 U
Weak Acid Dissoc. Cyanide	07/10/08 071008#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Client ID: RM-MW-21(I)
ARI ID: 08-14331 ND73D

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/11/08 071108#1	EPA 335.4	mg/L	0.005	< 0.005 U
Weak Acid Dissoc. Cyanide	07/10/08 071008#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Client ID: RM-MW-5(I)
ARI ID: 08-14332 ND73E

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/11/08 071108#1	EPA 335.4	mg/L	0.005	< 0.005 U
Weak Acid Dissoc. Cyanide	07/10/08 071008#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Client ID: RM-MW-6(I)
ARI ID: 08-14333 ND73F

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/11/08 071108#1	EPA 335.4	mg/L	0.005	< 0.005 U
Weak Acid Dissoc. Cyanide	07/10/08 071008#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: NA
Date Received: NA

Analyte	Method	Date	Units	Blank
Total Cyanide	EPA 335.4	07/11/08	mg/L	< 0.005 U
Weak Acid Dissoc. Cyanide	SM4500CN-I	07/10/08	mg/L	< 0.005 U

STANDARD REFERENCE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
Total Cyanide SPEX #33-6AS	EPA 335.4	07/11/08	mg/L	0.142	0.150	94.7%
Weak Acid Dissoc. Cyanide SPEX #33-6AS	SM4500CN-I	07/10/08	mg/L	0.145	0.150	96.7%

REPLICATE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: ND73A Client ID: SPL-MW-C(I)						
Total Cyanide	EPA 335.4	07/11/08	mg/L	0.043	0.041	4.8%

MS/MSD RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: ND73A Client ID: SPL-MW-C(I)							
Total Cyanide	EPA 335.4	07/11/08	mg/L	0.043	0.183	0.150	93.3%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: RM-MW-3(I)
SAMPLE

Lab Sample ID: ND73B
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/16/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/15/08	7440-38-2	Arsenic	1	1	U
200.8	07/08/08	200.8	07/14/08	7440-43-9	Cadmium	0.5	0.5	U
200.8	07/08/08	200.8	07/14/08	**7440-47-3**	**Chromium**	1	**1**	
200.8	07/08/08	200.8	07/15/08	**7440-50-8**	**Copper**	1	**2**	
200.8	07/08/08	200.8	07/14/08	7439-92-1	Lead	2	2	U
7470	07/08/08	7470A	07/09/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/15/08	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: RM-MW-4(I)
SAMPLE

Lab Sample ID: ND73C
LIMS ID: 08-14330
Matrix: Water
Data Release Authorized:
Reported: 07/16/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/15/08	**7440-38-2**	**Arsenic**	1	**4**	
200.8	07/08/08	200.8	07/14/08	7440-43-9	Cadmium	0.5	0.5	U
200.8	07/08/08	200.8	07/14/08	**7440-47-3**	**Chromium**	1	**11**	
200.8	07/08/08	200.8	07/15/08	**7440-50-8**	**Copper**	1	**3**	
200.8	07/08/08	200.8	07/14/08	7439-92-1	Lead	2	2	U
7470	07/08/08	7470A	07/09/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/15/08	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: RM-MW-21(I)
SAMPLE

Lab Sample ID: ND73D
LIMS ID: 08-14331
Matrix: Water
Data Release Authorized:
Reported: 07/16/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/15/08	**7440-38-2**	**Arsenic**	1	**3**	
200.8	07/08/08	200.8	07/14/08	7440-43-9	Cadmium	0.5	0.5	U
200.8	07/08/08	200.8	07/11/08	**7440-47-3**	**Chromium**	2	**5**	
200.8	07/08/08	200.8	07/15/08	7440-50-8	Copper	1	1	U
200.8	07/08/08	200.8	07/14/08	7439-92-1	Lead	2	2	U
7470	07/08/08	7470A	07/09/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/15/08	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: RM-MW-5(I)
SAMPLE

Lab Sample ID: ND73E
LIMS ID: 08-14332
Matrix: Water
Data Release Authorized:
Reported: 07/16/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/15/08	**7440-38-2**	**Arsenic**	0.2	**3.6**	
200.8	07/08/08	200.8	07/14/08	7440-43-9	Cadmium	0.2	0.2	U
200.8	07/08/08	200.8	07/14/08	**7440-47-3**	**Chromium**	0.5	**15.4**	
200.8	07/08/08	200.8	07/15/08	**7440-50-8**	**Copper**	0.5	**4.3**	
200.8	07/08/08	200.8	07/14/08	7439-92-1	Lead	1	1	U
7470	07/08/08	7470A	07/09/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/15/08	**7440-66-6**	**Zinc**	4	**6**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: RM-MW-6(I)
SAMPLE

Lab Sample ID: ND73F
LIMS ID: 08-14333
Matrix: Water
Data Release Authorized:
Reported: 07/16/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/11/08	**7440-38-2**	**Arsenic**	2	**18**	
200.8	07/08/08	200.8	07/14/08	7440-43-9	Cadmium	0.5	0.5	U
200.8	07/08/08	200.8	07/11/08	**7440-47-3**	**Chromium**	2	**88**	
200.8	07/08/08	200.8	07/11/08	**7440-50-8**	**Copper**	2	**6**	
200.8	07/08/08	200.8	07/14/08	7439-92-1	Lead	2	2	U
7470	07/08/08	7470A	07/09/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/15/08	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: METHOD BLANK**

Lab Sample ID: ND73MB
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/16/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/11/08	7440-38-2	Arsenic	0.2	0.2	U
200.8	07/08/08	200.8	07/11/08	7440-43-9	Cadmium	0.2	0.2	U
200.8	07/08/08	200.8	07/11/08	7440-47-3	Chromium	0.5	0.5	U
200.8	07/08/08	200.8	07/11/08	7440-50-8	Copper	0.5	0.5	U
200.8	07/08/08	200.8	07/11/08	7439-92-1	Lead	1	1	U
7470	07/08/08	7470A	07/09/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/11/08	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: LAB CONTROL

Lab Sample ID: ND73LCS
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/16/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	200.8	27.9	25.0	112%	
Cadmium	200.8	26.8	25.0	107%	
Chromium	200.8	27.3	25.0	109%	
Copper	200.8	29.3	25.0	117%	
Lead	200.8	27.7	25.0	111%	
Mercury	7470A	2.40	2.00	120%	
Zinc	200.8	89.6	80.0	112%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

September 11, 2008

Stacy Pischer
Landau Associates, Inc.
130 Second Avenue South
Edmonds, WA 98020-9129

RE: Project: Kaiser Well Sampling
ARI Job No: NM70

Dear Stacy:

Please find enclosed the original chain of custody (COCs) records and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted one water sample on August 30, 2008 in good condition.

The sample was analyzed for SIM cPAHs and Total and WAD cyanide.

No analytical complications were noted. A copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

LANDAU ASSOCIATES

☐ **Seattle (Edmonds)** (425) 778-0907
☒ **Tacoma** (253) 926-2493
☐ **Spokane** (509) 327-9737
☐ **Portland (Tigard)** (503) 443-6010
☐ _____

NM70

6.2°C

Date 8/29/08
Page 1 of 1

Chain-of-Custody Record

Project Name KAISER WELL SAMPLING Project No. 168004.020.002
Project Location/Event WEYER WELL (I)
Sampler's Name JESSICA STONE
Project Contact JENNIFER WYNKOOP
Send Results To JENNIFER WYNKOOP

Testing Parameters

Turnaround Time
☒ Standard
☐ Accelerated
☐ _____

Sample I.D.	Date	Time	Matrix	No. of Containers	cPAHs Method 8270-SIM	Total Cyanide Method 335.4	WAD Cyanide SM4500CNI	Observations/Comments
WI-082908	8/29/08	1000	WATER	3	X	X	X	

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

NWTPH-Dx:
___ run acid wash/silica gel cleanup
___ run samples standardized to _____ product

___ Analyze for EPH if no specific product identified

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

___ Dissolved metal water samples field filtered

Other _____

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
JESSICA STONE	Ke Cheek Hin Li		
Printed Name	Printed Name	Printed Name	Printed Name
LANDAU ASSOCIATES	ARI		
Company	Company	Company	Company
Date 8/29/08 Time 1200	Date 8/30/08 Time 923	Date _____ Time _____	Date _____ Time _____

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

Rev 4/01

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: LAI
Project Name: Kaiser Well Sampling
COC No:
Delivered by: UPS
Assigned ARI Job No: NM70
Tracking No:

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	(YES)	NO
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Record cooler temperature (recommended 2.0-6.0 °C for chemistry	6.2 °C	

Cooler Accepted by: JL Date: 8/30/08 Time: 923

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?		Bubble	
Was sufficient ice used (if appropriate)?		(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottle arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation checklist)		YES	(NO)
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO

Samples Logged by: JL Date: 8/30/08 Time: 931

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

Explain discrepancies or negative responses:

By: Date:

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: W(I)-082908
SAMPLE

Lab Sample ID: NM70A
LIMS ID: 08-21890
Matrix: Water
Data Release Authorized:
Reported: 09/08/08

QC Report No: NM70-LANDAU
Project: KAISER WELL SAMPLING
Event: 168004.020.002
Date Sampled: 08/29/08
Date Received: 08/30/08

Date Extracted: 09/01/08
Date Analyzed: 09/02/08 19:08
Instrument/Analyst: NT1/VTS

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

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
205-99-2	Benzo(b)fluoranthene	0.10	< 0.10 U
207-08-9	Benzo(k)fluoranthene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	72.0%
d14-Dibenzo(a,h)anthracene	33.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-090108
METHOD BLANK

Lab Sample ID: MB-090108
LIMS ID: 08-21890
Matrix: Water
Data Release Authorized:
Reported: 09/08/08

QC Report No: NM70-LANDAU
Project: KAISER WELL SAMPLING
Event: 168004.020.002
Date Sampled: NA
Date Received: NA

Date Extracted: 09/01/08
Date Analyzed: 09/02/08 15:23
Instrument/Analyst: NT1/VTS

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

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
205-99-2	Benzo(b)fluoranthene	0.10	< 0.10 U
207-08-9	Benzo(k)fluoranthene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	73.3%
d14-Dibenzo(a,h)anthracene	70.7%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: NM70-LANDAU
Project: KAISER WELL SAMPLING
168004.020.002

Client ID	MNP	DBA	TOT OUT
MB-090108	73.3%	70.7%	0
LCS-090108	75.0%	80.3%	0
LCSD-090108	51.0%	65.0%	0
W(I)-082908	72.0%	33.7%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(49-113)	(44-112)
(DBA) = d14-Dibenzo(a,h)anthracene	(49-132)	(10-138)

Prep Method: SW3520C
Log Number Range: 08-21890 to 08-21890

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-090108
LAB CONTROL SAMPLE

Lab Sample ID: LCS-090108
LIMS ID: 08-21890
Matrix: Water
Data Release Authorized:
Reported: 09/08/08

QC Report No: NM70-LANDAU
Project: KAISER WELL SAMPLING
Event: 168004.020.002
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 09/01/08

Date Analyzed LCS: 09/02/08 15:48
LCSD: 09/02/08 16:13
Instrument/Analyst LCS: NT1/VTS
LCSD: NT1/VTS

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

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	2.54	3.00	84.7%	2.08	3.00	69.3%	19.9%
Chrysene	2.62	3.00	87.3%	2.16	3.00	72.0%	19.2%
Benzo(b)fluoranthene	2.40	3.00	80.0%	2.02	3.00	67.3%	17.2%
Benzo(k)fluoranthene	2.93	3.00	97.7%	2.42	3.00	80.7%	19.1%
Benzo(a)pyrene	2.39	3.00	79.7%	2.07	3.00	69.0%	14.3%
Indeno(1,2,3-cd)pyrene	2.42	3.00	80.7%	2.06	3.00	68.7%	16.1%
Dibenz(a,h)anthracene	2.33	3.00	77.7%	2.06	3.00	68.7%	12.3%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	75.0%	51.0%
d14-Dibenzo(a,h)anthracene	80.3%	65.0%

SAMPLE RESULTS-CONVENTIONALS
NM70-LANDAU

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/08/08

Project: KAISER WELL SAMPLING
Event: 168004.020.002
Date Sampled: 08/29/08
Date Received: 08/30/08

Client ID: W(I)-082908
ARI ID: 08-21890 NM70A

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	09/05/08 090508#1	EPA 335.4	mg/L	0.005	0.023
Weak Acid Dissoc. Cyanide	09/02/08 090208#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
NM70-LANDAU

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/08/08

Project: KAISER WELL SAMPLING
Event: 168004.020.002
Date Sampled: NA
Date Received: NA

Analyte	Method	Date	Units	Blank
Total Cyanide	EPA 335.4	09/05/08	mg/L	< 0.005 U
Weak Acid Dissoc. Cyanide	SM4500CN-I	09/02/08	mg/L	< 0.005 U

STANDARD REFERENCE RESULTS-CONVENTIONALS
NM70-LANDAU

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/08/08

Project: KAISER WELL SAMPLING
Event: 168004.020.002
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
Total Cyanide ERA 11107	EPA 335.4	09/05/08	mg/L	0.151	0.150	100.7%
Weak Acid Dissoc. Cyanide ERA 11107	SM4500CN-I	09/02/08	mg/L	0.158	0.150	105.3%

REPLICATE RESULTS-CONVENTIONALS
NM70-LANDAU

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/08/08

Project: KAISER WELL SAMPLING
Event: 168004.020.002
Date Sampled: 08/29/08
Date Received: 08/30/08

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: NM70A Client ID: W(I)-082908						
Total Cyanide	EPA 335.4	09/05/08	mg/L	0.023	0.022	4.4%
Weak Acid Dissoc. Cyani	SM4500CN-I	09/02/08	mg/L	< 0.005	< 0.005	NA

MS/MSD RESULTS-CONVENTIONALS
NM70-LANDAU

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/08/08

Project: KAISER WELL SAMPLING
Event: 168004.020.002
Date Sampled: 08/29/08
Date Received: 08/30/08

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: NM70A Client ID: W(I)-082908							
Total Cyanide	EPA 335.4	09/05/08	mg/L	0.023	0.163	0.150	93.3%
Weak Acid Dissoc. Cyanid	SM4500CN-I	09/02/08	mg/L	< 0.005	0.141	0.147	95.9%

APPENDIX E

Rod Mill Area Closed Landfill 2003-2007 Test Pit and Boring Logs

TABLE 2
Test Pit and Boring/Well Logs
Rod Mill Area - Kaiser-Tacoma Facility

TEST PIT	DEPTH INTERVAL (feet bgs)	DEPTH TO WATER (feet bgs)	Test Pit Orientation	DESCRIPTION
WASTE COOLANT DISPOSAL AREA - Area-Wide Investigation				
RM-WCDA1	0 - 5	4.5	N - S	sand with shells, brown
RM-WCDA2	0 - 5.5	5.3	N - S	sand with shells, brown
RM-WCDA3	0 - 5	5.3	N - S	sand, brown, few roots
	5 - 5.5			silty sand, gray, saturated
RM-WCDA4	0 - 5	4.7	N - S	sand, brown
RM-WCDA5	0 - 5	4.5	N - S	sand with shells, brown
RM-WCDA6	0 - 4	6	N - S	layered fine to medium sand, brown
	4 - 6			silty sand, brown, water at 6 feet bgs
RM-WCDA7	0 - 4	---	E - W	sand, brown
	4 - 6			silt, gray
RM-WCDA8	0 - 3.6	---	NE - SW	fine to coarse sand with shells, brown,
	3.6 - 4			silt, gray
	4 - 6			silt, brown, with layers of iron oxide staining and black and white sand
RM-WCDA9	0 - 4	3.7	N - S	sand, brown, 3.5 to 4 feet bgs iron oxide staining
	4 - 5.5			silty sand, gray, moist
	5.5 - 6			silt, gray, wet
RM-WCDA10	0 - 1	4	N - S	sand cover material
	1 - 3			fine sand waste, white and gray with cooker brick and hoses
	3 - 5			sand, brown
RM-WCDA11	0 - 5	4.7	N - S	fine to medium sand, brown with layers of black, tan, and iron oxide staining
RM-WCDA12	0 - 5.5	5.3	N - S	fine to medium sand, brown to tan
RM-WCDA13	0 - 4	---	N - S	fine to medium sand with shells, brown
RM-WCDA14	0 - 5	4.7	N - S	sand with shells, brown, some concrete and rebar, 1 red brick, concrete footing
RM-WCDA15	0 - 5	4.3	S - N	sand, some shells, brown with some iron oxide staining
RM-WCDA16	0 - 5	4.7	N - S	sand with shells, brown
RM-WCDA17	0 - 5.5	4.8	N - S	sand with shells, brown
RM-WCDA18	0 - 6	6	N - S	fine to medium sand, few shells, brown
RM-WCDA19	0 - 5	5	N - S	fine to medium sand with shells, some to few coarse sand, brown
FORMER LANDFILL - Area-Wide Investigation				
RM-LF1	0 - 5	4.5	S - N	fine to coarse sand with shells, brown
RM-LF2	0 - 5	4.7	S - N	medium sand with shells
RM-LF3	0 - 5	4	S - N	sand with shells, brown to gray brown
RM-LF4	0 - 5	4.2	SE - NW	fine to coarse sand, shells and roots, brown with iron oxide staining between 4-4.5 feet bgs
RM-LF5	0 - 2.8	5.5	E - W	fine to coarse sand, brown
	2.8 - 3.3			fine sand and silt, gray with iron oxide staining (dark red and yellow orange)
	3.3 - 6			fine to coarse sand, brown
RM-LF6	0 - 3.7	3.7	E - W	fine to coarse sand, brown, iron oxide staining at 3.7 feet bgs
	3.7 - 5			silt, gray
RM-LF7	0 - 4	4	E - W	fine to medium sand, brown
	4 - 5.25			silt, gray

TABLE 2
Test Pit and Boring/Well Logs
Rod Mill Area - Kaiser-Tacoma Facility

TEST PIT	DEPTH INTERVAL (feet bgs)	DEPTH TO WATER (feet bgs)	Test Pit Orientation	DESCRIPTION
	5.25 - 5.5			sand, black and white (rounded shells)
RM-LF8	0 - 1	4.7	E - W	sand cover material, lt brown
	1 - 7			gray to white waste, blocky waste, cooker brick, possible piece of asbestos, lots of water in hole -no native encountered
RM-LF9	0 - 1	4.7	N - S	medium sand cover material
	1 - 1.5			yellowish (poss iron oxide stained) waste/fill
	1.5 - 2.5			black, gray, and white sand-size waste, cooker brick, wood, metal
	2.5 - 3.5			cemented black medium sand size waste
	3.5 - 8.5			as above, 1.5 - 2.5
	8.5 - 9			silt to clayey silt, grayish brown, wet to saturated, native
RM-LF10	0 - 1	4.7	NE - SW	medium sand cover material
	1 - 6			gray and white sand size waste, wood, metal, cloth, large blocks of angular waste up to 1.5-foot size, gay and white layered sand size waste toward bottom of hole
RM-LF11	0 - 6	6	W - E	medium to coarse sand, brown, some to few fine to very coarse sand, moist to very moist, shells at 5-6 feet bgs
	6 - 7			silt, gray, wet
RM-LF12	0 - 1	4.7	SE - NW	sand cover material
	1 - 5.5			dark gray to black sandy waste with various sizes of shiny, black coal
	5.5 - 6			sand and silt size waste, white gray, black, wet to saturated, lots of water in hole, no native encountered
STORMWATER CONVEYANCE DITCH - Focused Investigation				
RM-SCD1	0 - 0.5	---	SE - NW	sandy loam, light brown
RM-SCD2	0 - 0.5	---	SE - NW	sandy loam, light brown
RM-SCD3	0 - 0.5	---	SE - NW	sandy loam, dark brown
RM-SCD4	0 - 0.5	---	SE - NW	sandy loam, medium brown
RM-SCD5	0 - 0.5	---	SW - NE	sandy loam, light brown
ROOF DRAINAGE AREA - Focused Investigation				
RM-RDA1	0 - 0.5	---	na	sandy gravel (removed overlying stained gravel and root zone)
RM-RDA2	0 - 0.5	---	na	sandy gravel (removed overlying stained gravel and root zone)
DPT SUBSURFACE SOIL BORINGS				
RM-DPT1	0 - 8	3.9	na	medium to fine sand, brown, minor shells
RM-DPT2	0 - 2	4	na	fine to medium sand, brown; grades to medium to coarse sand
	2 - 5			medium to coarse sand, brown, few subangular to subrounded 1/8-inch pebbles
	6 - 8			medium sand, dark brown, shells
	at 8			brown silt in bit
RM-DPT3	0 - 0.5	4	na	medium sand, yellowish brown, cover soil
	0.5 - 3.5			sandy gravel, brown, subrounded gravel up to 3/4-inch size
	3.5 - 3.75			gray and white fine sand waste, wet
	3.75 - 5			medium sand, brown
	5 - 6			medium sand, yellowish orange with iron oxide staining
	6 - 6.75			fine sand, brown, saturated
	6.75 - 7.75			silt to silty fine sand, brown, wet to saturated
	7.75 - 8			fine sand, gray, wet to saturated

TABLE 2
Test Pit and Boring/Well Logs
Rod Mill Area - Kaiser-Tacoma Facility

TEST PIT	DEPTH INTERVAL (feet bgs)	DEPTH TO WATER (feet bgs)	Test Pit Orientation	DESCRIPTION
RM-DPT4	0 - 0.5	6	na	silty sand, dark brown, organics
	0.5 - 3			medium to coarse sand, brown, very moist
	3 - 4.5			as above, 0.5 - 3 feet, interbedded with coarse sand and fine sand layers approx. 1-inch thick, iron oxide staining
	4.5 - 5.75			as above, with silty layers and one layer with wood, very moist to wet
	5.75 - 7			fine to medium sand, brown, some to few coarse sand, iron oxide staining, saturated
	7 - 10			fine to medium sand, dark brown, few coarse sand, saturated
RM-DPT5	0 - 4	6	na	fine to medium sand, brown, some iron oxide stained layers at 3.74 to 4 feet bgs
	4 - 10			medium sand, brown with iron oxide staining, very moist to wet, grades to wet to saturated at 6 feet bgs
Well Borings / Well Construction				
RM-MW-1I	0 -5.75		na	Sand, olive gray, medium, minor gravel up to 1.5-inch size, few to some iron oxide staining, moist
	5.75 - 6			as above, laminated and increase in iron oxide staining
	6 - 7			as above, with shells
	7 - 10			Sand, dark gray, medium, scattered shell fragments, saturated
	10 - 10.5			as above, very moist to moist
	10.5 - 11.2			Silt, grayish brown, very moist to wet
	11.2 - 11.3			Peat with silt, blak
	11.3 - 11.5			Silty Peat to Peat with silt, brown
	11.5 - 15			Sand to silty sand, light brown to gray, fine, minor organics (roots), laminated, very moist
	15 - 17.5			Silt to sandy silt, brown to grayish brown, grades to fine sand to silty sand, very moist
	17.5 - 18.6			Sand to silty sand, brown to grayish brown , very fine to fine sand, increase in patches of organics (sticks, roots)
	18.6 - 18.8			Sand, gray, fine to medium
	18.8 - 19			Sand to silty sand, brown to grayish brown , very fine to fine sand, increase in patches of organics (sticks, roots)
	20 - 23.5			Sand, gray, medium, few lobes of brown silty sand with organics to sand with silt with organics, very fine to fine sand,
	23.5 - 24.5			Sand, medium, few to coarse sand, wet to saturated
	24.5 - 28			Sand, fine to coarse, wet to saturated
	28 - 31.5			Silt, gray to grayish brown, wet
	Well Construction			Total Depth of Well: 28 ft bgs; Well Screen Interval: 22.5 ft to 27.5 ft bgs; Sand: 20.5 ft to 31.5 ft bgs; Bentonite: 1 ft to 20.5 ft bgs; Concrete: 0 ft to 1 ft bgs; Well Stickup: approx. 3 ft above ground surface; Water Level 11/12/04: 10.75 ft below
	0 - 5.7			Sand, gray to brown, iron oxide staining, few subrounded pebbles up to 1/2-inch size
	5.7 - 7.5			Sand, dark gray, medium, wet to saturated
	7.5 - 8.2			Sand, gray to brown, medium, very moist to wet
	8.2 - 8.8			Silt, gray, wet to saturated
	8.8 - 10			Peat, black, almost all organics (grasses, plant stalks, plant matter)
	10 - 11.3			Silt, gray, wet to saturated
	11.4 - 11.5			Sand, fine, gray to brownish gray
	11.5 - 14			Sand, grayish brown, very fine to fine, few to some silt, moist to very moist
	14 - 18			as above, moist to very moist

TABLE 2
Test Pit and Boring/Well Logs
Rod Mill Area - Kaiser-Tacoma Facility

TEST PIT	DEPTH INTERVAL (feet bgs)	DEPTH TO WATER (feet bgs)	Test Pit Orientation	DESCRIPTION
RM-MW2I	18 - 22		na	as above, slight increase in silt, very moist, minor organics (roots)
	22 - 25			Silty sand, gray, very fine, very moist to moist
	25 - 27.5			Silt to sandy silt, very fine sand, very moist
	27.5 - 28.5			Silt
	28.5 - 32.5			Sand, gray, fine, moist to very moist
	32.5 - 33			Sand, gray, fine to medium, wet
	33 - 33.25			Peat
	33.25 - 34			Silt, dense, few roots and plant matter
	Well Construction			Total Depth of Well: 33 ft bgs; Well Screen Interval: 22.5 ft to 32.5 ft bgs; Sand: 20.5 ft to 24 ft bgs; Bentonite: 1 ft to 20.5 ft bgs; Concrete: 0 ft to 1 ft bgs; Well Stickup: approx. 3 ft above ground surface; Water Level 11/12/04: 10.45 ft below top

Soil Classification System

MAJOR DIVISIONS			GRAPHIC SYMBOL	USCS LETTER SYMBOL[1]	TYPICAL DESCRIPTIONS [2][3]
COARSE-GRAINED SOIL (More than 50% of material is larger than No. 200 sieve size)	GRAVEL AND GRAVELLY SOIL (More than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (Little or no fines)		GW	Well-graded gravel; gravel/sand mixture(s); little or no fines
				GP	Poorly graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)		GM	Silty gravel; gravel/sand/silt mixture(s)
				GC	Clayey gravel; gravel/sand/clay mixture(s)
	SAND AND SANDY SOIL (More than 50% of coarse fraction passed through No. 4 sieve)	CLEAN SAND (Little or no fines)		SW	Well-graded sand; gravelly sand; little or no fines
				SP	Poorly graded sand; gravelly sand; little or no fines
		SAND WITH FINES (Appreciable amount of fines)		SM	Silty sand; sand/silt mixture(s)
				SC	Clayey sand; sand/clay mixture(s)
FINE-GRAINED SOIL (More than 50% of material is smaller than No. 200 sieve size)	SILT AND CLAY (Liquid limit less than 50)			ML	Inorganic silt and very fine sand; rock flour; silty or clayey fine sand or clayey silt with slight plasticity
				CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay
				OL	Organic silt; organic, silty clay of low plasticity
	SILT AND CLAY (Liquid limit greater than 50)			MH	Inorganic silt; micaceous or diatomaceous fine sand
				CH	Inorganic clay of high plasticity; fat clay
				OH	Organic clay of medium to high plasticity; organic silt
	HIGHLY ORGANIC SOIL			PT	Peat; humus; swamp soil with high organic content

OTHER MATERIALS	GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
PAVEMENT		AC or PC	Asphalt concrete pavement or Portland cement pavement
ROCK		RK	Rock (See Rock Classification)
WOOD		WD	Wood, lumber, wood chips
DEBRIS		DB	Construction debris, garbage

Notes:
1. USCS letter symbols correspond to symbols used by the Unified Soil Classification System and ASTM classification methods. Dual letter symbols (e.g., SP-SM for sand or gravel) indicate soil with an estimated 5-15% fines. Multiple letter symbols (e.g., ML/CL) indicate borderline or multiple soil classifications.
2. Soil descriptions are based on the general approach presented in the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), outlined in ASTM D 2488. Where laboratory index testing has been conducted, soil classifications are based on the Standard Test Method for Classification of Soils for Engineering Purposes, as outlined in ASTM D 2487.
3. Soil description terminology is based on visual estimates (in the absence of laboratory test data) of the percentages of each soil type and is defined as follows:

Primary Constituent:	> 50% - "GRAVEL," "SAND," "SILT," "CLAY," etc.
Secondary Constituents:	> 30% and ≤ 50% - "very gravelly," "very sandy," "very silty," etc.
	> 15% and ≤ 30% - "gravelly," "sandy," "silty," etc.
Additional Constituents:	> 5% and ≤ 15% - "with gravel," "with sand," "with silt," etc.
	≤ 5% - "with trace gravel," "with trace sand," "with trace silt," etc., or not noted.

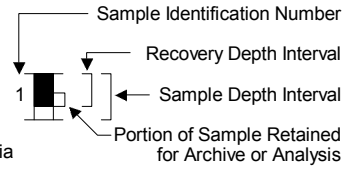
4. Soil density or consistency descriptions are based on judgement using a combination of sampler penetration blow counts, drilling or excavating conditions, field tests, and laboratory tests, as appropriate.

Drilling and Sampling Key

SAMPLER TYPE

Code	Description
a	3.25-inch O.D., 2.42-inch I.D. Split Spoon
b	2.00-inch O.D., 1.50-inch I.D. Split Spoon
c	Shelby Tube
d	Grab Sample
e	Single-Tube Core Barrel
f	Double-Tube Core Barrel
g	2.50-inch O.D., 2.00-inch I.D. WSDOT
h	3.00-inch O.D., 2.375-inch I.D. Mod. California
i	Other - See text if applicable
1	300-lb Hammer, 30-inch Drop
2	140-lb Hammer, 30-inch Drop
3	Pushed
4	Vibrocore (Rotosonic/Geoprobe)
5	Other - See text if applicable

SAMPLE NUMBER & INTERVAL



Field and Lab Test Data

Code	Description
PP = 1.0	Pocket Penetrometer, tsf
TV = 0.5	Torvane, tsf
PID = 100	Photoionization Detector VOC screening, ppm
W = 10	Moisture Content, %
D = 120	Dry Density, pcf
-200 = 60	Material smaller than No. 200 sieve, %
GS	Grain Size - See separate figure for data
AL	Atterberg Limits - See separate figure for data
GT	Other Geotechnical Testing
CA	Chemical Analysis

Groundwater

▽ Approximate water level at time of drilling (ATD)

▼ Approximate water level at time other than ATD

LANDAU ASSOCIATES

RRI-Blair Hylebos Peninsula Terminal Redevelopment Project Tacoma, Washington

Soil Classification System and Key

Figure E-1

RRI-B-23(X)

Drilling Method: Hollow-stem Auger

Ground Elevation (ft): 20 (MLLW)

Drilled By: Cascade Drilling Inc.

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	SOIL PROFILE	GROUNDWATER
0	S-1	b2	24	PID=0		SP	Brown to dark gray, fine to medium SAND (medium dense, moist) **(FILL)**	Water Level
	S-2	b2	14	PID=0 W = 8		DB	Black pot liner/slag (medium dense, moist)	
5	S-3	b2	29	PID=0				▽ ATD
	S-4	b2	3	PID=0 W = 25 GS		SP-SM	Gray, fine to medium SAND with silt and trace gravel and shell fragments (very loose, wet) **(ALLUVIUM)**	
10	S-5	b2	0			SM	Gray, silty, fine SAND, trace shell fragments (very loose, wet)	
						ML	Gray SILT with trace sand (very soft, wet)	
	S-6	c3				ML	Gray SILT with sand and organics (very soft, wet)	
15	S-7	b2	9	W = 40 GS AL			- grades stiff	
20	S-8	b2	3	AL=NP W = 47 GS			- grades with wood debris, soft	
	S-9	c3					- grades sandy	
25	S-10	b2	20	AL=NP W = 31 GS			- grades very stiff	
30								
35								

Boring Completed 11/07/07
Total Depth of Boring = 26.5 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

168005.03 7/28/11 N:\PROJECTS\168005 REV 04.15.09.GPJ SOIL BORING LOG

LANDAU ASSOCIATES

RRI-Blair Hylebos Peninsula Terminal Redevelopment Project Tacoma, Washington

Log of Boring RRI-B-23(X)

Figure E-2

APPENDIX F

Rod Mill Area 2002-2003 Soil Analytical Results

Table 6

ROD MILL SOIL ANALYTICAL RESULTS
Kaiser Aluminum Facility - Tacoma, Washington

	RM-1	RM-2	MTCA Method C[a] Industrial Soil Cleanup Level (mg/kg)
Petroleum Hydrocarbons (mg/kg)[b]			
Gasoline-Range Hydrocarbons	<5.00[c]	<5.00	--[d] (MTCA Method A = 30 - 100)
Diesel-Range Hydrocarbons	<10.0	<10.0	-- (MTCA Method A = 2,000)
Lube Oil Range Hydrocarbons	<25.0	<25.0	-- (MTCA Method A = 2,000)
Polychlorinated Biphenyls (mg/kg)[e] - No PCBs were detected above laboratory reporting limits			

Notes:

(a) Model Toxics Control Act (MTCA) Method C industrial soil cleanup levels based on CLARC version 3.1, dated November 2001.

(b) Samples were analyzed for petroleum hydrocarbons by Ecology Method NWTPH-Dx (extended).

(c) "<" denotes analyte was not detected at the indicated reporting limit.

(d) "--" = MTCA Method C industrial soil cleanup level not established. If available, MTCA Method A industrial soil cleanup level used (WAC 173-340, Table 745-1).

(e) Samples were analyzed for polychlorinated biphenyls (PCBs) by EPA Method 8082.

mg/kg = milligrams per kilograms

TABLE F-1
2003 SOIL ANALYTICAL RESULTS
ROD MILL AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Preliminary Cleanup Levels (a)							
	MTCA Method A	MTCA Method C Protective of Human Direct Contact	Protective of Marine Surface Water	RM-LF1 0-5 12/3/2003	RM-LF4 0-4 12/3/2003	RM-LF7 0-4 12/3/2003	RM-LF9 1.5-5 12/3/2003	RM-LF10 1-6 12/3/2003
cPAHs (mg/kg)								
SW8270C								
Benzo(a)anthracene	see total cPAHs	see total cPAHs	0.13	0.268 U	0.257 U	0.266 U	323	90.4
Chrysene	see total cPAHs	see total cPAHs	0.14	0.268 U	0.257 U	0.266 U	582	405
Benzofluoranthenes	see total cPAHs	see total cPAHs	0.44	0.535 U	0.515 U	0.533 U	548	380
Benzo(a)pyrene	see total cPAHs	see total cPAHs	0.35	0.268 U	0.257 U	0.266 U	289	124
Indeno(1,2,3-cd)pyrene	see total cPAHs	see total cPAHs	1	0.0268 U	0.0257 U	0.0266 U	101	47.4
Dibenz(a,h)anthracene	see total cPAHs	see total cPAHs	0.64	0.0268 U	0.0257 U	0.0266 U	50.6	24.4
TEQ	2	18	--	ND	ND	ND	397	182

TABLE F-1
2003 SOIL ANALYTICAL RESULTS
ROD MILL AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Preliminary Cleanup Levels (a)			
	MTCA Method A	MTCA Method C Protective of Human Direct Contact	Protective of Marine Surface Water	RM-DPT3 3.5-4.5 12/4/2003
cPAHs (mg/kg)				
SW8270C				
Benzo(a)anthracene	see total cPAHs	see total cPAHs	0.13	0.034 U
Chrysene	see total cPAHs	see total cPAHs	0.14	0.034 U
Benzofluoranthenes	see total cPAHs	see total cPAHs	0.44	0.034 U
Benzo(a)pyrene	see total cPAHs	see total cPAHs	0.35	0.034 U
Indeno(1,2,3-cd)pyrene	see total cPAHs	see total cPAHs	1	0.034 U
Dibenz(a,h)anthracene	see total cPAHs	see total cPAHs	0.64	0.034 U
TEQ	2	18	--	ND

Boxed values indicate an exceedance of the preliminary cleanup level protective of marine surface water.
-- Indicates no cleanup level criteria available.
ND = Not Detected
U = The analyte was not detected in the sample at the given reporting limit.
(a) Development of preliminary soil cleanup levels is presented in Table 23 of the main text.

TABLE 4
Former Landfill Soil Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	FORMER LANDFILL TEST PIT SAMPLES				
SAMPLE NUMBER		**RM-LF1**	**RM-LF4**	**RM-LF7**	**RM-LF9**	**RM-LF10**
SAMPLE DEPTH INTERVAL (feet bgs)		**0 - 5**	**0 - 4**	**0 - 4**	**1.5 - 5**	**1 - 6**
DATE COLLECTED		12/3/2003	12/3/2003	12/3/2003	12/3/2003	12/3/2003
ANIONS *(Method 300.0)*						
Fluoride	ns	**2.88**	**4.79**	**5.22**	**1,070**	**2,190**
Chloride		<1.62	<1.59	<1.61	**2.28**	<1.83
Nitrite as N		<0.162	<0.159	<0.161	<0.197	<0.183
Bromide		<0.539	<0.53	<0.535	<0.656	<0.611
Nitrate as N		<0.162	<0.159	<0.161	<0.197	<0.183
Phosphate as P		<0.808	<0.795	<0.803	<0.984	<0.916
Sulfate	ns	**6.08**	**7.76**	**10.2**	**478**	**108**
CYANIDE *(Method 9012/9013)*						
Cyanide		<0.2	<0.2	<0.2	<0.2	<0.2
WEAK AND DISSOCIABLE CYANIDE in mg/L *(Method SM 45CNI)*						
WAD Cyanide		<0.01	<0.01	<0.01	<0.01	<0.01
METALS *(Method SW846 6010/7471)*						
Aluminum	ns	**3,490**	**3,730**	**4,020**	**129,000**	**136,000**
Arsenic	20	<2.08	<2.1	<2.13	**29.4**	**144**
Barium	ns	**10.1**	**8.3**	**9.04**	**214**	**32**
Cadmium	2	<1.04	<1.05	<1.06	**2.17**	**6.92**
Chromium	2,000	**10.8**	**8.87**	**10.4**	**62.8**	**19.5**
Lead	1,000	<2.08	<2.1	<2.13	**153**	**2,370**
Mercury	2	<0.0208	<0.0169	<0.0211	<0.0198	**0.235**
Selenium		<10.4	<10.5	<10.6	<13.4	<11.9
Silver	ns	<2.08	<2.1	<2.13	<2.67	**18.7**
TCLP 8 RCRA METALS in mg/L *(Method SW846 6010/7470)*						
Arsenic		<0.01	<0.01	<0.01	<0.01	**0.01**
Barium	[1]100.0 mg/L	**0.0313**	**0.0299**	**0.0285**	**0.354**	**0.174**
Cadmium		<0.005	<0.005	<0.005	<0.005	**0.0445**
Chromium	[1]5.0 mg/L	**0.0244**	**0.0244**	**0.0256**	**0.0241**	**0.024**
Lead	[1]5 mg/L	**0.0303**	**0.00943**	**0.00531**	**1.12**	**27.9**
Mercury		<0.002	<0.002	<0.002	<0.002	<0.002
Selenium		<0.03	<0.03	<0.03	<0.03	<0.03
Silver		<0.005	<0.005	<0.005	<0.005	<0.005
DIESEL RANGE PETROLEUM HYDROCARBONS *(Method NWTPH-Dx)*						
#2 Diesel	2,000	<13.4	<13.2	<13.4	**4,420**	**1,920**
Motor Oil	2,000	<26.8	<26.5	<26.7	**7,980**	**7,000**
GASOLINE RANGE PETROLEUM HYDROCARBONS *(Method NWTPH-Gx)*						
Gasoline		<4.11	<4.02	<4.25	**11.4**	<4.92
EXTRACTABLE PETROLEUM HYDROCARBONS						
C8-C10 Aliphatics		<11	<11	<11	<13	<12
C10-C12 Aliphatics		<5.3	<5.5	<5.3	<6.4	<6.1
C12-C16 Aliphatics		<5.3	<5.5	<5.3	<6.4	<6.1
C16-C21 Aliphatics		<5.3	<5.5	<5.3	**21**	**21**
C21-C34 Aliphatics		<11	<11	<11	**87**	**110**
Total Aliphatics		---	---	---	**110**	**130**
C8-C10 Aromatics		<32	<33	<32	<38	<37
C10-C12 Aromatics		<5.3	<5.5	<5.3	**29**	**14**
C12-C16 Aromatics		<5.3	<5.5	<5.3	**110**	**46**
C16-C21 Aromatics		<5.3	<5.5	<5.3	**890**	**350**
C21-C34 Aromatics		<5.3	<5.5	<5.3	**1,600**	**2,000**
Total Aromatics		---	---	---	**2,600**	**2,400**
POLYCHLORINATED BIPHENYLS *(Method SW846 8082)*						
Aroclor 1016		<0.0526	<0.0523	<0.0518	<0.0634	<0.0607
Aroclor 1221		<0.105	<0.105	<0.104	<0.127	<0.121
Aroclor 1232		<0.0526	<0.0523	<0.0518	<0.0634	<0.0607

TABLE 4
Former Landfill Soil Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	FORMER LANDFILL TEST PIT SAMPLES				
SAMPLE NUMBER		RM-LF1	RM-LF4	RM-LF7	RM-LF9	RM-LF10
SAMPLE DEPTH INTERVAL (feet bgs)		0 - 5	0 - 4	0 - 4	1.5 - 5	1 - 6
DATE COLLECTED		12/3/2003	12/3/2003	12/3/2003	12/3/2003	12/3/2003
Aroclor 1242	ns	<0.0526	<0.0523	<0.0518	**0.837**	<0.0607
Aroclor 1248		<0.0526	<0.0523	<0.0518	<0.0634	<0.0607
Aroclor 1254	ns	<0.0526	<0.0523	<0.0518	<0.0634	**0.833**
Aroclor 1260		<0.0526	<0.0523	<0.0518	<0.0634	<0.0607
Total PCBs	10	NA	NA	NA	**0.837**	**0.833**
TOTAL PHENOLS *(EPA Method 9066)*	ns	<5	6	<5	82	17
VOLATILE ORGANIC COMPOUNDS *(Method 8260B)*						
Dichlorodifluoromethane		<0.211	<0.210	<0.201	<0.265	<0.243
Chloromethane		<0.529	<0.526	<0.502	<0.663	<0.607
Vinyl chloride		<0.211	<0.210	<0.201	<0.265	<0.243
Bromomethane		<0.423	<0.421	<0.401	<0.530	<0.486
Chloroethane		<0.211	<0.210	<0.201	<0.265	<0.243
Trichlorofluoromethane		<0.211	<0.210	<0.201	<0.265	<0.486
1,1-Dichloroethene		<0.211	<0.210	<0.201	<0.265	<0.243
Methylene chloride		<0.211	<0.210	<0.201	<0.265	<0.243
trans-1,2-Dichloroethene		<0.211	<0.210	<0.201	<0.265	<0.243
1,1-Dichloroethane		<0.211	<0.210	<0.201	<0.265	<0.243
2,2-Dichloropropane		<0.211	<0.210	<0.201	<0.265	<0.243
cis-1,2-Dichloroethene		<0.211	<0.210	<0.201	<0.265	<0.243
Bromochloromethane		<0.211	<0.210	<0.201	<0.265	<0.243
Chloroform		<0.211	<0.210	<0.201	<0.265	<0.243
1,1,1-Trichloroethane		<0.211	<0.210	<0.201	<0.265	<0.243
Carbon Tetrachloride		<0.211	<0.210	<0.201	<0.265	<0.243
1,1-Dichloropropene		<0.211	<0.210	<0.201	<0.265	<0.243
Benzene		<0.211	<0.210	<0.201	<0.265	<0.243
1,2-Dichloroethane		<0.211	<0.210	<0.201	<0.265	<0.243
Trichloroethene		<0.211	<0.210	<0.201	<0.265	<0.243
1,2-Dichloropropane		<0.211	<0.210	<0.201	<0.265	<0.243
Dibromomethane		<0.211	<0.210	<0.201	<0.265	<0.243
Bromodichloromethane		<0.211	<0.210	<0.201	<0.265	<0.243
cis-1,3-Dichloropropene		<0.211	<0.210	<0.201	<0.265	<0.243
Toluene		<0.211	<0.210	<0.201	<0.265	<0.243
trans-1,3-Dichloropropene		<0.211	<0.210	<0.201	<0.265	<0.243
1,1,2-Trichloroethane		<0.211	<0.210	<0.201	<0.265	<0.243
Tetrachloroethene		<0.211	<0.210	<0.201	<0.265	<0.243
1,3-Dichloropropane		<0.211	<0.210	<0.201	<0.265	<0.243
Dibromochloromethane		<0.211	<0.210	<0.201	<0.265	<0.243
1,2-Dibromoethane		<0.211	<0.210	<0.201	<0.265	<0.243
Chlorobenzene		<0.211	<0.210	<0.201	<0.265	<0.243
Ethylbenzene		<0.211	<0.210	<0.201	<0.265	<0.243
1,1,1,2-Tetrachloroethane		<0.211	<0.210	<0.201	<0.265	<0.243
m,p-Xylene		<0.423	<0.421	<0.401	<0.530	<0.486
o-Xylene		<0.211	<0.210	<0.201	<0.265	<0.243
Styrene		<0.211	<0.210	<0.201	<0.265	<0.243
Bromoform		<0.211	<0.210	<0.201	<0.265	<0.243
Isopropylbenzene		<0.211	<0.210	<0.201	<0.265	<0.243
Bromobenzene		<0.211	<0.210	<0.201	<0.265	<0.243
n-Propylbenzene		<0.211	<0.210	<0.201	<0.265	<0.243
1,1,2,2-Tetrachloroethane		<0.211	<0.210	<0.201	<0.265	<0.243
1,2,3-Trichloropropane		<0.211	<0.210	<0.201	<0.265	<0.243
2-Chlorotoluene		<0.211	<0.210	<0.201	<0.265	<0.243
1,3,5-Trimethylbenzene		<0.211	<0.210	<0.201	<0.265	<0.243

TABLE 4
Former Landfill Soil Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	FORMER LANDFILL TEST PIT SAMPLES				
SAMPLE NUMBER		RM-LF1	RM-LF4	RM-LF7	RM-LF9	RM-LF10
SAMPLE DEPTH INTERVAL (feet bgs)		0 - 5	0 - 4	0 - 4	1.5 - 5	1 - 6
DATE COLLECTED		12/3/2003	12/3/2003	12/3/2003	12/3/2003	12/3/2003
4-Chlorotoluene		<0.211	<0.210	<0.201	<0.265	<0.243
t-Butylbenzene		<0.211	<0.210	<0.201	<0.265	<0.243
1,2,4-Trimethylbenzene		<0.211	<0.210	<0.201	<0.265	<0.243
sec-Butylbenzene		<0.211	<0.210	<0.201	<0.265	<0.243
4-Isopropyltoluene		<0.211	<0.210	<0.201	<0.265	<0.243
n-Butylbenzene		<0.211	<0.210	<0.201	<0.265	<0.243
1,2-Dibromo-3-chloropropane		<0.423	<0.421	<0.401	<0.530	<0.486
Hexachlorobutadiene		<0.211	<0.210	<0.201	<0.265	<0.243
1,2,3-Trichlorobenzene		<0.211	<0.210	<0.201	<0.265	<0.243
SEMI-VOLATILE ORANGIC COMPOUNDS *(Method 8270C)*						
bis(2-Chloroethyl)ether		<0.107	<0.103	<0.107	<1.31	<0.616
2-Chlorophenol		<0.107	<0.103	<0.107	<1.31	<0.616
1,3-Dichlorobenzene		<0.107	<0.103	<0.107	<1.31	<0.616
1,4-Dichlorobenzene		<0.107	<0.103	<0.107	<1.31	<0.616
Benzyl Alcohol		<0.134	<0.129	<0.133	<1.31	<0.770
1,2-Dichlorobenzene		<0.107	<0.103	<0.107	<1.31	<0.616
2-Methylphenol		<0.107	<0.103	<0.107	<1.31	<0.616
bis(2-Chloroisopropyl)ether		<0.107	<0.103	<0.107	<1.31	<0.616
3-&4-Methylphenol		<0.214	<0.206	<0.213	<2.61	<1.23
N-nitroso-di-n-propylamine		<0.107	<0.103	<0.107	<1.31	<0.616
Hexachloroethane		<0.107	<0.103	<0.107	<1.31	<0.616
Nitrobenzene		<0.107	<0.103	<0.107	<1.31	<0.616
Isophorone		<0.107	<0.103	<0.107	<1.31	<0.616
2-Nitrophenol		<0.107	<0.103	<0.107	<1.31	<0.616
2,4-Dimethylphenol		<0.107	<0.103	<0.107	<1.31	<0.616
Benzoic Acid		<0.535	<0.515	<0.533	<6.53	<3.08
bis(2-Chloroethoxy)methane		<0.107	<0.103	<0.107	<1.31	<0.616
2,4-Dichlorophenol		<0.107	<0.103	<0.107	<1.31	<0.616
4-Chloroaniline		<0.107	<0.103	<0.107	<1.31	<0.616
Hexachlorobutadiene		<0.107	<0.103	<0.107	<1.31	<0.616
4-Chloro-3-methylphenol		<0.107	<0.103	<0.107	<1.31	<0.616
Hexachlorocyclopentadiene		<0.107	<0.103	<0.107	<1.31	<0.616
2-Nitroaniline		<0.107	<0.103	<0.107	<1.31	<0.616
Dimethylphthalate		<0.107	<0.103	<0.107	<1.31	<0.616
2,6-Dinitrotoluene		<0.107	<0.103	<0.107	<1.31	<0.616
3-Nitroaniline		<0.107	<0.103	<0.107	<1.31	<0.616
2,4-Dinitrophenol		<0.535	<0.515	<0.533	<6.53	<3.08
4-Nitrophenol		<0.268	<0.257	<0.266	<3.26	<1.54
Dibenzofuran	ns	<0.107	<0.103	<0.107	**68.0**	**11.0**
2,4-Dinitrotoluene		<0.107	<0.103	<0.107	<1.31	<0.616
Diethylphthalate		<0.107	<0.103	<0.107	<1.31	<0.616
4-Chlorophenylphenylether		<0.107	<0.103	<0.107	<1.31	<0.616
4-Nitroaniline		<0.107	<0.103	<0.107	<1.31	<0.616
4,6-Dinitro-2-methylphenol		<0.535	<0.515	<0.533	<6.53	<3.08
N-Nitrosodiphenylamine		<0.107	<0.103	<0.107	<1.31	<0.616
4-Bromophenylphenylether		<0.107	<0.103	<0.107	<1.31	<0.616
Hexachlorobenzene		<0.107	<0.103	<0.107	<1.31	<0.616
Pentachlorophenol		<0.107	<0.103	<0.107	<1.31	<0.616
Di-n-butylphthalate		<0.107	<0.103	<0.107	<1.31	<0.616
Butylbenzylphthalate		<0.134	<0.129	<0.133	<1.63	<0.770
3,3'-Dichlorobenzidine	ns	<0.214	<0.206	<0.213	<2.61	**1.75**
bis(2-Ethylhexyl)phthalate	ns	<0.107	<0.103	<0.107	**3.40**	**1.94**

TABLE 4
Former Landfill Soil Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	FORMER LANDFILL TEST PIT SAMPLES				
SAMPLE NUMBER		**RM-LF1**	**RM-LF4**	**RM-LF7**	**RM-LF9**	**RM-LF10**
SAMPLE DEPTH INTERVAL (feet bgs)		**0 - 5**	**0 - 4**	**0 - 4**	**1.5 - 5**	**1 - 6**
DATE COLLECTED		12/3/2003	12/3/2003	12/3/2003	12/3/2003	12/3/2003
Di-n-octylphthalate		<0.107	<0.103	<0.107	<1.31	<0.616
Phenol		<0.107	<0.103	<0.107	<1.31	<0.616
1,2,4-Trichlorobenzene		<0.107	<0.103	<0.107	<1.31	<0.616
2,4,5-Trichlorophenol		<0.107	<0.103	<0.107	<1.31	<0.616
2,4,6-Trichlorophenol		<0.107	<0.103	<0.107	<1.31	<0.616
NAPHTHALENES						
1-Methylnaphthalene	ns	<0.0268	<0.0257	<0.0266	**23.4**	**6.00**
Naphthalene	5	<0.0268	<0.0257	<0.0266	**72.0**	**13.3**
2-Chloronaphthalene		<0.0268	<0.0257	<0.0266	<0.326	<0.154
Total Naphthalenes	5				**95.4**	**19.3**
POLYNUCLEAR AROMATIC HYDROCARBONS *(Method 8270C)*						
Acenaphthene	ns	<0.0268	<0.0257	<0.0266	**121**	**21.2**
Acenaphthylene	ns	<0.0268	<0.0257	<0.0266	**1.04**	**0.350**
Anthracene	ns	<0.268	<0.257	<0.266	**210**	**33.0**
Benzo(a)anthracene[C]	ns	<0.268	<0.257	<0.266	**323**	**90.4**
Benzo(a)pyrene[C]	2	<0.268	<0.257	<0.266	**289**	**124**
Benzo(g,h,i)perylene[C]	ns	<0.0268	<0.0257	<0.0266	**97.5**	**47.6**
Benzofluoranthenes[C]	ns	<0.535	<0.515	<0.533	**548**	**380**
Chrysene[C]	ns	<0.268	<0.257	<0.266	**582**	**405**
Dibenz(a,h)anthracene[C]	ns	<0.0268	<0.0257	<0.0266	**50.6**	**24.4**
Fluoranthene	ns	<0.268	<0.257	<0.266	**711**	**143**
Fluorene	ns	<0.0268	<0.0257	<0.0266	**122**	**20.9**
Indeno(1,2,3-cd)pyrene[C]	ns	<0.0268	<0.0257	<0.0266	**101**	**47.4**
Phenanthrene	ns	<0.268	<0.257	<0.266	**615**	**118**
Pyrene	ns	<0.268	<0.257	<0.266	**741**	**156**
Total PAHs	[1]1%				**4,512**	**1,611**
Total Carcinogenic PAHs	2				**1,668**	**1,119**

WAD = Weak and Dissociable Cyanide

TCLP = Toxicity Characteristic Leaching Procedure (Method 1311)

< = analyte was not detected at or above the method detection limit or laboratory practical quantitation limit

J = analyte detected above the method detection limit but below the laboratory practical quantitation limit

[1] = Dangerous Waste Regulation (WAC 173-303)

Bold = analyte detected at or above method detection limit

Bold + shaded = exceeded MTCA Method A cleanup level (WAC 173-340) and/or Dangerous Waste Regulation (WAC 173-303)

[C] = carcinogenic PAH

Total carcinogenic PAHs cleanup level assumes entire carcinogenic PAH mixture is as toxic as benzo(a)pyrene, WAC 173-340-708(8)

MTCA Method A Soil Cleanup Levels: available standards are listed for analytes detected above method detection limits

ns = No MTCA Method A Soil Cleanup Level

TABLE 5
Stormwater Conveyance Ditch Soil Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	STORMWATER CONVEYANCE DITCH TEST PIT SAMPLES				
SAMPLE NUMBER		RM-SCD1	RM-SCD2	RM-SCD3	RM-SCD4	RM-SCD5
SAMPLE DEPTH INTERVAL (feet bgs)		0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
DATE COLLECTED		12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003
Diesel Range Petroleum Hydrocarbons *(Method NWTPH-Dx)*						
#2 Diesel	2,000	**15.9**	**27.3**	**149**	**13.3**	**53.9**
Motor Oil	2,000	**240**	**182**	**817**	**53.1**	**275**
EXTRACTABLE PETROLEUM HYDROCARBONS						
C8-C10 Aliphatics		<11	<12	<13	<11	<12
C10-C12 Aliphatics		<5.6	<6.2	<6.5	<5.6	<5.8
C12-C16 Aliphatics		<5.6	<6.2	<6.5	<5.6	<5.8
C16-C21 Aliphatics		<5.6	**7.3**	**21**	<5.6	**6.9**
C21-C34 Aliphatics		**23**	**60**	**170**	**34**	**110**
Total Aliphatics		**23**	**67**	**190**	**34**	**120**
C8-C10 Aromatics		<28	<31	<32	<28	<29
C10-C12 Aromatics		<5.6	<6.2	<6.5	<5.6	<5.8
C12-C16 Aromatics		<5.6	<6.2	<6.5	<5.6	<5.8
C16-C21 Aromatics		<5.6	<6.2	**54**	**7.8**	**12**
C21-C34 Aromatics		**8.7**	**9.2**	**740**	**24**	**69**
Total Aromatics		**8.7**	**9.2**	**790**	**32**	**81**
Volatile Organic Compounds *(Method 8260B)*						
Dichlorodifluoromethane		<0.222	<0.248	<0.220	<0.205	<0.230
Chloromethane		<0.556	<0.619	<0.549	<0.514	<0.576
Vinyl chloride		<0.222	<0.248	<0.220	<0.205	<0.230
Bromomethane		<0.445	<0.495	<0.439	<0.411	<0.460
Chloroethane		<0.222	<0.248	<0.220	<0.205	<0.230
Trichlorofluoromethane		<0.222	<0.248	<0.220	<0.205	<0.230
1,1-Dichloroethene		<0.222	<0.248	<0.220	<0.205	<0.230
Methylene chloride		<0.222	<0.248	<0.220	<0.205	<0.230
trans-1,3-Dichloropropene		<0.222	<0.248	<0.220	<0.205	<0.230
1,1-Dichloroethane		<0.222	<0.248	<0.220	<0.205	<0.230
2,2-Dichloropropane		<0.222	<0.248	<0.220	<0.205	<0.230
cis-1,2-Dichloroethene		<0.222	<0.248	<0.220	<0.205	<0.230
Bromochloromethane		<0.222	<0.248	<0.220	<0.205	<0.230
Chloroform		<0.222	<0.248	<0.220	<0.205	<0.230
1,1,1-Trichloroethane		<0.222	<0.248	<0.220	<0.205	<0.230
Carbon Tetrachloride		<0.222	<0.248	<0.220	<0.205	<0.230
1,1-Dichloropropene		<0.222	<0.248	<0.220	<0.205	<0.230
Benzene		<0.222	<0.248	<0.220	<0.205	<0.230
1,2-Dichloroethane		<0.222	<0.248	<0.220	<0.205	<0.230
Trichloroethene		<0.222	<0.248	<0.220	<0.205	<0.230
1,2-Dichloropropane		<0.222	<0.248	<0.220	<0.205	<0.230
Dibromomethane		<0.222	<0.248	<0.220	<0.205	<0.230
Bromodichloromethane		<0.222	<0.248	<0.220	<0.205	<0.230
cis-1,3-Dichloropropene		<0.222	<0.248	<0.220	<0.205	<0.230
Toluene		<0.222	<0.248	<0.220	<0.205	<0.230
trans-1,3-Dichloropropene		<0.222	<0.248	<0.220	<0.205	<0.230
1,1,2-Trichloroethane		<0.222	<0.248	<0.220	<0.205	<0.230

TABLE 5
Stormwater Conveyance Ditch Soil Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	STORMWATER CONVEYANCE DITCH TEST PIT SAMPLES				
SAMPLE NUMBER		RM-SCD1	RM-SCD2	RM-SCD3	RM-SCD4	RM-SCD5
SAMPLE DEPTH INTERVAL (feet bgs)		0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
DATE COLLECTED		12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003
Tetrachloroethene		<0.222	<0.248	<0.220	<0.205	<0.230
1,3-Dichloropropane		<0.222	<0.248	<0.220	<0.205	<0.230
Dibromochloromethane		<0.222	<0.248	<0.220	<0.205	<0.230
1,2-Dibromoethane		<0.222	<0.248	<0.220	<0.205	<0.230
Chlorobenzene		<0.222	<0.248	<0.220	<0.205	<0.230
Ethylbenzene		<0.222	<0.248	<0.220	<0.205	<0.230
1,1,1,2-Tetrachloroethane		<0.222	<0.248	<0.220	<0.205	<0.230
m,p-Xylene		<0.445	<0.495	<0.439	<0.411	<0.460
o-Xylene		<0.222	<0.248	<0.220	<0.205	<0.230
Styrene		<0.222	<0.248	<0.220	<0.205	<0.230
Bromoform		<0.222	<0.248	<0.220	<0.205	<0.230
Isopropylbenzene		<0.222	<0.248	<0.220	<0.205	<0.230
Bromobenzene		<0.222	<0.248	<0.220	<0.205	<0.230
n-Propylbenzene		<0.222	<0.248	<0.220	<0.205	<0.230
1,1,2,2-Tetrachloroethane		<0.222	<0.248	<0.220	<0.205	<0.230
1,2,3-Trichloropropane		<0.222	<0.248	<0.220	<0.205	<0.230
2-Chlorotoluene		<0.222	<0.248	<0.220	<0.205	<0.230
1,3,5-Trimethylbenzene		<0.222	<0.248	<0.220	<0.205	<0.230
4-Chlorotoluene		<0.222	<0.248	<0.220	<0.205	<0.230
t-Butylbenzene		<0.222	<0.248	<0.220	<0.205	<0.230
1,2,4-Trimethylbenzene		<0.222	<0.248	<0.220	<0.205	<0.230
sec-Butylbenzene		<0.222	<0.248	<0.220	<0.205	<0.230
1,3-Dichlorobenzene		<0.222	<0.248	<0.220	<0.205	<0.230
4-Isopropyltoluene		<0.222	<0.248	<0.220	<0.205	<0.230
1,4-Dichlorobenzene		<0.222	<0.248	<0.220	<0.205	<0.230
n-Butylbenzene		<0.222	<0.248	<0.220	<0.205	<0.230
1,2-Dichlorobenzene		<0.222	<0.248	<0.220	<0.205	<0.230
1,2-Dibromo-3-chloropropane		<0.445	<0.495	<0.439	<0.411	<0.460
1,2,4-Trichlorobenzene		<0.222	<0.248	<0.220	<0.205	<0.230
Hexachlorobutadiene		<0.222	<0.248	<0.220	<0.205	<0.230
Naphthalene		<0.222	<0.248	<0.220	<0.205	<0.230
1,2,3-Trichlorobenzene		<0.222	<0.248	<0.220	<0.205	<0.230
POLYNUCLEAR AROMATIC HYDROCARBONS *(Method 8270C)*						
Acenaphthylene	ns	<0.014	<0.0156	**0.0612**	**0.022 J**	**0.0195 J**
Acenaphthene	ns	<0.014	<0.0156	**0.0386**	**0.653**	**0.769**
Anthracene	ns	**0.0172 J**	**0.0184 J**	**0.712**	**1.29**	**1.57**
Benzo(a)anthracene[C]	ns	**0.0716**	**0.0891**	**31.4**	**5.23**	**3.18**
Benzofluoranthenes[C]	ns	**0.337**	**0.386**	**94.5**	**7.96**	**4.87**
Benzo(g,h,i)perylene[C]	ns	**0.0861**	**0.089**	**9.48**	**2.67**	**1.71**
Benzo(a)pyrene[C]	2	**0.0749**	**0.0783**	**7.27**	**4.96**	**3.04**
Chrysene[C]	ns	**0.176**	**0.401**	**280**	**5.82**	**3.78**
Dibenz(a,h)anthracene[C]	ns	**0.0337**	**0.0364**	**4.55**	**1.22**	**0.628**
Fluoranthene	ns	**0.139**	**0.149**	**11.2**	**8.25**	**7.02**

TABLE 5
Stormwater Conveyance Ditch Soil Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	STORMWATER CONVEYANCE DITCH TEST PIT SAMPLES				
SAMPLE NUMBER		**RM-SCD1**	**RM-SCD2**	**RM-SCD3**	**RM-SCD4**	**RM-SCD5**
SAMPLE DEPTH INTERVAL (feet bgs)		**0 - 0.5**	**0 - 0.5**	**0 - 0.5**	**0 - 0.5**	**0 - 0.5**
DATE COLLECTED		12/2/2003	12/2/2003	12/2/2003	12/2/2003	12/2/2003
Fluorene	ns	<0.014	<0.0156	**0.0385**	**0.567**	**0.675**
Indeno(1,2,3-cd)pyrene[c]	ns	**0.0784**	**0.0777**	**8.64**	**2.71**	**1.62**
Phenanthrene	ns	**0.0759**	**0.0778**	**1.19**	**4.65**	**5.16**
Pyrene	ns	**0.146**	**0.162**	**20.4**	**8.20**	**6.74**
Total PAHs	[1]1%	**1.08**	**1.42**	**469**	**54.2**	**40.8**
Total carcinogenic PAHs	2	**0.858**	**1.16**	**436**	**30.57**	**18.8**
Naphthalenes						
Naphthalene	5	<0.014	<0.0156	<0.0144	**0.0815**	**0.0702**
2-Methylnaphthalene	ns	<0.0279	<0.0311	<0.0288	**0.064**	**0.0602**
Total Naphthalenes	5	---	---	---	**0.1455**	**0.1304**

< = analyte was not detected at or above the method detection limit or laboratory practical quantitation limit

J = analyte detected above the method detection limit but below the laboratory practical quantitation limit

[1] = Dangerous Waste Regulation (WAC 173-303)

Bold = analyte detected at or above method detection limit

Bold + shaded = exceeded MTCA Method A cleanup level (WAC 173-340) and/or Dangerous Waste Regulation (WAC 173-303)

[c] = carcinogenic PAH

Total carcinogenic PAHs cleanup level assumes entire carcinogenic PAH mixture is as toxic as benzo(a)pyrene, WAC 173-340-708(8)

MTCA Method A Soil Cleanup Levels: standards are listed for analytes detected above method detection limits

ns = No MTCA Method A Soil Cleanup Level

TABLE 6
Roof Drainage Area Soil Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	ROOF DRAINAGE AREA TEST PIT SAMPLES	
SAMPLE NUMBER		RM-RDA1	RM-RDA2
SAMPLE DEPTH INTERVAL (feet bgs)		0 - 0.5	0 - 0.5
DATE COLLECTED		12/1/2003	12/1/2003
DIESEL RANGE PETROLEUM HYDROCARBONS (Method NWTPH-Dx)			
#2 Diesel	2,000	**6,480**	**5,890**
Motor Oil	2,000	**11,200**	**15,500**
EXTRACTABLE PETROLEUM HYDROCARBONS			
C8-C10 Aliphatics		<11	<14
C10-C12 Aliphatics		<5.3	<6.8
C12-C16 Aliphatics		<5.3	**13**
C16-C21 Aliphatics		**17**	**440**
C21-C34 Aliphatics		**71**	**1,100**
Total Aliphatics		**88**	**1,600**
C8-C10 Aromatics		**33**	**38**
C10-C12 Aromatics		**8.9**	<6.8
C12-C16 Aromatics		**56**	**8.9**
C16-C21 Aromatics		**670**	**170**
C21-C34 Aromatics		**1,000**	**380**
Total Aromatics		**1,800**	**600**
POLYNUCLEAR AROMATIC HYDROCARBONS (Method 8270C)			
Acenaphthylene	ns	<1.45	**0.534**
Acenaphthene	ns	**122**	**17.5**
Anthracene	ns	**195**	**30.2**
Benzo(a)anthracene[C]	ns	**297**	**40.6**
Benzofluoranthenes[C]	ns	**395**	**74.8**
Benzo(g,h,i)perylene[C]	ns	**128**	**27.4**
Benzo(a)pyrene[C]	2	**259**	**45.7**
Chrysene[C]	ns	**347**	**64.7**
Dibenz(a,h)anthracene[C]	ns	**57.7**	**10.7**
Fluoranthene	ns	**677**	**104**
Fluorene	ns	**128**	**16.4**
Indeno(1,2,3-cd)pyrene[C]	ns	**136**	**26.4**
Phenanthrene	ns	**744**	**113**
Pyrene	ns	**695**	**112**
Total PAHs	[1]1%	**4,181**	**684**
Total carcinogenic PAHs	2	**1,620**	**411**
Naphthalenes			
Naphthalene	5	**25.7**	**3.48**
2-Chloronaphthalene		<1.45	<0.175
2-Methylnaphthalene	ns	**16.1**	**2.31**
Total Naphthalenes	5	**41.8**	**5.79**

< = analyte was not detected at or above the method detection limit or laboratory practical quantitation limit

J = analyte detected above the method detection limit but below the laboratory prac

[1] = Dangerous Waste Regulation (WAC 173-303)

Bold = analyte detected at or above method detection limit

Bold + shaded = exceeded MTCA Method A cleanup level (WAC 173-340) or Dangerous Waste criteria (WAC 173-303)

[C] = carcinogenic PAH

Total carcinogenic PAHs cleanup level assumes entire carcinogenic PAH mixture is as toxic as benzo(a)pyrene, WAC 173-340-708(8)

MTCA Method A Soil Cleanup Levels: standards are listed for analytes detected above method detection limits

ns = No MTCA Method A Soil Cleanup Level

TABLE 7
DPT Subsurface Soil Boring Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	ROD MILL AREA DPT BORINGS				
SAMPLE NUMBER		RM-DPT1	RM-DPT2	RM-DPT3	RM-DPT4	RM-DPT5
SAMPLE DEPTH INTERVAL (feet bgs)		3.5 - 4.5	3.25 - 4	3.5 - 4.5	5.5 - 6.5	5.5 - 6.5
DATE COLLECTED		12/4/2003	12/4/2003	12/4/2003	12/4/2003	12/4/2003
ANIONS *(Method 300.0)*						
Fluoride	ns	**23.9**	**3.94**	**1,060**	**4.46**	<0.309
Chloride		<1.65	<1.68	**4.54**	<1.83	<1.54
Nitrite as N		<0.165	<0.168	<0.169	<0.183	<0.154
Bromide		<0.551	<0.561	<0.562	<0.611	<0.515
Nitrate as N	ns	<0.165	<0.168	**0.247**	<0.183	<0.154
Phosphate as P	ns	**2.08**	**1.38**	<0.844	<0.917	<0.772
Sulfate	ns	**17.4**	**8.24**	**48.9**	**285**	<1.54
CYANIDE (Method 9012/9013)		<0.2	<0.2	<0.2	<0.2	<0.2
WAD CYANIDE (Method SM45CNI)		<0.2	<0.2	<0.2	<0.2	<0.2
METALS *(Method SW846 6010/7471)*						
Aluminum	ns	**3,960**	**3,820**	**18,100**	**5,630**	**4,680**
Arsenic	20	<1.95	<2.21	**4.43**	<2.55	<2.02
Barium	ns	**9.93**	**10.1**	**37.1**	**10.4**	**9.25**
Cadmium		<0.977	<1.11	<1.08	<1.27	<1.01
Chromium	2,000	**13.2**	**10.3**	**21.5**	**11.1**	**9.72**
Lead	1,000	<1.95	**3.77**	**14.7**	<2.55	<2.02
Mercury	2	<0.0223	<0.0222	**0.364**	<0.0231	<0.0169
Selenium		<9.77	<11.1	<10.8	<12.7	<10.1
Silver		<1.95	<2.21	<2.16	<2.55	<2.02
TCLP 8 RCRA METALS in mg/L *(Method SW846 6010/7470)*						
Arsenic		<0.01	<0.01	<0.01	<0.01	<0.01
Barium	[1]100.0 mg/L	**0.0333**	**0.0317**	**0.105**	**0.043**	**0.0448**
Cadmium		<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	[1]5.0 mg/L	**0.0199**	**0.0196**	**0.0232**	**0.0185**	**0.0214**
Lead	[1]5.0 mg/L	**0.00609**	<0.005	**0.006**	<0.005	**0.00511**
Mercury		<0.002	<0.002	<0.002	<0.002	<0.002
Selenium		<0.03	<0.03	<0.03	<0.03	<0.03
Silver		<0.005	<0.005	<0.005	<0.005	<0.005
DIESEL RANGE PETROLEUM HYDROCARBONS *(Method NWTPH-Dx)*						
#2 Diesel	2,000	<13	**277**	<13	<14.8	<13.8
Motor Oil	2,000	<25.9	**1,070**	<26.1	<29.7	<27.5
GASOLINE RANGE PETROLEUM HYDROCARBONS *(Method NWTPH-Gx)*						
Gasoline		<4.29	<4.29	<4.64	<4.96	<4.39
Benzene		<0.0107	<0.0107	<0.0116	<0.0124	<0.011
Toluene		<0.0215	<0.0214	<0.0232	<0.0248	<0.0219
Ethylbenzene		<0.0215	<0.0214	<0.0232	<0.0248	<0.0219
m&p-Xylene		<0.0429	<0.0429	<0.0464	<0.0496	<0.0439
o-Xylene		<0.0215	<0.0214	<0.0232	<0.0248	<0.0219
EXTRACTABLE PETROLEUM HYDROCARBONS						
C8-C10 Aliphatics		<11	<11	<11	<13	<12
C10-C12 Aliphatics		<5.7	<5.6	<5.7	<6.6	<5.8
C12-C16 Aliphatics		<5.7	<5.6	<5.7	<6.6	<5.8
C16-C21 Aliphatics		<5.7	**63**	**5.9**	<6.6	<5.8
C21-C34 Aliphatics		<11	**500**	**43**	<13	<12
Total Aliphatics		---	**560**	**49**	---	---
C8-C10 Aromatics		<34	<34	<34	<39	<35
C10-C12 Aromatics		<5.7	<5.6	<5.7	<6.6	<5.8
C12-C16 Aromatics		<5.7	<5.6	<5.7	<6.6	<5.8
C16-C21 Aromatics		<5.7	**5.8**	<5.7	<6.6	<5.8
C21-C34 Aromatics		<5.7	**14**	**15**	<6.6	<5.8
Total Aromatics		---	**20**	**15**	---	---

TABLE 7
DPT Subsurface Soil Boring Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	ROD MILL AREA DPT BORINGS				
SAMPLE NUMBER		RM-DPT1	RM-DPT2	RM-DPT3	RM-DPT4	RM-DPT5
SAMPLE DEPTH INTERVAL (feet bgs)		3.5 - 4.5	3.25 - 4	3.5 - 4.5	5.5 - 6.5	5.5 - 6.5
DATE COLLECTED		12/4/2003	12/4/2003	12/4/2003	12/4/2003	12/4/2003
POLYCHLORINATED BIPHENYLS *(Method SW846 8082)*						
Aroclor 1016		<0.0524	<0.266	<0.0537	<0.0626	<0.0541
Aroclor 1221		<0.105	<0.533	<0.107	<0.125	<0.108
Aroclor 1232		<0.0524	<0.266	<0.0537	<0.0626	<0.0541
Aroclor 1242		<0.0524	<0.266	<0.0537	<0.0626	<0.0541
Aroclor 1248		<0.0524	<0.266	<0.0537	<0.0626	<0.0541
Aroclor 1254	ns	<0.0524	**6.98**	**0.145**	<0.0626	<0.0541
Aroclor 1260		<0.0524	<0.266	<0.0537	<0.0626	<0.0541
Total PCBs	10		**6.98**	**0.145**		
TOTAL PHENOLS *(EPA Method 9066)*		<5	<5	<5	<5	<5
VOLATILE ORGANIC COMPOUNDS *(Method 8260B)*						
Dichlorodifluoromethane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Chloromethane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Vinyl chloride		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Bromomethane		<0.00444	<0.00437	<0.0046	<0.00542	<0.00373
Chloroethane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Trichlorofluoromethane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,1-Dichloroethene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Methylene chloride	0.02	<0.000887	<0.00873	<0.000919	**0.00141 J**	<0.000746
trans-1,2-Dichloroethene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,1-Dichloroethane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
2,2-Dichloropropane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
cis-1,2-Dichloroethene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Bromochloromethane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Chloroform		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,1,1-Trichloroethane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Carbon Tetrachloride		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,1-Dichloropropene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Benzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,2-Dichloroethane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Trichloroethene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,2-Dichloropropane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Dibromomethane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Bromodichloromethane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
cis-1,3-Dichloropropene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Toluene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
trans-1,3-Dichloropropene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,1,2-Trichloroethane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Tetrachloroethene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,3-Dichloropropane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Dibromochloromethane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,2-Dibromoethane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Chlorobenzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Ethylbenzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,1,1,2-Tetrachloroethane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
m,p-Xylene		<0.00177	<0.00175	<0.00184	<0.00217	<0.00149
o-Xylene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Styrene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Bromoform		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Isopropylbenzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Bromobenzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
n-Propylbenzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,1,2,2-Tetrachloroethane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746

TABLE 7
DPT Subsurface Soil Boring Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	ROD MILL AREA DPT BORINGS				
SAMPLE NUMBER		RM-DPT1	RM-DPT2	RM-DPT3	RM-DPT4	RM-DPT5
SAMPLE DEPTH INTERVAL (feet bgs)		3.5 - 4.5	3.25 - 4	3.5 - 4.5	5.5 - 6.5	5.5 - 6.5
DATE COLLECTED		12/4/2003	12/4/2003	12/4/2003	12/4/2003	12/4/2003
1,2,3-Trichloropropane		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
2-Chlorotoluene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,3,5-Trimethylbenzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
4-Chlorotoluene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
t-Butylbenzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,2,4-Trimethylbenzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
sec-Butylbenzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,3-Dichlorobenzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
4-Isopropyltoluene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,4-Dichlorobenzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
n-Butylbenzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,2-Dichlorobenzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,2-Dibromo-3-chloropropane		<0.00177	<0.00175	<0.00184	<0.00217	<0.00149
1,2,4-Trichlorobenzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
Hexachlorobutadiene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
1,2,3-Trichlorobenzene		<0.000887	<0.00873	<0.000919	<0.00108	<0.000746
SEMI-VOLATILE ORANGIC COMPOUNDS *(Method 8270C)*						
Phenol		<0.142	<0.145	<0.136	<0.167	<0.145
bis(2-Chloroethyl)ether		<0.142	<0.145	<0.136	<0.167	<0.145
2-Chlorophenol		<0.142	<0.145	<0.136	<0.167	<0.145
1,3-Dichlorobenzene		<0.142	<0.145	<0.136	<0.167	<0.145
1,4-Dichlorobenzene		<0.142	<0.145	<0.136	<0.167	<0.145
Benzyl Alcohol		<0.177	<0.182	<0.170	<0.209	<0.182
1,2-Dichlorobenzene		<0.142	<0.145	<0.136	<0.167	<0.145
2-Methylphenol		<0.142	<0.145	<0.136	<0.167	<0.145
bis(2-Chloroisopropyl)ether		<0.142	<0.145	<0.136	<0.167	<0.145
3-&4-Methylphenol		<0.284	<0.291	<0.272	<0.334	<0.291
N-nitroso-di-n-propylamine		<0.142	<0.145	<0.136	<0.167	<0.145
Hexachloroethane		<0.142	<0.145	<0.136	<0.167	<0.145
Nitrobenzene		<0.142	<0.145	<0.136	<0.167	<0.145
Isophorone		<0.142	<0.145	<0.136	<0.167	<0.145
2-Nitrophenol		<0.142	<0.145	<0.136	<0.167	<0.145
2,4-Dimethylphenol		<0.142	<0.145	<0.136	<0.167	<0.145
Benzoic Acid		<0.710	<0.727	<0.679	<0.835	<0.726
bis(2-Chloroethoxy)methane		<0.142	<0.145	<0.136	<0.167	<0.145
2,4-Dichlorophenol		<0.142	<0.145	<0.136	<0.167	<0.145
1,2,4-Trichlorobenzene		<0.142	<0.145	<0.136	<0.167	<0.145
4-Chloroaniline		<0.142	<0.145	<0.136	<0.167	<0.145
Hexachlorobutadiene		<0.142	<0.145	<0.136	<0.167	<0.145
4-Chloro-3-methylphenol		<0.142	<0.145	<0.136	<0.167	<0.145
Hexachlorocyclopentadiene		<0.142	<0.145	<0.136	<0.167	<0.145
2,4,6-Trichlorophenol		<0.142	<0.145	<0.136	<0.167	<0.145
2,4,5-Trichlorophenol		<0.142	<0.145	<0.136	<0.167	<0.145
2-Nitroaniline		<0.142	<0.145	<0.136	<0.167	<0.145
Dimethylphthalate		<0.142	<0.145	<0.136	<0.167	<0.145
2,6-Dinitrotoluene		<0.142	<0.145	<0.136	<0.167	<0.145
3-Nitroaniline		<0.142	<0.145	<0.136	<0.167	<0.145
2,4-Dinitrophenol		<0.710	<0.727	<0.679	<0.835	<0.726
4-Nitrophenol		<0.355	<0.0364	<0.340	<0.0417	<0.0363
Dibenzofuran		<0.142	<0.145	<0.136	<0.167	<0.145
2,4-Dinitrotoluene		<0.142	<0.145	<0.136	<0.167	<0.145
Diethylphthalate		<0.142	<0.145	<0.136	<0.167	<0.145
4-Chlorophenylphenylether		<0.142	<0.145	<0.136	<0.167	<0.145

TABLE 7
DPT Subsurface Soil Boring Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/kg except where noted)	MTCA Method A Soil Cleanup Level	ROD MILL AREA DPT BORINGS				
SAMPLE NUMBER		RM-DPT1	RM-DPT2	RM-DPT3	RM-DPT4	RM-DPT5
SAMPLE DEPTH INTERVAL (feet bgs)		3.5 - 4.5	3.25 - 4	3.5 - 4.5	5.5 - 6.5	5.5 - 6.5
DATE COLLECTED		12/4/2003	12/4/2003	12/4/2003	12/4/2003	12/4/2003
4-Nitroaniline		<0.142	<0.145	<0.136	<0.167	<0.145
4,6-Dinitro-2-methylphenol		<0.710	<0.727	<0.679	<0.835	<0.726
N-Nitrosodiphenylamine		<0.142	<0.145	<0.136	<0.167	<0.145
4-Bromophenylphenylether		<0.142	<0.145	<0.136	<0.167	<0.145
Hexachlorobenzene		<0.142	<0.145	<0.136	<0.167	<0.145
Pentachlorophenol		<0.142	<0.145	<0.136	<0.167	<0.145
Di-n-butylphthalate		<0.142	<0.145	<0.136	<0.167	<0.145
Butylbenzylphthalate		<0.177	<0.182	<0.170	<0.209	<0.182
3,3'-Dichlorobenzidine		<0.284	<0.291	<0.272	<0.334	<0.291
bis(2-Ethylhexyl)phthalate		<0.142	<0.145	<0.136	<0.167	<0.145
Di-n-octylphthalate		<0.142	<0.145	<0.136	<0.167	<0.145
NAPHTHALENES						
2-Methylnaphthalene		<0.0355	<0.0364	<0.034	<0.0417	<0.0363
Naphthalene		<0.0355	<0.0364	<0.034	<0.0417	<0.0363
2-Chloronaphthalene		<0.0355	<0.0364	<0.034	<0.0417	<0.0363
Total Naphthalenes		---	---	---	---	---
POLYNUCLEAR AROMATIC HYDROCARBONS *(Method 8270C)*						
Acenaphthene		<0.0355	<0.364	<0.034	<0.0417	<0.0363
Acenaphthylene		<0.0355	<0.0364	<0.034	<0.0417	<0.0363
Anthracene		<0.0355	<0.0364	<0.034	<0.0417	<0.0363
Benzo(a)anthracene[c]		<0.0355	<0.0364	<0.034	<0.0417	<0.0363
Benzo(a)pyrene[c]	2	<0.0355	<0.0364	<0.034	<0.0417	<0.0363
Benzo(g,h,i)perylene[c]		<0.0355	<0.0364	<0.034	<0.0417	<0.0363
Benzofluoranthenes[c]	ns	**0.0372 J**	<0.0364	<0.034	<0.0417	<0.0363
Chrysene[c]		<0.0355	<0.0364	<0.034	<0.0417	<0.0363
Dibenz(a,h)anthracene[c]		<0.0355	<0.0364	<0.034	<0.0417	<0.0363
Fluoranthene	ns	**0.051 J**	<0.0364	<0.034	<0.0417	<0.0363
Fluorene		<0.0355	<0.0364	<0.034	<0.0417	<0.0363
Indeno(1,2,3-cd)pyrene[c]		<0.0355	<0.0364	<0.034	<0.0417	<0.0363
Phenanthrene	ns	**0.0737**	<0.0364	<0.034	<0.0417	<0.0363
Pyrene	ns	**0.0815**	<0.0364	<0.034	<0.0417	<0.0363
Total PAHs	[1]1%	**0.2434**	---	---	---	---
Total Carcinogenic PAHs	2	**0.0372**	---	---	---	---

WAD = Weak and Dissociable Cyanide

TCLP = Toxicity Characteristic Leaching Procedure (Method 1311)

< = analyte was not detected at or above the method detection limit or laboratory practical quantitation limit

J = analyte detected above the method detection limit but below the laboratory practical quantitation limit

[1] = Dangerous Waste Regulation (WAC 173-303)

Bold = analyte detected at or above method detection limit

Bold + shaded = exceeded MTCA Method A cleanup level (WAC 173-340) and/or Dangerous Waste Regulation (WAC 173-303)

[c] = carcinogenic PAH

Total carcinogenic PAHs cleanup level assumes entire carcinogenic PAH mixture is as toxic as benzo(a)pyrene, WAC 173-340-708(8)

MTCA Method A Soil Cleanup Levels: standards are listed for analytes detected above method detection limits

ns = No MTCA Method A Soil Cleanup Level

APPENDIX G

Rod Mill Area 2003-2004 Groundwater Analytical Results

TABLE G-1
2003 GROUNDWATER ANALYTICAL RESULTS
ROD MILL AREA
KAISER COMPILATION REPORT
TACOMA, WASHINGTON

	Preliminary Cleanup Levels (a)						
	MTCA Method A/B Protective of Drinking Water	Protective of Marine Surface Water	RM-DPT1 (4-8) 12/4/2003	RM-DPT2 (4-8) 12/4/2003	RM-DPT3 (4-6) 12/4/2003	RM-DPT4 (6-10) 12/4/2003	RM-DPT5 (6-10) 12/4/2003
cPAHs (µg/L)							
SW8270C							
Benzo(a)anthracene	see total cPAHs	0.018	0.0237 U	0.237 U	0.0304 J	0.0237 U	0.0256 U
Chrysene	see total cPAHs	0.040	0.0237 U	0.237 U	0.0825	0.0237 U	0.0256 U
Benzofluoranthenes (b)	see total cPAHs	-- (c)	0.0474 U	0.473 U	0.0506 U	0.0475 U	0.0512 U
Benzo(a)pyrene	see total cPAHs	0.035	0.0237 U	0.237 U	0.0389 J	0.0237 U	0.0256 U
Indeno(1,2,3-cd)pyrene	see total cPAHs	0.018	0.0237 U	0.237 U	0.0562	0.0237 U	0.0256 U
Dibenz(a,h)anthracene	see total cPAHs	0.018	0.0237 U	0.237 U	0.0253 U	0.0237 U	0.0256 U
TEQ	0.1 / 0.12	0.030	NA	NA	0.0484	NA	NA

U = The analyte was not detected in the sample at the given reporting limit.

Boxed cells indicate an exceedance of site cleanup levels.

(a) Development of preliminary cleanup levels for groundwater is presented in Table 9.

(b) Concentrations reported as a total for benzo(b)fluoranthene and benzo(k)fluoranthene.

(c) No cleanup level protective of marine surface water is available for total Benzofluoranthenes.

TABLE 8
Groundwater Analytical Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/L except where noted)	MTCA Method A Groundwater Cleanup Level (mg/L)	RM-DPT1	RM-DPT2	RM-DPT3	RM-DPT4	RM-DPT5	RM-MW1I (total)	RM-MW1I (dissolved)	RM-MW2I (total)	RM-MW2I (dissolved)
DPT GROUNDWATER SAMPLE DEPTH INTERVAL (feet bgs)		4 - 8	4 - 8	4 - 6	6 - 10	6 - 10	22-27.5	22.5-27.5	22.5-32.5	22.5-32.5
DATE COLLECTED		12/4/2003	12/4/2003	12/4/2003	12/4/2003	12/4/2003	11/12/2004	11/12/2004	11/12/2004	11/12/2004
FIELD PARAMETERS										
pH (standard units)		7.5	6.5	6.4	5.8	5.0	nr		nr	
Temperature (°C)		12.5	13.2	12.3	13.0	11.6	7.8		12.0	
Specific Conductance (uS/cm[c])		380	763	691	1,051	540	1,967		7,180	
Dissolved Oxygen (percent)		41.5	22.2	45.6	62.5	44.9				
Dissolved Oxygen (mg/L)		4.2	2.1	4.3	6.9	4.7				
ANIONS (Method 300.0)										
Fluoride	[2]0.96,	3.0	1.87	52.8	4.53	3.95	0.91[4]		1.68	
Chloride	ns	2.63	2.88	<0.15	23.4	19.3	424[4]		2,930[4]	
Nitrite	ns	<0.015	<0.015	<0.015	<0.015	<0.015	<0.031		<0.31	
Bromide	ns	<0.05	<0.05	<0.05	0.119	0.106	1.59		9.98	
Nitrate	ns	0.916	0.341	0.077	0.129	3.91	0.019 J		<0.3	
Phosphate	ns	<0.075	0.161	0.086	<0.075	<0.075	0.115 J		<1.5	
Sulfate	ns	56.3	213	255	496	249	54.1[4]		3.13	
CYANIDE (Method 9012/9013)	[2]0.32	0.11	<0.05	<0.05	<0.05	<0.05				
WAD CYANIDE (Method SM45CNI)		<0.01	<0.01	<0.01	<0.01	<0.01				
METALS (Method SW846 6010/7471)										
Aluminum	ns	0.622	0.739	42.6	9.68	7.2	1.92		0.432	
Arsenic	0.005	<0.0015	<0.0015	0.00224	<0.0015	<0.0015	0.00621		0.0133	
Barium	ns	0.00566	0.0083	0.0187	0.0268	0.013	0.0176		0.0844	
Cadmium	0.005	<0.0005	<0.0005	<0.0005	0.00052	<0.0005	<0.005		<0.005	
Chromium	0.050	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	
Copper	ns						0.0776		<0.01	
Lead	0.015	<0.01	<0.01	<0.01	<0.01	<0.01	0.0219		<0.01	
Mercury	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002		<0.0002	
Selenium		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	
Silver	ns	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		0.0378	
DIESEL RANGE PETROLEUM HYDROCARBONS (Method NWTPH-Dx)										
#2 Diesel	0.500	<0.119	3.31	<0.119	<0.119	<0.126	<0.247		0.24[3]	
Motor Oil	0.500	<0.237	6.2	<0.237	<0.238	<0.252	<0.495		<0.471	
GASOLINE RANGE PETROLEUM HYDROCARBONS (Method NWTPH-Gx)										
Gasoline		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	
Benzene		<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.0005		<0.0005	
Toluene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Ethylbenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
m&p-Xylene		<0.001	<0.001	<0.001	<0.001	<0.001	<0.002		<0.002	
o-Xylene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
EXTRACTABLE PETROLEUM HYDROCARBONS										
C8-C10 Aliphatics		<0.10	<0.10	<0.10	<0.10	<0.10				
C10-C12 Aliphatics		<0.050	<0.050	<0.050	<0.050	<0.050				
C12-C16 Aliphatics		<0.050	<0.050	<0.050	<0.050	<0.050				
C16-C21 Aliphatics		<0.050	<0.050	<0.050	<0.050	<0.050				
C21-C34 Aliphatics		<0.050	<0.050	<0.050	<0.050	<0.050				
Total Aliphatics		---	---	---	---	---				

TABLE 8
Groundwater Analytical Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/L except where noted)	MTCA Method A Groundwater Cleanup Level (mg/L)	RM-DPT1	RM-DPT2	RM-DPT3	RM-DPT4	RM-DPT5	RM-MW1I (total)	RM-MW1I (dissolved)	RM-MW2I (total)	RM-MW2I (dissolved)
DPT GROUNDWATER SAMPLE DEPTH INTERVAL (feet bgs)		4 - 8	4 - 8	4 - 6	6 - 10	6 - 10	22-27.5	22.5-27.5	22.5-32.5	22.5-32.5
DATE COLLECTED		12/4/2003	12/4/2003	12/4/2003	12/4/2003	12/4/2003	11/12/2004	11/12/2004	11/12/2004	11/12/2004
C8-C10 Aromatics		<0.40	<0.40	<0.40	<0.40	<0.40				
C10-C12 Aromatics		<0.050	<0.050	<0.050	<0.050	<0.050				
C12-C16 Aromatics		<0.050	0.13	<0.050	<0.050	<0.050				
C16-C21 Aromatics		<0.050	<0.050	<0.050	<0.050	<0.050				
C21-C34 Aromatics		<0.050	0.050	<0.050	<0.050	<0.050				
Total Aromatics		—	0.18	—	—	—				
POLYCHLORINATED BIPHENYLS (Method SW846 8082)										
Aroclor 1016		<0.00000476	<0.0000242	<0.00000496	<0.00000494	<0.00000493	<0.00000955	<0.00000955	<0.00000958	<0.00000958
Aroclor 1221		<0.00000951	<0.0000.0484	<0.00000992	<0.00000988	<0.00000985	<0.00000955	<0.00000955	<0.00000958	<0.00000958
Aroclor 1232		<0.00000476	<0.0000242	<0.00000496	<0.00000494	<0.00000493	<0.00000955	<0.00000955	<0.00000958	<0.00000958
Aroclor 1242		<0.00000476	<0.0000242	<0.00000496	<0.00000494	<0.00000493	<0.00000955	<0.00000955	<0.00000958	<0.00000958
Aroclor 1248	ns	<0.00000476	0.00112	<0.00000496	<0.00000494	<0.00000493	<0.00000955	<0.00000955	<0.00000958	<0.00000958
Aroclor 1254		<0.00000476	<0.0000242	<0.00000496	<0.00000494	<0.00000493	<0.00000955	<0.00000955	<0.00000958	<0.00000958
Aroclor 1260		<0.00000476	<0.0000242	<0.00000496	<0.00000494	<0.00000493	<0.00000955	<0.00000955	<0.00000958	<0.00000958
Total PCBs	0.0001	—	0.00112	—	—	—	—	—	—	—
TOTAL PHENOLS (EPA Method 9066)		<0.05	<0.05	<0.05	<0.05	<0.05				
VOLATILE ORGANIC COMPOUNDS (Method 8260B)										
Dichlorodifluoromethane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Chloromethane		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	
Vinyl chloride	0.0002	0.00641	<0.0002	<0.0002	<0.0002	<0.0002	0.000659		<0.0002	
Bromomethane		<0.00125	<0.00125	<0.00125	<0.00125	<0.00125	<0.001		<0.001	
Chloroethane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Trichlorofluoromethane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,1-Dichloroethene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Methylene chloride		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	
trans-1,2-Dichloroethene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,1-Dichloroethane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
2,2-Dichloropropane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
cis-1,2-Dichloroethene	ns	0.00666	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Bromochloromethane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Chloroform		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,1,1-Trichloroethane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Carbon Tetrachloride		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,1-Dichloropropene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Benzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,2-Dichloroethane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Trichloroethene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,2-Dichloropropane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Dibromomethane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Bromodichloromethane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
cis-1,3-Dichloropropene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Toluene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
trans-1,3-Dichloropropene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,1,2-Trichloroethane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	

TABLE 8
Groundwater Analytical Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/L except where noted)	MTCA Method A Groundwater Cleanup Level (mg/L)	RM-DPT1	RM-DPT2	RM-DPT3	RM-DPT4	RM-DPT5	RM-MW1I (total)	RM-MW1I (dissolved)	RM-MW2I (total)	RM-MW2I (dissolved)
DPT GROUNDWATER SAMPLE DEPTH INTERVAL (feet bgs)		4 - 8	4 - 8	4 - 6	6 - 10	6 - 10	22-27.5	22.5-27.5	22.5-32.5	22.5-32.5
DATE COLLECTED		12/4/2003	12/4/2003	12/4/2003	12/4/2003	12/4/2003	11/12/2004	11/12/2004	11/12/2004	11/12/2004
Tetrachloroethene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,3-Dichloropropane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Dibromochloromethane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,2-Dibromoethane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Chlorobenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Ethylbenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,1,1,2-Tetrachloroethane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
m,p-Xylene		<0.001	<0.001	<0.001	<0.001	<0.001	<0.002		<0.002	
o-Xylene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Styrene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Bromoform		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Isopropylbenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Bromobenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
n-Propylbenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,1,2,2-Tetrachloroethane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,2,3-Trichloropropane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
2-Chlorotoluene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,3,5-Trimethylbenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
4-Chlorotoluene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
t-Butylbenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,2,4-Trimethylbenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
sec-Butylbenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,3-Dichlorobenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
4-Isopropyltoluene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,4-Dichlorobenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
n-Butylbenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,2-Dichlorobenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,2-Dibromo-3-chloropropane		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
1,2,4-Trichlorobenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Hexachlorobutadiene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
Naphthalene		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	
1,2,3-Trichlorobenzene		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	
SEMI-VOLATILE ORANGIC COMPOUNDS *(Method 8270C)*										
Phenol	ns	<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	**0.000506**	**0.000191**	<0.000192	<0.000193
bis(2-Chloroethyl)ether		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
2-Chlorophenol		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
1,3-Dichlorobenzene		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
1,4-Dichlorobenzene		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
Benzyl Alcohol	ns	<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	**0.000619**	<0.00019	**0.000197**	**0.000394**
1,2-Dichlorobenzene		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
2-Methylphenol		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
bis(2-Chloroisopropyl)ether		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
3-&4-Methylphenol		<0.00019	<0.00189	<0.000202	<0.00019	<0.000205	<0.000378	<0.00019	<0.000384	<0.000193
N-nitroso-di-n-propylamine		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193

TABLE 8
Groundwater Analytical Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/L except where noted)	MTCA Method A Groundwater Cleanup Level (mg/L)	RM-DPT1	RM-DPT2	RM-DPT3	RM-DPT4	RM-DPT5	RM-MW1I (total)	RM-MW1I (dissolved)	RM-MW2I (total)	RM-MW2I (dissolved)
DPT GROUNDWATER SAMPLE DEPTH INTERVAL (feet bgs)		4 - 8	4 - 8	4 - 6	6 - 10	6 - 10	22-27.5	22.5-27.5	22.5-32.5	22.5-32.5
DATE COLLECTED		12/4/2003	12/4/2003	12/4/2003	12/4/2003	12/4/2003	11/12/2004	11/12/2004	11/12/2004	11/12/2004
Hexachloroethane		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
Nitrobenzene		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
Isophorone		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
2-Nitrophenol		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
2,4-Dimethylphenol		<0.000474	<0.00473	<0.000506	<0.000475	<0.000512	<0.000945	<0.00095	<0.000959	<0.000193
Benzoic Acid		<0.000474	<0.00473	<0.000506	<0.000475	<0.000512	<0.000945	<0.00095	<0.000959	**0.00137**
bis(2-Chloroethoxy)methane		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
2,4-Dichlorophenol		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
1,2,4-Trichlorobenzene		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
4-Chloroaniline		<0.000142	<0.00142	<0.000152	<0.000142	<0.000154	<0.000284	<0.000285	<0.000288	<0.000193
Hexachlorobutadiene		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000945	<0.00019	<0.000192	<0.000193
4-Chloro-3-methylphenol		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
Hexachlorocyclopentadiene		<0.000474	<0.00473	<0.000506	<0.000475	<0.000512	<0.000189	<0.00095	<0.000192	<0.000966
2,4,6-Trichlorophenol		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
2,4,5-Trichlorophenol		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
2-Nitroaniline		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
Dimethylphthalate		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
2,6-Dinitrotoluene		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
3-Nitroaniline		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
2,4-Dinitrophenol		<0.000474	<0.00473	<0.000506	<0.000475	<0.000512	<0.000945	<0.00095	<0.000959	<0.000966
4-Nitrophenol		<0.000474	<0.00473	<0.000506	<0.000475	<0.000512	<0.000945	<0.00095	<0.000959	<0.000966
Dibenzofuran	ns	<0.0000949	<0.000947	**0.000126 J**	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
2,4-Dinitrotoluene		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
Diethylphthalate		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
4-Chlorophenylphenylether		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
4-Nitroaniline		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
4,6-Dinitro-2-methylphenol		<0.000474	<0.00473	<0.000506	<0.000475	<0.000512	<0.000945	<0.00095	<0.000959	<0.000966
N-Nitrosodiphenylamine		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
4-Bromophenylphenylether		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
Hexachlorobenzene		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
Pentachlorophenol		<0.000308	<0.00308	<0.000329	<0.000309	<0.000333	<0.000189	<0.00019	<0.000192	<0.000193
Di-n-butylphthalate		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
Butylbenzylphthalate		<0.000142	<0.00142	<0.000152	<0.000142	<0.000154	<0.000189	<0.000285	<0.000288	<0.00029
3,3'-Dichlorobenzidine		<0.000474	<0.00473	<0.000506	<0.000475	<0.000512	<0.000945	<0.00019	<0.000959	<0.000966
bis(2-Ethylhexyl)phthalate		<0.000712	<0.0071	<0.000759	<0.000712	<0.000768	<0.00142	<0.00142	**0.00352**	<0.00145
Di-n-octylphthalate		<0.0000949	<0.000947	<0.000101	<0.000095	<0.000102	<0.000189	<0.00019	<0.000192	<0.000193
NAPHTHALENES										
2-Methylnaphthalene		<0.0000237	<0.000237	<0.0000253	<0.0000237	<0.0000256	<0.0000473	**0.000213**	<0.0000479	<0.0000483
Naphthalene	0.160	**0.0000391 J**	<0.000284	**0.0000407 J**	**0.0000296 J**	<0.0000307	<0.0000473	<0.000145	**0.0000264 J**	**0.00013**
2-Chloronaphthalene		<0.0000237	0.000237	<0.0000253	<0.0000237	<0.0000256	<0.0000189	<0.00019	<0.0000192	<0.0000193
Total Naphthalenes	0.160	**0.0000391 J**	---	**0.0000407**	**0.0000296**	---	---	**0.000213**	**0.0000264 J**	**0.00013**
POLYNUCLEAR AROMATIC HYDROCARBONS (Method 8270C)										
Acenaphthene	ns	<0.0000237	<0.000237	**0.000798**	<0.0000237	<0.0000256	<0.0000189	<0.00019	<0.0000192	<0.0000193
Acenaphthylene		<0.0000237	<0.000237	<0.0000253	<0.0000237	<0.0000256	<0.0000189	<0.00019	<0.0000192	<0.0000193

APPENDIX H

Rod Mill Area Closed Landfill 2008 Test Pit and Boring Logs

Soil Classification System

MAJOR DIVISIONS			GRAPHIC SYMBOL	USCS LETTER SYMBOL[1]	TYPICAL DESCRIPTIONS [2][3]
COARSE-GRAINED SOIL (More than 50% of material is larger than No. 200 sieve size)	GRAVEL AND GRAVELLY SOIL (More than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (Little or no fines)		GW	Well-graded gravel; gravel/sand mixture(s); little or no fines
				GP	Poorly graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)		GM	Silty gravel; gravel/sand/silt mixture(s)
				GC	Clayey gravel; gravel/sand/clay mixture(s)
	SAND AND SANDY SOIL (More than 50% of coarse fraction passed through No. 4 sieve)	CLEAN SAND (Little or no fines)		SW	Well-graded sand; gravelly sand; little or no fines
				SP	Poorly graded sand; gravelly sand; little or no fines
		SAND WITH FINES (Appreciable amount of fines)		SM	Silty sand; sand/silt mixture(s)
				SC	Clayey sand; sand/clay mixture(s)
FINE-GRAINED SOIL (More than 50% of material is smaller than No. 200 sieve size)	SILT AND CLAY (Liquid limit less than 50)			ML	Inorganic silt and very fine sand; rock flour; silty or clayey fine sand or clayey silt with slight plasticity
				CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay
				OL	Organic silt; organic, silty clay of low plasticity
	SILT AND CLAY (Liquid limit greater than 50)			MH	Inorganic silt; micaceous or diatomaceous fine sand
				CH	Inorganic clay of high plasticity; fat clay
				OH	Organic clay of medium to high plasticity; organic silt
	HIGHLY ORGANIC SOIL			PT	Peat; humus; swamp soil with high organic content

OTHER MATERIALS	GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
PAVEMENT		AC or PC	Asphalt concrete pavement or Portland cement pavement
ROCK		RK	Rock (See Rock Classification)
WOOD		WD	Wood, lumber, wood chips
DEBRIS		DB	Construction debris, garbage

Notes:
1. USCS letter symbols correspond to symbols used by the Unified Soil Classification System and ASTM classification methods. Dual letter symbols (e.g., SP-SM for sand or gravel) indicate soil with an estimated 5-15% fines. Multiple letter symbols (e.g., ML/CL) indicate borderline or multiple soil classifications.
2. Soil descriptions are based on the general approach presented in the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), outlined in ASTM D 2488. Where laboratory index testing has been conducted, soil classifications are based on the Standard Test Method for Classification of Soils for Engineering Purposes, as outlined in ASTM D 2487.
3. Soil description terminology is based on visual estimates (in the absence of laboratory test data) of the percentages of each soil type and is defined as follows:

Primary Constituent:	> 50% - "GRAVEL," "SAND," "SILT," "CLAY," etc.
Secondary Constituents:	> 30% and ≤ 50% - "very gravelly," "very sandy," "very silty," etc.
	> 15% and ≤ 30% - "gravelly," "sandy," "silty," etc.
Additional Constituents:	> 5% and ≤ 15% - "with gravel," "with sand," "with silt," etc.
	≤ 5% - "with trace gravel," "with trace sand," "with trace silt," etc., or not noted.

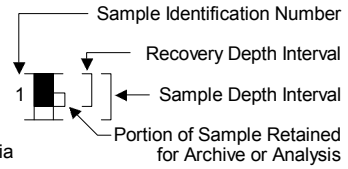
4. Soil density or consistency descriptions are based on judgement using a combination of sampler penetration blow counts, drilling or excavating conditions, field tests, and laboratory tests, as appropriate.

Drilling and Sampling Key

SAMPLER TYPE

Code	Description
a	3.25-inch O.D., 2.42-inch I.D. Split Spoon
b	2.00-inch O.D., 1.50-inch I.D. Split Spoon
c	Shelby Tube
d	Grab Sample
e	Single-Tube Core Barrel
f	Double-Tube Core Barrel
g	2.50-inch O.D., 2.00-inch I.D. WSDOT
h	3.00-inch O.D., 2.375-inch I.D. Mod. California
i	Other - See text if applicable
1	300-lb Hammer, 30-inch Drop
2	140-lb Hammer, 30-inch Drop
3	Pushed
4	Vibrocore (Rotosonic/Geoprobe)
5	Other - See text if applicable

SAMPLE NUMBER & INTERVAL



Field and Lab Test Data

Code	Description
PP = 1.0	Pocket Penetrometer, tsf
TV = 0.5	Torvane, tsf
PID = 100	Photoionization Detector VOC screening, ppm
W = 10	Moisture Content, %
D = 120	Dry Density, pcf
-200 = 60	Material smaller than No. 200 sieve, %
GS	Grain Size - See separate figure for data
AL	Atterberg Limits - See separate figure for data
GT	Other Geotechnical Testing
CA	Chemical Analysis

Groundwater

▽ Approximate water level at time of drilling (ATD)

▼ Approximate water level at time other than ATD

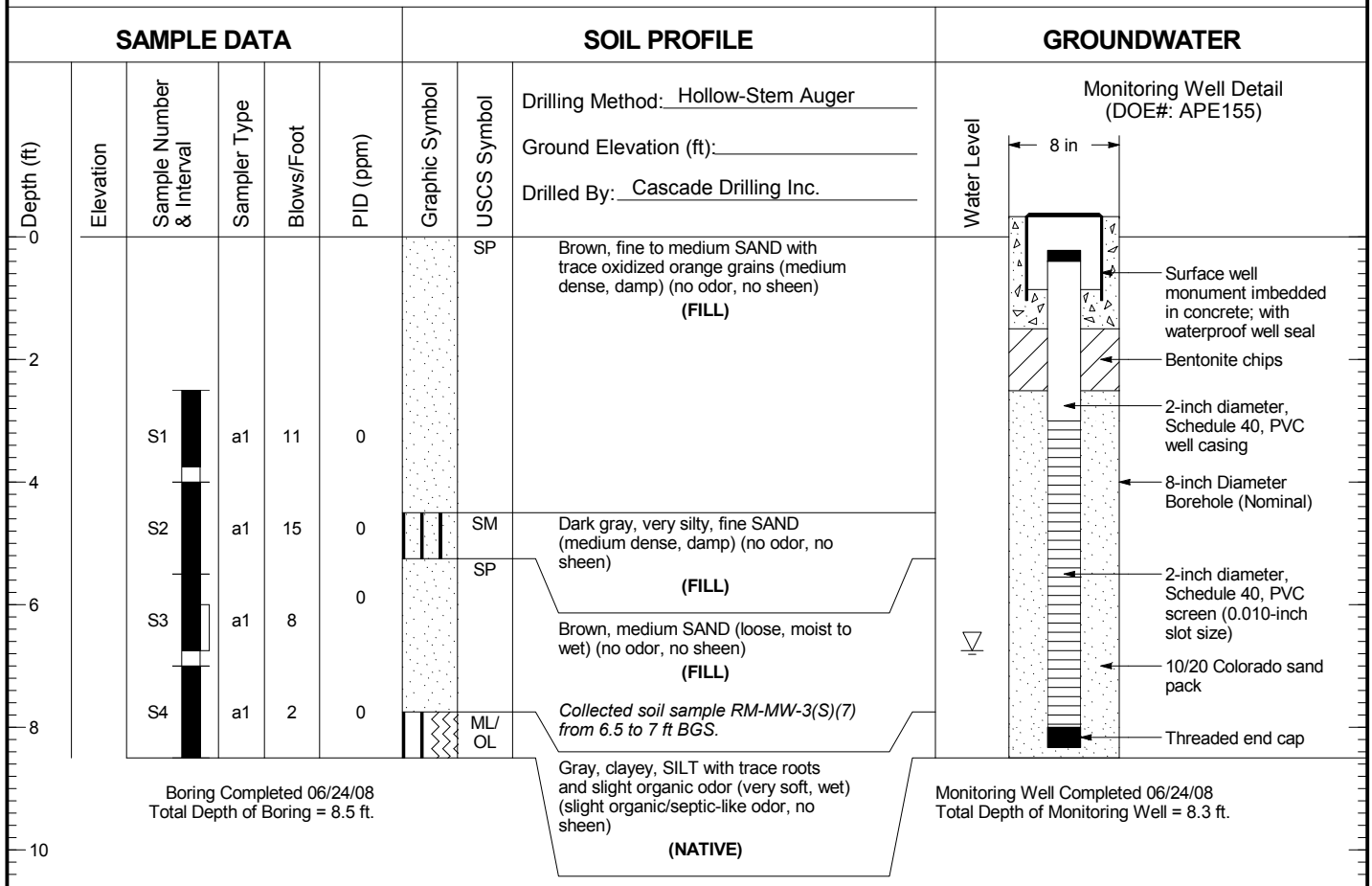
LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Soil Classification System and Key

Figure H-1

RM-MW-3(S)



Boring Completed 06/24/08
Total Depth of Boring = 8.5 ft.

Monitoring Well Completed 06/24/08
Total Depth of Monitoring Well = 8.3 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

168004.02 7/28/11 N:\PROJECTS\168004.020.GPJ WELL LOG W/ ELEVATION

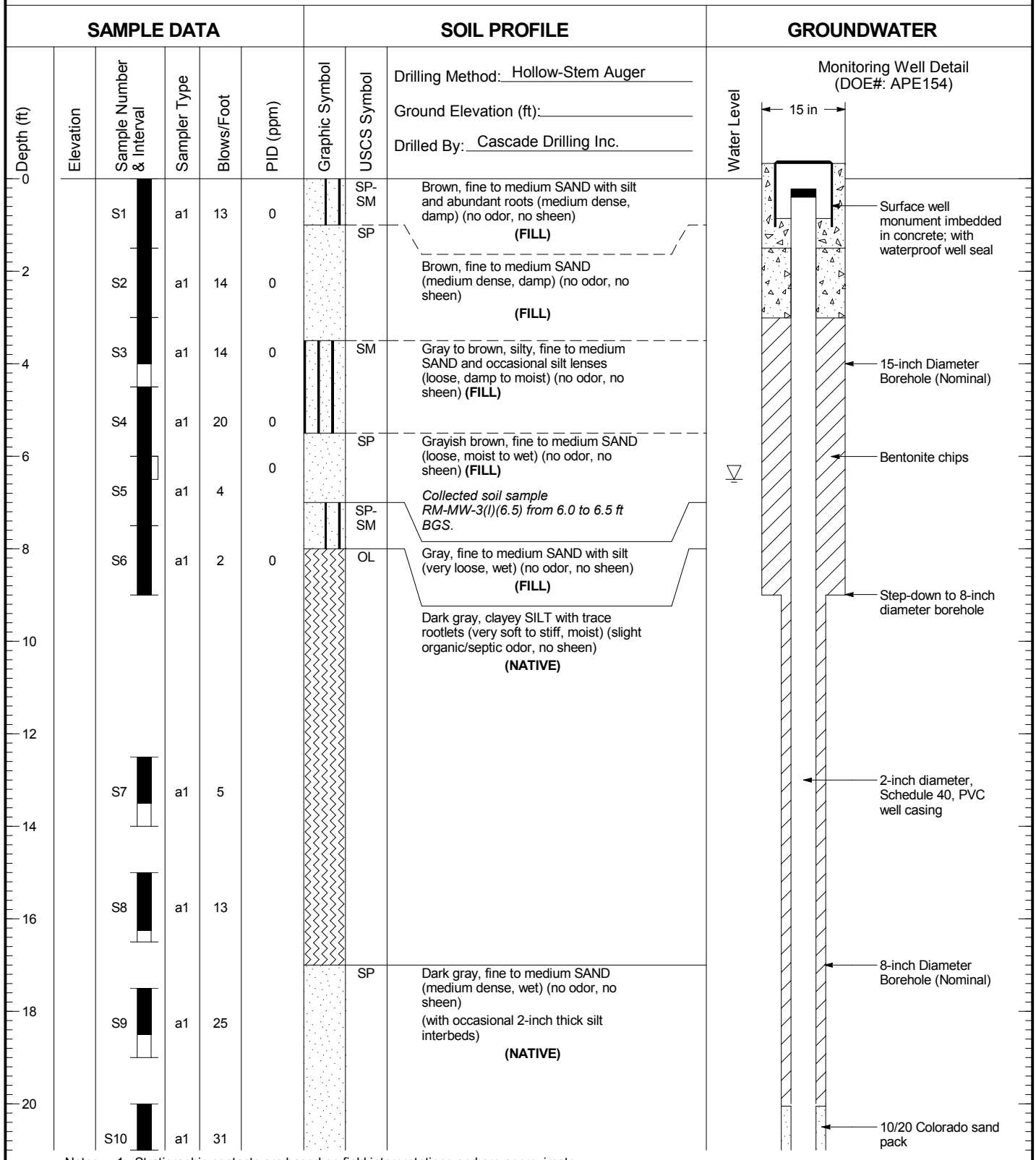
LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Monitoring Well RM-MW-3(S)

Figure
H-2

RM-MW-3(I)



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

168004.02 7/28/11 N:\PROJECTS\168004.020.GPJ WELL LOG W/ ELEVATION

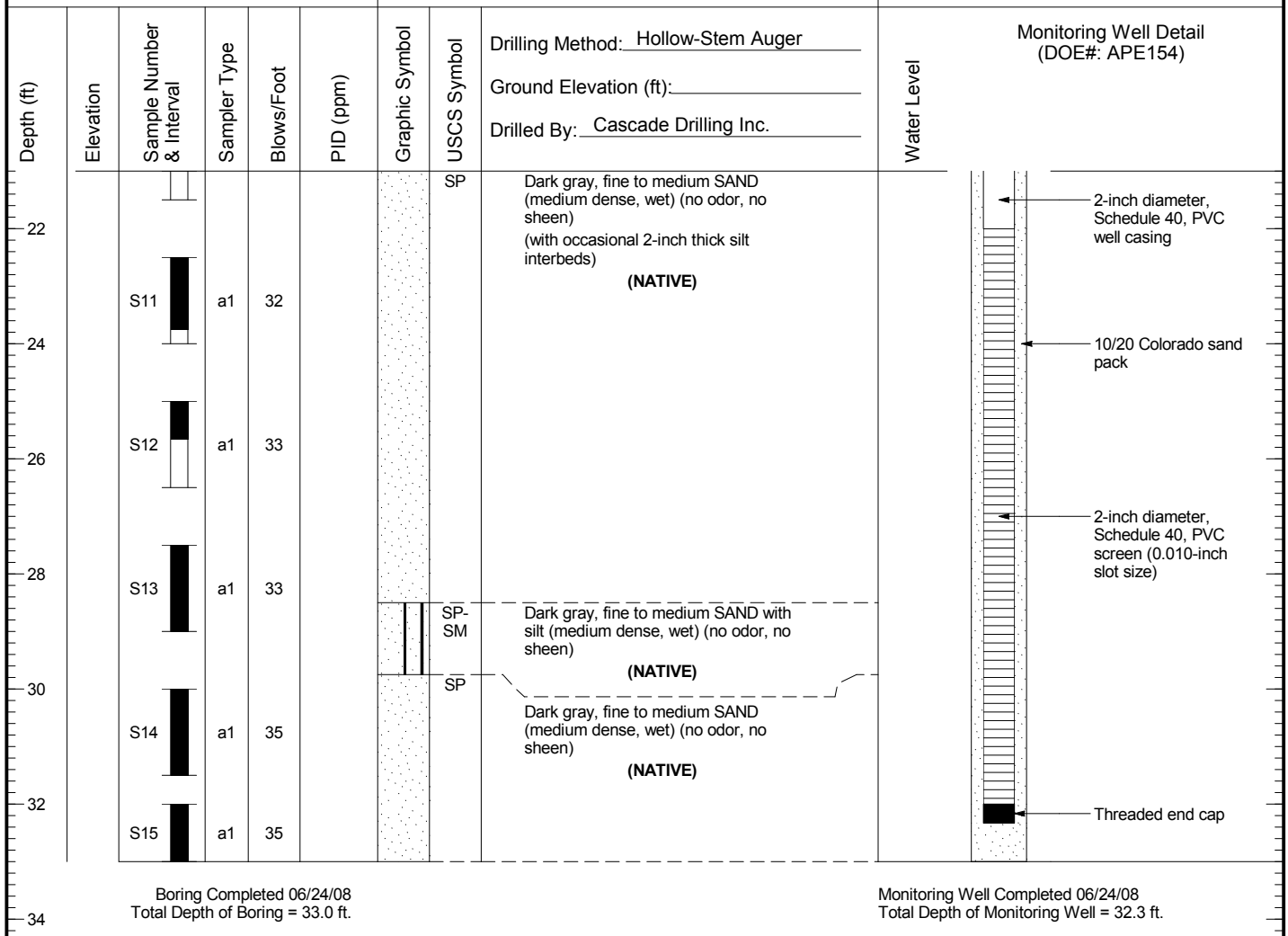
LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Monitoring Well RM-MW-3(I)

Figure
H-3
(1 of 2)

RM-MW-3(I)



Boring Completed 06/24/08
Total Depth of Boring = 33.0 ft.

Monitoring Well Completed 06/24/08
Total Depth of Monitoring Well = 32.3 ft.

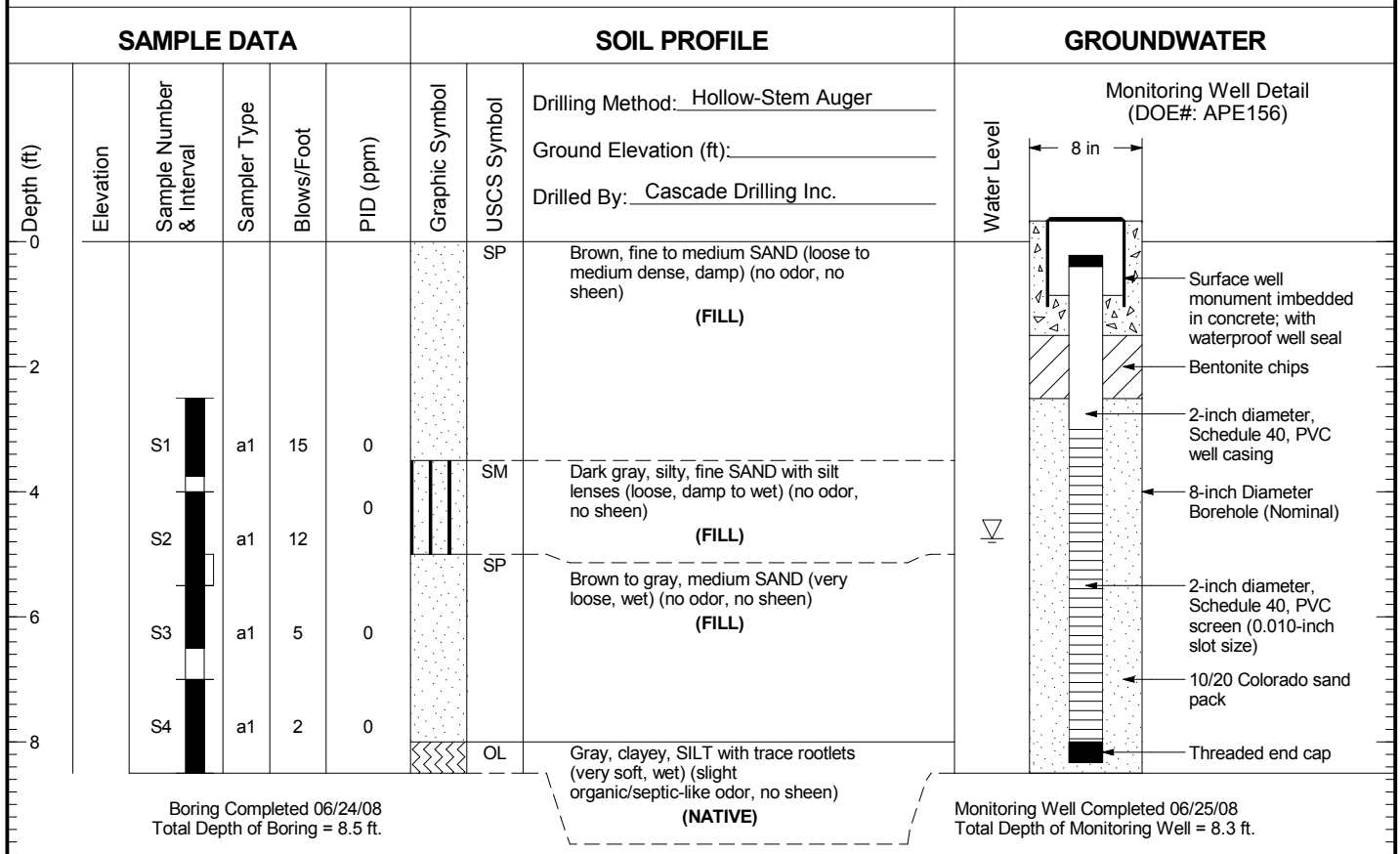
Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

168004.02 7/28/11 N:\PROJECTS\168004.020.GPJ WELL LOG W/ ELEVATION

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Monitoring Well RM-MW-3(I)	Figure H-3 (2 of 2)

RM-MW-4(S)



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

168004.02 7/28/11 N:\PROJECTS\168004.020.GPJ WELL LOG W/ ELEVATION

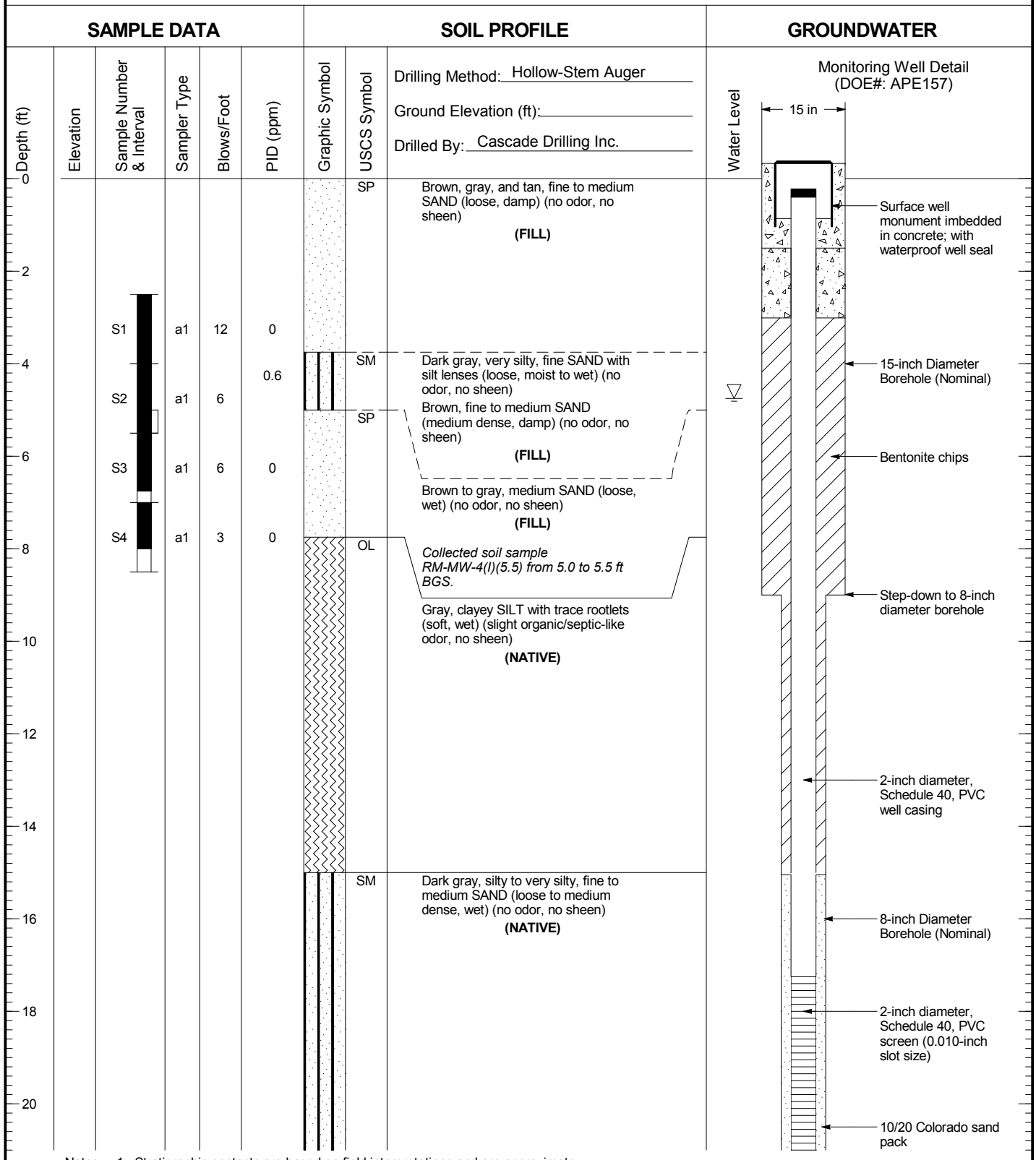
LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Monitoring Well RM-MW-4(S)

Figure
H-4

RM-MW-4(I)



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

168004.02 7/28/11 N:\PROJECTS\168004.020.GPJ WELL LOG W/ ELEVATION

LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Monitoring Well RM-MW-4(I)

Figure
H-5
(1 of 2)

RM-MW-4(I)

SAMPLE DATA						SOIL PROFILE			GROUNDWATER	
Depth (ft)	Elevation	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: Hollow-Stem Auger Ground Elevation (ft): Drilled By: Cascade Drilling Inc.	Water Level	Monitoring Well Detail (DOE#: APE157)
22							SM	Dark gray, silty to very silty, fine to medium SAND (loose to medium dense, wet) (no odor, no sheen) **(NATIVE)**		2-inch diameter, Schedule 40, PVC screen (0.010-inch slot size)
24										10/20 Colorado sand pack
26										
28							SP	Gray, fine to medium SAND with trace silt and trace sandy silt interbeds (medium dense, wet) (no odor, no sheen) **(NATIVE)**		Threaded end cap
30										
32										
34										
36										
38										
40										
42										

Boring Completed 06/24/08
Total Depth of Boring = 29.0 ft.

Monitoring Well Completed 06/25/08
Total Depth of Monitoring Well = 27.5 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

168004.02 7/28/11 N:\PROJECTS\168004.020.GPJ WELL LOG W/ ELEVATION

LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Monitoring Well RM-MW-4(I)

Figure
H-5
(2 of 2)

RM-MW-5(S)

SAMPLE DATA / SOIL PROFILE / GROUNDWATER

Drilling Method: Hollow-Stem Auger

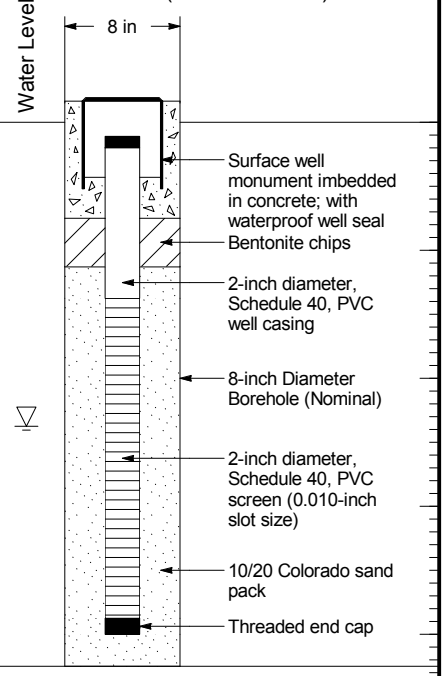
Ground Elevation (ft):

Drilled By: Cascade Drilling Inc.

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	USCS Symbol	Soil Description
0					SP	Brown, fine to medium SAND (loose, damp to wet) (no odor, no sheen) **(FILL)**
2	S1	a1	11	0		
4	S2	a1	11	0		Dark brown in color
6	S3	a1	7	0.9		*Collected soil sample RM-MW-5(S)(6) from 5.5 to 6 ft BGS.* Dark gray in color
8	S4	a1	2	0	OL	Gray, clayey SILT with rootlets (very soft, wet) (no odor, no sheen) **(NATIVE TIDEFLAT DEPOSIT)**
10						
12						
14						
16						
18						
20						

Boring Completed 06/25/08
Total Depth of Boring = 8.5 ft.

Monitoring Well Detail
(DOE#: APE159)



Monitoring Well Completed 06/25/08
Total Depth of Monitoring Well = 8.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

168004.02 7/28/11 N:\PROJECTS\168004.020.GPJ WELL LOG W/ ELEVATION

LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Monitoring Well RM-MW-5(S)

Figure
H-6

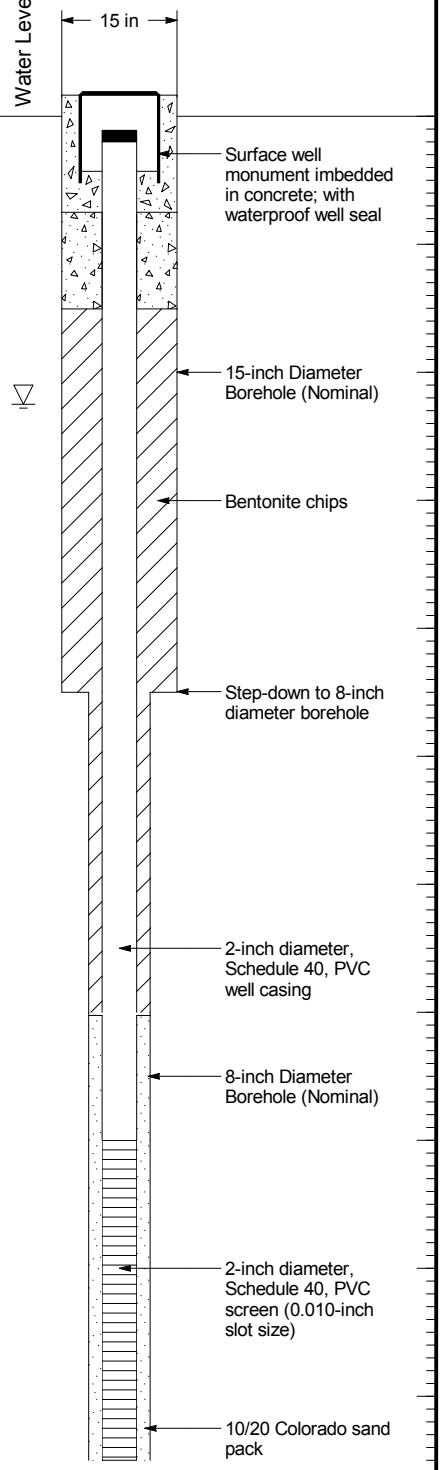
RM-MW-5(I)

Depth (ft)	Elevation	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Soil Profile
								Drilling Method: Hollow-Stem Auger
								Ground Elevation (ft):
								Drilled By: Cascade Drilling Inc.
0							SP	Brown to gray, fine to medium SAND (loose, moist to wet) (odor, no sheen) **(FILL)**
2		S1	a1	11	0			
4		S2	a1	11	0			
6		S3	a1	7	2.7			*Collected soil sample RM-MW-5(I)(6) from 5.5 to 6 ft BGS.*
8		S4	a1	2	0		OL	Gray, clayey, SILT with abundant rootlets (very soft, wet) (slight organic/septic odor, no sheen) **(NATIVE)**
10		S5	a1	2	0			
12		S6	a1	7	0			
14		S7	a1	12			SM	Dark gray, silty, fine to medium SAND with occasional silt interbeds (loose, wet) **(NATIVE)**
16								
18		S8	a1	13			SP	Dark gray, fine to medium SAND (loose to medium dense, wet) **(NATIVE)**
20		S9	a1	17				

GROUNDWATER

Water Level

Monitoring Well Detail
(DOE#: APE158)



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

168004.02 7/28/11 N:\PROJECTS\168004.020.GPJ WELL LOG W/ ELEVATION

LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Monitoring Well RM-MW-5(I)

Figure
H-7
(1 of 2)

RM-MW-5(I)

SAMPLE DATA						SOIL PROFILE			GROUNDWATER	
Depth (ft)	Elevation	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: Hollow-Stem Auger Ground Elevation (ft): Drilled By: Cascade Drilling Inc.	Water Level	Monitoring Well Detail (DOE#: APE158)
22							SP	Dark gray, fine to medium SAND (loose to medium dense, wet) **(NATIVE)**		2-inch diameter, Schedule 40, PVC screen (0.010-inch slot size)
24		S10	a1	17						10/20 Colorado sand pack
26		S11	a1	20						Threaded end cap
28										
30										
32										
34										
36										
38										
40										
42										

Boring Completed 06/25/08
Total Depth of Boring = 27.5 ft.

Monitoring Well Completed 06/25/08
Total Depth of Monitoring Well = 26.3 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

168004.02 7/28/11 N:\PROJECTS\168004.020.GPJ WELL LOG W/ ELEVATION

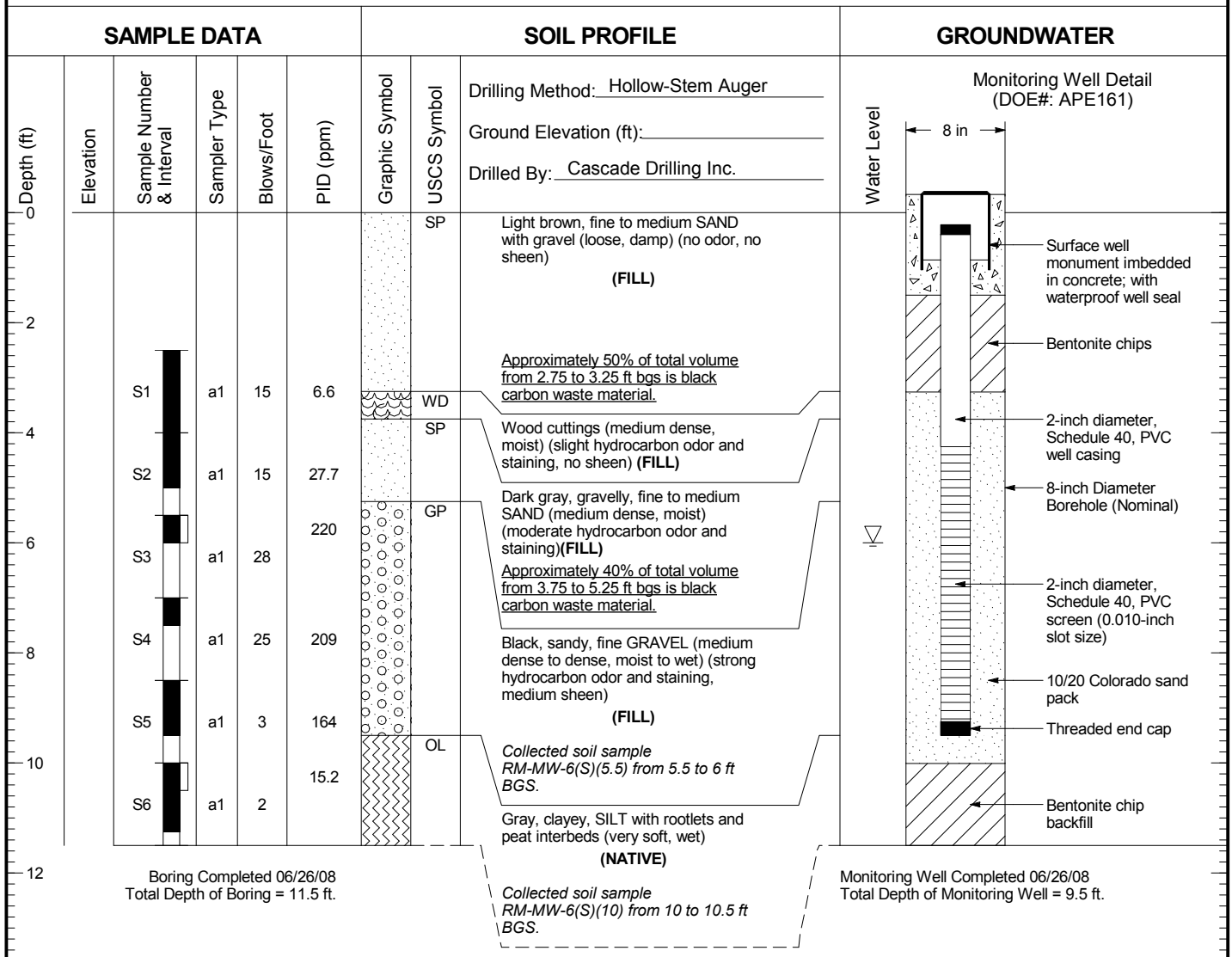
LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Monitoring Well RM-MW-5(I)

Figure
H-7
(2 of 2)

RM-MW-6(S)



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

168004.02 7/28/11 N:\PROJECTS\168004.020.GPJ WELL LOG W/ ELEVATION

LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Monitoring Well RM-MW-6(S)

Figure
H-8

RM-MW-6(I)

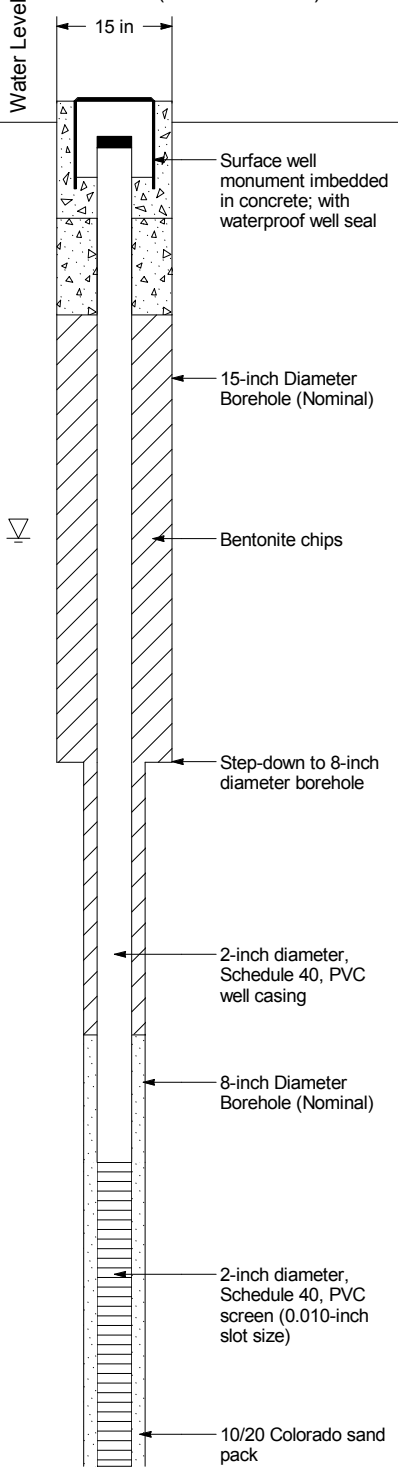
SAMPLE DATA | **SOIL PROFILE** | **GROUNDWATER**

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft):
Drilled By: Cascade Drilling Inc.

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	USCS Symbol	Soil Description
0					SP	Light brown to tan, fine to medium SAND with gravel (loose, damp) (no odor, no sheen) **(FILL)**
2						
4	S1	a1	23	0		Approximately 75% of total volume from 3 to 3.5 ft bgs is black carbon waste material with fragments of petroleum coke and coal tar pitch. Approximately 70% of total volume from 3.5 to 4 ft bgs is a moist light gray, silt/ash
	S2	a1	19	0	SM	Dark gray, silty, fine to medium SAND **(FILL)**
6	S3	a1	10	6.2		Approximately 50% of total volume from 6 to 6.75 ft bgs is black carbon waste material
	S4	a1	2	46.1	SM	Black, silty, gravelly, fine to medium SAND with shell fragments (very loose, wet) (strong petroleum odor and sheen) **(FILL)**
8	S5	a1	2	65.7		
10	S6	a1	3	0	OL	*Collected soil sample RM-MW-6(I)(7) from 7 to 7.5 ft BGS.* *Collected soil sample RM-MW-6(I)(9) from 9 to 9.5 ft BGS.* Gray, clayey, SILT with trace rootlets (very soft, wet) **(NATIVE)**
12	S7	a1	2	0	PT	
					OL	*Collected soil sample RM-MW-6(I)(10.5) from 10.5 to 11 ft BGS.* Brown, sandy, PEAT (very soft, damp) **(NATIVE)**
14	S8	a1	7	0	SM	Gray, clayey, SILT with trace rootlets (very soft, wet) **(NATIVE)**
16	S9	a1	13			Gray to dark gray, silty, fine sand with occasional silt interbeds (loose, wet) **(NATIVE)**
					SP	Dark gray, fine to medium SAND with trace silt interbeds (loose, wet) **(NATIVE)**
18	S10	a1	11			
20	S11	a1	10			

Water Level

Monitoring Well Detail
(DOE#: APE160)



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

168004.02 7/28/11 N:\PROJECTS\168004.020.GPJ WELL LOG W/ ELEVATION

LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Monitoring Well RM-MW-6(I)

Figure
H-9
(1 of 2)

RM-MW-6(I)

SAMPLE DATA						SOIL PROFILE			GROUNDWATER	
Depth (ft)	Elevation	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: Hollow-Stem Auger Ground Elevation (ft): Drilled By: Cascade Drilling Inc.	Water Level	Monitoring Well Detail (DOE#: APE160)
22							SM	Gray, fine to medium SAND (loose, wet) **(ALLUVIUM)**		
24		S12	a1	14			SP	Dark gray, fine to medium SAND (loose, wet) **(ALLUVIUM)**		2-inch diameter, Schedule 40, PVC screen (0.010-inch slot size) 10/20 Colorado sand pack
26		S13	a1	13						Threaded end cap

Boring Completed 06/26/08
Total Depth of Boring = 26.5 ft.

Monitoring Well Completed 06/26/08
Total Depth of Monitoring Well = 26.5 ft.

28 30 32 34 36 38 40 42

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

168004.02 7/28/11 N:\PROJECTS\168004.020.GPJ WELL LOG W/ ELEVATION

LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Monitoring Well RM-MW-6(I)

Figure
H-9
(2 of 2)

RM-LF13-2008

SAMPLE DATA | SOIL PROFILE | NOTES/GROUNDWATER

Excavation Method: Tracked Excavator
Ground Elevation (ft):
Excavated By: Green Earthworks Construction
View Direction: West

Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Soil Description
0	S1	d	0		SP	Brown, fine to medium SAND (loose, damp) (no odor, no sheen) **(FILL)**
2	S2	d	0.7		SP	Brown to dark gray, fine to medium SAND (loose, damp to wet) (Strong hydrocarbon odor and sheen) **(FILL)**
	S3	d	5.2			
4	S4	d	5.1			
	S5	d	12.0			
6	S6	d	10.8			
	S7	d	18.3			
8	S8	d	9.6			Medium to heavy sheen on water surface
	S9	d	0.0		ML	**(NATIVE)**
10						
12						
14						

Approximate Test Pit Outline

Moderate Groundwater Seepage

Test Pit Completed 06/17/08

0 S — 4 — 8 — 11 N

Length (ft)

Gray, sandy SILT (soft, wet) (no odor, no sheen)

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs.dwg (A) 7/29/2011

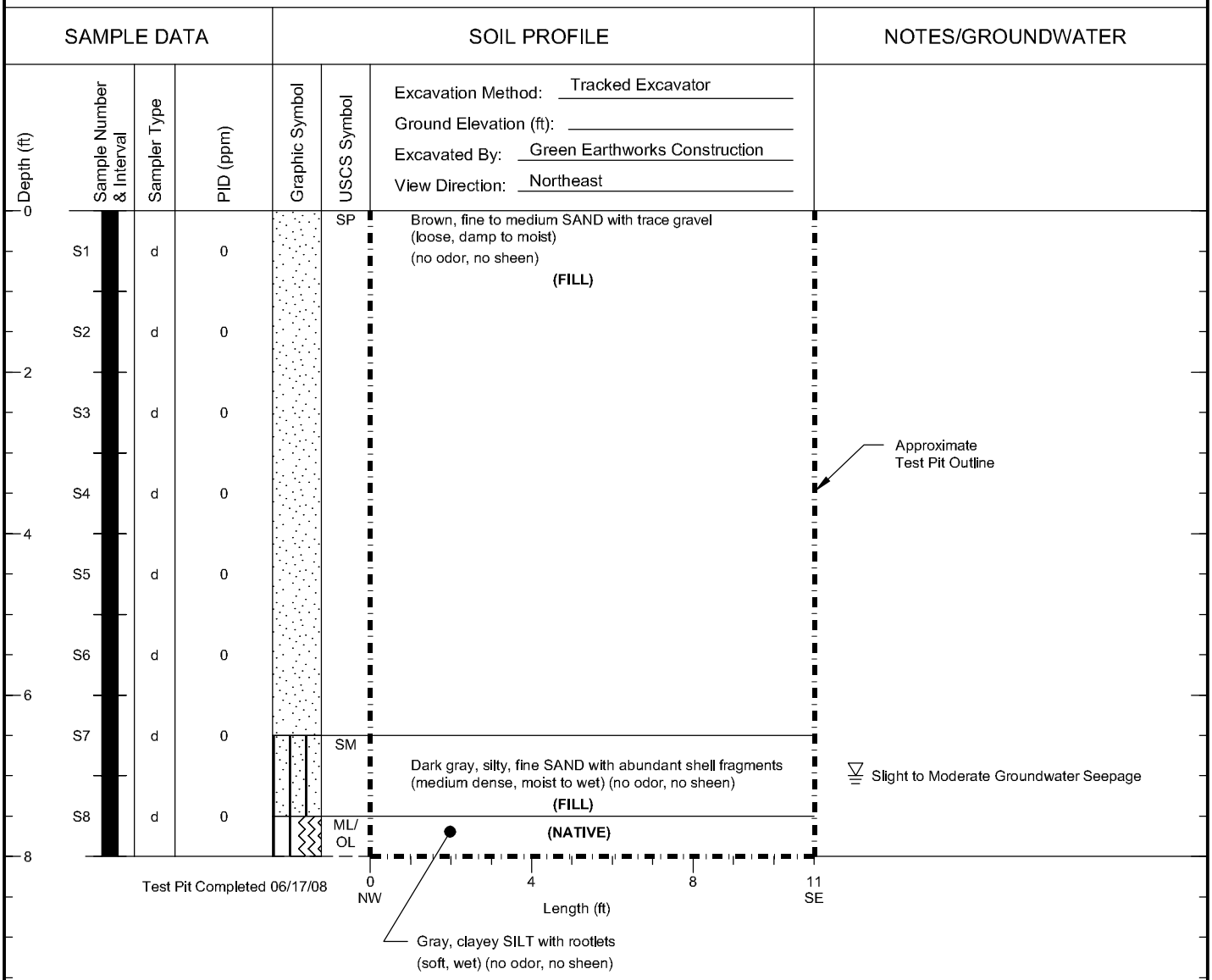
LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Test Pit RM-LF13-2008

Figure H-10

RM-LF14-2008



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs.dwg (A) 7/29/2011

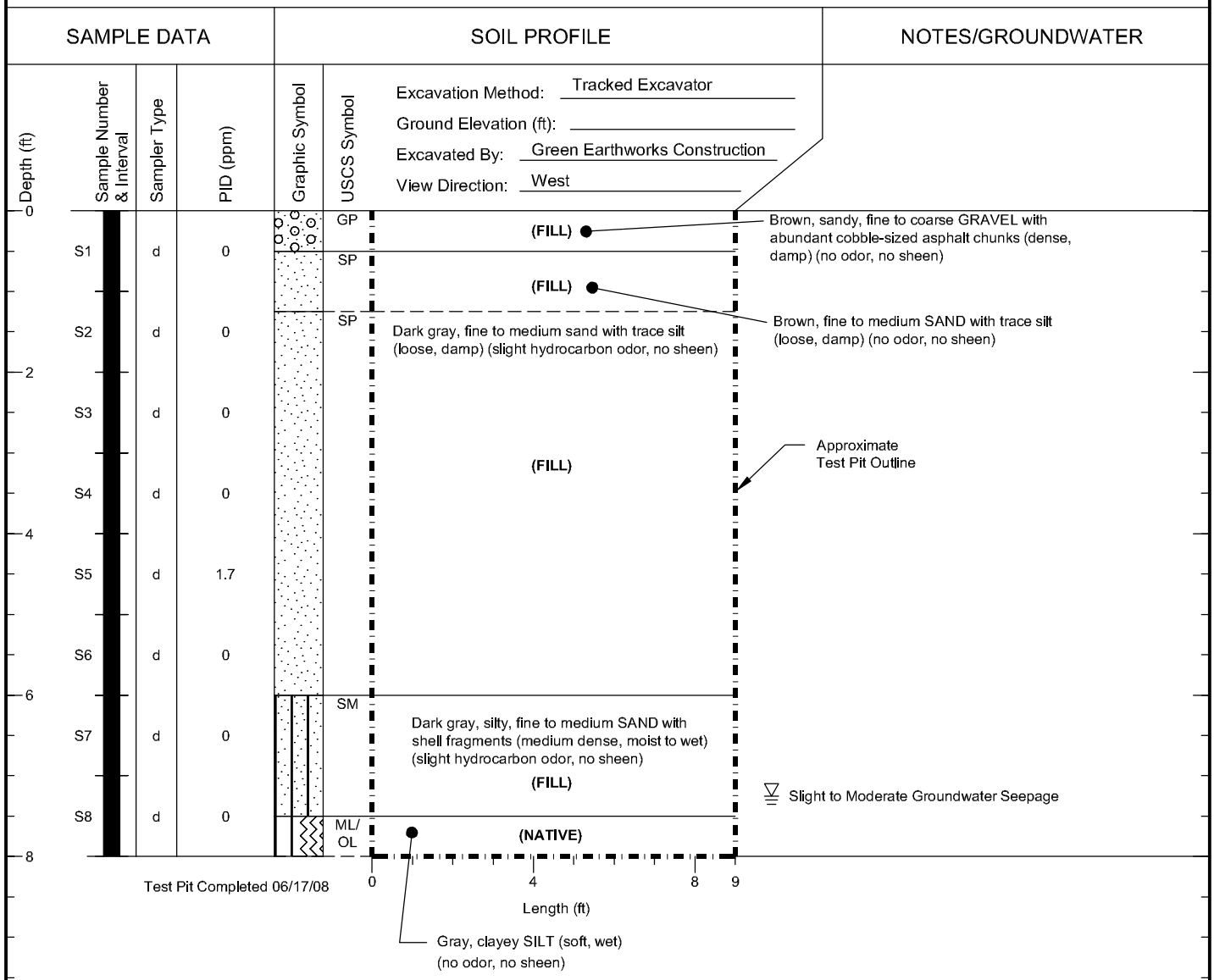
LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Test Pit RM-LF14-2008

Figure
H-11

RM-LF15-2008



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs.dwg (A) 7/29/2011

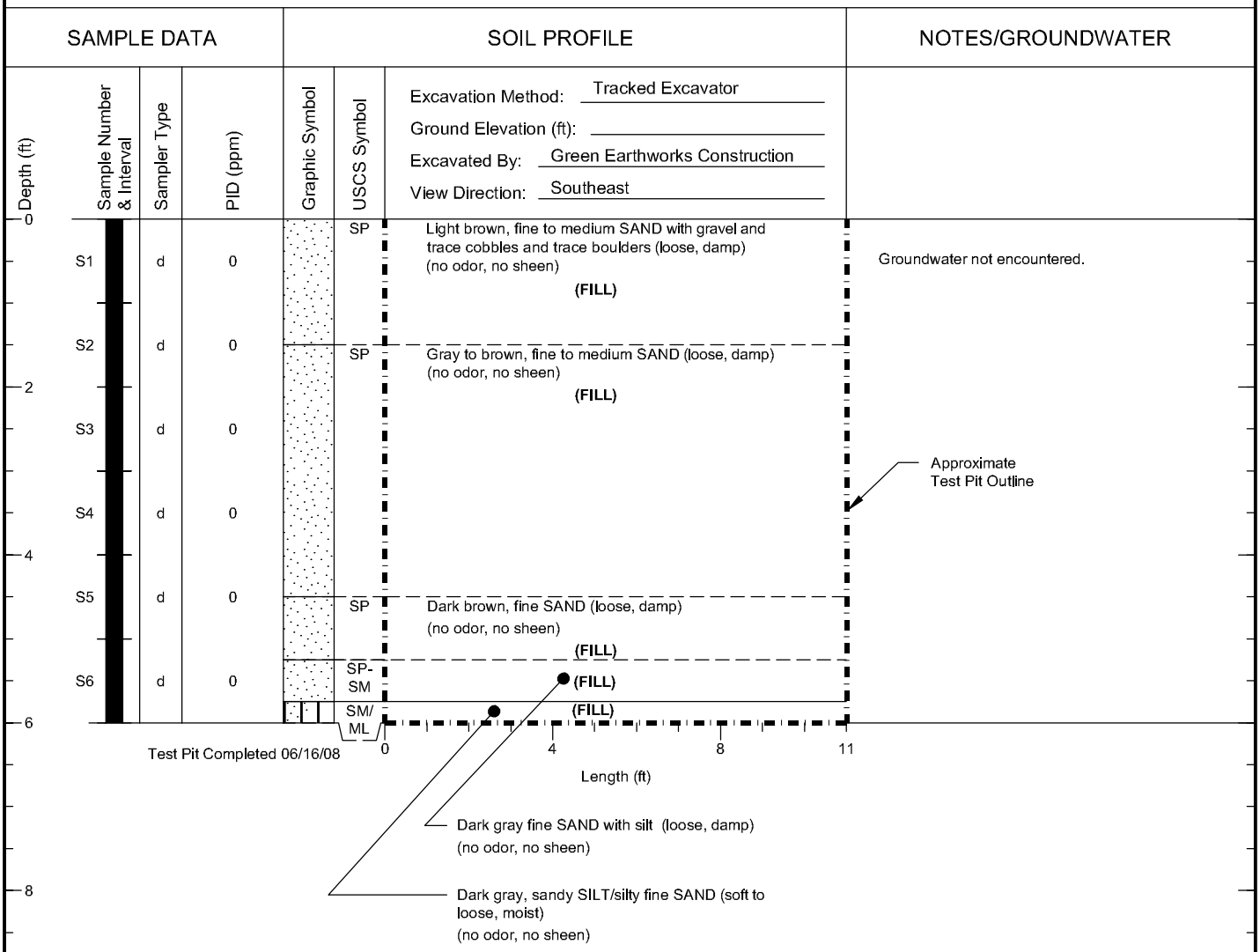
LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Test Pit RM-LF15-2008

Figure
H-12

RM-LF16-2008



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs.dwg (A) 7/29/2011

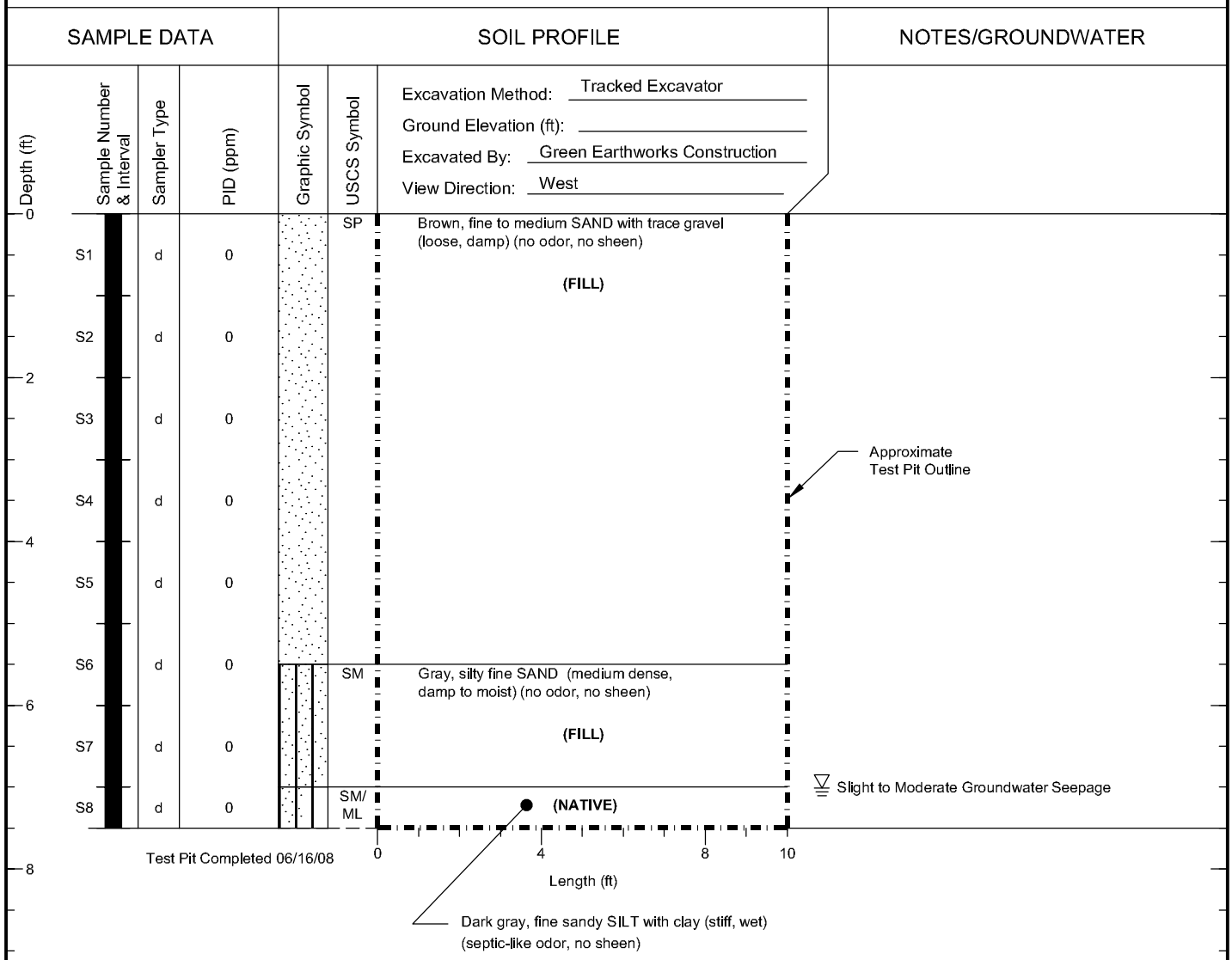
LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Test Pit RM-LF16-2008

Figure
H-13

RM-LF17-2008



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Test Pit RM-LF17-2008

Figure
H-14

RM-LF18-2008

SAMPLE DATA			SOIL PROFILE		NOTES/GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol
0	S1	d	0		SP
	S2	d	0		SM
2	S3	d	0		
	S4	d	0		
4	S5	d	0		
	S6	d	0		
6	S7	d	0		
	S8	d	0		
8	S9	d	0		
	S10	d	0		SM/ ML
10					
12					
14					

Excavation Method: Tracked Excavator
Ground Elevation (ft):
Excavated By: Green Earthworks Construction
View Direction: East

Light brown, fine to medium SAND with gravel and trace silt (loose, damp)
(no odor, no sheen)
(FILL)

Dark gray, silty fine SAND (medium dense, damp to moist)
(no odor, no sheen)

Approximately 70% of total volume from 1 to 4.5 ft bgs is waste. Waste includes:.
40% cobble- and boulder-sized chunks of black carbon waste material
< 5% bauxite ore.
10% refractory brick
15% mixed waste

Red rubber hoses mixed with waste at 3 ft bgs.
Approximately 30% of total volume from 4.5 to 9.5 ft bgs is mixed waste and soil.

(FILL)

(NATIVE)

Gray, sandy SILT/silty fine SAND
(stiff/loose, wet) (septic-like odor, no sheen)

Groundwater not encountered.

Approximate Test Pit Outline

Test Pit Completed 06/16/08

0 4 8 10
Length (ft)

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Test Pit RM-LF18-2008

Figure
H-15

RM-LF19-2008

SAMPLE DATA | SOIL PROFILE | NOTES/GROUNDWATER

Excavation Method: Tracked Excavator
Ground Elevation (ft): _____
Excavated By: Green Earthworks Construction
View Direction: North

Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Description
0	S1	d	0		SP	Light brown, medium SAND with trace gravel (loose damp) (no odor, no sheen) **(FILL)**
2	S2	d	0		SP-SM	Dark brown, fine to medium SAND with silt and cobbles (medium dense, damp) (no odor, no sheen)
	S3	d	0			Trace amounts of total volume are waste. Waste includes:. < 5% cobble- and boulder-sized chunks of black carbon waste material
	S4	d	0			< 5% refractory brick < 5% rebar < 1% cloth fabric < 1% metal debris (pipe elbows)
4	S5	d	0			**(FILL)**
	S6	d	0			
6	S7	d	0		SM	Dark gray, silty fine SAND (loose to medium dense, moist to wet) (no odor, no sheen) **(FILL)**
	S8	d	0		ML/OL	**(NATIVE)**
8						
10						
12						
14						

Approximate Test Pit Outline

Moderate Groundwater Seepage

Test Pit Completed 06/17/08

0 4 8
Length (ft)

Gray, clayey SILT with trace wood debris (twigs) (soft, wet) (no odor, no sheen)

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Test Pit RM-LF19-2008

Figure
H-16

RM-LF20-2008

SAMPLE DATA				SOIL PROFILE			NOTES/GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol		
0					SM	Light brown, silty, gravelly, fine-medium SAND (loose, damp) **(FILL)**	Approximate Test Pit Outline
	S1	d	0				
	S2	d	0				
2	S3	d	0				
					SP-SM	Dark gray to black, gravelly, fine-medium SAND with silt and cobbles (very dense, damp to moist) 25% of total volume is cobble to boulder-sized chunks of concrete <5% of total volume is refractory brick **(FILL)**	
	S4	d	0				
4	S5	d	0				
	S6	d	0				
6	S7	d	0		SP-SM	Dark gray, fine-medium SAND with silt and abundant shell fragments (medium dense, wet) **(FILL)**	Rapid Seepage
	S8	d	0				
8	S9	d	0				

Test Pit Completed 06/17/08

Excavation Method: Tracked Excavator
Ground Elevation (ft): _____
Excavated By: Green Earthworks Construction
View Direction: Northeast

0 NW — 4 — 8 — 12 — 16 — 19 SE
Length (ft)

10
12
14

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\168\0041020\D\Test Pit Logs.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Test Pit RM-LF20-2008

Figure
H-17

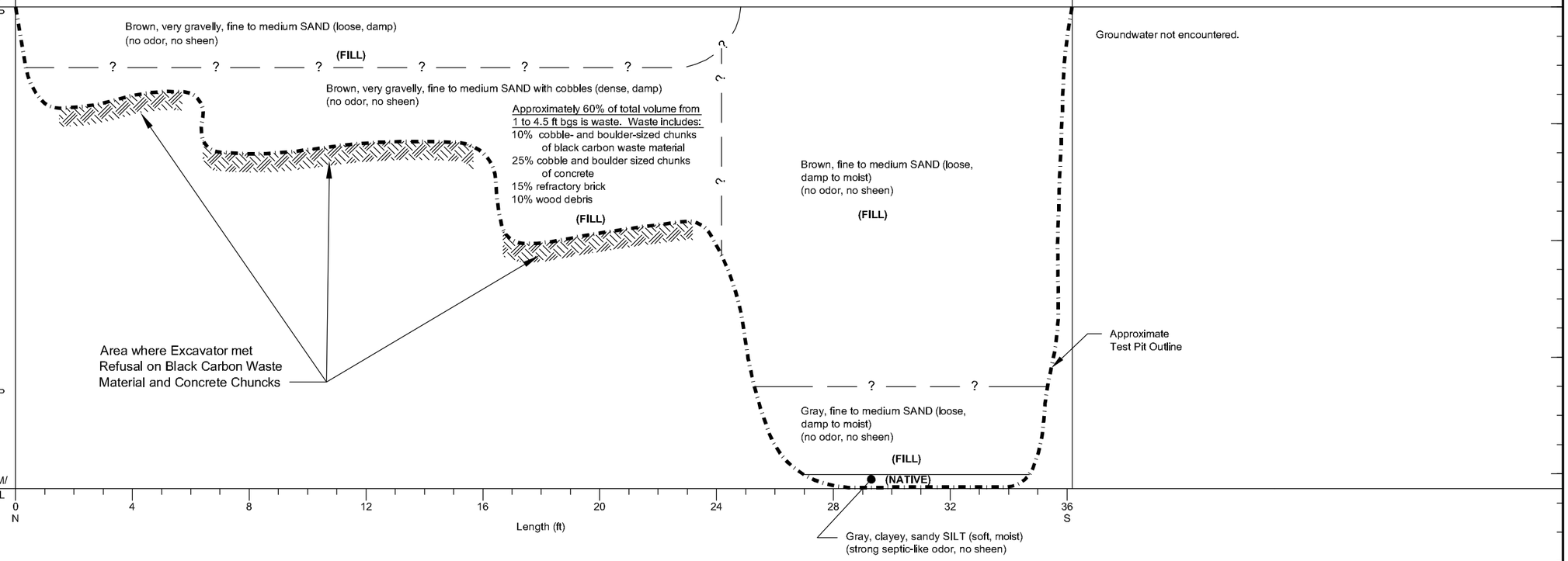
RM-LF21-2008

SAMPLE DATA | SOIL PROFILE | NOTES/GROUNDWATER

Excavation Method: Tracked Excavator
Ground Elevation (ft): _____
Excavated By: Green Earthworks Construction
View Direction: East

Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol
0	S1	d	0		SP
	S2	d	0		
2	S3	d	0		
	S4	d	0		
4	S5	d	0		
	S6	d	0		
6	S7	d	0		SP
	S8	d	0		
8	S9	d	0		SM/ ML
10					
12					
14					

Test Pit Completed 06/17/08



Groundwater not encountered.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1681004\0200\D\Test Pit Logs.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit RM-LF21-2008	Figure H-18

RM-LF22-2008

SAMPLE DATA | SOIL PROFILE | NOTES/GROUNDWATER

Excavation Method: Tracked Excavator
Ground Elevation (ft): _____
Excavated By: Green Earthworks Construction
View Direction: East

Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)
0	S1	d	0
	S2	d	0
2	S3	d	0
	S4	d	0
4	S5	d	0
	S6	d	0
6	S7	d	0
	S8	d	0
8	S9	d	0
	S10	d	0
10			
12			
14			

Test Pit Completed 06/17/08

Light brown, sandy, fine-coarse GRAVEL (loose, damp) (no odor, no sheen)

Approximately 50% of total volume is waste. Waste includes:
~30% Cobble and boulder sized concrete chunks
~10% refractory brick
~20% Red brick or red concrete chunks

(FILL)

Area where excavator met refusal due to debris

Brown, fine-medium SAND
(loose to medium dense, damp to wet)
(no odor, no sheen)

(FILL)

Gray, sandy, SILT with trace roullets
(medium stiff, wet)

(NATIVE)

Approximate Test Pit Outline

Moderate Groundwater Seepage

0 4 8 12 16 20 24 28 32 36 37
Length (ft)

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\0041020\D\Test Pit Logs.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit RM-LF22-2008	Figure H-19

RM-LF23-2008

SAMPLE DATA				SOIL PROFILE			NOTES/GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol		

Excavation Method: Tracked Excavator
Ground Elevation (ft): _____
Excavated By: Green Earthworks Construction
View Direction: North

Depth (ft)	Sample	Type
0	S1	d
	S2	d
2	S3	d
	S4	d
4	S5	d
	S6	d
6	S7	d
	S8	d
8	S9	d
10		
12		
14		

SP-SM — Brown, fine to medium SAND with silt and trace gravel (loose, damp)

Trace to 30% of total volume is gravel- to cobble-sized chunks of concrete

(FILL)

Volume of concrete chunks increases to approximately 30% to 40% from 1.75 to 7 ft bgs. Boulder-sized chunks of concrete are also present

SP-SM

(FILL)

Approximate Test Pit Outline

Moderate Groundwater Seepage

SM — Dark gray, silty fine SAND with shell fragments (loose to medium dense, wet) (no odor, no sheen)

(FILL)

ML/OL

(NATIVE)

Gray, clayey SILT with sand and twigs (soft, wet) (septic odor)

Test Pit Completed 06/17/08

0 4 8 12 16 20 22

Length (ft)

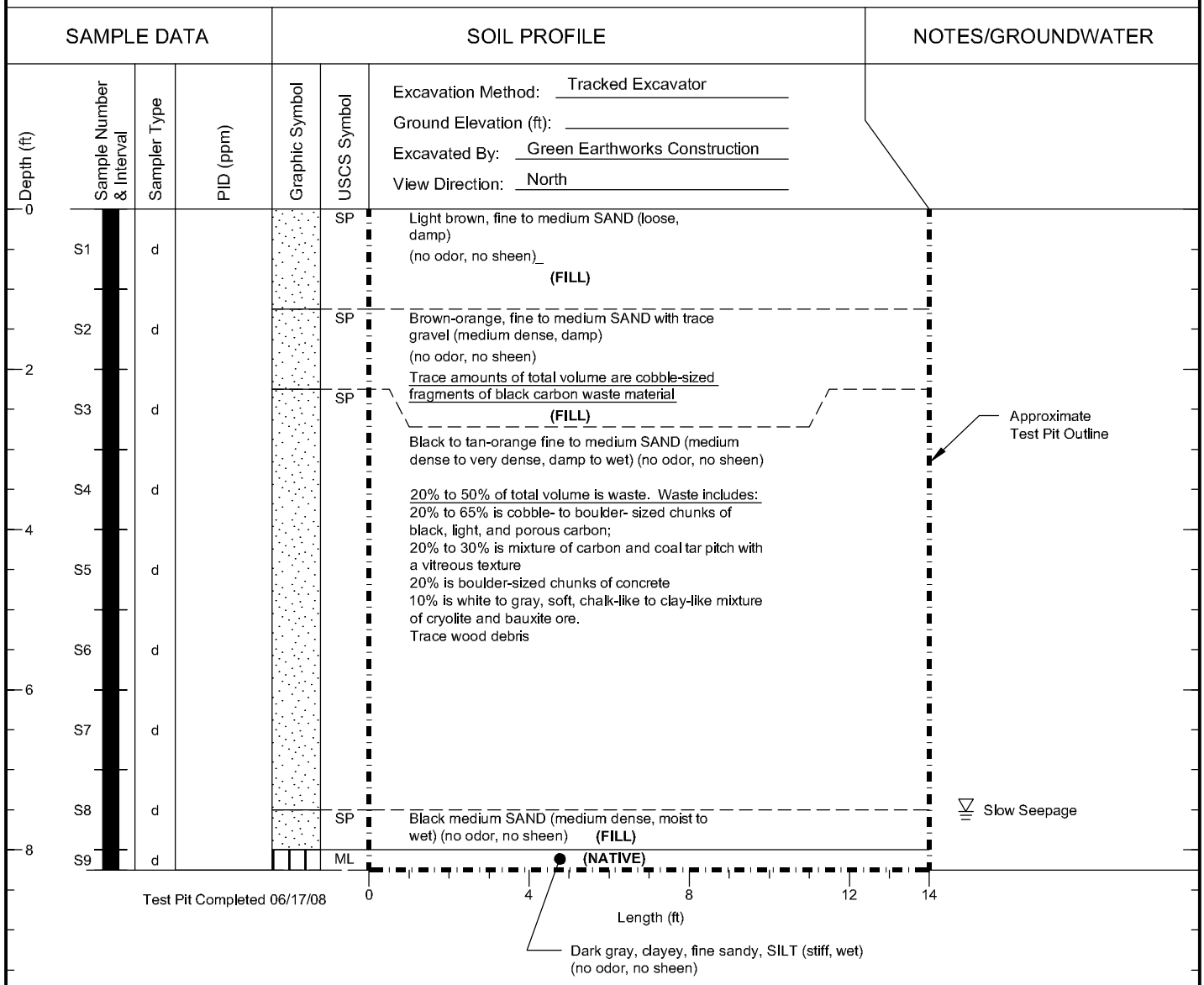
Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\168\0041020\D\Test Pit Logs.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit RM-LF23-2008	Figure H-20

RM-LF24-2008



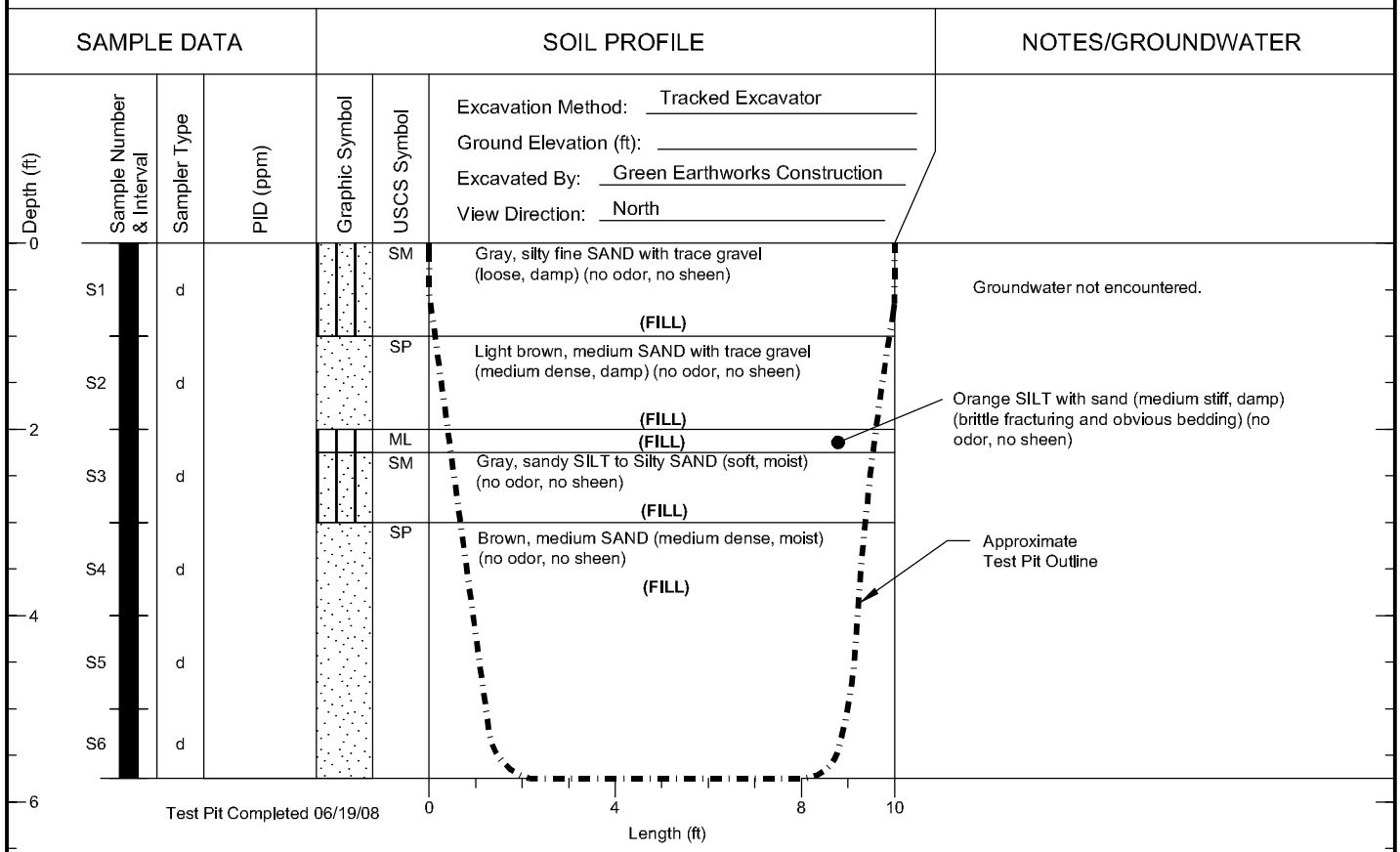
Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit RM-LF24-2008	Figure H-21

RM-LF25-2008



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit RM-LF25-2008	Figure H-22

RM-LF26-2008

SAMPLE DATA			SOIL PROFILE			NOTES/GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	
0	S1	d	0		SP	Grayish-brown, fine to medium SAND with trace gravel and trace silt (loose, damp) (no odor, no sheen) **(FILL)**
2	S2	d	0		SP	Brown, fine to medium SAND (loose to medium dense, damp) (no odor, no sheen) **(FILL)**
	S3	d	0		SP	Gray, fine to medium SAND (loose, moist) (no odor, no sheen) (FILL)
4	S4	d	0		SM	**(FILL)**

Excavation Method: Tracked Excavator
Ground Elevation (ft): _____
Excavated By: Green Earthworks Construction
View Direction: North

Groundwater not encountered.

Approximate Test Pit Outline

Test Pit Completed 06/19/08

0 4 8
Length (ft)

Gray, sandy SILT to Silty SAND with trace twigs (soft, moist) (no odor, no sheen)

6 8 10 12 14

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

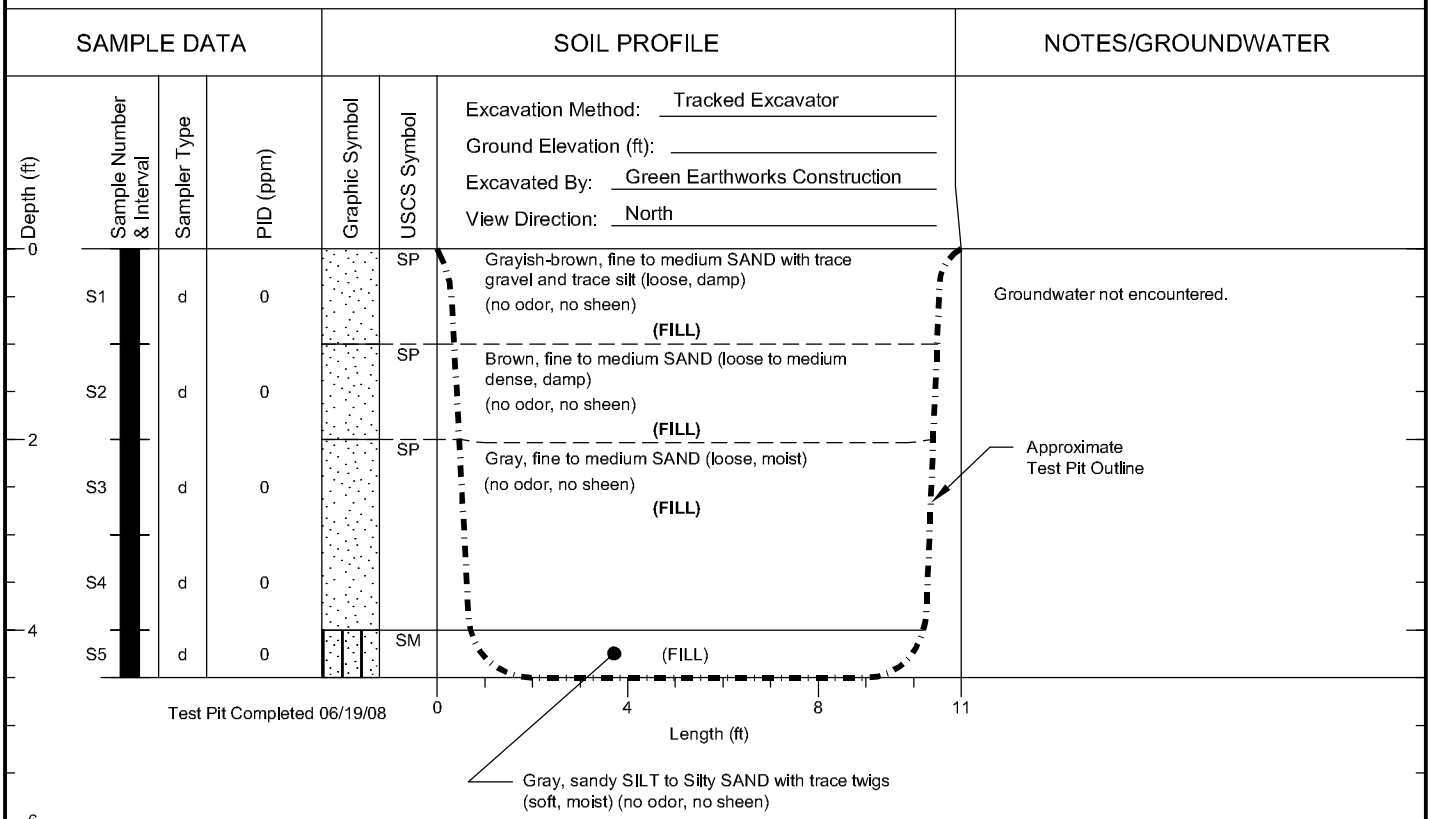
LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Test Pit RM-LF26-2008

Figure
H-23

RM-LF27-2008



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

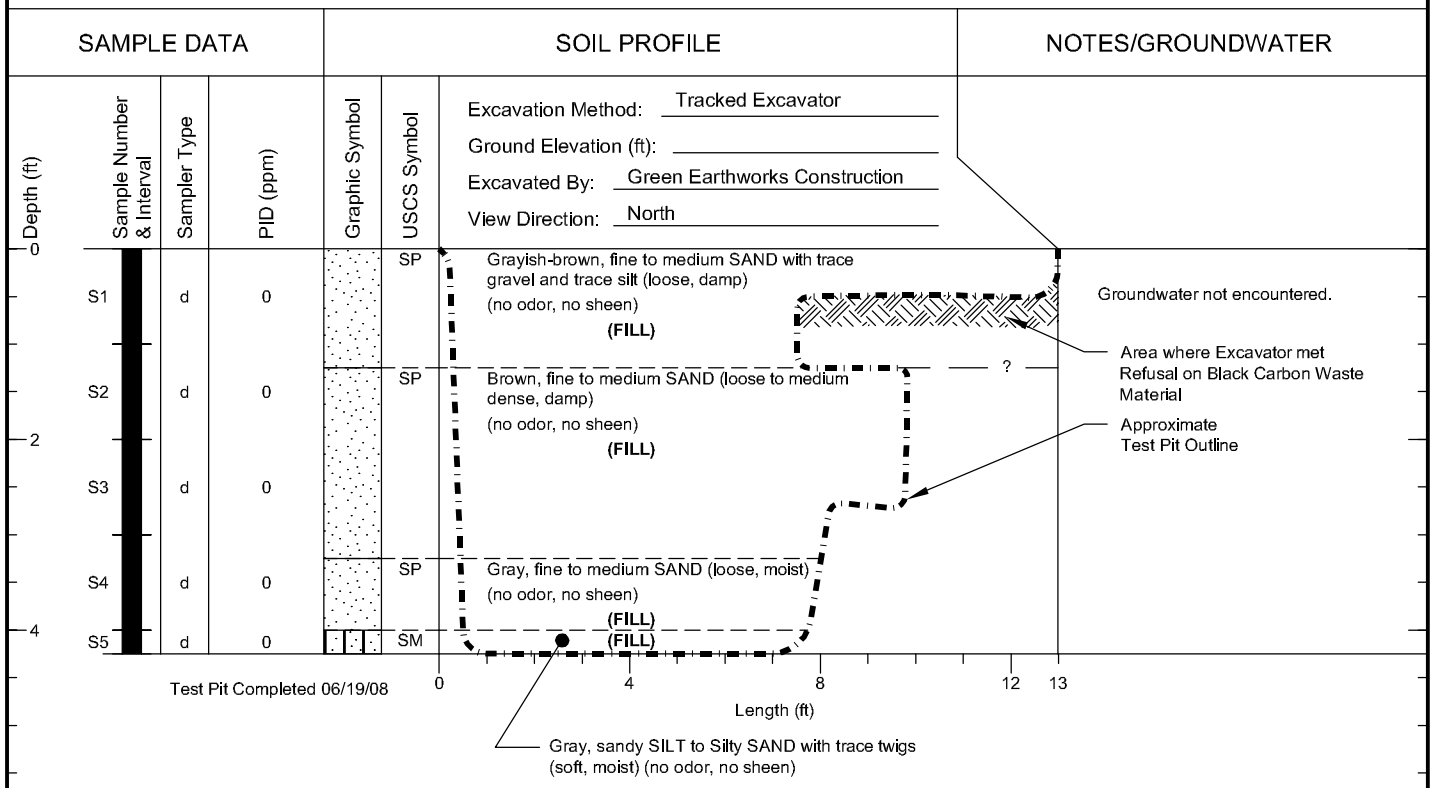
LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Test Pit RM-LF27-2008

Figure
H-24

RM-LF28-2008



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\1168\004\020\D\Test Pit Logs.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project
Tacoma, Washington

Log of Test Pit RM-LF28-2008

Figure
H-25

RM-LF29-2008

SAMPLE DATA | SOIL PROFILE | NOTES/GROUNDWATER

Excavation Method: Tracked Excavator
Ground Elevation (ft): _____
Excavated By: Green Earthworks Construction
View Direction: South

Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol
0	S1	d	0		SP
2	S2	d	0		SP
	S3	d	0		
4	S4	d	0		SP
	S5	d	0		
6	S6	d	0		
	S7	d	0		
8					
10					
12					
14					

Grayish-brown, fine to medium SAND with trace gravel and trace silt (loose, damp)
(no odor, no sheen)
(FILL)

Brown, fine to medium SAND (loose to medium dense, damp)
(no odor, no sheen)
(FILL)

Gray, fine to medium SAND (loose, moist)
(no odor, no sheen)
(FILL)

Area where Excavator met Refusal on Black Carbon Waste Material and Concrete Chuncks

Approximate Test Pit Outline

Groundwater not encountered.

Test Pit Completed 06/19/08

0 E 4 8 12 16 20 24 28 32 35 W
Length (ft)

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES, INC. | V:\168\004\020\D\Test Pit Logs.dwg (A) 7/29/2011

LANDAU ASSOCIATES

Kaiser Redevelopment Project Tacoma, Washington	Log of Test Pit RM-LF29-2008	Figure H-26

TABLE 8
Groundwater Analytical Results
Rod Mill Area - Kaiser-Tacoma Facility

ANALYTE (in mg/L except where noted)	MTCA Method A Groundwater Cleanup Level (mg/L)	RM-DPT1	RM-DPT2	RM-DPT3	RM-DPT4	RM-DPT5	RM-MW1I (total)	RM-MW1I (dissolved)	RM-MW2I (total)	RM-MW2I (dissolved)
DPT GROUNDWATER SAMPLE DEPTH INTERVAL (feet bgs)		4 - 8	4 - 8	4 - 6	6 - 10	6 - 10	22-27.5	22.5-27.5	22.5-32.5	22.5-32.5
DATE COLLECTED		12/4/2003	12/4/2003	12/4/2003	12/4/2003	12/4/2003	11/12/2004	11/12/2004	11/12/2004	11/12/2004
Anthracene		<0.0000237	<0.000237	<0.0000253	<0.0000237	<0.0000256	<0.0000189	<0.000019	<0.0000192	<0.0000193
Benzo(a)anthracene[C]	ns	<0.0000237	<0.000237	**0.0000304 J**	<0.0000237	<0.0000256	<0.0000189	<0.000019	<0.0000192	<0.0000193
Benzo(a)pyrene[C]	0.0001	<0.0000237	<0.000237	**0.0000389 J**	<0.0000237	<0.0000256	<0.0000189	<0.000019	<0.0000192	<0.0000193
Benzo(g,h,i)perylene[C]	ns	<0.0000237	<0.000237	**0.000174**	<0.0000237	<0.0000256	<0.0000189	<0.000019	<0.0000192	<0.0000193
Benzofluoranthenes[C]		<0.0000474	<0.000473	<0.0000506	<0.0000475	<0.0000512	<0.0000945	<0.000095	<0.0000959	<0.0000966
Chrysene[C]	ns	<0.0000237	<0.000237	**0.0000825**	<0.0000237	<0.0000256	<0.0000189	<0.000019	<0.0000192	<0.0000193
Dibenz(a,h)anthracene[C]		<0.0000237	<0.000237	<0.0000253	<0.0000237	<0.0000256	<0.0000189	<0.000019	<0.0000192	<0.0000193
Fluoranthene	ns	<0.0000237	<0.000237	**0.0000827**	<0.0000237	<0.0000256	<0.0000189	<0.000019	<0.0000192	<0.0000193
Fluorene	ns	<0.0000237	<0.000237	**0.000128**	<0.0000237	<0.0000256	<0.0000189	<0.000019	<0.0000192	<0.0000193
Indeno(1,2,3-cd)pyrene[C]	ns	<0.0000237	<0.000237	**0.0000562**	<0.0000237	<0.0000256	<0.0000189	<0.000019	<0.0000192	<0.0000193
Phenanthrene	ns	**0.0000409 J**	<0.000237	**0.000063**	<0.0000237	<0.0000256	<0.0000189	<0.000019	<0.0000192	<0.0000193
Pyrene	ns	**0.0000389 J**	<0.000237	**0.0000714**	<0.0000237	<0.0000256	<0.0000189	<0.000019	<0.0000192	<0.0000193
Total PAHs	[1]1%	**0.0000798**	---	**0.0007271**	---	---	---	---	---	---
Total Carcinogenic PAHs	0.0001	---	---	**0.000382**	---	---	---	---	---	---

WAD = Weak and Dissociable Cyanide

TCLP = Toxicity Characteristic Leaching Procedure (Method 1311)

< = analyte was not detected at or above the method detection limit or laboratory practical quantitation limit

J = analyte detected above the method detection limit but below the laboratory practical quantitation limit

[1] = Dangerous Waste Regulation (WAC 173-303)

[2] = MTCA Method B Surface Water standard

[3] = Hydrocarbon elution pattern did not match any diesel pattern in the analytical laboratory's library. Per laboratory, hydrocarbons detected may be from other organics, such as tannins or other organics

[4] = Required 10 times dilution

Bold = analyte detected at or above method detection limit

Bold + shaded = exceeded MTCA Method A cleanup level (WAC 173-340) and/or Dangerous Waste Regulation (WAC 173-303)

[C] = carcinogenic PAH

Total carcinogenic PAHs cleanup level assumes entire carcinogenic PAH mixture is as toxic as benzo(a)pyrene, WAC 173-340-708(8)

MTCA Method A Soil Cleanup Levels: standards are listed for analytes detected above method detection limits

Metals standards = National Recommended Water Quality Criteria

ns = No MTCA Method Groundwater Cleanup Level for that metal

nr =pH meter was inoperable - pH not recorded

Blank = not analyzed

--- = not applicable

APPENDIX I

Rod Mill Area Closed Landfill 2008 Laboratory Analytical Reports

Analytical Resources, Incorporated
Analytical Chemists and Consultants

July 16, 2008

Stacy Pischer
Landau Associates, Inc.
130 Second Avenue South
Edmonds, WA 98020-9129

RE: Project: P.O.T. Kaiser
ARI Job No: ND16

Dear Stacy:

Please find enclosed the original chain of custody (COCs) records and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted eleven soil samples on June 27, 2008 in good condition. There were no discrepancies between the COC and the sample containers' labels. Select samples were placed on hold pending further instructions.

The samples were analyzed for SIM cPAHs, NWTPH-Dx and Total Cyanide, as requested on the COC.

The sample duplicate **RM-MW-6 (I) (7)** RPD for cyanide is outside of the +/- 20% control limit. The matrix spike recovery was in control; therefore no further corrective action was taken.

No other analytical complications were noted. A copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

LANDAU ASSOCIATES

- [x] **Seattle (Edmonds)** (425) 778-0907
- [ ] **Tacoma** (253) 926-2493
- [ ] **Spokane** (509) 327-9737
- [ ] **Portland (Tigard)** (503) 443-6010
- [ ] _____

0.62 layers ND16

Date 6/27/08

Page 1 of 1

Chain-of-Custody Record

Project Name P.O.T. Kaiser Project No. 168004.020

Project Location/Event 3400 Taylor Way, Tacoma

Sampler's Name David Nelson

Project Contact Stacy Pischer

Send Results To " " + Anne Halvorsen

Testing Parameters

Turnaround Time
- [x] Standard
- [ ] Accelerated
- [ ] _____

Sample I.D.	Date	Time	Matrix	No. of Containers	NWTPH-Dx	cPAHs (EPA 8270 SIM)	Total Cyanide	Archive (Store)
RM-MW-3 (I) (6.5)	6/24/08	0925	S	1				X
RM-MW-3 (S) (7)		1210		2				X
RM-MW-4 (I) (5.5)		1420		2				X
RM-MW-4 (S) (5.5)		1450		2				X
RM-MW-5 (I) (6)	6/25/08	1220		2				X
RM-MW-5 (S) (6)		1440		2				X
RM-MW-6 (I) (7)	6/26/08	0900		2	X	X	X	
RM-MW-6 (I) (9)		0910		1	X	X	X	
RM-MW-6 (I) (10.5)		0920		1	X	X	X	
RM-MW-6 (S) (5.5)		1125		2	X	X	X	
RM-MW-6 (S) (10)		1140		1	X	X	X	

Observations/Comments

- ___ Allow water samples to settle, collect aliquot from clear portion

NWTPH-Dx:
- [x] run acid wash/silica gel cleanup
- ___ run samples standardized to _____ product

- ___ Analyze for EPH if no specific product identified

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

- ___ Dissolved metal water samples field filtered

Other _____

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature: David M. Nelson	Signature: [illegible]	Signature	Signature
Printed Name: David M. Nelson	Printed Name: Doug Singleton	Printed Name	Printed Name
Company: LAI	Company: ARS	Company	Company
Date: 6/27/08 Time: 0948	Date: 6/27/08 Time: 1100	Date Time	Date Time

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

Rev 4/01

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau
COC No: —
Assigned ARI Job No: NO16

Project Name: PoT Kaiser
Delivered by: ARI
Tracking No: —

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	(YES)	NO
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Record cooler temperature (recommended 2.0-6.0 °C for chemistry	0.6 °C	

Cooler Accepted by: BC Date: 6/27/08 Time: 1150

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?	YES	(NO)
What kind of packing material was used?	—	
Was sufficient ice used (if appropriate)?	(YES)	NO
Were all bottles sealed in individual plastic bags?	(YES)	NO
Did all bottle arrive in good condition (unbroken)?	(YES)	NO
Were all bottle labels complete and legible?	(YES)	NO
Did all bottle labels and tags agree with custody papers?	(YES)	NO
Were all bottles used correct for the requested analyses?	(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation checklist)	YES	(NO)
Were all VOC vials free of air bubbles?	(NA) YES	NO
Was sufficient amount of sample sent in each bottle?	(YES)	NO

Samples Logged by: [signature] Date: 6/27/08 Time: 1702

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

Explain discrepancies or negative responses:

By: Date:

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-6(I) (7)
SAMPLE

Lab Sample ID: ND16G
LIMS ID: 08-13941
Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Date Extracted: 07/07/08
Date Analyzed: 07/09/08 17:29
Instrument/Analyst: NT1/PK
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 0.76 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 25.5%

CAS Number	Analyte	RL	Result
56-55-3	**Benzo(a)anthracene**	66	**47,000 E**
218-01-9	**Chrysene**	66	**63,000 E**
205-99-2	**Benzo(b)fluoranthene**	66	**39,000 E**
207-08-9	**Benzo(k)fluoranthene**	66	**19,000 E**
50-32-8	**Benzo(a)pyrene**	66	**25,000 E**
193-39-5	**Indeno(1,2,3-cd)pyrene**	66	**13,000 E**
53-70-3	**Dibenz(a,h)anthracene**	66	**5,900**

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	78.3%
d14-Dibenzo(a,h)anthracen	70.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: RM-MW-6(I) (7)
DILUTION

Lab Sample ID: ND16G
LIMS ID: 08-13941
Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 10:47
Instrument/Analyst: NT1/PK
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 0.76 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 20.0
Percent Moisture: 25.5%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	1,300	54,000
218-01-9	Chrysene	1,300	100,000
205-99-2	Benzo(b)fluoranthene	1,300	52,000
207-08-9	Benzo(k)fluoranthene	1,300	42,000
50-32-8	Benzo(a)pyrene	1,300	34,000
193-39-5	Indeno(1,2,3-cd)pyrene	1,300	19,000
53-70-3	Dibenz(a,h)anthracene	1,300	7,400

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	93.3%
d14-Dibenzo(a,h)anthracen	86.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: RM-MW-6(I) (9)
SAMPLE

Lab Sample ID: ND16H
LIMS ID: 08-13942
Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Date Extracted: 07/07/08
Date Analyzed: 07/09/08 17:55
Instrument/Analyst: NT1/PK
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 1.57 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 22.1%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	32	14,000 E
218-01-9	Chrysene	32	17,000 E
205-99-2	Benzo(b)fluoranthene	32	11,000 E
207-08-9	Benzo(k)fluoranthene	32	8,400 E
50-32-8	Benzo(a)pyrene	32	10,000 E
193-39-5	Indeno(1,2,3-cd)pyrene	32	5,600 E
53-70-3	Dibenz(a,h)anthracene	32	2,400

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	74.7%
d14-Dibenzo(a,h)anthracen	68.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-6(I) (9)
DILUTION

Lab Sample ID: ND16H
LIMS ID: 08-13942
Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 11:13
Instrument/Analyst: NT1/PK
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 1.57 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 20.0
Percent Moisture: 22.1%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	640	17,000
218-01-9	Chrysene	640	24,000
205-99-2	Benzo(b)fluoranthene	640	15,000
207-08-9	Benzo(k)fluoranthene	640	12,000
50-32-8	Benzo(a)pyrene	640	13,000
193-39-5	Indeno(1,2,3-cd)pyrene	640	7,000
53-70-3	Dibenz(a,h)anthracene	640	2,700

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	80.0%
d14-Dibenzo(a,h)anthracen	80.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-6(I) (10.5)
SAMPLE

Lab Sample ID: ND16I
LIMS ID: 08-13943
Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Date Extracted: 07/07/08
Date Analyzed: 07/09/08 18:21
Instrument/Analyst: NT1/PK
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 37.2%

CAS Number	Analyte	RL	Result	
56-55-3	Benzo(a)anthracene	5.0	460	
218-01-9	Chrysene	5.0	600	E
205-99-2	Benzo(b)fluoranthene	5.0	340	
207-08-9	Benzo(k)fluoranthene	5.0	340	
50-32-8	Benzo(a)pyrene	5.0	320	
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	170	
53-70-3	Dibenz(a,h)anthracene	5.0	63	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	55.3%
d14-Dibenzo(a,h)anthracen	61.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: RM-MW-6(I) (10.5)
DILUTION

Lab Sample ID: ND16I
LIMS ID: 08-13943
Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 11:39
Instrument/Analyst: NT1/PK
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 10.0
Percent Moisture: 37.2%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	50	480
218-01-9	Chrysene	50	640
205-99-2	Benzo(b)fluoranthene	50	400
207-08-9	Benzo(k)fluoranthene	50	360
50-32-8	Benzo(a)pyrene	50	320
193-39-5	Indeno(1,2,3-cd)pyrene	50	170
53-70-3	Dibenz(a,h)anthracene	50	54

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	63.3%
d14-Dibenzo(a,h)anthracen	60.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-6(S) (5.5)
SAMPLE

Lab Sample ID: ND16J
LIMS ID: 08-13944
Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Date Extracted: 07/07/08
Date Analyzed: 07/09/08 18:47
Instrument/Analyst: NT1/PK
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 0.81 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 20.3%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	62	21,000 E
218-01-9	Chrysene	62	23,000 E
205-99-2	Benzo(b)fluoranthene	62	16,000 E
207-08-9	Benzo(k)fluoranthene	62	13,000 E
50-32-8	Benzo(a)pyrene	62	15,000 E
193-39-5	Indeno(1,2,3-cd)pyrene	62	8,000 E
53-70-3	Dibenz(a,h)anthracene	62	3,200

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	76.7%
d14-Dibenzo(a,h)anthracen	74.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: RM-MW-6(S) (5.5)
DILUTION

Lab Sample ID: ND16J
LIMS ID: 08-13944
Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 12:05
Instrument/Analyst: NT1/PK
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 0.81 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 20.0
Percent Moisture: 20.3%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	1,200	26,000
218-01-9	Chrysene	1,200	31,000
205-99-2	Benzo(b)fluoranthene	1,200	18,000
207-08-9	Benzo(k)fluoranthene	1,200	19,000
50-32-8	Benzo(a)pyrene	1,200	19,000
193-39-5	Indeno(1,2,3-cd)pyrene	1,200	9,300
53-70-3	Dibenz(a,h)anthracene	1,200	3,200

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	80.0%
d14-Dibenzo(a,h)anthracen	86.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-6(S) (10)
SAMPLE

Lab Sample ID: ND16K
LIMS ID: 08-13945
Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Date Extracted: 07/07/08
Date Analyzed: 07/09/08 19:13
Instrument/Analyst: NT1/PK
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.3 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 39.7%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	4.8	3,200 E
218-01-9	Chrysene	4.8	3,000 E
205-99-2	Benzo(b)fluoranthene	4.8	2,400 E
207-08-9	Benzo(k)fluoranthene	4.8	1,200 E
50-32-8	Benzo(a)pyrene	4.8	2,200 E
193-39-5	Indeno(1,2,3-cd)pyrene	4.8	1,000 E
53-70-3	Dibenz(a,h)anthracene	4.8	430

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	55.0%
d14-Dibenzo(a,h)anthracen	45.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-6(S) (10)
DILUTION

Lab Sample ID: ND16K
LIMS ID: 08-13945
Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 12:31
Instrument/Analyst: NT1/PK
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.3 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 30.0
Percent Moisture: 39.7%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	150	4,000
218-01-9	Chrysene	150	4,600
205-99-2	Benzo(b)fluoranthene	150	3,100
207-08-9	Benzo(k)fluoranthene	150	3,000
50-32-8	Benzo(a)pyrene	150	3,200
193-39-5	Indeno(1,2,3-cd)pyrene	150	1,600
53-70-3	Dibenz(a,h)anthracene	150	580

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	60.0%
d14-Dibenzo(a,h)anthracen	50.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-070708
METHOD BLANK

Lab Sample ID: MB-070708
LIMS ID: 08-13941
Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted: 07/07/08
Date Analyzed: 07/09/08 16:10
Instrument/Analyst: NT1/PK
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	5.0	< 5.0 U
218-01-9	Chrysene	5.0	< 5.0 U
205-99-2	Benzo(b)fluoranthene	5.0	< 5.0 U
207-08-9	Benzo(k)fluoranthene	5.0	< 5.0 U
50-32-8	Benzo(a)pyrene	5.0	< 5.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	< 5.0 U
53-70-3	Dibenz(a,h)anthracene	5.0	< 5.0 U

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	66.7%
d14-Dibenzo(a,h)anthracen	63.3%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
168004.020

Client ID	MNP	DBA	TOT OUT
MB-070708	66.7%	63.3%	0
LCS-070708	60.7%	62.0%	0
LCSD-070708	56.7%	63.7%	0
RM-MW-6(I) (7)	78.3%	70.7%	0
RM-MW-6(I) (7) DL	93.3%	86.7%	0
RM-MW-6(I) (9)	74.7%	68.3%	0
RM-MW-6(I) (9) DL	80.0%	80.0%	0
RM-MW-6(I) (10.5)	55.3%	61.0%	0
RM-MW-6(I) (10.5) DL	63.3%	60.0%	0
RM-MW-6(S) (5.5)	76.7%	74.0%	0
RM-MW-6(S) (5.5) DL	80.0%	86.7%	0
RM-MW-6(S) (10)	55.0%	45.0%	0
RM-MW-6(S) (10) DL	60.0%	50.0%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(44-100)	(37-106)
(DBA) = d14-Dibenzo(a,h)anthracene	(46-121)	(16-118)

Prep Method: SW3546
Log Number Range: 08-13941 to 08-13945

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: LCS-070708
LAB CONTROL SAMPLE

Lab Sample ID: LCS-070708
LIMS ID: 08-13941
Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted: 07/07/08

Sample Amount LCS: 10.0 g-dry-wt
LCSD: 10.0 g-dry-wt

Date Analyzed LCS: 07/09/08 16:36
LCSD: 07/09/08 17:03

Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL

Instrument/Analyst LCS: NT1/PK
LCSD: NT1/PK

Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	102	150	68.0%	102	150	68.0%	0.0%
Chrysene	94.0	150	62.7%	95.0	150	63.3%	1.1%
Benzo(b)fluoranthene	102	150	68.0%	113	150	75.3%	10.2%
Benzo(k)fluoranthene	106	150	70.7%	95.0	150	63.3%	10.9%
Benzo(a)pyrene	98.0	150	65.3%	100	150	66.7%	2.0%
Indeno(1,2,3-cd)pyrene	92.5	150	61.7%	94.5	150	63.0%	2.1%
Dibenz(a,h)anthracene	95.0	150	63.3%	94.0	150	62.7%	1.1%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	60.7%	56.7%
d14-Dibenzo(a,h)anthracen	62.0%	63.7%

ANALYTICAL RESOURCES INCORPORATED

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

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
168004.020

Data Release Authorized:
Reported: 07/11/08

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-062808	Method Blank	06/28/08	07/03/08	1.00	Diesel	5.0	< 5.0 U
08-13941	HC ID: ---		FID3A	1.0	Motor Oil	10	< 10 U
					o-Terphenyl		72.2%
ND16G	RM-MW-6(I) (7)	06/28/08	07/10/08	1.00	**Diesel**	**670**	**6900**
08-13941	HC ID: **DIESEL/RRO**		FID3A	100	**Motor Oil**	**1300**	**1500**
					o-Terphenyl		D
ND16H	RM-MW-6(I) (9)	06/28/08	07/03/08	1.00	**Diesel**	**160**	**3400**
08-13942	HC ID: **DIESEL/RRO**		FID3A	25	**Motor Oil**	**320**	**900**
					o-Terphenyl		66.7%
ND16I	RM-MW-6(I) (10.5)	06/28/08	07/03/08	1.00	**Diesel**	**8.0**	**67**
08-13943	HC ID: **DIESEL/RRO**		FID3A	1.0	**Motor Oil**	**16**	**22**
					o-Terphenyl		72.9%
ND16J	RM-MW-6(S) (5.5)	06/28/08	07/03/08	1.00	**Diesel**	**310**	**7300**
08-13944	HC ID: **DIESEL/MOTOR OIL**		FID3A	50	**Motor Oil**	**630**	**1400**
					o-Terphenyl		D
ND16K	RM-MW-6(S) (10)	06/28/08	07/03/08	1.00	**Diesel**	**8.3**	**100**
08-13945	HC ID: **DIESEL/MOTOR OIL**		FID3A	1.0	**Motor Oil**	**17**	**43**
					o-Terphenyl		60.2%

Reported in mg/kg (ppm)

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

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

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
168004.020

Client ID	OTER	TOT OUT
MB-062808	72.2%	0
LCS-062808	73.8%	0
LCSD-062808	78.4%	0
RM-MW-6(I) (7)	D	0
RM-MW-6(I) (9)	66.7%	0
RM-MW-6(I) (10.5)	72.9%	0
RM-MW-6(S) (5.5)	D	0
RM-MW-6(S) (10)	60.2%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(62-118)	(49-125)

Prep Method: SW3550B
Log Number Range: 08-13941 to 08-13945

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-062808**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-062808
LIMS ID: 08-13941
Matrix: Soil
Data Release Authorized:
Reported: 07/11/08

QC Report No: ND16-Landau Associates, Inc.
Project: P.O.T. Kaiser
168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Date Extracted LCS/LCSD: 06/28/08
Date Analyzed LCS: 07/03/08 02:53
LCSD: 07/03/08 03:08
Instrument/Analyst LCS: FID/MS
LCSD: FID/MS

Sample Amount LCS: 10.0 g
LCSD: 10.0 g
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.0
LCSD: 1.0

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	96.5	150	64.3%	106	150	70.7%	9.4%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	73.8%	78.4%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: ND16
Project: P.O.T. Kaiser
168004.020

Matrix: Soil
Date Received: 06/27/08

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
08-13941-062808MB1	Method Blank	10.0 g	1.00 mL	-	06/28/08
08-13941-062808LCS1	Lab Control	10.0 g	1.00 mL	-	06/28/08
08-13941-062808LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	06/28/08
08-13941-ND16G	RM-MW-6(I) (7)	7.45 g	1.00 mL	D	06/28/08
08-13942-ND16H	RM-MW-6(I) (9)	7.82 g	1.00 mL	D	06/28/08
08-13943-ND16I	RM-MW-6(I) (10.5)	6.29 g	1.00 mL	D	06/28/08
08-13944-ND16J	RM-MW-6(S) (5.5)	7.97 g	1.00 mL	D	06/28/08
08-13945-ND16K	RM-MW-6(S) (10)	6.03 g	1.00 mL	D	06/28/08

Basis: D=Dry Weight W=As Received

SAMPLE RESULTS-CONVENTIONALS
ND16-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Client ID: RM-MW-6(I) (7)
ARI ID: 08-13941 ND16G

Analyte	Date	Method	Units	RL	Sample
Total Solids	06/30/08 063008#1	EPA 160.3	Percent	0.01	79.70
Total Cyanide	07/08/08 070808#1	EPA 335.4	mg/kg	0.056	0.124

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND16-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Client ID: RM-MW-6(I) (9)
ARI ID: 08-13942 ND16H

Analyte	Date	Method	Units	RL	Sample
Total Solids	06/30/08 063008#1	EPA 160.3	Percent	0.01	81.30
Total Cyanide	07/08/08 070808#1	EPA 335.4	mg/kg	0.053	0.127

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND16-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Client ID: RM-MW-6(I) (10.5)
ARI ID: 08-13943 ND16I

Analyte	Date	Method	Units	RL	Sample
Total Solids	06/30/08 063008#1	EPA 160.3	Percent	0.01	61.70
Total Cyanide	07/08/08 070808#1	EPA 335.4	mg/kg	0.071	< 0.071 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND16-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Client ID: RM-MW-6(S) (5.5)
ARI ID: 08-13944 ND16J

Analyte	Date	Method	Units	RL	Sample
Total Solids	06/30/08 063008#1	EPA 160.3	Percent	0.01	86.40
Total Cyanide	07/08/08 070808#1	EPA 335.4	mg/kg	0.055	0.209

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND16-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Client ID: RM-MW-6(S) (10)
ARI ID: 08-13945 ND16K

Analyte	Date	Method	Units	RL	Sample
Total Solids	06/30/08 063008#1	EPA 160.3	Percent	0.01	59.30
Total Cyanide	07/08/08 070808#1	EPA 335.4	mg/kg	0.083	0.149

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
ND16-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	06/30/08	Percent	< 0.01 U
	06/30/08		< 0.01 U
Total Cyanide	07/08/08	mg/kg	< 0.005 U

STANDARD REFERENCE RESULTS-CONVENTIONALS
ND16-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
Total Cyanide EPA #03026	07/08/08	mg/kg	0.375	0.400	93.8%

REPLICATE RESULTS-CONVENTIONALS
ND16-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: ND16G Client ID: RM-MW-6(I) (7)					
Total Solids	06/30/08	Percent	79.70	80.10 81.30	1.0%
Total Cyanide	07/08/08	mg/kg	0.124	0.304	84.1%

MS/MSD RESULTS-CONVENTIONALS
ND16-Landau Associates, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 07/15/08

Project: P.O.T. Kaiser
Event: 168004.020
Date Sampled: 06/26/08
Date Received: 06/27/08

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: ND16G Client ID: RM-MW-6(I) (7)						
Total Cyanide	07/08/08	mg/kg	0.124	1.65	1.80	84.8%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

July 28, 2008

Stacy Pischer
Landau Associates, Inc.
130 Second Avenue South
Edmonds, WA 98020-9129

RE: Project: P.O.T. Kaiser
ARI Job No: ND59

Dear Stacy:

Please find enclosed the original chain of custody (COCs) records and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted eight water samples and a trip blank on July 1, 2008 in good condition. There were no discrepancies between the COC and the sample containers' labels.

The samples were analyzed for Low Level SIM PAHs, SIM cPAHs NWTPH-Dx, Low Level PCBs, Total Metals, VOCs, SIM VOCs and Total Cyanide and WAD Cyanide, as requested on the COC.

The surrogate o-Terphenyl is out of control low due to matrix effects for the NWTPH-Dx analysis.

The method blank for the LL SIM PAH analysis contained contamination of several analytes. All associated samples that contained associated analyte detections have been flagged with a "B" flag qualifier. The samples were originally analyzed within the method recommended holding time and flagged with "B" flags. All associated samples were re-extracted and re- analyzed outside of the method recommended holding time and both sets of data have been included for your review.

The surrogate DCE is out of control high in sample **RM-MW-3(S)** for the 8260 SIM analysis. The associated sample was non-detect, therefore no further corrective action was taken.

Due to a laboratory error the samples for the sim VOC analysis were analyzed outside of the method recommended holding time.

No other analytical complications were noted. A copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

LANDAU ASSOCIATES

- [x] **Seattle (Edmonds)** (425) 778-0907
- [ ] **Tacoma** (253) 926-2493
- [ ] **Spokane** (509) 327-9737
- [ ] **Portland (Tigard)** (503) 443-6010
- [ ] _____

ND 59

Chain-of-Custody Record

Date 7-1-08

Page 1 of 1

Project Name Port of Tacoma Kaiser Project No. 168004.020

Project Location/Event Tacoma, WA

Sampler's Name Brett Borgeson / Jacob Stokes

Project Contact Stacy Pischer

Send Results To Above + Anne Halvorsen

Testing Parameters

Turnaround Time
- [x] Standard
- [ ] Accelerated
- [ ] _____

Sample I.D.	Date	Time	Matrix	No. of Containers	CPAH's (Method 8270 SIM)	WAD Cyanide SM4500	Total Cyanide Method 335.4	Naphthalenes (Method 8270 SIM & ULV)	NWTPH-Dx	PCB's Low Level Method 8082	VOC's *	Total metals* (Method 6020/7470)	Observations/Comments
RM-MW-3(S)	7-1-08	1130	H2O	11	X	X	X	X	X	X	X	X	As, Cd, Cr, Cu, Pb, Hg, Zn
RM-MW-4(S)		1200		11									
RM-MW-5(S)		1240		11									
RM-MW-6(S)		1345		11									
RM-MW-6(D)		1100		11									
SPL-MW-B(S)		1530		3	X	X	X						
SPL-MW-C(S)		1600		3	X	X	X						
SPL-MW-F(S)		1640		3	X	X	X						

- [x] Allow water samples to settle, collect aliquot from clear portion

NWTPH-Dx:
- ___ run acid wash/silica gel cleanup
- ___ run samples standardized to _____ product

___ Analyze for EPH if no specific product identified

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

___ Dissolved metal water samples field filtered

Other * VOC's by method 8260 w/ 20-ml purge & vinyl chloride by SIM if not detected in initial analysis
* metals were not field filtered.

Special Shipment/Handling or Storage Requirements: Store below 4°C

Method of Shipment:

Relinquished by	Received by	Relinquished by	Received by
Signature: Brett Borgeson	Signature: Brian Ilegel	Signature:	Signature:
Printed Name: Brett Borgeson	Printed Name: Brian Ilegel	Printed Name:	Printed Name:
Company: Landau	Company: ARI	Company:	Company:
Date: 7-1-08 Time: 1720	Date: 7/1/08 Time: 1720	Date: Time:	Date: Time:

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

Rev 4/01

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Can Tan
Project Name: Port of Tacoma Kaiser
COC No: —
Delivered by: Hand
Assigned ARI Job No: ND 59
Tracking No: —

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Record cooler temperature (recommended 2.0-6.0 °C for chemistry	8.1, 10.0, 8.1 °C	

Cooler Accepted by: JL Date: 7/1/08 Time: 1720

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?		Bag	
Was sufficient ice used (if appropriate)?		YES	(NO)
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottle arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation checklist)		(YES)	NO
Were all VOC vials free of air bubbles?	NA	YES	(NO)
Was sufficient amount of sample sent in each bottle?		(YES)	NO

Samples Logged by: JL Date: 7/2/08 Time: 1053

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

Explain discrepancies or negative responses:

ND 59 D2 — peabubble

By: Date:

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-3(S)**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ND59A
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/02/08 19:10

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	**Acetone**	**3.0**	**13**	
75-15-0	**Carbon Disulfide**	**0.2**	**0.6**	
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	**Chloroform**	**0.2**	**1.8**	
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	**2-Butanone**	**2.5**	**3.0**	
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-3(S)**
 SAMPLE

Lab Sample ID: ND59A
LIMS ID: 08-14247
Matrix: Water
Date Analyzed: 07/02/08 19:10

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%
d8-Toluene	100%
Bromofluorobenzene	93.2%
d4-1,2-Dichlorobenzene	105%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-4(S)**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ND59B
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/02/08 19:38

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	**Vinyl Chloride**	**0.2**	**1.2**	
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-4(S)**
 SAMPLE

Lab Sample ID: ND59B
LIMS ID: 08-14248
Matrix: Water
Date Analyzed: 07/02/08 19:38

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	102%
Bromofluorobenzene	94.5%
d4-1,2-Dichlorobenzene	106%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-5(S)**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ND59C
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/02/08 20:05

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	**Acetone**	**3.0**	**5.1**	
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-5(S)**
 SAMPLE

Lab Sample ID: ND59C
LIMS ID: 08-14249
Matrix: Water
Date Analyzed: 07/02/08 20:05

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	108%
d8-Toluene	99.2%
Bromofluorobenzene	92.2%
d4-1,2-Dichlorobenzene	107%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(S)**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/02/08 20:32

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	**Vinyl Chloride**	**0.2**	**5.5**	
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	**Methylene Chloride**	**0.5**	**16**	**E**
67-64-1	**Acetone**	**3.0**	**130**	**E**
75-15-0	**Carbon Disulfide**	**0.2**	**0.8**	
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	**1,1-Dichloroethane**	**0.2**	**0.4**	
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	**Chloroform**	**0.2**	**1.1**	
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	**2-Butanone**	**2.5**	**21**	
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	**Benzene**	**0.2**	**8.6**	
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	**4-Methyl-2-Pentanone (MIBK)**	**2.5**	**9.8**	
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	**Toluene**	**0.2**	**23**	**E**
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	**Ethylbenzene**	**0.2**	**21**	**E**
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	**m,p-Xylene**	**0.4**	**56**	**ES**
95-47-6	**o-Xylene**	**0.2**	**24**	**E**
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(S)**

SAMPLE

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Date Analyzed: 07/02/08 20:32

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	**1,3,5-Trimethylbenzene**	**0.2**	**23**	**E**
95-63-6	**1,2,4-Trimethylbenzene**	**0.2**	**32**	**ES**
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	**Isopropylbenzene**	**0.2**	**4.4**	
103-65-1	**n-Propylbenzene**	**0.2**	**7.0**	
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	**4-Isopropyltoluene**	**0.2**	**2.1**	
104-51-8	**n-Butylbenzene**	**0.2**	**3.9**	
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	**Naphthalene**	**0.5**	**36**	**ES**
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	106%
Bromofluorobenzene	113%
d4-1,2-Dichlorobenzene	106%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(S)**
Page 1 of 2 **DILUTION**

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/03/08 13:27

Sample Amount: 2.00 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	2.0	< 2.0	U
74-83-9	Bromomethane	5.0	< 5.0	U
75-01-4	**Vinyl Chloride**	**2.0**	**2.3**	
75-00-3	Chloroethane	2.0	< 2.0	U
75-09-2	**Methylene Chloride**	**5.0**	**23**	
67-64-1	**Acetone**	**30**	**170**	
75-15-0	Carbon Disulfide	2.0	< 2.0	U
75-35-4	1,1-Dichloroethene	2.0	< 2.0	U
75-34-3	1,1-Dichloroethane	2.0	< 2.0	U
156-60-5	trans-1,2-Dichloroethene	2.0	< 2.0	U
156-59-2	cis-1,2-Dichloroethene	2.0	< 2.0	U
67-66-3	Chloroform	2.0	< 2.0	U
107-06-2	1,2-Dichloroethane	2.0	< 2.0	U
78-93-3	**2-Butanone**	**25**	**30**	
71-55-6	1,1,1-Trichloroethane	2.0	< 2.0	U
56-23-5	Carbon Tetrachloride	2.0	< 2.0	U
108-05-4	Vinyl Acetate	10	< 10	U
75-27-4	Bromodichloromethane	2.0	< 2.0	U
78-87-5	1,2-Dichloropropane	2.0	< 2.0	U
10061-01-5	cis-1,3-Dichloropropene	2.0	< 2.0	U
79-01-6	Trichloroethene	2.0	< 2.0	U
124-48-1	Dibromochloromethane	2.0	< 2.0	U
79-00-5	1,1,2-Trichloroethane	2.0	< 2.0	U
71-43-2	**Benzene**	**2.0**	**9.3**	
10061-02-6	trans-1,3-Dichloropropene	2.0	< 2.0	U
110-75-8	2-Chloroethylvinylether	10	< 10	U
75-25-2	Bromoform	2.0	< 2.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	25	< 25	U
591-78-6	2-Hexanone	25	< 25	U
127-18-4	Tetrachloroethene	2.0	< 2.0	U
79-34-5	1,1,2,2-Tetrachloroethane	2.0	< 2.0	U
108-88-3	**Toluene**	**2.0**	**25**	
108-90-7	Chlorobenzene	2.0	< 2.0	U
100-41-4	**Ethylbenzene**	**2.0**	**32**	
100-42-5	Styrene	2.0	< 2.0	U
75-69-4	Trichlorofluoromethane	2.0	< 2.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	2.0	< 2.0	U
1330-20-7	**m,p-Xylene**	**4.0**	**91**	
95-47-6	**o-Xylene**	**2.0**	**26**	
95-50-1	1,2-Dichlorobenzene	2.0	< 2.0	U
541-73-1	1,3-Dichlorobenzene	2.0	< 2.0	U
106-46-7	1,4-Dichlorobenzene	2.0	< 2.0	U
107-02-8	Acrolein	50	< 50	U
74-88-4	Methyl Iodide	10	< 10	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	10	< 10	U
563-58-6	1,1-Dichloropropene	2.0	< 2.0	U
74-95-3	Dibromomethane	2.0	< 2.0	U
630-20-6	1,1,1,2-Tetrachloroethane	2.0	< 2.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(S) DILUTION**

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Date Analyzed: 07/03/08 13:27

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	10	< 10	U
108-67-8	**1,3,5-Trimethylbenzene**	**2.0**	**36**	
95-63-6	**1,2,4-Trimethylbenzene**	**2.0**	**99**	
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	Ethylene Dibromide	2.0	< 2.0	U
74-97-5	Bromochloromethane	2.0	< 2.0	U
594-20-7	2,2-Dichloropropane	2.0	< 2.0	U
142-28-9	1,3-Dichloropropane	2.0	< 2.0	U
98-82-8	**Isopropylbenzene**	**2.0**	**4.7**	
103-65-1	**n-Propylbenzene**	**2.0**	**7.6**	
108-86-1	Bromobenzene	2.0	< 2.0	U
95-49-8	2-Chlorotoluene	2.0	< 2.0	U
106-43-4	4-Chlorotoluene	2.0	< 2.0	U
98-06-6	tert-Butylbenzene	2.0	< 2.0	U
135-98-8	sec-Butylbenzene	2.0	< 2.0	U
99-87-6	**4-Isopropyltoluene**	**2.0**	**2.2**	
104-51-8	**n-Butylbenzene**	**2.0**	**4.4**	
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	**Naphthalene**	**5.0**	**260**	**E**
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	119%
d8-Toluene	102%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	108%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(S)**
Page 1 of 2 **DILUTION**

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/03/08 15:18

Sample Amount: 0.500 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	8.0	< 8.0	U
74-83-9	Bromomethane	20	< 20	U
75-01-4	Vinyl Chloride	8.0	< 8.0	U
75-00-3	Chloroethane	8.0	< 8.0	U
75-09-2	**Methylene Chloride**	**20**	**32**	
67-64-1	**Acetone**	**120**	**160**	
75-15-0	Carbon Disulfide	8.0	< 8.0	U
75-35-4	1,1-Dichloroethene	8.0	< 8.0	U
75-34-3	1,1-Dichloroethane	8.0	< 8.0	U
156-60-5	trans-1,2-Dichloroethene	8.0	< 8.0	U
156-59-2	cis-1,2-Dichloroethene	8.0	< 8.0	U
67-66-3	Chloroform	8.0	< 8.0	U
107-06-2	1,2-Dichloroethane	8.0	< 8.0	U
78-93-3	2-Butanone	100	< 100	U
71-55-6	1,1,1-Trichloroethane	8.0	< 8.0	U
56-23-5	Carbon Tetrachloride	8.0	< 8.0	U
108-05-4	Vinyl Acetate	40	< 40	U
75-27-4	Bromodichloromethane	8.0	< 8.0	U
78-87-5	1,2-Dichloropropane	8.0	< 8.0	U
10061-01-5	cis-1,3-Dichloropropene	8.0	< 8.0	U
79-01-6	Trichloroethene	8.0	< 8.0	U
124-48-1	Dibromochloromethane	8.0	< 8.0	U
79-00-5	1,1,2-Trichloroethane	8.0	< 8.0	U
71-43-2	**Benzene**	**8.0**	**8.4**	
10061-02-6	trans-1,3-Dichloropropene	8.0	< 8.0	U
110-75-8	2-Chloroethylvinylether	40	< 40	U
75-25-2	Bromoform	8.0	< 8.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	100	< 100	U
591-78-6	2-Hexanone	100	< 100	U
127-18-4	Tetrachloroethene	8.0	< 8.0	U
79-34-5	1,1,2,2-Tetrachloroethane	8.0	< 8.0	U
108-88-3	**Toluene**	**8.0**	**21**	
108-90-7	Chlorobenzene	8.0	< 8.0	U
100-41-4	**Ethylbenzene**	**8.0**	**28**	
100-42-5	Styrene	8.0	< 8.0	U
75-69-4	Trichlorofluoromethane	8.0	< 8.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	8.0	< 8.0	U
1330-20-7	**m,p-Xylene**	**16**	**76**	
95-47-6	**o-Xylene**	**8.0**	**21**	
95-50-1	1,2-Dichlorobenzene	8.0	< 8.0	U
541-73-1	1,3-Dichlorobenzene	8.0	< 8.0	U
106-46-7	1,4-Dichlorobenzene	8.0	< 8.0	U
107-02-8	Acrolein	200	< 200	U
74-88-4	Methyl Iodide	40	< 40	U
74-96-4	Bromoethane	8.0	< 8.0	U
107-13-1	Acrylonitrile	40	< 40	U
563-58-6	1,1-Dichloropropene	8.0	< 8.0	U
74-95-3	Dibromomethane	8.0	< 8.0	U
630-20-6	1,1,1,2-Tetrachloroethane	8.0	< 8.0	U
96-12-8	1,2-Dibromo-3-chloropropane	20	< 20	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(S)**
 DILUTION

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Date Analyzed: 07/03/08 15:18

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

CAS Number	Analyte	RL	Result	Q
96-18-4	1,2,3-Trichloropropane	20	< 20	U
110-57-6	trans-1,4-Dichloro-2-butene	40	< 40	U
108-67-8	**1,3,5-Trimethylbenzene**	**8.0**	**34**	
95-63-6	**1,2,4-Trimethylbenzene**	**8.0**	**95**	
87-68-3	Hexachlorobutadiene	20	< 20	U
106-93-4	Ethylene Dibromide	8.0	< 8.0	U
74-97-5	Bromochloromethane	8.0	< 8.0	U
594-20-7	2,2-Dichloropropane	8.0	< 8.0	U
142-28-9	1,3-Dichloropropane	8.0	< 8.0	U
98-82-8	Isopropylbenzene	8.0	< 8.0	U
103-65-1	**n-Propylbenzene**	**8.0**	**8.0**	
108-86-1	Bromobenzene	8.0	< 8.0	U
95-49-8	2-Chlorotoluene	8.0	< 8.0	U
106-43-4	4-Chlorotoluene	8.0	< 8.0	U
98-06-6	tert-Butylbenzene	8.0	< 8.0	U
135-98-8	sec-Butylbenzene	8.0	< 8.0	U
99-87-6	4-Isopropyltoluene	8.0	< 8.0	U
104-51-8	n-Butylbenzene	8.0	< 8.0	U
120-82-1	1,2,4-Trichlorobenzene	20	< 20	U
91-20-3	**Naphthalene**	**20**	**260**	
87-61-6	1,2,3-Trichlorobenzene	20	< 20	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	116%
d8-Toluene	102%
Bromofluorobenzene	96.5%
d4-1,2-Dichlorobenzene	99.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(D)**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/02/08 20:59

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	**Vinyl Chloride**	**0.2**	**4.0**	
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	**Methylene Chloride**	**0.5**	**11**	
67-64-1	**Acetone**	**3.0**	**100**	**E**
75-15-0	**Carbon Disulfide**	**0.2**	**0.7**	
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	**1,1-Dichloroethane**	**0.2**	**0.3**	
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	**Chloroform**	**0.2**	**1.3**	
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	**2-Butanone**	**2.5**	**18**	
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	**Benzene**	**0.2**	**5.8**	
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	**4-Methyl-2-Pentanone (MIBK)**	**2.5**	**7.7**	
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	**Toluene**	**0.2**	**15**	
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	**Ethylbenzene**	**0.2**	**20**	**E**
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	**m,p-Xylene**	**0.4**	**56**	**ES**
95-47-6	**o-Xylene**	**0.2**	**22**	**E**
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(D)**

SAMPLE

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Date Analyzed: 07/02/08 20:59

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	**1,3,5-Trimethylbenzene**	**0.2**	**25**	**E**
95-63-6	**1,2,4-Trimethylbenzene**	**0.2**	**34**	**ES**
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	**Isopropylbenzene**	**0.2**	**4.8**	
103-65-1	**n-Propylbenzene**	**0.2**	**7.6**	
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	**sec-Butylbenzene**	**0.2**	**1.3**	
99-87-6	**4-Isopropyltoluene**	**0.2**	**2.4**	
104-51-8	**n-Butylbenzene**	**0.2**	**4.3**	
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	**Naphthalene**	**0.5**	**34**	**ES**
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	101%
Bromofluorobenzene	115%
d4-1,2-Dichlorobenzene	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(D)**
Page 1 of 2 **DILUTION**

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/03/08 13:55

Sample Amount: 2.00 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	2.0	< 2.0	U
74-83-9	Bromomethane	5.0	< 5.0	U
75-01-4	Vinyl Chloride	2.0	< 2.0	U
75-00-3	Chloroethane	2.0	< 2.0	U
75-09-2	**Methylene Chloride**	**5.0**	**17**	
67-64-1	**Acetone**	**30**	**110**	
75-15-0	Carbon Disulfide	2.0	< 2.0	U
75-35-4	1,1-Dichloroethene	2.0	< 2.0	U
75-34-3	1,1-Dichloroethane	2.0	< 2.0	U
156-60-5	trans-1,2-Dichloroethene	2.0	< 2.0	U
156-59-2	cis-1,2-Dichloroethene	2.0	< 2.0	U
67-66-3	Chloroform	2.0	< 2.0	U
107-06-2	1,2-Dichloroethane	2.0	< 2.0	U
78-93-3	2-Butanone	25	< 25	U
71-55-6	1,1,1-Trichloroethane	2.0	< 2.0	U
56-23-5	Carbon Tetrachloride	2.0	< 2.0	U
108-05-4	Vinyl Acetate	10	< 10	U
75-27-4	Bromodichloromethane	2.0	< 2.0	U
78-87-5	1,2-Dichloropropane	2.0	< 2.0	U
10061-01-5	cis-1,3-Dichloropropene	2.0	< 2.0	U
79-01-6	Trichloroethene	2.0	< 2.0	U
124-48-1	Dibromochloromethane	2.0	< 2.0	U
79-00-5	1,1,2-Trichloroethane	2.0	< 2.0	U
71-43-2	**Benzene**	**2.0**	**6.1**	
10061-02-6	trans-1,3-Dichloropropene	2.0	< 2.0	U
110-75-8	2-Chloroethylvinylether	10	< 10	U
75-25-2	Bromoform	2.0	< 2.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	25	< 25	U
591-78-6	2-Hexanone	25	< 25	U
127-18-4	Tetrachloroethene	2.0	< 2.0	U
79-34-5	1,1,2,2-Tetrachloroethane	2.0	< 2.0	U
108-88-3	**Toluene**	**2.0**	**15**	
108-90-7	Chlorobenzene	2.0	< 2.0	U
100-41-4	**Ethylbenzene**	**2.0**	**29**	
100-42-5	Styrene	2.0	< 2.0	U
75-69-4	Trichlorofluoromethane	2.0	< 2.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	2.0	< 2.0	U
1330-20-7	**m,p-Xylene**	**4.0**	**85**	
95-47-6	**o-Xylene**	**2.0**	**21**	
95-50-1	1,2-Dichlorobenzene	2.0	< 2.0	U
541-73-1	1,3-Dichlorobenzene	2.0	< 2.0	U
106-46-7	1,4-Dichlorobenzene	2.0	< 2.0	U
107-02-8	Acrolein	50	< 50	U
74-88-4	Methyl Iodide	10	< 10	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	10	< 10	U
563-58-6	1,1-Dichloropropene	2.0	< 2.0	U
74-95-3	Dibromomethane	2.0	< 2.0	U
630-20-6	1,1,1,2-Tetrachloroethane	2.0	< 2.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(D) DILUTION**

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Date Analyzed: 07/03/08 13:55

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	10	< 10	U
108-67-8	**1,3,5-Trimethylbenzene**	**2.0**	**40**	
95-63-6	**1,2,4-Trimethylbenzene**	**2.0**	**110**	
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	Ethylene Dibromide	2.0	< 2.0	U
74-97-5	Bromochloromethane	2.0	< 2.0	U
594-20-7	2,2-Dichloropropane	2.0	< 2.0	U
142-28-9	1,3-Dichloropropane	2.0	< 2.0	U
98-82-8	**Isopropylbenzene**	**2.0**	**5.2**	
103-65-1	**n-Propylbenzene**	**2.0**	**8.3**	
108-86-1	Bromobenzene	2.0	< 2.0	U
95-49-8	2-Chlorotoluene	2.0	< 2.0	U
106-43-4	4-Chlorotoluene	2.0	< 2.0	U
98-06-6	tert-Butylbenzene	2.0	< 2.0	U
135-98-8	sec-Butylbenzene	2.0	< 2.0	U
99-87-6	**4-Isopropyltoluene**	**2.0**	**2.6**	
104-51-8	**n-Butylbenzene**	**2.0**	**4.9**	
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	**Naphthalene**	**5.0**	**250**	**E**
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	111%
d8-Toluene	103%
Bromofluorobenzene	104%
d4-1,2-Dichlorobenzene	99.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(D) DILUTION**

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/03/08 15:45

Sample Amount: 0.500 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	8.0	< 8.0	U
74-83-9	Bromomethane	20	< 20	U
75-01-4	Vinyl Chloride	8.0	< 8.0	U
75-00-3	Chloroethane	8.0	< 8.0	U
75-09-2	**Methylene Chloride**	**20**	**25**	
67-64-1	Acetone	120	< 120	U
75-15-0	Carbon Disulfide	8.0	< 8.0	U
75-35-4	1,1-Dichloroethene	8.0	< 8.0	U
75-34-3	1,1-Dichloroethane	8.0	< 8.0	U
156-60-5	trans-1,2-Dichloroethene	8.0	< 8.0	U
156-59-2	cis-1,2-Dichloroethene	8.0	< 8.0	U
67-66-3	Chloroform	8.0	< 8.0	U
107-06-2	1,2-Dichloroethane	8.0	< 8.0	U
78-93-3	2-Butanone	100	< 100	U
71-55-6	1,1,1-Trichloroethane	8.0	< 8.0	U
56-23-5	Carbon Tetrachloride	8.0	< 8.0	U
108-05-4	Vinyl Acetate	40	< 40	U
75-27-4	Bromodichloromethane	8.0	< 8.0	U
78-87-5	1,2-Dichloropropane	8.0	< 8.0	U
10061-01-5	cis-1,3-Dichloropropene	8.0	< 8.0	U
79-01-6	Trichloroethene	8.0	< 8.0	U
124-48-1	Dibromochloromethane	8.0	< 8.0	U
79-00-5	1,1,2-Trichloroethane	8.0	< 8.0	U
71-43-2	Benzene	8.0	< 8.0	U
10061-02-6	trans-1,3-Dichloropropene	8.0	< 8.0	U
110-75-8	2-Chloroethylvinylether	40	< 40	U
75-25-2	Bromoform	8.0	< 8.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	100	< 100	U
591-78-6	2-Hexanone	100	< 100	U
127-18-4	Tetrachloroethene	8.0	< 8.0	U
79-34-5	1,1,2,2-Tetrachloroethane	8.0	< 8.0	U
108-88-3	**Toluene**	**8.0**	**14**	
108-90-7	Chlorobenzene	8.0	< 8.0	U
100-41-4	**Ethylbenzene**	**8.0**	**25**	
100-42-5	Styrene	8.0	< 8.0	U
75-69-4	Trichlorofluoromethane	8.0	< 8.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	8.0	< 8.0	U
1330-20-7	**m,p-Xylene**	**16**	**66**	
95-47-6	**o-Xylene**	**8.0**	**17**	
95-50-1	1,2-Dichlorobenzene	8.0	< 8.0	U
541-73-1	1,3-Dichlorobenzene	8.0	< 8.0	U
106-46-7	1,4-Dichlorobenzene	8.0	< 8.0	U
107-02-8	Acrolein	200	< 200	U
74-88-4	Methyl Iodide	40	< 40	U
74-96-4	Bromoethane	8.0	< 8.0	U
107-13-1	Acrylonitrile	40	< 40	U
563-58-6	1,1-Dichloropropene	8.0	< 8.0	U
74-95-3	Dibromomethane	8.0	< 8.0	U
630-20-6	1,1,1,2-Tetrachloroethane	8.0	< 8.0	U
96-12-8	1,2-Dibromo-3-chloropropane	20	< 20	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-6(D)**
 DILUTION

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Date Analyzed: 07/03/08 15:45

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020

CAS Number	Analyte	RL	Result	Q
96-18-4	1,2,3-Trichloropropane	20	< 20	U
110-57-6	trans-1,4-Dichloro-2-butene	40	< 40	U
108-67-8	**1,3,5-Trimethylbenzene**	**8.0**	**35**	
95-63-6	**1,2,4-Trimethylbenzene**	**8.0**	**91**	
87-68-3	Hexachlorobutadiene	20	< 20	U
106-93-4	Ethylene Dibromide	8.0	< 8.0	U
74-97-5	Bromochloromethane	8.0	< 8.0	U
594-20-7	2,2-Dichloropropane	8.0	< 8.0	U
142-28-9	1,3-Dichloropropane	8.0	< 8.0	U
98-82-8	Isopropylbenzene	8.0	< 8.0	U
103-65-1	n-Propylbenzene	8.0	< 8.0	U
108-86-1	Bromobenzene	8.0	< 8.0	U
95-49-8	2-Chlorotoluene	8.0	< 8.0	U
106-43-4	4-Chlorotoluene	8.0	< 8.0	U
98-06-6	tert-Butylbenzene	8.0	< 8.0	U
135-98-8	sec-Butylbenzene	8.0	< 8.0	U
99-87-6	4-Isopropyltoluene	8.0	< 8.0	U
104-51-8	n-Butylbenzene	8.0	< 8.0	U
120-82-1	1,2,4-Trichlorobenzene	20	< 20	U
91-20-3	**Naphthalene**	**20**	**240**	
87-61-6	1,2,3-Trichlorobenzene	20	< 20	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	119%
d8-Toluene	102%
Bromofluorobenzene	96.2%
d4-1,2-Dichlorobenzene	102%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: TRIP BLANK SAMPLE**

Lab Sample ID: ND59I
LIMS ID: 08-14281
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/02/08 16:08

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: TRIP BLANK SAMPLE**

Lab Sample ID: ND59I
LIMS ID: 08-14281
Matrix: Water
Date Analyzed: 07/02/08 16:08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	98.8%
Bromofluorobenzene	92.8%
d4-1,2-Dichlorobenzene	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-070208**

METHOD BLANK

Lab Sample ID: MB-070208
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/02/08 13:47

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-070208**

METHOD BLANK

Lab Sample ID: MB-070208
LIMS ID: 08-14247
Matrix: Water
Date Analyzed: 07/02/08 13:47

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	109%
d8-Toluene	100%
Bromofluorobenzene	96.8%
d4-1,2-Dichlorobenzene	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-070308**

METHOD BLANK

Lab Sample ID: MB-070308
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst: FINN3/JZ
Date Analyzed: 07/03/08 12:48

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-070308**

METHOD BLANK

Lab Sample ID: MB-070308
LIMS ID: 08-14250
Matrix: Water
Date Analyzed: 07/03/08 12:48

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	115%
d8-Toluene	99.0%
Bromofluorobenzene	94.8%
d4-1,2-Dichlorobenzene	101%

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-070208	Method Blank	20	109%	100%	96.8%	101%	0
LCS-070208	Lab Control	20	107%	101%	99.0%	97.0%	0
LCSD-070208	Lab Control Dup	20	106%	100%	97.0%	99.2%	0
ND59A	RM-MW-3(S)	20	110%	100%	93.2%	105%	0
ND59B	RM-MW-4(S)	20	107%	102%	94.5%	106%	0
ND59C	RM-MW-5(S)	20	108%	99.2%	92.2%	107%	0
MB-070308	Method Blank	20	115%	99.0%	94.8%	101%	0
LCS-070308	Lab Control	20	115%	102%	101%	99.2%	0
LCSD-070308	Lab Control Dup	20	119%	98.0%	100%	98.2%	0
ND59D	RM-MW-6(S)	20	106%	106%	113%	106%	0
ND59DRE	RM-MW-6(S)	20	119%	102%	103%	108%	0
ND59DDL	RM-MW-6(S)	20	116%	102%	96.5%	99.0%	0
ND59E	RM-MW-6(D)	20	106%	101%	115%	104%	0
ND59ERE	RM-MW-6(D)	20	111%	103%	104%	99.2%	0
ND59EDL	RM-MW-6(D)	20	119%	102%	96.2%	102%	0
ND59I	TRIP BLANK	20	106%	98.8%	92.8%	104%	0

SW8260B	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	70-131	64-146
(TOL) = d8-Toluene	80-120	78-125
(BFB) = Bromofluorobenzene	74-121	71-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-121

Prep Method: SW5030B
Log Number Range: 08-14247 to 08-14281

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-070208**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-070208
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: FINN3/JZ
LCSD: FINN3/JZ
Date Analyzed LCS: 07/02/08 11:47
LCSD: 07/02/08 12:32

Sample Amount LCS: 20.0 mL
LCSD: 20.0 mL
Purge Volume LCS: 20.0 mL
LCSD: 20.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	3.5	4.0	87.5%	3.6	4.0	90.0%	2.8%
Bromomethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
Vinyl Chloride	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
Chloroethane	3.8	4.0	95.0%	3.9	4.0	97.5%	2.6%
Methylene Chloride	4.7	4.0	118%	4.6	4.0	115%	2.2%
Acetone	19.3	20.0	96.5%	20.5	20.0	102%	6.0%
Carbon Disulfide	4.6	4.0	115%	4.6	4.0	115%	0.0%
1,1-Dichloroethene	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
1,1-Dichloroethane	3.9	4.0	97.5%	3.8	4.0	95.0%	2.6%
trans-1,2-Dichloroethene	4.1	4.0	102%	4.0	4.0	100%	2.5%
cis-1,2-Dichloroethene	3.6	4.0	90.0%	3.6	4.0	90.0%	0.0%
Chloroform	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%
1,2-Dichloroethane	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
2-Butanone	21.0	20.0	105%	17.9	20.0	89.5%	15.9%
1,1,1-Trichloroethane	3.7	4.0	92.5%	3.7	4.0	92.5%	0.0%
Carbon Tetrachloride	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
Vinyl Acetate	4.6	4.0	115%	4.7	4.0	118%	2.2%
Bromodichloromethane	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%
1,2-Dichloropropane	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
cis-1,3-Dichloropropene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
Trichloroethene	3.5	4.0	87.5%	3.4	4.0	85.0%	2.9%
Dibromochloromethane	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
1,1,2-Trichloroethane	3.9	4.0	97.5%	3.5	4.0	87.5%	10.8%
Benzene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
trans-1,3-Dichloropropene	3.9	4.0	97.5%	3.7	4.0	92.5%	5.3%
2-Chloroethylvinylether	4.4	4.0	110%	3.7	4.0	92.5%	17.3%
Bromoform	4.0	4.0	100%	3.6	4.0	90.0%	10.5%
4-Methyl-2-Pentanone (MIBK)	20.1	20.0	100%	17.4	20.0	87.0%	14.4%
2-Hexanone	19.9	20.0	99.5%	16.9	20.0	84.5%	16.3%
Tetrachloroethene	3.5	4.0	87.5%	3.5	4.0	87.5%	0.0%
1,1,2,2-Tetrachloroethane	3.8	4.0	95.0%	3.5	4.0	87.5%	8.2%
Toluene	3.6	4.0	90.0%	3.6	4.0	90.0%	0.0%
Chlorobenzene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
Ethylbenzene	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
Styrene	3.9	4.0	97.5%	3.8	4.0	95.0%	2.6%
Trichlorofluoromethane	3.9	4.0	97.5%	3.9	4.0	97.5%	0.0%
1,1,2-Trichloro-1,2,2-trifluoroetha	4.6	4.0	115%	4.7	4.0	118%	2.2%
m,p-Xylene	7.5	8.0	93.8%	7.3	8.0	91.2%	2.7%
o-Xylene	3.7	4.0	92.5%	3.5	4.0	87.5%	5.6%
1,2-Dichlorobenzene	4.1	4.0	102%	3.9	4.0	97.5%	5.0%
1,3-Dichlorobenzene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
1,4-Dichlorobenzene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
Acrolein	21.0	20.0	105%	19.1	20.0	95.5%	9.5%
Methyl Iodide	4.5	4.0	112%	4.4	4.0	110%	2.2%
Bromoethane	4.5	4.0	112%	4.3	4.0	108%	4.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-070208**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-070208 QC Report No: ND59-Landau Associates
LIMS ID: 08-14247 Project: PORT OF TACOMA KAISER
Matrix: Water 168004.020

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Acrylonitrile	4.8	4.0	120%	4.5	4.0	112%	6.5%
1,1-Dichloropropene	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
Dibromomethane	3.7	4.0	92.5%	3.5	4.0	87.5%	5.6%
1,1,1,2-Tetrachloroethane	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
1,2-Dibromo-3-chloropropane	4.2	4.0	105%	3.9	4.0	97.5%	7.4%
1,2,3-Trichloropropane	4.4	4.0	110%	3.8	4.0	95.0%	14.6%
trans-1,4-Dichloro-2-butene	4.4	4.0	110%	3.6	4.0	90.0%	20.0%
1,3,5-Trimethylbenzene	3.9	4.0	97.5%	3.8	4.0	95.0%	2.6%
1,2,4-Trimethylbenzene	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%
Hexachlorobutadiene	3.5	4.0	87.5%	3.7	4.0	92.5%	5.6%
Ethylene Dibromide	3.6	4.0	90.0%	3.4	4.0	85.0%	5.7%
Bromochloromethane	3.6	4.0	90.0%	3.4	4.0	85.0%	5.7%
2,2-Dichloropropane	3.7	4.0	92.5%	3.9	4.0	97.5%	5.3%
1,3-Dichloropropane	3.9	4.0	97.5%	3.6	4.0	90.0%	8.0%
Isopropylbenzene	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
n-Propylbenzene	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
Bromobenzene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
2-Chlorotoluene	3.7	4.0	92.5%	3.7	4.0	92.5%	0.0%
4-Chlorotoluene	4.0	4.0	100%	3.8	4.0	95.0%	5.1%
tert-Butylbenzene	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%
sec-Butylbenzene	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
4-Isopropyltoluene	3.9	4.0	97.5%	3.8	4.0	95.0%	2.6%
n-Butylbenzene	4.0	4.0	100%	4.0	4.0	100%	0.0%
1,2,4-Trichlorobenzene	3.6	4.0	90.0%	3.6	4.0	90.0%	0.0%
Naphthalene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
1,2,3-Trichlorobenzene	3.7	4.0	92.5%	3.5	4.0	87.5%	5.6%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	107%	106%
d8-Toluene	101%	100%
Bromofluorobenzene	99.0%	97.0%
d4-1,2-Dichlorobenzene	97.0%	99.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-070308**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-070308
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/07/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: FINN3/JZ
LCSD: FINN3/JZ
Date Analyzed LCS: 07/03/08 11:48
LCSD: 07/03/08 12:13

Sample Amount LCS: 20.0 mL
LCSD: 20.0 mL
Purge Volume LCS: 20.0 mL
LCSD: 20.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	3.6	4.0	90.0%	3.6	4.0	90.0%	0.0%
Bromomethane	3.9	4.0	97.5%	4.0	4.0	100%	2.5%
Vinyl Chloride	3.8	4.0	95.0%	4.0	4.0	100%	5.1%
Chloroethane	4.1	4.0	102%	4.1	4.0	102%	0.0%
Methylene Chloride	4.4	4.0	110%	4.4	4.0	110%	0.0%
Acetone	20.5	20.0	102%	21.8	20.0	109%	6.1%
Carbon Disulfide	4.3	4.0	108%	4.5	4.0	112%	4.5%
1,1-Dichloroethene	4.0	4.0	100%	4.0	4.0	100%	0.0%
1,1-Dichloroethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
trans-1,2-Dichloroethene	4.2	4.0	105%	4.3	4.0	108%	2.4%
cis-1,2-Dichloroethene	3.6	4.0	90.0%	3.6	4.0	90.0%	0.0%
Chloroform	3.9	4.0	97.5%	3.9	4.0	97.5%	0.0%
1,2-Dichloroethane	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
2-Butanone	19.4	20.0	97.0%	19.7	20.0	98.5%	1.5%
1,1,1-Trichloroethane	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
Carbon Tetrachloride	3.7	4.0	92.5%	3.7	4.0	92.5%	0.0%
Vinyl Acetate	4.4	4.0	110%	4.6	4.0	115%	4.4%
Bromodichloromethane	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
1,2-Dichloropropane	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
cis-1,3-Dichloropropene	3.7	4.0	92.5%	3.5	4.0	87.5%	5.6%
Trichloroethene	3.5	4.0	87.5%	3.4	4.0	85.0%	2.9%
Dibromochloromethane	3.7	4.0	92.5%	3.7	4.0	92.5%	0.0%
1,1,2-Trichloroethane	3.5	4.0	87.5%	3.5	4.0	87.5%	0.0%
Benzene	3.6	4.0	90.0%	3.5	4.0	87.5%	2.8%
trans-1,3-Dichloropropene	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
2-Chloroethylvinylether	3.6	4.0	90.0%	3.5	4.0	87.5%	2.8%
Bromoform	3.6	4.0	90.0%	3.8	4.0	95.0%	5.4%
4-Methyl-2-Pentanone (MIBK)	17.4	20.0	87.0%	16.2	20.0	81.0%	7.1%
2-Hexanone	16.7	20.0	83.5%	17.5	20.0	87.5%	4.7%
Tetrachloroethene	3.3	4.0	82.5%	3.4	4.0	85.0%	3.0%
1,1,2,2-Tetrachloroethane	3.6	4.0	90.0%	3.9	4.0	97.5%	8.0%
Toluene	3.6	4.0	90.0%	3.4	4.0	85.0%	5.7%
Chlorobenzene	3.4	4.0	85.0%	3.6	4.0	90.0%	5.7%
Ethylbenzene	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
Styrene	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
Trichlorofluoromethane	4.1	4.0	102%	4.2	4.0	105%	2.4%
1,1,2-Trichloro-1,2,2-trifluoroetha	4.2	4.0	105%	4.4	4.0	110%	4.7%
m,p-Xylene	7.3	8.0	91.2%	7.5	8.0	93.8%	2.7%
o-Xylene	3.5	4.0	87.5%	3.6	4.0	90.0%	2.8%
1,2-Dichlorobenzene	3.7	4.0	92.5%	4.2	4.0	105%	12.7%
1,3-Dichlorobenzene	3.5	4.0	87.5%	3.9	4.0	97.5%	10.8%
1,4-Dichlorobenzene	3.4	4.0	85.0%	3.8	4.0	95.0%	11.1%
Acrolein	19.3	20.0	96.5%	19.5	20.0	97.5%	1.0%
Methyl Iodide	4.0	4.0	100%	4.1	4.0	102%	2.5%
Bromoethane	4.2	4.0	105%	4.1	4.0	102%	2.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-070308**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-070308 QC Report No: ND59-Landau Associates
LIMS ID: 08-14250 Project: PORT OF TACOMA KAISER
Matrix: Water 168004.020

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Acrylonitrile	4.6	4.0	115%	4.3	4.0	108%	6.7%
1,1-Dichloropropene	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
Dibromomethane	3.8	4.0	95.0%	3.5	4.0	87.5%	8.2%
1,1,1,2-Tetrachloroethane	3.5	4.0	87.5%	3.8	4.0	95.0%	8.2%
1,2-Dibromo-3-chloropropane	3.9	4.0	97.5%	4.2	4.0	105%	7.4%
1,2,3-Trichloropropane	3.9	4.0	97.5%	4.1	4.0	102%	5.0%
trans-1,4-Dichloro-2-butene	3.6	4.0	90.0%	4.2	4.0	105%	15.4%
1,3,5-Trimethylbenzene	3.6	4.0	90.0%	4.2	4.0	105%	15.4%
1,2,4-Trimethylbenzene	3.6	4.0	90.0%	4.2	4.0	105%	15.4%
Hexachlorobutadiene	3.3	4.0	82.5%	3.9	4.0	97.5%	16.7%
Ethylene Dibromide	3.7	4.0	92.5%	3.4	4.0	85.0%	8.5%
Bromochloromethane	3.5	4.0	87.5%	3.4	4.0	85.0%	2.9%
2,2-Dichloropropane	3.9	4.0	97.5%	4.0	4.0	100%	2.5%
1,3-Dichloropropane	3.6	4.0	90.0%	3.7	4.0	92.5%	2.7%
Isopropylbenzene	3.7	4.0	92.5%	4.0	4.0	100%	7.8%
n-Propylbenzene	3.8	4.0	95.0%	4.3	4.0	108%	12.3%
Bromobenzene	3.4	4.0	85.0%	3.7	4.0	92.5%	8.5%
2-Chlorotoluene	3.5	4.0	87.5%	4.1	4.0	102%	15.8%
4-Chlorotoluene	3.9	4.0	97.5%	4.3	4.0	108%	9.8%
tert-Butylbenzene	3.6	4.0	90.0%	4.1	4.0	102%	13.0%
sec-Butylbenzene	3.8	4.0	95.0%	4.3	4.0	108%	12.3%
4-Isopropyltoluene	3.7	4.0	92.5%	4.2	4.0	105%	12.7%
n-Butylbenzene	3.8	4.0	95.0%	4.4	4.0	110%	14.6%
1,2,4-Trichlorobenzene	3.4	4.0	85.0%	3.8	4.0	95.0%	11.1%
Naphthalene	3.6	4.0	90.0%	4.0	4.0	100%	10.5%
1,2,3-Trichlorobenzene	3.3	4.0	82.5%	3.8	4.0	95.0%	14.1%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	115%	119%
d8-Toluene	102%	98.0%
Bromofluorobenzene	101%	100%
d4-1,2-Dichlorobenzene	99.2%	98.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260 SIM **Sample ID: RM-MW-3(S)**
Page 1 of 1 **SAMPLE**

Lab Sample ID: ND59A
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized: VTS
Reported: 07/25/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: NT7/JZ
Date Analyzed: 07/25/08 14:41

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	< 0.020	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	152%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260 SIM **Sample ID: RM-MW-5(S)**
Page 1 of 1 **SAMPLE**

Lab Sample ID: ND59C
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized: VJS
Reported: 07/25/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Instrument/Analyst: NT7/JZ
Date Analyzed: 07/25/08 15:06

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	< 0.020	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	126%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260 SIM **Sample ID: MB-072508**
Page 1 of 1 **METHOD BLANK**

Lab Sample ID: MB-072508
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized: VTS
Reported: 07/25/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT7/JZ
Date Analyzed: 07/25/08 13:45

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	< 0.020	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	119%

ANALYTICAL RESOURCES INCORPORATED

SW8260-SIM SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

Client ID	DCE	TOT OUT
RM-MW-3(S)	152%*	1
MB-072508	119%	0
LCS-072508	117%	0
LCSD-072508	114%	0
RM-MW-5(S)	126%	0

	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	(80-133)	(80-136)

Prep Method: SW5030
Log Number Range: 08-14247 to 08-14249

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260 SIM **Sample ID: LCS-072508**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-072508
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized: VTS
Reported: 07/25/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT7/JZ
LCSD: NT7/JZ
Date Analyzed LCS: 07/25/08 12:40
LCSD: 07/25/08 13:12

Sample Amount LCS: 10.0 mL
LCSD: 10.0 mL
Purge Volume LCS: 10.0 mL
LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Vinyl Chloride	1.18	1.00	118%	1.05	1.00	105%	11.7%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	117%	114%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: RM-MW-3(S)**
Page 1 of 1 **SAMPLE**

Lab Sample ID: ND59A
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized: VTS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/10/08 16:53
Instrument/Analyst: NT2/YZ

Sample Amount: 410 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.012**	**0.36 B**
91-57-6	**2-Methylnaphthalene**	**0.012**	**0.11 B**
90-12-0	**1-Methylnaphthalene**	**0.012**	**0.099 B**
208-96-8	Acenaphthylene	0.012	< 0.012 U
83-32-9	**Acenaphthene**	**0.012**	**0.070 B**
86-73-7	**Fluorene**	**0.012**	**0.041**
85-01-8	**Phenanthrene**	**0.012**	**0.040 B**
120-12-7	Anthracene	0.012	< 0.012 U
206-44-0	**Fluoranthene**	**0.012**	**0.015**
129-00-0	**Pyrene**	**0.012**	**0.012**
56-55-3	Benzo(a)anthracene	0.012	< 0.012 U
218-01-9	Chrysene	0.012	< 0.012 U
205-99-2	Benzo(b)fluoranthene	0.012	< 0.012 U
207-08-9	Benzo(k)fluoranthene	0.012	< 0.012 U
50-32-8	Benzo(a)pyrene	0.012	< 0.012 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.012	< 0.012 U
53-70-3	Dibenz(a,h)anthracene	0.012	< 0.012 U
191-24-2	Benzo(g,h,i)perylene	0.012	< 0.012 U
132-64-9	**Dibenzofuran**	**0.012**	**0.025**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	60.7%
d14-Dibenzo(a,h)anthracene	42.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-3(S) REEXTRACT

Lab Sample ID: ND59A
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/15/08
Date Analyzed: 07/23/08 14:48
Instrument/Analyst: NT2/PK

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

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	< 0.010 U
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	**Acenaphthene**	**0.010**	**0.011**
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	70.7%
d14-Dibenzo(a,h)anthracene	38.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: RM-MW-4(S)
SAMPLE

Lab Sample ID: ND59B
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized: VTS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/10/08 17:17
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.011**	**0.15 B**
91-57-6	**2-Methylnaphthalene**	**0.011**	**0.041 B**
90-12-0	**1-Methylnaphthalene**	**0.011**	**0.045 B**
208-96-8	Acenaphthylene	0.011	< 0.011 U
83-32-9	**Acenaphthene**	**0.011**	**0.70 B**
86-73-7	**Fluorene**	**0.011**	**0.19**
85-01-8	**Phenanthrene**	**0.011**	**0.025 B**
120-12-7	**Anthracene**	**0.011**	**0.042**
206-44-0	**Fluoranthene**	**0.011**	**0.018**
129-00-0	**Pyrene**	**0.011**	**0.022**
56-55-3	**Benzo(a)anthracene**	**0.011**	**0.012**
218-01-9	Chrysene	0.011	< 0.011 U
205-99-2	Benzo(b)fluoranthene	0.011	< 0.011 U
207-08-9	Benzo(k)fluoranthene	0.011	< 0.011 U
50-32-8	Benzo(a)pyrene	0.011	< 0.011 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.011	< 0.011 U
53-70-3	Dibenz(a,h)anthracene	0.011	< 0.011 U
191-24-2	Benzo(g,h,i)perylene	0.011	< 0.011 U
132-64-9	**Dibenzofuran**	**0.011**	**0.37**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	66.0%
d14-Dibenzo(a,h)anthracene	63.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-4(S) REEXTRACT

Lab Sample ID: ND59B
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/15/08
Date Analyzed: 07/23/08 15:12
Instrument/Analyst: NT2/PK

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.030**
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	**1-Methylnaphthalene**	**0.010**	**0.014**
208-96-8	**Acenaphthylene**	**0.010**	**0.010**
83-32-9	**Acenaphthene**	**0.010**	**1.0 E**
86-73-7	**Fluorene**	**0.010**	**0.18**
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	**Anthracene**	**0.010**	**0.030**
206-44-0	**Fluoranthene**	**0.010**	**0.012**
129-00-0	**Pyrene**	**0.010**	**0.017**
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	**Dibenzofuran**	**0.010**	**0.43**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	73.3%
d14-Dibenzo(a,h)anthracene	73.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-4(S)
REEXTRACT DL

Lab Sample ID: ND59B
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/15/08
Date Analyzed: 07/23/08 18:02
Instrument/Analyst: NT2/PK

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.030**	**0.037**
91-57-6	2-Methylnaphthalene	0.030	< 0.030 U
90-12-0	1-Methylnaphthalene	0.030	< 0.030 U
208-96-8	Acenaphthylene	0.030	< 0.030 U
83-32-9	**Acenaphthene**	**0.030**	**1.1**
86-73-7	**Fluorene**	**0.030**	**0.18**
85-01-8	Phenanthrene	0.030	< 0.030 U
120-12-7	**Anthracene**	**0.030**	**0.030**
206-44-0	Fluoranthene	0.030	< 0.030 U
129-00-0	Pyrene	0.030	< 0.030 U
56-55-3	Benzo(a)anthracene	0.030	< 0.030 U
218-01-9	Chrysene	0.030	< 0.030 U
205-99-2	Benzo(b)fluoranthene	0.030	< 0.030 U
207-08-9	Benzo(k)fluoranthene	0.030	< 0.030 U
50-32-8	Benzo(a)pyrene	0.030	< 0.030 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.030	< 0.030 U
53-70-3	Dibenz(a,h)anthracene	0.030	< 0.030 U
191-24-2	Benzo(g,h,i)perylene	0.030	< 0.030 U
132-64-9	**Dibenzofuran**	**0.030**	**0.37**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	69.2%
d14-Dibenzo(a,h)anthracene	45.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-5(S)
SAMPLE

Lab Sample ID: ND59C
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized: VJS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/10/08 17:41
Instrument/Analyst: NT2/YZ

Sample Amount: 490 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.12 B**
91-57-6	**2-Methylnaphthalene**	**0.010**	**0.015 B**
90-12-0	**1-Methylnaphthalene**	**0.010**	**0.013 B**
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	**Acenaphthene**	**0.010**	**0.014 B**
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	66.3%
d14-Dibenzo(a,h)anthracene	89.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: RM-MW-5(S) REEXTRACT

Lab Sample ID: ND59C
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/15/08
Date Analyzed: 07/23/08 15:37
Instrument/Analyst: NT2/PK

Sample Amount: 425 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.012**	**0.047**
91-57-6	2-Methylnaphthalene	0.012	< 0.012 U
90-12-0	1-Methylnaphthalene	0.012	< 0.012 U
208-96-8	Acenaphthylene	0.012	< 0.012 U
83-32-9	Acenaphthene	0.012	< 0.012 U
86-73-7	Fluorene	0.012	< 0.012 U
85-01-8	Phenanthrene	0.012	< 0.012 U
120-12-7	Anthracene	0.012	< 0.012 U
206-44-0	Fluoranthene	0.012	< 0.012 U
129-00-0	Pyrene	0.012	< 0.012 U
56-55-3	Benzo(a)anthracene	0.012	< 0.012 U
218-01-9	Chrysene	0.012	< 0.012 U
205-99-2	Benzo(b)fluoranthene	0.012	< 0.012 U
207-08-9	Benzo(k)fluoranthene	0.012	< 0.012 U
50-32-8	Benzo(a)pyrene	0.012	< 0.012 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.012	< 0.012 U
53-70-3	Dibenz(a,h)anthracene	0.012	< 0.012 U
191-24-2	Benzo(g,h,i)perylene	0.012	< 0.012 U
132-64-9	Dibenzofuran	0.012	< 0.012 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	74.0%
d14-Dibenzo(a,h)anthracene	76.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-6(S)
SAMPLE

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized: VTS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/10/08 18:05
Instrument/Analyst: NT2/YZ

Sample Amount: 10.0 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.50**	**120 EB**
91-57-6	**2-Methylnaphthalene**	**0.50**	**48 B**
90-12-0	**1-Methylnaphthalene**	**0.50**	**49 B**
208-96-8	Acenaphthylene	0.50	< 0.50 U
83-32-9	**Acenaphthene**	**0.50**	**75 EB**
86-73-7	**Fluorene**	**0.50**	**58**
85-01-8	**Phenanthrene**	**0.50**	**85 EB**
120-12-7	**Anthracene**	**0.50**	**15**
206-44-0	**Fluoranthene**	**0.50**	**16**
129-00-0	**Pyrene**	**0.50**	**12**
56-55-3	**Benzo(a)anthracene**	**0.50**	**1.3**
218-01-9	**Chrysene**	**0.50**	**1.6**
205-99-2	**Benzo(b)fluoranthene**	**0.50**	**0.60**
207-08-9	**Benzo(k)fluoranthene**	**0.50**	**0.60**
50-32-8	Benzo(a)pyrene	0.50	< 0.50 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.50	< 0.50 U
53-70-3	Dibenz(a,h)anthracene	0.50	< 0.50 U
191-24-2	Benzo(g,h,i)perylene	0.50	< 0.50 U
132-64-9	**Dibenzofuran**	**0.50**	**28**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	57.7%
d14-Dibenzo(a,h)anthracene	87.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-6(S)
DILUTION

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized: VTS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/14/08 14:11
Instrument/Analyst: NT2/YZ

Sample Amount: 10.0 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 5.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**2.5**	**130 B**
91-57-6	**2-Methylnaphthalene**	**2.5**	**49 B**
90-12-0	**1-Methylnaphthalene**	**2.5**	**48 B**
208-96-8	Acenaphthylene	2.5	< 2.5 U
83-32-9	**Acenaphthene**	**2.5**	**65 B**
86-73-7	**Fluorene**	**2.5**	**45**
85-01-8	**Phenanthrene**	**2.5**	**77 B**
120-12-7	**Anthracene**	**2.5**	**11**
206-44-0	**Fluoranthene**	**2.5**	**14**
129-00-0	**Pyrene**	**2.5**	**10**
56-55-3	Benzo(a)anthracene	2.5	< 2.5 U
218-01-9	Chrysene	2.5	< 2.5 U
205-99-2	Benzo(b)fluoranthene	2.5	< 2.5 U
207-08-9	Benzo(k)fluoranthene	2.5	< 2.5 U
50-32-8	Benzo(a)pyrene	2.5	< 2.5 U
193-39-5	Indeno(1,2,3-cd)pyrene	2.5	< 2.5 U
53-70-3	Dibenz(a,h)anthracene	2.5	< 2.5 U
191-24-2	Benzo(g,h,i)perylene	2.5	< 2.5 U
132-64-9	**Dibenzofuran**	**2.5**	**26**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	57.0%
d14-Dibenzo(a,h)anthracene	66.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: RM-MW-6(S)**
Page 1 of 1 **REEXTRACT**

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/15/08
Date Analyzed: 07/23/08 16:01
Instrument/Analyst: NT2/PK

Sample Amount: 475 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 100

CAS Number	Analyte	RL	Result	
91-20-3	**Naphthalene**	**1.0**	**120**	**E**
91-57-6	**2-Methylnaphthalene**	**1.0**	**57**	
90-12-0	**1-Methylnaphthalene**	**1.0**	**56**	
208-96-8	Acenaphthylene	1.0	< 1.0	U
83-32-9	**Acenaphthene**	**1.0**	**91**	
86-73-7	**Fluorene**	**1.0**	**62**	
85-01-8	**Phenanthrene**	**1.0**	**120**	**E**
120-12-7	**Anthracene**	**1.0**	**20**	
206-44-0	**Fluoranthene**	**1.0**	**32**	
129-00-0	**Pyrene**	**1.0**	**26**	
56-55-3	**Benzo(a)anthracene**	**1.0**	**3.4**	
218-01-9	**Chrysene**	**1.0**	**7.0**	
205-99-2	**Benzo(b)fluoranthene**	**1.0**	**2.3**	
207-08-9	**Benzo(k)fluoranthene**	**1.0**	**1.8**	
50-32-8	**Benzo(a)pyrene**	**1.0**	**1.3**	
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0	U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0	U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0	U
132-64-9	**Dibenzofuran**	**1.0**	**31**	

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: RM-MW-6(S)**
Page 1 of 1 **REEXTRACT DL**

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/15/08
Date Analyzed: 07/24/08 10:41
Instrument/Analyst: NT2/PK

Sample Amount: 475 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 200

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**2.1**	**110**
91-57-6	**2-Methylnaphthalene**	**2.1**	**53**
90-12-0	**1-Methylnaphthalene**	**2.1**	**52**
208-96-8	Acenaphthylene	2.1	< 2.1 U
83-32-9	**Acenaphthene**	**2.1**	**89**
86-73-7	**Fluorene**	**2.1**	**62**
85-01-8	**Phenanthrene**	**2.1**	**120**
120-12-7	**Anthracene**	**2.1**	**21**
206-44-0	**Fluoranthene**	**2.1**	**33**
129-00-0	**Pyrene**	**2.1**	**27**
56-55-3	**Benzo(a)anthracene**	**2.1**	**4.0**
218-01-9	**Chrysene**	**2.1**	**8.2**
205-99-2	**Benzo(b)fluoranthene**	**2.1**	**3.1**
207-08-9	**Benzo(k)fluoranthene**	**2.1**	**2.1**
50-32-8	Benzo(a)pyrene	2.1	< 2.1 U
193-39-5	Indeno(1,2,3-cd)pyrene	2.1	< 2.1 U
53-70-3	Dibenz(a,h)anthracene	2.1	< 2.1 U
191-24-2	Benzo(g,h,i)perylene	2.1	< 2.1 U
132-64-9	**Dibenzofuran**	**2.1**	**28**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-6(D)
SAMPLE

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized: VTS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/14/08 14:59
Instrument/Analyst: NT2/YZ

Sample Amount: 480 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 10.0

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	0.10	71 EB
91-57-6	**2-Methylnaphthalene**	0.10	58 EB
90-12-0	**1-Methylnaphthalene**	0.10	55 EB
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	**Acenaphthene**	0.10	80 EB
86-73-7	**Fluorene**	0.10	57 E
85-01-8	**Phenanthrene**	0.10	130 EB
120-12-7	**Anthracene**	0.10	34 E
206-44-0	**Fluoranthene**	0.10	54 E
129-00-0	**Pyrene**	0.10	46 E
56-55-3	**Benzo(a)anthracene**	0.10	9.0
218-01-9	**Chrysene**	0.10	16 E
205-99-2	**Benzo(b)fluoranthene**	0.10	4.0
207-08-9	**Benzo(k)fluoranthene**	0.10	4.0
50-32-8	**Benzo(a)pyrene**	0.10	2.8
193-39-5	**Indeno(1,2,3-cd)pyrene**	0.10	1.5
53-70-3	**Dibenz(a,h)anthracene**	0.10	0.66
191-24-2	**Benzo(g,h,i)perylene**	0.10	1.7
132-64-9	**Dibenzofuran**	0.10	31 E

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	81.7%
d14-Dibenzo(a,h)anthracene	28.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: RM-MW-6(D)**
Page 1 of 1 **DILUTION**

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized: VTS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/15/08 10:30
Instrument/Analyst: NT2/YZ

Sample Amount: 480 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 300

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**3.1**	**170 B**
91-57-6	**2-Methylnaphthalene**	**3.1**	**87 B**
90-12-0	**1-Methylnaphthalene**	**3.1**	**82 B**
208-96-8	Acenaphthylene	3.1	< 3.1 U
83-32-9	**Acenaphthene**	**3.1**	**120 B**
86-73-7	**Fluorene**	**3.1**	**91**
85-01-8	**Phenanthrene**	**3.1**	**180 B**
120-12-7	**Anthracene**	**3.1**	**39**
206-44-0	**Fluoranthene**	**3.1**	**60**
129-00-0	**Pyrene**	**3.1**	**49**
56-55-3	**Benzo(a)anthracene**	**3.1**	**8.2**
218-01-9	**Chrysene**	**3.1**	**16**
205-99-2	**Benzo(b)fluoranthene**	**3.1**	**3.8**
207-08-9	**Benzo(k)fluoranthene**	**3.1**	**3.8**
50-32-8	Benzo(a)pyrene	3.1	< 3.1 U
193-39-5	Indeno(1,2,3-cd)pyrene	3.1	< 3.1 U
53-70-3	Dibenz(a,h)anthracene	3.1	< 3.1 U
191-24-2	Benzo(g,h,i)perylene	3.1	< 3.1 U
132-64-9	**Dibenzofuran**	**3.1**	**50**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: RM-MW-6(D)**
Page 1 of 1 **REEXTRACT**

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/15/08
Date Analyzed: 07/23/08 16:25
Instrument/Analyst: NT2/PK

Sample Amount: 10.0 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 5.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**2.5**	**120**
91-57-6	**2-Methylnaphthalene**	**2.5**	**54**
90-12-0	**1-Methylnaphthalene**	**2.5**	**52**
208-96-8	Acenaphthylene	2.5	< 2.5 U
83-32-9	**Acenaphthene**	**2.5**	**76**
86-73-7	**Fluorene**	**2.5**	**50**
85-01-8	**Phenanthrene**	**2.5**	**75**
120-12-7	**Anthracene**	**2.5**	**12**
206-44-0	**Fluoranthene**	**2.5**	**14**
129-00-0	**Pyrene**	**2.5**	**11**
56-55-3	Benzo(a)anthracene	2.5	< 2.5 U
218-01-9	Chrysene	2.5	< 2.5 U
205-99-2	Benzo(b)fluoranthene	2.5	< 2.5 U
207-08-9	Benzo(k)fluoranthene	2.5	< 2.5 U
50-32-8	Benzo(a)pyrene	2.5	< 2.5 U
193-39-5	Indeno(1,2,3-cd)pyrene	2.5	< 2.5 U
53-70-3	Dibenz(a,h)anthracene	2.5	< 2.5 U
191-24-2	Benzo(g,h,i)perylene	2.5	< 2.5 U
132-64-9	**Dibenzofuran**	**2.5**	**22**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	62.5%
d14-Dibenzo(a,h)anthracene	43.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: SPL-MW-B(S)
SAMPLE

Lab Sample ID: ND59F
LIMS ID: 08-14252
Matrix: Water
Data Release Authorized:
Reported: 07/28/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/10/08 18:53
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result	TEQ
56-55-3	**Benzo(a)anthracene**	**0.010**	**0.016**	**0.0016**
218-01-9	**Chrysene**	**0.010**	**0.024**	**0.0002**
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U	
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U	
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U	
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U	
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U	

cPAH TEQ 0.0018

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	50.0%
d14-Dibenzo(a,h)anthracene	27.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: SPL-MW-C(S)
SAMPLE

Lab Sample ID: ND59G
LIMS ID: 08-14253
Matrix: Water
Data Release Authorized:
Reported: 07/28/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/14/08 13:47
Instrument/Analyst: NT2/YZ

Sample Amount: 465 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result	TEQ
56-55-3	Benzo(a)anthracene	0.011	< 0.011 U	
218-01-9	Chrysene	0.011	< 0.011 U	
205-99-2	Benzo(b)fluoranthene	0.011	< 0.011 U	
207-08-9	Benzo(k)fluoranthene	0.011	< 0.011 U	
50-32-8	Benzo(a)pyrene	0.011	< 0.011 U	
193-39-5	Indeno(1,2,3-cd)pyrene	0.011	< 0.011 U	
53-70-3	Dibenz(a,h)anthracene	0.011	< 0.011 U	
			cPAH TEQ	NA

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	58.3%
d14-Dibenzo(a,h)anthracene	21.5%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: SPL-MW-F(S)
SAMPLE

Lab Sample ID: ND59H
LIMS ID: 08-14254
Matrix: Water
Data Release Authorized:
Reported: 07/28/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/03/08
Date Analyzed: 07/10/08 19:41
Instrument/Analyst: NT2/YZ

Sample Amount: 490 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result	TEQ
56-55-3	**Benzo(a)anthracene**	0.010	0.018	0.0018
218-01-9	**Chrysene**	0.010	0.062	0.0006
205-99-2	**Benzo(b)fluoranthene**	0.010	0.045	0.0045
207-08-9	**Benzo(k)fluoranthene**	0.010	0.045	0.0045
50-32-8	**Benzo(a)pyrene**	0.010	0.014	0.0139
193-39-5	**Indeno(1,2,3-cd)pyrene**	0.010	0.017	0.0017
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U	

cPAH TEQ 0.0270

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	56.3%
d14-Dibenzo(a,h)anthracene	14.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: MB-070308**
Page 1 of 1 **METHOD BLANK**

Lab Sample ID: MB-070308
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized: VNS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted: 07/03/08
Date Analyzed: 07/10/08 15:41
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.050**
91-57-6	**2-Methylnaphthalene**	**0.010**	**0.015**
90-12-0	**1-Methylnaphthalene**	**0.010**	**0.013**
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	**Acenaphthene**	**0.010**	**0.012**
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	**Phenanthrene**	**0.010**	**0.013**
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	72.7%
d14-Dibenzo(a,h)anthracene	86.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: MB-071508**
Page 1 of 1 **METHOD BLANK**

Lab Sample ID: MB-071508
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted: 07/15/08
Date Analyzed: 07/23/08 13:36
Instrument/Analyst: NT2/PK

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

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	< 0.010 U
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	84.0%
d14-Dibenzo(a,h)anthracene	83.0%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

Client ID	MNP	DBA	TOT OUT
MB-070308	72.7%	86.7%	0
LCS-070308	63.0%	89.7%	0
LCSD-070308	66.7%	94.3%	0
RM-MW-3(S)	60.7%	42.7%	0
RM-MW-3(S) RE	70.7%	38.0%	0
MB-071508	84.0%	83.0%	0
LCS-071508	84.3%	99.3%	0
LCSD-071508	83.7%	100%	0
RM-MW-4(S)	66.0%	63.0%	0
RM-MW-4(S) RE	73.3%	73.0%	0
RM-MW-5(S)	66.3%	89.0%	0
RM-MW-5(S) RE	74.0%	76.3%	0
RM-MW-6(S)	57.7%	87.7%	0
RM-MW-6(S) DL	57.0%	66.8%	0
RM-MW-6(S) RE	D	D	0
RM-MW-6(D)	81.7%	28.8%	0
RM-MW-6(D) DL	D	D	0
RM-MW-6(D) RE	62.5%	43.7%	0
SPL-MW-B(S)	50.0%	27.3%	0
SPL-MW-B(S) DL	51.3%	22.8%	0
SPL-MW-B(S) RE	74.3%	20.7%	0
SPL-MW-C(S)	58.3%	21.5%	0
SPL-MW-C(S) RE	64.3%	16.3%	0
SPL-MW-F(S)	56.3%	14.4%	0
SPL-MW-F(S) DL	53.0%	10.0%	0
SPL-MW-F(S) RE	57.7%	D	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(49-113)	(44-112)
(DBA) = d14-Dibenzo(a,h)anthracene	(49-132)	(10-138)

Prep Method: SW3520C
Log Number Range: 08-14247 to 08-14254

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: LCS-070308
LAB CONTROL SAMPLE

Lab Sample ID: LCS-070308
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized: VTS
Reported: 07/17/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 07/03/08

Date Analyzed LCS: 07/10/08 16:05
LCSD: 07/10/08 16:29
Instrument/Analyst LCS: NT2/YZ
LCSD: NT2/YZ

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

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	0.214	0.300	71.3%	0.262	0.300	87.3%	20.2%
2-Methylnaphthalene	0.170	0.300	56.7%	0.206	0.300	68.7%	19.1%
1-Methylnaphthalene	0.185	0.300	61.7%	0.207	0.300	69.0%	11.2%
Acenaphthylene	0.190	0.300	63.3%	0.203	0.300	67.7%	6.6%
Acenaphthene	0.197	0.300	65.7%	0.214	0.300	71.3%	8.3%
Fluorene	0.247	0.300	82.3%	0.260	0.300	86.7%	5.1%
Phenanthrene	0.233	0.300	77.7%	0.258	0.300	86.0%	10.2%
Anthracene	0.249	0.300	83.0%	0.268	0.300	89.3%	7.4%
Fluoranthene	0.285	0.300	95.0%	0.306	0.300	102%	7.1%
Pyrene	0.282	0.300	94.0%	0.310	0.300	103%	9.5%
Benzo(a)anthracene	0.266	0.300	88.7%	0.272	0.300	90.7%	2.2%
Chrysene	0.243	0.300	81.0%	0.260	0.300	86.7%	6.8%
Benzo(b)fluoranthene	0.265	0.300	88.3%	0.302	0.300	101%	13.1%
Benzo(k)fluoranthene	0.209	0.300	69.7%	0.216	0.300	72.0%	3.3%
Benzo(a)pyrene	0.158	0.300	52.7%	0.0852	0.300	28.4%	59.9%
Indeno(1,2,3-cd)pyrene	0.242	0.300	80.7%	0.260	0.300	86.7%	7.2%
Dibenz(a,h)anthracene	0.222	0.300	74.0%	0.242	0.300	80.7%	8.6%
Benzo(g,h,i)perylene	0.245	0.300	81.7%	0.234	0.300	78.0%	4.6%
Dibenzofuran	0.173	0.300	57.7%	0.186	0.300	62.0%	7.2%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	63.0%	66.7%
d14-Dibenzo(a,h)anthracene	89.7%	94.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: LCS-071508
LAB CONTROL SAMPLE

Lab Sample ID: LCS-071508
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized:
Reported: 07/24/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 07/15/08

Date Analyzed LCS: 07/23/08 14:00
LCSD: 07/23/08 14:24
Instrument/Analyst LCS: NT2/PK
LCSD: NT2/PK

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

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	0.220	0.300	73.3%	0.232	0.300	77.3%	5.3%
2-Methylnaphthalene	0.228	0.300	76.0%	0.233	0.300	77.7%	2.2%
1-Methylnaphthalene	0.238	0.300	79.3%	0.240	0.300	80.0%	0.8%
Acenaphthylene	0.235	0.300	78.3%	0.245	0.300	81.7%	4.2%
Acenaphthene	0.248	0.300	82.7%	0.259	0.300	86.3%	4.3%
Fluorene	0.249	0.300	83.0%	0.258	0.300	86.0%	3.6%
Phenanthrene	0.260	0.300	86.7%	0.264	0.300	88.0%	1.5%
Anthracene	0.238	0.300	79.3%	0.215	0.300	71.7%	10.2%
Fluoranthene	0.289	0.300	96.3%	0.295	0.300	98.3%	2.1%
Pyrene	0.283	0.300	94.3%	0.286	0.300	95.3%	1.1%
Benzo(a)anthracene	0.287	0.300	95.7%	0.287	0.300	95.7%	0.0%
Chrysene	0.290	0.300	96.7%	0.294	0.300	98.0%	1.4%
Benzo(b)fluoranthene	0.270	0.300	90.0%	0.271	0.300	90.3%	0.4%
Benzo(k)fluoranthene	0.268	0.300	89.3%	0.274	0.300	91.3%	2.2%
Benzo(a)pyrene	0.189	0.300	63.0%	0.150	0.300	50.0%	23.0%
Indeno(1,2,3-cd)pyrene	0.267	0.300	89.0%	0.275	0.300	91.7%	3.0%
Dibenz(a,h)anthracene	0.266	0.300	88.7%	0.271	0.300	90.3%	1.9%
Benzo(g,h,i)perylene	0.264	0.300	88.0%	0.272	0.300	90.7%	3.0%
Dibenzofuran	0.172	0.300	57.3%	0.179	0.300	59.7%	4.0%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	84.3%	83.7%
d14-Dibenzo(a,h)anthracene	99.3%	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-3(S)
SAMPLE

Lab Sample ID: ND59A
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 15:05
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 910 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.011	< 0.011 U
53469-21-9	Aroclor 1242	0.011	< 0.011 U
12672-29-6	Aroclor 1248	0.011	< 0.011 U
11097-69-1	Aroclor 1254	0.011	< 0.011 U
11096-82-5	Aroclor 1260	0.011	< 0.011 U
11104-28-2	Aroclor 1221	0.011	< 0.011 U
11141-16-5	Aroclor 1232	0.011	< 0.011 U

Reported in µg/L (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	65.8%
Tetrachlorometaxylene	78.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-4(S)
SAMPLE

Lab Sample ID: ND59B
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 15:23
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 980 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	73.8%
Tetrachlorometaxylene	77.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-5(S)
SAMPLE

Lab Sample ID: ND59C
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 15:40
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 960 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	65.8%
Tetrachlorometaxylene	84.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-6(S)
SAMPLE

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/07/08
Date Analyzed: 07/11/08 15:14
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 1000 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 3.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.030	< 0.030 U
53469-21-9	Aroclor 1242	0.030	< 0.030 U
12672-29-6	**Aroclor 1248**	**0.030**	**0.73**
11097-69-1	**Aroclor 1254**	**0.030**	**0.77**
11096-82-5	**Aroclor 1260**	**0.030**	**0.11**
11104-28-2	Aroclor 1221	0.030	< 0.030 U
11141-16-5	Aroclor 1232	0.030	< 0.030 U

Reported in µg/L (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	62.6%
Tetrachlorometaxylene	64.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-6(D)
SAMPLE

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/07/08
Date Analyzed: 07/11/08 15:49
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 950 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 3.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.032	< 0.032 U
53469-21-9	Aroclor 1242	0.032	< 0.032 U
12672-29-6	**Aroclor 1248**	**0.032**	**1.2**
11097-69-1	**Aroclor 1254**	**0.032**	**1.3**
11096-82-5	**Aroclor 1260**	**0.032**	**0.18**
11104-28-2	Aroclor 1221	0.032	< 0.032 U
11141-16-5	Aroclor 1232	0.032	< 0.032 U

Reported in µg/L (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	64.0%
Tetrachlorometaxylene	68.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082

Sample ID: MB-070708
METHOD BLANK

Lab Sample ID: MB-070708
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 14:13
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 1000 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	64.2%
Tetrachlorometaxylene	80.8%

ANALYTICAL RESOURCES INCORPORATED

SW8082/PCB WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

Client ID	DCBP % REC	DCBP LCL-UCL	TCMX % REC	TCMX LCL-UCL	TOT OUT
MB-070708	64.2%	36-102	80.8%	34-93	0
LCS-070708	65.0%	36-102	83.0%	34-93	0
LCSD-070708	66.0%	36-102	73.0%	34-93	0
RM-MW-3(S)	65.8%	19-121	78.2%	30-98	0
RM-MW-4(S)	73.8%	19-121	77.8%	30-98	0
RM-MW-5(S)	65.8%	19-121	84.0%	30-98	0
RM-MW-6(S)	62.6%	19-121	64.5%	30-98	0
RM-MW-6(D)	64.0%	19-121	68.6%	30-98	0

Prep Method: SW3510C
Log Number Range: 08-14247 to 08-14251

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082 **Sample ID: LCS-070708**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-070708
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 07/07/08

Date Analyzed LCS: 07/10/08 14:30
LCSD: 07/10/08 14:47
Instrument/Analyst LCS: ECD5/JGR
LCSD: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount LCS: 1000 mL
LCSD: 1000 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Silica Gel: No
Acid Cleanup: Yes

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Aroclor 1016	0.048	0.050	96.0%	0.049	0.050	98.0%	2.1%
Aroclor 1260	0.046	0.050	92.0%	0.047	0.050	94.0%	2.2%

PCB Surrogate Recovery

	LCS	LCSD
Decachlorobiphenyl	65.0%	66.0%
Tetrachlorometaxylene	83.0%	73.0%

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

ANALYTICAL RESOURCES INCORPORATED

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

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

Data Release Authorized:
Reported: 07/15/08

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-070308	Method Blank	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14247	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		87.1%
ND59A	RM-MW-3(S)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14247	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		73.1%
ND59B	RM-MW-4(S)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14248	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		82.7%
ND59C	RM-MW-5(S)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14249	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		86.2%
ND59D	RM-MW-6(S)	07/03/08	07/09/08	1.00	**Diesel**	**1.2**	**7.4**
08-14250	HC ID: **DIESEL**		FID3A	5.0	Motor Oil	2.5	< 2.5 U
					o-Terphenyl		32.9%
ND59E	RM-MW-6(D)	07/03/08	07/09/08	1.00	**Diesel**	**1.2**	**15**
08-14251	HC ID: **DIESEL**		FID3A	5.0	Motor Oil	2.5	< 2.5 U
					o-Terphenyl		16.9%

Reported in mg/L (ppm)

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

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

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020

Client ID	OTER	TOT OUT
MB-070308	87.1%	0
LCS-070308	91.3%	0
LCSD-070308	89.3%	0
RM-MW-3(S)	73.1%	0
RM-MW-4(S)	82.7%	0
RM-MW-5(S)	86.2%	0
RM-MW-6(S)	32.9%*	1
RM-MW-6(D)	16.9%*	1

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(49-118)	(45-112)

Prep Method: SW3510C
Log Number Range: 08-14247 to 08-14251

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-070308**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-070308 QC Report No: ND59-Landau Associates
LIMS ID: 08-14247 Project: PORT OF TACOMA KAISER
Matrix: Water 168004.020
Data Release Authorized: Date Sampled: 07/01/08
Reported: 07/15/08 Date Received: 07/01/08

Date Extracted LCS/LCSD: 07/03/08 Sample Amount LCS: 500 mL
LCSD: 500 mL
Date Analyzed LCS: 07/09/08 16:27 Final Extract Volume LCS: 1.0 mL
LCSD: 07/09/08 16:43 LCSD: 1.0 mL
Instrument/Analyst LCS: FID/MS Dilution Factor LCS: 1.00
LCSD: FID/MS LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.52	3.00	84.0%	2.39	3.00	79.7%	5.3%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	91.3%	89.3%

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

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Water
Date Received: 07/01/08

ARI Job: ND59
Project: PORT OF TACOMA KAISER
168004.020

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
08-14247-070308MB1	Method Blank	500 mL	1.00 mL	07/03/08
08-14247-070308LCS1	Lab Control	500 mL	1.00 mL	07/03/08
08-14247-070308LCSD1	Lab Control Dup	500 mL	1.00 mL	07/03/08
08-14247-ND59A	RM-MW-3(S)	470 mL	1.00 mL	07/03/08
08-14248-ND59B	RM-MW-4(S)	500 mL	1.00 mL	07/03/08
08-14249-ND59C	RM-MW-5(S)	490 mL	1.00 mL	07/03/08
08-14250-ND59D	RM-MW-6(S)	485 mL	1.00 mL	07/03/08
08-14251-ND59E	RM-MW-6(D)	500 mL	1.00 mL	07/03/08

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: RM-MW-3(S)
ARI ID: 08-14247 ND59A

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.005	0.005
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: RM-MW-4(S)
ARI ID: 08-14248 ND59B

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.005	< 0.005 U
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: RM-MW-5(S)
ARI ID: 08-14249 ND59C

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.005	< 0.005 U
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: RM-MW-6(S)
ARI ID: 08-14250 ND59D

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.005	0.026
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: RM-MW-6(D)
ARI ID: 08-14251 ND59E

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.005	0.036
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: SPL-MW-B(S)
ARI ID: 08-14252 ND59F

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.025	0.370
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	0.006

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: SPL-MW-C(S)
ARI ID: 08-14253 ND59G

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.005	0.029
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	0.006

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Client ID: SPL-MW-F(S)
ARI ID: 08-14254 ND59H

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/09/08 070908#1	EPA 335.4	mg/L	0.100	1.02
Weak Acid Dissoc. Cyanide	07/12/08 071208#1	SM4500CN-I	mg/L	0.005	0.011

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: NA
Date Received: NA

Analyte	Method	Date	Units	Blank
Total Cyanide	EPA 335.4	07/09/08	mg/L	< 0.005 U
Weak Acid Dissoc. Cyanide	SM4500CN-I	07/12/08	mg/L	< 0.005 U

STANDARD REFERENCE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
Total Cyanide SPEX #33-6AS	EPA 335.4	07/09/08	mg/L	0.138	0.150	92.0%
Weak Acid Dissoc. Cyanide SPEX #33-6AS	SM4500CN-I	07/12/08	mg/L	0.147	0.150	98.0%

REPLICATE RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: ND59A Client ID: RM-MW-3(S)						
Total Cyanide	EPA 335.4	07/09/08	mg/L	0.005	< 0.005	NA
Weak Acid Dissoc. Cyani	SM4500CN-I	07/12/08	mg/L	< 0.005	< 0.005	NA

MS/MSD RESULTS-CONVENTIONALS
ND59-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: PORT OF TACOMA KAISER
Event: 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: ND59A Client ID: RM-MW-3(S)							
Total Cyanide	EPA 335.4	07/09/08	mg/L	0.005	0.134	0.150	86.0%
Weak Acid Dissoc. Cyanid	SM4500CN-I	07/12/08	mg/L	< 0.005	0.116	0.147	78.9%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: RM-MW-3(S)
SAMPLE

Lab Sample ID: ND59A
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/11/08	**7440-38-2**	**Arsenic**	1	**11**	
200.8	07/08/08	200.8	07/14/08	**7440-43-9**	**Cadmium**	0.2	**0.2**	
200.8	07/08/08	200.8	07/11/08	**7440-47-3**	**Chromium**	2	**21**	
200.8	07/08/08	200.8	07/11/08	**7440-50-8**	**Copper**	2	**51**	
200.8	07/08/08	200.8	07/11/08	**7439-92-1**	**Lead**	5	**7**	
7470	07/16/08	7470A	07/18/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/11/08	**7440-66-6**	**Zinc**	20	**60**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: RM-MW-4(S)
SAMPLE

Lab Sample ID: ND59B
LIMS ID: 08-14248
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/15/08	**7440-38-2**	**Arsenic**	0.2	**2.8**	
200.8	07/08/08	200.8	07/14/08	7440-43-9	Cadmium	0.2	0.2	U
200.8	07/08/08	200.8	07/14/08	**7440-47-3**	**Chromium**	0.5	**2.8**	
200.8	07/08/08	200.8	07/15/08	**7440-50-8**	**Copper**	0.5	**6.1**	
200.8	07/08/08	200.8	07/14/08	7439-92-1	Lead	1	1	U
7470	07/16/08	7470A	07/18/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/15/08	**7440-66-6**	**Zinc**	4	**10**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: RM-MW-5(S)
SAMPLE

Lab Sample ID: ND59C
LIMS ID: 08-14249
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/15/08	**7440-38-2**	**Arsenic**	0.2	**1.6**	
200.8	07/08/08	200.8	07/14/08	7440-43-9	Cadmium	0.2	0.2	U
200.8	07/08/08	200.8	07/14/08	7440-47-3	Chromium	0.5	0.5	U
200.8	07/08/08	200.8	07/15/08	**7440-50-8**	**Copper**	0.5	**0.5**	
200.8	07/08/08	200.8	07/14/08	7439-92-1	Lead	1	1	U
7470	07/16/08	7470A	07/18/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/15/08	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: RM-MW-6(S)
SAMPLE

Lab Sample ID: ND59D
LIMS ID: 08-14250
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/11/08	**7440-38-2**	**Arsenic**	2	**85**	
200.8	07/08/08	200.8	07/11/08	**7440-43-9**	**Cadmium**	1	**1**	
200.8	07/08/08	200.8	07/14/08	**7440-47-3**	**Chromium**	5	**74**	
200.8	07/08/08	200.8	07/11/08	**7440-50-8**	**Copper**	2	**201**	
200.8	07/08/08	200.8	07/11/08	**7439-92-1**	**Lead**	5	**52**	
7470	07/16/08	7470A	07/18/08	**7439-97-6**	**Mercury**	0.1	**0.2**	
200.8	07/08/08	200.8	07/11/08	**7440-66-6**	**Zinc**	20	**340**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: RM-MW-6(D)
SAMPLE

Lab Sample ID: ND59E
LIMS ID: 08-14251
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020
Date Sampled: 07/01/08
Date Received: 07/01/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/11/08	**7440-38-2**	**Arsenic**	1	**42**	
200.8	07/08/08	200.8	07/14/08	**7440-43-9**	**Cadmium**	0.2	**0.6**	
200.8	07/08/08	200.8	07/11/08	**7440-47-3**	**Chromium**	2	**27**	
200.8	07/08/08	200.8	07/11/08	**7440-50-8**	**Copper**	2	**68**	
200.8	07/08/08	200.8	07/11/08	**7439-92-1**	**Lead**	5	**14**	
7470	07/16/08	7470A	07/18/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/11/08	**7440-66-6**	**Zinc**	20	**90**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: METHOD BLANK

Lab Sample ID: ND59MB
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER
168004.020
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/11/08	7440-38-2	Arsenic	0.2	0.2	U
200.8	07/08/08	200.8	07/11/08	7440-43-9	Cadmium	0.2	0.2	U
200.8	07/08/08	200.8	07/11/08	7440-47-3	Chromium	0.5	0.5	U
200.8	07/08/08	200.8	07/11/08	7440-50-8	Copper	0.5	0.5	U
200.8	07/08/08	200.8	07/11/08	7439-92-1	Lead	1	1	U
7470	07/16/08	7470A	07/18/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/11/08	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: LAB CONTROL**

Lab Sample ID: ND59LCS
LIMS ID: 08-14247
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND59-Landau Associates
Project: PORT OF TACOMA KAISER 168004.020
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	200.8	26.4	25.0	106%	
Cadmium	200.8	25.1	25.0	100%	
Chromium	200.8	26.0	25.0	104%	
Copper	200.8	27.5	25.0	110%	
Lead	200.8	25.7	25.0	103%	
Mercury	7470A	2.32	2.00	116%	
Zinc	200.8	83.7	80.0	105%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

July 22, 2008

Stacy Pischer
Landau Associates, Inc.
130 Second Avenue South
Edmonds, WA 98020-9129

RE: Project: P.O.T. Kaiser
ARI Job No: ND67

Dear Stacy:

Please find enclosed the original chain of custody (COCs) records and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted sixteen soil samples on July 1, 2008 in good condition. Select samples were placed on hold pending further instructions.

The samples were analyzed for SIM cPAHs, as requested on the COC.

No analytical complications were noted. A copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

NDG7

LANDAU ASSOCIATES

- [x] **Seattle (Edmonds)** (425) 778-0907
- [ ] **Tacoma** (253) 926-2493
- [ ] **Spokane** (509) 327-9737
- [ ] **Portland (Tigard)** (503) 443-6010
- [ ] ______

8.9, 10.0, 15.1 °C Ice-yes

Chain-of-Custody Record

Date 7-1-08

Page 1 of 1

Project Name Port of Tacoma Kaiser Project No. 168004.020

Project Location/Event Tacoma, WA

Sampler's Name Brett Borgeson / Jacob Stokes

Project Contact Stacy Pischer

Send Results To Above + Anne Halvorsen

Turnaround Time
- [x] Standard
- [ ] Accelerated
- [ ] ______

Sample I.D.	Date	Time	Matrix	No. of Containers	cPAH's (method 8270 SIM)	Archive										
RM-SCD1 (0-1)	7-1-08	0920	Soil	1	X											
RM-SCD1 (1-2)	↓	0940	↓	↓		X										
RM-SCD2 (0-1)	↓	0845	↓	↓	X											
RM-SCD2 (1-2)	↓	0855	↓	↓		X										
RM-SCD3 (0-1)	↓	0935	↓	↓	X											
RM-SCD3 (1-2)	↓	0925	↓	↓		X										
RM-SCD4 (0-1)	↓	0850	↓	↓	X											
RM-SCD4 (1-2)	↓	0900	↓	↓		X										
RM-SCD5 (0-1)	↓	0820	↓	↓	X											
RM-SCD5 (1-2)	↓	0835	↓	↓		X										
RM-SCD6 (0-1)	↓	0815	↓	↓	X											
RM-SCD6 (1-2)	↓	0830	↓	↓		X										
RM-SCD7 (0-1)	↓	1020	↓	↓	X											
RM-SCD7 (1-2)	↓	1025	↓	↓		X										
RM-SCD8 (0-1)	↓	1000	↓	↓	X											
RM-SCD8 (1-2)	↓	1015	↓	↓		X										

Observations/Comments

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

NWTPH-Dx:
___ run acid wash/silica gel cleanup
___ run samples standardized to ______ product

___ Analyze for EPH if no specific product identified

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

___ Dissolved metal water samples field filtered

Other ______

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature: Brett Borgeson (signed)	Signature: (signed)	Signature	Signature
Printed Name: Brett Borgeson	Printed Name: BRIAN KEGEL	Printed Name	Printed Name
Company: Landau	Company: ARI	Company	Company
Date 7-1-08 Time 1720	Date 7/1/08 Time 1720	Date ____ Time ____	Date ____ Time ____

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

Rev 4/01

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Can Tan
COC No: —
Assigned ARI Job No: NDGX

Project Name: Port of Tacoma Kaiser
Delivered by: Hand
Tracking No: —

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Record cooler temperature (recommended 2.0-6.0 °C for chemistry	8.4,10.0,5.1 °C	

Cooler Accepted by: JR Date: 7/1/08 Time: 1720

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?	YES	(NO)
What kind of packing material was used?	BW	
Was sufficient ice used (if appropriate)?	(YES)	NO
Were all bottles sealed in individual plastic bags?	YES	(NO)
Did all bottle arrive in good condition (unbroken)?	(YES)	NO
Were all bottle labels complete and legible?	(YES)	NO
Did all bottle labels and tags agree with custody papers?	YES	(NO)*
Were all bottles used correct for the requested analyses?	(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation checklist)	YES	(NO)
Were all VOC vials free of air bubbles?	(NA) ~~YES~~	NO
Was sufficient amount of sample sent in each bottle?	(YES)	NO

Samples Logged by: SJoshi Date: 7/2/08 Time: 1140

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

Explain discrepancies or negative responses:

* RM S CD3 (0-1) time = 925 on jar lid
RM S CD3 (1-2) time = 935 on jar lid
labels on jar okay 7/2/08

By: Date:

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-SCD1(0-1)
SAMPLE

Lab Sample ID: ND67A
LIMS ID: 08-14289
Matrix: Soil
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/10/08
Date Analyzed: 07/11/08 13:48
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 0.86 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 72.3%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	58	1,000
218-01-9	Chrysene	58	2,000
205-99-2	Benzo(b)fluoranthene	58	1,300
207-08-9	Benzo(k)fluoranthene	58	1,300
50-32-8	Benzo(a)pyrene	58	980
193-39-5	Indeno(1,2,3-cd)pyrene	58	720
53-70-3	Dibenz(a,h)anthracene	58	300

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	61.3%
d14-Dibenzo(a,h)anthracen	38.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-SCD2(0-1)
SAMPLE

Lab Sample ID: ND67B
LIMS ID: 08-14290
Matrix: Soil
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/10/08
Date Analyzed: 07/11/08 14:14
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 0.71 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 67.9%

CAS Number	Analyte	RL	Result	
56-55-3	Benzo(a)anthracene	70	6,700	
218-01-9	Chrysene	70	9,400	E
205-99-2	Benzo(b)fluoranthene	70	10,000	E
207-08-9	Benzo(k)fluoranthene	70	6,800	
50-32-8	Benzo(a)pyrene	70	7,600	E
193-39-5	Indeno(1,2,3-cd)pyrene	70	3,900	
53-70-3	Dibenz(a,h)anthracene	70	1,800	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	62.0%
d14-Dibenzo(a,h)anthracen	48.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-SCD2(0-1)
DILUTION

Lab Sample ID: ND67B
LIMS ID: 08-14290
Matrix: Soil
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/10/08
Date Analyzed: 07/11/08 18:25
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 0.71 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 3.00
Percent Moisture: 67.9%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	210	6,200
218-01-9	Chrysene	210	9,000
205-99-2	Benzo(b)fluoranthene	210	9,300
207-08-9	Benzo(k)fluoranthene	210	7,600
50-32-8	Benzo(a)pyrene	210	8,000
193-39-5	Indeno(1,2,3-cd)pyrene	210	3,900
53-70-3	Dibenz(a,h)anthracene	210	1,700

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	64.0%
d14-Dibenzo(a,h)anthracen	55.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-SCD3(0-1)
SAMPLE

Lab Sample ID: ND67C
LIMS ID: 08-14291
Matrix: Soil
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/10/08
Date Analyzed: 07/11/08 17:07
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 8.3%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	5.0	< 5.0 U
218-01-9	**Chrysene**	**5.0**	**11**
205-99-2	**Benzo(b)fluoranthene**	**5.0**	**8.9**
207-08-9	**Benzo(k)fluoranthene**	**5.0**	**8.9**
50-32-8	Benzo(a)pyrene	5.0	< 5.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	< 5.0 U
53-70-3	Dibenz(a,h)anthracene	5.0	< 5.0 U

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	56.7%
d14-Dibenzo(a,h)anthracen	54.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-SCD4(0-1)
SAMPLE

Lab Sample ID: ND67D
LIMS ID: 08-14292
Matrix: Soil
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/10/08
Date Analyzed: 07/11/08 17:33
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.2 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 7.1%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	4.9	30
218-01-9	Chrysene	4.9	100
205-99-2	Benzo(b)fluoranthene	4.9	130
207-08-9	Benzo(k)fluoranthene	4.9	52
50-32-8	Benzo(a)pyrene	4.9	31
193-39-5	Indeno(1,2,3-cd)pyrene	4.9	27
53-70-3	Dibenz(a,h)anthracene	4.9	11

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	52.7%
d14-Dibenzo(a,h)anthracen	56.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-SCD5(0-1)
SAMPLE

Lab Sample ID: ND67E
LIMS ID: 08-14293
Matrix: Soil
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/10/08
Date Analyzed: 07/11/08 15:34
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 2.02 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 10.5%

CAS Number	Analyte	RL	Result	
56-55-3	Benzo(a)anthracene	25	1,200	
218-01-9	Chrysene	25	2,700	E
205-99-2	Benzo(b)fluoranthene	25	4,000	E
207-08-9	Benzo(k)fluoranthene	25	1,900	
50-32-8	Benzo(a)pyrene	25	1,100	
193-39-5	Indeno(1,2,3-cd)pyrene	25	840	
53-70-3	Dibenz(a,h)anthracene	25	340	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	68.7%
d14-Dibenzo(a,h)anthracen	63.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-SCD5(0-1)
DILUTION

Lab Sample ID: ND67E
LIMS ID: 08-14293
Matrix: Soil
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/10/08
Date Analyzed: 07/11/08 18:51
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 2.02 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 3.00
Percent Moisture: 10.5%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	74	1,200
218-01-9	Chrysene	74	2,800
205-99-2	Benzo(b)fluoranthene	74	4,300
207-08-9	Benzo(k)fluoranthene	74	2,200
50-32-8	Benzo(a)pyrene	74	1,100
193-39-5	Indeno(1,2,3-cd)pyrene	74	910
53-70-3	Dibenz(a,h)anthracene	74	330

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	70.0%
d14-Dibenzo(a,h)anthracen	68.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-SCD6(0-1)
SAMPLE

Lab Sample ID: ND67F
LIMS ID: 08-14294
Matrix: Soil
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/10/08
Date Analyzed: 07/11/08 16:00
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.7 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 3.1%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	4.7	4,300 E
218-01-9	Chrysene	4.7	12,000 SE
205-99-2	Benzo(b)fluoranthene	4.7	7,300 SE
207-08-9	Benzo(k)fluoranthene	4.7	2,300 SE
50-32-8	Benzo(a)pyrene	4.7	1,200 E
193-39-5	Indeno(1,2,3-cd)pyrene	4.7	1,100 E
53-70-3	Dibenz(a,h)anthracene	4.7	490 E

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	59.7%
d14-Dibenzo(a,h)anthracen	56.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: RM-SCD6(0-1)
DILUTION

Lab Sample ID: ND67F
LIMS ID: 08-14294
Matrix: Soil
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/10/08
Date Analyzed: 07/12/08 17:07
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.7 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 100
Percent Moisture: 3.1%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	470	4,900
218-01-9	Chrysene	470	24,000
205-99-2	Benzo(b)fluoranthene	470	7,900
207-08-9	Benzo(k)fluoranthene	470	7,900
50-32-8	Benzo(a)pyrene	470	1,500
193-39-5	Indeno(1,2,3-cd)pyrene	470	1,600
53-70-3	Dibenz(a,h)anthracene	470	700

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	D
d14-Dibenzo(a,h)anthracen	D

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-SCD7(0-1)
SAMPLE

Lab Sample ID: ND67G
LIMS ID: 08-14295
Matrix: Soil
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/10/08
Date Analyzed: 07/11/08 16:26
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 2.04 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 4.8%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	24	16,000 E
218-01-9	Chrysene	24	15,000 E
205-99-2	Benzo(b)fluoranthene	24	10,000 E
207-08-9	Benzo(k)fluoranthene	24	10,000 E
50-32-8	Benzo(a)pyrene	24	13,000 E
193-39-5	Indeno(1,2,3-cd)pyrene	24	5,000 E
53-70-3	Dibenz(a,h)anthracene	24	2,000

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	66.0%
d14-Dibenzo(a,h)anthracen	60.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: RM-SCD7(0-1)
DILUTION

Lab Sample ID: ND67G
LIMS ID: 08-14295
Matrix: Soil
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/10/08
Date Analyzed: 07/11/08 19:43
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 2.04 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 20.0
Percent Moisture: 4.8%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	490	22,000
218-01-9	Chrysene	490	22,000
205-99-2	Benzo(b)fluoranthene	490	13,000
207-08-9	Benzo(k)fluoranthene	490	18,000
50-32-8	Benzo(a)pyrene	490	18,000
193-39-5	Indeno(1,2,3-cd)pyrene	490	6,500
53-70-3	Dibenz(a,h)anthracene	490	3,200

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	66.7%
d14-Dibenzo(a,h)anthracen	60.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-SCD8(0-1)
SAMPLE

Lab Sample ID: ND67H
LIMS ID: 08-14296
Matrix: Soil
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/10/08
Date Analyzed: 07/11/08 17:59
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.9 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 2.4%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	4.6	430
218-01-9	Chrysene	4.6	530 E
205-99-2	Benzo(b)fluoranthene	4.6	490 E
207-08-9	Benzo(k)fluoranthene	4.6	460
50-32-8	Benzo(a)pyrene	4.6	440
193-39-5	Indeno(1,2,3-cd)pyrene	4.6	230
53-70-3	Dibenz(a,h)anthracene	4.6	100

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	57.3%
d14-Dibenzo(a,h)anthracen	63.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: RM-SCD8(0-1)
DILUTION

Lab Sample ID: ND67H
LIMS ID: 08-14296
Matrix: Soil
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 07/10/08
Date Analyzed: 07/11/08 20:09
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.9 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 20.0
Percent Moisture: 2.4%

CAS Number	Analyte	RL	Result
56-55-3	**Benzo(a)anthracene**	**92**	**410**
218-01-9	**Chrysene**	**92**	**530**
205-99-2	**Benzo(b)fluoranthene**	**92**	**460**
207-08-9	**Benzo(k)fluoranthene**	**92**	**520**
50-32-8	**Benzo(a)pyrene**	**92**	**460**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**92**	**210**
53-70-3	Dibenz(a,h)anthracene	92	< 92 U

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	60.0%
d14-Dibenzo(a,h)anthracen	46.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-071008
METHOD BLANK

Lab Sample ID: MB-071008
LIMS ID: 08-14289
Matrix: Soil
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: NA
Date Received: NA

Date Extracted: 07/10/08
Date Analyzed: 07/11/08 12:30
Instrument/Analyst: NT1/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	5.0	< 5.0 U
218-01-9	Chrysene	5.0	< 5.0 U
205-99-2	Benzo(b)fluoranthene	5.0	< 5.0 U
207-08-9	Benzo(k)fluoranthene	5.0	< 5.0 U
50-32-8	Benzo(a)pyrene	5.0	< 5.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	< 5.0 U
53-70-3	Dibenz(a,h)anthracene	5.0	< 5.0 U

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	65.0%
d14-Dibenzo(a,h)anthracen	69.7%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
168004.026

Client ID		MNP	DBA	TOT OUT
MB-071008		65.0%	69.7%	0
LCS-071008		68.0%	79.3%	0
LCSD-071008		66.3%	77.3%	0
RM-SCD1(0-1)		61.3%	38.0%	0
RM-SCD2(0-1)		62.0%	48.7%	0
RM-SCD2(0-1)	DL	64.0%	55.0%	0
RM-SCD3(0-1)		56.7%	54.3%	0
RM-SCD4(0-1)		52.7%	56.0%	0
RM-SCD5(0-1)		68.7%	63.7%	0
RM-SCD5(0-1)	DL	70.0%	68.0%	0
RM-SCD6(0-1)		59.7%	56.7%	0
RM-SCD6(0-1)	DL	D	D	0
RM-SCD7(0-1)		66.0%	60.0%	0
RM-SCD7(0-1)	DL	66.7%	60.0%	0
RM-SCD8(0-1)		57.3%	63.0%	0
RM-SCD8(0-1)	DL	60.0%	46.7%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(44-100)	(37-106)
(DBA) = d14-Dibenzo(a,h)anthracene	(46-121)	(16-118)

Prep Method: SW3550B
Log Number Range: 08-14289 to 08-14296

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-071008
LAB CONTROL SAMPLE

Lab Sample ID: LCS-071008
LIMS ID: 08-14289
Matrix: Soil
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND67-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: NA
Date Received: NA

Date Extracted: 07/10/08

Sample Amount LCS: 10.0 g-dry-wt
LCSD: 10.0 g-dry-wt

Date Analyzed LCS: 07/11/08 12:56
LCSD: 07/11/08 13:22

Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL

Instrument/Analyst LCS: NT1/VTS
LCSD: NT1/VTS

Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	119	150	79.3%	122	150	81.3%	2.5%
Chrysene	114	150	76.0%	117	150	78.0%	2.6%
Benzo(b)fluoranthene	132	150	88.0%	131	150	87.3%	0.8%
Benzo(k)fluoranthene	116	150	77.3%	120	150	80.0%	3.4%
Benzo(a)pyrene	117	150	78.0%	116	150	77.3%	0.9%
Indeno(1,2,3-cd)pyrene	112	150	74.7%	112	150	74.7%	0.0%
Dibenz(a,h)anthracene	114	150	76.0%	114	150	76.0%	0.0%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	68.0%	66.3%
d14-Dibenzo(a,h)anthracen	79.3%	77.3%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

July 22, 2008

Stacy Pischer
Landau Associates, Inc.
130 Second Avenue South
Edmonds, WA 98020-9129

RE: Project: P.O.T. Kaiser
ARI Job No: ND73

Dear Stacy:

Please find enclosed the original chain of custody (COCs) records and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted six water samples and a trip blank on July 2, 2008 in good condition. There were no discrepancies between the COC and the sample containers' labels.

The samples were analyzed for Low Level SIM PAHs, NWTPH-Dx, Low Level PCBs, Total Metals, VOCs and Total Cyanide and WAD Cyanide, as requested on the COC.

Sample **RN-MW-6-(I)** required a dilution for VOCs due to matrix foaming.

No other analytical complications were noted. A copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

ND73

LANDAU ASSOCIATES

- [x] **Seattle (Edmonds)** (425) 778-0907
- [ ] **Tacoma** (253) 926-2493
- [ ] **Spokane** (509) 327-9737
- [ ] **Portland (Tigard)** (503) 443-6010
- [ ] _____

9° C, 10°

Chain-of-Custody Record

Date 7-2-08

Page 1 of 1

Project Name Port of Tacoma Kaiser Project No. 168004.020

Project Location/Event Tacoma, WA

Sampler's Name Brett Borgeson / Jacob Stokes

Project Contact Stacy Pischer

Send Results To Above + Anne Halvorsen

Testing Parameters

Turnaround Time
- [x] Standard
- [ ] Accelerated
- [ ] _____

Sample I.D.	Date	Time	Matrix	No. of Containers	cPAHs (method 8270 SIM LVI)	WAD Cyanide SM4500	Total Cyanide (method 335.4)	Naphthalenes (method 8270 SIM & LVI)	NWTPH-Dx	PCB's Low level (method 8082 LVI)	VOC's (method 8260)	Total Metals (method 6020/7470)	Observations/Comments
SPL-MW-C(I)	7-2-08	0850	H2O	3	X	X	X	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	
RM-MW-3(I)		0935		11	X	X	X	X	X	X	X	X	
RM-MW-4(I)		1030											
RM-MW-21(I)		1125											
RM-MW-5(I)		1210											
RM-MW-6(I)		1255											
Trip Blank				2									

- [x] Allow water samples to settle, collect aliquot from clear portion

NWTPH-Dx:
- ___ run acid wash/silica gel cleanup
- ___ run samples standardized to _____ product

___ Analyze for EPH if no specific product identified

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

___ Dissolved metal water samples field filtered

Other Metals: arsenic, cadmium, chromium, copper, lead, mercury, zinc.

Special Shipment/Handling or Storage Requirements: Store below 4°C

Method of Shipment:

Relinquished by	Received by	Relinquished by	Received by
Signature: Brett Borgeson	Signature: Bob Congleton	Signature:	Signature:
Printed Name: Brett Borgeson	Printed Name: Bob Congleton	Printed Name:	Printed Name:
Company: Landau	Company: ARI	Company:	Company:
Date: 7-2-08 Time: 1340	Date: 7/2/08 Time: 1340	Date: Time:	Date: Time:

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

Rev 4/01

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: LAT Project Name: P.T. KAISER

COC No: _____ Delivered by: HAND

Assigned ARI Job No: ND73 Tracking No: _____

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Record cooler temperature (recommended 2.0-6.0 °C for chemistry	9° 10° °C	

Cooler Accepted by: BB Engle Date: 7/2/08 Time: 1340

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?		ICE	
Was sufficient ice used (if appropriate)?		YES	(NO)
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottle arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation checklist)		(YES)	NO
Were all VOC vials free of air bubbles?	NA	YES	(NO)*
Was sufficient amount of sample sent in each bottle?		(YES)	NO

Samples Logged by: BC Date: 7/2/08 Time: 1435

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

Explain discrepancies or negative responses:

*- LARGE BUBBLE IN 1 of 3 VIALS SAMPLE KM-MW-5(I).

By: Date:

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-3(I)**
 SAMPLE

Lab Sample ID: ND73B
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Instrument/Analyst: NT5/JZ
Date Analyzed: 07/02/08 19:23

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-3(I)**
 SAMPLE

Lab Sample ID: ND73B
LIMS ID: 08-14329
Matrix: Water
Date Analyzed: 07/02/08 19:23

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	98.5%
d8-Toluene	100%
Bromofluorobenzene	94.0%
d4-1,2-Dichlorobenzene	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-4(I)**
 SAMPLE

Lab Sample ID: ND73C
LIMS ID: 08-14330
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Instrument/Analyst: NT5/JZ
Date Analyzed: 07/02/08 19:50

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	**Acetone**	**3.0**	**9.2**	
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	**Chloroform**	**0.2**	**0.5**	
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-4(I)**
 SAMPLE

Lab Sample ID: ND73C
LIMS ID: 08-14330
Matrix: Water
Date Analyzed: 07/02/08 19:50

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	102%
d8-Toluene	101%
Bromofluorobenzene	94.0%
d4-1,2-Dichlorobenzene	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-21(I)**
 SAMPLE

Lab Sample ID: ND73D
LIMS ID: 08-14331
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Instrument/Analyst: NT5/JZ
Date Analyzed: 07/02/08 20:16

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-21(I)**

SAMPLE

Lab Sample ID: ND73D
LIMS ID: 08-14331
Matrix: Water
Date Analyzed: 07/02/08 20:16

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	99.2%
d8-Toluene	101%
Bromofluorobenzene	91.5%
d4-1,2-Dichlorobenzene	102%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2

Sample ID: RM-MW-5(I)
SAMPLE

Lab Sample ID: ND73E
LIMS ID: 08-14332
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Instrument/Analyst: NT5/JZ
Date Analyzed: 07/02/08 20:42

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	**cis-1,2-Dichloroethene**	**0.2**	**0.8**	
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: RM-MW-5(I)**
Page 2 of 2 **SAMPLE**

Lab Sample ID: ND73E
LIMS ID: 08-14332
Matrix: Water
Date Analyzed: 07/02/08 20:42

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	98.8%
d8-Toluene	101%
Bromofluorobenzene	91.2%
d4-1,2-Dichlorobenzene	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: RM-MW-6(I)
SAMPLE

Lab Sample ID: ND73F
LIMS ID: 08-14333
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Instrument/Analyst: NT5/JZ
Date Analyzed: 07/02/08 21:09

Sample Amount: 2.00 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	2.0	< 2.0	U
74-83-9	Bromomethane	5.0	< 5.0	U
75-01-4	Vinyl Chloride	2.0	< 2.0	U
75-00-3	Chloroethane	2.0	< 2.0	U
75-09-2	Methylene Chloride	5.0	< 5.0	U
67-64-1	Acetone	30	< 30	U
75-15-0	Carbon Disulfide	2.0	< 2.0	U
75-35-4	1,1-Dichloroethene	2.0	< 2.0	U
75-34-3	1,1-Dichloroethane	2.0	< 2.0	U
156-60-5	trans-1,2-Dichloroethene	2.0	< 2.0	U
156-59-2	cis-1,2-Dichloroethene	2.0	< 2.0	U
67-66-3	Chloroform	2.0	< 2.0	U
107-06-2	1,2-Dichloroethane	2.0	< 2.0	U
78-93-3	2-Butanone	25	< 25	U
71-55-6	1,1,1-Trichloroethane	2.0	< 2.0	U
56-23-5	Carbon Tetrachloride	2.0	< 2.0	U
108-05-4	Vinyl Acetate	10	< 10	U
75-27-4	Bromodichloromethane	2.0	< 2.0	U
78-87-5	1,2-Dichloropropane	2.0	< 2.0	U
10061-01-5	cis-1,3-Dichloropropene	2.0	< 2.0	U
79-01-6	Trichloroethene	2.0	< 2.0	U
124-48-1	Dibromochloromethane	2.0	< 2.0	U
79-00-5	1,1,2-Trichloroethane	2.0	< 2.0	U
71-43-2	Benzene	2.0	< 2.0	U
10061-02-6	trans-1,3-Dichloropropene	2.0	< 2.0	U
110-75-8	2-Chloroethylvinylether	10	< 10	U
75-25-2	Bromoform	2.0	< 2.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	25	< 25	U
591-78-6	2-Hexanone	25	< 25	U
127-18-4	Tetrachloroethene	2.0	< 2.0	U
79-34-5	1,1,2,2-Tetrachloroethane	2.0	< 2.0	U
108-88-3	Toluene	2.0	< 2.0	U
108-90-7	Chlorobenzene	2.0	< 2.0	U
100-41-4	Ethylbenzene	2.0	< 2.0	U
100-42-5	Styrene	2.0	< 2.0	U
75-69-4	Trichlorofluoromethane	2.0	< 2.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	2.0	< 2.0	U
1330-20-7	m,p-Xylene	4.0	< 4.0	U
95-47-6	o-Xylene	2.0	< 2.0	U
95-50-1	1,2-Dichlorobenzene	2.0	< 2.0	U
541-73-1	1,3-Dichlorobenzene	2.0	< 2.0	U
106-46-7	1,4-Dichlorobenzene	2.0	< 2.0	U
107-02-8	Acrolein	50	< 50	U
74-88-4	Methyl Iodide	10	< 10	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	10	< 10	U
563-58-6	1,1-Dichloropropene	2.0	< 2.0	U
74-95-3	Dibromomethane	2.0	< 2.0	U
630-20-6	1,1,1,2-Tetrachloroethane	2.0	< 2.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: RM-MW-6(I) SAMPLE

Lab Sample ID: ND73F
LIMS ID: 08-14333
Matrix: Water
Date Analyzed: 07/02/08 21:09

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	10	< 10	U
108-67-8	1,3,5-Trimethylbenzene	2.0	< 2.0	U
95-63-6	1,2,4-Trimethylbenzene	2.0	< 2.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	Ethylene Dibromide	2.0	< 2.0	U
74-97-5	Bromochloromethane	2.0	< 2.0	U
594-20-7	2,2-Dichloropropane	2.0	< 2.0	U
142-28-9	1,3-Dichloropropane	2.0	< 2.0	U
98-82-8	Isopropylbenzene	2.0	< 2.0	U
103-65-1	n-Propylbenzene	2.0	< 2.0	U
108-86-1	Bromobenzene	2.0	< 2.0	U
95-49-8	2-Chlorotoluene	2.0	< 2.0	U
106-43-4	4-Chlorotoluene	2.0	< 2.0	U
98-06-6	tert-Butylbenzene	2.0	< 2.0	U
135-98-8	sec-Butylbenzene	2.0	< 2.0	U
99-87-6	4-Isopropyltoluene	2.0	< 2.0	U
104-51-8	n-Butylbenzene	2.0	< 2.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	101%
d8-Toluene	101%
Bromofluorobenzene	93.0%
d4-1,2-Dichlorobenzene	105%

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B

ANALYTICAL RESOURCES INCORPORATED

Sample ID: TRIP BLANK SAMPLE

Lab Sample ID: ND73G
LIMS ID: 08-14334
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Instrument/Analyst: NT5/JZ
Date Analyzed: 07/02/08 18:57

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: TRIP BLANK SAMPLE**

Lab Sample ID: ND73G
LIMS ID: 08-14334
Matrix: Water
Date Analyzed: 07/02/08 18:57

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	95.8%
d8-Toluene	102%
Bromofluorobenzene	96.5%
d4-1,2-Dichlorobenzene	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-070208**
Page 1 of 2 **METHOD BLANK**

Lab Sample ID: MB-070208
LIMS ID: 08-14334
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT5/JZ
Date Analyzed: 07/02/08 18:17

Sample Amount: 20.0 mL
Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-070208**

METHOD BLANK

Lab Sample ID: MB-070208
LIMS ID: 08-14334
Matrix: Water
Date Analyzed: 07/02/08 18:17

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.8%
d8-Toluene	99.8%
Bromofluorobenzene	95.2%
d4-1,2-Dichlorobenzene	101%

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
ND73B	RM-MW-3(I)	20	98.5%	100%	94.0%	104%	0
ND73C	RM-MW-4(I)	20	102%	101%	94.0%	104%	0
ND73D	RM-MW-21(I)	20	99.2%	101%	91.5%	102%	0
ND73E	RM-MW-5(I)	20	98.8%	101%	91.2%	104%	0
ND73F	RM-MW-6(I)	20	101%	101%	93.0%	105%	0
MB-070208	Method Blank	20	92.8%	99.8%	95.2%	101%	0
LCS-070208	Lab Control	20	92.2%	99.0%	101%	99.0%	0
LCSD-070208	Lab Control Dup	20	92.5%	97.5%	102%	101%	0
ND73G	TRIP BLANK	20	95.8%	102%	96.5%	104%	0

SW8260B	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	70-131	64-146
(TOL) = d8-Toluene	80-120	78-125
(BFB) = Bromofluorobenzene	74-121	71-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-121

Prep Method: SW5030B
Log Number Range: 08-14329 to 08-14334

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-070208**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-070208
LIMS ID: 08-14334
Matrix: Water
Data Release Authorized:
Reported: 07/03/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT5/JZ
LCSD: NT5/JZ
Date Analyzed LCS: 07/02/08 17:14
LCSD: 07/02/08 17:51

Sample Amount LCS: 20.0 mL
LCSD: 20.0 mL
Purge Volume LCS: 20.0 mL
LCSD: 20.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	3.4	4.0	85.0%	3.2	4.0	80.0%	6.1%
Bromomethane	3.8	4.0	95.0%	3.5	4.0	87.5%	8.2%
Vinyl Chloride	3.4	4.0	85.0%	3.2	4.0	80.0%	6.1%
Chloroethane	3.3	4.0	82.5%	3.2	4.0	80.0%	3.1%
Methylene Chloride	3.7	4.0	92.5%	3.3	4.0	82.5%	11.4%
Acetone	17.6	20.0	88.0%	17.5	20.0	87.5%	0.6%
Carbon Disulfide	3.4	4.0	85.0%	3.6	4.0	90.0%	5.7%
1,1-Dichloroethene	3.4	4.0	85.0%	3.2	4.0	80.0%	6.1%
1,1-Dichloroethane	3.2	4.0	80.0%	3.1	4.0	77.5%	3.2%
trans-1,2-Dichloroethene	3.4	4.0	85.0%	3.2	4.0	80.0%	6.1%
cis-1,2-Dichloroethene	3.5	4.0	87.5%	3.2	4.0	80.0%	9.0%
Chloroform	3.3	4.0	82.5%	3.1	4.0	77.5%	6.2%
1,2-Dichloroethane	3.4	4.0	85.0%	3.2	4.0	80.0%	6.1%
2-Butanone	17.4	20.0	87.0%	17.4	20.0	87.0%	0.0%
1,1,1-Trichloroethane	3.3	4.0	82.5%	3.2	4.0	80.0%	3.1%
Carbon Tetrachloride	3.6	4.0	90.0%	3.8	4.0	95.0%	5.4%
Vinyl Acetate	3.4	4.0	85.0%	3.6	4.0	90.0%	5.7%
Bromodichloromethane	3.4	4.0	85.0%	3.3	4.0	82.5%	3.0%
1,2-Dichloropropane	3.4	4.0	85.0%	3.2	4.0	80.0%	6.1%
cis-1,3-Dichloropropene	3.6	4.0	90.0%	3.3	4.0	82.5%	8.7%
Trichloroethene	3.4	4.0	85.0%	3.4	4.0	85.0%	0.0%
Dibromochloromethane	3.7	4.0	92.5%	3.4	4.0	85.0%	8.5%
1,1,2-Trichloroethane	3.5	4.0	87.5%	3.2	4.0	80.0%	9.0%
Benzene	3.4	4.0	85.0%	3.3	4.0	82.5%	3.0%
trans-1,3-Dichloropropene	3.6	4.0	90.0%	3.3	4.0	82.5%	8.7%
2-Chloroethylvinylether	3.6	4.0	90.0%	3.6	4.0	90.0%	0.0%
Bromoform	3.6	4.0	90.0%	3.2	4.0	80.0%	11.8%
4-Methyl-2-Pentanone (MIBK)	17.4	20.0	87.0%	18.0	20.0	90.0%	3.4%
2-Hexanone	16.7	20.0	83.5%	17.3	20.0	86.5%	3.5%
Tetrachloroethene	3.5	4.0	87.5%	3.5	4.0	87.5%	0.0%
1,1,2,2-Tetrachloroethane	4.1	4.0	102%	3.6	4.0	90.0%	13.0%
Toluene	3.4	4.0	85.0%	3.3	4.0	82.5%	3.0%
Chlorobenzene	3.5	4.0	87.5%	3.4	4.0	85.0%	2.9%
Ethylbenzene	3.6	4.0	90.0%	3.6	4.0	90.0%	0.0%
Styrene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
Trichlorofluoromethane	3.4	4.0	85.0%	3.2	4.0	80.0%	6.1%
1,1,2-Trichloro-1,2,2-trifluoroetha	3.5	4.0	87.5%	3.7	4.0	92.5%	5.6%
m,p-Xylene	7.3	8.0	91.2%	7.2	8.0	90.0%	1.4%
o-Xylene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
1,2-Dichlorobenzene	3.5	4.0	87.5%	3.3	4.0	82.5%	5.9%
1,3-Dichlorobenzene	3.5	4.0	87.5%	3.4	4.0	85.0%	2.9%
1,4-Dichlorobenzene	3.5	4.0	87.5%	3.3	4.0	82.5%	5.9%
Acrolein	17.8	20.0	89.0%	17.2	20.0	86.0%	3.4%
Methyl Iodide	3.7	4.0	92.5%	3.9	4.0	97.5%	5.3%
Bromoethane	3.6	4.0	90.0%	3.8	4.0	95.0%	5.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-070208**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-070208 QC Report No: ND73-Landau Associates
LIMS ID: 08-14334 Project: Port of Tacoma Kaiser
Matrix: Water 168004.020

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Acrylonitrile	3.3	4.0	82.5%	3.4	4.0	85.0%	3.0%
1,1-Dichloropropene	3.5	4.0	87.5%	3.5	4.0	87.5%	0.0%
Dibromomethane	3.5	4.0	87.5%	3.2	4.0	80.0%	9.0%
1,1,1,2-Tetrachloroethane	3.6	4.0	90.0%	3.4	4.0	85.0%	5.7%
1,2-Dibromo-3-chloropropane	3.7	4.0	92.5%	3.3	4.0	82.5%	11.4%
1,2,3-Trichloropropane	3.6	4.0	90.0%	3.3	4.0	82.5%	8.7%
trans-1,4-Dichloro-2-butene	3.5	4.0	87.5%	3.4	4.0	85.0%	2.9%
1,3,5-Trimethylbenzene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
1,2,4-Trimethylbenzene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
Hexachlorobutadiene	3.6	4.0	90.0%	3.4	4.0	85.0%	5.7%
Ethylene Dibromide	3.5	4.0	87.5%	3.2	4.0	80.0%	9.0%
Bromochloromethane	3.4	4.0	85.0%	3.1	4.0	77.5%	9.2%
2,2-Dichloropropane	3.2	4.0	80.0%	3.3	4.0	82.5%	3.1%
1,3-Dichloropropane	3.6	4.0	90.0%	3.3	4.0	82.5%	8.7%
Isopropylbenzene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
n-Propylbenzene	3.6	4.0	90.0%	3.5	4.0	87.5%	2.8%
Bromobenzene	3.6	4.0	90.0%	3.3	4.0	82.5%	8.7%
2-Chlorotoluene	3.6	4.0	90.0%	3.4	4.0	85.0%	5.7%
4-Chlorotoluene	3.6	4.0	90.0%	3.4	4.0	85.0%	5.7%
tert-Butylbenzene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
sec-Butylbenzene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
4-Isopropyltoluene	3.8	4.0	95.0%	3.7	4.0	92.5%	2.7%
n-Butylbenzene	3.7	4.0	92.5%	3.6	4.0	90.0%	2.7%
1,2,4-Trichlorobenzene	3.7	4.0	92.5%	3.4	4.0	85.0%	8.5%
Naphthalene	4.0	4.0	100%	3.4	4.0	85.0%	16.2%
1,2,3-Trichlorobenzene	3.8	4.0	95.0%	3.5	4.0	87.5%	8.2%

Reported in μg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	92.2%	92.5%
d8-Toluene	99.0%	97.5%
Bromofluorobenzene	101%	102%
d4-1,2-Dichlorobenzene	99.0%	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: SPL-MW-C(I)
SAMPLE

Lab Sample ID: ND73A
LIMS ID: 08-14328
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/14/08 17:22
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.026**
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	70.3%
d14-Dibenzo(a,h)anthracene	30.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-3(I)
SAMPLE

Lab Sample ID: ND73B
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/14/08 17:46
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.033**
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	84.3%
d14-Dibenzo(a,h)anthracene	96.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-4(I)
SAMPLE

Lab Sample ID: ND73C
LIMS ID: 08-14330
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/14/08 18:10
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.029**
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	76.7%
d14-Dibenzo(a,h)anthracene	59.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-21(I)
SAMPLE

Lab Sample ID: ND73D
LIMS ID: 08-14331
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/14/08 18:34
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.031**
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	77.7%
d14-Dibenzo(a,h)anthracene	93.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: RM-MW-5(I)
SAMPLE

Lab Sample ID: ND73E
LIMS ID: 08-14332
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/14/08 18:58
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.010**	**0.030**
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	81.7%
d14-Dibenzo(a,h)anthracene	62.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-MW-6(I)
SAMPLE

Lab Sample ID: ND73F
LIMS ID: 08-14333
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/15/08 10:06
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	0.030	0.32
91-57-6	**2-Methylnaphthalene**	0.030	0.099
90-12-0	**1-Methylnaphthalene**	0.030	0.077
208-96-8	Acenaphthylene	0.030	< 0.030 U
83-32-9	**Acenaphthene**	0.030	0.22
86-73-7	**Fluorene**	0.030	0.19
85-01-8	**Phenanthrene**	0.030	1.0
120-12-7	**Anthracene**	0.030	0.25
206-44-0	**Fluoranthene**	0.030	1.2
129-00-0	**Pyrene**	0.030	1.2
56-55-3	**Benzo(a)anthracene**	0.030	0.48
218-01-9	**Chrysene**	0.030	0.52
205-99-2	**Benzo(b)fluoranthene**	0.030	0.28
207-08-9	**Benzo(k)fluoranthene**	0.030	0.28
50-32-8	**Benzo(a)pyrene**	0.030	0.37
193-39-5	**Indeno(1,2,3-cd)pyrene**	0.030	0.20
53-70-3	**Dibenz(a,h)anthracene**	0.030	0.080
191-24-2	**Benzo(g,h,i)perylene**	0.030	0.23
132-64-9	**Dibenzofuran**	0.030	0.081

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	71.7%
d14-Dibenzo(a,h)anthracene	41.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: MB-070708
METHOD BLANK

Lab Sample ID: MB-070708
LIMS ID: 08-14328
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted: 07/07/08
Date Analyzed: 07/14/08 16:11
Instrument/Analyst: NT2/YZ

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

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	< 0.010 U
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
205-99-2	Benzo(b)fluoranthene	0.010	< 0.010 U
207-08-9	Benzo(k)fluoranthene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	68.7%
d14-Dibenzo(a,h)anthracene	58.0%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

Client ID	MNP	DBA	TOT OUT
MB-070708	68.7%	58.0%	0
LCS-070708	80.0%	81.7%	0
LCSD-070708	75.3%	94.0%	0
SPL-MW-C(I)	70.3%	30.3%	0
RM-MW-3(I)	84.3%	96.7%	0
RM-MW-4(I)	76.7%	59.7%	0
RM-MW-21(I)	77.7%	93.3%	0
RM-MW-5(I)	81.7%	62.3%	0
RM-MW-6(I)	71.7%	41.6%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(49-113)	(44-112)
(DBA) = d14-Dibenzo(a,h)anthracene	(49-132)	(10-138)

Prep Method: SW3520C
Log Number Range: 08-14328 to 08-14333

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS **Sample ID: LCS-070708**
Page 1 of 1 **LAB CONTROL SAMPLE**

Lab Sample ID: LCS-070708
LIMS ID: 08-14328
Matrix: Water
Data Release Authorized:
Reported: 07/15/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 07/07/08

Date Analyzed LCS: 07/14/08 16:34
LCSD: 07/14/08 16:58
Instrument/Analyst LCS: NT2/YZ
LCSD: NT2/YZ

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

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	0.218	0.300	72.7%	0.208	0.300	69.3%	4.7%
2-Methylnaphthalene	0.220	0.300	73.3%	0.212	0.300	70.7%	3.7%
1-Methylnaphthalene	0.222	0.300	74.0%	0.214	0.300	71.3%	3.7%
Acenaphthylene	0.222	0.300	74.0%	0.216	0.300	72.0%	2.7%
Acenaphthene	0.211	0.300	70.3%	0.208	0.300	69.3%	1.4%
Fluorene	0.240	0.300	80.0%	0.239	0.300	79.7%	0.4%
Phenanthrene	0.235	0.300	78.3%	0.230	0.300	76.7%	2.2%
Anthracene	0.217	0.300	72.3%	0.221	0.300	73.7%	1.8%
Fluoranthene	0.296	0.300	98.7%	0.300	0.300	100%	1.3%
Pyrene	0.282	0.300	94.0%	0.285	0.300	95.0%	1.1%
Benzo(a)anthracene	0.270	0.300	90.0%	0.285	0.300	95.0%	5.4%
Chrysene	0.240	0.300	80.0%	0.253	0.300	84.3%	5.3%
Benzo(b)fluoranthene	0.232	0.300	77.3%	0.277	0.300	92.3%	17.7%
Benzo(k)fluoranthene	0.226	0.300	75.3%	0.247	0.300	82.3%	8.9%
Benzo(a)pyrene	0.122	0.300	40.7%	0.118	0.300	39.3%	3.3%
Indeno(1,2,3-cd)pyrene	0.221	0.300	73.7%	0.247	0.300	82.3%	11.1%
Dibenz(a,h)anthracene	0.201	0.300	67.0%	0.233	0.300	77.7%	14.7%
Benzo(g,h,i)perylene	0.210	0.300	70.0%	0.234	0.300	78.0%	10.8%
Dibenzofuran	0.192	0.300	64.0%	0.191	0.300	63.7%	0.5%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	80.0%	75.3%
d14-Dibenzo(a,h)anthracene	81.7%	94.0%

ANALYTICAL RESOURCES INCORPORATED

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

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

Data Release Authorized:
Reported: 07/11/08

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-070308	Method Blank	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14329	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		87.1%
ND73B	RM-MW-3(I)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14329	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		76.9%
ND73C	RM-MW-4(I)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14330	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		82.4%
ND73D	RM-MW-21(I)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14331	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		87.6%
ND73E	RM-MW-5(I)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14332	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		52.4%
ND73F	RM-MW-6(I)	07/03/08	07/09/08	1.00	Diesel	0.25	< 0.25 U
08-14333	HC ID: ---		FID3A	1.0	Motor Oil	0.50	< 0.50 U
					o-Terphenyl		63.8%

Reported in mg/L (ppm)

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

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

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

Client ID	OTER	TOT OUT
MB-070308	87.1%	0
LCS-070308	91.3%	0
LCSD-070308	89.3%	0
RM-MW-3(I)	76.9%	0
RM-MW-4(I)	82.4%	0
RM-MW-21(I)	87.6%	0
RM-MW-5(I)	52.4%	0
RM-MW-6(I)	63.8%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(49-118)	(45-112)

Prep Method: SW3510C
Log Number Range: 08-14329 to 08-14333

FORM-II TPHD

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned
Page 1 of 1

Sample ID: LCS-070308
LCS/LCSD

Lab Sample ID: LCS-070308
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/11/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted LCS/LCSD: 07/03/08

Date Analyzed LCS: 07/09/08 16:27
LCSD: 07/09/08 16:43
Instrument/Analyst LCS: FID/MS
LCSD: FID/MS

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

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.52	3.00	84.0%	2.39	3.00	79.7%	5.3%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	91.3%	89.3%

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

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: ND73
Project: Port of Tacoma Kaiser 168004.020

Matrix: Water
Date Received: 07/02/08

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
08-14329-070308MB1	Method Blank	500 mL	1.00 mL	07/03/08
08-14329-070308LCS1	Lab Control	500 mL	1.00 mL	07/03/08
08-14329-070308LCSD1	Lab Control Dup	500 mL	1.00 mL	07/03/08
08-14329-ND73B	RM-MW-3(I)	500 mL	1.00 mL	07/03/08
08-14330-ND73C	RM-MW-4(I)	500 mL	1.00 mL	07/03/08
08-14331-ND73D	RM-MW-21(I)	500 mL	1.00 mL	07/03/08
08-14332-ND73E	RM-MW-5(I)	500 mL	1.00 mL	07/03/08
08-14333-ND73F	RM-MW-6(I)	500 mL	1.00 mL	07/03/08

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-3(I)
SAMPLE

Lab Sample ID: ND73B
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 16:33
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 1000 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	56.2%
Tetrachlorometaxylene	71.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082

Sample ID: RM-MW-4(I)
SAMPLE

Lab Sample ID: ND73C
LIMS ID: 08-14330
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 16:50
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 980 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	41.0%
Tetrachlorometaxylene	62.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082

Sample ID: RM-MW-21(I)
SAMPLE

Lab Sample ID: ND73D
LIMS ID: 08-14331
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 17:07
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 1000 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	54.5%
Tetrachlorometaxylene	70.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-5(I)
SAMPLE

Lab Sample ID: ND73E
LIMS ID: 08-14332
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 17:25
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 1000 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	41.5%
Tetrachlorometaxylene	61.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: RM-MW-6(I)
SAMPLE

Lab Sample ID: ND73F
LIMS ID: 08-14333
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 17:43
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 1000 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	**Aroclor 1254**	**0.010**	**0.033**
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	19.9%
Tetrachlorometaxylene	35.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082

Sample ID: MB-070708
METHOD BLANK

Lab Sample ID: MB-070708
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: NA
Date Received: NA

Date Extracted: 07/07/08
Date Analyzed: 07/10/08 14:13
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount: 1000 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Silica Gel: No
Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U

Reported in µg/L (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	64.2%
Tetrachlorometaxylene	80.8%

ANALYTICAL RESOURCES INCORPORATED

SW8082/PCB WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020

Client ID	DCBP % REC	DCBP LCL-UCL	TCMX % REC	TCMX LCL-UCL	TOT OUT
MB-070708	64.2%	36-102	80.8%	34-93	0
LCS-070708	65.0%	36-102	83.0%	34-93	0
LCSD-070708	66.0%	36-102	73.0%	34-93	0
RM-MW-3(I)	56.2%	19-121	71.5%	30-98	0
RM-MW-4(I)	41.0%	19-121	62.8%	30-98	0
RM-MW-21(I)	54.5%	19-121	70.0%	30-98	0
RM-MW-5(I)	41.5%	19-121	61.8%	30-98	0
RM-MW-6(I)	19.9%	19-121	35.5%	30-98	0

Prep Method: SW3510C
Log Number Range: 08-14329 to 08-14333

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: LCS-070708
LCS/LCSD

Lab Sample ID: LCS-070708
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/21/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 07/07/08

Date Analyzed LCS: 07/10/08 14:30
LCSD: 07/10/08 14:47
Instrument/Analyst LCS: ECD5/JGR
LCSD: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes

Sample Amount LCS: 1000 mL
LCSD: 1000 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Silica Gel: No
Acid Cleanup: Yes

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Aroclor 1016	0.048	0.050	96.0%	0.049	0.050	98.0%	2.1%
Aroclor 1260	0.046	0.050	92.0%	0.047	0.050	94.0%	2.2%

PCB Surrogate Recovery

	LCS	LCSD
Decachlorobiphenyl	65.0%	66.0%
Tetrachlorometaxylene	83.0%	73.0%

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

SAMPLE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Client ID: SPL-MW-C(I)
ARI ID: 08-14328 ND73A

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/11/08 071108#1	EPA 335.4	mg/L	0.005	0.043
Weak Acid Dissoc. Cyanide	07/10/08 071008#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Client ID: RM-MW-3(I)
ARI ID: 08-14329 ND73B

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/11/08 071108#1	EPA 335.4	mg/L	0.005	< 0.005 U
Weak Acid Dissoc. Cyanide	07/10/08 071008#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Client ID: RM-MW-4(I)
ARI ID: 08-14330 ND73C

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/11/08 071108#1	EPA 335.4	mg/L	0.005	< 0.005 U
Weak Acid Dissoc. Cyanide	07/10/08 071008#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Client ID: RM-MW-21(I)
ARI ID: 08-14331 ND73D

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/11/08 071108#1	EPA 335.4	mg/L	0.005	< 0.005 U
Weak Acid Dissoc. Cyanide	07/10/08 071008#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Client ID: RM-MW-5(I)
ARI ID: 08-14332 ND73E

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/11/08 071108#1	EPA 335.4	mg/L	0.005	< 0.005 U
Weak Acid Dissoc. Cyanide	07/10/08 071008#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Client ID: RM-MW-6(I)
ARI ID: 08-14333 ND73F

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	07/11/08 071108#1	EPA 335.4	mg/L	0.005	< 0.005 U
Weak Acid Dissoc. Cyanide	07/10/08 071008#1	SM4500CN-I	mg/L	0.005	< 0.005 U

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: NA
Date Received: NA

Analyte	Method	Date	Units	Blank
Total Cyanide	EPA 335.4	07/11/08	mg/L	< 0.005 U
Weak Acid Dissoc. Cyanide	SM4500CN-I	07/10/08	mg/L	< 0.005 U

STANDARD REFERENCE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
Total Cyanide SPEX #33-6AS	EPA 335.4	07/11/08	mg/L	0.142	0.150	94.7%
Weak Acid Dissoc. Cyanide SPEX #33-6AS	SM4500CN-I	07/10/08	mg/L	0.145	0.150	96.7%

REPLICATE RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: ND73A Client ID: SPL-MW-C(I)						
Total Cyanide	EPA 335.4	07/11/08	mg/L	0.043	0.041	4.8%

MS/MSD RESULTS-CONVENTIONALS
ND73-Landau Associates

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 07/16/08

Project: Port of Tacoma Kaiser
Event: 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: ND73A Client ID: SPL-MW-C(I)							
Total Cyanide	EPA 335.4	07/11/08	mg/L	0.043	0.183	0.150	93.3%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: RM-MW-3(I)
SAMPLE

Lab Sample ID: ND73B
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/16/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/15/08	7440-38-2	Arsenic	1	1	U
200.8	07/08/08	200.8	07/14/08	7440-43-9	Cadmium	0.5	0.5	U
200.8	07/08/08	200.8	07/14/08	**7440-47-3**	**Chromium**	1	**1**	
200.8	07/08/08	200.8	07/15/08	**7440-50-8**	**Copper**	1	**2**	
200.8	07/08/08	200.8	07/14/08	7439-92-1	Lead	2	2	U
7470	07/08/08	7470A	07/09/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/15/08	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: RM-MW-4(I)
SAMPLE

Lab Sample ID: ND73C
LIMS ID: 08-14330
Matrix: Water
Data Release Authorized:
Reported: 07/16/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/15/08	**7440-38-2**	**Arsenic**	1	**4**	
200.8	07/08/08	200.8	07/14/08	7440-43-9	Cadmium	0.5	0.5	U
200.8	07/08/08	200.8	07/14/08	**7440-47-3**	**Chromium**	1	**11**	
200.8	07/08/08	200.8	07/15/08	**7440-50-8**	**Copper**	1	**3**	
200.8	07/08/08	200.8	07/14/08	7439-92-1	Lead	2	2	U
7470	07/08/08	7470A	07/09/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/15/08	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: RM-MW-21(I)
SAMPLE

Lab Sample ID: ND73D
LIMS ID: 08-14331
Matrix: Water
Data Release Authorized:
Reported: 07/16/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/15/08	**7440-38-2**	**Arsenic**	1	**3**	
200.8	07/08/08	200.8	07/14/08	7440-43-9	Cadmium	0.5	0.5	U
200.8	07/08/08	200.8	07/11/08	**7440-47-3**	**Chromium**	2	**5**	
200.8	07/08/08	200.8	07/15/08	7440-50-8	Copper	1	1	U
200.8	07/08/08	200.8	07/14/08	7439-92-1	Lead	2	2	U
7470	07/08/08	7470A	07/09/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/15/08	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: RM-MW-5(I)
SAMPLE

Lab Sample ID: ND73E
LIMS ID: 08-14332
Matrix: Water
Data Release Authorized:
Reported: 07/16/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/15/08	**7440-38-2**	**Arsenic**	0.2	**3.6**	
200.8	07/08/08	200.8	07/14/08	7440-43-9	Cadmium	0.2	0.2	U
200.8	07/08/08	200.8	07/14/08	**7440-47-3**	**Chromium**	0.5	**15.4**	
200.8	07/08/08	200.8	07/15/08	**7440-50-8**	**Copper**	0.5	**4.3**	
200.8	07/08/08	200.8	07/14/08	7439-92-1	Lead	1	1	U
7470	07/08/08	7470A	07/09/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/15/08	**7440-66-6**	**Zinc**	4	**6**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: RM-MW-6(I)
SAMPLE

Lab Sample ID: ND73F
LIMS ID: 08-14333
Matrix: Water
Data Release Authorized:
Reported: 07/16/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: 07/02/08
Date Received: 07/02/08

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/11/08	**7440-38-2**	**Arsenic**	2	**18**	
200.8	07/08/08	200.8	07/14/08	7440-43-9	Cadmium	0.5	0.5	U
200.8	07/08/08	200.8	07/11/08	**7440-47-3**	**Chromium**	2	**88**	
200.8	07/08/08	200.8	07/11/08	**7440-50-8**	**Copper**	2	**6**	
200.8	07/08/08	200.8	07/14/08	7439-92-1	Lead	2	2	U
7470	07/08/08	7470A	07/09/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/15/08	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: METHOD BLANK**

Lab Sample ID: ND73MB
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/16/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser 168004.020
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	07/08/08	200.8	07/11/08	7440-38-2	Arsenic	0.2	0.2	U
200.8	07/08/08	200.8	07/11/08	7440-43-9	Cadmium	0.2	0.2	U
200.8	07/08/08	200.8	07/11/08	7440-47-3	Chromium	0.5	0.5	U
200.8	07/08/08	200.8	07/11/08	7440-50-8	Copper	0.5	0.5	U
200.8	07/08/08	200.8	07/11/08	7439-92-1	Lead	1	1	U
7470	07/08/08	7470A	07/09/08	7439-97-6	Mercury	0.1	0.1	U
200.8	07/08/08	200.8	07/11/08	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: LAB CONTROL

Lab Sample ID: ND73LCS
LIMS ID: 08-14329
Matrix: Water
Data Release Authorized:
Reported: 07/16/08

QC Report No: ND73-Landau Associates
Project: Port of Tacoma Kaiser
168004.020
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	200.8	27.9	25.0	112%	
Cadmium	200.8	26.8	25.0	107%	
Chromium	200.8	27.3	25.0	109%	
Copper	200.8	29.3	25.0	117%	
Lead	200.8	27.7	25.0	111%	
Mercury	7470A	2.40	2.00	120%	
Zinc	200.8	89.6	80.0	112%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

August 13, 2008

Jennifer Wynkoop
Landau Associates, Inc.
950 Pacific Ave # 515
Tacoma, WA 98402

RE: Project: Kaiser Sump Sampling
ARI Job No: NG33

Dear Jennifer:

Please find enclosed the original chain of custody (COCs) records and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted six soil samples in good condition. There were no discrepancies between the COC and the sample containers' labels.

The samples were analyzed for VOCs, PCBs, NWTPH-Dx and Total RCRA Metals, as requested on the COC.

Continuing calibrations had several compounds outside of the 20% control limits for the 7/28/08 and 7/22/08 8260 analyses, but were accepted outliers under ARI SOPs. No further corrective action was required.

The surrogate DCE is out of control high and BFB is out of control low for several of the 8260 samples. The samples were re-analyzed with some sample surrogates in control for the re-analyses. This is due to matrix effects. No further corrective action was taken.

The 8260 LCSD RPDs are out of control for the 7/28/08 and 7/29/08 analyses. All spike recoveries are in control for the LCS and LCSD, therefore no further corrective action was taken.

The surrogate TCMX is out of control high in sample KS-04 for the PCB analysis due to matrix effects.

The CCALS for PCB aroclor 1260 are out of control high due to matrix effects. All associated samples were re-analyzed with high aroclor 1260 CCALs failing high again. No further corrective action was taken.

No other analytical complications were noted. A copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

LANDAU ASSOCIATES

☐ Seattle (Edmonds) (425) 778-0907
☒ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (Tigard) (503) 443-6010
☐ _____

NG33

Chain-of-Custody Record

As, Ba, Cd, Cr, Pb, Hg Se

Date 7/18/08
Page 1 of 1

Project Name Kaiser Sump Sampling Project No. 168004.020.002
Project Location/Event Kaiser Property
Sampler's Name Jessica Stone, Petter Keller
Project Contact Jennifer Wynkoop
Send Results To Jennifer Wynkoop

Testing Parameters

Turnaround Time
☒ Standard
☐ Accelerated
☐ _____

Sample I.D.	Date	Time	Matrix	No. of Containers	VOCs	PCB, NWTPH-Dx, RCRA METALS	Observations/Comments
KS-01	7/18/08	0955	SOIL	2	X	X	
KS-02		1030			X	X	
KS-03		1100			X	X	
KS-04		1130			X	X	
KS-05		1145			X	X	
KS-06		1200			X	X	

Observations/Comments

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

NWTPH-Dx:
___ run acid wash/silica gel cleanup
___ run samples standardized to _____ product

___ Analyze for EPH if no specific product identified

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

___ Dissolved metal water samples field filtered

Other _____

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Jessica Stone	Erik Kasanda		
Printed Name	Printed Name	Printed Name	Printed Name
Landau Associates	ARI		
Company	Company	Company	Company
Date 7/18/08 Time 1300	Date 07/18/08 Time 13:45	Date _____ Time _____	Date _____ Time _____

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

Rev 4/01

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau Associates
Project Name: GW Monitoring Kaiser Scrubber Sludge
COC No:
Delivered by: Courier
Assigned ARI Job No: NL633
Tracking No:

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Record cooler temperature (recommended 2.0-6.0 °C for chemistry	13.2, 10.2, 12.0 °C	

Cooler Accepted by: Eric Kosanda Date: 07/18/08 Time: 13:45

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?	YES	~~NO~~
What kind of packing material was used?	Box, ICE	
Was sufficient ice used (if appropriate)?	YES	~~NO~~
Were all bottles sealed in individual plastic bags?	YES	~~NO~~
Did all bottle arrive in good condition (unbroken)?	~~YES~~	NO
Were all bottle labels complete and legible?	~~YES~~	NO
Did all bottle labels and tags agree with custody papers?	~~YES~~	NO
Were all bottles used correct for the requested analyses?	~~YES~~	NO
Do any of the analyses (bottles) require preservation? (attach preservation checklist)	YES	~~NO~~
Were all VOC vials free of air bubbles? ~~NA~~	YES	NO
Was sufficient amount of sample sent in each bottle?	~~YES~~	NO

Samples Logged by: Bob Crayton Date: 7/18/08 Time: 1540

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

Explain discrepancies or negative responses:

By: Date:

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-01**
Page 1 of 2 **SAMPLE**

Lab Sample ID: NG33A
LIMS ID: 08-16217
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Instrument/Analyst: FINN5/PAB
Date Analyzed: 07/22/08 17:46

Sample Amount: 2.79 g-dry-wt
Purge Volume: 5.0 mL
Moisture: 48.1%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	1.8	< 1.8	U
74-83-9	Bromomethane	1.8	< 1.8	U
75-01-4	Vinyl Chloride	1.8	< 1.8	U
75-00-3	Chloroethane	1.8	< 1.8	U
75-09-2	Methylene Chloride	3.6	< 3.6	U
67-64-1	**Acetone**	**9.0**	**74**	
75-15-0	**Carbon Disulfide**	**1.8**	**2.4**	
75-35-4	1,1-Dichloroethene	1.8	< 1.8	U
75-34-3	1,1-Dichloroethane	1.8	< 1.8	U
156-60-5	trans-1,2-Dichloroethene	1.8	< 1.8	U
156-59-2	cis-1,2-Dichloroethene	1.8	< 1.8	U
67-66-3	Chloroform	1.8	< 1.8	U
107-06-2	1,2-Dichloroethane	1.8	< 1.8	U
78-93-3	**2-Butanone**	**9.0**	**16**	
71-55-6	1,1,1-Trichloroethane	1.8	< 1.8	U
56-23-5	Carbon Tetrachloride	1.8	< 1.8	U
108-05-4	Vinyl Acetate	9.0	< 9.0	U
75-27-4	Bromodichloromethane	1.8	< 1.8	U
78-87-5	1,2-Dichloropropane	1.8	< 1.8	U
10061-01-5	cis-1,3-Dichloropropene	1.8	< 1.8	U
79-01-6	Trichloroethene	1.8	< 1.8	U
124-48-1	Dibromochloromethane	1.8	< 1.8	U
79-00-5	1,1,2-Trichloroethane	1.8	< 1.8	U
71-43-2	**Benzene**	**1.8**	**4.2**	
10061-02-6	trans-1,3-Dichloropropene	1.8	< 1.8	U
110-75-8	2-Chloroethylvinylether	9.0	< 9.0	U
75-25-2	Bromoform	1.8	< 1.8	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	9.0	< 9.0	U
591-78-6	2-Hexanone	9.0	< 9.0	U
127-18-4	Tetrachloroethene	1.8	< 1.8	U
79-34-5	1,1,2,2-Tetrachloroethane	1.8	< 1.8	U
108-88-3	Toluene	1.8	< 1.8	U
108-90-7	Chlorobenzene	1.8	< 1.8	U
100-41-4	**Ethylbenzene**	**1.8**	**54**	
100-42-5	Styrene	1.8	< 1.8	U
75-69-4	Trichlorofluoromethane	1.8	< 1.8	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	3.6	< 3.6	U
1330-20-7	**m,p-Xylene**	**1.8**	**240**	
95-47-6	**o-Xylene**	**1.8**	**57**	
95-50-1	1,2-Dichlorobenzene	1.8	< 1.8	U
541-73-1	1,3-Dichlorobenzene	1.8	< 1.8	U
106-46-7	1,4-Dichlorobenzene	1.8	< 1.8	U
107-02-8	Acrolein	90	< 90	U
74-88-4	Methyl Iodide	1.8	< 1.8	U
74-96-4	Bromoethane	3.6	< 3.6	U
107-13-1	Acrylonitrile	9.0	< 9.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-01**
Page 2 of 2 **SAMPLE**

Lab Sample ID: NG33A
LIMS ID: 08-16217
Matrix: Soil
Date Analyzed: 07/22/08 17:46

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	1.8	< 1.8	U
74-95-3	Dibromomethane	1.8	< 1.8	U
630-20-6	1,1,1,2-Tetrachloroethane	1.8	< 1.8	U
96-12-8	1,2-Dibromo-3-chloropropane	9.0	< 9.0	U
96-18-4	1,2,3-Trichloropropane	3.6	< 3.6	U
110-57-6	trans-1,4-Dichloro-2-butene	9.0	< 9.0	U
108-67-8	**1,3,5-Trimethylbenzene**	**1.8**	**3.1**	
95-63-6	**1,2,4-Trimethylbenzene**	**1.8**	**6.8**	
87-68-3	Hexachlorobutadiene	9.0	< 9.0	U
106-93-4	Ethylene Dibromide	1.8	< 1.8	U
74-97-5	Bromochloromethane	1.8	< 1.8	U
594-20-7	2,2-Dichloropropane	1.8	< 1.8	U
142-28-9	1,3-Dichloropropane	1.8	< 1.8	U
98-82-8	Isopropylbenzene	1.8	< 1.8	U
103-65-1	n-Propylbenzene	1.8	< 1.8	U
108-86-1	Bromobenzene	1.8	< 1.8	U
95-49-8	2-Chlorotoluene	1.8	< 1.8	U
106-43-4	4-Chlorotoluene	1.8	< 1.8	U
98-06-6	tert-Butylbenzene	1.8	< 1.8	U
135-98-8	sec-Butylbenzene	1.8	< 1.8	U
99-87-6	4-Isopropyltoluene	1.8	< 1.8	U
104-51-8	n-Butylbenzene	1.8	< 1.8	U
120-82-1	1,2,4-Trichlorobenzene	9.0	< 9.0	U
91-20-3	Naphthalene	9.0	< 9.0	U
87-61-6	1,2,3-Trichlorobenzene	9.0	< 9.0	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	114%
d8-Toluene	96.0%
Bromofluorobenzene	88.5%
d4-1,2-Dichlorobenzene	98.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-01**
Page 1 of 2 **REANALYSIS**

Lab Sample ID: NG33A
LIMS ID: 08-16217
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Instrument/Analyst: FINN5/PAB
Date Analyzed: 07/28/08 21:08

Sample Amount: 2.68 g-dry-wt
Purge Volume: 5.0 mL
Moisture: 48.1%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	1.9	< 1.9	U
74-83-9	Bromomethane	1.9	< 1.9	U
75-01-4	Vinyl Chloride	1.9	< 1.9	U
75-00-3	Chloroethane	1.9	< 1.9	U
75-09-2	Methylene Chloride	3.7	< 3.7	U
67-64-1	**Acetone**	**9.3**	**60**	
75-15-0	**Carbon Disulfide**	**1.9**	**4.7**	
75-35-4	1,1-Dichloroethene	1.9	< 1.9	U
75-34-3	1,1-Dichloroethane	1.9	< 1.9	U
156-60-5	trans-1,2-Dichloroethene	1.9	< 1.9	U
156-59-2	cis-1,2-Dichloroethene	1.9	< 1.9	U
67-66-3	Chloroform	1.9	< 1.9	U
107-06-2	1,2-Dichloroethane	1.9	< 1.9	U
78-93-3	**2-Butanone**	**9.3**	**26**	
71-55-6	1,1,1-Trichloroethane	1.9	< 1.9	U
56-23-5	Carbon Tetrachloride	1.9	< 1.9	U
108-05-4	Vinyl Acetate	9.3	< 9.3	U
75-27-4	Bromodichloromethane	1.9	< 1.9	U
78-87-5	1,2-Dichloropropane	1.9	< 1.9	U
10061-01-5	cis-1,3-Dichloropropene	1.9	< 1.9	U
79-01-6	Trichloroethene	1.9	< 1.9	U
124-48-1	Dibromochloromethane	1.9	< 1.9	U
79-00-5	1,1,2-Trichloroethane	1.9	< 1.9	U
71-43-2	**Benzene**	**1.9**	**2.8**	
10061-02-6	trans-1,3-Dichloropropene	1.9	< 1.9	U
110-75-8	2-Chloroethylvinylether	9.3	< 9.3	U
75-25-2	Bromoform	1.9	< 1.9	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	9.3	< 9.3	U
591-78-6	2-Hexanone	9.3	< 9.3	U
127-18-4	Tetrachloroethene	1.9	< 1.9	U
79-34-5	1,1,2,2-Tetrachloroethane	1.9	< 1.9	U
108-88-3	Toluene	1.9	< 1.9	U
108-90-7	Chlorobenzene	1.9	< 1.9	U
100-41-4	**Ethylbenzene**	**1.9**	**63**	
100-42-5	Styrene	1.9	< 1.9	U
75-69-4	Trichlorofluoromethane	1.9	< 1.9	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	3.7	< 3.7	U
1330-20-7	**m,p-Xylene**	**1.9**	**260**	
95-47-6	**o-Xylene**	**1.9**	**64**	
95-50-1	1,2-Dichlorobenzene	1.9	< 1.9	U
541-73-1	1,3-Dichlorobenzene	1.9	< 1.9	U
106-46-7	1,4-Dichlorobenzene	1.9	< 1.9	U
107-02-8	Acrolein	93	< 93	U
74-88-4	Methyl Iodide	1.9	< 1.9	U
74-96-4	Bromoethane	3.7	< 3.7	U
107-13-1	Acrylonitrile	9.3	< 9.3	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-01**
Page 2 of 2 **REANALYSIS**

Lab Sample ID: NG33A
LIMS ID: 08-16217
Matrix: Soil
Date Analyzed: 07/28/08 21:08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	1.9	< 1.9	U
74-95-3	Dibromomethane	1.9	< 1.9	U
630-20-6	1,1,1,2-Tetrachloroethane	1.9	< 1.9	U
96-12-8	1,2-Dibromo-3-chloropropane	9.3	< 9.3	U
96-18-4	1,2,3-Trichloropropane	3.7	< 3.7	U
110-57-6	trans-1,4-Dichloro-2-butene	9.3	< 9.3	U
108-67-8	**1,3,5-Trimethylbenzene**	**1.9**	**4.2**	
95-63-6	**1,2,4-Trimethylbenzene**	**1.9**	**10**	
87-68-3	Hexachlorobutadiene	9.3	< 9.3	U
106-93-4	Ethylene Dibromide	1.9	< 1.9	U
74-97-5	Bromochloromethane	1.9	< 1.9	U
594-20-7	2,2-Dichloropropane	1.9	< 1.9	U
142-28-9	1,3-Dichloropropane	1.9	< 1.9	U
98-82-8	**Isopropylbenzene**	**1.9**	**2.1**	
103-65-1	n-Propylbenzene	1.9	< 1.9	U
108-86-1	Bromobenzene	1.9	< 1.9	U
95-49-8	2-Chlorotoluene	1.9	< 1.9	U
106-43-4	4-Chlorotoluene	1.9	< 1.9	U
98-06-6	tert-Butylbenzene	1.9	< 1.9	U
135-98-8	sec-Butylbenzene	1.9	< 1.9	U
99-87-6	4-Isopropyltoluene	1.9	< 1.9	U
104-51-8	n-Butylbenzene	1.9	< 1.9	U
120-82-1	1,2,4-Trichlorobenzene	9.3	< 9.3	U
91-20-3	Naphthalene	9.3	< 9.3	U
87-61-6	1,2,3-Trichlorobenzene	9.3	< 9.3	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	140%
d8-Toluene	97.8%
Bromofluorobenzene	90.0%
d4-1,2-Dichlorobenzene	93.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-02**
Page 1 of 2 **SAMPLE**

Lab Sample ID: NG33B
LIMS ID: 08-16218
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Instrument/Analyst: FINN5/PAB
Date Analyzed: 07/22/08 18:13

Sample Amount: 0.864 g-dry-wt
Purge Volume: 5.0 mL
Moisture: 85.2%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	5.8	< 5.8	U
74-83-9	Bromomethane	5.8	< 5.8	U
75-01-4	Vinyl Chloride	5.8	< 5.8	U
75-00-3	Chloroethane	5.8	< 5.8	U
75-09-2	Methylene Chloride	12	< 12	U
67-64-1	**Acetone**	**29**	**160**	
75-15-0	**Carbon Disulfide**	**5.8**	**23**	
75-35-4	1,1-Dichloroethene	5.8	< 5.8	U
75-34-3	1,1-Dichloroethane	5.8	< 5.8	U
156-60-5	trans-1,2-Dichloroethene	5.8	< 5.8	U
156-59-2	cis-1,2-Dichloroethene	5.8	< 5.8	U
67-66-3	Chloroform	5.8	< 5.8	U
107-06-2	1,2-Dichloroethane	5.8	< 5.8	U
78-93-3	**2-Butanone**	**29**	**35**	
71-55-6	1,1,1-Trichloroethane	5.8	< 5.8	U
56-23-5	Carbon Tetrachloride	5.8	< 5.8	U
108-05-4	Vinyl Acetate	29	< 29	U
75-27-4	Bromodichloromethane	5.8	< 5.8	U
78-87-5	1,2-Dichloropropane	5.8	< 5.8	U
10061-01-5	cis-1,3-Dichloropropene	5.8	< 5.8	U
79-01-6	Trichloroethene	5.8	< 5.8	U
124-48-1	Dibromochloromethane	5.8	< 5.8	U
79-00-5	1,1,2-Trichloroethane	5.8	< 5.8	U
71-43-2	Benzene	5.8	< 5.8	U
10061-02-6	trans-1,3-Dichloropropene	5.8	< 5.8	U
110-75-8	2-Chloroethylvinylether	29	< 29	U
75-25-2	Bromoform	5.8	< 5.8	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	29	< 29	U
591-78-6	2-Hexanone	29	< 29	U
127-18-4	Tetrachloroethene	5.8	< 5.8	U
79-34-5	1,1,2,2-Tetrachloroethane	5.8	< 5.8	U
108-88-3	**Toluene**	**5.8**	**15**	
108-90-7	Chlorobenzene	5.8	< 5.8	U
100-41-4	**Ethylbenzene**	**5.8**	**1,400**	**E**
100-42-5	Styrene	5.8	< 5.8	U
75-69-4	**Trichlorofluoromethane**	**5.8**	**8.6**	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	12	< 12	U
1330-20-7	**m,p-Xylene**	**5.8**	**5,000**	**ES**
95-47-6	**o-Xylene**	**5.8**	**2,100**	**ES**
95-50-1	1,2-Dichlorobenzene	5.8	< 5.8	U
541-73-1	1,3-Dichlorobenzene	5.8	< 5.8	U
106-46-7	1,4-Dichlorobenzene	5.8	< 5.8	U
107-02-8	Acrolein	290	< 290	U
74-88-4	Methyl Iodide	5.8	< 5.8	U
74-96-4	Bromoethane	12	< 12	U
107-13-1	Acrylonitrile	29	< 29	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-02**
 SAMPLE

Lab Sample ID: NG33B
LIMS ID: 08-16218
Matrix: Soil
Date Analyzed: 07/22/08 18:13

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	5.8	< 5.8	U
74-95-3	Dibromomethane	5.8	< 5.8	U
630-20-6	1,1,1,2-Tetrachloroethane	5.8	< 5.8	U
96-12-8	1,2-Dibromo-3-chloropropane	29	< 29	U
96-18-4	1,2,3-Trichloropropane	12	< 12	U
110-57-6	trans-1,4-Dichloro-2-butene	29	< 29	U
108-67-8	**1,3,5-Trimethylbenzene**	**5.8**	**16**	
95-63-6	**1,2,4-Trimethylbenzene**	**5.8**	**14**	
87-68-3	Hexachlorobutadiene	29	< 29	U
106-93-4	Ethylene Dibromide	5.8	< 5.8	U
74-97-5	Bromochloromethane	5.8	< 5.8	U
594-20-7	2,2-Dichloropropane	5.8	< 5.8	U
142-28-9	1,3-Dichloropropane	5.8	< 5.8	U
98-82-8	**Isopropylbenzene**	**5.8**	**46**	
103-65-1	**n-Propylbenzene**	**5.8**	**32**	
108-86-1	Bromobenzene	5.8	< 5.8	U
95-49-8	2-Chlorotoluene	5.8	< 5.8	U
106-43-4	4-Chlorotoluene	5.8	< 5.8	U
98-06-6	tert-Butylbenzene	5.8	< 5.8	U
135-98-8	sec-Butylbenzene	5.8	< 5.8	U
99-87-6	**4-Isopropyltoluene**	**5.8**	**7.3**	
104-51-8	n-Butylbenzene	5.8	< 5.8	U
120-82-1	1,2,4-Trichlorobenzene	29	< 29	U
91-20-3	**Naphthalene**	**29**	**170**	
87-61-6	1,2,3-Trichlorobenzene	29	< 29	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	122%
d8-Toluene	102%
Bromofluorobenzene	94.0%
d4-1,2-Dichlorobenzene	95.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-02**
Page 1 of 2 **REANALYSIS**

Lab Sample ID: NG33B
LIMS ID: 08-16218
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Instrument/Analyst: FINN5/PAB
Date Analyzed: 07/28/08 21:34

Sample Amount: 0.080 g-dry-wt
Purge Volume: 5.0 mL
Moisture: 85.2%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	63	< 63	U
74-83-9	Bromomethane	63	< 63	U
75-01-4	Vinyl Chloride	63	< 63	U
75-00-3	Chloroethane	63	< 63	U
75-09-2	Methylene Chloride	120	< 120	U
67-64-1	Acetone	310	< 310	U
75-15-0	Carbon Disulfide	63	< 63	U
75-35-4	1,1-Dichloroethene	63	< 63	U
75-34-3	1,1-Dichloroethane	63	< 63	U
156-60-5	trans-1,2-Dichloroethene	63	< 63	U
156-59-2	cis-1,2-Dichloroethene	63	< 63	U
67-66-3	Chloroform	63	< 63	U
107-06-2	1,2-Dichloroethane	63	< 63	U
78-93-3	2-Butanone	310	< 310	U
71-55-6	1,1,1-Trichloroethane	63	< 63	U
56-23-5	Carbon Tetrachloride	63	< 63	U
108-05-4	Vinyl Acetate	310	< 310	U
75-27-4	Bromodichloromethane	63	< 63	U
78-87-5	1,2-Dichloropropane	63	< 63	U
10061-01-5	cis-1,3-Dichloropropene	63	< 63	U
79-01-6	Trichloroethene	63	< 63	U
124-48-1	Dibromochloromethane	63	< 63	U
79-00-5	1,1,2-Trichloroethane	63	< 63	U
71-43-2	Benzene	63	< 63	U
10061-02-6	trans-1,3-Dichloropropene	63	< 63	U
110-75-8	2-Chloroethylvinylether	310	< 310	U
75-25-2	Bromoform	63	< 63	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	310	< 310	U
591-78-6	2-Hexanone	310	< 310	U
127-18-4	Tetrachloroethene	63	< 63	U
79-34-5	1,1,2,2-Tetrachloroethane	63	< 63	U
108-88-3	Toluene	63	< 63	U
108-90-7	Chlorobenzene	63	< 63	U
100-41-4	**Ethylbenzene**	**63**	**1,800**	
100-42-5	Styrene	63	< 63	U
75-69-4	Trichlorofluoromethane	63	< 63	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	120	< 120	U
1330-20-7	**m,p-Xylene**	**63**	**9,800**	
95-47-6	**o-Xylene**	**63**	**2,800**	
95-50-1	1,2-Dichlorobenzene	63	< 63	U
541-73-1	1,3-Dichlorobenzene	63	< 63	U
106-46-7	1,4-Dichlorobenzene	63	< 63	U
107-02-8	Acrolein	3,100	< 3,100	U
74-88-4	Methyl Iodide	63	< 63	U
74-96-4	Bromoethane	120	< 120	U
107-13-1	Acrylonitrile	310	< 310	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-02**
Page 2 of 2 **REANALYSIS**

Lab Sample ID: NG33B
LIMS ID: 08-16218
Matrix: Soil
Date Analyzed: 07/28/08 21:34

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	63	< 63	U
74-95-3	Dibromomethane	63	< 63	U
630-20-6	1,1,1,2-Tetrachloroethane	63	< 63	U
96-12-8	1,2-Dibromo-3-chloropropane	310	< 310	U
96-18-4	1,2,3-Trichloropropane	120	< 120	U
110-57-6	trans-1,4-Dichloro-2-butene	310	< 310	U
108-67-8	1,3,5-Trimethylbenzene	63	< 63	U
95-63-6	1,2,4-Trimethylbenzene	63	< 63	U
87-68-3	Hexachlorobutadiene	310	< 310	U
106-93-4	Ethylene Dibromide	63	< 63	U
74-97-5	Bromochloromethane	63	< 63	U
594-20-7	2,2-Dichloropropane	63	< 63	U
142-28-9	1,3-Dichloropropane	63	< 63	U
98-82-8	Isopropylbenzene	63	< 63	U
103-65-1	n-Propylbenzene	63	< 63	U
108-86-1	Bromobenzene	63	< 63	U
95-49-8	2-Chlorotoluene	63	< 63	U
106-43-4	4-Chlorotoluene	63	< 63	U
98-06-6	tert-Butylbenzene	63	< 63	U
135-98-8	sec-Butylbenzene	63	< 63	U
99-87-6	4-Isopropyltoluene	63	< 63	U
104-51-8	n-Butylbenzene	63	< 63	U
120-82-1	1,2,4-Trichlorobenzene	310	< 310	U
91-20-3	Naphthalene	310	< 310	U
87-61-6	1,2,3-Trichlorobenzene	310	< 310	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	131%
d8-Toluene	103%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	97.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-03**
Page 1 of 2 **SAMPLE**

Lab Sample ID: NG33C
LIMS ID: 08-16219
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Instrument/Analyst: FINN5/PAB
Date Analyzed: 07/28/08 22:00

Sample Amount: 1.55 g-dry-wt
Purge Volume: 5.0 mL
Moisture: 66.1%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	3.2	< 3.2	U
74-83-9	Bromomethane	3.2	< 3.2	U
75-01-4	Vinyl Chloride	3.2	< 3.2	U
75-00-3	Chloroethane	3.2	< 3.2	U
75-09-2	Methylene Chloride	6.4	< 6.4	U
67-64-1	**Acetone**	**16**	**4,400**	**E**
75-15-0	**Carbon Disulfide**	**3.2**	**5.5**	
75-35-4	1,1-Dichloroethene	3.2	< 3.2	U
75-34-3	1,1-Dichloroethane	3.2	< 3.2	U
156-60-5	trans-1,2-Dichloroethene	3.2	< 3.2	U
156-59-2	cis-1,2-Dichloroethene	3.2	< 3.2	U
67-66-3	Chloroform	3.2	< 3.2	U
107-06-2	1,2-Dichloroethane	3.2	< 3.2	U
78-93-3	**2-Butanone**	**16**	**500**	
71-55-6	1,1,1-Trichloroethane	3.2	< 3.2	U
56-23-5	Carbon Tetrachloride	3.2	< 3.2	U
108-05-4	Vinyl Acetate	16	< 16	U
75-27-4	Bromodichloromethane	3.2	< 3.2	U
78-87-5	1,2-Dichloropropane	3.2	< 3.2	U
10061-01-5	cis-1,3-Dichloropropene	3.2	< 3.2	U
79-01-6	Trichloroethene	3.2	< 3.2	U
124-48-1	Dibromochloromethane	3.2	< 3.2	U
79-00-5	1,1,2-Trichloroethane	3.2	< 3.2	U
71-43-2	Benzene	3.2	< 3.2	U
10061-02-6	trans-1,3-Dichloropropene	3.2	< 3.2	U
110-75-8	2-Chloroethylvinylether	16	< 16	U
75-25-2	Bromoform	3.2	< 3.2	U
108-10-1	**4-Methyl-2-Pentanone (MIBK)**	**16**	**160**	
591-78-6	2-Hexanone	16	< 16	U
127-18-4	**Tetrachloroethene**	**3.2**	**11**	
79-34-5	1,1,2,2-Tetrachloroethane	3.2	< 3.2	U
108-88-3	**Toluene**	**3.2**	**6.1**	
108-90-7	Chlorobenzene	3.2	< 3.2	U
100-41-4	**Ethylbenzene**	**3.2**	**100**	
100-42-5	Styrene	3.2	< 3.2	U
75-69-4	**Trichlorofluoromethane**	**3.2**	**25**	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	6.4	< 6.4	U
1330-20-7	**m,p-Xylene**	**3.2**	**440**	
95-47-6	**o-Xylene**	**3.2**	**120**	
95-50-1	1,2-Dichlorobenzene	3.2	< 3.2	U
541-73-1	1,3-Dichlorobenzene	3.2	< 3.2	U
106-46-7	1,4-Dichlorobenzene	3.2	< 3.2	U
107-02-8	Acrolein	160	< 160	U
74-88-4	Methyl Iodide	3.2	< 3.2	U
74-96-4	Bromoethane	6.4	< 6.4	U
107-13-1	Acrylonitrile	16	< 16	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-03**
Page 2 of 2 **SAMPLE**

Lab Sample ID: NG33C
LIMS ID: 08-16219
Matrix: Soil
Date Analyzed: 07/28/08 22:00

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	3.2	< 3.2	U
74-95-3	Dibromomethane	3.2	< 3.2	U
630-20-6	1,1,1,2-Tetrachloroethane	3.2	< 3.2	U
96-12-8	1,2-Dibromo-3-chloropropane	16	< 16	U
96-18-4	1,2,3-Trichloropropane	6.4	< 6.4	U
110-57-6	trans-1,4-Dichloro-2-butene	16	< 16	U
108-67-8	1,3,5-Trimethylbenzene	3.2	< 3.2	U
95-63-6	**1,2,4-Trimethylbenzene**	**3.2**	**9.8**	**M**
87-68-3	Hexachlorobutadiene	16	< 16	U
106-93-4	Ethylene Dibromide	3.2	< 3.2	U
74-97-5	Bromochloromethane	3.2	< 3.2	U
594-20-7	2,2-Dichloropropane	3.2	< 3.2	U
142-28-9	1,3-Dichloropropane	3.2	< 3.2	U
98-82-8	Isopropylbenzene	3.2	< 3.2	U
103-65-1	n-Propylbenzene	3.2	< 3.2	U
108-86-1	Bromobenzene	3.2	< 3.2	U
95-49-8	2-Chlorotoluene	3.2	< 3.2	U
106-43-4	4-Chlorotoluene	3.2	< 3.2	U
98-06-6	tert-Butylbenzene	3.2	< 3.2	U
135-98-8	sec-Butylbenzene	3.2	< 3.2	U
99-87-6	**4-Isopropyltoluene**	**3.2**	**6.4**	**M**
104-51-8	n-Butylbenzene	3.2	< 3.2	U
120-82-1	1,2,4-Trichlorobenzene	16	< 16	U
91-20-3	Naphthalene	16	< 16	U
87-61-6	1,2,3-Trichlorobenzene	16	< 16	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	170%
d8-Toluene	84.9%
Bromofluorobenzene	66.7%
d4-1,2-Dichlorobenzene	86.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-03**
Page 1 of 2 **REANALYSIS**

Lab Sample ID: NG33C
LIMS ID: 08-16219
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Instrument/Analyst: FINN1/PAB
Date Analyzed: 07/29/08 20:52

Sample Amount: 0.434 g-dry-wt
Purge Volume: 5.0 mL
Moisture: 66.1%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	12	< 12	U
74-83-9	Bromomethane	12	< 12	U
75-01-4	Vinyl Chloride	12	< 12	U
75-00-3	Chloroethane	12	< 12	U
75-09-2	**Methylene Chloride**	**23**	**37**	
67-64-1	**Acetone**	**58**	**2,300**	
75-15-0	Carbon Disulfide	12	< 12	U
75-35-4	1,1-Dichloroethene	12	< 12	U
75-34-3	1,1-Dichloroethane	12	< 12	U
156-60-5	trans-1,2-Dichloroethene	12	< 12	U
156-59-2	cis-1,2-Dichloroethene	12	< 12	U
67-66-3	Chloroform	12	< 12	U
107-06-2	1,2-Dichloroethane	12	< 12	U
78-93-3	**2-Butanone**	**58**	**520**	
71-55-6	1,1,1-Trichloroethane	12	< 12	U
56-23-5	Carbon Tetrachloride	12	< 12	U
108-05-4	Vinyl Acetate	58	< 58	U
75-27-4	Bromodichloromethane	12	< 12	U
78-87-5	1,2-Dichloropropane	12	< 12	U
10061-01-5	cis-1,3-Dichloropropene	12	< 12	U
79-01-6	Trichloroethene	12	< 12	U
124-48-1	Dibromochloromethane	12	< 12	U
79-00-5	1,1,2-Trichloroethane	12	< 12	U
71-43-2	Benzene	12	< 12	U
10061-02-6	trans-1,3-Dichloropropene	12	< 12	U
110-75-8	2-Chloroethylvinylether	58	< 58	U
75-25-2	Bromoform	12	< 12	U
108-10-1	**4-Methyl-2-Pentanone (MIBK)**	**58**	**160**	
591-78-6	2-Hexanone	58	< 58	U
127-18-4	**Tetrachloroethene**	**12**	**15**	
79-34-5	1,1,2,2-Tetrachloroethane	12	< 12	U
108-88-3	Toluene	12	< 12	U
108-90-7	Chlorobenzene	12	< 12	U
100-41-4	**Ethylbenzene**	**12**	**130**	
100-42-5	Styrene	12	< 12	U
75-69-4	**Trichlorofluoromethane**	**12**	**28**	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	23	< 23	U
1330-20-7	**m,p-Xylene**	**12**	**630**	
95-47-6	**o-Xylene**	**12**	**160**	
95-50-1	1,2-Dichlorobenzene	12	< 12	U
541-73-1	1,3-Dichlorobenzene	12	< 12	U
106-46-7	1,4-Dichlorobenzene	12	< 12	U
107-02-8	Acrolein	580	< 580	U
74-88-4	Methyl Iodide	12	< 12	U
74-96-4	Bromoethane	23	< 23	U
107-13-1	Acrylonitrile	58	< 58	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-03**
 REANALYSIS

Lab Sample ID: NG33C
LIMS ID: 08-16219
Matrix: Soil
Date Analyzed: 07/29/08 20:52

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	12	< 12	U
74-95-3	Dibromomethane	12	< 12	U
630-20-6	1,1,1,2-Tetrachloroethane	12	< 12	U
96-12-8	1,2-Dibromo-3-chloropropane	58	< 58	U
96-18-4	1,2,3-Trichloropropane	23	< 23	U
110-57-6	trans-1,4-Dichloro-2-butene	58	< 58	U
108-67-8	1,3,5-Trimethylbenzene	12	< 12	U
95-63-6	1,2,4-Trimethylbenzene	12	< 12	U
87-68-3	Hexachlorobutadiene	58	< 58	U
106-93-4	Ethylene Dibromide	12	< 12	U
74-97-5	Bromochloromethane	12	< 12	U
594-20-7	2,2-Dichloropropane	12	< 12	U
142-28-9	1,3-Dichloropropane	12	< 12	U
98-82-8	Isopropylbenzene	12	< 12	U
103-65-1	n-Propylbenzene	12	< 12	U
108-86-1	Bromobenzene	12	< 12	U
95-49-8	2-Chlorotoluene	12	< 12	U
106-43-4	4-Chlorotoluene	12	< 12	U
98-06-6	tert-Butylbenzene	12	< 12	U
135-98-8	sec-Butylbenzene	12	< 12	U
99-87-6	4-Isopropyltoluene	12	< 12	U
104-51-8	n-Butylbenzene	12	< 12	U
120-82-1	1,2,4-Trichlorobenzene	58	< 58	U
91-20-3	Naphthalene	58	< 58	U
87-61-6	1,2,3-Trichlorobenzene	58	< 58	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	126%
d8-Toluene	82.1%
Bromofluorobenzene	77.9%
d4-1,2-Dichlorobenzene	91.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-04**
Page 1 of 2 **SAMPLE**

Lab Sample ID: NG33D
LIMS ID: 08-16220
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Instrument/Analyst: FINN5/PAB
Date Analyzed: 07/22/08 19:06

Sample Amount: 2.61 g-dry-wt
Purge Volume: 5.0 mL
Moisture: 60.7%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	1.9	< 1.9	U
74-83-9	Bromomethane	1.9	< 1.9	U
75-01-4	Vinyl Chloride	1.9	< 1.9	U
75-00-3	Chloroethane	1.9	< 1.9	U
75-09-2	Methylene Chloride	3.8	< 3.8	U
67-64-1	**Acetone**	**9.6**	**290**	
75-15-0	**Carbon Disulfide**	**1.9**	**4.0**	
75-35-4	1,1-Dichloroethene	1.9	< 1.9	U
75-34-3	1,1-Dichloroethane	1.9	< 1.9	U
156-60-5	trans-1,2-Dichloroethene	1.9	< 1.9	U
156-59-2	cis-1,2-Dichloroethene	1.9	< 1.9	U
67-66-3	Chloroform	1.9	< 1.9	U
107-06-2	1,2-Dichloroethane	1.9	< 1.9	U
78-93-3	**2-Butanone**	**9.6**	**61**	
71-55-6	1,1,1-Trichloroethane	1.9	< 1.9	U
56-23-5	Carbon Tetrachloride	1.9	< 1.9	U
108-05-4	Vinyl Acetate	9.6	< 9.6	U
75-27-4	Bromodichloromethane	1.9	< 1.9	U
78-87-5	1,2-Dichloropropane	1.9	< 1.9	U
10061-01-5	cis-1,3-Dichloropropene	1.9	< 1.9	U
79-01-6	Trichloroethene	1.9	< 1.9	U
124-48-1	Dibromochloromethane	1.9	< 1.9	U
79-00-5	1,1,2-Trichloroethane	1.9	< 1.9	U
71-43-2	**Benzene**	**1.9**	**2.9**	
10061-02-6	trans-1,3-Dichloropropene	1.9	< 1.9	U
110-75-8	2-Chloroethylvinylether	9.6	< 9.6	U
75-25-2	Bromoform	1.9	< 1.9	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	9.6	< 9.6	U
591-78-6	2-Hexanone	9.6	< 9.6	U
127-18-4	Tetrachloroethene	1.9	< 1.9	U
79-34-5	1,1,2,2-Tetrachloroethane	1.9	< 1.9	U
108-88-3	**Toluene**	**1.9**	**5.1**	
108-90-7	Chlorobenzene	1.9	< 1.9	U
100-41-4	**Ethylbenzene**	**1.9**	**280**	
100-42-5	Styrene	1.9	< 1.9	U
75-69-4	Trichlorofluoromethane	1.9	< 1.9	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	3.8	< 3.8	U
1330-20-7	**m,p-Xylene**	**1.9**	**790**	**E**
95-47-6	**o-Xylene**	**1.9**	**280**	
95-50-1	1,2-Dichlorobenzene	1.9	< 1.9	U
541-73-1	1,3-Dichlorobenzene	1.9	< 1.9	U
106-46-7	1,4-Dichlorobenzene	1.9	< 1.9	U
107-02-8	Acrolein	96	< 96	U
74-88-4	Methyl Iodide	1.9	< 1.9	U
74-96-4	Bromoethane	3.8	< 3.8	U
107-13-1	Acrylonitrile	9.6	< 9.6	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-04**
Page 2 of 2 **SAMPLE**

Lab Sample ID: NG33D
LIMS ID: 08-16220
Matrix: Soil
Date Analyzed: 07/22/08 19:06

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	1.9	< 1.9	U
74-95-3	Dibromomethane	1.9	< 1.9	U
630-20-6	1,1,1,2-Tetrachloroethane	1.9	< 1.9	U
96-12-8	1,2-Dibromo-3-chloropropane	9.6	< 9.6	U
96-18-4	1,2,3-Trichloropropane	3.8	< 3.8	U
110-57-6	trans-1,4-Dichloro-2-butene	9.6	< 9.6	U
108-67-8	1,3,5-Trimethylbenzene	1.9	< 1.9	U
95-63-6	**1,2,4-Trimethylbenzene**	**1.9**	**3.7**	**M**
87-68-3	Hexachlorobutadiene	9.6	< 9.6	U
106-93-4	Ethylene Dibromide	1.9	< 1.9	U
74-97-5	Bromochloromethane	1.9	< 1.9	U
594-20-7	2,2-Dichloropropane	1.9	< 1.9	U
142-28-9	1,3-Dichloropropane	1.9	< 1.9	U
98-82-8	Isopropylbenzene	1.9	< 1.9	U
103-65-1	n-Propylbenzene	1.9	< 1.9	U
108-86-1	Bromobenzene	1.9	< 1.9	U
95-49-8	2-Chlorotoluene	1.9	< 1.9	U
106-43-4	4-Chlorotoluene	1.9	< 1.9	U
98-06-6	tert-Butylbenzene	1.9	< 1.9	U
135-98-8	sec-Butylbenzene	1.9	< 1.9	U
99-87-6	4-Isopropyltoluene	1.9	< 1.9	U
104-51-8	n-Butylbenzene	1.9	< 1.9	U
120-82-1	1,2,4-Trichlorobenzene	9.6	< 9.6	U
91-20-3	Naphthalene	9.6	< 9.6	U
87-61-6	1,2,3-Trichlorobenzene	9.6	< 9.6	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	158%
d8-Toluene	74.0%
Bromofluorobenzene	67.3%
d4-1,2-Dichlorobenzene	87.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-04**
Page 1 of 2 **REANALYSIS**

Lab Sample ID: NG33D
LIMS ID: 08-16220
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Instrument/Analyst: FINN5/PAB
Date Analyzed: 07/28/08 22:27

Sample Amount: 0.806 g-dry-wt
Purge Volume: 5.0 mL
Moisture: 60.7%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	6.2	< 6.2	U
74-83-9	Bromomethane	6.2	< 6.2	U
75-01-4	Vinyl Chloride	6.2	< 6.2	U
75-00-3	Chloroethane	6.2	< 6.2	U
75-09-2	Methylene Chloride	12	< 12	U
67-64-1	**Acetone**	**31**	**520**	
75-15-0	**Carbon Disulfide**	**6.2**	**16**	
75-35-4	1,1-Dichloroethene	6.2	< 6.2	U
75-34-3	1,1-Dichloroethane	6.2	< 6.2	U
156-60-5	trans-1,2-Dichloroethene	6.2	< 6.2	U
156-59-2	cis-1,2-Dichloroethene	6.2	< 6.2	U
67-66-3	Chloroform	6.2	< 6.2	U
107-06-2	1,2-Dichloroethane	6.2	< 6.2	U
78-93-3	**2-Butanone**	**31**	**160**	
71-55-6	1,1,1-Trichloroethane	6.2	< 6.2	U
56-23-5	Carbon Tetrachloride	6.2	< 6.2	U
108-05-4	Vinyl Acetate	31	< 31	U
75-27-4	Bromodichloromethane	6.2	< 6.2	U
78-87-5	1,2-Dichloropropane	6.2	< 6.2	U
10061-01-5	cis-1,3-Dichloropropene	6.2	< 6.2	U
79-01-6	Trichloroethene	6.2	< 6.2	U
124-48-1	Dibromochloromethane	6.2	< 6.2	U
79-00-5	1,1,2-Trichloroethane	6.2	< 6.2	U
71-43-2	Benzene	6.2	< 6.2	U
10061-02-6	trans-1,3-Dichloropropene	6.2	< 6.2	U
110-75-8	2-Chloroethylvinylether	31	< 31	U
75-25-2	Bromoform	6.2	< 6.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	31	< 31	U
591-78-6	2-Hexanone	31	< 31	U
127-18-4	Tetrachloroethene	6.2	< 6.2	U
79-34-5	1,1,2,2-Tetrachloroethane	6.2	< 6.2	U
108-88-3	**Toluene**	**6.2**	**8.1**	
108-90-7	Chlorobenzene	6.2	< 6.2	U
100-41-4	**Ethylbenzene**	**6.2**	**470**	
100-42-5	Styrene	6.2	< 6.2	U
75-69-4	Trichlorofluoromethane	6.2	< 6.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	12	< 12	U
1330-20-7	**m,p-Xylene**	**6.2**	**1,200**	
95-47-6	**o-Xylene**	**6.2**	**480**	
95-50-1	1,2-Dichlorobenzene	6.2	< 6.2	U
541-73-1	1,3-Dichlorobenzene	6.2	< 6.2	U
106-46-7	1,4-Dichlorobenzene	6.2	< 6.2	U
107-02-8	Acrolein	310	< 310	U
74-88-4	Methyl Iodide	6.2	< 6.2	U
74-96-4	Bromoethane	12	< 12	U
107-13-1	Acrylonitrile	31	< 31	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-04**
Page 2 of 2 **REANALYSIS**

Lab Sample ID: NG33D QC Report No: NG33-Landau Associates, Inc.
LIMS ID: 08-16220 Project: Kaiser Sump Sampling
Matrix: Soil 168004.020.002
Date Analyzed: 07/28/08 22:27

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	6.2	< 6.2	U
74-95-3	Dibromomethane	6.2	< 6.2	U
630-20-6	1,1,1,2-Tetrachloroethane	6.2	< 6.2	U
96-12-8	1,2-Dibromo-3-chloropropane	31	< 31	U
96-18-4	1,2,3-Trichloropropane	12	< 12	U
110-57-6	trans-1,4-Dichloro-2-butene	31	< 31	U
108-67-8	1,3,5-Trimethylbenzene	6.2	< 6.2	U
95-63-6	**1,2,4-Trimethylbenzene**	**6.2**	**7.0**	**M**
87-68-3	Hexachlorobutadiene	31	< 31	U
106-93-4	Ethylene Dibromide	6.2	< 6.2	U
74-97-5	Bromochloromethane	6.2	< 6.2	U
594-20-7	2,2-Dichloropropane	6.2	< 6.2	U
142-28-9	1,3-Dichloropropane	6.2	< 6.2	U
98-82-8	Isopropylbenzene	6.2	< 6.2	U
103-65-1	n-Propylbenzene	6.2	< 6.2	U
108-86-1	Bromobenzene	6.2	< 6.2	U
95-49-8	2-Chlorotoluene	6.2	< 6.2	U
106-43-4	4-Chlorotoluene	6.2	< 6.2	U
98-06-6	tert-Butylbenzene	6.2	< 6.2	U
135-98-8	sec-Butylbenzene	6.2	< 6.2	U
99-87-6	4-Isopropyltoluene	6.2	< 6.2	U
104-51-8	n-Butylbenzene	6.2	< 6.2	U
120-82-1	1,2,4-Trichlorobenzene	31	< 31	U
91-20-3	Naphthalene	31	< 31	U
87-61-6	1,2,3-Trichlorobenzene	31	< 31	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	154%
d8-Toluene	82.1%
Bromofluorobenzene	73.6%
d4-1,2-Dichlorobenzene	90.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-05**
Page 1 of 2 **SAMPLE**

Lab Sample ID: NG33E
LIMS ID: 08-16221
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Instrument/Analyst: FINN5/PAB
Date Analyzed: 07/28/08 22:53

Sample Amount: 0.406 g-dry-wt
Purge Volume: 5.0 mL
Moisture: 26.1%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	12	< 12	U
74-83-9	Bromomethane	12	< 12	U
75-01-4	Vinyl Chloride	12	< 12	U
75-00-3	Chloroethane	12	< 12	U
75-09-2	Methylene Chloride	25	< 25	U
67-64-1	**Acetone**	**62**	**14,000**	**E**
75-15-0	**Carbon Disulfide**	**12**	**230**	
75-35-4	1,1-Dichloroethene	12	< 12	U
75-34-3	1,1-Dichloroethane	12	< 12	U
156-60-5	trans-1,2-Dichloroethene	12	< 12	U
156-59-2	cis-1,2-Dichloroethene	12	< 12	U
67-66-3	Chloroform	12	< 12	U
107-06-2	1,2-Dichloroethane	12	< 12	U
78-93-3	**2-Butanone**	**62**	**1,800**	
71-55-6	1,1,1-Trichloroethane	12	< 12	U
56-23-5	Carbon Tetrachloride	12	< 12	U
108-05-4	Vinyl Acetate	62	< 62	U
75-27-4	Bromodichloromethane	12	< 12	U
78-87-5	1,2-Dichloropropane	12	< 12	U
10061-01-5	cis-1,3-Dichloropropene	12	< 12	U
79-01-6	Trichloroethene	12	< 12	U
124-48-1	Dibromochloromethane	12	< 12	U
79-00-5	1,1,2-Trichloroethane	12	< 12	U
71-43-2	Benzene	12	< 12	U
10061-02-6	trans-1,3-Dichloropropene	12	< 12	U
110-75-8	2-Chloroethylvinylether	62	< 62	U
75-25-2	Bromoform	12	< 12	U
108-10-1	**4-Methyl-2-Pentanone (MIBK)**	**62**	**300**	
591-78-6	2-Hexanone	62	< 62	U
127-18-4	**Tetrachloroethene**	**12**	**2,700**	**E**
79-34-5	1,1,2,2-Tetrachloroethane	12	< 12	U
108-88-3	**Toluene**	**12**	**12**	
108-90-7	Chlorobenzene	12	< 12	U
100-41-4	**Ethylbenzene**	**12**	**200**	
100-42-5	Styrene	12	< 12	U
75-69-4	**Trichlorofluoromethane**	**12**	**26**	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	25	< 25	U
1330-20-7	**m,p-Xylene**	**12**	**900**	
95-47-6	**o-Xylene**	**12**	**270**	
95-50-1	1,2-Dichlorobenzene	12	< 12	U
541-73-1	1,3-Dichlorobenzene	12	< 12	U
106-46-7	1,4-Dichlorobenzene	12	< 12	U
107-02-8	Acrolein	620	< 620	U
74-88-4	Methyl Iodide	12	< 12	U
74-96-4	Bromoethane	25	< 25	U
107-13-1	Acrylonitrile	62	< 62	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-05**
Page 2 of 2 **SAMPLE**

Lab Sample ID: NG33E
LIMS ID: 08-16221
Matrix: Soil
Date Analyzed: 07/28/08 22:53

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	12	< 12	U
74-95-3	Dibromomethane	12	< 12	U
630-20-6	1,1,1,2-Tetrachloroethane	12	< 12	U
96-12-8	1,2-Dibromo-3-chloropropane	62	< 62	U
96-18-4	1,2,3-Trichloropropane	25	< 25	U
110-57-6	trans-1,4-Dichloro-2-butene	62	< 62	U
108-67-8	**1,3,5-Trimethylbenzene**	**12**	**410**	
95-63-6	**1,2,4-Trimethylbenzene**	**12**	**1,000**	
87-68-3	Hexachlorobutadiene	62	< 62	U
106-93-4	Ethylene Dibromide	12	< 12	U
74-97-5	Bromochloromethane	12	< 12	U
594-20-7	2,2-Dichloropropane	12	< 12	U
142-28-9	1,3-Dichloropropane	12	< 12	U
98-82-8	**Isopropylbenzene**	**12**	**78**	
103-65-1	**n-Propylbenzene**	**12**	**200**	
108-86-1	Bromobenzene	12	< 12	U
95-49-8	2-Chlorotoluene	12	< 12	U
106-43-4	4-Chlorotoluene	12	< 12	U
98-06-6	tert-Butylbenzene	12	< 12	U
135-98-8	**sec-Butylbenzene**	**12**	**160**	
99-87-6	**4-Isopropyltoluene**	**12**	**81**	**M**
104-51-8	**n-Butylbenzene**	**12**	**110**	
120-82-1	1,2,4-Trichlorobenzene	62	< 62	U
91-20-3	Naphthalene	62	< 62	U
87-61-6	1,2,3-Trichlorobenzene	62	< 62	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	137%
d8-Toluene	79.5%
Bromofluorobenzene	60.8%
d4-1,2-Dichlorobenzene	81.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-05**
Page 1 of 2 **REANALYSIS**

Lab Sample ID: NG33E
LIMS ID: 08-16221
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Instrument/Analyst: FINN1/PAB
Date Analyzed: 07/29/08 21:20

Sample Amount: 59.3 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 26.1%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	84	< 84	U
74-83-9	Bromomethane	84	< 84	U
75-01-4	Vinyl Chloride	84	< 84	U
75-00-3	Chloroethane	84	< 84	U
75-09-2	**Methylene Chloride**	**170**	**230**	
67-64-1	**Acetone**	**420**	**940**	
75-15-0	Carbon Disulfide	84	< 84	U
75-35-4	1,1-Dichloroethene	84	< 84	U
75-34-3	1,1-Dichloroethane	84	< 84	U
156-60-5	trans-1,2-Dichloroethene	84	< 84	U
156-59-2	cis-1,2-Dichloroethene	84	< 84	U
67-66-3	Chloroform	84	< 84	U
107-06-2	1,2-Dichloroethane	84	< 84	U
78-93-3	2-Butanone	420	< 420	U
71-55-6	1,1,1-Trichloroethane	84	< 84	U
56-23-5	Carbon Tetrachloride	84	< 84	U
108-05-4	Vinyl Acetate	420	< 420	U
75-27-4	Bromodichloromethane	84	< 84	U
78-87-5	1,2-Dichloropropane	84	< 84	U
10061-01-5	cis-1,3-Dichloropropene	84	< 84	U
79-01-6	Trichloroethene	84	< 84	U
124-48-1	Dibromochloromethane	84	< 84	U
79-00-5	1,1,2-Trichloroethane	84	< 84	U
71-43-2	Benzene	84	< 84	U
10061-02-6	trans-1,3-Dichloropropene	84	< 84	U
110-75-8	2-Chloroethylvinylether	420	< 420	U
75-25-2	Bromoform	84	< 84	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	420	< 420	U
591-78-6	2-Hexanone	420	< 420	U
127-18-4	**Tetrachloroethene**	**84**	**710**	
79-34-5	1,1,2,2-Tetrachloroethane	84	< 84	U
108-88-3	Toluene	84	< 84	U
108-90-7	Chlorobenzene	84	< 84	U
100-41-4	Ethylbenzene	84	< 84	U
100-42-5	Styrene	84	< 84	U
75-69-4	Trichlorofluoromethane	84	< 84	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	170	< 170	U
1330-20-7	**m,p-Xylene**	**84**	**360**	
95-47-6	**o-Xylene**	**84**	**120**	
95-50-1	1,2-Dichlorobenzene	84	< 84	U
541-73-1	1,3-Dichlorobenzene	84	< 84	U
106-46-7	1,4-Dichlorobenzene	84	< 84	U
107-02-8	Acrolein	4,200	< 4,200	U
74-88-4	Methyl Iodide	84	< 84	U
74-96-4	Bromoethane	170	< 170	U
107-13-1	Acrylonitrile	420	< 420	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-05**
 REANALYSIS

Lab Sample ID: NG33E
LIMS ID: 08-16221
Matrix: Soil
Date Analyzed: 07/29/08 21:20

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	84	< 84	U
74-95-3	Dibromomethane	84	< 84	U
630-20-6	1,1,1,2-Tetrachloroethane	84	< 84	U
96-12-8	1,2-Dibromo-3-chloropropane	420	< 420	U
96-18-4	1,2,3-Trichloropropane	170	< 170	U
110-57-6	trans-1,4-Dichloro-2-butene	420	< 420	U
108-67-8	1,3,5-Trimethylbenzene	84	< 84	U
95-63-6	**1,2,4-Trimethylbenzene**	**84**	**120**	
87-68-3	Hexachlorobutadiene	420	< 420	U
106-93-4	Ethylene Dibromide	84	< 84	U
74-97-5	Bromochloromethane	84	< 84	U
594-20-7	2,2-Dichloropropane	84	< 84	U
142-28-9	1,3-Dichloropropane	84	< 84	U
98-82-8	Isopropylbenzene	84	< 84	U
103-65-1	n-Propylbenzene	84	< 84	U
108-86-1	Bromobenzene	84	< 84	U
95-49-8	2-Chlorotoluene	84	< 84	U
106-43-4	4-Chlorotoluene	84	< 84	U
98-06-6	tert-Butylbenzene	84	< 84	U
135-98-8	sec-Butylbenzene	84	< 84	U
99-87-6	4-Isopropyltoluene	84	< 84	U
104-51-8	n-Butylbenzene	84	< 84	U
120-82-1	1,2,4-Trichlorobenzene	420	< 420	U
91-20-3	Naphthalene	420	< 420	U
87-61-6	1,2,3-Trichlorobenzene	420	< 420	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	101%
d8-Toluene	99.4%
Bromofluorobenzene	97.0%
d4-1,2-Dichlorobenzene	96.4%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-06**
Page 1 of 2 **SAMPLE**

Lab Sample ID: NG33F
LIMS ID: 08-16222
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Instrument/Analyst: FINN1/PAB
Date Analyzed: 07/29/08 21:48

Sample Amount: 77.3 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 5.7%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	65	< 65	U
74-83-9	Bromomethane	65	< 65	U
75-01-4	Vinyl Chloride	65	< 65	U
75-00-3	Chloroethane	65	< 65	U
75-09-2	**Methylene Chloride**	**130**	**170**	
67-64-1	**Acetone**	**320**	**820**	
75-15-0	Carbon Disulfide	65	< 65	U
75-35-4	1,1-Dichloroethene	65	< 65	U
75-34-3	1,1-Dichloroethane	65	< 65	U
156-60-5	trans-1,2-Dichloroethene	65	< 65	U
156-59-2	cis-1,2-Dichloroethene	65	< 65	U
67-66-3	Chloroform	65	< 65	U
107-06-2	1,2-Dichloroethane	65	< 65	U
78-93-3	**2-Butanone**	**320**	**340**	
71-55-6	1,1,1-Trichloroethane	65	< 65	U
56-23-5	Carbon Tetrachloride	65	< 65	U
108-05-4	Vinyl Acetate	320	< 320	U
75-27-4	Bromodichloromethane	65	< 65	U
78-87-5	1,2-Dichloropropane	65	< 65	U
10061-01-5	cis-1,3-Dichloropropene	65	< 65	U
79-01-6	Trichloroethene	65	< 65	U
124-48-1	Dibromochloromethane	65	< 65	U
79-00-5	1,1,2-Trichloroethane	65	< 65	U
71-43-2	Benzene	65	< 65	U
10061-02-6	trans-1,3-Dichloropropene	65	< 65	U
110-75-8	2-Chloroethylvinylether	320	< 320	U
75-25-2	Bromoform	65	< 65	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	320	< 320	U
591-78-6	2-Hexanone	320	< 320	U
127-18-4	Tetrachloroethene	65	< 65	U
79-34-5	1,1,2,2-Tetrachloroethane	65	< 65	U
108-88-3	Toluene	65	< 65	U
108-90-7	Chlorobenzene	65	< 65	U
100-41-4	**Ethylbenzene**	**65**	**260**	
100-42-5	Styrene	65	< 65	U
75-69-4	**Trichlorofluoromethane**	**65**	**89**	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	130	< 130	U
1330-20-7	**m,p-Xylene**	**65**	**1,300**	
95-47-6	**o-Xylene**	**65**	**560**	
95-50-1	1,2-Dichlorobenzene	65	< 65	U
541-73-1	1,3-Dichlorobenzene	65	< 65	U
106-46-7	1,4-Dichlorobenzene	65	< 65	U
107-02-8	Acrolein	3,200	< 3,200	U
74-88-4	Methyl Iodide	65	< 65	U
74-96-4	Bromoethane	130	< 130	U
107-13-1	Acrylonitrile	320	< 320	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: KS-06**
Page 2 of 2 **SAMPLE**

Lab Sample ID: NG33F
LIMS ID: 08-16222
Matrix: Soil
Date Analyzed: 07/29/08 21:48

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	65	< 65	U
74-95-3	Dibromomethane	65	< 65	U
630-20-6	1,1,1,2-Tetrachloroethane	65	< 65	U
96-12-8	1,2-Dibromo-3-chloropropane	320	< 320	U
96-18-4	1,2,3-Trichloropropane	130	< 130	U
110-57-6	trans-1,4-Dichloro-2-butene	320	< 320	U
108-67-8	1,3,5-Trimethylbenzene	65	< 65	U
95-63-6	1,2,4-Trimethylbenzene	65	< 65	U
87-68-3	Hexachlorobutadiene	320	< 320	U
106-93-4	Ethylene Dibromide	65	< 65	U
74-97-5	Bromochloromethane	65	< 65	U
594-20-7	2,2-Dichloropropane	65	< 65	U
142-28-9	1,3-Dichloropropane	65	< 65	U
98-82-8	Isopropylbenzene	65	< 65	U
103-65-1	n-Propylbenzene	65	< 65	U
108-86-1	Bromobenzene	65	< 65	U
95-49-8	2-Chlorotoluene	65	< 65	U
106-43-4	4-Chlorotoluene	65	< 65	U
98-06-6	tert-Butylbenzene	65	< 65	U
135-98-8	sec-Butylbenzene	65	< 65	U
99-87-6	4-Isopropyltoluene	65	< 65	U
104-51-8	n-Butylbenzene	65	< 65	U
120-82-1	1,2,4-Trichlorobenzene	320	< 320	U
91-20-3	Naphthalene	320	< 320	U
87-61-6	1,2,3-Trichlorobenzene	320	< 320	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	100%
d8-Toluene	99.2%
Bromofluorobenzene	96.8%
d4-1,2-Dichlorobenzene	99.2%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-072208**
 METHOD BLANK

Lab Sample ID: MB-072208
LIMS ID: 08-16217
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: NA
Date Received: NA

Instrument/Analyst: FINN5/PAB
Date Analyzed: 07/22/08 10:36

Sample Amount: 5.00 g-dry-wt
Purge Volume: 5.0 mL
Moisture: NA

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	2.0	< 2.0	U
1330-20-7	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U
107-02-8	Acrolein	50	< 50	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-072208**

METHOD BLANK

Lab Sample ID: MB-072208
LIMS ID: 08-16217
Matrix: Soil
Date Analyzed: 07/22/08 10:36

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	Ethylene Dibromide	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	1.0	< 1.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	101%
Bromofluorobenzene	94.7%
d4-1,2-Dichlorobenzene	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-072808**
 METHOD BLANK

Lab Sample ID: MB-072808
LIMS ID: 08-16220
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: NA
Date Received: NA

Instrument/Analyst: FINN5/PAB
Date Analyzed: 07/28/08 19:22

Sample Amount: 5.00 g-dry-wt
Purge Volume: 5.0 mL
Moisture: NA

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	2.0	< 2.0	U
1330-20-7	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U
107-02-8	Acrolein	50	< 50	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-072808**
METHOD BLANK

Lab Sample ID: MB-072808
LIMS ID: 08-16220
Matrix: Soil
Date Analyzed: 07/28/08 19:22

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	Ethylene Dibromide	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	1.0	< 1.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	97.9%
Bromofluorobenzene	99.1%
d4-1,2-Dichlorobenzene	98.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-072908**
Page 1 of 2 **METHOD BLANK**

Lab Sample ID: MB-072908
LIMS ID: 08-16219
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: NA
Date Received: NA

Instrument/Analyst: FINN1/PAB
Date Analyzed: 07/29/08 17:36

Sample Amount: 5.00 g-dry-wt
Purge Volume: 5.0 mL
Moisture: NA

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	2.0	< 2.0	U
1330-20-7	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U
107-02-8	Acrolein	50	< 50	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-072908**
 METHOD BLANK

Lab Sample ID: MB-072908 QC Report No: NG33-Landau Associates, Inc.
LIMS ID: 08-16219 Project: Kaiser Sump Sampling
Matrix: Soil 168004.020.002
Date Analyzed: 07/29/08 17:36

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	Ethylene Dibromide	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	1.0	< 1.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	108%
d8-Toluene	98.7%
Bromofluorobenzene	94.1%
d4-1,2-Dichlorobenzene	102%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-072908**
 METHOD BLANK

Lab Sample ID: MB-072908
LIMS ID: 08-16222
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: NA
Date Received: NA

Instrument/Analyst: FINN1/PAB
Date Analyzed: 07/29/08 17:36

Sample Amount: 100 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: NA

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	50	< 50	U
74-83-9	Bromomethane	50	< 50	U
75-01-4	Vinyl Chloride	50	< 50	U
75-00-3	Chloroethane	50	< 50	U
75-09-2	Methylene Chloride	100	< 100	U
67-64-1	Acetone	250	< 250	U
75-15-0	Carbon Disulfide	50	< 50	U
75-35-4	1,1-Dichloroethene	50	< 50	U
75-34-3	1,1-Dichloroethane	50	< 50	U
156-60-5	trans-1,2-Dichloroethene	50	< 50	U
156-59-2	cis-1,2-Dichloroethene	50	< 50	U
67-66-3	Chloroform	50	< 50	U
107-06-2	1,2-Dichloroethane	50	< 50	U
78-93-3	2-Butanone	250	< 250	U
71-55-6	1,1,1-Trichloroethane	50	< 50	U
56-23-5	Carbon Tetrachloride	50	< 50	U
108-05-4	Vinyl Acetate	250	< 250	U
75-27-4	Bromodichloromethane	50	< 50	U
78-87-5	1,2-Dichloropropane	50	< 50	U
10061-01-5	cis-1,3-Dichloropropene	50	< 50	U
79-01-6	Trichloroethene	50	< 50	U
124-48-1	Dibromochloromethane	50	< 50	U
79-00-5	1,1,2-Trichloroethane	50	< 50	U
71-43-2	Benzene	50	< 50	U
10061-02-6	trans-1,3-Dichloropropene	50	< 50	U
110-75-8	2-Chloroethylvinylether	250	< 250	U
75-25-2	Bromoform	50	< 50	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	250	< 250	U
591-78-6	2-Hexanone	250	< 250	U
127-18-4	Tetrachloroethene	50	< 50	U
79-34-5	1,1,2,2-Tetrachloroethane	50	< 50	U
108-88-3	Toluene	50	< 50	U
108-90-7	Chlorobenzene	50	< 50	U
100-41-4	Ethylbenzene	50	< 50	U
100-42-5	Styrene	50	< 50	U
75-69-4	Trichlorofluoromethane	50	< 50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	100	< 100	U
1330-20-7	m,p-Xylene	50	< 50	U
95-47-6	o-Xylene	50	< 50	U
95-50-1	1,2-Dichlorobenzene	50	< 50	U
541-73-1	1,3-Dichlorobenzene	50	< 50	U
106-46-7	1,4-Dichlorobenzene	50	< 50	U
107-02-8	Acrolein	2,500	< 2,500	U
74-88-4	Methyl Iodide	50	< 50	U
74-96-4	Bromoethane	100	< 100	U
107-13-1	Acrylonitrile	250	< 250	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: MB-072908**
 METHOD BLANK

Lab Sample ID: MB-072908 QC Report No: NG33-Landau Associates, Inc.
LIMS ID: 08-16222 Project: Kaiser Sump Sampling
Matrix: Soil 168004.020.002
Date Analyzed: 07/29/08 17:36

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	50	< 50	U
74-95-3	Dibromomethane	50	< 50	U
630-20-6	1,1,1,2-Tetrachloroethane	50	< 50	U
96-12-8	1,2-Dibromo-3-chloropropane	250	< 250	U
96-18-4	1,2,3-Trichloropropane	100	< 100	U
110-57-6	trans-1,4-Dichloro-2-butene	250	< 250	U
108-67-8	1,3,5-Trimethylbenzene	50	< 50	U
95-63-6	1,2,4-Trimethylbenzene	50	< 50	U
87-68-3	Hexachlorobutadiene	250	< 250	U
106-93-4	Ethylene Dibromide	50	< 50	U
74-97-5	Bromochloromethane	50	< 50	U
594-20-7	2,2-Dichloropropane	50	< 50	U
142-28-9	1,3-Dichloropropane	50	< 50	U
98-82-8	Isopropylbenzene	50	< 50	U
103-65-1	n-Propylbenzene	50	< 50	U
108-86-1	Bromobenzene	50	< 50	U
95-49-8	2-Chlorotoluene	50	< 50	U
106-43-4	4-Chlorotoluene	50	< 50	U
98-06-6	tert-Butylbenzene	50	< 50	U
135-98-8	sec-Butylbenzene	50	< 50	U
99-87-6	4-Isopropyltoluene	50	< 50	U
104-51-8	n-Butylbenzene	50	< 50	U
120-82-1	1,2,4-Trichlorobenzene	250	< 250	U
91-20-3	Naphthalene	250	< 250	U
87-61-6	1,2,3-Trichlorobenzene	250	< 250	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	108%
d8-Toluene	98.7%
Bromofluorobenzene	94.1%
d4-1,2-Dichlorobenzene	102%

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

ARI ID	Client ID	Level	DCE	TOL	BFB	DCB	TOT OUT
MB-072208	Method Blank	Low	107%	101%	94.7%	100%	0
LCS-072208	Lab Control	Low	105%	98.1%	101%	99.9%	0
LCSD-072208	Lab Control Dup	Low	107%	98.8%	103%	102%	0
NG33A	KS-01	Low	114%	96.0%	88.5%	98.4%	0
NG33ARE	KS-01	Low	140%*	97.8%	90.0%	93.7%	1
NG33B	KS-02	Low	122%	102%	94.0%	95.3%	0
NG33BRE	KS-02	Low	131%	103%	103%	97.2%	0
MB-072908	Method Blank	Low	108%	98.7%	94.1%	102%	0
LCS-072908	Lab Control	Low	101%	104%	103%	97.1%	0
LCSD-072908	Lab Control Dup	Low	100%	103%	103%	98.3%	0
NG33C	KS-03	Low	170%*	84.9%	66.7%	86.2%	1
NG33CRE	KS-03	Low	126%	82.1%	77.9%	91.3%	0
MB-072808	Method Blank	Low	106%	97.9%	99.1%	98.3%	0
LCS-072808	Lab Control	Low	101%	94.9%	97.3%	102%	0
LCSD-072808	Lab Control Dup	Low	113%	98.8%	102%	101%	0
NG33D	KS-04	Low	158%*	74.0%*	67.3%	87.6%	2
NG33DRE	KS-04	Low	154%*	82.1%	73.6%	90.5%	1
NG33E	KS-05	Low	137%*	79.5%	60.8%*	81.1%	2
NG33ERE	KS-05	Med	101%	99.4%	97.0%	96.4%	0
MB-072908	Method Blank	Med	108%	98.7%	94.1%	102%	0
LCS-072908	Lab Control	Med	101%	104%	103%	97.1%	0
LCSD-072908	Lab Control Dup	Med	100%	103%	103%	98.3%	0
NG33F	KS-06	Med	100%	99.2%	96.8%	99.2%	0

SW8260B	LCS/MB LIMITS Low	LCS/MB LIMITS Med	QC LIMITS Low	QC LIMITS Med
(DCE) = d4-1,2-Dichloroethane	75-120	76-120	72-134	69-120
(TOL) = d8-Toluene	80-122	80-120	78-124	80-120
(BFB) = Bromofluorobenzene	79-120	80-120	66-120	76-128
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120	79-120	80-120

Log Number Range: 08-16217 to 08-16222

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-072208**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-072208
LIMS ID: 08-16217
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: FINN5/PAB
LCSD: FINN5/PAB
Date Analyzed LCS: 07/22/08 09:35
LCSD: 07/22/08 10:09

Sample Amount LCS: 5.00 g-dry-wt
LCSD: 5.00 g-dry-wt
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL
Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	54.2	50.0	108%	51.7	50.0	103%	4.7%
Bromomethane	53.6	50.0	107%	52.1	50.0	104%	2.8%
Vinyl Chloride	51.2	50.0	102%	57.0	50.0	114%	10.7%
Chloroethane	48.1	50.0	96.2%	45.7	50.0	91.4%	5.1%
Methylene Chloride	53.6	50.0	107%	52.9	50.0	106%	1.3%
Acetone	227	250	90.8%	254	250	102%	11.2%
Carbon Disulfide	53.9	50.0	108%	52.8	50.0	106%	2.1%
1,1-Dichloroethene	54.5	50.0	109%	53.2	50.0	106%	2.4%
1,1-Dichloroethane	51.8	50.0	104%	51.1	50.0	102%	1.4%
trans-1,2-Dichloroethene	53.1	50.0	106%	52.5	50.0	105%	1.1%
cis-1,2-Dichloroethene	51.8	50.0	104%	48.4	50.0	96.8%	6.8%
Chloroform	54.6	50.0	109%	53.1	50.0	106%	2.8%
1,2-Dichloroethane	51.5	50.0	103%	50.5	50.0	101%	2.0%
2-Butanone	236	250	94.4%	262	250	105%	10.4%
1,1,1-Trichloroethane	55.9	50.0	112%	54.5	50.0	109%	2.5%
Carbon Tetrachloride	57.2	50.0	114%	54.6	50.0	109%	4.7%
Vinyl Acetate	52.1	50.0	104%	49.9	50.0	99.8%	4.3%
Bromodichloromethane	53.4	50.0	107%	51.4	50.0	103%	3.8%
1,2-Dichloropropane	49.1	50.0	98.2%	48.6	50.0	97.2%	1.0%
cis-1,3-Dichloropropene	51.7	50.0	103%	50.4	50.0	101%	2.5%
Trichloroethene	52.9	50.0	106%	49.8	50.0	99.6%	6.0%
Dibromochloromethane	50.3	50.0	101%	49.4	50.0	98.8%	1.8%
1,1,2-Trichloroethane	51.3	50.0	103%	50.9	50.0	102%	0.8%
Benzene	53.2	50.0	106%	51.9	50.0	104%	2.5%
trans-1,3-Dichloropropene	52.2	50.0	104%	52.1	50.0	104%	0.2%
2-Chloroethylvinylether	44.4	50.0	88.8%	45.9	50.0	91.8%	3.3%
Bromoform	47.1	50.0	94.2%	47.9	50.0	95.8%	1.7%
4-Methyl-2-Pentanone (MIBK)	225	250	90.0%	248	250	99.2%	9.7%
2-Hexanone	249	250	99.6%	279	250	112%	11.4%
Tetrachloroethene	56.8	50.0	114%	54.5	50.0	109%	4.1%
1,1,2,2-Tetrachloroethane	49.6	50.0	99.2%	51.6	50.0	103%	4.0%
Toluene	51.8	50.0	104%	50.9	50.0	102%	1.8%
Chlorobenzene	54.8	50.0	110%	52.2	50.0	104%	4.9%
Ethylbenzene	53.8	50.0	108%	52.0	50.0	104%	3.4%
Styrene	57.2	50.0	114%	54.5	50.0	109%	4.8%
Trichlorofluoromethane	60.2	50.0	120%	57.8	50.0	116%	4.1%
1,1,2-Trichloro-1,2,2-trifluoroetha	57.8	50.0	116%	55.4	50.0	111%	4.2%
m,p-Xylene	114	100	114%	109	100	109%	4.5%
o-Xylene	55.5	50.0	111%	54.6	50.0	109%	1.6%
1,2-Dichlorobenzene	52.2	50.0	104%	50.4	50.0	101%	3.5%
1,3-Dichlorobenzene	53.6	50.0	107%	51.4	50.0	103%	4.2%
1,4-Dichlorobenzene	53.1	50.0	106%	50.3	50.0	101%	5.4%
Acrolein	250	250	100%	259	250	104%	3.5%
Methyl Iodide	52.6	50.0	105%	49.4	50.0	98.8%	6.3%
Bromoethane	54.7	50.0	109%	54.1	50.0	108%	1.1%
Acrylonitrile	46.5	50.0	93.0%	50.7	50.0	101%	8.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-072208**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-072208 QC Report No: NG33-Landau Associates, Inc.
LIMS ID: 08-16217 Project: Kaiser Sump Sampling
Matrix: Soil 168004.020.002

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,1-Dichloropropene	52.3	50.0	105%	50.5	50.0	101%	3.5%
Dibromomethane	48.7	50.0	97.4%	49.9	50.0	99.8%	2.4%
1,1,1,2-Tetrachloroethane	55.9	50.0	112%	53.8	50.0	108%	3.8%
1,2-Dibromo-3-chloropropane	43.5	50.0	87.0%	49.7	50.0	99.4%	13.3%
1,2,3-Trichloropropane	48.2	50.0	96.4%	50.0	50.0	100%	3.7%
trans-1,4-Dichloro-2-butene	47.0	50.0	94.0%	51.8	50.0	104%	9.7%
1,3,5-Trimethylbenzene	57.0	50.0	114%	54.8	50.0	110%	3.9%
1,2,4-Trimethylbenzene	57.1	50.0	114%	55.2	50.0	110%	3.4%
Hexachlorobutadiene	54.0	50.0	108%	52.5	50.0	105%	2.8%
Ethylene Dibromide	50.5	50.0	101%	50.8	50.0	102%	0.6%
Bromochloromethane	55.6	50.0	111%	54.2	50.0	108%	2.6%
2,2-Dichloropropane	55.6	50.0	111%	53.6	50.0	107%	3.7%
1,3-Dichloropropane	51.2	50.0	102%	51.7	50.0	103%	1.0%
Isopropylbenzene	56.8	50.0	114%	55.2	50.0	110%	2.9%
n-Propylbenzene	56.1	50.0	112%	54.0	50.0	108%	3.8%
Bromobenzene	51.7	50.0	103%	49.6	50.0	99.2%	4.1%
2-Chlorotoluene	53.3	50.0	107%	51.8	50.0	104%	2.9%
4-Chlorotoluene	56.6	50.0	113%	54.4	50.0	109%	4.0%
tert-Butylbenzene	55.4	50.0	111%	53.8	50.0	108%	2.9%
sec-Butylbenzene	56.2	50.0	112%	54.5	50.0	109%	3.1%
4-Isopropyltoluene	57.4	50.0	115%	56.1	50.0	112%	2.3%
n-Butylbenzene	59.1	50.0	118%	57.2	50.0	114%	3.3%
1,2,4-Trichlorobenzene	54.5	50.0	109%	53.4	50.0	107%	2.0%
Naphthalene	47.4	50.0	94.8%	51.4	50.0	103%	8.1%
1,2,3-Trichlorobenzene	51.3	50.0	103%	51.1	50.0	102%	0.4%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	105%	107%
d8-Toluene	98.1%	98.8%
Bromofluorobenzene	101%	103%
d4-1,2-Dichlorobenzene	99.9%	102%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-072808**
Page 1 of 2 **LAB CONTROL SAMPLE**

Lab Sample ID: LCS-072808
LIMS ID: 08-16220
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: FINN5/PAB
LCSD: FINN5/PAB
Date Analyzed LCS: 07/28/08 17:31
LCSD: 07/28/08 18:21

Sample Amount LCS: 5.00 g-dry-wt
LCSD: 5.00 g-dry-wt
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL
Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	66.5	50.0	133%	55.7	50.0	111%	17.7%
Bromomethane	51.5	50.0	103%	47.8	50.0	95.6%	7.5%
Vinyl Chloride	63.1	50.0	126%	47.4	50.0	94.8%	28.4%
Chloroethane	60.3	50.0	121%	56.8	50.0	114%	6.0%
Methylene Chloride	48.8	50.0	97.6%	51.3	50.0	103%	5.0%
Acetone	268	250	107%	229	250	91.6%	15.7%
Carbon Disulfide	56.1	50.0	112%	59.1	50.0	118%	5.2%
1,1-Dichloroethene	51.6	50.0	103%	50.3	50.0	101%	2.6%
1,1-Dichloroethane	52.0	50.0	104%	51.8	50.0	104%	0.4%
trans-1,2-Dichloroethene	49.5	50.0	99.0%	53.4	50.0	107%	7.6%
cis-1,2-Dichloroethene	50.7	50.0	101%	50.9	50.0	102%	0.4%
Chloroform	52.0	50.0	104%	56.6	50.0	113%	8.5%
1,2-Dichloroethane	48.1	50.0	96.2%	54.1	50.0	108%	11.7%
2-Butanone	251	250	100%	235	250	94.0%	6.6%
1,1,1-Trichloroethane	54.7	50.0	109%	59.4	50.0	119%	8.2%
Carbon Tetrachloride	52.9	50.0	106%	59.5	50.0	119%	11.7%
Vinyl Acetate	53.1	50.0	106%	54.7	50.0	109%	3.0%
Bromodichloromethane	51.5	50.0	103%	58.6	50.0	117%	12.9%
1,2-Dichloropropane	46.1	50.0	92.2%	49.1	50.0	98.2%	6.3%
cis-1,3-Dichloropropene	49.1	50.0	98.2%	52.8	50.0	106%	7.3%
Trichloroethene	51.2	50.0	102%	51.8	50.0	104%	1.2%
Dibromochloromethane	55.6	50.0	111%	56.6	50.0	113%	1.8%
1,1,2-Trichloroethane	52.1	50.0	104%	50.7	50.0	101%	2.7%
Benzene	49.8	50.0	99.6%	50.3	50.0	101%	1.0%
trans-1,3-Dichloropropene	54.0	50.0	108%	54.8	50.0	110%	1.5%
2-Chloroethylvinylether	48.0	50.0	96.0%	51.7	50.0	103%	7.4%
Bromoform	54.4	50.0	109%	49.4	50.0	98.8%	9.6%
4-Methyl-2-Pentanone (MIBK)	231	250	92.4%	251	250	100%	8.3%
2-Hexanone	254	250	102%	240	250	96.0%	5.7%
Tetrachloroethene	58.3	50.0	117%	56.0	50.0	112%	4.0%
1,1,2,2-Tetrachloroethane	51.7	50.0	103%	50.0	50.0	100%	3.3%
Toluene	49.9	50.0	99.8%	49.5	50.0	99.0%	0.8%
Chlorobenzene	53.2	50.0	106%	51.4	50.0	103%	3.4%
Ethylbenzene	53.8	50.0	108%	50.6	50.0	101%	6.1%
Styrene	51.4	50.0	103%	52.2	50.0	104%	1.5%
Trichlorofluoromethane	57.5	50.0	115%	58.9	50.0	118%	2.4%
1,1,2-Trichloro-1,2,2-trifluoroetha	56.4	50.0	113%	53.8	50.0	108%	4.7%
m,p-Xylene	108	100	108%	105	100	105%	2.8%
o-Xylene	51.2	50.0	102%	52.3	50.0	105%	2.1%
1,2-Dichlorobenzene	51.4	50.0	103%	50.6	50.0	101%	1.6%
1,3-Dichlorobenzene	55.4	50.0	111%	52.2	50.0	104%	5.9%
1,4-Dichlorobenzene	52.7	50.0	105%	52.1	50.0	104%	1.1%
Acrolein	260	250	104%	243	250	97.2%	6.8%
Methyl Iodide	46.1	50.0	92.2%	47.6	50.0	95.2%	3.2%
Bromoethane	49.9	50.0	99.8%	50.7	50.0	101%	1.6%
Acrylonitrile	48.0	50.0	96.0%	52.9	50.0	106%	9.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-072808**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-072808
LIMS ID: 08-16220
Matrix: Soil

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,1-Dichloropropene	52.6	50.0	105%	52.7	50.0	105%	0.2%
Dibromomethane	45.7	50.0	91.4%	49.5	50.0	99.0%	8.0%
1,1,1,2-Tetrachloroethane	57.1	50.0	114%	52.3	50.0	105%	8.8%
1,2-Dibromo-3-chloropropane	52.0	50.0	104%	51.8	50.0	104%	0.4%
1,2,3-Trichloropropane	53.7	50.0	107%	51.1	50.0	102%	5.0%
trans-1,4-Dichloro-2-butene	57.8	50.0	116%	51.5	50.0	103%	11.5%
1,3,5-Trimethylbenzene	56.7	50.0	113%	53.3	50.0	107%	6.2%
1,2,4-Trimethylbenzene	53.6	50.0	107%	53.9	50.0	108%	0.6%
Hexachlorobutadiene	55.3	50.0	111%	56.8	50.0	114%	2.7%
Ethylene Dibromide	45.7	50.0	91.4%	51.0	50.0	102%	11.0%
Bromochloromethane	52.5	50.0	105%	57.2	50.0	114%	8.6%
2,2-Dichloropropane	57.4	50.0	115%	57.8	50.0	116%	0.7%
1,3-Dichloropropane	53.8	50.0	108%	52.5	50.0	105%	2.4%
Isopropylbenzene	55.6	50.0	111%	53.4	50.0	107%	4.0%
n-Propylbenzene	57.2	50.0	114%	53.9	50.0	108%	5.9%
Bromobenzene	56.1	50.0	112%	51.3	50.0	103%	8.9%
2-Chlorotoluene	56.0	50.0	112%	50.0	50.0	100%	11.3%
4-Chlorotoluene	54.2	50.0	108%	53.4	50.0	107%	1.5%
tert-Butylbenzene	53.8	50.0	108%	52.2	50.0	104%	3.0%
sec-Butylbenzene	53.0	50.0	106%	52.4	50.0	105%	1.1%
4-Isopropyltoluene	54.3	50.0	109%	54.4	50.0	109%	0.2%
n-Butylbenzene	58.8	50.0	118%	56.1	50.0	112%	4.7%
1,2,4-Trichlorobenzene	53.0	50.0	106%	56.6	50.0	113%	6.6%
Naphthalene	39.7	50.0	79.4%	44.7	50.0	89.4%	11.8%
1,2,3-Trichlorobenzene	47.4	50.0	94.8%	48.2	50.0	96.4%	1.7%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	101%	113%
d8-Toluene	94.9%	98.8%
Bromofluorobenzene	97.3%	102%
d4-1,2-Dichlorobenzene	102%	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-072908**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-072908
LIMS ID: 08-16222
Matrix: Soil
Data Release Authorized:
Reported: 07/30/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: FINN1/PAB
LCSD: FINN1/PAB
Date Analyzed LCS: 07/29/08 16:59
LCSD: 07/29/08 18:13

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL
Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	2270	2500	90.8%	2440	2500	97.6%	7.2%
Bromomethane	2390	2500	95.6%	2480	2500	99.2%	3.7%
Vinyl Chloride	2660	2500	106%	2790	2500	112%	4.8%
Chloroethane	2380	2500	95.2%	2460	2500	98.4%	3.3%
Methylene Chloride	2350	2500	94.0%	2590	2500	104%	9.7%
Acetone	11100	12500	88.8%	11300	12500	90.4%	1.8%
Carbon Disulfide	2180	2500	87.2%	2350	2500	94.0%	7.5%
1,1-Dichloroethene	2370	2500	94.8%	2510	2500	100%	5.7%
1,1-Dichloroethane	2430	2500	97.2%	2530	2500	101%	4.0%
trans-1,2-Dichloroethene	2470	2500	98.8%	2500	2500	100%	1.2%
cis-1,2-Dichloroethene	2450	2500	98.0%	2540	2500	102%	3.6%
Chloroform	2440	2500	97.6%	2560	2500	102%	4.8%
1,2-Dichloroethane	2470	2500	98.8%	2540	2500	102%	2.8%
2-Butanone	11500	12500	92.0%	11600	12500	92.8%	0.9%
1,1,1-Trichloroethane	2590	2500	104%	2730	2500	109%	5.3%
Carbon Tetrachloride	2780	2500	111%	2850	2500	114%	2.5%
Vinyl Acetate	2400	2500	96.0%	2460	2500	98.4%	2.5%
Bromodichloromethane	2190	2500	87.6%	2260	2500	90.4%	3.1%
1,2-Dichloropropane	2590	2500	104%	2580	2500	103%	0.4%
cis-1,3-Dichloropropene	2240	2500	89.6%	2250	2500	90.0%	0.4%
Trichloroethene	2500	2500	100%	2520	2500	101%	0.8%
Dibromochloromethane	2040	2500	81.6%	2130	2500	85.2%	4.3%
1,1,2-Trichloroethane	2550	2500	102%	2560	2500	102%	0.4%
Benzene	2520	2500	101%	2620	2500	105%	3.9%
trans-1,3-Dichloropropene	2200	2500	88.0%	2240	2500	89.6%	1.8%
2-Chloroethylvinylether	2060	2500	82.4%	3300	2500	132%	46.3%
Bromoform	1970	2500	78.8%	2040	2500	81.6%	3.5%
4-Methyl-2-Pentanone (MIBK)	11400	12500	91.2%	11500	12500	92.0%	0.9%
2-Hexanone	12300	12500	98.4%	12700	12500	102%	3.2%
Tetrachloroethene	2510	2500	100%	2480	2500	99.2%	1.2%
1,1,2,2-Tetrachloroethane	2350	2500	94.0%	2340	2500	93.6%	0.4%
Toluene	2540	2500	102%	2580	2500	103%	1.6%
Chlorobenzene	2470	2500	98.8%	2450	2500	98.0%	0.8%
Ethylbenzene	2670	2500	107%	2740	2500	110%	2.6%
Styrene	2690	2500	108%	2700	2500	108%	0.4%
Trichlorofluoromethane	2420	2500	96.8%	2510	2500	100%	3.7%
1,1,2-Trichloro-1,2,2-trifluoroetha	2420	2500	96.8%	2450	2500	98.0%	1.2%
m,p-Xylene	5320	5000	106%	5400	5000	108%	1.5%
o-Xylene	2630	2500	105%	2660	2500	106%	1.1%
1,2-Dichlorobenzene	2350	2500	94.0%	2370	2500	94.8%	0.8%
1,3-Dichlorobenzene	2500	2500	100%	2420	2500	96.8%	3.3%
1,4-Dichlorobenzene	2470	2500	98.8%	2390	2500	95.6%	3.3%
Acrolein	12100	12500	96.8%	12600	12500	101%	4.0%
Methyl Iodide	2450	2500	98.0%	3510	2500	140%	35.6%
Bromoethane	2000	2500	80.0%	2740	2500	110%	31.2%
Acrylonitrile	2420	2500	96.8%	2580	2500	103%	6.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260B **Sample ID: LCS-072908**
LAB CONTROL SAMPLE

Lab Sample ID: LCS-072908
LIMS ID: 08-16222
Matrix: Soil

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,1-Dichloropropene	2530	2500	101%	2600	2500	104%	2.7%
Dibromomethane	2520	2500	101%	2640	2500	106%	4.7%
1,1,1,2-Tetrachloroethane	2070	2500	82.8%	2100	2500	84.0%	1.4%
1,2-Dibromo-3-chloropropane	2340	2500	93.6%	2360	2500	94.4%	0.9%
1,2,3-Trichloropropane	2390	2500	95.6%	2330	2500	93.2%	2.5%
trans-1,4-Dichloro-2-butene	2410	2500	96.4%	2370	2500	94.8%	1.7%
1,3,5-Trimethylbenzene	2710	2500	108%	2630	2500	105%	3.0%
1,2,4-Trimethylbenzene	2720	2500	109%	2670	2500	107%	1.9%
Hexachlorobutadiene	2800	2500	112%	2810	2500	112%	0.4%
Ethylene Dibromide	2180	2500	87.2%	2220	2500	88.8%	1.8%
Bromochloromethane	2510	2500	100%	2500	2500	100%	0.4%
2,2-Dichloropropane	2270	2500	90.8%	2480	2500	99.2%	8.8%
1,3-Dichloropropane	2420	2500	96.8%	2490	2500	99.6%	2.9%
Isopropylbenzene	2670	2500	107%	2630	2500	105%	1.5%
n-Propylbenzene	2740	2500	110%	2650	2500	106%	3.3%
Bromobenzene	2440	2500	97.6%	2400	2500	96.0%	1.7%
2-Chlorotoluene	2530	2500	101%	2640	2500	106%	4.3%
4-Chlorotoluene	2580	2500	103%	2420	2500	96.8%	6.4%
tert-Butylbenzene	2680	2500	107%	2570	2500	103%	4.2%
sec-Butylbenzene	2820	2500	113%	2790	2500	112%	1.1%
4-Isopropyltoluene	2880	2500	115%	2790	2500	112%	3.2%
n-Butylbenzene	2860	2500	114%	2760	2500	110%	3.6%
1,2,4-Trichlorobenzene	2580	2500	103%	2460	2500	98.4%	4.8%
Naphthalene	2150	2500	86.0%	2190	2500	87.6%	1.8%
1,2,3-Trichlorobenzene	2380	2500	95.2%	2400	2500	96.0%	0.8%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	101%	100%
d8-Toluene	104%	103%
Bromofluorobenzene	103%	103%
d4-1,2-Dichlorobenzene	97.1%	98.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: KS-01
SAMPLE

Lab Sample ID: NG33A
LIMS ID: 08-16217
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Date Extracted: 07/25/08
Date Analyzed: 08/06/08 07:34
Instrument/Analyst: ECD6/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 2.12 g-dry-wt
Final Extract Volume: 4.0 mL
Dilution Factor: 10.0
Silica Gel: Yes

Percent Moisture: 48.1%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	1,900	< 1,900 U
53469-21-9	Aroclor 1242	1,900	< 1,900 U
12672-29-6	**Aroclor 1248**	**1,900**	**12,000**
11097-69-1	**Aroclor 1254**	**1,900**	**4,600**
11096-82-5	Aroclor 1260	1,900	< 1,900 U
11104-28-2	Aroclor 1221	1,900	< 1,900 U
11141-16-5	Aroclor 1232	1,900	< 1,900 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	103%
Tetrachlorometaxylene	85.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: KS-02
SAMPLE

Lab Sample ID: NG33B
LIMS ID: 08-16218
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Date Extracted: 07/25/08
Date Analyzed: 08/06/08 07:56
Instrument/Analyst: ECD6/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 12.1 g-dry-wt
Final Extract Volume: 4.0 mL
Dilution Factor: 3.00
Silica Gel: Yes

Percent Moisture: 85.2%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	99	< 99 U
53469-21-9	Aroclor 1242	99	< 99 U
12672-29-6	**Aroclor 1248**	**99**	**710**
11097-69-1	**Aroclor 1254**	**99**	**420**
11096-82-5	Aroclor 1260	99	< 99 U
11104-28-2	Aroclor 1221	99	< 99 U
11141-16-5	Aroclor 1232	99	< 99 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	70.9%
Tetrachlorometaxylene	68.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: KS-03
SAMPLE

Lab Sample ID: NG33C
LIMS ID: 08-16219
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Date Extracted: 07/25/08
Date Analyzed: 08/06/08 08:19
Instrument/Analyst: ECD6/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 12.2 g-dry-wt
Final Extract Volume: 10 mL
Dilution Factor: 4.00
Silica Gel: Yes

Percent Moisture: 66.1%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	330	< 330 U
53469-21-9	Aroclor 1242	330	< 330 U
12672-29-6	**Aroclor 1248**	**330**	**2,600**
11097-69-1	**Aroclor 1254**	**330**	**1,700**
11096-82-5	Aroclor 1260	360	< 360 Y
11104-28-2	Aroclor 1221	330	< 330 U
11141-16-5	Aroclor 1232	330	< 330 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	94.0%
Tetrachlorometaxylene	71.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082

Sample ID: KS-04
SAMPLE

Lab Sample ID: NG33D
LIMS ID: 08-16220
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Date Extracted: 07/25/08
Date Analyzed: 08/04/08 22:45
Instrument/Analyst: ECD6/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 12.2 g-dry-wt
Final Extract Volume: 10 mL
Dilution Factor: 10.0
Silica Gel: Yes

Percent Moisture: 60.7%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	820	< 820 U
53469-21-9	Aroclor 1242	820	< 820 U
12672-29-6	Aroclor 1248	2,500	< 2,500 Y
11097-69-1	Aroclor 1254	1,200	< 1,200 Y
11096-82-5	Aroclor 1260	820	< 820 U
11104-28-2	Aroclor 1221	820	< 820 U
11141-16-5	Aroclor 1232	820	< 820 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	121%
Tetrachlorometaxylene	132%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: KS-05
SAMPLE

Lab Sample ID: NG33E
LIMS ID: 08-16221
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Date Extracted: 07/25/08
Date Analyzed: 08/06/08 08:41
Instrument/Analyst: ECD6/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 12.6 g-dry-wt
Final Extract Volume: 10 mL
Dilution Factor: 1.00
Silica Gel: Yes

Percent Moisture: 26.1%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	79	< 79 U
53469-21-9	Aroclor 1242	79	< 79 U
12672-29-6	**Aroclor 1248**	**79**	**640**
11097-69-1	**Aroclor 1254**	**79**	**470**
11096-82-5	**Aroclor 1260**	**79**	**120**
11104-28-2	Aroclor 1221	79	< 79 U
11141-16-5	Aroclor 1232	79	< 79 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	76.2%
Tetrachlorometaxylene	60.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: KS-06
SAMPLE

Lab Sample ID: NG33F
LIMS ID: 08-16222
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Date Extracted: 07/25/08
Date Analyzed: 08/06/08 09:03
Instrument/Analyst: ECD6/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 12.3 g-dry-wt
Final Extract Volume: 10 mL
Dilution Factor: 5.00
Silica Gel: Yes

Percent Moisture: 5.7%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	400	< 400 U
53469-21-9	Aroclor 1242	400	< 400 U
12672-29-6	**Aroclor 1248**	**400**	**1,800**
11097-69-1	**Aroclor 1254**	**400**	**1,400**
11096-82-5	Aroclor 1260	400	< 400 U
11104-28-2	Aroclor 1221	400	< 400 U
11141-16-5	Aroclor 1232	400	< 400 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	97.5%
Tetrachlorometaxylene	68.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: MB-072508
METHOD BLANK

Lab Sample ID: MB-072508
LIMS ID: 08-16217
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: NA
Date Received: NA

Date Extracted: 07/25/08
Date Analyzed: 08/06/08 04:35
Instrument/Analyst: ECD6/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 12.0 g
Final Extract Volume: 4.0 mL
Dilution Factor: 1.00
Silica Gel: Yes

Percent Moisture: NA

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	33	< 33 U
53469-21-9	Aroclor 1242	33	< 33 U
12672-29-6	Aroclor 1248	33	< 33 U
11097-69-1	Aroclor 1254	33	< 33 U
11096-82-5	Aroclor 1260	33	< 33 U
11104-28-2	Aroclor 1221	33	< 33 U
11141-16-5	Aroclor 1232	33	< 33 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	87.8%
Tetrachlorometaxylene	75.0%

ANALYTICAL RESOURCES INCORPORATED

SW8082/PCB SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

Client ID	DCBP % REC	DCBP LCL-UCL	TCMX % REC	TCMX LCL-UCL	TOT OUT
MB-072508	87.8%	59-122	75.0%	61-118	0
LCS-072508	83.2%	59-122	71.0%	61-118	0
LCSD-072508	83.2%	59-122	70.8%	61-118	0
KS-01	103%	40-139	85.0%	49-120	0
KS-02	70.9%	40-139	68.6%	49-120	0
KS-03	94.0%	40-139	71.5%	49-120	0
KS-04	121%	40-139	132%*	49-120	1
KS-05	76.2%	40-139	60.9%	49-120	0
KS-06	97.5%	40-139	68.4%	49-120	0

Standard Sonication Control Limits
Prep Method: SW3550B
Log Number Range: 08-16217 to 08-16222

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: LCS-072508
LCS/LCSD

Lab Sample ID: LCS-072508
LIMS ID: 08-16217
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 07/25/08

Date Analyzed LCS: 08/06/08 04:57
LCSD: 08/06/08 05:20
Instrument/Analyst LCS: ECD6/JGR
LCSD: ECD6/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount LCS: 12.0 g-dry-wt
LCSD: 12.0 g-dry-wt
Final Extract Volume LCS: 4.0 mL
LCSD: 4.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Silica Gel: Yes

Percent Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Aroclor 1016	122	167	73.2%	119	167	71.4%	2.5%
Aroclor 1260	174	167	104%	174	167	104%	0.0%

PCB Surrogate Recovery

	LCS	LCSD
Decachlorobiphenyl	83.2%	83.2%
Tetrachlorometaxylene	71.0%	70.8%

Results reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

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

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

Data Release Authorized:
Reported: 07/31/08

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-072808	Method Blank	07/28/08	07/30/08	1.00	Diesel	5.0	< 5.0 U
08-16217	HC ID: ---		FID3A	1.0	Motor Oil	10	< 10 U
					o-Terphenyl		77.8%
NG33A	KS-01	07/28/08	07/30/08	1.00	**Diesel**	**190**	**470**
08-16217	HC ID: **DRO/MOTOR OIL**		FID3A	20	**Motor Oil**	**380**	**1900**
					o-Terphenyl		D
NG33B	KS-02	07/28/08	07/30/08	1.00	**Diesel**	**3400**	**5100**
08-16218	HC ID: **DRO/MOTOR OIL**		FID3A	100	**Motor Oil**	**6800**	**13000**
					o-Terphenyl		D
NG33C	KS-03	07/28/08	07/30/08	10.0	**Diesel**	**15000**	**20000**
08-16219	HC ID: **DRO/MOTOR OIL**		FID3A	100	**Motor Oil**	**29000**	**120000**
					o-Terphenyl		D
NG33D	KS-04	07/28/08	07/30/08	10.0	**Diesel**	**13000**	**19000**
08-16220	HC ID: **DRO/MOTOR OIL**		FID3A	100	**Motor Oil**	**25000**	**59000**
					o-Terphenyl		D
NG33E	KS-05	07/28/08	07/30/08	10.0	**Diesel**	**6800**	**23000**
08-16221	HC ID: **DRO/MOTOR OIL**		FID3A	100	**Motor Oil**	**14000**	**81000**
					o-Terphenyl		D
NG33F	KS-06	07/28/08	07/31/08	10.0	**Diesel**	**11000**	**25000**
08-16222	HC ID: **DRO/MOTOR OIL**		FID3A	200	**Motor Oil**	**21000**	**130000**
					o-Terphenyl		D

Reported in mg/kg (ppm)

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

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned
Page 1 of 1

Sample ID: LCS-072808
LCS/LCSD

Lab Sample ID: LCS-072808
LIMS ID: 08-16217
Matrix: Soil
Data Release Authorized:
Reported: 07/31/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Date Extracted LCS/LCSD: 07/28/08

Sample Amount LCS: 10.0 g
LCSD: 10.0 g
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.0
LCSD: 1.0

Date Analyzed LCS: 07/30/08 21:56
LCSD: 07/30/08 22:12
Instrument/Analyst LCS: FID/PKC
LCSD: FID/PKC

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	124	150	82.7%	111	150	74.0%	11.1%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	80.4%	72.0%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002

Client ID	OTER	TOT OUT
MB-072808	77.8%	0
LCS-072808	80.4%	0
LCSD-072808	72.0%	0
KS-01	D	0
KS-02	D	0
KS-03	D	0
KS-04	D	0
KS-05	D	0
KS-06	D	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(62-118)	(49-125)

Prep Method: SW3550B
Log Number Range: 08-16217 to 08-16222

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: NG33
Matrix: Soil Project: Kaiser Sump Sampling
Date Received: 07/18/08 168004.020.002

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
08-16217-072808MB1	Method Blank	10.0 g	1.00 mL	-	07/28/08
08-16217-072808LCS1	Lab Control	10.0 g	1.00 mL	-	07/28/08
08-16217-072808LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	07/28/08
08-16217-NG33A	KS-01	5.24 g	1.00 mL	D	07/28/08
08-16218-NG33B	KS-02	1.48 g	1.00 mL	D	07/28/08
08-16219-NG33C	KS-03	3.40 g	10.0 mL	D	07/28/08
08-16220-NG33D	KS-04	3.96 g	10.0 mL	D	07/28/08
08-16221-NG33E	KS-05	7.39 g	10.0 mL	D	07/28/08
08-16222-NG33F	KS-06	9.43 g	10.0 mL	D	07/28/08

Basis: D=Dry Weight W=As Received

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: KS-01
SAMPLE

Lab Sample ID: NG33A
LIMS ID: 08-16217
Matrix: Soil
Data Release Authorized:
Reported: 08/11/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Percent Total Solids: 52.1%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	07/30/08	6010B	08/08/08	7440-38-2	Arsenic	40	40	U
3050B	07/30/08	6010B	08/08/08	**7440-39-3**	**Barium**	3	**663**	
3050B	07/30/08	6010B	08/08/08	**7440-43-9**	**Cadmium**	2	**5**	
3050B	07/30/08	6010B	08/08/08	**7440-47-3**	**Chromium**	4	**110**	
3050B	07/30/08	6010B	08/08/08	**7439-92-1**	**Lead**	20	**130**	
CLP	08/01/08	7471A	08/02/08	**7439-97-6**	**Mercury**	0.09	**0.10**	
3050B	07/30/08	6010B	08/08/08	7782-49-2	Selenium	40	40	U
3050B	07/30/08	6010B	08/08/08	7440-22-4	Silver	3	3	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: KS-02
SAMPLE

Lab Sample ID: NG33B
LIMS ID: 08-16218
Matrix: Soil
Data Release Authorized:
Reported: 08/11/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Percent Total Solids: 17.6%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	07/30/08	6010B	08/08/08	7440-38-2	Arsenic	30	30	U
3050B	07/30/08	6010B	08/08/08	**7440-39-3**	**Barium**	2	**2,710**	
3050B	07/30/08	6010B	08/08/08	**7440-43-9**	**Cadmium**	1	**22**	
3050B	07/30/08	6010B	08/08/08	**7440-47-3**	**Chromium**	3	**1,000**	
3050B	07/30/08	6010B	08/08/08	**7439-92-1**	**Lead**	10	**470**	
CLP	08/01/08	7471A	08/02/08	7439-97-6	Mercury	0.2	0.2	U
3050B	07/30/08	6010B	08/08/08	7782-49-2	Selenium	30	30	U
3050B	07/30/08	6010B	08/08/08	7440-22-4	Silver	2	2	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: KS-03**
Page 1 of 1 **SAMPLE**

Lab Sample ID: NG33C
LIMS ID: 08-16219
Matrix: Soil
Data Release Authorized:
Reported: 08/11/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Percent Total Solids: 40.8%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	07/30/08	6010B	08/08/08	7440-38-2	Arsenic	10	10	U
3050B	07/30/08	6010B	08/08/08	**7440-39-3**	**Barium**	0.7	**175**	
3050B	07/30/08	6010B	08/08/08	**7440-43-9**	**Cadmium**	0.5	**37.2**	
3050B	07/30/08	6010B	08/08/08	**7440-47-3**	**Chromium**	1	**59**	
3050B	07/30/08	6010B	08/08/08	**7439-92-1**	**Lead**	5	**473**	
CLP	08/01/08	7471A	08/02/08	**7439-97-6**	**Mercury**	0.09	**0.27**	
3050B	07/30/08	6010B	08/08/08	7782-49-2	Selenium	10	10	U
3050B	07/30/08	6010B	08/08/08	**7440-22-4**	**Silver**	0.7	**1.4**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: KS-04
SAMPLE

Lab Sample ID: NG33D
LIMS ID: 08-16220
Matrix: Soil
Data Release Authorized:
Reported: 08/11/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Percent Total Solids: 49.5%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	07/30/08	6010B	08/08/08	**7440-38-2**	**Arsenic**	20	**20**	
3050B	07/30/08	6010B	08/08/08	**7440-39-3**	**Barium**	1	**140**	
3050B	07/30/08	6010B	08/08/08	**7440-43-9**	**Cadmium**	0.9	**10.1**	
3050B	07/30/08	6010B	08/08/08	**7440-47-3**	**Chromium**	2	**124**	
3050B	07/30/08	6010B	08/08/08	**7439-92-1**	**Lead**	9	**102**	
CLP	08/01/08	7471A	08/02/08	**7439-97-6**	**Mercury**	0.08	**0.10**	
3050B	07/30/08	6010B	08/08/08	7782-49-2	Selenium	20	20	U
3050B	07/30/08	6010B	08/08/08	7440-22-4	Silver	1	1	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: KS-05
SAMPLE

Lab Sample ID: NG33E
LIMS ID: 08-16221
Matrix: Soil
Data Release Authorized:
Reported: 08/11/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Percent Total Solids: 74.0%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	07/30/08	6010B	08/08/08	7440-38-2	Arsenic	20	20	U
3050B	07/30/08	6010B	08/08/08	**7440-39-3**	**Barium**	0.9	**307**	
3050B	07/30/08	6010B	08/08/08	**7440-43-9**	**Cadmium**	0.6	**11.0**	
3050B	07/30/08	6010B	08/08/08	**7440-47-3**	**Chromium**	2	**93**	
3050B	07/30/08	6010B	08/08/08	**7439-92-1**	**Lead**	6	**407**	
CLP	08/01/08	7471A	08/02/08	**7439-97-6**	**Mercury**	0.06	**0.11**	
3050B	07/30/08	6010B	08/08/08	7782-49-2	Selenium	20	20	U
3050B	07/30/08	6010B	08/08/08	7440-22-4	Silver	0.9	0.9	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: KS-06
SAMPLE

Lab Sample ID: NG33F
LIMS ID: 08-16222
Matrix: Soil
Data Release Authorized:
Reported: 08/11/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: 07/18/08
Date Received: 07/18/08

Percent Total Solids: 95.0%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	07/30/08	6010B	08/08/08	7440-38-2	Arsenic	50	50	U
3050B	07/30/08	6010B	08/08/08	**7440-39-3**	**Barium**	3	**571**	
3050B	07/30/08	6010B	08/08/08	**7440-43-9**	**Cadmium**	2	**11**	
3050B	07/30/08	6010B	08/08/08	**7440-47-3**	**Chromium**	5	**187**	
3050B	07/30/08	6010B	08/08/08	**7439-92-1**	**Lead**	20	**500**	
CLP	08/01/08	7471A	08/02/08	**7439-97-6**	**Mercury**	0.05	**0.17**	
3050B	07/30/08	6010B	08/08/08	7782-49-2	Selenium	50	50	U
3050B	07/30/08	6010B	08/08/08	7440-22-4	Silver	3	3	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: METHOD BLANK

Lab Sample ID: NG33MB
LIMS ID: 08-16217
Matrix: Soil
Data Release Authorized:
Reported: 08/11/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: NA
Date Received: NA

Percent Total Solids: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	07/30/08	6010B	08/08/08	7440-38-2	Arsenic	5	5	U
3050B	07/30/08	6010B	08/08/08	7440-39-3	Barium	0.3	0.3	U
3050B	07/30/08	6010B	08/08/08	7440-43-9	Cadmium	0.2	0.2	U
3050B	07/30/08	6010B	08/08/08	7440-47-3	Chromium	0.5	0.5	U
3050B	07/30/08	6010B	08/08/08	7439-92-1	Lead	2	2	U
CLP	08/01/08	7471A	08/02/08	7439-97-6	Mercury	0.05	0.05	U
3050B	07/30/08	6010B	08/08/08	7782-49-2	Selenium	5	5	U
3050B	07/30/08	6010B	08/08/08	7440-22-4	Silver	0.3	0.3	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: LAB CONTROL

Lab Sample ID: NG33LCS
LIMS ID: 08-16217
Matrix: Soil
Data Release Authorized:
Reported: 08/11/08

QC Report No: NG33-Landau Associates, Inc.
Project: Kaiser Sump Sampling
168004.020.002
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	6010B	210	200	105%	
Barium	6010B	195	200	97.5%	
Cadmium	6010B	50.3	50.0	101%	
Chromium	6010B	48.8	50.0	97.6%	
Lead	6010B	200	200	100%	
Mercury	7471A	1.07	1.00	107%	
Selenium	6010B	203	200	102%	
Silver	6010B	50.3	50.0	101%	

Reported in mg/kg-dry

N-Control limit not met
Control Limits: 80-120%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

August 13, 2008

Stacy Pischer
Landau Associates, Inc.
130 Second Avenue South
Edmonds, WA 98020-9129

RE: Project: P.O.T. Kaiser
ARI Job No: NI05

Dear Stacy:

Please find enclosed the original chain of custody (COCs) records and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted sixteen soil samples on July 1, 2008 in good condition and reported under ARI SDG ND67. Select samples were placed on hold pending further instructions. * All samples were frozen to protect the holding times.

On 7/30/08 at the request of Landau Associates, select samples were analyzed for SIM cPAHs.

No analytical complications were noted. A copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

ND67

LANDAU ASSOCIATES

☒ Seattle (Edmonds) (425) 778-0907
☐ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (Tigard) (503) 443-6010
☐ _____

8.4, 10.0, 15.1 & Ice-yes (70 SIM)

Chain-of-Custody Record

Date 7-1-08
Page 1 of 1

Project Name Port of Tacoma Kaiser Project No. 168004.020
Project Location/Event Tacoma, WA
Sampler's Name Brett Borgeson / Jacob Stokes
Project Contact Stacy Pischer
Send Results To Above + Anne Halvorsen

Testing Parameters

Turnaround Time
☒ Standard
☐ Accelerated
☐ _____

Sample I.D.	Date	Time	Matrix	No. of Containers	CPAH's (method 8270 SIM)	Archive	Observations/Comments
RM-SCD1 (0-1)	7-1-08	0920	Soil	1	X		
RM-SCD1 (1-2)		0940				X	
RM-SCD2 (0-1)		0845			X		
RM-SCD2 (1-2)		0855				X	
RM-SCD3 (0-1)		0935			X		
RM-SCD3 (1-2)		0925				X	
RM-SCD4 (0-1)		0850			X		
RM-SCD4 (1-2)		0900				X	
RM-SCD5 (0-1)		0820			X		
RM-SCD5 (1-2)		0835				X	
RM-SCD6 (0-1)		0815			X		
RM-SCD6 (1-2)		0830				X	
RM-SCD7 (0-1)		1020			X		
RM-SCD7 (1-2)		1025				X	
RM-SCD8 (0-1)		1000			X		
RM-SCD8 (1-2)		1015				X	

Observations/Comments

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

NWTPH-Dx:
___ run acid wash/silica gel cleanup
___ run samples standardized to _____ product

___ Analyze for EPH if no specific product identified

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

___ Dissolved metal water samples field filtered

Other _____

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature: Brett Borgeson	Signature: Dorian Ickes	Signature:	Signature:
Printed Name: Brett Borgeson	Printed Name:	Printed Name:	Printed Name:
Company: Landau	Company: ARI	Company:	Company:
Date: 7-1-08 Time: 1720	Date: 7/1/08 Time: 1720	Date: Time:	Date: Time:

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

Rev 4/01

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Can Tan
COC No: —
Assigned ARI Job No: NDGX

Project Name: Port of Tacoma Kaiser
Delivered by: Hand
Tracking No: —

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Record cooler temperature (recommended 2.0-6.0 °C for chemistry	8.4,10.0,15.1 °C	

Cooler Accepted by: JK Date: 7/1/08 Time: 1720

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?	YES	(NO)
What kind of packing material was used?	Bbl	
Was sufficient ice used (if appropriate)?	(YES)	NO
Were all bottles sealed in individual plastic bags?	YES	(NO)
Did all bottle arrive in good condition (unbroken)?	(YES)	NO
Were all bottle labels complete and legible?	(YES)	NO
Did all bottle labels and tags agree with custody papers?	YES	(NO)*
Were all bottles used correct for the requested analyses?	(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation checklist)	YES	(NO)
Were all VOC vials free of air bubbles?	(NA) ~~YES~~	NO
Was sufficient amount of sample sent in each bottle?	(YES)	NO

Samples Logged by: SDoshi Date: 7/2/08 Time: 1140

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

Explain discrepancies or negative responses:

* RMS CD3 (0-1) time = 925 on jar lid
RMS CD3 (1-2) time = 935 on jar lid
labels on jar okay SD 7/2/08

By: Date:

Subject: Analysis of Archived Samples
From: "Stacy Pischer" <Spischer@landauinc.com>
Date: Wed, 30 Jul 2008 11:12:26 -0700
To: "Kelly Bottem" <kellyb@arilabs.com>
CC: "Kristi Schultz" <kschultz@landauinc.com>, "Kris Hendrickson" <khendrickson@landauinc.com>

Kelly,
Please analyze the following archived samples for cPAHs Method 8270 SIM (included with samples in data package ND67).

RM-SCD2(1-2)
RM-SCD5(1-2)
RM-SCD6(1-2)
RM-SCD7(1-2)

Also, would you let me know if these samples were kept frozen or not?

Thanks,
Stacy

Stacy Pischer, L.G. ¨ Senior Geologist
Landau Associates, Inc.
130 2nd Ave. S, Edmonds, WA 98020
425.778.0907 ¨ direct 425.329.0311 ¨ cell 206.550.5641
spischer@landauinc.com ¨ www.landauinc.com

19289
19304

~~18429~~
1

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-SCD2(1-2)
SAMPLE

Lab Sample ID: NI05A
LIMS ID: 08-18068
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NI05-Landau Associates, Inc.
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 08/04/08
Date Analyzed: 08/07/08 17:21
Instrument/Analyst: NT2/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 1.62 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 29.0%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	31	1,300
218-01-9	Chrysene	31	2,100
205-99-2	Benzo(b)fluoranthene	31	1,800
207-08-9	Benzo(k)fluoranthene	31	1,200
50-32-8	Benzo(a)pyrene	31	1,600
193-39-5	Indeno(1,2,3-cd)pyrene	31	870
53-70-3	Dibenz(a,h)anthracene	31	360

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	69.0%
d14-Dibenzo(a,h)anthracen	68.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-SCD5(1-2)
SAMPLE

Lab Sample ID: NI05B
LIMS ID: 08-18069
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NI05-Landau Associates, Inc.
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 08/04/08
Date Analyzed: 08/07/08 17:43
Instrument/Analyst: NT2/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.8 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 4.1%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	4.6	130
218-01-9	Chrysene	4.6	260
205-99-2	Benzo(b)fluoranthene	4.6	340
207-08-9	Benzo(k)fluoranthene	4.6	180
50-32-8	Benzo(a)pyrene	4.6	130
193-39-5	Indeno(1,2,3-cd)pyrene	4.6	95
53-70-3	Dibenz(a,h)anthracene	4.6	41

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	61.3%
d14-Dibenzo(a,h)anthracen	62.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-SCD6(1-2)
SAMPLE

Lab Sample ID: NI05C
LIMS ID: 08-18070
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NI05-Landau Associates, Inc.
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 08/04/08
Date Analyzed: 08/07/08 18:05
Instrument/Analyst: NT2/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.8 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 11.7%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	4.6	1,400 E
218-01-9	Chrysene	4.6	5,900 SE
205-99-2	Benzo(b)fluoranthene	4.6	3,000 SE
207-08-9	Benzo(k)fluoranthene	4.6	1,000 E
50-32-8	Benzo(a)pyrene	4.6	400
193-39-5	Indeno(1,2,3-cd)pyrene	4.6	420
53-70-3	Dibenz(a,h)anthracene	4.6	210

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	43.3%
d14-Dibenzo(a,h)anthracen	60.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: RM-SCD6(1-2)
DILUTION

Lab Sample ID: NI05C
LIMS ID: 08-18070
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NI05-Landau Associates, Inc.
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 08/04/08
Date Analyzed: 08/12/08 21:17
Instrument/Analyst: NT2/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.8 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 50.0
Percent Moisture: 11.7%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	230	2,000
218-01-9	Chrysene	230	17,000
205-99-2	Benzo(b)fluoranthene	230	2,900
207-08-9	Benzo(k)fluoranthene	230	2,900
50-32-8	Benzo(a)pyrene	230	530
193-39-5	Indeno(1,2,3-cd)pyrene	230	650
53-70-3	Dibenz(a,h)anthracene	230	370

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	D
d14-Dibenzo(a,h)anthracen	D

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: RM-SCD7(1-2)
SAMPLE

Lab Sample ID: NI05D
LIMS ID: 08-18071
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NI05-Landau Associates, Inc.
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 08/04/08
Date Analyzed: 08/07/08 18:28
Instrument/Analyst: NT2/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.8 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 3.0%

CAS Number	Analyte	RL	Result	
56-55-3	Benzo(a)anthracene	4.6	340	
218-01-9	Chrysene	4.6	490	E
205-99-2	Benzo(b)fluoranthene	4.6	430	
207-08-9	Benzo(k)fluoranthene	4.6	320	
50-32-8	Benzo(a)pyrene	4.6	350	
193-39-5	Indeno(1,2,3-cd)pyrene	4.6	180	
53-70-3	Dibenz(a,h)anthracene	4.6	89	

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	67.3%
d14-Dibenzo(a,h)anthracen	64.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: RM-SCD7(1-2)
DILUTION

Lab Sample ID: NI05D
LIMS ID: 08-18071
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NI05-Landau Associates, Inc.
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: 07/01/08
Date Received: 07/01/08

Date Extracted: 08/04/08
Date Analyzed: 08/12/08 21:39
Instrument/Analyst: NT2/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.8 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 3.00
Percent Moisture: 3.0%

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	14	440
218-01-9	Chrysene	14	620
205-99-2	Benzo(b)fluoranthene	14	420
207-08-9	Benzo(k)fluoranthene	14	440
50-32-8	Benzo(a)pyrene	14	420
193-39-5	Indeno(1,2,3-cd)pyrene	14	280
53-70-3	Dibenz(a,h)anthracene	14	130

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	82.0%
d14-Dibenzo(a,h)anthracen	100%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-080408
METHOD BLANK

Lab Sample ID: MB-080408
LIMS ID: 08-18068
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NI05-Landau Associates, Inc.
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: NA
Date Received: NA

Date Extracted: 08/04/08
Date Analyzed: 08/07/08 13:17
Instrument/Analyst: NT2/VTS
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	5.0	< 5.0 U
218-01-9	Chrysene	5.0	< 5.0 U
205-99-2	Benzo(b)fluoranthene	5.0	< 5.0 U
207-08-9	Benzo(k)fluoranthene	5.0	< 5.0 U
50-32-8	Benzo(a)pyrene	5.0	< 5.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	< 5.0 U
53-70-3	Dibenz(a,h)anthracene	5.0	< 5.0 U

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	70.7%
d14-Dibenzo(a,h)anthracen	70.3%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: NI05-Landau Associates, Inc.
Project: Port of Tacoma Kaiser
168004.026

Client ID	MNP	DBA	TOT OUT
MB-080408	70.7%	70.3%	0
LCS-080408	65.0%	72.0%	0
LCSD-080408	71.7%	80.0%	0
RM-SCD2(1-2)	69.0%	68.7%	0
RM-SCD5(1-2)	61.3%	62.3%	0
RM-SCD6(1-2)	43.3%	60.0%	0
RM-SCD6(1-2) DL	D	D	0
RM-SCD7(1-2)	67.3%	64.3%	0
RM-SCD7(1-2) DL	82.0%	100%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(44-100)	(37-106)
(DBA) = d14-Dibenzo(a,h)anthracene	(46-121)	(16-118)

Prep Method: SW3546
Log Number Range: 08-18068 to 08-18071

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-080408
LAB CONTROL SAMPLE

Lab Sample ID: LCS-080408
LIMS ID: 08-18068
Matrix: Soil
Data Release Authorized:
Reported: 08/13/08

QC Report No: NI05-Landau Associates, Inc.
Project: Port of Tacoma Kaiser
Event: 168004.026
Date Sampled: NA
Date Received: NA

Date Extracted: 08/04/08

Sample Amount LCS: 10.0 g-dry-wt
LCSD: 10.0 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Date Analyzed LCS: 08/07/08 13:39
LCSD: 08/07/08 14:01
Instrument/Analyst LCS: NT2/VTS
LCSD: NT2/VTS

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	117	150	78.0%	127	150	84.7%	8.2%
Chrysene	113	150	75.3%	123	150	82.0%	8.5%
Benzo(b)fluoranthene	112	150	74.7%	135	150	90.0%	18.6%
Benzo(k)fluoranthene	114	150	76.0%	114	150	76.0%	0.0%
Benzo(a)pyrene	123	150	82.0%	132	150	88.0%	7.1%
Indeno(1,2,3-cd)pyrene	114	150	76.0%	124	150	82.7%	8.4%
Dibenz(a,h)anthracene	112	150	74.7%	126	150	84.0%	11.8%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	65.0%	71.7%
d14-Dibenzo(a,h)anthracen	72.0%	80.0%

Former Log Yard Area 2002 Analytical Results

Table 3

LOG YARD SOIL ANALYTICAL RESULTS
Kaiser Aluminum Facility - Tacoma, Washington

	LY-1	LY-2	LY-3	LY-4	LY-5	LY-6	LY-7	LY-8	MTCA Method C[a] Industrial Soil Cleanup Level (mg/kg)
Petroleum Hydrocarbons (mg/kg)[b]									
Gasoline-Range Hydrocarbons	NA[c]	NA	NA	NA	NA	NA	NA	NA	--[d] (MTCA Method A = 30 - 100)
Diesel-Range Hydrocarbons	139	320	313	234	602	141	161	207	-- (MTCA Method A = 2,000)
Lube Oil Range Hydrocarbons	530	737	1,190	648	1,180	448	593	751	-- (MTCA Method A = 2,000)
Total Metals (mg/kg)[e]									
Arsenic	***221***	16.9	34	39.1	***164***	69.1	***121***	***172***	87.5
Copper	73.3	44	51.6	49.1	158	157	217	400	130,000
Lead	28.5	28.9	36.7	35.1	179	74.5	127	145	-- (MTCA Method A = 1,000)
Zinc	135	95.3	100	105	386	210	545	413	1,050,000

Notes:

(a) Model Toxics Control Act (MTCA) Method C industrial soil cleanup levels based on CLARC version 3.1, dated November 2001.

(b) Samples were analyzed for petroleum hydrocarbons by Ecology Method NWTPH-Dx (extended).

(c) NA = Not analyzed.

(d) "--" = MTCA Method C industrial soil cleanup level not established. If available, MTCA Method A industrial soil cleanup level used (WAC 173-340, Table 745-1).

(e) Samples were analyzed for metals by EPA Method 6020.

Concentrations above cleanup standards are shown in bold and italics.
mg/kg = milligrams per kilograms

Table 9

GROUNDWATER ANALYTICAL RESULTS FROM MONITORING WELLS
Kaiser Aluminum Facility - Tacoma, Washington

	MW-C	MW-D	MW-E	MW-F	MW-I	MW-J	MW-L	MW-N	MW-AA	MW-CC	MTCA Method B Surface Water (ug/l)[a]	Ecology Marine Chronic (ug/l)[b]	National Toxic Rule (ug/l)[c]
Petroleum Hydrocarbons (ug/l) [d]													
Gasoline-Range Hydrocarbons	NA[e]	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,000[f]	-[g]	-
Diesel-Range Hydrocarbons	927	485	753	2,290	<250[h]	<250	317	<250	<250	964	10,000[f]	-	-
Lube Oil Range Hydrocarbons	<500	<500	874	1,500	<500	<500	<500	<500	<500	<500	10,000[f]	-	-
PAH-SIM (ug/l) [i]													
Acenaphthene	<0.100	<0.100	<0.100	0.462	1.49	<0.100	NS[k]	<0.100	0.340	10.1	643	710	-
Acenaphthylene	<0.100	<0.100	<0.100	<0.100	0.434	<0.100	NS	<0.100	<0.100	1.04	-	-	-
Anthracene	0.283	0.135	<0.100	0.154	<0.100	<0.100	NS	<0.100	0.113	9.30	25,900	-	1,100,000
Benzo (a) anthracene [j]	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	NS	<0.100	<0.100	***0.820***	0.0296	-	0.31
Benzo (a) pyrene [j]	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	NS	<0.100	<0.100	***0.480***	0.0296	-	0.31
Benzo (b) fluoranthene [j]	<0.100	<0.100	<0.100	***0.192***	<0.100	<0.100	NS	<0.100	***0.170***	***0.620***	0.0296	-	0.31
Benzo (ghi) perylene	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	NS	<0.100	<0.100	0.160	-	-	-
Benzo (k) fluoranthene [j]	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	NS	<0.100	<0.100	***0.220***	0.0296	-	0.31
Chrysene [j]	<0.100	<0.100	***0.113***	***0.135***	<0.100	<0.100	NS	<0.100	<0.100	***0.780***	0.0296	-	0.31
Dibenz (a,h) anthracene [j]	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	NS	***0.500***	***0.453***	***0.500***	0.0296	-	0.31
Fluoranthene	<0.100	<0.100	0.283	0.25	<0.100	<0.100	NS	<0.100	0.491	17.1	90.2	-	3700
Fluorene	<0.100	<0.100	<0.100	<0.100	0.491	<0.100	NS	<0.100	<0.100	11.2	3,460	-	140,000
Indeno (1,2,3-cd) pyrene [j]	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	NS	***0.460***	<0.100	***0.540***	0.0296	-	0.31
1-Methylnaphthalene	<0.100	<0.100	<0.100	2.60	0.585	<0.100	NS	<0.100	<0.100	1.46	-	-	-
2-Methylnaphthalene	<0.100	<0.100	<0.100	1.25	0.245	<0.100	NS	<0.100	<0.100	<0.100	-	-	-
Naphthalene	<0.100	<0.100	0.132	10.1	5.40	<0.100	NS	<0.100	0.132	0.900	4,940	-	-
Phenanthrene	<0.100	<0.100	0.245	0.250	0.151	<0.100	NS	<0.100	0.113	4.34	-	-	-
Pyrene	<0.100	<0.100	0.226	0.250	<0.100	<0.100	NS	<0.100	0.528	17.4	2,590	-	110,000
Semivolatile Organic Compounds (ug/l) [l] **- Only compounds detected are listed**													
Benzoic Acid	<10.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	38.2	-	-	-
Carbazole	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	32.4	-	-	-
Diethyl phthalate	<10.0	***14.1***	<10.0	<10.0	<10.0	<10.0	***16.4***	<10.0	<10.0	***24.2***	28,400	3.40	1,200,000
3&4 Methylphenol	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	13.0	<10.0	<10.0	13.7	-	-	-
Pentachorophenol (ug/l) [m]	<0.500	<0.500	<0.500	2.13	<0.500	<0.500	NS	<0.500	<0.500	<0.500	491	7.90	82
Total Metals (ug/l) [n]													
Silver	<10.0	<10.0	<10.0	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	25,900	-	-
Arsenic	<10.0	***186***	***62.9***	***608***	***7.47***	***4.51***	***38.2***	***1.62***	***87.4***	***19.1***	0.0982	36	1.4
Beryllium	<10.0	<10.0	<10.0	10.7	<1.00	<1.00	<1.00	<1.00	2.87	2.68	273	-	-
Cadmium	<10.0	<10.0	<10.0	<10.0	<1.00	<1.00	<1.00	<1.00	2.36	<1.00	20.3	9.3	-
Chromium	<10.0	271	238	934	1.47	1.22	9.7	<1.00	223	<1.00	243,000	-	-
Copper	<10.0	***158***	***93.4***	***478***	<1.00	1.39	***5.01***	1.59	***195***	<1.00	2,660	3.1	-
Mercury	<1.00	<1.00	<2.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-	0.025	1.5
Nickel	***10.6***	***282***	***40.2***	***625***	1.15	1.13	3.21	2.44	***60.8***	2.29	1,100	8.2	46,000
Lead	<10.0	***73***	***26.6***	***245***	<1.00	<1.00	3.57	<1.00	***51.1***	1.08	-	8.1	-
Antimony	<30.0	<30.0	<30.0	<100	<3.00	<3.00	<3.00	<3.00	4.72	<3.00	1,040	-	43,000
Selenium	<10.0	16.5	<10.0	***267***	<1.00	<1.00	2.69	<1.00	4.7	1.55	2,700	71	-
Thallium	<10.0	<10.0	<10.0	<10.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.56	-	63
Zinc	<100	<100	<100	<100	<10.0	<10.0	<10.0	<10.0	31.4	<10.0	16,500	81	-
Polychlorinated Biphenyls (ug/l) [o] **- No PCBs detected above laboratory reporting limits**													
Volatile Organic Compounds (ug/l) [p] **- Only compounds detected are listed**													
Naphthalene	<400	<400	<400	<400	6.14	<1.00	<1.00	<1.00	<1.00	1.08	4940	-	-
cis-1,2,-dichloroethene	<400	<400	<400	<400	<1.00	<1.00	<1.00	<1.00	<1.00	3.60	-	-	-
Vinyl chloride	<400	<400	<400	<400	<1.00	<1.00	<1.00	<1.00	<1.00	***4.08***	3.69	-	-
Miscellaneous Compounds (ug/l) [q]													
Total Cyanide	73.3	72.8	168	1,280	<10.0	40.6	<10.0	<10.0	95.3	38.7	-	-	-
Free Cyanide	<12.0	<12.0	***19***	***50***	<5.0	<5.0	NS	<5.0	<5.0	<5.0	51,900	1.00	2,200,000
Fluoride	32,900	117,00	104,000	498,000	12,600	13,800	14,500	4,030	34,100	54,400	-	-	-

Table 9

GROUNDWATER ANALYTICAL RESULTS FROM MONITORING WELLS
Kaiser Aluminum Facility - Tacoma, Washington

Notes:

(a) Model Toxics Control Act (MTCA) Method B surface water cleanup levels based on CLARC version 3.1, dated November 2001.
(b) Ecology chronic marine surface water quality standard (SWQS) based on WAC 173-201A.
(c) National Toxics Rule for consumption of organisms only based on 40 CFR 131.36 for a risk level of $1x10^{-5}$.
(d) Samples were analyzed for petroleum hydrocarbons by Ecology Method NWTPH-Dx (extended).
(e) NA = Not analyzed.
(f) Ecology's Model National Pollutant Discharge Elimination System (NPDES) Permit standard for discharges to surface water from leaking underground storage tank (UST) cleanups where gasoline and diesel are the pollutants of concern (WAC173-226).
(g) "-" = No standard available.
(h) "<" denotes analyte was not detected at the indicated reporting limit.
(i) Samples were analyzed for polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270-SIM.
(j) Carcinogenic PAH.
(k) NS = Insufficient water in well for sample collection.
(l) Samples were analyzed for semivolatile organic compounds (SVOCs) by EPA Method 8270C. Only those compounds detected and not analyzed for PAHs are listed.
(m) Sample analyzed for pentachlorophenol (PCP) by EPA Method 8270 modified.
(n) Samples were analyzed for total metals by EPA Method 6020, except mercury, which was analyzed by EPA Method 7470A.
(o) Sample analyzed for polychlorinated biphenyls (PCBs) by EPA Method 8082.
(p) Sample analyzed for volatile organic compounds (VOCs) by EPA Method 8260B
(q) Samples were analyzed for total and free cyanide by EPA Method 335.2 and fluoride by EPA Method 340.2.

Concentrations above cleanup standards are shown in bold and italics.
ug/l = micrograms per liter

APPENDIX K

Terrestrial Ecological Evaluation Exclusion Documentation

Washington State Department of Ecology
Toxics Cleanup Program

Terrestrial Ecological Evaluation Process - Primary Exclusions

Documentation Form – Log Yard Area

Exclusion #	Exclusion Detail	Yes or No?	Are Institutional Controls Required If The Exclusion Applies?
1	Will soil contamination located at least 6 feet beneath the ground surface and less than 15 feet?	Yes / No	Yes
	Will soil contamination located at least 15 feet beneath the ground surface?	Yes / No	No
	Will soil contamination located below the conditional point of compliance?	Yes / No	Yes
2	Will soil contamination be covered by buildings, paved roads, pavement, or other physical barriers that will prevent plants or wildlife from being exposed?	**Yes**	Yes
3	Is there less than 1.5 acres of contiguous undeveloped land on the site, or within 500 feet of any area of the site affected by hazardous substances **other than** those listed in the table of Hazardous Substances of Concern? And Is there less than 0.25 acres of contiguous undeveloped land on or within 500 feet of any area of the site affected by hazardous substances **listed in** the table of Hazardous Substances of Concern?	Yes / No Yes / No	Other factors determine
4	Are concentrations of hazardous substances in the soil less than or equal to natural background concentrations of those substances at the point of compliance	Yes / No	No

Washington State Department of Ecology
Toxics Cleanup Program

Terrestrial Ecological Evaluation Process - Primary Exclusions

Documentation Form – Rod Mill Area

Exclusion #	Exclusion Detail	Yes or No?	Are Institutional Controls Required If The Exclusion Applies?
1	Will soil contamination located at least 6 feet beneath the ground surface and less than 15 feet?	Yes / No	Yes
	Will soil contamination located at least 15 feet beneath the ground surface?	Yes / No	No
	Will soil contamination located below the conditional point of compliance?	Yes / No	Yes
2	Will soil contamination be covered by buildings, paved roads, pavement, or other physical barriers that will prevent plants or wildlife from being exposed?	Yes / No	Yes
3	Is there less than 1.5 acres of contiguous undeveloped land on the site, or within 500 feet of any area of the site affected by hazardous substances **other than** those listed in the table of Hazardous Substances of Concern? And Is there less than 0.25 acres of contiguous undeveloped land on or within 500 feet of any area of the site affected by hazardous substances **listed in** the table of Hazardous Substances of Concern?	**Yes** **Yes**	Other factors determine
4	Are concentrations of hazardous substances in the soil less than or equal to natural background concentrations of those substances at the point of compliance	Yes / No	No

Washington State Department of Ecology
Toxics Cleanup Program

Terrestrial Ecological Evaluation Process - Primary Exclusions

Documentation Form – SPL Area

Exclusion #	Exclusion Detail	Yes or No?	Are Institutional Controls Required If The Exclusion Applies?
1	Will soil contamination located at least 6 feet beneath the ground surface and less than 15 feet?	Yes / No	Yes
	Will soil contamination located at least 15 feet beneath the ground surface?	Yes / No	No
	Will soil contamination located below the conditional point of compliance?	Yes / No	Yes
2	Will soil contamination be covered by buildings, paved roads, pavement, or other physical barriers that will prevent plants or wildlife from being exposed?	Yes / No	Yes
3	Is there less than 1.5 acres of contiguous undeveloped land on the site, or within 500 feet of any area of the site affected by hazardous substances **other than** those listed in the table of Hazardous Substances of Concern? And Is there less than 0.25 acres of contiguous undeveloped land on or within 500 feet of any area of the site affected by hazardous substances **listed in** the table of Hazardous Substances of Concern?	**Yes** **Yes**	Other factors determine
4	Are concentrations of hazardous substances in the soil less than or equal to natural background concentrations of those substances at the point of compliance	Yes / No	No

APPENDIX L

Statistical Evaluation of PCB Compliance with Terrestrial Ecological Receptor Cleanup Level

APPENDIX L

STATISTICAL EVALUATION OF PCB COMPLIANCE WITH TERRESTRIAL ECOLOGICAL RECEPTOR CLEANUP LEVEL

A statistical evaluation of the PCB results from 2003 and 2004 indicates that the Rectifier Yard soil is in compliance with the concentration protective of terrestrial ecological receptors as follows:

- **UCL < 2 mg/kg**. 106 samples were analyzed for PCBs during the 2003 and 2004 soil investigations. The upper confidence limit for the 95th percentile of this data set was calculated to be 0.5 mg/kg using MTCA Stat Version 3.0. A copy of the MTCA Stat report documenting the UCL calculation is provided.

- **No single sample is greater than 2 times the cleanup level (i.e., 4 mg/kg).** The highest concentration detected in the 2003 and 2004 soil investigation data set is 2.39 mg/kg.

- **Less than 10 percent of the results exceed the cleanup level.** Two soil samples, less than 2 percent of the data set, exceed the cleanup level of 2 mg/kg.

2003/2004 Soil Sample Detected PCB Concentrations (mg/kg)
0.226
0.146
0.417
0.256
0.95
0.747
1.02
0.533
0.22
0.0829
0.475
0.198
0.924
0.697
2.39
0.141
0.53
0.707
0.595
0.27
0.674
0.673
0.15
0.349
0.132
0.307
0.262
0.254
0.395
0.0731
0.0634
0.469
0.111
0.149
0.182
0.543
0.423
1.01
0.396
0.765
0.794
0.771
0.474
0.276
0.223
0.291
0.0829
0.108
2.1
0.704

Rectifier Yard

Statistical Evaluation of 2003 and 2004 Soil Sample PCB Results

Number of samples	106	Uncensored values	
Uncensored	62	Mean	0.50
Censored	44	Lognormal mean	0.51
Detection limit or PQL	0.1	Std. devn.	0.45086416
Method detection limit		Median	0.3955
TOTAL	106	Min.	0.0513
		Max.	2.39

Lognormal distribution?		Normal distribution?	
r-squared is:	0.917	r-squared is:	0.898

Recommendations:

Use lognormal distribution.

UCL (Land's method) is 0.510114278030427

Cohen's method applied.

Rectifier Yard

Statistical Evaluation of 2003 and 2004 Soil Sample PCB Results

2003/2004 Soil Sample Detected PCB Concentrations (mg/kg)
0.435
0.0513
0.493
0.504
0.284
1.07
1.61
0.318
0.82
0.103
0.0824
0.203