Associated Environmental Group, LLC

Final
Remedial Investigation Report

Conducted on:

Petroleum Reclaiming Service, Inc. (PRSI)

3003 Taylor Way

Tacoma, Washington 98421-4309

Ecology Facility Site ID #1245

Prepared for:

Mr. Tom Smith

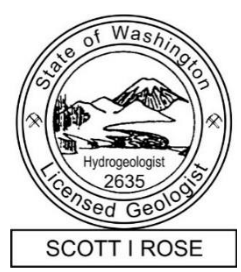
Mr. Jay Johnson

PRS Group, Inc.

3003 Taylor Way

Tacoma, Washington 98421-4309

Prepared & Reviewed by:



Charlie Swift
Senior Project Manager

Scott Rose, L.H.G
Senior Hydrogeologist

AEG Project #: 16-123

Date of Report: November 2, 2018

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1.0 INTRODUCTION

Associated Environmental Group, LLC (AEG) is pleased to present this Remedial Investigation (RI) for Petroleum Reclaiming Services, Inc. (PRSI), located at 3003 Taylor Way in Tacoma, Pierce County, Washington (Site). This RI was performed as required under Washington State Department of Ecology (Ecology) Agreed Order No. DE 11357. The purpose of this report is to document the completion of the RI in accordance with the requirements of Washington Administrative Code (WAC) 173-340, undertaken in whole or in part to fulfill the corrective action requirements of WAC 173-303-64620 and provide a summary of historical information.

A Site visit was conducted to photograph Site conditions with no field sampling conducted by AEG staff. Copies of the existing information was provided to AEG, and any relevant tables or figures are provided as attachments to this report.

The RI was conducted to summarize and obtain additional data to better understand the current subsurface conditions and evaluate practicable approaches for achieving regulatory closure of the Site. The conclusions and recommendations by AEG are based on our professional judgment and experience in accordance with requirements in the Model Toxics Control Act (MTCA) Cleanup Regulations (Chapter 173-340 WAC).

1.1 *General Site Information*

Site Name: Petroleum Reclaiming Services, Inc. (PRSI)
Site Address: 3003 Taylor Way, Tacoma, Washington 98421-4309
Facility/Site ID No.: 1245
Cleanup Site ID No.: 3255
Agreed Order No.: DE 11357
Property Owner: Petroleum Reclaiming Services, Inc.
Contacts: Mr. Tom Smith
Mr. Jay Johnson

The Site is located at located at 3003 Taylor Way in Tacoma, Washington (Figure 1, *Site Vicinity Map*). The PRSI facility is situated on two Pierce County Tax Parcels (0321363021 and 0321363028) totaling approximately 0.63 acres, and zoned for industrial use. The Site has two tank farms: Tank Farm A with 18 aboveground storage tanks (ASTs), and Tank Farm B with five ASTs, located within secondary containment. The Site has office space, drum storage, laboratory facility, boiler room, water/oil treatment equipment, parking and concrete pads for loading/unloading operations.

The immediate vicinity of the Site is heavy industrial. The triangle-shaped Site is bounded to the north by vacant industrial property, formerly occupied by the Arkema Manufacturing Plant (Ecology Facility/Site ID 1219); to the east by a drainage swale and vacant industrial property used for parking new vehicles, formerly occupied by the Arkema Mound site (Ecology Facility/Site ID 1220); and to the southwest by Taylor Way and vacant industrial property known as the Port of Tacoma Blair Backup property. Figure 1, *Vicinity Map*, presents the general vicinity of the Site. The Site's current layout and features are provided in Figure 2, *Site Map*.

MTCA defines a *Site* as *"…any area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located."(WAC 173-340-200)* Based on the characterization activities performed to date, the boundary of the Site appears to be contained within the property boundaries of the PRSI facility.

1.2 *Site History*

From 1922 until present, sections of the Site were owned by the Port of Tacoma, Pierce County, Ohio Ferro Alloys, City of Tacoma, Pacific Northwest Processing, PRSI (Anton May and Wendell Smith owners), and PRSI (present owners). Records indicate Ohio Ferro Alloys purchased land from the Port of Tacoma in 1941 and, in 1942, sold a small parcel to the City of Tacoma for an electrical power substation where present day PRSI is now located. Ohio Ferro Alloys manufactured chromium and ferrosilicate on an adjacent site until 1974.

At the present PRSI site, Pacific Northwest Processing operated an animal rendering plant for an undetermined number of years, and ceased operation in 1977.

According to a 1987 Site Inspection Report by Ecology and Environment (E&E), PRSI started in business as an oil recycling facility at the Site in 1977. The Site is currently operated as a vactor waste decant facility, a waste water treatment facility, and a reclamation facility for used/waste oil petroleum products. Waste waters processed include storm waters, wash waters, bilge waters, and the water recovered from the oil reclaiming process. On January 10, 1984, the U.S. Environmental Protection Agency (EPA) issued the Resource Conservation and Recovery Act (RCRA) identification number WAD980511729 to PRSI.

Site investigations in 1985 and 1986 by Hart Crowser & Associates (HCA) and E&E identified the release of volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs), and metals to the Site soils.

In 1989 and 1990, during Site inspections, Ecology discovered evidence of potential surface releases. The inspection noted spilled oil within tank containment areas along with visual staining, cracks, and unsealed joints in the containment areas. Further, waste oil residuals were noted on the floors of the office and laboratory buildings.

Concrete was poured in 1993 that has become the storage area for stabilized non-hazardous wastes. Asphalt driving areas were constructed in 2006.

As a result of these investigations, Ecology signed a *Stipulation and Agreed Order of Dismissal – PCHB No. 90-30*, between PRSI and Ecology on October 30, 1990. This order required PRSI to perform Site investigations to characterize Site conditions, and potential impacts to soil and groundwater. The Toxic Cleanup Program assigned a hazard ranking of 2 (out 5) using the Ecology's Washington Ranking Method for assessment of the potential threat to human health and the environment. A RCRA Closure Plan for the Site was submitted to Ecology on October 16, 1995. In January 1996, PRSI notified Ecology that holes 6 inches in diameter had been discovered in the on-Site oil/water separator used for the discharge of treated water to the local POTW.

On April 16, 2009, Ecology approved a *Final Closure Plan with Sampling and Analysis Plan for Mitigating Soils at Closure* for the PRSI facility. The closure plan requires the emptying and decontamination of tanks 1A, 2A, 3A, 7A, 8A, 9A, 10A, 11A, 12A, 20A, 30A, 1B, 2B, 3B, 4B, and 5B (see Figure 2, *Facility Site Map*). In addition to the tanks, the containment system and piping in the secondary containment systems will require decontamination and removal. These systems will be closed in a manner that addresses the closure performance standards in WAC 173-3-3-610(2) following the completion of work as described in the Sampling and Analysis Plan.

The closure plan provides guidelines that protect human health and the environment to:

1. Minimize the need for further maintenance;
2. Control, minimize, or eliminate the post-closure escape of waste oil and waste water, glycol onto the ground, into surface water or groundwater, or to the atmosphere;
3. Remove all wastes and waste residues from tank systems containing processed oil, slop oils and waste water and properly dispose of the waste offsite;
4. Clean all empty tanks and properly dispose of rinsate;
5. Clean the concrete surfaces and properly dispose of any waste/residue generated;
6. Abandon and properly decommission monitoring well S04A;
7. Excavate the general area around the monitoring well S04A to remove suspected contaminated soils, field screen the soils during removal and collect confirmation soil samples after the excavation is completed.

8. Prepare a summary report describing the sampling activities, provide drawings of sample locations, exhibit laboratory results with copies of the chain of custody and QA/QC documentation, along with photo documentation of the closure event.
9. Provide certification to Ecology that the oil recycling plant was closed in accordance to the Site Closure Plan.

1.3 *Processes*

PRSI serves the community by providing treatment, recovery and management of various wastes. Thousands of local businesses look for proper management and handling of their wastes as routine maintenance occurs at their locations. Also, PRSI's 24-hour hotline provides for spill assistance when necessary.

The facility is designed to store 390,000 gallons of water/oils in tanks and 11,000 gallons in containers, able to treat 60,000 gallons of liquids per day in tanks, and stabilize 90 tons of non-hazardous wastes for landfilling daily. Waste water is treated for discharge, under permit, to the local Tacoma public-owned treatment works (POTW). Sediments, soil, and sludge are managed as required by the Tacoma-Pierce County Health department. PRS operates under numerous regulations, including WAC 173-303, WAC 173-350, 40 CFR Part 437, and Puget Sound Clean Air Agency's Regulation I.

Waste shipments are profiled prior to arrival to determine treatment suitability and to ensure permit parameters are complied with. Each arriving load is screened prior to offloading and a sample is kept for 90 days. Liquid wastes are typically storm waters, wash waters and maritime waters. Liquid wastes are offloaded by pumps into various treatment tanks. Each contains contaminants to include oil, metals, or organics in need of removal or reduction. Sediments, sands, soil, etc. are offloaded into a concrete-lined cell where stabilization of the material takes place. Wastes placed in the concrete-lined cell, destined for the landfill, are mixed with bulking agents to achieve Ecology's "Paint filter test." The bulking agents currently are sawdust or shredded carpet. PRSI adds these with a rubber-tired loader and thoroughly mixes the two to absorb moisture and eliminate the sloppiness. When mixing is complete, the material is moved to a concrete-lined holding cell awaiting a dump truck to deliver it to the local landfill. Adjacent to the cells is a catchbasin connected to the on-Site stormwater system in case any water drains out of the mixed waste.

Liquid wastes are initially screened for oversize items and then allowed to set over time to allow smaller particles to settle out. PRS ends with an oil phase on top with water in the middle and sludge in the bottom of the tank. The oil phase is pumped to oil tanks for eventual sale to re-refiners or permitted burners. The water phase is treated using heat and chemicals to allow for discharge to the City of Tacoma with their permission. The sludge phase is moved to a concrete mixing area to allow the mixing of absorbents to dry up the small amounts of water found in sludge. Sludge is transported to our local landfill for disposal.

2.0 FIELD INVESTIGATIONS

2.1 *Previous Environmental Investigations*

An abbreviated description of environmental investigations performed to date is provided below, with references to attached AEG summary tables and figures, as well as tables and figures by others presented in the Appendices.

2.1.1 Surface Soil Sampling – HCA, 1985 to 1986

In December 1985, HCA reported collecting six composite soil samples from across the Site; the samples were designated "hand-augered (HA)" with HA-1 located north of the "processing area" or tank farms, HA-2 and HA-3 along the northern boundary near the drainage ditch, HA-4 and HA-5 located along the southeastern boundary near the drainage ditch, and HA-6 south of the "shed" adjacent to Taylor Way. The samples were collected at depths ranging from ground surface to about 2 feet below ground surface (bgs), and were analyzed for VOCs, semivolatile organic compounds (SVOCs), PCBs, and pesticides.

Analytical results of the samples indicated the presence of VOCs (including tetrachloroethylene [PCE] and toluene), SVOCs (including benzo(a)anthracene, benzo(a)pyrene, benzo(b) fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene), and PCBs (aroclor-1260). Sample locations and analytical results are presented in Appendix A.

The sample results were interpreted by HCA to mean "*that widespread soil contamination was present at the Site with the heaviest concentrations on the east side of the Site adjacent to the east ditch.*"

2.1.2 Groundwater Sampling – E&E, 1986

In 1986, E&E reported collecting one groundwater sample at the Site; the exact location of the sample is not known. The sample was reportedly analyzed for arsenic, cadmium, mercury, VOCs, SVOCs, PCBs, and pesticides. E&E reported that the analytical results indicated that none of the analyzed compounds were detected.

2.1.3 Surface Soil Sampling – E&E, 1986

In 1986, E&E reported collecting 12 near-surface soil samples from across the Site; the sample locations were a repeat of the six SECOR hand-augered sample locations with six additional samples collected based on "surface stainage" throughout the Site. The samples were reportedly analyzed for arsenic, cadmium, mercury, VOCs, SVOCs, PCBs, and pesticides.

Analytical results of the samples indicated the presence of PCBs (aroclor-1260), cadmium, mercury, and SVOCs (including chrysene and benzo(a)anthracene). Sample locations and analytical results are presented in Appendix B.

2.1.4 Site Inspection – Ecology, 1989

On December 21, 1989, Ecology inspected the PRSI facility and reported the following:

- Secondary containment around three large vertical tanks was partially full of a black viscous liquid. Of the 20 inches of liquid in the containment area, about 18.6 inches was petroleum-based material.
- A crack or joint in the containment wall allowed a discharge of liquid to the ground on the east side of the containment area. The liquid was identified as primarily #2 diesel oil along with some type of heavier hydrocarbon mixture, probably lubricating oil.

2.1.5 Surface Water/Sediment Sampling – Ecology, 1990

In April 1990, Ecology reportedly collected three soil/sediment samples in the vicinity of the Site: one sample (PSI1A) from the southern corner of the Site, one sample (PSI2A) from the "east ditch", and one sample (PSI3A) from the "convergence of east and north ditch". The samples were reportedly analyzed for metals, VOCs, PCBs, and pesticides.

According to SECOR's review of the one-page Ecology inspection report, *"The reported analytical results indicated that concentrations of arsenic (13 to 151 ppm* [parts per million]*), cadmium (1.0 ppm), chromium (7.2 to 75.7 ppm), copper (9.8 to 242 ppm), lead (6.2 to 160 ppm), nickel (4.0 to 29.4 ppm), and zinc (65.9 to 132 ppm) were detected in the three Ecology samples. The metal concentrations were consistently lowest in sample PRI3A, which was collected from the ditch convergence area. The majority of the metal concentrations were highest in sample PRI2A, which was collected from the East Ditch. The highest chromium concentration was reported for Site sample PRI1A, which was collected as a {background sample}."*

Analytical results for the remaining analyses indicated the presence of VOCs (including methylene chloride, acetone, and toluene), and PCBs (aroclor-1260 and an "unspecified pesticide/PCB").

SECOR concluded that the data was not *"relevant or useful"* due to lack of the *"completeness"* of the data. *"However, the surface water hydrologic features indicate that the majority of the surface runoff entering the east and north ditches may originate from the adjacent Atochem* [Arkema] *facilities."*

2.1.6 Phase 1 Site Investigation – Golder Associates, 1991

Monitoring Well Installation, Soil and Groundwater Sampling

The Ecology Agreed Order of Dismissal (PCHB No. 90-30) dictated that subsurface investigations be completed at the Site. The first phase of investigation was performed by Golder Associates (GA) in August 1991. As part of this action, GA advanced eight soil borings, which were completed as monitoring wells. Six soil borings/wells (S01A, S02A, C02A, C02B, C03A and C03B) were advanced on Site, and two soil borings/wells (C01A and C01B) were advanced off Site in the Taylor Way right-of-way (ROW). Six borings were completed as "pair clusters" and identified with the prefix "C". Also, the suffix "A" was used for wells screened through the "Shallow Aquifer" and the suffix "B" for wells screened through the "Intermediate Aquifer." Soil borings S01A, S02A, C01A, C02A, and C03A were advanced up to 12.5 feet bgs, and soil borings C01B, C02B, and C03B were advanced up to 33 feet bgs. The boring/well locations are illustrated on the SECOR Figure 2, *Site Plan*, in Appendix C.

Soil samples were collected at 2.5-foot intervals from all soil borings, and submitted for laboratory analysis for TPH, VOCs, SVOCs, PCBs, pesticides, metals, and toxicity characteristic leaching procedure (TCLP) metals. Analytical results of the soil samples indicated the presence of SVOCs (including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, and indeno(1,2,3-cd) pyrene), and metals (arsenic and mercury). Analytical results of the soil samples collected from the borings are presented in Table 1, *AEG Summary of Soil Analytical Results*, and in Appendix D.

The wells were constructed in compliance with WAC 173-160-500. Wells S01A, S02A, C01A, C02A and C03A were screened at interval depths ranging from 5 to 8 feet bgs and 5 to 12 feet bgs. Well C01B was completed with a screened interval depth of 16 to 27.5 feet bgs, well C02B was screened from 22 to 32 feet bgs, and well C03B was screened from 19.5 to 29.5 feet bgs. The Shallow and Intermediate Aquifers are separated by a clay/peat aquitard, which is located between about 7.5 to 17.5 feet bgs, according to the boring logs. Wells C01B, C02B, and C03B were reportedly sealed with bentonite through the "Shallow Aquifer" and into the clay/peat aquitard to prevent "cross-communication" to the "Intermediate Aquifer." The boring/well logs are presented in Appendix E, and the boring/well locations are illustrated on SECOR Figure 2, *Site Plan*, in Appendix C.

The wells were developed by PRSI personnel using a centrifugal pump setup with a suction hose and on-way bottom "foot" valve. The down-well hose was used to "surge" the well during the pumping event and all equipment was cleaned between well locations. Each well was purged with a minimum of five well volumes of water with measurements of pH, conductivity, temperature, and turbidity collected on a "frequent basis" to assess the stabilization of the groundwater characteristics.

During well development, a "hydrocarbon-like" sheen was reported in the groundwater sample collected from well C03A. EEC had concluded that *"the TPH detected in this well probably resulted from cross-contamination from surface soils during the installation of the monitoring wells"*. No sheen was reported in the remaining wells during the purging activities.

Groundwater samples were collected from the wells in September 1991, June 1992, and September 1992. The samples were reportedly collected by decanting directly from a stainless-steel bailer after at least five well volumes were purged from each well. The stainless-steel bailer was reportedly used to assess the presence of sheen within the well casings. Field parameters were measured and the equipment was cleaned between well locations. The groundwater samples were submitted for laboratory analysis for VOCs, SVOCs, TPH, pesticides, PCBs, and total and dissolved metals.

Analytical results of the groundwater samples collected from the shallow wells indicated the presence of VOCs (including vinyl chloride, methylene chloride, trichloroethylene [TCE], benzene, toluene, ethylbenzene, and xylenes), SVOCs (including naphthalene, 1-methylnaphthalene, and di-n-butylphthalate), PCBs (aroclor-1260), TPH, and metals (arsenic and cadmium). Analytical results of the groundwater samples collected from the intermediate wells indicated the presence of VOCs (methylene chloride), PCBs (aroclor-1260), and metals (cadmium, copper, and zinc). Analytical results of the groundwater samples collected from the shallow and intermediate wells are presented in Table 2, *AEG Summary of Groundwater Analytical Results*, and in Appendix F.

Surface Soil Sampling

In addition to the soil borings, GA collected 21 "near surface" soil samples (NS-01 through NS-21) from unpaved surfaces, as well as from beneath paved surfaces located based on suspected releases. Samples were collected using hand equipment (hand auger or post-hole digger), which was cleaned between locations, and submitted for laboratory analysis for TPH, PCBs, pesticides, metals, and TCLP metals. The sample locations were backfilled with soil and/or premixed concrete, and finished to original Site grade. The sample locations are illustrated on SECOR Figure 2, *Site Plan*, in Appendix C.

Analytical results of the "near surface" soil samples indicated the presence of TPH, PCBs (aroclor-1260), and metals (arsenic, cadmium, and mercury) no tabular data was presented for review.

2.1.7 Phase 2 Site Investigation – EEC, 1992

In October 1992, 10 test pits (TP-101 through TP-110) were excavated using a backhoe. The locations for the test pits was apparently a "random number method", and ranged in depths from 3.4 to 5.0 feet bgs. Soil samples were collected from one sidewall of all test pits at 1.0 foot and 3.0 feet bgs, with additional soil samples collected at 4.0 feet bgs and 5.0 feet bgs from TP-101, at 4.0 feet bgs from TP-102, and at 4.0 feet bgs from TP-109. Soil samples collected from the test pits were analyzed for VOCs, PCBs, TPH, and metals. The test pit locations are illustrated on SECOR Figure 2, *Site Plan*, in Appendix C.

Analytical results of the soil samples indicated the presence of PCBs (aroclor-1260), TPH, and arsenic. Analytical results of the soil samples collected from the test pits are presented in Table 1, *AEG Summary of Soil Analytical Results,* and in Appendix D.

In November 1992, additional drilling activities were completed to collect samples from 14 shallow borings (SB-111 through SB-115, and SB-117 through SB-125). The locations for SB-115 and SB-117 through SB-125 were placed at previous near-surface soil sample locations. The shallow borings were installed using post-hole diggers, hand augers, and hand-operated power augers to depths of 2.0 to 4.0 feet bgs. The samples were collected in the saturated zone with depth to groundwater ranging from 1.7 to 2.8 feet bgs. Soil samples collected from the shallow borings were analyzed for PCBs, TPH, and metals. The shallow boring locations are illustrated on SECOR Figure 2, *Site Plan*, in Appendix C.

Analytical results of the soil samples indicated the presence of PCBs (aroclor-1260), TPH, arsenic, and mercury. Analytical results of the soil samples collected from the shallow borings are presented in Table 1, *AEG Summary of Soil Analytical Results,* and in Appendix D.

In December 1992, EEC collected groundwater samples from the shallow and intermediate wells. The shallow well samples were submitted for laboratory analysis for VOCs, PCBs, TPH, and selected total and dissolved metals. The intermediate well samples were submitted for laboratory analysis for PCBs, TPH, and selected total and dissolved metals.

Analytical results of the groundwater samples collected from the shallow wells indicated the presence of VOCs (including vinyl chloride, methylene chloride, benzene, toluene, ethylbenzene, and xylenes), TPH, and metals (arsenic and cadmium). Analytical results of the groundwater samples collected from the intermediate wells indicated the presence of VOCs (methylene chloride) and TPH. Analytical results of the groundwater samples collected from the shallow and intermediate wells are presented in Table 2, *AEG Summary of Groundwater Analytical Results*, and in Appendix F.

2.1.8 Semi-Annual Groundwater Well Monitoring – SECOR, 1997

On May 29 and August 28, 1997, SECOR measured the water levels and collected groundwater samples from five monitoring wells (C02A, S03A, C03A, S02A, and S04A; S04A was installed by SECOR in October 1996 to a depth of 11.5 feet bgs – the boring log is included in Appendix E). The groundwater samples were collected using a single-use disposable bailer. The wells were purged using a variable-speed peristaltic pump and dedicated single-use tubing. During the purging, field parameters (pH, temperature, conductivity, and color/appearance) were monitored until the water parameters were stabilized. The groundwater samples were collected in laboratory-prepared containers. The samples were transported under chain of custody to Lauck's Testing Laboratories, Inc. (Lauck's) of Seattle, Washington for analysis of VOCs by EPA Method 8260, SVOCs by EPA Method 8270, a suite of 13 metals by EPA Method Series 6000 and 7000, and TPH by Ecology Method 418.1.

Analytical results of the groundwater samples are presented in Appendix G. SECOR's report concluded the following:

"Reported dissolved arsenic concentrations in groundwater samples collected during the May and August 1997 groundwater sampling events exceeded MTCA Method A Cleanup Levels for each groundwater sample submitted for analysis. A site specific cleanup level has not been determined for the site. A detailed analysis of Applicable or Relevant and Appropriate Requirements (ARARs) is necessary to determine specific cleanup levels for the site. The presence of dissolved arsenic in groundwater is consistent with background concentrations of arsenic in soil and groundwater in the vicinity of the site.

Concentrations of VOCs were detected in the shallow, upgradient wells sampled on-site. The monitoring wells located downgradient of the operating plant did not contain detectable concentrations of VOCs. Benzene was detected in the downgradient well only. No other compounds were detected on-site at concentrations above the most conservative cleanup levels."

2.1.9 Interim Action, Soil Excavation – SECOR, November 1997

In November 1997, SECOR performed an interim cleanup action at the Site, which reportedly included the excavation and off-Site disposal of shallow contaminated soils in the northeast portion of the Site. This action was performed to remediate contaminated soils in an area proposed for a new tank farm, which was subsequently never constructed. The limited information available regarding this action is included in Appendix K. This information includes laboratory analyses for three soil samples (SS-1, SS-2, and SS-3), and a figure illustrating the area of the proposed new tank farm that was reportedly remediated. The locations and depths of the samples are not known.

One of the samples (SS-3) was used to calculate a Site-specific TPH cleanup level using Ecology's Interim TPH Policy. These calculations are also included in Appendix K.

2.1.10 Site Inspection – Ecology, 2004

On February 19, 2004, Ecology performed a Site inspection, and noted cracks and gaps in the secondary containment system, which was reported as a violation of WAC 173-303-519(9) – *"Failure to maintain a tank and secondary containment system and/or repair cracks and gaps that can provide a pathway to soil and groundwater contamination."* The violation was detailed in a letter from Ecology to PRSI dated March 2, 2004.

2.1.11 Groundwater Well Installation and Monitoring – EMS, 2008

On March 22, 2008, Environmental Management Services, LLC (EMS) installed monitoring wells MW1A, MW2A, and MW3A on Site. The wells were installed in the Shallow Aquifer to about 10 feet bgs. The locations of the wells are illustrated on Figure 2, *Site Map*, and the boring/well logs are included in Appendix H.

On April 16, 2008, EMS measured the water levels and collected groundwater samples from seven monitoring wells (MW1A, S02A, MW2A, MW3A, C03A, and S04A). The groundwater samples were collected using a single-use disposable bailer. The wells were purged using a variable-speed peristaltic pump and dedicated single-use tubing. During the purging, field parameters (pH, temperature, and conductivity) were monitored until the water parameters were stabilized. The groundwater samples were collected in laboratory-prepared containers. The samples were transported under chain of custody to Spectra Laboratories of Tacoma, Washington for analysis of diesel- and oil-range TPH by Method NWTPH-Dx, gasoline-range TPH by Method NWTPH-Gx, VOCs by EPA Method 8260B, PCBs by EPA Method 8082, arsenic by EPA Method SW8046, and lead by EPA Method SW8046-7421.

Analytical results of the groundwater samples are presented in Table 2, AEG *Summary of Groundwater Analytical Results*, and in Appendix H. According to the EMS report:

- VOCs were detected in S04A, including PCE (5 µg/L [micrograms per liter]), TCE (12 µg/L), vinyl chloride (5 µg/L), and cis-1,2-dichloroethene (28 µg/L).
- Acetone was detected in MW2A, and may have been a relic of laboratory contamination.
- The groundwater gradient flow was estimated to the south-southwest.

2.1.12 Monitoring Well Installation and Monitoring – RNI, January 2010

On January 22, 2010, Robinson Noble, Inc. (RNI) installed two monitoring wells (S04B and MW1B) into the intermediate aquifer, using direct-push drilling technology, to replace two damaged and subsequently decommissioned wells (C01B and C02B). S04B and MW1B were installed to approximately 30 feet bgs and completed using 1-inch, piezometer-type, pre-packed PVC well screens. Each well was installed with a minimum of 10 feet of open slotted well screen to allow sufficient groundwater entry. The well locations are illustrated on Figure 2, *Site Map*, and the boring logs are presented in Appendix I.

Two soil samples (one from each boring) were submitted for laboratory analysis for gasoline- and diesel-range TPH (NWTPH-Gx and NWTPH-Dx-extended), VOCs (EPA Method 8260B), and selected metals: lead, chromium, and arsenic (EPA Method 7000 series). The samples were both collected at approximately 4 feet bgs. Analytical results reported no concentrations above the laboratory PQL for TPH Gx/Dx and VOCs. Total chromium was detected in MW1B-4' at 26 mg/kg. Follow-up analysis to speciate for hexavalent chromium resulted in a detection of 0.2 mg/kg, which is below the MTCA Method A cleanup level of 19 mg/kg.

On January 26, 2010, following well development, RNI measured the water levels and collected groundwater samples from the seven existing monitoring wells (C03A, MW3A, S02A, S04A, MW1A, MW2A, and C03B) and two new monitoring wells (S04B and MW1B). The groundwater samples were collected using a variable-speed peristaltic pump and dedicated single-use tubing. The wells were purged, and field parameters (pH, ORP, temperature, conductivity, total dissolved solids, and dissolved oxygen) were monitored until the water parameters were stabilized. The groundwater samples were collected in laboratory-prepared containers. The samples were transported under chain of custody to Libby Environmental, Inc. in Olympia, Washington for analysis of diesel- and oil-range TPH by Method NWTPH-Dx, gasoline-range TPH by Method NWTPH-Gx, VOCs by EPA Method 8260B, and metals By EPA Method 7000.

Analytical results of the groundwater samples are presented in Table 2, AEG *Summary of Groundwater Analytical Results.* Arsenic concentrations were reported in groundwater monitoring wells S04A at 217 µg/L, in S02A at 7.4 µg/L, in MW3A at 51 µg/L, in C03A at 38 µg/L, and MW1A at 20 µg/L. TCE and PCE concentrations were reported in groundwater monitoring well S04A at 6.2 µg/L and 6.8 µg/L, respectively.

Based on the sample results and groundwater levels measured, RNI concluded:

- Groundwater beneath the Site continues to be impacted by arsenic, TPH, TCE and PCE.
- Hydrostatic head in the shallow system was higher than in the intermediate system at the time of the investigation.

2.1.13 Additional Groundwater Well Monitoring – RNI, August and December 2010

On August 5, 2010, RNI measured the water levels and collected groundwater samples from monitoring wells C03A, MW3A, S02A, S04A, MW1A, MW2A, C03B, SO4B, and MW1B. RNI returned to the Site on December 14, 2010 to sample intermediate aquifer monitoring wells MW1B, C03B, and S04B only. Sample collection procedures were the same as previous events. The samples were transported under chain of custody to Libby Environmental, Inc. in Olympia, Washington for analysis of diesel- and oil-range TPH by Method NWTPH-Dx, gasoline-range TPH by Method NWTPH-Gx, VOCs by EPA Method 8260B, and metals By EPA Method 7000.

Analytical results of the groundwater samples are presented in Table 2, AEG *Summary of Groundwater Analytical Results*. For the August event, RNI reported arsenic concentrations in groundwater monitoring wells S04A (106 µg/L), S02A (7.4 µg/L), MW3A (59.4 µg/L), C03A (19.8 µg/L), MW2A (10.3 µg/L), and MW1A (34 µg/L). Also, benzene and vinyl chloride were detected in S04A at 5.4 µg/L and 0.48 µg/L, respectively.

For the August event, RNI concluded the following:

- Groundwater beneath the Site continues to be impacted by arsenic, TPH constituents, TCE, and PCE.
- The presence of vinyl chloride along with the absence of TCE and PCE suggests natural attenuation of chlorinated solvent plume is actively continuing beneath the Site.
- Hydrostatic head in the shallow system was higher in the deep system at the time of the investigation.
- The shallow aquifer gradient was estimated to flow south-southwest.
- The intermediate aquifer gradient was estimated to flow north-north east.

For the December event, RNI reported arsenic concentrations monitoring wells S04B at 10 µg/L and C03B at 8.4 µg/L. The intermediate aquifer gradient was estimated to flow north-northeast.

2.1.14 Site Inspection – Ecology, July 2011

On July 13, 2011, Ecology performed a Site inspection and noted poor condition of the secondary containment system in Tank Farm A and Tank Farm B along with "poor housekeeping", with the surfaces of the tank farms "dirty – coated with oil and standing puddles." The inspection report stated lack of compliance with WAC 173-303-515(9) and 40 CFR Part 279.54 (c, d, and e) *"Secondary containment is required for used oil being managed in containers and tanks"*, and WAC 173-303-515(9) and 40 CFR Part 279.52(a)(1) *"Facilities must be maintained and operated* *to minimize the possibility of non-sudden release of used oil to soil."* The violation was detailed in a letter from Ecology to PRSI dated July 22, 2011.

2.1.15 Quarterly Groundwater Monitoring - GeoEngineers, June 2015 to March 2016

GeoEngineers completed four quarters of groundwater compliance monitoring at the PRSI Site as part of the requirements of Ecology Agreed Order No. DE 11357. According to GeoEngineers, the groundwater compliance monitoring was intended to monitor releases of hazardous substances identified as COCs in groundwater and complete remedial actions as requested by Ecology.

Quarterly groundwater compliance monitoring events were completed on June 11, 2015, September 9, 2015, December 10, 2015, and March 8, 2016. For each sampling event, GeoEngineers measured the water levels and collected groundwater samples from the six shallow aquifer monitoring wells (C03A, MW1A, MW2A, MW3A, S02A, and S04B) and three intermediate aquifer monitoring wells (CO3B, MW1B, and S04B).

The groundwater samples were collected using a low-flow/low-turbidity sampling techniques with a variable-speed peristaltic pump and dedicated single-use vinyl tubing. The wells were purged, and field parameters (ferrous iron, pH, ORP, temperature, conductivity, turbidity, and dissolved oxygen) were monitored until the water parameters were stabilized. The groundwater samples were collected in laboratory-prepared containers, and were transported under chain of custody to Spectra Laboratories in Tacoma, Washington for analysis of gasoline-range TPH using NWTPH-Gx, diesel-range TPH using NWTPH-Dx, VOCs using EPA Method 8260, PCBs using EPA Method SW8082A, total metals by EPA Method 6020A, nitrate by Method Systea Easy (1-Reagant) and sulfate by Method SM4500-S04 E.

Analytical results of the groundwater samples are presented in Table 2, AEG *Summary of Groundwater Analytical.* Chlorinated solvents were only detected in monitoring well S04A during the four quarters of sampling:

- PCE concentrations were detected in December 2015 (8.4 µg/L) and March 2016 (6.1 µg/L) above the MTCA A cleanup level of 5 µg/L.
- Vinyl chloride concentrations were detected in June 2015 (0.9 µg/L) and in September 2015 (1.2 µg/L) above the MTCA A cleanup level of 0.2 µg/L.

VOCs were detected in three shallow aquifer monitoring wells (MW1A, MW2A, and S04A):

- Benzene (9.3 µg/L) was reported in MW-1A in the March 2016 sampling event above the MTCA A cleanup level of 5 µg/L.

- No other VOCs exceeded MTCA Method A cleanup levels for all four sampling events.

Arsenic was the most common COC detected in the groundwater during the four groundwater sampling event. Arsenic concentrations in groundwater exceeded the MTCA Method A cleanup levels in eight of the nine groundwater wells sampled.

- Arsenic concentrations ranging from 10 to 519 µg/L (above the MTCA Method A cleanup level of 5 µg/L) were reported in shallow aquifer monitoring wells C03A, MW1A, MW2A, MW3A, S04A, and from deep (intermediate) aquifer monitoring wells C03B and S04B during all four groundwater monitoring events.
- Arsenic concentrations exceeding the MTCA Method A cleanup level were reported in S02A during the June 2015 (9.9 µg/L) and December 2015 (5.9 µg/L) groundwater monitoring events.

Based on the sample results and groundwater levels measured over the four quarters, GeoEngineers provided the following conclusions:

- *The results of groundwater compliance monitoring indicate that chlorinated solvents are present in groundwater at one location at the PRS facility. PCE and associated degradation products TCE, 1,2-DCE and vinyl chloride were detected in groundwater from shallow aquifer monitoring well (SO-4A). The solvents detected in groundwater from well SO-4A varied seasonally. Vinyl chloride and 1,2-DCE were the only chlorinated solvents detected in groundwater during the first two quarterly monitoring events (Q1 and Q2). While PCE and TCE were the only chlorinated solvents detected in groundwater during the last two quarterly monitoring events (Q3 and Q4) as shown in* [Table 2, AEG *Summary of Groundwater Analytical Results*].
- *Groundwater elevations in the shallow aquifer were up to 2.7 feet higher during winter and spring (December and March) when the PCE and TCE were detected than during the summer and fall monitoring events, suggesting that PCE and TCE may be mobilizing from shallow soil to groundwater at this location during higher seasonal groundwater levels. However, chlorinated solvents were not detected in other monitoring wells during the compliance groundwater monitoring suggesting that natural attenuation processes (i.e., fluctuating seasonal groundwater levels and ORP) may be degrading PCE and TCE to their associated breakdown products in groundwater in this area.*
- *Geochemical indicators of natural attenuation fluctuated seasonally between slightly reductive and slightly oxidative conditions in both shallow and deep groundwater during compliance monitoring events performed at the PRS facility. Reductive conditions generally appeared to occur during winter and spring (Q3 and Q4) events, as indicated by a lower relative ORP and higher relative concentrations of ferrous iron. The groundwater*

natural attenuation conditions observed during the quarterly monitoring events (i.e., fluctuation between reductive and oxidative conditions) are anticipated to be favorable to the breakdown of chlorinated solvents and associated degradation products.

- *Arsenic was detected in groundwater within both the shallow and deep aquifers in the wells sampled during these events. The average concentration of arsenic in groundwater was 64 µg/L in the shallow aquifer and 13 µg/L in the deep aquifer over the four quarterly sampling events.*
- *Groundwater samples collected from shallow aquifer well SO-4A had the highest concentrations of arsenic at the PRS facility. The average concentration of arsenic in well SO-4A was 241 µg/L during the four quarterly monitoring events. In comparison, the average concentration of arsenic detected in groundwater from the remaining shallow aquifer monitoring wells was 29 µg/L during the four quarterly monitoring events.*
- *Arsenic is a common soil constituent in the Puget Sound region (Ecology, 1994). The detected concentrations of arsenic in both shallow and deep groundwater was generally within one order of magnitude (with the exception of groundwater at monitoring well SO-4A) and may be representative of area wide background arsenic concentrations in groundwater.*
- *The groundwater flow direction in the shallow aquifer was generally consistent during each of the four quarterly monitoring events with an inferred flow direction to the southeast or east-southeast* [GeoEngineers Figure 3, *Groundwater Elevations-Shallow Aquifer Quarters 1-4* in Appendix J].
- *The groundwater flow direction in the deep aquifer was variable during the four quarterly monitoring events. The groundwater flow direction variability is likely related to adjacent utility corridors that influence the groundwater direction as documented by others. The groundwater flow direction was inferred to be to the northeast during the Q1 monitoring event (June 2015) and generally to the south during the Q2, Q3 and Q4 monitoring events (September and December 2015, and March 2016)* [GeoEngineers Figure 4, *Groundwater Elevations-Deep Aquifer Quarters 1-4* in Appendix J].

2.1.16 Annual Groundwater Monitoring – AEG, June 2017 & 2018

Following four quarters of groundwater compliance monitoring, the PRSI Site switched to monitoring on an annual basis as part of the requirements of Ecology Agreed Order No. DE 11357. Annual groundwater compliance monitoring events were completed on June 13, 2017, and June 20, 2018. For the 2017 sampling event, AEG measured the water levels and collected groundwater samples from the six shallow aquifer monitoring wells (C03A, MW1A, MW2A, MW3A, S02A, and S04B) and three intermediate aquifer monitoring wells (CO3B, MW1B, and S04B). For the

2018 sampling event, per approval from Ecology due to a lack of detected constituents, sampling was reduced to two shallow aquifer monitoring wells (MW1A and S04B) for the full suite of contaminants, and one intermediate aquifer monitoring wells (MW1B) for diesel- and oil-range TPH only.

The groundwater samples were collected using a low-flow/low-turbidity sampling techniques with a variable-speed peristaltic pump and dedicated single-use vinyl tubing. The wells were purged, and field parameters (ferrous iron, pH, ORP, temperature, conductivity, turbidity, and dissolved oxygen) were monitored until the water parameters were stabilized. The groundwater samples were collected in laboratory-prepared containers, and were transported under chain of custody to Spectra Laboratories in Tacoma, Washington for one or more of the following analyses: gasoline-range TPH using NWTPH-Gx, diesel-range TPH using NWTPH-Dx, VOCs using EPA Method 8260, PCBs using EPA Method SW8082A, total metals by EPA Method 6020A, nitrate by Method Systea Easy (1-Reagant) and sulfate by Method SM4500-S04 E.

Analytical results of the groundwater samples are presented in Table 2, AEG *Summary of Groundwater Analytical.*

3.0 CONCEPTUAL SITE MODEL (CSM)

This section provides a conceptual understanding of the Site, derived from the results of the subsurface investigations and previous remedial actions performed at the Site. This Conceptual Site Model (CSM) will assist in determining the best remedial approach for the Site. The CSM is dynamic and may be refined as additional information becomes available.

3.1 *Constituents of Concern (COCs) and Affected Media*

The primary release mechanism for COCs at the Site appears to be associated with historical surface spills from mishandling of recycled materials and oils. This is supported by observations noted by Ecology and others during Site inspections where surface staining and inadequate secondary containment were noted. Characterization activities performed to date have identified the following affected media and COCs:

Surface Soils

The review of the soil analytical data collected to date (primarily circa 1991/1992), as compared to current MTCA cleanup levels, identified the following potential COCs for the subsurface soils to a depth of approximately 3 to 5 feet bgs (top of the shallow groundwater) at the Site:

- Gasoline-, diesel-, and oil-range TPH;
- Arsenic; and
- VOCs, including PCE and TCE.

In their 1996 RI Report, SECOR noted the following:

"Analysis of the Site data presented in this report, including comparison with preliminary primary ARARs, suggests that PCBs, VOC and semi-VOCs are not constituents of concern. PCBs were determined not to be a constituent of concern as soil samples analyzed using a Method 3630 cleanup prior to a Method 8080 were consistently below regulatory cleanup levels. The limited results showing concentrations above the cleanup level (2 samples out of a total of 43 samples analyzed) do not establish them as a constituent of concern for the Site. VOCs and semi-VOCs were not detected in the soil samples analyzed."

Given the frequency of detection in only a limited number of historic samples, PCE and TCE would not be considered primary COCs; however, their presence in shallow soil (and groundwater) would make them potential COCs nonetheless, and is consistent with the primary release mechanism for the Site (i.e., surface spillage).

Elevated concentrations of arsenic are common in the Tacoma Tideflats, known sources of which include the adjacent Arkema sites, slag from the ASARCO smelter in Ruston historically used for roadbed material in the area, and naturally occurring sources. The presence of arsenic in shallow soils on Site make it a potential COC; however, it does not appear to be associated with any known on-Site sources.

Shallow Aquifer

The review of the analytical data collected to date, as compared to current MTCA cleanup levels, identified the following potential COCs for the Shallow Aquifer at the Site:

- Gasoline-, diesel-, and oil-range TPH;
- Arsenic; and
- Chlorinated VOCs, including PCE, TCE, cis-1,2-dichloroethylene (DCE), and vinyl chloride.

Given the presence of TPH in shallow soils, low detections in groundwater, and management of known TPH sources on Site, gasoline-, diesel-, and oil-range TPH are considered potential COCs for the Shallow Aquifer at the Site.

As noted above, elevated concentrations of arsenic have been detected in soil and groundwater in this area. While arsenic is not typically associated with the wastes handled at the Site, it is possible that it is present in some wastes. That said, arsenic exceeded the MTCA industrial cleanup level for soil in only 3 of about 50 soil samples collected to date from the Site, though it has been detected in every monitoring well at the Site.

There is a history of arsenic impacts throughout the tideflats. The practice of depositing dredging spoils and copper smelter slag sands, which contained high levels of arsenic, copper, and zinc taken from the ASARCO smelter and used as fill material, was historically common practice. At the time, this material was considered chemically stable and would not leach to the environment.

The Site is also bounded to the north by the former Arkema Manufacturing Area site (2901 Taylor Way), to the east by the Arkema Mound site (3009 Taylor Way), and to the west by the Wypenn Area (2920 Taylor Way), collectively known as the AMP, which has been undergoing remediation since 1990 (Table 2-1, *Arkema Environmental Chronology* is attached in Appendix L). Within the Manufacturing Area of the AMP is an area called the Central Manufacturing Area, which included buildings to manufacture inorganic chemical products, tanks to store chemical products and fuels, electrical equipment (including transformers), shops, storage rooms and warehouse, and administrative offices. One chemical produced was a sodium arsenite herbicide called *Penite*, which was considered a contributing factor to the overall arsenic concentrations throughout the AMP site.

Soil and groundwater contamination within the AMP boundaries was discovered in 1981. To address the arsenic at the AMP site, an arsenic groundwater treatment plant was constructed in 1991 and operated until 2003. The Arkema Mound property was formerly used as a log sort yard and ASARCO slag was placed as ballast material. Arkema remediated the arsenic- containing slag by consolidating the materials and placing them in a lined and covered containment cell (mound). After the Port of Tacoma purchased the property, the mound was removed and an RI/FS is being completed under Ecology AO DE6129.

Groundwater is characterized on the PRSI property in two zones the upper and lower aquifers and the gradient flows are influenced by seasonal rains and from tidal flux. The aquifer studies on the Arkema properties, namely the Wypenn property, show the upper aquifer flow pattern suggests that groundwater may be infiltrating into the sewer lines that exist beneath Taylor Way.

The adjacent Arkema site has documented concentrations of arsenic in the Shallow and Intermediate Aquifers well above MTCA cleanup levels. The speciation of the arsenic may show the concentrations detected in monitoring well S04A may not be associated with any known on-Site sources. Arsenic (arsenite) has a solubility and mobility that have a lower affinity for anion exchange and adsorption to solid phase amorphous metal phosphates and oxides/hydroxides, and is influenced by the redox potential (ORP) of local aquifer. The specific sampling completed throughout 2008 to 2016 was for total arsenic and not for the forms of arsenic, such as arsenite. The presence of arsenic in every monitoring well on the Site, in both aquifers, show the nature of arsenic present in all areas surrounding the Site and in groundwater throughout the tideflats.

One or more chlorinated VOCs have been detected in the Shallow Aquifer both historically (S01A, C01A, and C03A – see SECOR Table 7a in Appendix F), and more recently (S04A – see Table 3, *AEG Summary of Groundwater Analytical Results*). Detections in C01A may be associated with off-Site sources, as this well was located in the proximity of a sanitary sewer line along Taylor Way, which may have acted as a preferential pathway.

<u>Intermediate Aquifer</u>

The review of the analytical data collected to date does not support the identification of COCs for the Intermediate Aquifer at the Site.

Air Quality

No indoor air or soil vapor samples are known to have been collected from the Site to date. However, no significant sources of air emissions have been identified at the Site, and no volatile COCs are present at concentrations in soil or groundwater that are likely to result in exposure to vapors via vapor intrusion into on-Site structures.

3.2 *Site Geology and Hydrogeology*

The Site is located within the Commencement Bay tideflats between the Blair Waterway and the Hylebos Waterway (Figure 1, *Vicinity Map*). These tideflats lie at the mouth of the Puyallup River Basin, which consists of a sequence of Holocene- to Pleistocene-age, deltaic-alluvial sediments and marine sediments. These sediments were deposited in a deep embayment, which was created by several glacial episodes. Recent fill material has been placed over the native alluvial and/or marine sediments.

The stratigraphy of the Puyallup River Basin, as presented in the EEC Phase 2 Report, consists of four geological units, which are described in the order they are encountered from ground surface as:

- Fill material, consisting of silt and sand, dredged from the Blair and Hylebos Waterways in the 1950s and 1960s as well as from gravel borrow sources. The fill material ranges in thickness from a few feet to approximately 25 feet.
- Deltaic-alluvial sediments, deposited by the Puyallup River, which flowed out of the Cascade Mountain Range to discharge into Commencement Bay of Puget Sound. A delta formed at the mouth of the Puyallup River in the Commencement Bay area, depositing alternating layers of sands and silts, which can be over 100 feet in thickness.
- Marine sediments deposited in a deep marine trough at the mouth of the Puyallup River, at a time when sea level was higher. Marine sediments are composed of fine-grained silts and clays and have been estimated to be over 300 feet in thickness.
- Glacial sediments deposited in troughs cut by advancing and receding glacial ice sheets. Glacial sediments consist of sand, gravel, and silt in estimated thicknesses ranging over 1,000 feet in the Puyallup River Valley

As reported in the EEC Phase 2 Report, three principle aquifers have been identified in the Commencement Bay tideflat area: the Shallow Aquifer (unconfined), the Intermediate Aquifer (confined), and the Deep Aquifer. The Shallow Aquifer consists of near-surface fill material; the Intermediate Aquifer consists of shallow deltaic sediments. An aquitard, locally known as the Upper Aquitard, separates the Shallow and Intermediate Aquifers. The Deep Aquifer consists of sand, and is separated from the Intermediate Aquifer by an aquitard known as the Lower Aquitard. A water supply aquifer is located in deltaic and glacial sediments within the Deep Aquifer.

According to EEC, a strong upward flow gradient between the water supply aquifer and the overlying Shallow, Intermediate, and Deep Aquifers is present in the Port of Tacoma area. However, this statement is inconsistent with another EEC statement that a downward flow locally occurs from the Shallow Aquifer into the Intermediate Aquifer as reported for the Blair Backup Property located adjacent south and west of the Site across Taylor Way, as well as for the Arkema Property located adjacent to the north of the Site.

Groundwater flow direction in the Shallow, Intermediate, and Deep Aquifers varies, and is affected by seasonal changes and local drainage patterns, such as drainage ditches and utility trenches. The regional groundwater is expected to flow towards the northwest and Commencement Bay of the Puget Sound. Tidal affects have been reported for the Intermediate and Deep Aquifers. The areas of the Shallow Aquifer that are located adjacent to surface waterways may be locally affected by tidal action.

EEC reported that the groundwater flow rate in the Shallow Aquifer ranges from 0.01 to 0.09 feet/day; in the Intermediate Aquifer, the flow rate ranges from 0.01 to 0.04 feet/day; and in the Upper Aquitard *(sic)*, the flow rate ranges from 0.0007 to 0.04 feet/day (no backup data were presented for these calculated values).

Monitoring wells installed on Site to date have been screened in both the Shallow and Intermediate Aquifers. However, a review of borings logs suggests some wells may have also intercepted the Deep Aquifer. Water level measurements collected from the on-Site monitoring wells vary from 1 to 15 feet below ground surface, depending on the aquifer, its location, and seasonal variations. The direction of groundwater flow seems to be dependent on seasonal variations.

South of the Site along Taylor Way is a 24-inch sewer utility line bedded in porous sands/gravel providing an easy path for groundwater to flow toward. This area acts as a sink for groundwater during drier months allowing groundwater to flow southerly into the bedded area. Conversely during the wet season the utility line bedded area is saturated with groundwater and seems to push groundwater away, reversing the flow of groundwater towards the north

3.3 *Environmental Fate of COCs in the Subsurface*

TPH and associated compounds

Gasoline-, diesel-, and oil-range TPH and associated compounds are soluble, and migrate in groundwater. These compounds have a specific gravity that is less than water, and can be measured in monitoring wells as a Light Non-aqueous Phase Liquid (LNAPL). No LNAPL is known to have been measured at the Site to date. LNAPL can also exist as a residual non-mobile phase that is either sorbed to the soil or trapped in the pore spaces between the soil particles. Unless treated, residual LNAPL can act as a long-term source for groundwater contamination. While TPH has historically been detected in shallow soils beneath the Site, it has not been detected at significant concentrations in groundwater.

Gasoline-range TPH and the associated VOCs are volatilized under the appropriate conditions. In the subsurface, volatilization releases COCs into the soil vapor where, if conditions are right, COCs can migrate beneath or into structures as vapor. TPH and VOCs are also readily biodegraded in the subsurface by naturally occurring aerobic and anaerobic bacteria. Aerobic biodegradation is the most efficient of the biological activities. At this Site, ongoing biodegradation is most likely reducing TPH concentrations. In addition, surface cover at the Site consisting of asphalt, concrete, and Site structures likely prevent stormwater from infiltrating through the subsurface and mobilizing COCs into the Shallow Aquifer.

Arsenic

Arsenic occurs naturally in soil and minerals and it therefore may enter the air, water, and land from wind-blown dust and may get into water from runoff and leaching. Volcanic eruptions are another source of arsenic. Arsenic is associated with ores containing metals, such as copper and lead. Arsenic may enter the environment during the mining and smelting of these ores. Small amounts of arsenic also may be released into the atmosphere from coal-fired power plants and incinerators because coal and waste products often contain some arsenic. Arsenic cannot be destroyed in the environment. It can only change its form, or become attached to or separated from articles. It may change its form by reacting with oxygen or other molecules present in air, water, or soil, or by the action of bacteria that live in soil or sediment. Arsenic released from power plants and other combustion processes is usually attached to very small particles. Arsenic contained in wind-borne soil is generally found in larger particles. These particles settle to the ground or are washed out of the air by rain. Arsenic that is attached to very small particles may stay in the air for many days and travel long distances. Many common arsenic compounds can dissolve in water. Thus, arsenic can get into lakes, rivers, or groundwater by dissolving in rain or snow or through the discharge of industrial wastes. Some of the arsenic will stick to particles in the water or sediment on the bottom of lakes or rivers, and some will be carried along by the water. Ultimately, most arsenic ends up in the soil or sediment.

Chlorinated VOCs

The density of the chlorinated VOCs PCE, TCE, DCE, and vinyl chloride is greater than water. Upon release into the environment, chlorinated VOCs can sink through the vadose zone, through the water table, and possibly penetrate leaking aquitards. These chemicals can also exist as a residual non-mobile phase either sorbed to the soil or trapped in the pore spaces between the soil particles. Unless treated, residual chlorinated VOCs can act as a long-term source for groundwater contamination. At this Site, localized residual dissolved-phase PCE, TCE, DCE, and vinyl chloride have been detected, as has sorbed-phase PCE and TCE.

Chlorinated VOCs and their associated compounds can be volatilized under the appropriate conditions. In the subsurface, volatilization releases COCs into soil vapor where, if conditions are right, can migrate beneath or into structures.

The most common anaerobic dechlorination pathway of PCE is the degradation to ethenes. In the sequential transformation of the chlorinated ethenes, chlorine is replaced using hydrogen as an electron donor. The occurrence of the lesser chlorinated ethenes (such as vinyl chloride and DCE) in groundwater is primarily a consequence of incomplete anaerobic reductive dechlorination of the more highly chlorinated ethenes (PCE and TCE). Vinyl chloride and DCE are toxic, and vinyl chloride is a known human carcinogen.

3.4 *Potential Exposure Pathways*

As defined in WAC 173-340-200, an exposure pathway describes the mechanism by which a hazardous substance takes or could take a pathway from a source or contaminated medium to an exposed receptor.

3.4.1 Potential Soil Exposure Pathways

Direct ingestion of, and dermal contact with soil containing Site COCs is considered a potential exposure pathway. On this Site, soil impacts are presumed to still exist beneath the surface cover, which consists of asphalt paving, concrete, and Site structures. As such, unless disturbed, these areas are not available for direct contact or ingestion.

3.4.2 Potential Groundwater Exposure Pathways

Groundwater in the area of the Site is not used for drinking water. In addition, due to the industrial nature of the area, and the proximity of the Site to marine surface water, groundwater is not likely to be considered a potential future source of drinking water. As such, groundwater is not considered an exposure pathway for ingestion. However, due to the shallow depth of the Shallow Aquifer (3 to 5 feet bgs), groundwater is considered an exposure pathway for direct contact.

3.4.3 Potential Air Exposure Pathways

No ambient air sampling has been conducted to date. Since volatile components of TPH and chlorinated VOCs have been present in soil and groundwater samples at the Site, air quality is a potential concern at the Site. While unlikely given the concentrations detected to date, migration of vapors through the unsaturated soil to the surface, both indoors and outdoors, is considered a potential exposure pathway at the Site.

3.4.4 Potential Human and Ecological Receptors

Employees, utility workers, and visitors to the Site who may be exposed to soil or groundwater are at a potential risk for exposure to contaminated soil and groundwater. However, as noted above, unless the surface cover is disturbed, exposure is unlikely.

3.4.5 Terrestrial Ecological Evaluation

The Site qualifies for the following exclusion from further consideration of the Terrestrial Ecological Evaluation:

- Barriers to Exposure: WAC 173-340-7491(1)(b) – All soil contamination is covered by physical barriers (such as buildings, paved roads, and Site infrastructure) that prevent exposure to plants and wildlife, and institutional controls will be used to manage remaining contamination.

4.0 CLEANUP STANDARDS

The following sections identify applicable or relevant and appropriate requirements (ARARs), remedial action objectives (RAOs) and preliminary cleanup standards for the Site, which were developed to address Ecology's requirements for cleanup. These requirements address conditions relative to potential identified impacts. Together, ARARs, RAOs, and cleanup standards provide the framework for evaluating remedial alternatives.

4.1 *Potentially Applicable Laws*

All cleanup actions conducted under MTCA shall comply with applicable state and federal laws [WAC 173-340-710(1)]. MTCA defines applicable state and federal laws to include legally applicable requirements and those requirements that are relevant and appropriate. Collectively, these requirements are referred to as ARARs. The primary ARAR is the MTCA regulation (WAC 173-340), especially with regard to the development of cleanup levels and procedures for development and implementation of a cleanup under MTCA. ARARs for the Site cleanup also include the following:

- Federal Safe Drinking Water Act Maximum Contaminant Levels (MCLs; 40 CFR Part 141);
- Natural Background Soil Metals Concentrations in Washington State, Publication #94-115, October 1995;
- Water Quality Standards for Groundwaters of the State of Washington (WAC 173-200);
- U.S. EPA Clean Water Act (40 CFR 100-149);
- Water Quality Standards for Surface Waters of the State of Washington (WAC 173-201);
- Washington Clean Air Act (Chapter 70.94 RCW);
- Puget Sound Clean Air Agency (PSCAA) Regulations;
- Washington Solid and Hazardous Waste Management (RCW 70.105); Chapter 173-303 WAC; 40 CFR 241, 257; Chapter 173-350 and 173-351 WAC) and Land Disposal Restrictions (40 CFR 268; WAC 173-303-340);
- Washington Industrial Safety and Health Act (RCW 49.17) and other Federal Occupational Safety and Health Act (29 CFR 1910, 1926); and
- Cleanup standards established for the adjacent Arkema Manufacturing Plant and Arkema Mound facilities.

4.2 *Remedial Action Objectives*

RAOs have been established for the Site to provide remedial alternatives that protect human health and the environment under the MTCA cleanup process (WAC 173-340-350). The primary RAO for this cleanup action focuses on substantially eliminating, reducing, and controlling unacceptable risks to human health and the environment posed by the COCs, to the greatest extent practicable.

RAOs are important for the evaluation of the general response actions, technologies, process options, and cleanup action alternatives. Based on the assessment of Site-specific conditions and the potentially applicable cleanup levels presented below, the RAOs for the Site have been established as follows:

- *In a reasonable restoration time frame, reduce concentrations of COCs in Site soils and groundwater to levels protective of human health and the environment, and which are protective of groundwater and surface water quality.*

4.3 *Cleanup Standards*

Cleanup standards include cleanup levels and points of compliance (POCs) as described in WAC 173-340-700 through WAC 173-340-760. Cleanup standards must also incorporate other state and federal regulatory requirements applicable.

4.4 *Cleanup Levels*

MTCA cleanup levels for industrial properties (Method A and Method C) are appropriate for Site soils. Since groundwater beneath the Site is not considered potable, Method C cleanup levels for protection of direct contact are used (if available) for COCs where the Method A cleanup level is based on protection of groundwater for drinking water uses, and groundwater data has empirically shown the COC to not be present in groundwater. One exception: Method C cleanup levels are being used for arsenic as they were also used at the adjacent Arkema facility.

These cleanup levels are based on the most stringent values for each exposure pathway and are considered appropriate for the Site COCs. However, in October 1997, SECOR calculated a Method B cleanup level for TPH using Ecology's Interim TPH Policy and data from a shallow soil sample collected during the 1997 interim action. AEG utilized this value to evaluate the 1991/1992 soil data (see Figure 4) as the TPH data collected during these investigation was not quantified as gasoline, diesel, or oil. However, it is AEG's opinion that any current TPH data be evaluated against MTCA Method A cleanup levels, pending any further Method B or C calculations using current data, which is likely to be more representative of current Site conditions. The 1997 SECOR Interim TPH Policy calculations are presented in Appendix K. The MTCA cleanup levels for the Site COCs in soil are as follows:

- TPH (unquantified) 1,630 mg/kg (Interim TPH Policy – Method B)
- Gasoline-range TPH 100 mg/kg (Method A Industrial)
- Diesel-range TPH 2,000 mg/kg (Method A Industrial)
- Oil-range TPH 2,000 mg/kg (Method A Industrial)
- Arsenic 88 mg/kg (Method C Direct Contact)
- PCE 0.05 mg/kg (Method A Industrial)
- TCE 0.03 mg/kg (Method A Industrial)

Since groundwater beneath the Site is not considered potable, the next most stringent exposure pathway is groundwater-to-surface water migration. As such, surface water quality criteria are appropriate for groundwater beneath the Site. With that said, only human health surface water quality criteria exist for PCE and TCE, and no criteria exists for TPH. Since the water in Hylebos waterway and Commencement Bay is not used for drinking water, the human health criteria is not appropriate. For these COCs, cleanup levels will default to Method A. For arsenic, the Method A cleanup level will also be used as it is adjusted for natural background, and was used at the adjacent Arkema facility. These cleanup levels are based on the most stringent values for each exposure pathway and are considered appropriate for the Site COCs. The MTCA cleanup levels for the Site COCs in groundwater are as follows:

- Gasoline-range TPH 800 µg/L (Method A)
- Diesel-range TPH 500 µg/L (Method A)
- Oil-range TPH 500 µg/L (Method A)
- Arsenic 5 µg/L (Method A)
- PCE 5 µg/L (Method A)
- TCE 5 µg/L (Method A)
- cis-1,2-DCE 16 µg/L (Method B; Method A not established)
- Vinyl chloride 0.2 µg/L (Method A)

4.5 *Points of Compliance*

For this Site, it is assumed that standard POC will be used.

- Soil – Direct Contact: For soil cleanup levels based on human exposure via direct contact, the POC is throughout the Site from the ground surface to 15 feet bgs.
- Soil – Leaching: For soil cleanup levels based on protection of groundwater, the POC is throughout the Site.
- Groundwater: For groundwater, the POC is throughout the Site from the uppermost level of the saturated zone extending vertically to the lowest most depth that could potentially be affected by the Site.
- Indoor Air/Soil Gas: The POC is ambient and indoor air throughout the Site.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 *Summary and Conclusions*

The Petroleum Reclaiming Service, Inc. Site is located at 3003 Taylor Way in Tacoma, Pierce County, Washington. Since the mid-1980s, numerous investigations have been conducted throughout the Site and surrounding area to define the extent of contamination associated with releases at the Site, and to achieve source control. These actions have also been conducted to differentiate impacts to the subsurface environment at the Site from other known releases within the vicinity of the Site.

Conclusions derived from the RI activities at the Site are as follows:

- Releases and/or potential releases of hazardous substances from on-Site activities at the facility include TPH and related constituents, metals, PCBs, and chlorinated VOCs.
- The extent of impacts to soil at the Site have been defined, based on data collected in 1991 and 1992, and is illustrated on Figure 4, *Surface Soil Plume Contamination Above MTCA Circa 1991 & 1992*, in plan view. Cross sections are illustrated in Figure 6, *Geologic Cross Section A-A'*, Figure 7, *Geologic Cross Section B-B'*, and Figure 8, *Geologic Cross Section C-C'*.
- The extent of impacts to groundwater at the Site have been defined, and is illustrated on Figure 3, *Groundwater Plume*. Groundwater flow in the Shallow Aquifer beneath the Site is generally to the south-southeast with some seasonal variation. Groundwater flow in the Intermediate Aquifer varies seasonally to the northeast and south.

Conclusions derived by GeoEngineers from the 2015-2016 quarterly groundwater monitoring activities at the Site are as follows:

- *The results of groundwater compliance monitoring indicate that chlorinated solvents are present in groundwater at one location at the PRS facility. PCE and associated degradation products TCE, 1,2-DCE and vinyl chloride were detected in groundwater from shallow aquifer monitoring well (SO-4A). The solvents detected in groundwater from well SO-4A varied seasonally. Vinyl chloride and 1,2-DCE were the only chlorinated solvents detected in groundwater during the first two quarterly monitoring events (Q1 and Q2). While PCE and TCE were the only chlorinated solvents detected in groundwater during the last two quarterly monitoring events (Q3 and Q4) as shown in* [Table 2, AEG *Summary of Groundwater Analytical Results*].
- *Groundwater elevations in the shallow aquifer were up to 2.7 feet higher during winter and spring (December and March) when the PCE and TCE were detected than during the*

summer and fall monitoring events, suggesting that PCE and TCE may be mobilizing from shallow soil to groundwater at this location during higher seasonal groundwater levels. However, chlorinated solvents were not detected in other monitoring wells during the compliance groundwater monitoring suggesting that natural attenuation processes (i.e., fluctuating seasonal groundwater levels and ORP) may be degrading PCE and TCE to their associated breakdown products in groundwater in this area.

- *Geochemical indicators of natural attenuation fluctuated seasonally between slightly reductive and slightly oxidative conditions in both shallow and deep groundwater during compliance monitoring events performed at the PRS facility. Reductive conditions generally appeared to occur during winter and spring (Q3 and Q4) events, as indicated by a lower relative ORP and higher relative concentrations of ferrous iron. The groundwater natural attenuation conditions observed during the quarterly monitoring events (i.e., fluctuation between reductive and oxidative conditions) are anticipated to be favorable to the breakdown of chlorinated solvents and associated degradation products.*

- *Arsenic was detected in groundwater within both the shallow and deep aquifers in the wells sampled during these events. The average concentration of arsenic in groundwater was 64 µg/L in the shallow aquifer and 13 µg/L in the deep aquifer over the four quarterly sampling events.*

- *Groundwater samples collected from shallow aquifer well SO-4A had the highest concentrations of arsenic at the PRS facility. The average concentration of arsenic in well SO-4A was 241 µg/L during the four quarterly monitoring events. In comparison, the average concentration of arsenic detected in groundwater from the remaining shallow aquifer monitoring wells was 29 µg/L during the four quarterly monitoring events.*

- *Arsenic is a common soil constituent in the Puget Sound region (Ecology, 1994). The detected concentrations of arsenic in both shallow and deep groundwater was generally within one order of magnitude (with the exception of groundwater at monitoring well SO-4A) and may be representative of area wide background arsenic concentrations in groundwater.*

- *The groundwater flow direction in the shallow aquifer was generally consistent during each of the four quarterly monitoring events with an inferred flow direction to the southeast or east-southeast* [GeoEngineers Figure 3, *Groundwater Elevations-Shallow Aquifer Quarters 1-4* in Appendix J].

- *The groundwater flow direction in the deep aquifer was variable during the four quarterly monitoring events. The groundwater flow direction variability is likely related to adjacent utility corridors that influence the groundwater direction as documented by others. The groundwater flow direction was inferred to be to the northeast during the Q1 monitoring* *event (June 2015) and generally to the south during the Q2, Q3 and Q4 monitoring events (September and December 2015, and March 2016)* [GeoEngineers Figure 4, *Groundwater Elevations-Deep Aquifer Quarters 1-4* in Appendix J].

5.2 *Recommendations*

Based on the conclusions from this investigation, AEG recommends the following:

- As required under Ecology Agreed Order No. DE 2954, a Feasibility Study (FS) should be performed to identify and evaluate remedial alternatives for Site cleanup.

6.0 LIMITATIONS

This report summarizes the findings of the services authorized under our agreement with PRSI and Mr. Tom Smith. It has been prepared using generally accepted professional practices, related to the nature of the work accomplished. This report was prepared for the exclusive use of PRSI and Mr. Tom Smith and his designated representatives for the specific application to the project purpose.

Recommendations, opinions, Site history, and proposed actions contained in this report apply to conditions and information available at the time this report was completed. Since conditions and regulations beyond our control can change at any time after completion of this report, or our proposed work, we are not responsible for any impacts of any changes in conditions, standards, practices, and/or regulations subsequent to our performance of services. We cannot warrant or validate the accuracy of information supplied by others, in whole or part.

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FIGURES

FILENAME	DRAWN BY		CHECKED BY		APPROVED BY		PROJECT NUMBER
16-120_16Q3.DWG	ICD	7/5/2016	NP	7/5/2016	NP	7/5/2016	16-120

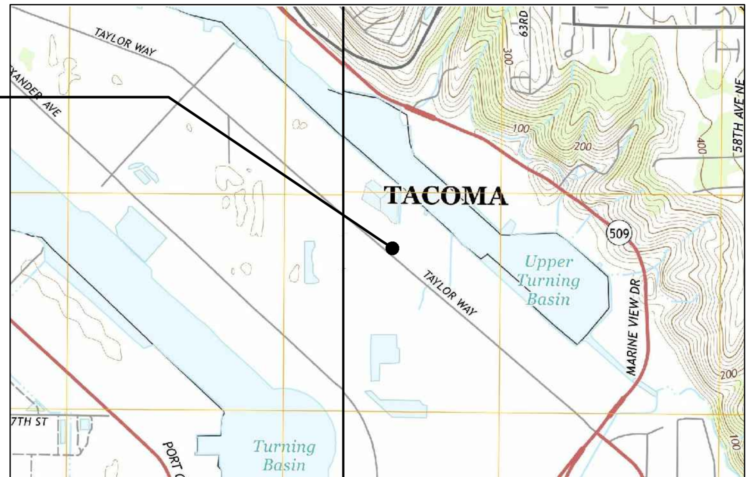
NOTES

1. THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE
2. THIS DRAWING IS FOR INFORMATION PURPOSES. IT IS INTENDED TO ASSIST IN SHOWING FEATURES DISCUSSED IN AN ATTACHED DOCUMENT.

REFERENCE

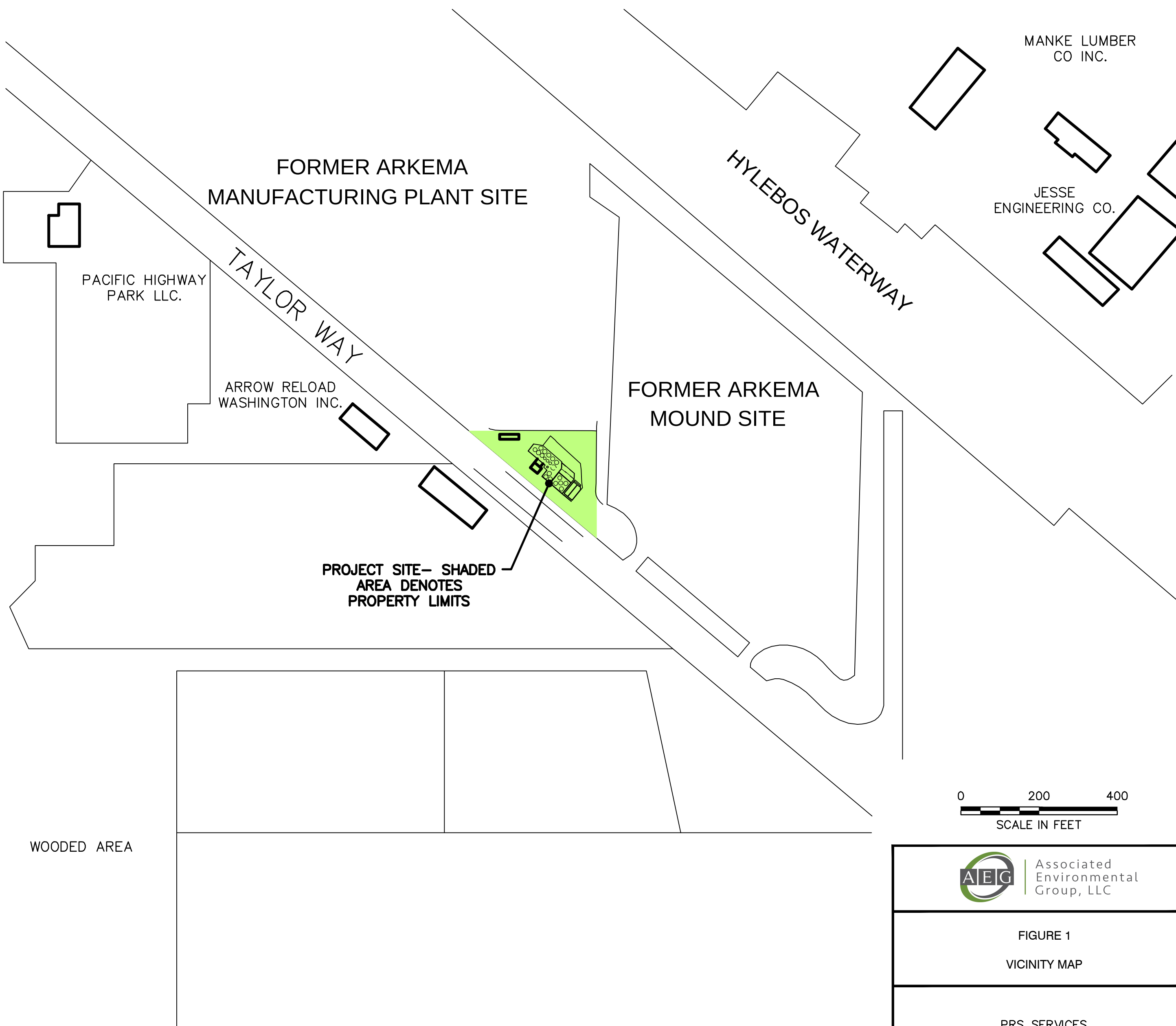
DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.
VICINITY IMAGE SOURCE: U.S. GEOLOGICAL SURVEY-2014, 7.5 MINUTE QUADRANGLE MAP
PROVERTY BAY, WASHINGTON

PROJECT LOCATION



VICINITY MAP

0 1,500 3,000
SCALE IN FEET



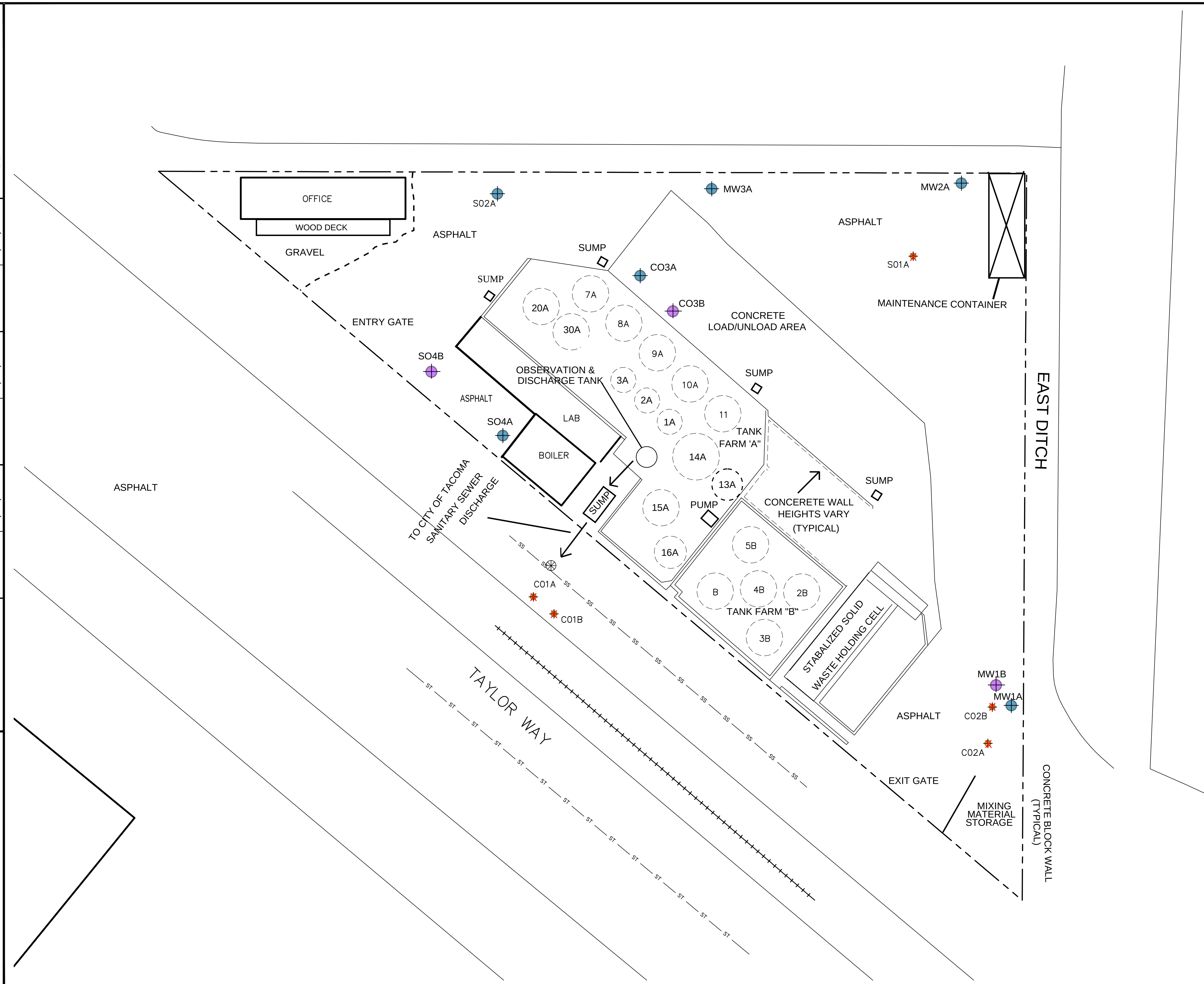
0 200 400
SCALE IN FEET

Associated Environmental Group, LLC

FIGURE 1

VICINITY MAP

PRS SERVICES
3003 TAYLOR WAY
TACOMA, WASHINGTON



LEGEND

- PROPERTY LINE
- S01A GOLDER ASSOCIATES SHALLOW AQUIFER WELLS
- INTERMEDIATE AQUIFER WELLS
- FORMER/REMOVED WELLS
- SANITARY SEWER MANHOLE
- SANITARY SEWER
- STORM SEWER
- RAILROAD

NOTES

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REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.

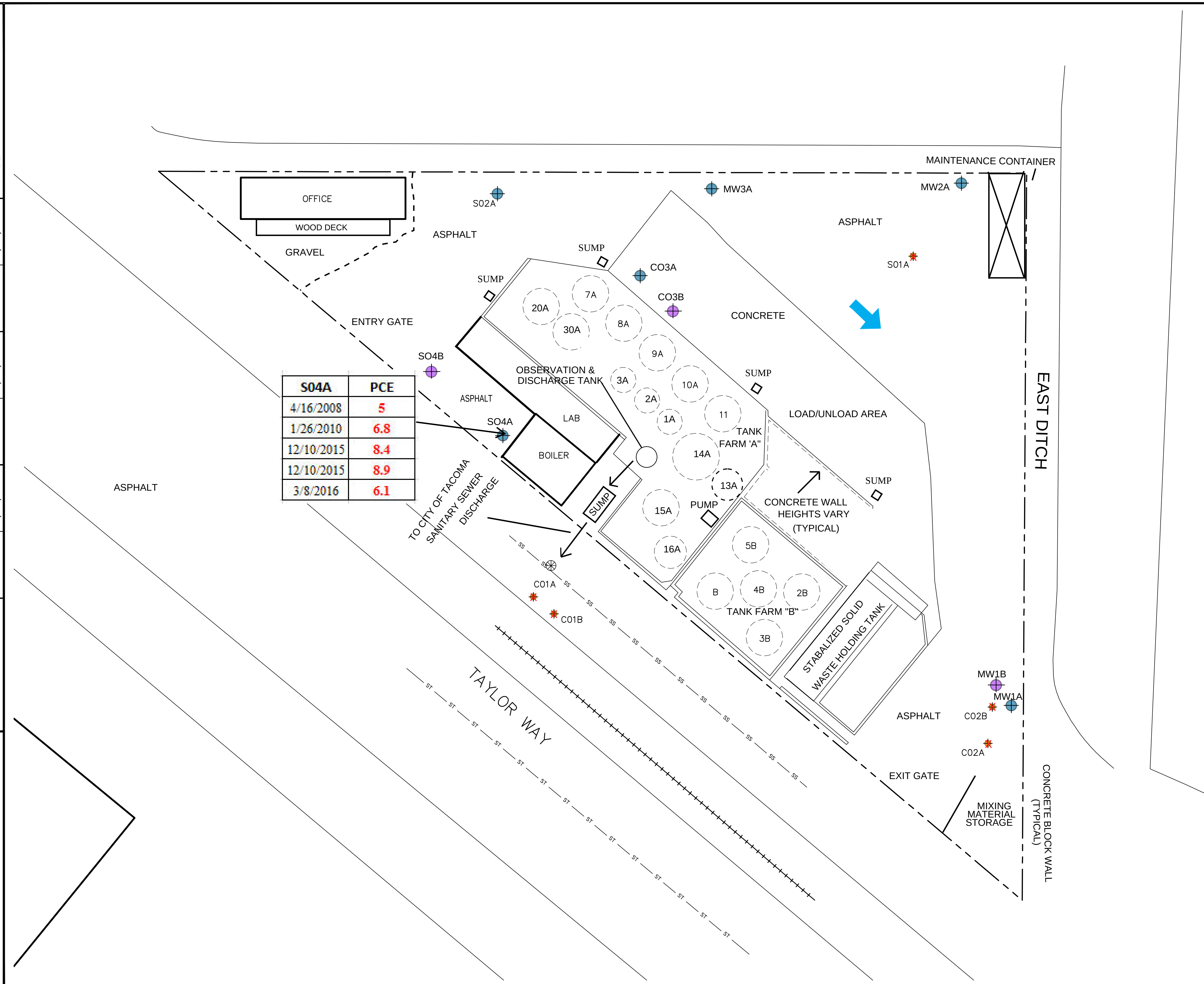
AEG Associated Environmental Group, LLC

FIGURE 2

FACILITY SITE MAP

PRS SERVICES
3003 TAYLOR WAY
TACOMA, WASHINGTON

PROJECT NUMBER 16-120
APPROVED BY NP 7/05/2016
CHECKED BY NP 7/05/2016
DRAWN BY ICD 7/05/2016
FILENAME 16-120_16Q3.DWG



S04A	PCE
4/16/2008	5
1/26/2010	6.8
12/10/2015	8.4
12/10/2015	8.9
3/8/2016	6.1

LEGEND

- PROPERTY LINE
- S01A SHALLOW AQUIFER WELLS
- INTERMEDIATE AQUIFER WELLS
- FORMER/REMOVED WELLS
- GROUNDWATER FLOW DIRECTION
- SANITARY SEWER MANHOLE
- SS — SS SANITARY SEWER
- ST — ST STORM SEWER
- RAILROAD

PCE CONCENTRATIONS ARE IN MICROGRAMS PER LITER

NOTES

1. THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE
2. THIS DRAWING IS FOR INFORMATION PURPOSES. IT IS INTENDED TO ASSIST IN SHOWING FEATURES DISCUSSED IN AN ATTACHED DOCUMENT.

REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.

0 15 30
SCALE IN FEET

Associated Environmental Group, LLC

FIGURE 3
GROUNDWATER CONTAMINATION
PCE ABOVE MTCA METHOD A MAP

PRS SERVICES
3003 TAYLOR WAY
TACOMA, WASHINGTON

PROJECT NUMBER	APPROVED BY	CHECKED BY	DRAWN BY	FILENAME
16-120	NP 7/05/2016	NP 7/05/2016	ICD 7/05/2016	16-120_16Q3.DWG

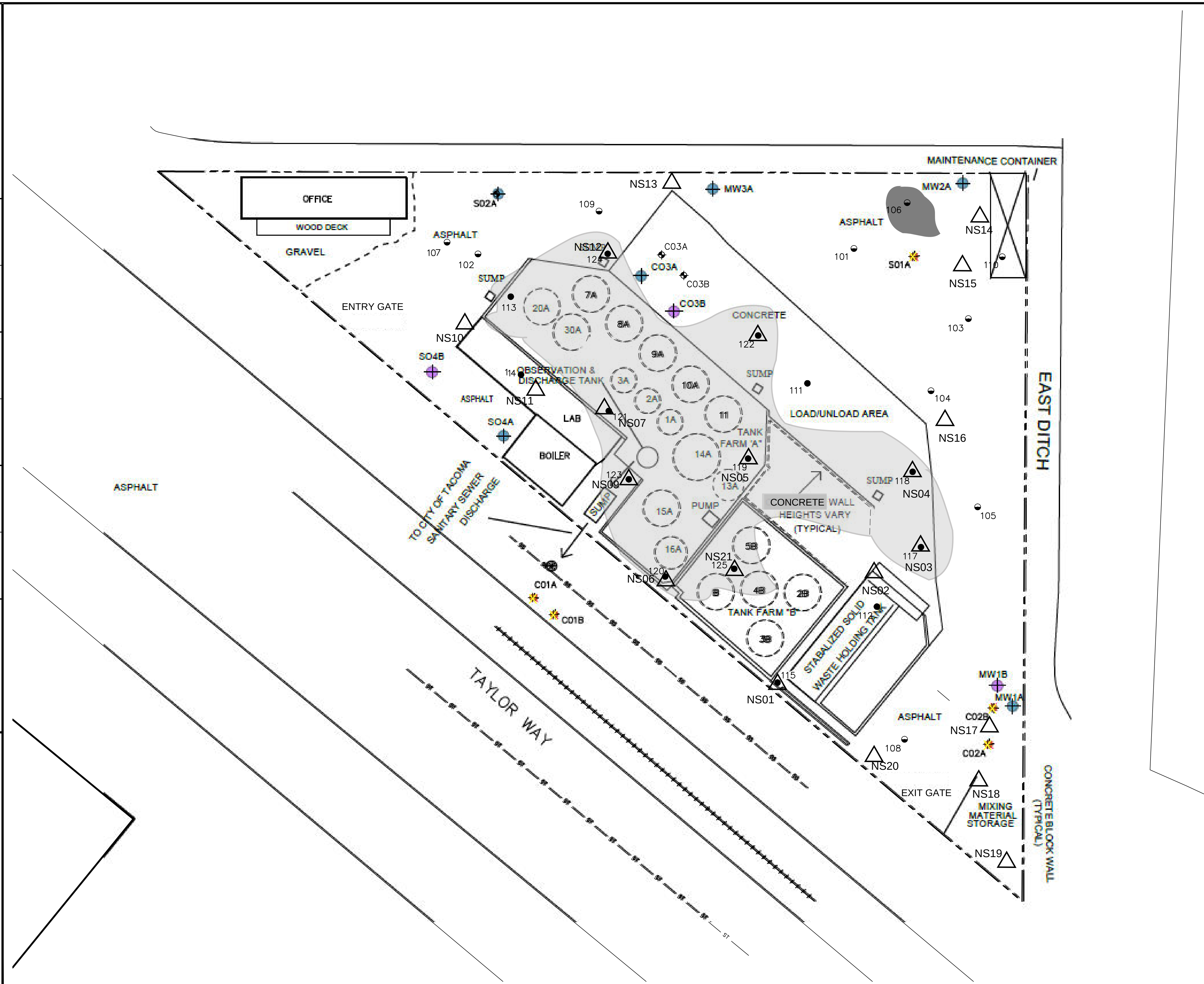
PROJECT NUMBER 16-120

APPROVED BY NP 7/05/2016

CHECKED BY NP 7/05/2016

DRAWN BY ICD 7/05/2016

FILENAME 16-120_16Q3.DWG



N
W E
S

LEGEND

PROPERTY LINE

S01A GOLDER ASSOCIATES MONITORING WELL

FORMER/REMOVED WELLS

101 ENVIRONMENTAL ENGINEERING & CONSULTING INC TEST PIT

111 ENVIRONMENTAL ENGINEERING & CONSULTING INC BORING

SANITARY SEWER MANHOLE

SANITARY SEWER

STORM SEWER

RAILROAD

SECOR BORINGS

TPH (MG/KG) IN SOIL

NOTES

1. THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE
2. THIS DRAWING IS FOR INFORMATION PURPOSES. IT IS INTENDED TO ASSIST IN SHOWING FEATURES DISCUSSED IN AN ATTACHED DOCUMENT.

REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.

PCE/TCE (MG/KG) IN SOIL

SOIL DATA FROM SECOR RI DATED OCTOBER 2, 1996

SOIL SAMPLE DATES AUGUST 1991 AND OCTOBER 1992

0 15 30

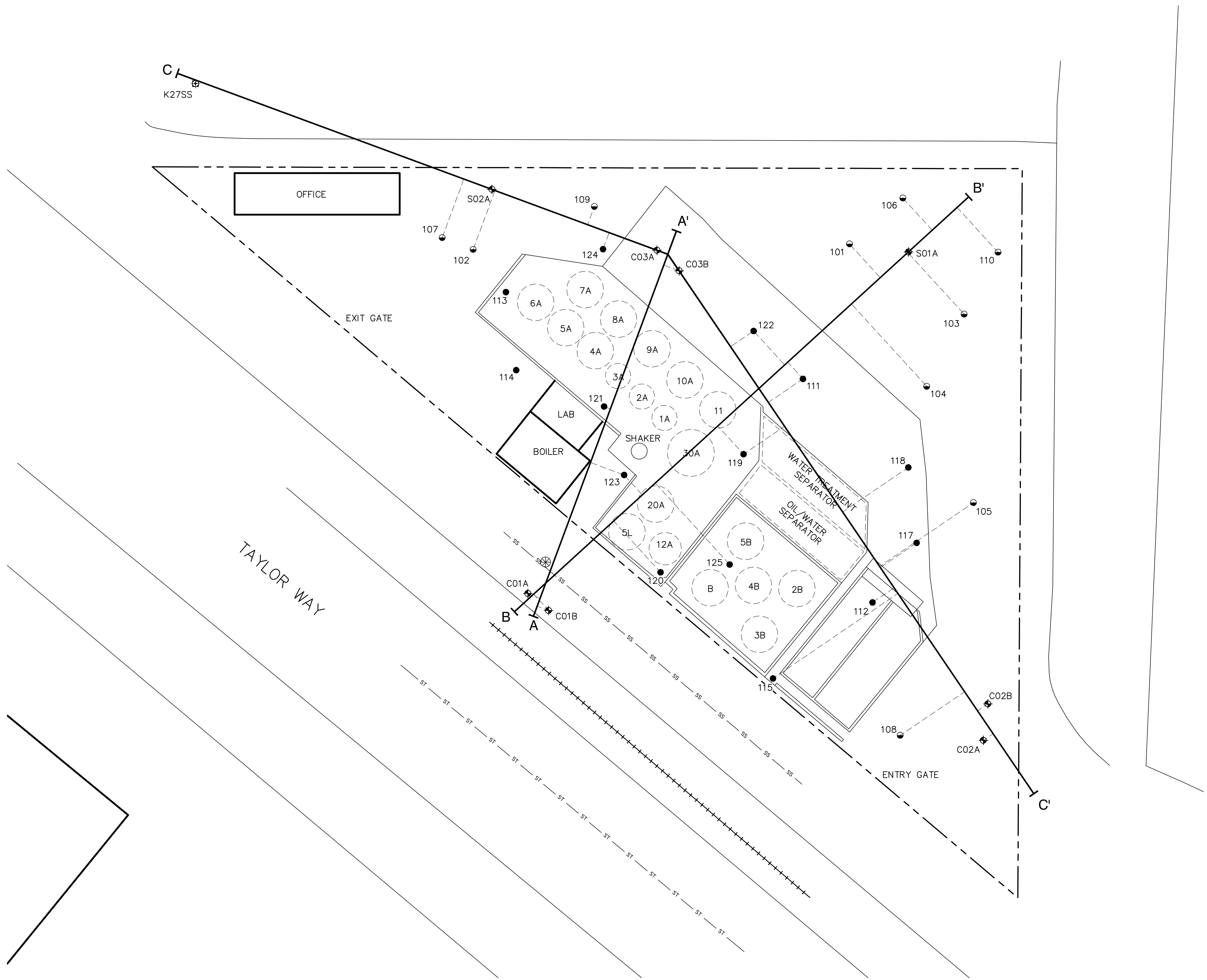
SCALE IN FEET

Associated Environmental Group, LLC

FIGURE 4

SURFACE SOIL PLUME CONTAMINATION ABOVE MTCA CIRCA 1991 & 1992

PRS SERVICES
3003 TAYLOR WAY
TACOMA, WASHINGTON



N

W E

S

LEGEND

	PROPERTY LINE
S01A	GOLDER ASSOCIATES MONITORING WELL
K27SS	KENNEDY/JENKS/CHILTON MONITORING WELL
101	ENVIRONMENTAL ENGINEERING & CONSULTING INC TEST PIT
111	ENVIRONMENTAL ENGINEERING & CONSULTING INC BORING
	SANITARY SEWER MANHOLE
— SS — SS —	SANITARY SEWER
— ST — ST —	STORM SEWER
	RAILROAD
A ⊢—⊣ A'	LINE OF LITHOLOGIC CROSS SECTION AND PROJECTION LINE OR BORING/WELL

NOTES

1. THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE
2. THIS DRAWING IS FOR INFORMATION PURPOSES. IT IS INTENDED TO ASSIST IN SHOWING FEATURES DISCUSSED IN AN ATTACHED DOCUMENT.

REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.

0 15 30

SCALE IN FEET

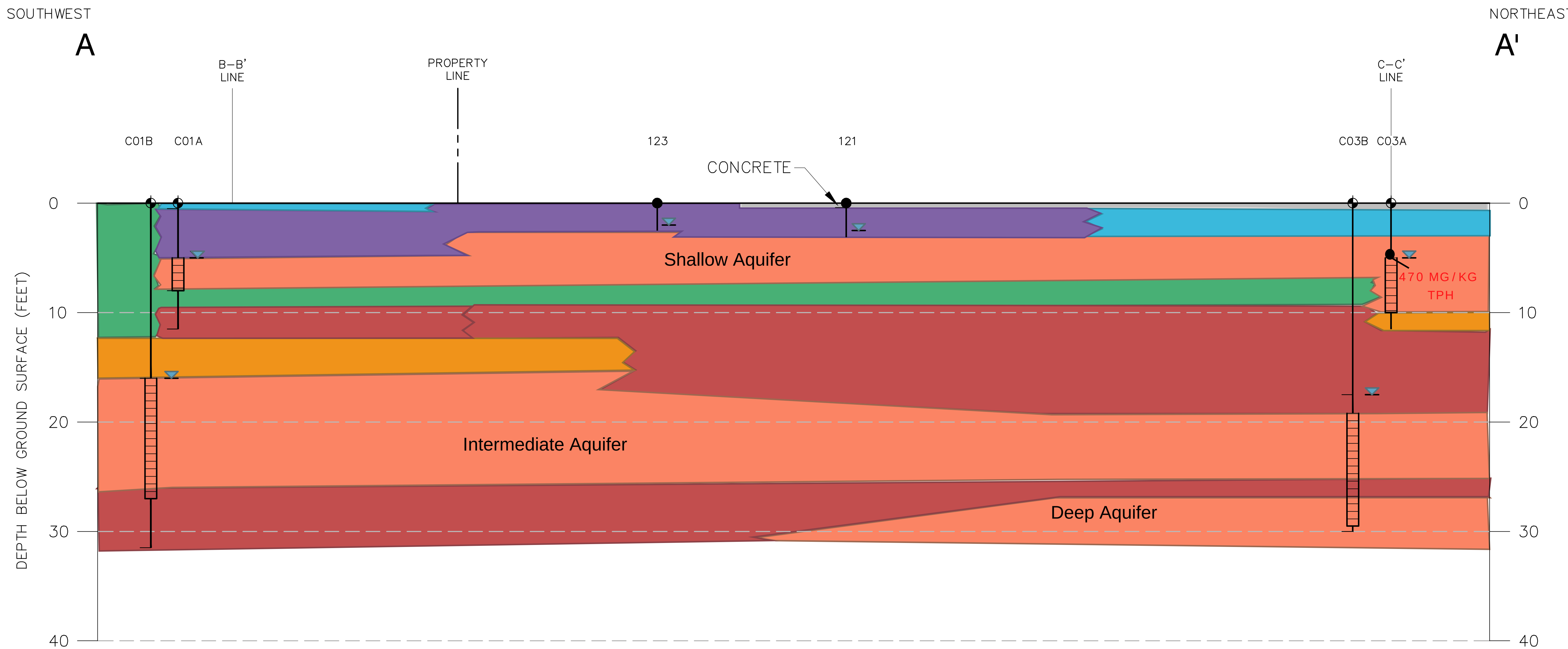
Associated Environmental Group, LLC

FIGURE 5

SITE MAP WITH GEOLOGIC CROSS SECTIONS A-A', B-B' AND C-C'

PRS SERVICES
3003 TAYLOR WAY
TACOMA, WASHINGTON

PROJECT NUMBER	APPROVED BY	CHECKED BY	DRAWN BY	FILENAME
16-120	NP 7/06/2016	NP 7/06/2016	ICD 7/06/2016	16-120_XSECTIONS.DWG



LEGEND

121 C01A

– WELL, SOIL BORING

SOIL SAMPLE LOCATION

– GROUNDWATER LEVEL AT TIME OF DRILLING

– SCREENED INTERVAL

– MAXIMUM DEPTH EXPLORED

– SOIL CONTACT

SP	POORLY–GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SM	SILTY–SANDS, SAND–SILT MIXTURES
CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, LEAN CLAYS, SILT–CLAYS MIXTURES
PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS
OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
GP	POORLY–GRADED GRAVELS, GRAVEL–SAND MIXTURES, LITTLE OR NO FINES

0 5 10
HORIZONTAL SCALE

0 5 10
VERTICAL SCALE

AEG Associated Environmental Group, LLC

FIGURE 6

GEOLOGIC CROSS SECTION A-A'

PRS SERVICES
3003 TAYLOR WAY
TACOMA, WASHINGTON

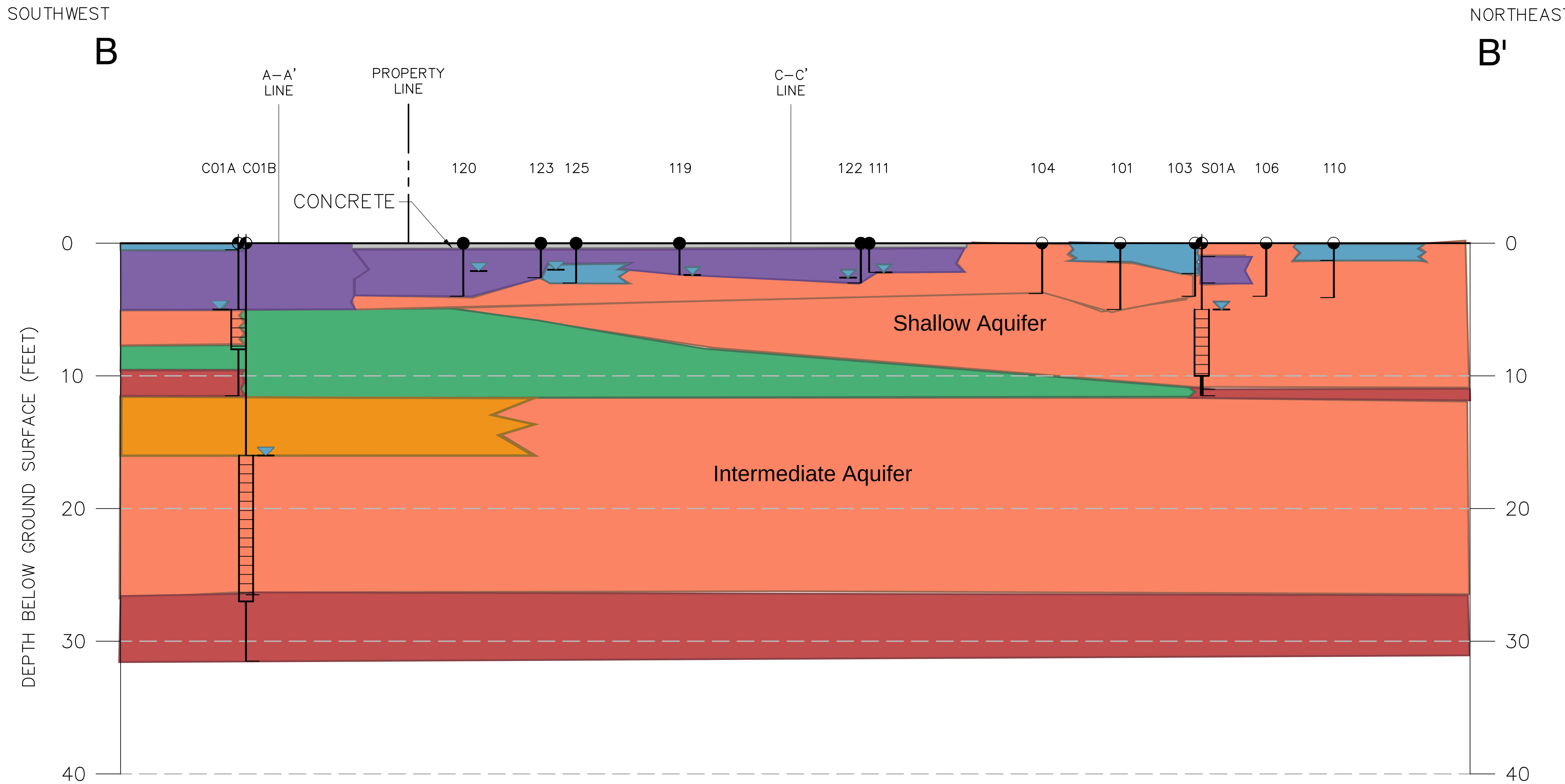
PROJECT NUMBER 16–120

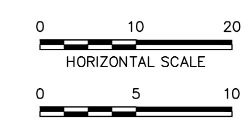
APPROVED BY NP 7/06/2016

CHECKED BY NP 7/06/2016

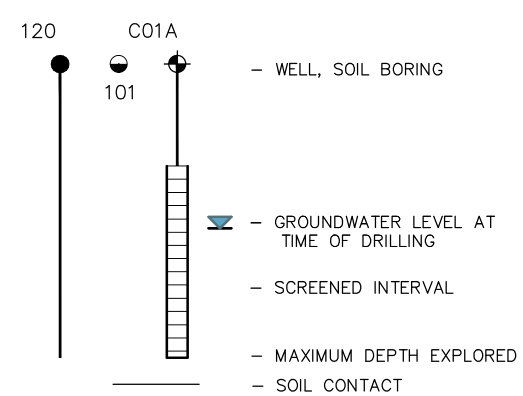
DRAWN BY ICD 7/06/2016

FILENAME 16–120_XSECTIONS.DWG





LEGEND



SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SM	SILTY-SANDS, SAND-SILT MIXTURES
CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, LEAN CLAYS, SILT-CLAYS MIXTURES
PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS
OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES

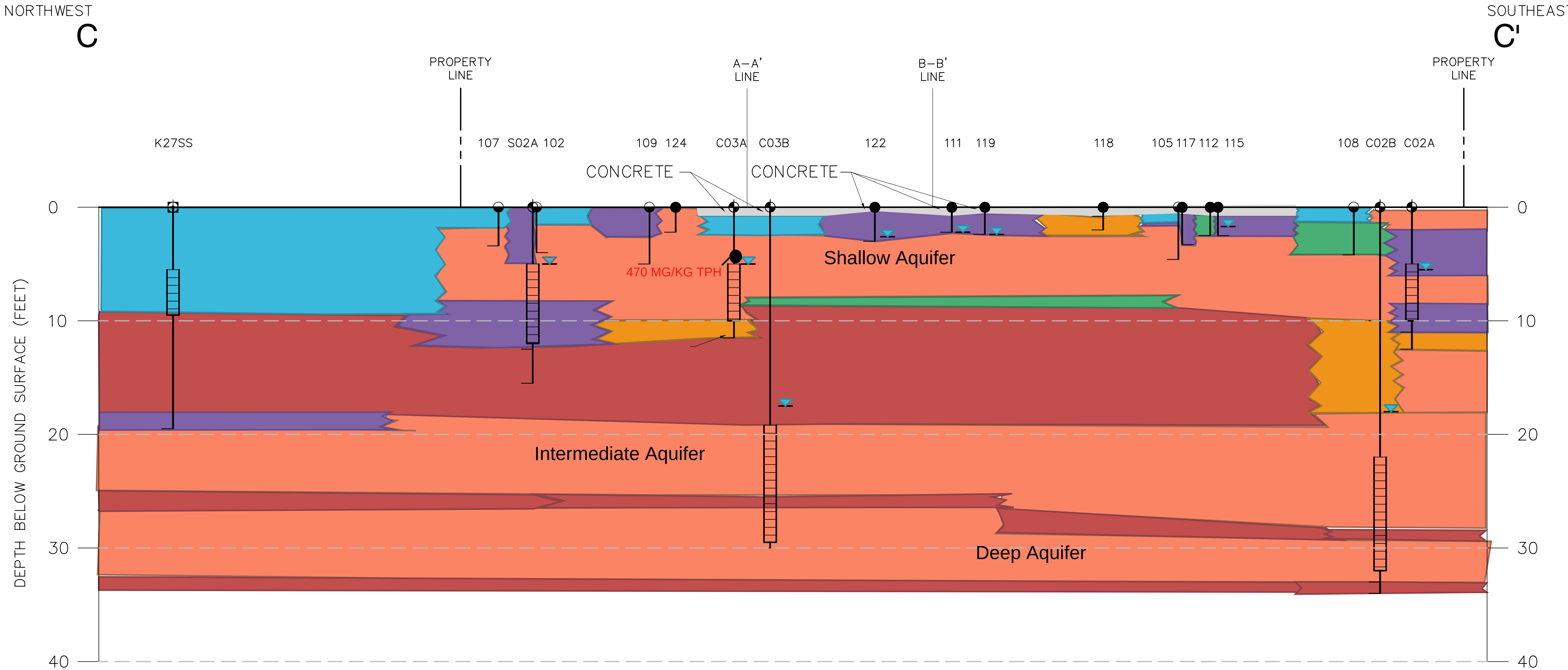
Associated Environmental Group, LLC

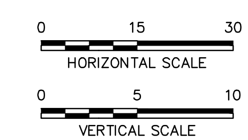
FIGURE 7

GEOLOGIC CROSS SECTION B-B'

PRS SERVICES
3003 TAYLOR WAY
TACOMA, WASHINGTON

PROJECT NUMBER 16–120
APPROVED BY NP 7/06/2016
CHECKED BY NP 7/06/2016
DRAWN BY ICD 7/06/2016
FILENAME 16–120_XSECTIONS.DWG





LEGEND

105, 111, K27SS, C02A	WELL, SOIL BORING
	SOIL BORING LOCATION
	GROUNDWATER LEVEL AT TIME OF DRILLING
	SCREENED INTERVAL
	MAXIMUM DEPTH EXPLORED
	SOIL CONTACT
NR	NO RECOVERY

SP	POORLY–GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SM	SILTY–SANDS, SAND–SILT MIXTURES
CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, LEAN CLAYS, SILT–CLAYS MIXTURES
OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS
GP	POORLY–GRADED GRAVELS, GRAVEL–SAND MIXTURES, LITTLE OR NO FINES

Associated Environmental Group, LLC

FIGURE 8

GEOLOGIC CROSS SECTION C-C'

PRS SERVICES
3003 TAYLOR WAY
TACOMA, WASHINGTON

PROJECT NUMBER 16–120
APPROVED BY NP 7/06/2016
CHECKED BY NP 7/06/2016
DRAWN BY ICD 7/06/2016
FILENAME 16–120_XSECTIONS.DWG

TABLES

605 11th Ave. SE, Suite 201 • Olympia, WA • 98501
Phone: 360-352-9835 • Fax: 360-352-8164 • Email: admin@aegwa.com

Table 1 - AEG Summary of Soil Analytical Results

Petroleum Reclaiming Services, Inc.

Tacoma, Washington

Sample Number	Depth Collected (feet)	Date Collected	Selected Volatile Organic Compounds						TPH	Selected Semivolatile Organic Compounds						Total cPAHs (TEF Adjusted)	Total PCBs	Selected ICP Metals						
			Benzene	Toluene	Ethyl benzene	Xylenes	PCE	TCE		Benzo(a) anthracene	Benzo(b) fluoranthene	Benzo(a) pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h) anthracene	Chrysene			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Zinc
C01A-2.5	2.5	09/1991	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**170**	**0.28**	**0.72**	**0.42**	**0.37**	**0.07**	**0.33**	**0.5673**	<0.1	**19**	**1.4**	**48**	**57**	**42**	**0.33**	**94**
C01A-7.5	7.5	09/1991	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<10	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	ND	<0.1	**11**	<0.3	**21**	**35**	**14**	**0.29**	**21**
C01B-12.5	12.5	09/1991	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	<0.1	<8.8	<0.22	**23**	**22**	**7.9**	**1.4**	**29**
C01B-15	15.0	09/1991	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<10	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	ND	<0.1	<7.6	<0.19	**23**	**15**	**6.4**	**1.1**	**23**
C01B-27.5	27.5	09/1991	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<10	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	ND	<0.1	<8.7	<0.21	**25**	**20**	**8.3**	**1.5**	**29**
C02A-5	5.0	09/1991	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	ND	<0.1	<4.2	<0.11	**7.7**	**5.4**	**2.6**	<0.1	**9.1**
C02B-32.5	32.5	09/1991	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	ND	<0.1	--	--	--	--	--	--	--
C02B DUP-32.5	32.5	09/1991	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<10	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	ND	<0.1	--	--	--	--	--	--	--
C03A-5	5.0	09/1991	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**470**	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	ND	<0.1	**20**	<0.13	**7.5**	**6.5**	**2.5**	<0.1	**10**
C03A-10	10.0	09/1991	--	--	--	--	--	--	**65**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C03B-2.5	2.5	09/1991	--	--	--	--	--	--	**15**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C03B-5	5.0	09/1991	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**18**	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	ND	<0.1	--	--	--	--	--	--	--
C03B-30	30.0	09/1991	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**25**	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	ND	<0.1	--	--	--	--	--	--	--
C03B DUP-30	30.0	09/1991	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**30**	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	ND	<0.1	--	--	--	--	--	--	--
S01A-2.5	2.5	09/1991	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	ND	<0.1	**218**	**0.19**	**8.1**	**6.9**	<1.2	<0.1	**9.5**
S02A-7.5	7.5	09/1991	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	ND	<0.1	<5.2	<0.13	**8**	**6.3**	**3.2**	<0.1	**11**
NS-01	1.5	09/1991	--	--	--	--	--	--	**350**	--	--	--	--	--	--	--	--	<6.7	<0.17	**22**	**15**	**8.7**	**0.11**	**35**
NS-02	1.2	09/1991	--	--	--	--	--	--	**660**	--	--	--	--	--	--	--	--	<7.7	<0.19	**27**	**28**	**9.8**	**1.7**	**42**
NS-03	1.7	09/1991	--	--	--	--	--	--	**2,500**	--	--	--	--	--	--	--	--	**39**	<0.15	**62**	**56**	**26**	**1.3**	**68**
NS-04	1.3	09/1991	--	--	--	--	--	--	**2,500**	--	--	--	--	--	--	--	--	**10**	<0.12	**22**	**20**	**16**	**0.5**	**48**
NS-05	0.4	09/1991	--	--	--	--	--	--	**57,000**	--	--	--	--	--	--	--	**0.2**	**24**	<0.12	**15**	**33**	**144**	<0.1	**161**
NS-06	0.75	09/1991	--	--	--	--	--	--	**4,000**	--	--	--	--	--	--	--	--	**60**	**0.28**	**18**	**36**	**45**	**0.5**	**110**
NS-07	0.3	09/1991	--	--	--	--	--	--	**88,000**	--	--	--	--	--	--	--	**3.8**	**82**	**2.9**	**60**	**114**	**259**	**0.2**	**490**
NS-08	2.0	09/1991	--	--	--	--	--	--	**710**	--	--	--	--	--	--	--	--	**20**	<0.11	**7.9**	**8.9**	**4.9**	<0.1	**20**
NS-09	0.75	09/1991	--	--	--	--	--	--	**2,000**	--	--	--	--	--	--	--	--	**29**	**30**	**17**	**490**	**63**	**0.1**	**335**
NS-12	1.3	09/1991	--	--	--	--	--	--	**17,000**	--	--	--	--	--	--	--	--	**30**	**1.3**	**23**	**4.2**	**46**	<0.1	**317**
NS-21	2.4	09/1991	--	--	--	--	--	--	**210**	--	--	--	--	--	--	--	--	<5.9	**2.5**	**34**	**23**	**8.8**	<0.1	**40**
101B-3'	3.0	10/1992	<0.2	**0.054**	**0.08**	**0.66**	<0.2	<0.2	**8,500**	--	--	--	--	--	--	--	<0.1	**78**	<0.081	**8.4**	**6.9**	--	<0.1	--
101C-5'	5.0	10/1992	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	**210**	--	--	--	--	--	--	--	<0.1	**86**	<0.11	**7.9**	**6.8**	--	<0.1	--
102B-3'	3.0	10/1992	--	--	--	--	--	--	<100	--	--	--	--	--	--	--	<0.1	**43**	<0.12	**6.7**	**6.2**	--	<0.1	--
102C-4'	4.0	10/1992	--	--	--	--	--	--	<100	--	--	--	--	--	--	--	<0.1	**14**	<0.094	**8.9**	**7.5**	--	<0.1	--
103B-3'	3.0	10/1992	--	--	--	--	--	--	<100	--	--	--	--	--	--	--	<0.1	**47**	**0.12**	**11**	**26**	--	**0.27**	--
104B-3'	3.0	10/1992	--	--	--	--	--	--	<100	--	--	--	--	--	--	--	<0.1	**20**	**0.12**	**11**	**7.8**	--	**0.15**	--
105B-3'	3.0	10/1992	--	--	--	--	--	--	<100	--	--	--	--	--	--	--	<0.1	<1.7	<0.085	**7.8**	**6.3**	--	<0.1	--
106B-3'	3.0	10/1992	<0.25	<0.25	<0.25	<0.25	**0.15**	**0.048**	<100	--	--	--	--	--	--	--	<0.1	**30**	<0.096	**7.5**	**8.4**	--	<0.1	--
107B-3'	3.0	10/1992	--	--	--	--	--	--	<100	--	--	--	--	--	--	--	<0.1	**25**	<0.085	**8.2**	**7.5**	--	<0.1	--
108B-3'	3.0	10/1992	--	--	--	--	--	--	<100	--	--	--	--	--	--	--	<0.1	<2.1	<0.11	**7.2**	**8.8**	--	**0.36**	--
109B-3'	3.2	10/1992	--	--	--	--	--	--	**450**	--	--	--	--	--	--	--	**2.9**	**51**	**0.17**	**20**	**40**	--	**0.15**	--
110B-3'	3.0	10/1992	--	--	--	--	--	--	<100	--	--	--	--	--	--	--	<0.1	**45**	<0.1	**11**	**7.4**	--	<0.1	--
111A-2'	2.0	11/1992	--	--	--	--	--	--	**980**	--	--	--	--	--	--	--	<0.1	**15**	**0.48**	**9.5**	**35**	--	**0.24**	--
112A-2.25'	2.25	11/1992	--	--	--	--	--	--	**150**	--	--	--	--	--	--	--	**0.1**	**15**	**0.41**	**20**	**42**	--	**1.1**	--
113A-2.75'	2.75	11/1992	--	--	--	--	--	--	**25,000**	--	--	--	--	--	--	--	**23**	**38**	**0.33**	**6.5**	**18**	--	<0.1	--
114A-2.3'	2.3	11/1992	--	--	--	--	--	--	**230**	--	--	--	--	--	--	--	**0.3**	**27**	**0.53**	**8**	**25**	--	<0.1	--
115A-2.2'	2.2	11/1992	--	--	--	--	--	--	**270**	--	--	--	--	--	--	--	**0.2**	**9.7**	**0.63**	**16**	**38**	--	<0.1	--
117A-3'	3.0	11/1992	--	--	--	--	--	--	**330**	--	--	--	--	--	--	--	<0.1	<1.9	**0.43**	**7.6**	**12**	--	<0.1	--
118A-1.8'	1.8	11/1992	--	--	--	--	--	--	**1,200**	--	--	--	--	--	--	--	**0.3**	**11**	**2**	**28**	**32**	--	**0.77**	--
119B-2'	2.0	11/1992	--	--	--	--	--	--	**26,000**	--	--	--	--	--	--	--	**0.4**	**36**	**0.63**	**7.3**	**16**	--	<0.1	--
120B-3.6'	3.6	11/1992	--	--	--	--	--	--	**48,000**	--	--	--	--	--	--	--	**4.4**	**41**	**0.33**	**7.8**	**15**	--	<0.1	--
121B-3.6'	3.6	11/1992	--	--	--	--	--	--	**750**	--	--	--	--	--	--	--	**0.3**	**23**	**0.44**	**6.9**	**17**	--	<0.1	--
122A-2.7'	2.7	11/1992	--	--	--	--	--	--	**2,400**	--	--	--	--	--	--	--	**0.2**	**25**	**0.61**	**10**	**37**	--	<0.1	--
123A-2.3'	2.3	11/1992	--	--	--	--	--	--	**3,500**	--	--	--	--	--	--	--	<0.1	**72**	**0.65**	**7.3**	**14**	--	<0.1	--
124A-2.1'	2.1	11/1992	--	--	--	--	--	--	**5,500**	--	--	--	--	--	--	--	**15**	**210**	**0.62**	**11**	**38**	--	**0.16**	--
125A-2.7'	2.7	11/1992	--	--	--	--	--	--	<100	--	--	--	--	--	--	--	<0.1	**5.1**	**0.76**	**12**	**31**	--	<0.1	--

Table 1 - AEG Summary of Soil Analytical Results
Petroleum Reclaiming Services, Inc.
Tacoma, Washington

Sample Number	Depth Collected (feet)	Date Collected	Selected Volatile Organic Compounds						TPH	Selected Semivolatile Organic Compounds						Total cPAHs (TEF Adjusted)	Total PCBs	Selected ICP Metals						
			Benzene	Toluene	Ethyl benzene	Xylenes	PCE	TCE		Benzo(a) anthracene	Benzo(b) fluoranthene	Benzo(a) pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h) anthracene	Chrysene			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Zinc
S03A 5-6.5	5-6.5	10/1996	--	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S03A 9-10.5	9-10.5	10/1996	--	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S04A 5-6.5	5-6.5	10/1996	--	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S04A 10-11.5	10-11.5	10/1996	--	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1A-5.0	5.0	03/2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<10	--	--	--	--	--	--	--	<0.05	--	--	--	--	--	--	**190**
MW2A-4.0	4.0	03/2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<10	--	--	--	--	--	--	--	<0.05	**90**	--	**52**	--	--	--	**52**
MW3A-3.5	3.5	03/2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<10	--	--	--	--	--	--	--	--	**35**	--	**63**	--	--	--	**76**
S04B-4.0	4.0	01/2010	<0.028	<0.04	<0.04	<0.08	<0.02	<0.03	<10	--	--	--	--	--	--	--	--	**11**	--	**13**	--	**33**	--	--
MW1B-4.0	4.0	01/2010	<0.028	<0.04	<0.04	<0.08	<0.02	<0.03	<10	--	--	--	--	--	--	--	--	**5.6**	--	**26**	--	**19**	--	--
MTCA Method A Industrial Cleanup Levels			0.03	7	6	9	0.05	0.03	1,630*	NA	NA	NA	NA	NA	NA	2	65.6**	88**	3,500**	2,000	1.4E+5**	1,000	2	1.05E+6**

Notes:
All values are presented in milligrams per kilogram (mg/kg)
-- = Not analyzed for constituent
< = Not detected at the listed laboratory detection limits
NL = Not Listed; no cleanup level has been established for this constituent
Red Bold indicates the detected concentration exceeds Ecology MTCA cleanup level
Bold indicates the detected concentration is below Ecology MTCA cleanup levels
* Method 418.1 used to analyze TPH, which does not quantify fuel type. Cleanup level for TPH was calculated using Interim TPH Policy
**Method C cleanup level; no Method A Industrial value has been established.

PCE = Tetrachloroethylene
TCE = Trichloroethylene
cPAHs = Carcinogenic polyaromatic hydrocarbons
TEF = Toxicity Equivalency Factor; MTCA Table 708-2
PCBs = Polychlorinated Biphenyls
ND = Non-Detect; no cPAHs were detected in the sample, so a total TEF-adjusted value was not calculated
NA = Not applcable; total cPAH cleanup level used for these constituents
TPH = Total Petroleum Hydrocarbons

Table 2 - AEG Summary of Groundwater Analytical Results
Petroleum Reclaiming Services, Inc.
Tacoma, Washington

Monitoring Well	Sample Date	Total Petroleum Hydrocarbons			Volatile Organic Compounds								Metals			PCBs
		Gasoline	Diesel	Lube Oil	Benzene	Toluene	Chloro-benzene	MTBE	PCE	TCE	cis-1,2-DCE	Vinyl Chloride	Arsenic	Chromium	Lead	
Shallow Aquifer Wells																
C03A	4/16/2008	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**16**	<7.0	<1.0	<0.1
	1/26/2010	<100	<200	<400	**4.9**	**1.8**	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**38**	<5.0	<5.0	<0.1
	8/5/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**19.8**	<5.0	<5.0	--
	6/11/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**14.6**	**1.6**	<0.5	<0.1
	9/9/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**13.3**	**0.7**	<0.5	<0.1
	12/10/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**13.1**	**2.3**	<0.5	<0.1
	3/8/2016	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**10**	**0.8**	<0.5	<0.1
	6/13/2017	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**11**	**1.2**	<0.2	<0.1
	6/20/2018	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**11**	**0.6**	<0.5	<0.1
MW1A	4/16/2008	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**68**	**14**	<1.0	<0.1
	1/26/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**20**	**6.9**	<5.0	<0.1
	8/5/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**34**	**10.7**	<5.0	--
	6/11/2015	<50	<100	<500	**0.88**	<1.0	<1.0	**2.24**	<1.0	<1.0	<1.0	<0.2	**46.2**	**3**	<0.5	<0.1
	9/8/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**54.3**	**4.3**	<0.5	<0.1
	12/11/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**61.1**	**5**	<0.5	<0.1
	3/9/2016	**55**	<100	<500	**9.3**	<1.0	<1.0	**16.7**	<1.0	<1.0	<1.0	<0.2	**67.1**	**3.1**	<0.5	<0.1
	6/13/2017	<50	**3,200**	**1,300**	<1.0	<1.0	<1.0	**3.8**	<1.0	<1.0	<1.0	<0.2	**46**	**3.6**	<0.2	<0.1
	6/20/2018	<50	<100	<500	**3.2**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**27**	**2.6**	<0.5	<0.1
MW2A	4/16/2008	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**79**	<7.0	<1.0	<0.1
	1/26/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	<5.0	<5.0	<5.0	<0.1
	8/5/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**10.3**	<5.0	<5.0	--
	6/11/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**26.6**	**1.6**	<0.5	<0.1
	9/8/2015	<50	<100	<500	<1.0	**2.3**	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**39**	**1.1**	<0.5	<0.1
	12/11/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**20.6**	**1.5**	<0.5	<0.1
	3/9/2016	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**26**	**0.7**	<0.5	<0.1
	6/13/2017	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**43**	**1.1**	<0.2	<0.1
MW3A	4/16/2008	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**74**	<7.0	<1.0	<0.1
	1/26/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**51**	<5.0	<5.0	<0.1
	8/5/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**59.4**	**13.4**	<5.0	--
	6/11/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**38.2**	**1.4**	<0.5	<0.1
	9/9/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**57.2**	**1.6**	<0.5	<0.1
	12/11/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**47.1**	**4**	**0.8**	<0.1
	3/9/2016	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**35.2**	**1.1**	<0.5	<0.1
	6/13/2017	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**42**	**2.2**	<0.2	<0.1
S02A	4/16/2008	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**6**	<7.0	<1.0	<0.1
	1/26/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**7.4**	<5.0	<5.0	<0.1
	8/5/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	<5.0	<5.0	<5.0	--
	6/11/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**9.9**	**1.1**	<0.5	<0.1
	9/9/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**3.4**	**0.7**	<0.5	<0.1
	12/10/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**5.9**	**2**	<0.5	<0.1
	3/8/2016	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**5.8**	**0.6**	<0.5	<0.1
	6/13/2017	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**5.3**	**1**	<0.2	<0.1
S04A	4/16/2008	**74**	<100	<500	<1.0	<1.0	<1.0	<1.0	**5**	**12**	**28**	**5**	**1,300**	<7.0	<1.0	<0.1
	1/26/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	**6.8**	**6.2**	**8.8**	<0.2	**217**	<5.0	<5.0	<0.1
	8/5/2010	**143**	<200	<400	**5.4**	<1.0	**36.5**	<1.0	<1.0	<1.0	**1.0**	**0.48**	**38**	<5.0	<5.0	--
	6/11/2015	**50**	<100	<500	**1.39**	<1.0	**14.7**	<1.0	<1.0	<1.0	**2.7**	**0.9**	**273**	**1.2**	<0.5	<0.1
	6/11/2015*	**52**	<100	<500	**1.47**	<1.0	**15.6**	<1.0	<1.0	<1.0	**2.86**	**0.8**	**280**	**1.3**	<0.5	<0.1
	9/8/2015	**55**	<100	<500	**1.5**	<1.0	**15.9**	<1.0	<1.0	<1.0	**1.9**	**1.2**	**46.9**	<0.5	<0.5	<0.1
	12/10/2015	<50	<100	<500	<1.0	<1.0	**1.9**	<1.0	**8.4**	<1.0	<1.0	<0.2	**197**	**0.8**	<0.5	<0.1
	12/10/2015*	<50	<100	<500	<1.0	<1.0	**2**	<1.0	**8.9**	<1.0	<1.0	<0.2	**202**	**0.8**	<0.5	<0.1
	3/8/2016	**76**	<100	<500	<1.0	<1.0	**1.5**	<1.0	**6.1**	**1.2**	<1.0	<0.2	**519**	<0.5	<0.5	<0.1
	6/13/2017	<50	<100	<500	<1.0	<1.0	**10.8**	<1.0	<1.0	<1.0	**1.3**	<0.2	**555**	**1.1**	<0.2	<0.1
	6/20/2018	<50	<100	<500	**1.3**	<1.0	**11.3**	<1.0	<1.0	<1.0	<1.0	<0.2	**291**	**1.1**	<0.5	<0.1

Table 2 - AEG Summary of Groundwater Analytical Results
Petroleum Reclaiming Services, Inc.
Tacoma, Washington

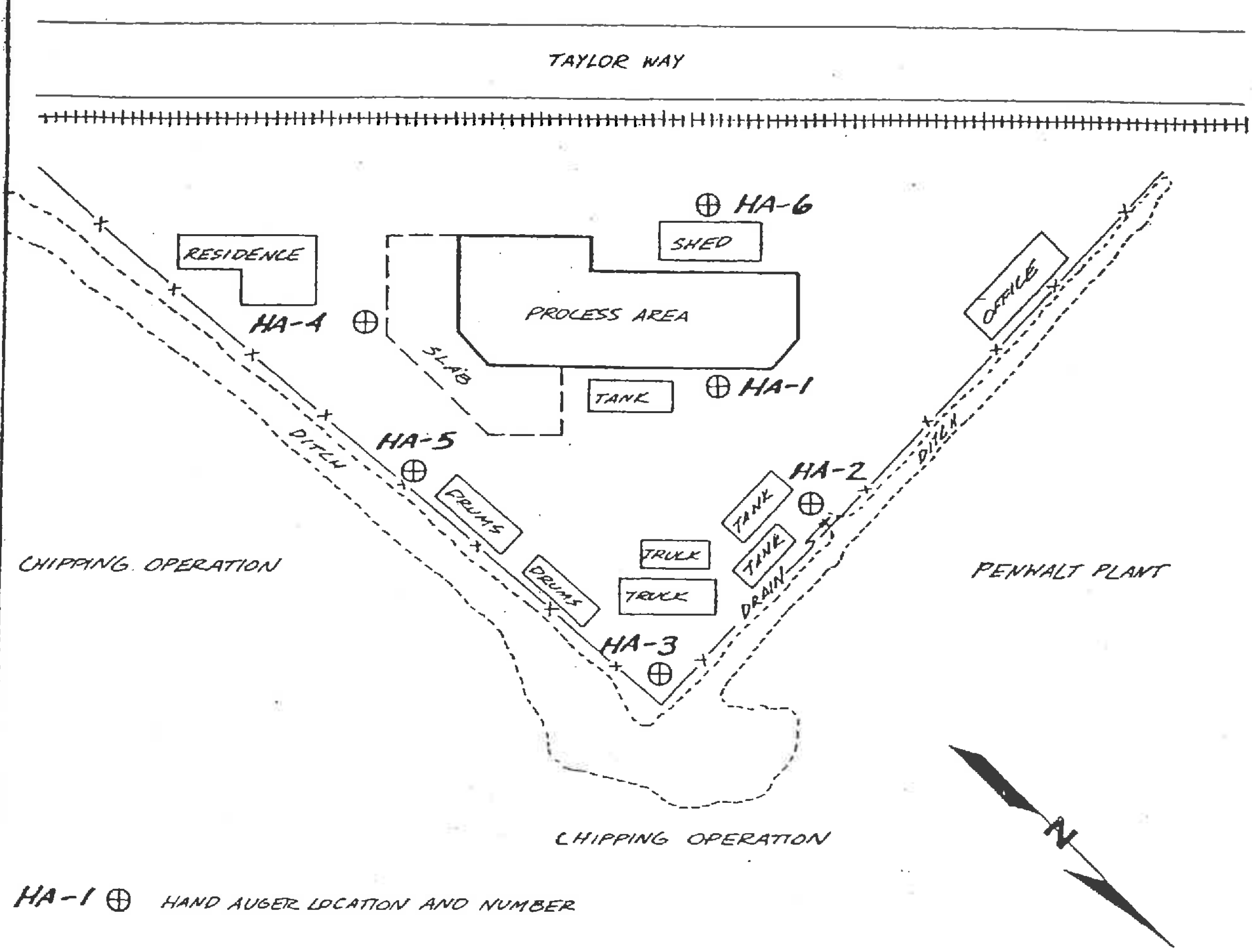
Monitoring Well	Sample Date	Total Petroleum Hydrocarbons			Volatile Organic Compounds								Metals			PCBs
		Gasoline	Diesel	Lube Oil	Benzene	Toluene	Chloro-benzene	MTBE	PCE	TCE	cis-1,2-DCE	Vinyl Chloride	Arsenic	Chromium	Lead	
Intermediate Aquifer Wells																
MW1B	1/26/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	<5.0	**16.5**	<5.0	<0.1
	8/5/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**38**	<5.0	<5.0	--
	12/14/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	<5.0	**16.0**	<5.0	--
	6/11/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**2.3**	**12.9**	<0.5	<0.1
	9/8/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**2.3**	**14**	<0.5	<0.1
	12/11/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**3.4**	**24.9**	<0.5	<0.1
	3/9/2016	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	<1.0	**20.2**	<0.5	<0.1
	6/13/2017	<50	<100	**620**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**3**	**19**	<0.2	<0.1
	6/20/2018	--	<100	**3,100**	--	--	--	--	--	--	--	--	--	--	--	--
C03B	4/16/2008	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**2**	**33**	**3**	<0.1
	1/26/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**6.1**	<5.0	<5.0	<0.1
	8/5/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**38**	<5.0	<5.0	--
	12/14/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**8.4**	**4.3**	<5.0	--
	6/11/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**14.1**	**5.3**	<0.5	<0.1
	9/9/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**12.7**	**3.9**	<0.5	<0.1
	12/10/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**19.8**	**8.9**	<0.5	<0.1
	3/8/2016	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**13.6**	**3.9**	<0.5	<0.1
	3/8/2016*	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**14.1**	**4.1**	<0.5	<0.1
	6/13/2017	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**12**	**5.6**	<0.2	<0.1
S04B	1/26/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**5.8**	<5.0	<5.0	<0.1
	8/5/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**38**	<5.0	<5.0	--
	12/14/2010	<100	<200	<400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**10**	**8.5**	<5.0	--
	6/11/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**16.5**	**8.4**	<0.5	<0.1
	9/8/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**18.3**	**8.2**	<0.5	<0.1
	12/10/2015	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**31.1**	**16.9**	<0.5	<0.1
	3/8/2016	<50	<100	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**27.8**	**10.8**	<0.5	<0.1
	6/13/2017	<50	**470**	<500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	**26**	**12**	<0.2	<0.1
PQL		50/100	100/200	400/500	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0/0.2	1.0/5.0	5.0	5.0/0.5	0.1
MTCA Method A Cleanup Levels		800	500	500	5	1,000	160**	20	5	5	16**	0.2	5	50	15	0.1

Notes:
All values are presented in micrograms per liter (µg/L)
*Field duplicate.
**MTCA Method B cleanup level; no Method A cleanup level has been established.
PQL = Practical Quantification Limit (laboratory detection limit)
< = Not detected above laboratory limits
-- = Not analyzed for this constituent
Red Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level
Bold indicates the detected concentration is below Ecology MTCA Method A cleanup levels

MTBE = Methyl Tert-Butyl Ether
PCE = Tetrachloroethylene
TCE = Trichloroethylene
DCE = Dichloroethylene
PCBs = Polychlorinated biphenyls

APPENDIX A

SITE AND EXPLORATION PLAN



NOT TO SCALE

J-1640/1640-01 February 1986
HART-CROWSER & associates inc.
Figure 1

EC
PRS 000848

TABLE 1: Sample Identification and Compositing Scheme

Submitted to Laboratory 12/20/85 and identified as shown below:

1)	S-1	HA-1	PAS	12/17/85	09:00	Surface to 0.5'	HC-1640
2)	S-2	HA-1	PAS	12/17/85	09:00	Surface to 1.0'	HC-1640
3)	S-1	HA-2	PAS	12/17/85	09:30	Surface to 0.5'	HC-1640
4)	S-2	HA-2	PAS	12/17/85	09:30	Surface to 1.0'	HC-1640
5)	S-1	HA-3	PAS	12/17/85	10:00	Surface to 1.0'	HC-1640
6)	S-2	HA-3	PAS	12/17/85	10:00	1.0' to 2.0'	HC-1640
7)	S-1	HA-4	PAS	12/17/85	10:45	Surface to 0.5'	HC-1640
8)	S-2	HA-4	PAS	12/17/85	10:45	0.5' to 1.5'	HC-1640
9)	S-1	HA-5	PAS	12/17/85	11:00	Surface to 1.0'	HC-1640
10)	S-2	HA-5	PAS	12/17/85	11:00	1.0' to 2.0'	HC-1640
11)	S-1	HA-6	PAS	12/17/85	11:30	Surface to 1.0'	HC-1640
12)	S-2	HA-6	PAS	12/17/85	11:30	1.0' to 2.0'	HC-1640

Samples were composited according to the following scheme:

Composite A:	Sample numbers 1 and 2 (HA-1)
Composite B:	Sample numbers 3 and 4 (HA-2)
Composite C:	Sample numbers 5 and 6 (HA-3)
Composite D:	Sample numbers 7 and 8 (HA-4)
Composite E:	Sample numbers 9 and 10 (HA-5)
Composite F:	Sample numbers 11 and 12 (HA-6)

Note: Samples were analyzed for priority pollutants in accordance with Test Methods for Evaluating Solid Wates, (SW-846), U.S.E.P.A., 1982, Methods 8240 (volatile organics), 8270 (extractable organics) and 8080 (pesticides and PCB).

TABLE 2: Results of Chemical Testing

PARAMETER	HA-1	HA-2	HA-3	Sample Location HA-4	HA-5	HA-6	BLANK
Volatile Organics (ppb)							
Methylene Chloride	T1	T1	T1	T1	T2	T1	L/125
Acetone	T1	T1	T1	129,000	740,000	T1	L/125
Tetrachloroethylene	L/125	L/125	L/125	L/125	1,600,000	8,900	L/125
Toluene	L/125	L/125	L/125	L/125	99,000	920	L/125
Ethylbenzene	L/125	L/125	L/125	L/125	T2	T1	L/125
o-Xylene	L/125	L/125	L/125	L/125	330,000	920	L/125
Extractable Organics (ppb)							
Naphthalene	L/50	L/50	L/100	L/500	1,400	L/50	L/50
Dimethylphthalate	L/50	300	L/100	L/500	L/50	L/50	L/50
Pentachlorophenol	L/50	L/50	L/100	L/500	98	L/50	L/50
Phenanthrene	L/50	L/50	L/100	L/500	220	56	L/50
Dibutylphthalate	L/50	L/50	L/100	L/500	120	L/50	L/50
Fluoranthene	L/50	L/50	130	L/500	160	330	L/50
Pyrene	L/50	L/50	190	L/500	L/50	420	L/50
Benzo(a)anthracene	L/50	L/50	250	L/500	L/50	330	L/50
Chrysene	L/50	L/50	210	L/500	L/50	410	L/50
Bis(2-ethylhexyl)phthalate	410	560	420	2,800	1,900	86	L/50
Di-n-octyl phthalate	L/50	L/50	100	L/500	150	55	L/50
Benzo(b,k)fluoranthene	L/50	L/50	270	L/500	L/50	430	L/50
Benzo(a)pyrene	L/50	L/50	200	L/500	L/50	640	L/50
Indeno(1,2,3-cd)pyrene	L/50	L/50	370	L/500	L/50	290	L/50
Dibenzo(ah)anthracene	L/50	L/50	360	L/500	210	56	L/50
Benzo(ghi)perylene	L/50	L/50	420	L/500	L/50	330	L/50
2-Methylnaphthalene	L/50	L/50	L/100	L/500	100	L/50	L/50
Pesticides and PCB (ppb)							
4,4-DDT	L/10	170	L/10	L/10	L/10	L/10	L/10
PCB 1260	480	L/50	280	370	2,400	96	L/50

Notes: T1 = An unquantifiable amount between 125 and 625 ppb
T2 = An unquantifiable amount between 14,000 and 70,000 ppb
L/ = "Less than"

APPENDIX B

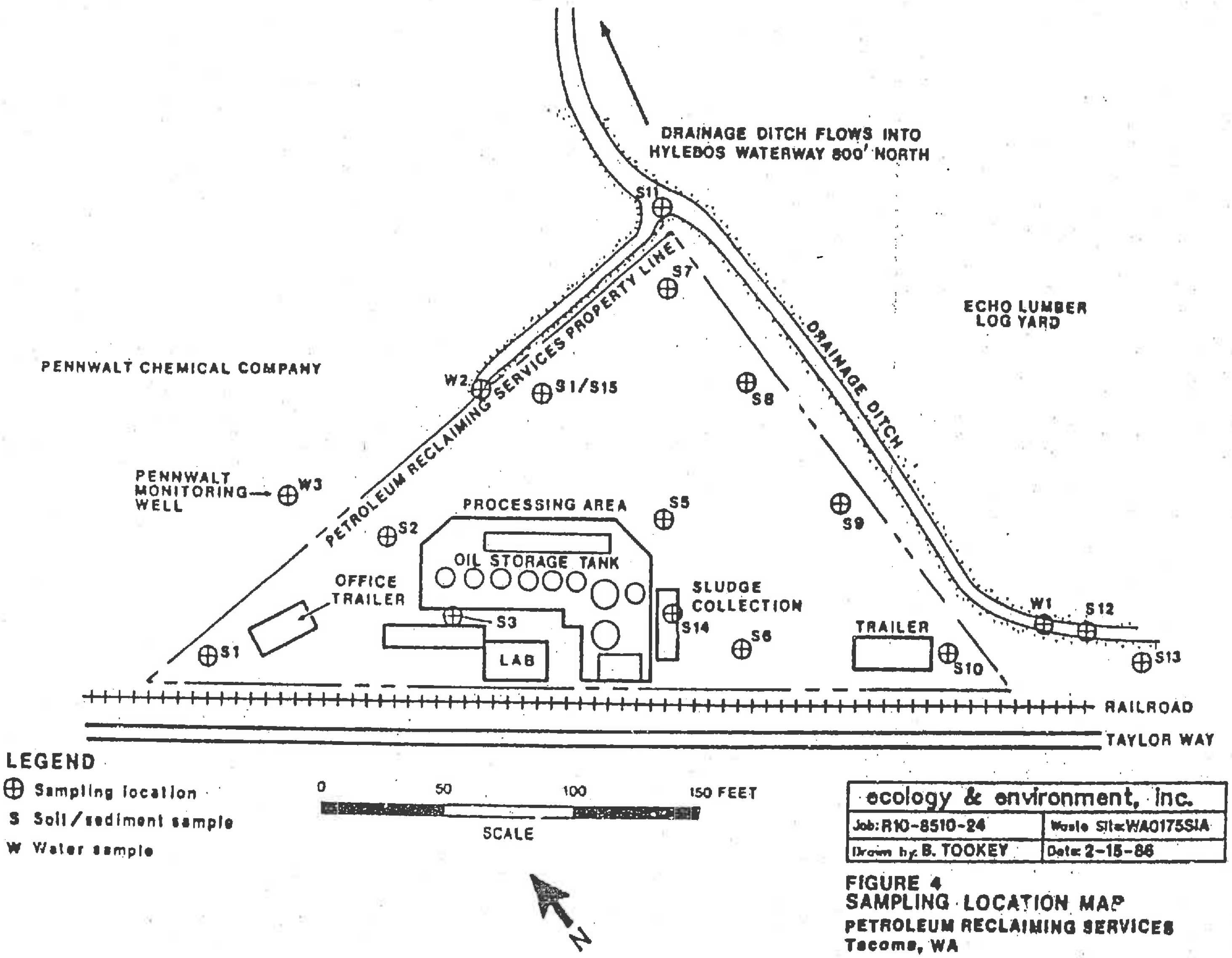


FIGURE 4
SAMPLING LOCATION MAP
PETROLEUM RECLAIMING SERVICES
Tacoma, WA

TABLE 4

CONCENTRATIONS OF BNA COMPOUNDS DETECTED IN SOIL SAMPLES AND A SLUDGE SAMPLE COLLECTED AT PETROLEUM RECLAIMING SERVICES, INC. APRIL 1986 (ug/kg)

Compound	Location S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	S-10	Background S-13	Sludge S-14
1,2,4-Trichlorobenzene	400U	750	400U	400U	400U	400U	400U	300U	400U	400U	400U	24,000U
Naphthalene	37J	400U	400U	400U	400U	400U	400U	300U	400U	400U	400U	24,000U
2-Methylnaphthalene	400U	41J	92J	400U	400U	220J	400U	300U	400U	400U	400U	410,000
Phenanthrene	52J	400U	61J	400U	400U	400U	400U	300U	400U	400U	75J	130,000
Fluoranthene	91J	400U	120J	400U	400U	400U	400U	300U	44J	400U	130J	24,000U
Pyrene	100J	400U	110J	400U	400U	400U	400U	300U	45J	400U	400U	24,000U
Benzo(a)anthracene	370	400U	400U	400U	400U	400U	400U	300U	400U	400U	400U	24,000U
Bis(2-Ethylhexyl)phthalate	130J	200J	150J	440	1000	970	470	150J	97J	400U	820	44,000
Chrysene	370	400U	240J	400U	400U	400U	400U	300U	400U	400U	400U	24,000U
Benzo(b)fluoranthene	340J	230J	280J	400U	400U	400U	400U	300U	100J	400U	540	24,000U
Benzo(k)fluoranthene	130J	100J	400U	400U	400U	400U	400U	300U	400U	400U	400U	24,000U
Benzo(a)pyrene	400U	400U	200J	400U	400U	400U	400U	300U	400U	400U	400U	24,000U

U = The material was analyzed for, but was not detected. The associated numerical value is estimated sample quantitation limit.

J = The associated numerical value is an estimated quantity because quality control criteria were not met.

TABLE 5

CONCENTRATIONS OF AROCHLOR DETECTED IN SOIL SAMPLES AND A SLUDGE SAMPLE
COLLECTED AT PETROLEUM RECLAIMING SERVICES, INC.
APRIL 1986
(ug/kg)

Compound	Location S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	S-10	Background S-13	Waste Sludge S-14
Arochlor 1260	170U	7400	86J	78J	460	2000	5300	130J	49J	170U	190U	29,000U

U = The material was analyzed for, but was not detected. The associated numerical value is estimated sample quantitation limit.

J = The associated numerical value is an estimated quantity because quality control criteria were not met.

TABLE 6

CONCENTRATIONS OF INORGANIC ELEMENTS DETECTED IN SOIL SAMPLES AND A SLUDGE SAMPLE COLLECTED AT PETROLEUM RECLAIMING SERVICES, INC.
APRIL 1986
(ug/kg)

	Location										Background	Sludge
Element	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	S-10	S-13	S-14
Aluminum	8,540	9,400	10,100	4,580	10,500	10,400	8,510	59,400	593	60,500	9,700	3,020
Antimony	33UJ	56J	39J	32UJ	33J	52J	44J	155J	226J	284J	30UJ	51
Arsenic	17.1J	323J	102J	78.6J	18.5J	23.5J	73.4J	16 9J	23.1J	24.5J	63.6J	38.6R
Barium	25	46	45	12U	40	49	25	425	370	451	30	240
Beryllium	2	2	2U	2	2U	2	1	4	4	3	2	1
Cadmium	3	4	4	3	4	4	4	12	11	11	5U	16
Calcium	3,330	3,820	3,770	3,030	6,210	8,270	4,370	16,000	134,000	168,000	5,370	10,700
Chromium	25J	67J	26J	18J	32J	41J	33J	735J	579J	675J	18J	200
Cobalt	11U	11U	11U	10U	10U	10U	11U	20	15	17	12U	35
Copper	31	108	62	16	25	51	54	67	58	53	69	505R
Iron	11,800	15,900	15,100	9,670	15,800	16,000	17,700	50,900	40,200	44,300	13,400	187,000J
Lead	16.3	53.7	26.6	7.7	35.5	41.1	50.7	18.8	24.2	14.6J	16.7	1,150
Magnesium	4,000	4,550	3,580	1,850	5,890	4,960	2,940	59,700	53,100	66,200	2,840	2,650
Manganese	192	219	198	76	260	366	148	8,290	6,270	7,730	315	878J
Mercury	0.13	2.07	0.13	0.09U	0.09U	0.99	0.81	0.13	0.81	0.17	1.56	0.12UJ
Nickel	37	55	20	15U	27U	25	23	45	35	31	18U	90
Potassium	1,400U	1,460U	1,370U	1,360U	1,280U	1,330U	1,370	4,360	3,560	4,860	1,630U	1,700U
Selenium	3UJ	4UJ	3UJ	3UJ	3UJ	3UJ	3UJ	3UJ	4UJ	3UJ	4UJ	4UJ
Silver	6U	6U	6U	5U	5U	5U	6U	5U	6U	5U	7U	7U
Sodium	452	374	401	446	423	614	544	10,000	8,160	9,390	515	901
Thallium	6U	6U	6U	6U	6U	6U	6U	6U	7U	6U	7U	8U
Tin	45	41	42	23U	21U	22U	23U	101	105	31	40	60
Vanadium	32	37	37	41	37	42	53	258	214	247	41	58
Zinc	41	1,060	140	307	54	116	270	101	107	108	77	4,330

U = The material was analyzed for, but was not detected. The associated numerical value is estimated sample quantitation limit.
J = The associated numerical value is an estimated quantity because quality control criteria were not met.
R = Quality Control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.

is present in used oil from the combustion by-products of gasoline lead antiknock additives while zinc compounds are used as oil detergent and lubricating additives (26).

Location S2 also had the highest concentrations of arsenic and mercury on the site, at 323 mg/kg and 2.07 mg/kg, respectively, with lower concentrations present at other sampling locations.

Samples S8, S9, and S10 contained elevated levels of calcium and magnesium. While these metals are commonly used in lubricating oil additives, the concentrations found were an order of magnitude higher than those found in the waste generated by Petroleum Reclaiming (Table 6). In general, the northeast edge of the site (S7 - S10) bordering Echo Lumber Log Yard is more contaminated with total metals than the rest of the site. The belt press sludge sample (S14) contained high levels of aluminum, calcium, iron, lead, magnesium, and zinc all of which are normally present in used automotive oil (26).

The background sample (S13) also had both mercury and arsenic present. These two metals are not normally associated with lubricating or fuel oils. A single source identification of metals found about the site is not possible due to historical activities in the industrial tideflats area of Commencement Bay. Ohio Ferro-Alloys Corporation had a manufacturing plant on site prior to 1942. In addition, much of the tideflats area has been filled with dredge spoils and copper smelter slag sands from the Asarco smelter which contain high levels of arsenic, copper, and zinc (Table 7) (27). Metals present in this slag are chemically bound and do not leach significantly during EP Toxicity test procedures (Table 8) (8). It is not known if leaching occurs under actual environmental conditions.

TABLE 7

SELECTED METAL ANALYSES
ASARCO SMELTER SLAG SANDS
(mg/kg)

Metal	Concentration
Arsenic	9,000
Copper	5,000
Lead	5,000
Zinc	18,000

TABLE 8

EP TOXICITY ANALYSIS
ASARCO SMELTER SLAG SANDS
(mg/l)

Metal	Concentration
Arsenic	< 0.01
Barium	< 0.5
Cadmium	< 0.02
Chromium	< 0.1
Lead	< 0.1
Mercury	< 0.005
Selenium	< 0.01
Silver	< 0.1

13.2 Sediment Analytical Results

13.2.1 Sediment Volatile Organic Compounds

Sediment samples contained only toluene. The upgradient sample (S12) contained 91 ug/kg of toluene while the downgradient sample (S11) contained only 15 ug/kg. The downgradient concentration is not significantly higher than the levels attributed to CLP laboratory contamination and may, in fact, be an analytical artifact since toluene was also found in the laboratory blank (Appendix F). The fact that the upgradient concentration of toluene is higher than the downgradient concentration would indicate a source other than Petroleum Reclaiming.

13.2.2 Sediment Base/Neutral/Acid Results

A number of polycyclic aromatic hydrocarbons (PAH) were detected in the upgradient sediment sample, S12 (Table 9). In fact, location S12 had the highest concentration of PAHs of any sample location on the site, and may be a sink for these compounds. Only fluoranthene was also detected in the downgradient sample. However, the level was not significantly greater than the upgradient concentration. These PAHs are normal constituents of oil, tar, and creosote. They are also by-products of incomplete combustion of organic compounds.

In addition, bis(2-ethylhexyl) phthalate was found in both samples with downgradient concentrations slightly higher than upgradient. Phthalates are used as plasticizers and tend to be released from plastics as they weather and decompose (20). Based on the analytical results, it is not possible to ascertain if Petroleum Reclaiming is the source of these compounds.

TABLE 9

CONCENTRATION OF BASE/NEUTRAL/ACID COMPOUNDS
DETECTED IN SEDIMENT SAMPLES COLLECTED AT
PETROLEUM RECLAIMING SERVICES, INC.
APRIL 1986
(ug/kg)

	Location	
Compound	S11	S12
2-Methylnaphthalene	700 U	3,600
Fluorene	700 U	1,500
Phenanthrene	700 U	4,500
Fluoranthene	1,900	1,200
Pyrene	700 U	1,400
Bis(2-ethylhexyl) pnthalate	20,000	7,100
Di-n-octylphthalate	700 U	530 J

U = The material was analyzed for but was not detected. The associated numerical value is estimated sample quantitation limit.

J = The associated numerical value is an estimated quantity because quality control criteria were not met.

13.2.3 Sediment Pesticide/PCB Results

No pesticides or PCBs were detected in sediment samples.

13.2.4 Sediment Tentatively Identified Compounds

A large number of compounds were detected which are not on the Hazardous Substance List (HSL). Positive identification of all these compounds was not possible and quantities are estimates only. Most of the analytes appear to be long chain alkanes which are the major components of diesel fuel and lubricating oils (26). Since the identifications are tentative, no correlations can be made between upgradient and downgradient concentrations.

13.2.5 Sediment Inorganic Results

Sodium, copper, and lead sediment concentrations were elevated compared to most soil concentrations at the site. While the northeast edge of the site along the drainage ditch contained the highest levels of total metals, no evidence of migration into the ditch sediments was observed. No significant concentration differences were observed between the upgradient sample (S12) and the downgradient sample (S11) (Table 10).

TABLE 10

CONCENTRATIONS OF INORGANIC ELEMENTS DETECTED IN SEDIMENT SAMPLES COLLECTED AT PETROLEUM RECLAIMING SERVICES APRIL 1986 (ug/kg)

Element	Location S11	S12
Aluminum	16,900	14,800
Antimony	69J	120J
Arsenic	218J	112J
Barium	89	72
Beryllium	3	6
Cadmium	6	7
Calcium	22,800	17,500
Chromium	34J	31J
Cobalt	19U	34U
Copper	261	236
Iron	26,400	19,000
Lead	132	101
Magnesium	4,800	4,550
Manganese	503	352
Mercury	0.38	0.30U
Nickel	36	51U
Potassium	2,570U	4,560U
Selenium	6UJ	10UJ
Silver	10U	17U
Sodium	2,300	1,050
Thallium	12U	19U
Tin	43	75U
Vanadium	56	44
Zinc	401	281

U = The material was analyzed for but was not detected. The associated numerical value is estimated sample quantitation limit.

J = The associated numerical value is an estimated quantity because quality control criteria were not met.

13.3 Ground Water and Surface Water Results

13.3.1 Field Measurements of pH, Conductivity, and Temperature

Three parameters (pH, conductivity, and temperature) were measured in the ground water sample (W3) with portable instruments in the field (Table 11). The well was screened at 20-25 feet and depth to ground water is approximately five feet (8).

TABLE 12

CONCENTRATIONS OF BNA COMPOUNDS DETECTED IN WATER SAMPLES
COLLECTED AT PETROLEUM RECLAIMING SERVICES, INC.
APRIL 1986
(ug/l)

Compound	Location W1	W2	W3
Phenol	31	10U	10U
2-Methylphenol	200	10U	10U
Bis (2-ethylhexyl) phthalate	6J	6J	3J
Di-n-octylphthalate	10U	10U	9J

J = The associated numerical value is an estimated quantity because quality control criteria were not met.

U = The material was analyzed for but was not detected. The associated numerical value is the estimated sample quantitation limit.

Only phenol (31 ug/l) and 2-methylphenol (200 ug/l) were found in the upgradient sample (W1) but were not present in either the downgradient (W2) or ground water (W3) samples. An Echo Lumber log yard which is located next to Petroleum Reclaiming may be a source for these compounds since phenols are often associated with wood treating.

All water samples also contained bis(2-ethylhexyl) phthalate at concentrations ranging from 3 to 6 ug/l. The ground water sample (W3) also contained 9 ug/l di-n-octylphthalate.

13.3.4 Ground Water and Surface Water Pesticides/PCBs

No pesticides or PCBs were detected in any of the water samples.

13.3.5 Ground Water and Surface Water Inorganic Results

Table 13 is a summary of all inorganic ground water and surface water data where elements were detected and identified.

Both ground water and surface water exhibit high salinity with elevated levels of sodium, potassium, calcium, and magnesium. This high salinity is not unexpected in the ground water since the Pennwalt monitoring well is screened in a zone which was originally tidal marsh prior to development of the industrial area. The surface water in the drainage ditch east of Petroleum Reclaiming is a result of runoff from Petroleum Reclaiming, Pennwalt Chemical, and the Echo Lumber Log Yard. It is possible that Echo Lumber uses saline water in their log spraying operation.

While neither surface water nor the shallow ground water are used as potable or industrial water sources, they do exceed the Federal Drinking Water Standards for a number of metals (Table 13).

TABLE 13

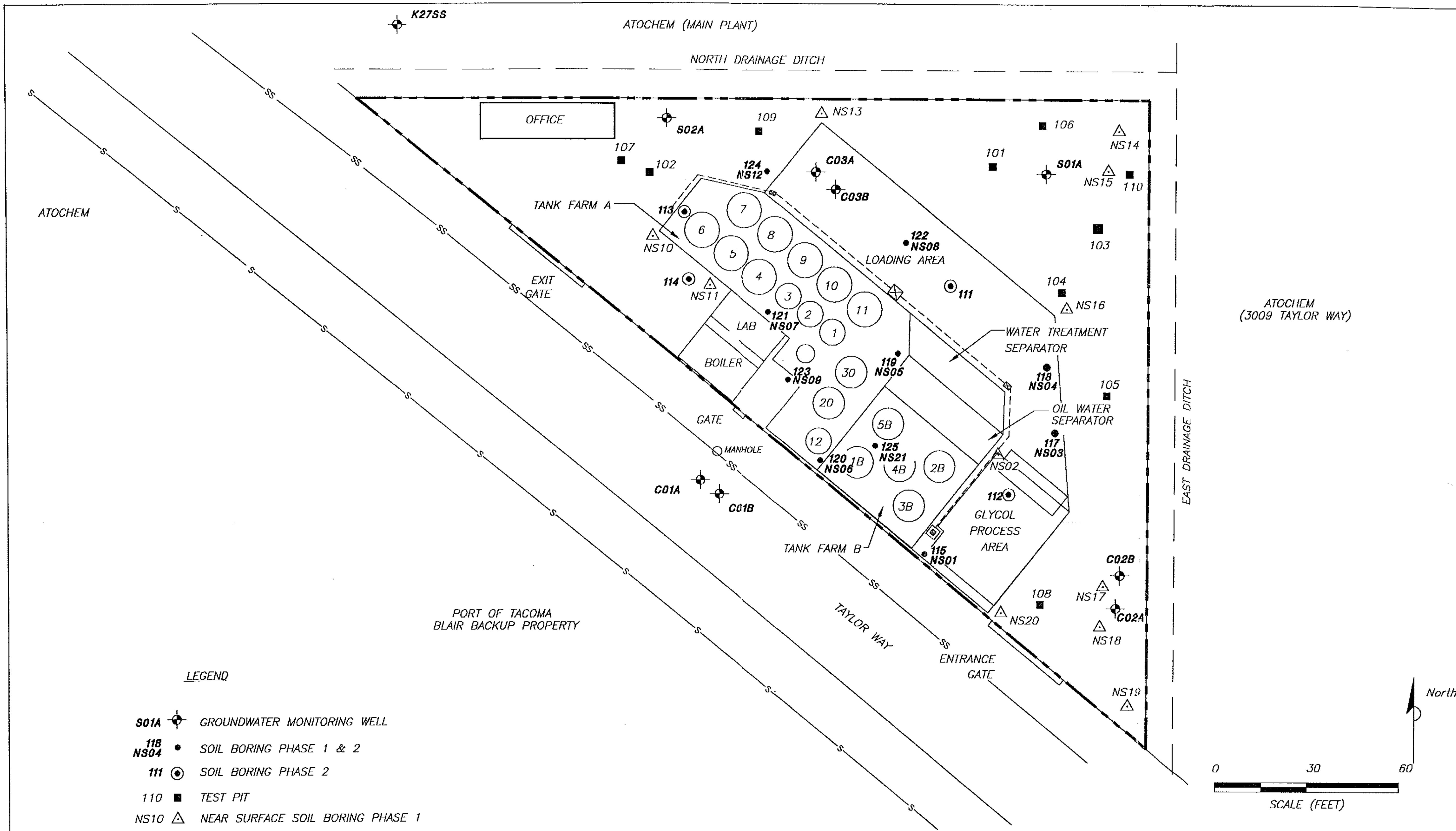
PETROLEUM RECLAIMING SERVICES RESULTS OF INORGANIC ANALYSES OF WATER APRIL 1986 (ug/l)

Element	Standard**	W1	W2	W3
		Location		
Aluminum		97,300R	7,450R	140,000R
Antimony		372J	69J	347J
Arsenic	50	[1,560R]	[62.5R]	18R
Barium	1,000	530	194	443
Beryllium		3	2U	4
Cadmium	10	[22R]	5R	[24R]
Calcium		289,000J	102,000J	364,000J
Chromium	50	[144J]	18J	[166J]
Cobalt		54	18U	58
Copper	1,000	621J	62J	174J
Iron	300	[91,800]	[26,800]	[256,000]
Lead	50	[530J]	[44.7J]	25J
Magnesium		36,900	30,700	240,000
Manganese	50	[3,230J]	[6,780J]	[11,800J]
Mercury	2	2.0J	[2.8J]	[2.5J]
Nickel		139J	31J	150J
Potassium		41,600	18,100	89,200
Selenium	10	5UR	25UR	[73.1R]
Silver	50	9U	9U	9U
Sodium		94,500J	563,000J	4,360,000J
Thallium	-	10U	10U	10U
Tin		168J	108J	260J
Vanadium		179J	29J	359J
Zinc	5,000	954	289	223
Cyanide		*	*	*

* = Not analyzed
[ ] = Value exceeds drinking water standards
** = Primary and Secondary Drinking Water Standards
U = The material was analyzed for but was not detected. The associated numerical value is estimated sample quantitation limit.
J = The associated numerical value is an estimated quantity because quality control criteria were not met.
R = Quality Control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.

APPENDIX C

605 11th Ave. SE, Suite 201 • Olympia, WA • 98501
Phone: 360-352-9835 • Fax: 360-352-8164 • Email: admin@aegwa.com



LEGEND

S01A	GROUNDWATER MONITORING WELL
118 NS04	SOIL BORING PHASE 1 & 2
111	SOIL BORING PHASE 2
110	TEST PIT
NS10	NEAR SURFACE SOIL BORING PHASE 1
—S—	STORM SEWER
—SS—	SANITARY SEWER

SECOR
International Incorporated

SITE PLAN

PETROLEUM RECLAIMING SERVICE
3003 TAYLOR WAY EAST
TACOMA, WASHINGTON

FIGURE: **2**

JOB#: 00332-001-01 APPR.: DWN: AJW DATE: 9/3/96

DWG: M332103B

APPENDIX D

TABLE 1a
SOIL ANALYTICAL RESULTS - SOIL BORING SAMPLES
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8240)
RESULTS IN mg/kg (ppm)

ANALYTE	SOIL SAMPLE NUMBER AND SAMPLING DATE																REGULATORY CLEANUP LEVELS		
	C01A-2.5[1] 8-91	C01A-2.5 DUP 8-91	C01A-7.5 8-91	C01B-12.5 8-91	C01B-15.0 8-91	C01B-27.5 8-91	C02A-5.0 8-91	C02A-5.0 DUP 8-91	C02B-32.5 8-91	C02B-32.5 DUP 8-91	C03A-5.0 8-91	C03B-5.0 8-91	C03B-30.0 8-91	C03B-30.0 DUP 8-91	SO1A-2.5 8-91	SO2A-7.5 8-91	MTCA[2] METHOD A	METHOD B[3] 100X GROUNDWATER CARCINOGENIC	METHOD B[3] 100X GROUNDWATER NON-CARCINOGENIC
Chloromethane	(0.40)[4]	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	–[5]	0.337	–
Bromomethane	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	–	–	1.12
Vinyl Chloride	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	–	0.0023	–
Chloroethane	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	–	–	–
Methylene Chloride	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	0.5	–	–
Acetone	(4.0)	(4.0)	(4.0)	(4.0)	(4.0)	(4.0)	(4.0)	(4.0)	(4.0)	(4.0)	(4.0)	(4.0)	(4.0)	(4.0)	(4.0)	(4.0)	–	–	80.0
Carbon Disulfide	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	–	–	80.0
1,1-Dichloroethene	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	–	0.0073	7.20
1,1-Dichloroethane	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	–	–	80.0
1,2-Dichloroethene (Total)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	–	–	80.0
Chloroform	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	–	0.72	8.0
1,2-Dichloroethane	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	–	0.048	–
2-Butanone	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	–	–	480
1,1,1-Trichloroethane	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	20.0	–	–
Carbon Tetrachloride	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	–	0.0034	0.56
Vinyl Acetate	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	–	–	800
Bromodichloromethane	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	–	0.07	16.0
1,2-Dichloropropane	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	–	0.064	–
Cis-1,3-Dichloropropene	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	–	0.024	0.24
Trichloroethene	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	0.5	–	–
Dibromochloromethane	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	–	0.052	16.0
1,1,2-Trichloroethane	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	–	0.077	3.2
Benzene	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	0.5	–	–
Trans-1,3-Dichloropropene	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	–	0.024	0.24
Bromoform	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	–	0.55	16.0
4-Methyl-2-Pentanone	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	–	–	–

TABLE 1a
SOIL ANALYTICAL RESULTS - SOIL BORING SAMPLES
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8240)
RESULTS IN mg/kg (ppm)

	SOIL SAMPLE NUMBER AND SAMPLING DATE																REGULATORY CLEANUP LEVELS		
ANALYTE	C01A-2.5[1] 8-91	C01A-2.5 DUP 8-91	C01A-7.5 8-91	C01B-12.5 8-91	C01B-15.0 8-91	C01B-27.5 8-91	C02A-5.0 8-91	C02A-5.0 DUP 8-91	C02B-32.5 8-91	C02B-32.5 DUP 8-91	C03A-5.0 8-91	C03B-5.0 8-91	C03B-30.0 8-91	C03B-30.0 DUP 8-91	SO1A-2.5 8-91	SO2A-7.5 8-91	MTCA[2] METHOD A	METHOD B[2] 100X GROUNDWATER CARCINOGENIC	METHOD B[3] 100X GROUNDWATER NON-CARCINOGENIC
2-Hexanone	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	--	--	--
Tetrachloroethene	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	0.5	--	--
1,1,2,2-Tetrachloroethane	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	--	0.0022	--
Toluene	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	40.0	--	--
Chlorobenzene	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	--	--	16.0
Ethyl Benzene	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	20.0	--	--
Styrene	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	--	0.15	160.0
Total Xylenes	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	20.0	--	--

NOTES:

1. Sample number (C01A), depth of sample (-2.5) feet below ground surface; date of sampling (8-1)
2. Washington State Department of Ecology Model Toxic Control Act (MTCA) Chapter 173-340-175 WAC Method A Cleanup Levels for Industrial Soils
3. MTCA Cleanup Levels and Risk Calculations (CLARC II) update, February 1996 based On 100X Groundwater Cleanup
4. (0.40) Analyte concentrations not detected above Laboratory Practical Quantification Level (PQL) presented within ( )
5. -- = No established regulatory level

TABLE 1b
SOIL ANALYTICAL RESULTS - TEST PITS SAMPLES
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8240)
RESULTS IN mg/kg (ppm)

	SOIL SAMPLE NUMBER AND SAMPLING DATE			REGULATORY CLEANUP LEVELS		
ANALYTE	101B-3'[1] 10-92	101C-5' 10-92	106B-3' 10-92	MTCA[2] METHOD A	METHOD B[3] 100X GROUNDWATER CARCINOGENIC	METHOD B[3] 100X GROUNDWATER NON-CARCINOGENIC
Chloromethane	(0.40)[4]	(0.50)	(0.50)	--[5]	0.337	--
Bromomethane	(0.40)	(0.50)	(0.50)	--	--	1.12
Vinyl Chloride	(0.40)	(0.50)	(0.50)	--	0.0023	--
Chloroethane	(0.40)	(0.50)	(0.50)	--	--	--
Methylene Chloride	(0.20)	(0.25)	0.39	0.5	--	--
Acetone	(2.0)	(2.5)	(2.5)	--	--	80.0
Carbon Disulfide	(0.20)	(0.25)	(0.25)	--	--	80.0
1,1-Dichloroethene	(0.20)	(0.25)	(0.25)	--	0.0073	7.20
1,1-Dichloroethane	(0.20)	(0.25)	(0.25)	--	--	80.0
1,2-Dichloroethene (Total)	(0.20)	(0.25)	(0.25)	--	--	80.0
Chloroform	(0.20)	(0.25)	(0.25)	--	0.72	8.0
1,2-Dichloroethane	(0.20)	(0.25)	(0.25)	--	0.048	--
2-Butanone	(0.40)	(1.25)	(1.25)	--	--	480
1,1,1-Trichloroethane	(0.20)	(0.25)	(0.25)	20.0	--	--
Carbon Tetrachloride	(0.20)	(0.25)	(0.25)	--	0.0034	0.56
Vinyl Acetate	(0.40)	(1.25)	(1.25)	--	--	800
Bromodichloromethane	(0.20)	(0.25)	(0.25)	--	0.07	16.0
1,2-Dichloropropane	(0.20)	(0.25)	(0.25)	--	0.064	--
Cis-1,3-Dichloropropene	(0.20)	(0.25)	(0.25)	--	0.024	0.24
Trichloroethene	(0.20)	(0.25)	0.048	0.5	--	--
Dibromochloromethane	(0.20)	(0.25)	(0.25)	--	0.052	16.0

TABLE 1b
SOIL ANALYTICAL RESULTS - TEST PITS SAMPLES
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8240)
RESULTS IN mg/kg (ppm)

ANALYTE	SOIL SAMPLE NUMBER AND SAMPLING DATE			REGULATORY CLEANUP LEVELS		
	101B-3'[1] 10-92	101C-5' 10-92	106B-3' 10-92	MTCA[2] METHOD A	METHOD B[3] 100X GROUNDWATER CARCINOGENIC	METHOD B[3] 100X GROUNDWATER NON-CARCINOGENIC
1,1,2-Trichloroethane	(0.20)	(0.25)	(0.25)	--	0.077	3.2
Benzene	(0.20)	(0.25)	(0.25)	0.5	--	--
Trans-1,3-Dichloropropene	(0.20)	(0.25)	(0.25)	--	0.024	0.24
Bromoform	(0.20)	(0.25)	(0.25)	--	0.55	16.0
4-Methyl-2-Pentanone	(0.40)	(1.25)	(1.25)	--	--	--
2-Hexanone	(0.20)	(0.25)	(0.25)	--	--	--
Tetrachloroethene	(0.20)	(0.25)	0.15	0.5	--	--
1,1,2,2-Tetrachloroethane	(0.20)	(0.25)	(0.25)	--	0.0022	--
Toluene	0.054	(0.25)	(0.25)	40.0	--	--
Chlorobenzene	(0.20)	(0.25)	(0.25)	--	--	16.0
Ethyl Benzene	0.080	(0.25)	(0.25)	20.0	--	--
Styrene	(0.20)	(0.25)	(0.25)	--	0.15	160.0
Total Xylenes	0.66	(0.25)	(0.25)	20.0	--	--

NOTES:

1. Sample number (101B), depth of sample (-3) feet below ground surface; date of sampling (10-92)
2. Washington State Department of Ecology Model Toxic Control Act (MTCA) Chapter 173-340-175 WAC Method A Cleanup Levels for Industrial Soils
3. MTCA Cleanup Levels and Risk Calculations (CLARC II) update, February 1996 based On 100X Groundwater Cleanup
4. (0.40) Analyte concentrations not detected above Laboratory Practical Quantification Level (PQL) presented within ( )
5. -- = No established regulatory level

TABLE 2
SOIL ANALYTICAL RESULTS - SOIL BORING SAMPLES
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN mg/kg (ppm)

	SOIL SAMPLE NUMBER AND SAMPLING DATE														REGULATORY CLEANUP LEVELS	
ANALYTE	C01A-2.5'[1] 9-91	C01A-7.5' 9-91	C01B-12.5' 9-91	C01B-15.0' 9-91	C01B-27.5' 9-91	C02A-5.0' 9-91	C02B-32.5' 9-91	C02B-32.5'D 9-91	C03A-5.0' 9-91	C03B-5.0' 9-91	C03B-30.0' 9-91	C03B-30.0'D 9-91	S01A-2.5' 9-91	S02A-7.5' 9-91	MTCA[2] METHOD B[3] 100X GROUNDWATER CARCINOGEN	METHOD B[3] 100X GROUNDWATER NON-CARCINOGEN
Phenol	(0.38)[4]	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	–[5]	960
bis (2-Chloroethyl) ether	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	0.004	–
2-Chlorophenol	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	–	8.0
1,3-Dichlorobenzene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	–	–
1,4-Dichlorobenzene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	0.018	–
Benzyl Alcohol	(0.77)	(1.3)	(1.0)	(0.94)	(0.97)	(0.82)	(0.66)	(0.66)	(0.79)	(0.66)	(0.66)	(0.66)	(0.73)	(0.82)	–	480
1,2-Dichlorobenzene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	–	72.0
2-Methylphenol	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	–	–
bis (2-Chloroisopropyl) Ether	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	–	32.0
4-Methylphenol	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	–	–
N-Nitroso-Di-N-propylamine	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	0.0013	–
Hexachloroethane	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	0.063	1.6
Nitrobenzene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	–	0.80
Isophorone	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	9.2	320
2-Nitrophenol	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	–	–
2,4-Dimethylphenol	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	–	32.0
Benzoic Acid	(1.9)	(3.3)	(2.5)	(2.4)	(2.4)	(2.0)	(1.7)	(1.7)	(2.0)	(1.7)	(1.7)	(1.7)	(1.8)	(2.0)	–	640
bis (2-Chloroethoxy) methane	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	–	–
2,4-Dichlorophenol	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	–	48.0
1,2,4-Trichlorobenzene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	–	8.0
Naphthalene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	0.024	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	–	3.2
4-Chloroaniline	(0.77)	(1.3)	(1.0)	(0.94)	(0.97)	(0.82)	(0.66)	(0.66)	(0.79)	(0.66)	(0.66)	(0.66)	(0.73)	(0.82)	–	–
Hexachlorobutadiene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	0.056	0.16

TABLE 2
SOIL ANALYTICAL RESULTS - SOIL BORING SAMPLES
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN mg/kg (ppm)

	SOIL SAMPLE NUMBER AND SAMPLING DATE														REGULATORY CLEANUP LEVELS	
ANALYTE	C01A-2.5'[1] 9-91	C01A-7.5' 9-91	C01B-12.5' 9-91	C01B-15.0' 9-91	C01B-27.5' 9-91	C02A-5.0' 9-91	C02B-32.5' 9-91	C02B-32.5'D 9-91	C03A-5.0' 9-91	C03B-5.0' 9-91	C03B-30.0' 9-91	C03B-30.0'D 9-91	S01A-2.5' 9-91	S02A-7.5' 9-91	MTCA[2] METHOD B[3] 100X GROUNDWATER CARCINOGEN	METHOD B[3] 100X GROUNDWATER NON-CARCINOGEN
4-Chloro-3-methylphenol	(0.77)	(1.3)	(1.0)	(0.94)	(0.97)	(0.82)	(0.66)	(0.66)	(0.79)	(0.66)	(0.66)	(0.66)	(0.73)	(0.82)	--	--
2-Methylnaphthalene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	0.077	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	--
Hexachlorocyclopentadiene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	11.2
2,4,6-Trichlorophenol	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	0.79	--
2,4,5-Trichlorophenol	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	160
2-Chloronaphthalene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	--
2-Nitroaniline	(1.9)	(3.3)	(2.5)	(2.4)	(2.4)	(2.0)	(1.7)	(1.7)	(2.0)	(1.7)	(1.7)	(1.7)	(1.8)	(2.0)	--	--
Dimethyl phthalate	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	160
Acenaphthylene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	--
3-Nitroaniline	(1.9)	(3.3)	(2.5)	(2.4)	(2.4)	(2.0)	(1.7)	(1.7)	(2.0)	(1.7)	(1.7)	(1.7)	(1.8)	(2.0)	--	--
Acenaphthene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	96.0
2,4-Dinitrophenol	(1.9)	(3.3)	(2.5)	(2.4)	(2.4)	(2.0)	(1.7)	(1.7)	(2.0)	(1.7)	(1.7)	(1.7)	(1.8)	(2.0)	--	3.2
4-Nitrophenol	(1.9)	(3.3)	(2.5)	(2.4)	(2.4)	(2.0)	(1.7)	(1.7)	(2.0)	(1.7)	(1.7)	(1.7)	(1.8)	(2.0)	--	--
Dibenzofuran	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	--
2,4-Dinitrotoluene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	3.2
2,6-Dinitrotoluene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	1.6
Diethylphthalate	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	1,280
4-Chlorphenyl phenyl ether	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	--
Fluorene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	64.0
4-Nitroaniline	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	--
4,6-Dinitro-2-methylphenol	(1.9)	(3.3)	(2.5)	(2.4)	(2.4)	(2.0)	(1.7)	(1.7)	(2.0)	(1.7)	(1.7)	(1.7)	(1.8)	(2.0)	--	--
N-Nitrosodiphenylamine	(1.9)	(3.3)	(2.5)	(2.4)	(2.4)	(2.0)	(1.7)	(1.7)	(2.0)	(1.7)	(1.7)	(1.7)	(1.8)	(2.0)	1.79	--
4-Bromophenyl phenyl ether	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	--

TABLE 2
SOIL ANALYTICAL RESULTS - SOIL BORING SAMPLES
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN mg/kg (ppm)

	SOIL SAMPLE NUMBER AND SAMPLING DATE														REGULATORY CLEANUP LEVELS	
ANALYTE	C01A-2.5'[1] 9-91	C01A-7.5' 9-91	C01B-12.5' 9-91	C01B-15.0' 9-91	C01B-27.5' 9-91	C02A-5.0' 9-91	C02B-32.5' 9-91	C02B-32.5'D 9-91	C03A-5.0' 9-91	C03B-5.0' 9-91	C03B-30.0' 9-91	C03B-30.0'D 9-91	S01A-2.5' 9-91	S02A-7.5' 9-91	MTCA[2] METHOD B[3] 100X GROUNDWATER CARCINOGEN	METHOD B[3] 100X GROUNDWATER NON-CARCINOGEN
Hexachlorobenzene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	0.0055	1.28
Pentachlorophenol	(1.9)	(3.3)	(2.5)	(2.4)	(2.4)	(2.0)	(1.7)	(1.7)	(2.0)	(1.7)	(1.7)	(1.7)	(1.8)	(2.0)	0.073	48.0
Phenanthrene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	--
Anthracene	0.084	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	480
Di-n-butylphthalate	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	--
Fluoranthene	0.36	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	64.0
Pyrene	0.54	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	48.0
Butyl benzyl phthalate	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	320.0
3,3'-Dichlorobenzidine	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	0.019	--
Benzo (a) anthracene	0.28	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	0.0012	--
bis (2-ethylhexyl) phthalate	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	0.032	0.62	32.0
Chrysene	0.33	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	0.0012	--
Di-n-octyl phthalate	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	32.0
Benzo (b) fluoranthene	0.72	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	0.0012	--
Benzo (k) fluoranthene	(0.38)	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	0.0012	--
Benzo (a) pyrene	0.42	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	0.0012	--
Indeno (1,2,3-cd) pyrene	0.37	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	0.0012	--
Dibenzo (a,h) anthracene	0.07	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	0.0012	--
Benzo (g,h,i) Perylene	0.42	(0.66)	(0.5)	(0.47)	(0.49)	(0.41)	(0.33)	(0.33)	(0.4)	(0.33)	(0.33)	(0.33)	(0.36)	(0.41)	--	--

NOTES:

1. Sample number (C01A), depth of sample (-2.5) feet below ground surface; date of sampling (9-91)
2. Washington State Department of Ecology Model Toxic Control Act (MTCA) Chapter 173-340-175 WAC Method A Cleanup Levels for Industrial Soils
3. MTCA Cleanup Levels and Risk Calculations (CLARC II) update, February 1996 based On 100X Groundwater Cleanup
4. (0.38) Analyte concentrations not detected above Laboratory Practical Quantification Level (PQL) presented within ( )
5. -- = No established regulatory level

TABLE 3a
SOIL ANALYTICAL RESULTS - SOIL BORING SAMPLES
ORGANOCHLORINE PESTICIDES AND PCB COMPOUNDS (EPA METHOD 8080)
RESULTS IN mg/kg (ppm)

	SOIL SAMPLE NUMBER AND SAMPLE DATE														REGULATORY CLEANUP LEVELS		
ANALYTE	C01A-2.5'[1] 9-91	C01A-7.5' 9-91	C01B-12.5' 9-91	C01B-15.0' 9-91	C01B-27.5' 9-91	C02A-5.0' 9-91	C02B-32.5' 9-91	C02B-32.5'D 9-91	C03A-5.0' 9-91	C03B-5.0' 9-91	C03B-30.0' 9-91	C03B-30.0'D 9-91	S01A-2.5' 9-91	S02A-7.5'[6]	MTCA[2] METHOD A	METHOD B[3] 100X GROUNDWATER CARCINOGEN	METHOD B[3] 100X GROUNDWATER NON-CARCINOGEN
Aldrin	(0.01)[4]	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	--[5]	0.00514	0.048
a-BHC	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	--	--	--
b-BHC	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	--	--	--
g-BHC	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	--	--	--
y-BHC (Lindane)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	20	--	--
Chlordane (technical)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)	(0.1)	(0.1)	(0.2)	(0.1)	(0.1)	(0.1)	--	0.0067	0.096
4,4' -DDD	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	--	0.0365	--
4,4' -DDE	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	--	0.0257	--
4,4' -DDT	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	5.0	--	--
Dieldrin	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	--	0.00057	0.080
Endosulfan I	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	--	--	--
Endosulfan II	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	--	--	--
Endosulfan sulfate	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	--	--	--
Endrin	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	--	--	0.48
Endrin aldehyde	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	--	--	--
Heptachlor	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	--	0.0014	0.80
Heptachlor epoxide	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	--	0.00092	0.02
Methoxychlor	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.04)	(0.04)	(0.02)	(0.02)	(0.04)	(0.02)	(0.02)		--	--	8.0
Toxaphene	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)	(0.1)	(0.1)	(0.2)	(0.1)	(0.1)	(0.1)	--	0.0079	--
Aroclor 1016	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)	(0.1)	(0.1)	(0.2)	(0.1)	(0.1)	(0.1)	10	0.13	--
Aroclor 1221	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)	(0.1)	(0.1)	(0.2)	(0.1)	(0.1)	(0.1)	10	0.13	--
Aroclor 1232	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)	(0.1)	(0.1)	(0.2)	(0.1)	(0.1)	(0.1)	10	0.13	--
Aroclor 1242	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)	(0.1)	(0.1)	(0.2)	(0.1)	(0.1)	(0.1)	10	0.13	--
Aroclor 1248	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)	(0.1)	(0.1)	(0.2)	(0.1)	(0.1)	(0.1)	10	0.13	--
Aroclor 1254	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)	(0.1)	(0.1)	(0.2)	(0.1)	(0.1)	(0.1)	10	0.13	--
Aroclor 1260	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)	(0.1)	(0.1)	(0.2)	(0.1)	(0.1)	(0.1)	10	0.13	--

NOTES:

1. Sample number (C01A), depth of sample (-2.5) feet below ground surface; date of sampling (9-91)
2. Washington State Department of Ecology Model Toxic Control Act (MTCA) Chapter 173-340-175 WAC Method A Cleanup Levels for Industrial Soils
3. MTCA Cleanup Levels and Risk Calculations (CLARC II) update, February 1996 based On 100X Groundwater Cleanup
4. (0.01) Analyte concentrations not detected above Laboratory Practical Quantification Level (PQL) presented within ()
5. -- = No established regulatory level
6. No laboratory report provided with reviewed reports. These analytical results were obtained from the text of reviewed reports.

TABLE 3b
SOIL ANALYTICAL RESULTS
PCB COMPOUNDS (EPA METHOD 8080)
RESULTS IN mg/kg (ppm)

	NEAR SURFACE SAMPLES		TEST PIT SOIL SAMPLE													
ANALYTE	NS-05 (5")[2] 11-91	NS-07 (4") 11-91	101B-3'[1] 11-92	101C-5' 11-92	102B-3' 11-92	102C-4' 11-92	103B-3' 11-92	104B-3' 11-92	105B-3' 11-92	106B-3' 11-92	107B-3' 11-92	108B-3' 11-92	109B-3' 11-92	110B-3' 11-92	IMPORT STOCKPILE 11-92	MTCA[3] METHOD A
Aroclor 1016	(0.1)[4]	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	10
Aroclor 1221	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	10
Aroclor 1232	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	10
Aroclor 1242	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	10
Aroclor 1248	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	10
Aroclor 1254	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	10
Aroclor 1260	0.2	3.8	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	2.9	(0.1)	(0.1)	10

NOTES:

1. Sample number (101B); depth below ground surface (-3) in feet; date of sampling (11-92)
2. Depth below ground surface in inches (5")
3. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels for Industrial Soils
4. (0.1) Analyte concentrations not deteced above PQL presented with ( )

TABLE 3c
SOIL ANALYTICAL RESULTS - SHALLOW SOIL BORINGS
PCB COMPOUNDS (EPA METHOD 8080)[5]
RESULTS IN mg/kg (ppm)

	SOIL SAMPLE NUMBER AND SAMPLING DATE														
ANALYTE	111A-2'[1] 11-92	112A-2.25' 11-92	113A-2.75' 11-92	114A-2.3' 11-92	115A-2.2' 11-92	117A-3' 11-92	118A-1.8' 11-92	119B-2' 11-92	120B-3.6' 11-92	121B-2.8' 11-92	122A-2.7' 11-92	123A-2.3' 11-92	124A-2.1' 11-92	125A-2.7' 11-92	MTCA[2] METHOD A
Aroclor 1016	(0.1)[3]	(0.1)	(1.0)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(1.0)	(0.1)	10
Aroclor 1221	(0.1)	(0.1)	(1.0)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(1.0)	(0.1)	10
Aroclor 1232	(0.1)	(0.1)	(1.0)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(1.0)	(0.1)	10
Aroclor 1242	(0.1)	(0.1)	(1.0)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(1.0)	(0.1)	10
Aroclor 1248	(0.1)	(0.1)	(1.0)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	1.2	(0.1)	(0.1)	(0.1)	(1.0)	(0.1)	10
Aroclor 1254	(0.1)	(0.1)	(1.0)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(1.0)	(0.1)	10
Aroclor 1260	(0.1)	0.1	**23**[4]	0.3	0.2	(0.1)	0.3	0.4	3.2	0.3	0.2	(0.1)	**15**	(0.1)	10

NOTES:

1. Sample number (111A); depth below ground surface (-2) in feet; date of sampling (11-92)
2. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels for Industrial Soils
3. (0.1) Analyte concentrations not deteced above PQL presented with ( )
4. **Bold** - Concentrations above regulatory cleanup levels
5. Soils samples not analyzed using Method 3630 cleanup prior to PCB analysis

TABLE 4
SOIL ANALYTICAL RESULTS
TOTAL PETROLEUM HYDROCARBONS
(EPA METHOD 418.1)
RESULTS IN mg/kg (ppm)

ANALYTE	SOIL BORING SAMPLES															
	S01A-2.5[1] 9-91	SO2A-7.5 9-91	CO1A-2.5 9-91	CO1A-7.5 9-91	CO1B-12.5 9-91	CO1B-15.0 9-91	CO1B-27.5 9-91	CO2A-5.0 9-91	CO2B-32.5 9-91	CO3A-5.0 9-91	CO3A-10.0 9-91	CO3B-2.5 9-91	CO3B-5.0 9-91	CO3B-30.0 9-91	CO3B-30.0 DUP 9-91	MTCA[2] Method A
Total Petroleum Hydrocarbons	--[3]	--	170	(10)[4]	(10)	(10)	(10)	--	--	**470**[5]	65	15	18	25	23	200

ANALYTE	NEAR SURFACE SOIL SAMPLES											
	NS-01 (18")[6] 9-91	NS-02 (14") 9-91	NS-03 (20") 9-91	NS-04 (16") 9-91	NS-05 (5") 9-91	NS-06 (9") 9-91	NS-07 (4") 9-91	NS-08 (24") 9-91	NS-09 (9") 9-91	NS-12 (16") 9-91	NS-21 (29") 9-91	MTCA Method A
Total Petroleum Hydrocarbons	**350**	**660**	**2,500**	**2,500**	**57,000**	**4,000**	**88,000**	**710**	**2,000**	**17,000**	**210**	200

ANALYTE	TEST PIT SAMPLES													
	101B-3' 10-92	101C-5' 10-92	102B-3' 10-92	102C-4' 10-92	103B-3' 10-92	104B-3' 10-92	105B-3' 10-92	106B-3' 10-92	107B-3' 10-92	108B-3' 10-92	109B-3' 10-92	110B-3' 10-92	*IMPORT STOCKPILE SAMPLE	MTCA Method A
Total Petroleum Hydrocarbons	**8,500**	**210**	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	**450**	(100)	(100)	200

*Results obtained from reviewed report. No laboratory report was provided.

ANALYTE	SHALLOW SOIL BORINGS														
	111A-2' 11-92	112A-2.25' 11-92	113A-2.75' 11-92	114A-2.3' 11-92	115A-2.2' 11-92	117A-3' 11-92	118A-1.8' 11-92	119B-2' 11-92	120B-3.6' 11-92	121B-2.8' 11-92	122A-2.7' 11-92	123A-2.3' 11-92	124A-2.1' 11-92	125A-2.7' 11-92	MTCA Method A
Total Petroleum Hydrocarbons	**980**	**150**	**25,000**	**230**	**270**	**330**	**1,200**	**26,000**	**48,000**	**750**	**2,400**	**3,500**	**5,500**	(100)	200

NOTES:

1. Sample number (S01A); depth of sample (-2.5) feet below ground surface; date of sampling 9-91
2. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Level (WAC 173-340)
3. -- = Samples not analyzed
4. (10) analyte concentration not detected above laboratory PQL presented within ( )
5. **Bold** - concentrations above regulatory cleanup levels
6. Depth of sample inches below ground surface

TABLE 5a
SOIL ANALYTICAL RESULTS - SOIL BORING SAMPLES
ICP METALS (EPA METHOD 6010)
RESULTS IN mg/kg (ppm)

	SOIL SAMPLE NUMBER AND SAMPLING DATE									REGULATORY CLEANUP LEVELS			
ANALYTE	S01A-2.5[1] 9-91	SO2A-7.5 9-91	CO1A-2.5 9-91	CO1A-7.5 9-91	CO1B-12.5 9-91	CO1B-15.0 9-91	CO1B-27.5 9-91	CO2A-5.0 9-91	CO3A-5.0 9-91	MTCA[2] Method A	MTCA[3] Method B 100X Groundwater Non-Carcinogen	Natural Background Concentrations[4]	Atochem[5]
Antimony	(4.8)[6]	(5.2)	7.2	(12)	(8.8)	(7.6)	(8.7)	(4.2)	(5.2)	--	--	--	--
Arsenic	**218**[7]	(5.2)	19	11	(8.8)	(7.6)	(8.7)	(4.2)	20	200	4.8	7.3	200
Beryllium	(0.12)	(0.13)	0.45	0.61	(0.22)	(0.19)	(0.21)	(0.11)	(0.13)	--	8.0	0.61	--
Cadmium	0.19	(0.13)	1.4	(0.3)	(0.22)	(0.19)	(0.21)	(0.11)	(0.13)	10	8.0	0.77	--
Chromium	8.1	8	48	21	23	23	25	7.7	7.5	500	--	48.0	--
Copper	6.9	6.3	57	35	22	15	20	5.4	6.5	--	5.9	36.0	--
Lead	(1.2)	3.2	42	14	7.9	6.4	8.3	2.6	2.5	1000	--	24.0	1000
Mercury	(0.1)	(0.1)	0.33	0.29	**1.4**	**1.1**	**1.5**	(0.1)	(0.1)	1.0	0.48	0.70	--
Nickel	2.1	4.9	29	7.7	13	11	10	2.9	5.4	--	--	48.0	--
Selenium	(7.2)	(7.7)	(7.6)	(18)	(0.13)	(11)	(13)	(6.3)	11	--	8.0	0.78	--
Silver	(0.24)	(0.25)	10	(0.61)	(0.44)	(0.38)	(0.43)	0.91	1.1	--	8.0	--	--
Thallium	(19)	(21)	(20)	(50)	(35)	(30)	(35)	(17)	(21)	--	--	--	--
Zinc	9.5	11	94	21	29	23	29	9.1	10	--	480	85	--

NOTES:

1. Sample number (S01A); depth below ground surface (2.5) in feet; date of sampling (9-91)
2. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels WAC 173-340
3. MTCA Cleanup Levels and Risk Calculations (CLARC II) update; February 1996 based on 100X groundwater
4. Natural Background Soil Metals Concentrations in Washington State, October 1994 Publication #94-115
5. Cleanup Levels for the Atochem Facility summarized in the EEC Phase 2 report
6. (4.8) Analyte concentration not detected above PQL presented within ( )
7. Bold - concentration above applicable regulatory cleanup levels

TABLE 5b
SOIL ANALYTICAL RESULTS - NEAR SURFACE SOIL SAMPLES
ICP METALS (EPA METHOD 6010)
RESULTS IN mg/kg (ppm)

	SOIL SAMPLE NUMBER AND SAMPLING DATE											REGULATORY CLEANUP LEVELS			
ANALYTE	NS-01[1] (18") 9-91	NS-02 (14") 9-91	NS-03 (20") 9-91	NS-04 (16") 9-91	NS-05 (5") 9-91	NS-06 (9") 9-91	NS-07 (4") 9-91	NS-08 (24") 9-91	NS-09 (9") 9-91	NS-12 (16") 9-91	NS-21 (29") 9-91	MTCA[2] Method A	MTCA[3] Method B 100X Groundwater Non-Carcinogen	Natural Background Concentrations[4]	Atochem[5]
Antimony	(6.7)[6]	(7.7)	14	(4.7)	(4.8)	(6.2)	(4.8)	(4.4)	(4.4)	(4.3)	(5.9)	--	--	--	--
Arsenic	(6.7)	(7.7)	39	10	24	60	82	20	29	30	(5.9)	200	4.8	7.3	200
Beryllium	(0.17)	(0.19)	(0.15)	(0.12)	(0.12)	(0.15)	(0.12)	(0.11)	(0.11)	0.23	1.5	--	8.0	0.61	--
Cadmium	(0.17)	(0.19)	(0.15)	(0.12)	(0.12)	0.28	2.9	(0.11)	**30**[7]	1.3	2.5	10	8.0	0.77	--
Chromium	22	27	62	22	15	18	60	7.9	17	23	34	500	--	48.0	--
Copper	15	28	56	20	33	36	114	8.9	**490**	4.2	23	--	5.9	36.0	--
Lead	8.7	9.8	26	16	144	45	259	4.9	63	46	8.8	1000	--	24.0	1000
Mercury	0.11	**1.7**	**1.3**	0.5	(0.1)	0.5	0.2	(0.1)	0.1	(0.1)	(0.1)	1.0	0.48	0.70	--
Nickel	16	12	11	6.6	10	11	14	3.6	11	14	28	--	--	48.0	--
Selenium	(10)	(12)	(8.7)	(7.1)	7.2	(9.3)	8.9	(6.6)	(6.6)	(6.5)	(9.0)	--	8.0	0.78	--
Silver	(0.33)	(0.38)	(0.29)	(0.24)	(0.24)	(0.31)	(0.24)	(0.22)	(0.22)	(0.22)	0.9	--	8.0	--	--
Thallium	(27)	(31)	(23)	(19)	(19)	(25)	(19)	(18)	48	(17)	(24)	--	--	--	--
Zinc	35	42	68	48	161	110	**490**	20	335	317	40	--	480	85	--

NOTES:

1. Sample number (NS-01); depth below ground surface (18) in inches; date of sampling (9-91)
2. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels WAC 173-340
3. MTCA Cleanup Levels and Risk Calculations (CLARC II) update; February 1996 based on 100X groundwater
4. Natural Background Soil Metals Concentrations in Washington State, October 1994 Publication #94-115
5. Cleanup Levels for the Atochem Facility summarized in the EEC Phase 2 report
6. (6.7) Analyte concentration not detected above PQL presented within ( )
7. **Bold** - Concentrations above regulatory or background levels

TABLE 5c
SOIL ANALYTICAL RESULTS - TEST PITS
ICP METALS (EPA METHOD 6010)
RESULTS IN mg/kg (ppm)

	SOIL SAMPLE NUMBER AND SAMPLING DATE													REGULATORY CLEANUP LEVELS			
ANALYTE	101B-3'[1] 10-92	101C-5' 10-92	102B-3' 10-92	102C-4' 10-92	103B-3' 10-92	104B 10-92	105B-3' 10-92	106B-3' 10-92	107B-3' 10-92	108B-3' 10-92	109B-3' 10-92	110B-3' 10-92	Import Stockpile Sample[7]	MTCA[2] Method A	MTCA[3] Method B 100x Groundwater Non-Carcinogen	Natural Background Concentrations[4]	Atochem[5]
Arsenic	78	86	43	14	47	20	(1.7)[6]	30	25	(2.1)	51	45	(1.6)	200	4.8	7.3	200
Cadmium	(0.081)	(0.11)	(0.12)	(0.094)	0.12	0.12	(0.085)	(0.096)	(0.085)	(0.11)	0.17	(0.1)	(0.08)	10	8.0	0.77	--
Chromium	8.4	7.9	6.7	8.9	11	11	7.8	7.5	8.2	7.2	20	11	12	500	--	48.0	--
Copper	6.9	6.8	6.2	7.5	26	7.8	6.3	8.4	7.5	8.8	40	7.4	12	--	5.9	36.0	--
Mercury	(0.1)	(0.1)	(0.1)	(0.1)	0.27	0.15	(0.1)	(0.1)	(0.1)	0.36	0.15	(0.1)	(0.1)	1.0	0.48	0.70	--

NOTES:

1. Sample number (101B); depth below ground surface (3) in feet; date of sampling (10-92)
2. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels WAC 173-340
3. MTCA Cleanup Levels and Risk Calculations (CLARC II) update; February 1996 based on 100X groundwater
4. Natural Background Soil Metals Concentrations in Washington State, October 1994 Publication #94-115
5. Cleanup Levels for the Atochem Facility summarized in the EEC Phase 2 report
6. (1.7) Analyte concentration not detected above PQL presented within ( )
7. Results obtained from reviewed reports. No laboratory report was provided.

TABLE 5d
SOIL ANALYTICAL RESULTS - SHALLOW SOIL BORINGS
ICP METALS (EPA METHOD 6010)
RESULTS IN mg/kg (ppm)

	SOIL SAMPLE NUMBER AND SAMPLING DATE														REGULATORY CLEANUP LEVELS			
ANALYTE	111A-2'[1] 11-92	112A-2.25' 11-92	113A-2.75' 11-92	114A-2.3' 11-92	115A-2.2' 11-92	117A-3' 11-92	118A-1.8' 11-92	119B-2' 11-92	120B-3.6' 11-92	121B-2.8' 11-92	122A-2.7' 11-92	123A-2.3' 11-92	124A-2.1' 11-92	125A-2.7' 11-92	MTCA[2] Method A	MTCA[3] Method B 100X Groundwater Non-Carcinogen	Natural Background Concentrations[4]	Atochem[5]
Arsenic	15	15	38	27	9.7	(1.9)[6]	11	36	41	23	25	72	**210**[7]	5.1	200	4.8	7.3	200
Cadmium	0.48	0.41	0.33	0.53	0.63	0.43	2	0.63	0.33	0.44	0.61	0.65	0.82	0.76	10	8.0	0.77	--
Chromium	9.5	20	6.5	8	16	7.6	28	7.3	7.8	6.9	10	7.3	11	12	500	--	48.0	--
Copper	35	42	18	25	38	12	32	16	15	17	37	14	38	31	--	5.9	36.0	--
Mercury	0.24	**1.1**	(0.1)	(0.1)	(0.1)	(0.1)	0.77	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	0.16	(0.1)	1.0	0.48	0.70	--

NOTES:

1. Sample number (111A); depth below ground surface (2) in feet; date of sampling (11-92)
2. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels WAC 173-340
3. MTCA Cleanup Levels and Risk Calculations (CLARC II) update; February 1996 based on 100X groundwater
4. Natural Background Soil Metals Concentrations in Washington State, October 1994 Publication #94-115
5. Cleanup Levels for the Atochem Facility summarized in the EEC Phase 2 report
6. (1.9) Analyte concentration not detected above PQL presented within ( )
7. Bold - Concentrations exceed regulatory cleanup levels

TABLE 6
SOIL ANALYTICAL RESULTS
TCLP METALS
RESULTS IN mg/kg (ppm)

	SOIL BORING SAMPLES					NEAR SURFACE SAMPLES		
ANALYTE	CO1A-2.5[1] 9-91	CO1A-7.5 9-91	CO1B-12.5 9-91	CO1B-15.0 9-91	CO1B-27.5 9-91	NS-01 (18") 9-91	NS-02 (14") 9-91	NS-03 (20") 9-91
Antimony	(0.2)[2]	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Arsenic	0.2	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Beryllium	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Cadmium	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Chromium	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Copper	0.1	0.1	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Lead	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Mercury	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Nickel	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Selenium	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)
Silver	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Thallium	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)
Zinc	0.3	0.6	0.7	0.3	0.4	(0.1)	0.2	0.2

NOTES:

1. Sample number (C01A); depth below ground surface (2.5) in feet; date of sampling 9-91
2. (0.2) analyte concentration not detected above PQL presented in ( )

APPENDIX E

APPENDIX A
SOIL BORING LOGS

Remedial Investigation Report
Petroleum Reclaiming Service, Inc.
3003 Taylor Way
Tacoma, Washington
SECOR PN: 00324-001-01
October 2, 1996

PROJECT: PRSI/DRILLING/ TACOMA

RECORD OF BOREHOLE #S-01A

DATUM:

PROJECT NUMBER: 913-1215

BORING LOCATION:

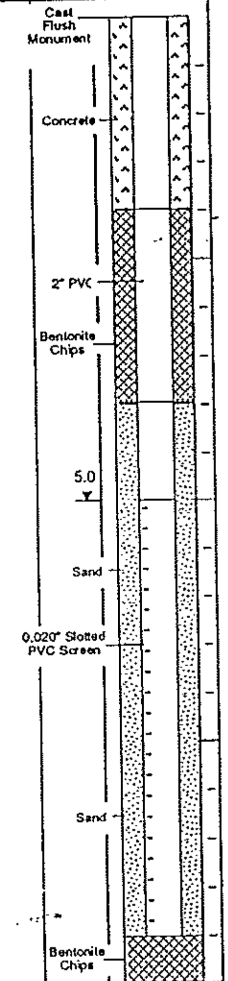
BORING DATE: 8/23/91

DEPTH FEET	BORING METHOD	SOIL PROFILE: DESCRIPTION	USCS	ELEV. / DEPTH	SAMPLES: NUMBER	TYPE	BLOWS / 6 IN. (140 lb. hammer, 30 inch drop)	N	REC/ATT
0	4 inch Hollow-stem Auger	0.0 Loose, medium olive-brown (5Y4/4) fine to coarse SAND and cobbles, dry (FILL)	SP						
		1.0 Loose, brownish-black (5YR2/1) silty, fine to coarse SAND, little fine to coarse gravel, dry	SM						
2.5					2.5	E S	13-10-10	20	90
		3.0 Loose, brownish-black (5YR2/1) fine to coarse SAND, trace silt, moist	SP						
5					5.0	E S	4-4-4	8	90
7.5					7.5	E	2-5-4	9	90
10					10.0	E S	1-1-1	2	100
		11.0 Soft, dusky yellowish-brown (10YR2/2), unstratified, silt and organic material, moist	PT						
		11.3 Soft, low plasticity, dark yellowish-brown CLAY to silty CLAY, some organic material, moist	CL-ML						
12.5		End of hole							
15									

PENETRATION RESISTANCE BLOWS/FT ■ (0, 10, 20, 30, 40, 50)

WATER CONTENT, PERCENT: Wp, W, Wl (0, 10, 20, 30, 40, 50)

PIEZOMETER GRAPHIC / WATER LEVEL



E = Environmental Sample
S = Stratigraphic Sample

DRILL RIG: Mobile B-57

DRILLING CONTRACTOR: HOLT DRILLING

DRILLER: Bill

Golder Associates

LOGGED: D. Crawford

CHECKED: M. Lubrecht

DATE: 1/15/92

RECORD OF BOREHOLE #S-02A

PROJECT: PRSI/DRILLING/TACOMA

SHEET 1 OF 1

DATUM:

PROJECT NUMBER: 913-1215

BORING LOCATION:

BORING DATE: 8/23/91

DEPTH FEET	SOIL PROFILE DESCRIPTION	USCS	SAMPLE NUMBER	TYPE	BLOWS / 6 IN. (140 lb. hammer, 30 inch drop)	N	REC/ATT
0	0.0 Crushed rock, compacted sand and gravel	GP					
	0.3 Loose, medium olive-brown (5Y4/4) fine to coarse SAND, some fine to coarse gravel, little silt, dry (FILL)	SM					
2.5			2.5	E S	9-9-7	16	90
5	5.0 Loose, brownish-black (5YR2/1) fine to medium SAND, trace fine gravel, trace silt, wet	SP	5.0	E	3-5-8	13	90
7.5			7.5	E	1-2-1	3	25
	8.5 Loose, brownish-black (5YR2/1) fine to medium sandy SILT, wet	SM					
10			10.0	NO SAMPLE	1-0-1	1	0
12.5	12.5 Very soft, olive-gray (5Y3/2), silty CLAY, little organic material, wet	CL	12.5	E S	0-0-1	1	50
15							

Boring method: 4 inch Hollow-stem Auger

Penetration resistance: BLOWS/FT ■ (scale 0, 10, 20, 30, 40, 50)

Water content, percent: Wp, W, Wl (scale 0, 10, 20, 30, 40, 50)

Piezometer graphic: Cast Flush Monument; Concrete; 2" PVC; Bentonite Chips; 0.020" Slotted PVC Screen; Sand; Bentonite Chips

Water level: 5.0

E = Environmental Sample
S = Stratigraphic Sample

DRILL RIG: Mobile B-57

DRILLING CONTRACTOR: HOLT DRILLING

DRILLER: Bill

Golder Associates

LOGGED: D. Crawford

CHECKED: M. Lubrecht

DATE: 8/23/91

913-1215/44473

RECORD OF BOREHOLE #C-01A

SHEET 1 OF 1

PROJECT: PRSI/DRILLING/ TACOMA

DATUM:

PROJECT NUMBER: 913-1215

BORING LOCATION:

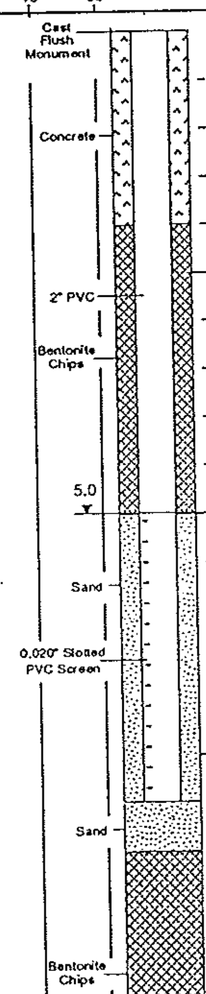
BORING DATE: 8/22/91

BORING METHOD: 4 Inch Hollow-stem Auger

DEPTH FEET	SOIL PROFILE – DESCRIPTION	USCS	SAMPLE NUMBER	TYPE	BLOWS / 6 IN. (140 lb. hammer, 30 inch drop)	N	REC/ATT
0.0	Crushed rock, packed sand and gravel	GP					
0.5	Loose, medium olive-brown (5Y4/4) silty, fine to coarse SAND, little fine to coarse gravel, dry (FILL)	SM					
2.5			2.5	E S	2-4-5	9	75
5.0	Loose, olive-gray (5Y3/2) fine sandy SILT, moist		5.0	E S	5-3-3	6	75
5.0	Loose, brownish-black (5YR2/1) fine to medium SAND, trace fine gravel, trace silt, wet	SP					
7.5			7.5	E S	1-0-1	1	90
7.7	Soft, olive-gray (5Y3/2) silty CLAY, moist	CL					
8.0	Soft, dusky yellowish-brown (10YR2/2), unstratified, organic PEAT, moist	PT					
9.5	Very soft, olive-gray (5Y3/2) silty CLAY to CLAY, little fine sand, wet	CL					
10.0			10.0	NO SAMPLE	0-0-1	1	0
	End of hole						

PENETRATION RESISTANCE BLOWS/FT ■ (0–50); WATER CONTENT, PERCENT: Wp ⊢—○W—⊣ Wl (0–50)

PIEZOMETER GRAPHIC / WATER LEVEL



E = Environmental Sample
S = Stratigraphic Sample

DRILL RIG: Mobile B-57

DRILLING CONTRACTOR: HOLT DRILLING

DRILLER: Bill

Golder Associates

LOGGED: D. Crawford

CHECKED: M. Lubrecht

DATE: 1/15/92

PROJECT: PRSI/DRILLING/ TACOMA

RECORD OF BOREHOLE #C-01B

DATUM:

PROJECT NUMBER: 913-1215

BORING LOCATION:

BORING DATE: 8/22/91

Boring method: 0–10 ft: 6 Inch Hollow-stem Auger; 10–30 ft: 4 Inch Hollow-stem Auger

Note: Install 12" ID conductive casing 0.0'-9.6'. No samples collected 0.0'-9.6'. See C-01A for stratigraphy.

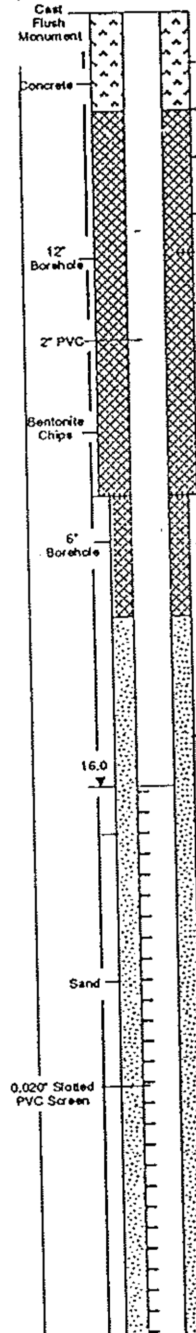
Depth (ft)	Description	USCS
10.0	Very soft, medium-olive brown (5Y4/4), unstratified, organic PEAT, moist	PT
12.5	Very soft, olive-gray (5Y3/2), unstratified, silty CLAY, little peat, moist	OL
16.0	Loose, brownish-black (5YR2/1) silty, fine to medium SAND, trace peat, wet	SP
17.5	Graded to fine to coarse SAND, no organic material	
26.5	Graded to silty fine to medium SAND	
27.5	Soft, olive-green (5Y3/2) silty CLAY, moist	CL

Samples (Blows / 6 in.: 140 lb. hammer, 30 inch drop)

Number	Type	Blows / 6 in.	N	Rec/Att
10.0	E S	1-0-1	1	90
12.5	E	0-0-1	1	100
15.0	E S	0-2-1	3	90
17.5	E	0-2-1	3	90
20.0	E	1-3-5	8	70
22.5	E	3-7-7	14	
25.0	No Sample	1-0-1	1	0
26.5	E	0-0-1	1	50
27.5	E	0-1-2	3	75

PENETRATION RESISTANCE BLOWS/FT ■ (0–50); WATER CONTENT, PERCENT: Wp — W — Wl (0–50)

PIEZOMETER GRAPHIC / WATER LEVEL



E = Environmental Sample
S = Stratigraphic Sample

DRILL RIG: Mobile B-57

DRILLING CONTRACTOR: HOLT DRILLING

DRILLER: Bill

Golder Associates

LOGGED: D. Crawford

CHECKED: M. Lubrecht

DATE: 1/15/92

PROJECT: PRSI/DRILLING/ TACOMA

RECORD OF BOREHOLE #C-01B

SHEET 2 OF 2

DATUM:

PROJECT NUMBER: 913-1215

BORING LOCATION:

BORING DATE: 8/22/91

DEPTH FEET	BORING METHOD	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH	SAMPLES: NUMBER	TYPE	BLOWS / 6 IN. (140 lb. hammer, 30 inch drop)	N	REC/ATT	PENETRATION RESISTANCE BLOWS/FT. ■ (0 10 20 30 40 50) / WATER CONTENT, PERCENT Wp —o W— Wl (0 10 20 30 40 50)	PIEZOMETER GRAPHIC / WATER LEVEL
30		Soft, olive-gray (5Y3/2) silty CLAY, moist	CL			30.0	E,S D	1-0-1	1	80	■	
		31.0 Very soft olive-gray (5Y3/2) silty CLAY to CLAY, wet	CL									
		End of hole										
35												
40												
45												
50												
55												
60												

E = Environmental Sample
S = Stratigraphic Sample
D = Duplicate Environmental Sample

DRILL RIG: Mobile B-57

DRILLING CONTRACTOR: HOLT DRILLING

DRILLER: Bill

Golder Associates

LOGGED: D. Crawford

CHECKED: M. Lubrecht

DATE: 1/15/92

PROJECT: PRSI/DRILLING/TACOMA

RECORD OF BOREHOLE #C-02A

SHEET 1 OF 1

DATUM:

PROJECT NUMBER: 913-1215

BORING LOCATION:

BORING DATE: 8/23/91

BORING METHOD: 4 inch Hollow-stem Auger

SOIL PROFILE

DEPTH FEET	DESCRIPTION	USCS	ELEV. / DEPTH
0.0	Loose, medium olive-brown (5Y4/4), fine to coarse SAND, some cobbles, dry	SP	
2.0	Loose, brownish-black (5YR2/1) silty, fine to medium SAND, some organic material, little cobbles,dry	SM	
5.5	Loose, brownish-black (5YR2/1) fine to coarse SAND, trace fine gravel, wet	SP	
8.5	Graded to silty SAND	SM	
11.0	Very soft, olive-gray (5Y3/2) silty CLAY and peat, moist	OL	

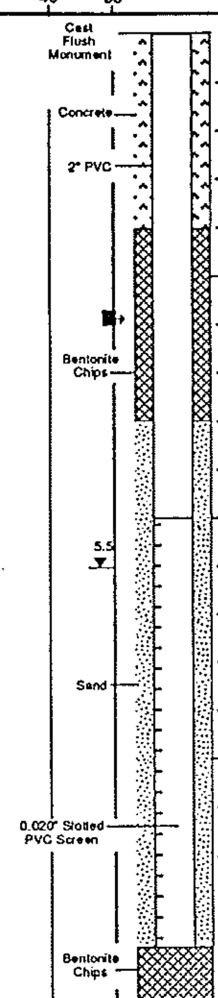
SAMPLES

NUMBER	TYPE	BLOWS / 6 IN. (140 lb. hammer, 30 inch drop)	N	REC/ATT
2.5	E	3-39-12	51	10
5.0	E	4-2-5	7	90
7.5	E	2-5-4	9	90
10.0	E	1-0-1	1	90

PENETRATION RESISTANCE BLOWS/FT ■ (0–50)

WATER CONTENT, PERCENT Wp — W — Wl (0–50)

PIEZOMETER GRAPHIC / WATER LEVEL



E = Environmental Sample
S = Stratigraphic Sample

DRILL RIG: Mobile B-57

DRILLING CONTRACTOR: HOLT DRILLING

DRILLER: Bill

Golder Associates

LOGGED: D. Crawford

CHECKED: M. Lubrecht

DATE: 8/23/91

913-1215/44473

RECORD OF BOREHOLE #C-02B

SHEET 1 OF 2

PROJECT: PRSI/DRILLING/ TACOMA

DATUM:

PROJECT NUMBER: 913-1215

BORING LOCATION:

BORING DATE: 8/26/91

Boring method: 0–10 ft 6 inch Hollow-stem Auger; 10–30 ft 4 inch Hollow-stem Auger

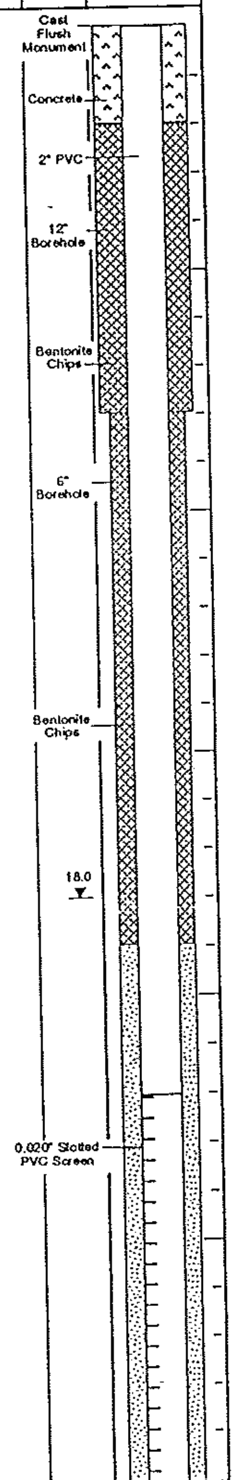
Note: Install 12" ID conductive casing 0.0'-10.0'. No samples collected 0.0'-10.0'. See C-02A for stratigraphy.

E = Environmental Sample
S = Stratigraphic Sample

DEPTH FEET	SOIL PROFILE – DESCRIPTION	USCS	SAMPLE NUMBER	TYPE	BLOWS / 6 IN. (140 lb. hammer, 30 inch drop)	N	REC/ATT
10.0	Very soft, olive-gray (5Y3/2) silty CLAY with little peat, moist	OH	10.0	E S	1-0-1	1	100
			12.5	E	1-0-1	1	100
			15.0	E	0-1-1	2	100
18.0	Compact, brownish-black (5YR2/1), fine to coarse SAND, little silt, trace fine gravel, wet	SP	17.5	E S	3-5-6	11	100
			20.0	E	7-3-4	7	100
			22.5	E	5-4-7	11	75
			25.0	E	0-12-17	29	75
27.5	Heaving sands, no sample, retake sample at 28.5'		27.5	No Sample	4-3-2	5	0
28.5	Firm, olive-gray (5Y3/2), low plasticity, silty CLAY stringer, wet	CL	28.5	E	4-3-2	5	25
29.0	Compact, brownish-black (5YR2/1) SAND, trace silt, wet						

PENETRATION RESISTANCE BLOWS/FT ■ (0–50); WATER CONTENT PERCENT Wp—W—Wl (0–50)

PIEZOMETER GRAPHIC / WATER LEVEL



DRILL RIG: Mobile B-57

DRILLING CONTRACTOR: HOLT DRILLING

DRILLER: Bill

Golder Associates

LOGGED: D. Crawford

CHECKED: M. Lubrecht

DATE: 1/15/92

RECORD OF BOREHOLE #C-02B

PROJECT: PRSI/DRILLING/ TACOMA

SHEET 2 OF 2

DATUM:

PROJECT NUMBER: 913-1215

BORING LOCATION:

BORING DATE: 8/26/91

DEPTH FEET	BORING METHOD	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH	NUMBER	TYPE	BLOWS / 6 IN. 140 lb. hammer 30 inch drop	N	REC/ATT
30	4 Inch Hollow-stem Auger	Compact, brownish-black (5YR 2/1), SAND, trace silt, wet				30.0	E	1-0-1	1	50
		33.0 Very soft, olive-gray (5Y3/2), silty CLAY, wet	CL			32.5	E S D	1-0-1	1	60
		End of hole								

Penetration Resistance Blows/ft (0–50); Water Content, Percent Wp—W—Wl (0–50).

Piezometer Graphic / Water Level: Sand; 0.020 Slotted PVC Screen; Bentonite Chips

Depth scale: 30, 35, 40, 45, 50, 55, 60

E = Environmental Sample
S = Stratigraphic Sample
D = Duplicate Environmental Sample

DRILL RIG: Mobile B-57

DRILLING CONTRACTOR: HOLT DRILLING

DRILLER: Bill

Golder Associates

LOGGED: D. Crawford

CHECKED: M. Lubrecht

DATE: 1/15/92

RECORD OF BOREHOLE #C-03A

PROJECT: PRSI/DRILLING/ TACOMA

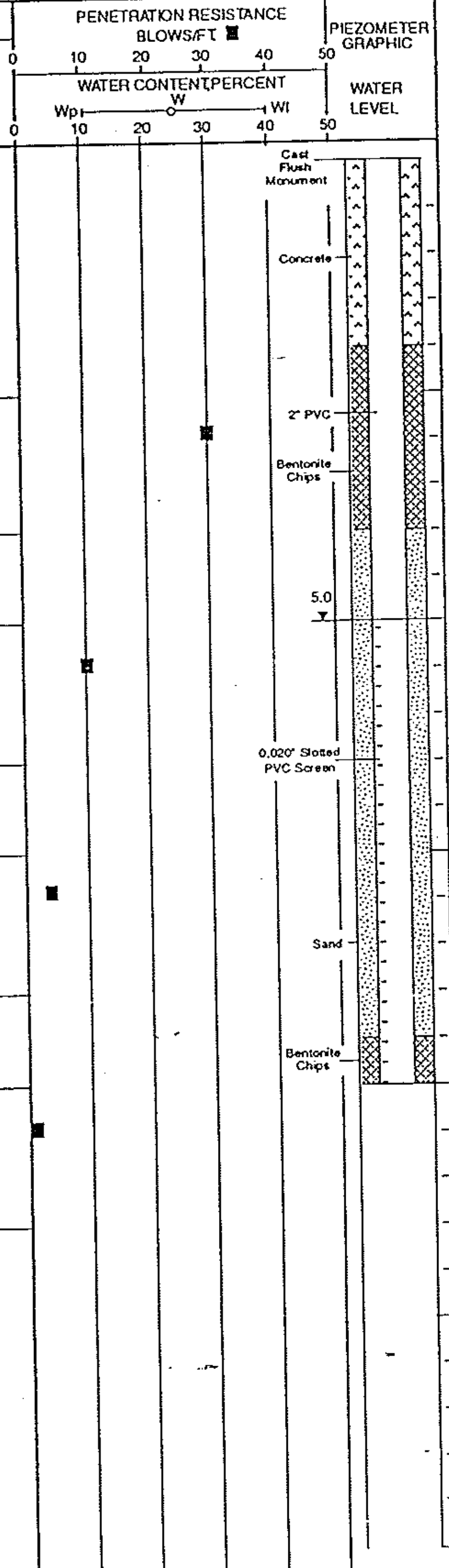
DATUM:

PROJECT NUMBER: 913-1215

BORING LOCATION:

BORING DATE: 8/23/91

DEPTH FEET	BORING METHOD	DESCRIPTION	USCS	ELEV. / DEPTH	SAMPLE NUMBER	TYPE	BLOWS / 6 IN. (140 lb. hammer, 30 inch drop)	N	REC/ATT
0	4 inch Hollow-stem Auger	0.0 Concrete							
		0.8 Loose, brownish-black (5YR2/1) silty, fine to medium sandy, fine to coarse GRAVEL and cobbles, dry	GP						
2.5		2.5 Compact, medium olive-brown (5Y4/4), fine to medium sandy, silty, fine to coarse GRAVEL and cobbles, dry			2.5	E	15-15-15	30	
		3.0 Loose, brownish-black (5YR2/1), fine to coarse SAND, trace silt, strong hydrocarbon odor, moist	SP						
5		5.0 Same material, hydrocarbon sheen visible on soil to 5.5'			5.0	E S	3-4-6	10	
7.5					7.5	E	4-3-1	4	
10					10.0	E	1-0-1	1	
		11.0 Very soft, olive-gray (5Y3/2), silty CLAY, some peat, moist	OL						
		End of hole							
12.5									
15									



E = Environmental Sample
S = Stratigraphic Sample

DRILL RIG: Mobile B-57

DRILLING CONTRACTOR: HOLT DRILLING

DRILLER: Bill

Golder Associates

LOGGED: D. Crawford

CHECKED: M. Lubrecht

DATE: 1/15/92

RECORD OF BOREHOLE #C-03B

PROJECT: PRSI/DRILLING/ TACOMA

SHEET 1 OF 1

DATUM:

PROJECT NUMBER: 913-1215

BORING LOCATION:

BORING DATE: 8/26/91

SOIL PROFILE

DEPTH FEET	BORING METHOD	DESCRIPTION	USCS
0	6 Inch Hollow-stem Auger	0.0 Concrete	
		0.8 Loose, brownish-black (5YR2/1) silty, fine to medium sandy GRAVEL, dry	GP
		2.5 Compact, brownish-black (5YR2/1) fine to coarse SAND, little fine to coarse gravel, moist	SP
5			
		8.0 Soft, dusky yellowish-brown (10YR2/2) PEAT and clay, moist	PT
		8.5 Firm, medium olive-brown (5Y4/4) silty CLAY to CLAY, little organic material, moist	ML-CL
10			
15		15.0 Graded to trace organic material	
	4 inch Hollow-stem Auger	17.5 Loose, brownish-black (5YR2/1) fine to coarse SAND, trace fine to coarse gravel, wet	SP
20		—Heaving Sand	
25		25.5 Soft, olive-gray (5Y3/2) silty CLAY, moist	CL
		26.0 Loose, brownish-black (5YR2/1) fine to coarse SAND, wet	
		End of hole	
30			

E = Environmental Sample
S = Stratigraphic Sample

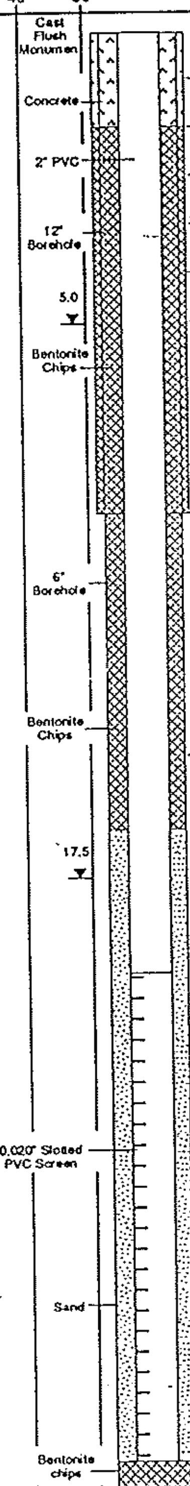
SAMPLES

NUMBER	TYPE	BLOWS / 6 IN. (140 lb. hammer, 30 inch drop)	N	REC/ATT
2.5	E	8-9-8	17	90
5.0	E			90
7.5	E S	2-4-3	7	90
10.0	E	1-0-1	1	100
12.5	E	1-0-1	1	90
15.0	E	1-0-1	1	90
17.5	E	1-1-3	4	75
20.0	E	4-4-7	11	90
22.5	E	11-10-8	18	90
25.0	E	6-3-4	7	
27.5	E	1-0-1		

PENETRATION RESISTANCE BLOWS/FT ■ (0, 10, 20, 30, 40, 50)

WATER CONTENT, PERCENT: Wp, W, Wl (0, 10, 20, 30, 40, 50)

PIEZOMETER GRAPHIC / WATER LEVEL



DRILL RIG: Mobile B-57

DRILLING CONTRACTOR: HOLT DRILLING

DRILLER: Bill

Golder Associates

LOGGED: D. Crawford

CHECKED: M. Lubrecht

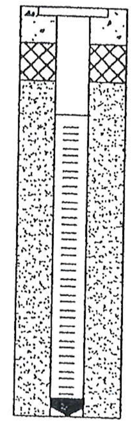
DATE: 1/15/92

International Incorporated

FACILITY **PETROLEUM RECLAIMING SERVICE INCORPORATED** JOB # **00324-001-01** BORING/WELL **SO4A**
LOCATION **3003 TAYLOR WAY AVE., FIFE, WASHINGTON** SURFACE ELEVATION
START **10/18/96 1415** FINISH **10/18/96 1500**
LOGGED BY **P. JEWETT** MONITORING DEVICE **PID** CASING TOP ELEVATION
SUBCONTRACTOR AND EQUIPMENT **CASCADE DRILLING, INC.; LIMITED ACCESS HOLLOW STEM AUGER**
COMMENTS

PENETRATION RESULTS BLOWS 6"/6"/6"	Sample Depth Interval, feet	PID Reading	Sheen	Depth Below Surface, feet	Lithologic Description	Unified Soil Classification	Depth Below Surface, feet
				0	Silty Gravelly Sand (fill)		0
				∇ (approx. 3)			
8/9/9	Field screen / preserved sample	* 0	NS	5	Sand, black, medium dense, medium to coarse grained, saturated	SP	5
55 for 6"	No recovery	0			No recovery		
2/3/2	Field screen / preserved sample	* 0	NS	10	Silty Clay, brown to gray, intermixed with peat/organics, very soft, plastic, saturated	CL-ML	10
					Boring terminated at 11.5 feet. Groundwater encountered at approximately 3 feet during drilling. Boring converted to a groundwater monitoring well on 10/18/96.		
				15			15
				20			20
				25			25

Well Construction Schematic



Field Screen/Lithologic Description Sample
Preserved Sample
No Recovery
* Sample Submitted for Laboratory Analysis
∇ Groundwater Level at Time of Drilling
▼ Static Groundwater Level
SD Sheen Detected
NS No Sheen Detected
NT Not Tested
(2.5Y 4/2) Munsell (1990) Soil Color Charts
Gradational Contact
Contact Located Approximately
Contact
Concrete
Bentonite
10/20 Colorado Silica Sand
2" PVC Blank Casing
2" PVC Screen Casing (0.010 slots)
End Cap

DWG: M324102L

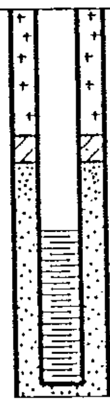
Boring & Well Construction Log

Kennedy/Jenks/Chilton

BORING LOCATION	ATOCHEM TACOMA WASHINGTON
DRILLING COMPANY	PACIFIC TESTING LAB.
DRILLER	J.M.
DRILLING METHOD	HOLLOW STEM AUGER
DRILL BIT(S) SIZE	8 INCH
Boring/Well Name	K-27SS
Project Name	ATOCHEM
Project Number	886067.03/P9BL017

Item	Description	From	To	Unit
ISOLATION CASING	N/A			FT.
BLANK CASING	2-inch sch. 40 PVC	+2.0	5.5	FT.
PERFORATED CASING	2-inch PVC(0.01" slot size)	5.5	9.5	FT.
SIZE AND TYPE OF FILTER PACK	No. 20/40 SILICA SAND	4.0	10.0	FT.
SEAL	BENTONITE CHIPS	3.5	4.0	FT.
GROUT	ATTAPULGITE SLURRY	0.5	3.5	FT.

ELEVATION AND DATUM	SEE NOTE 2
TOTAL DEPTH	19.5 FEET
DATE STARTED	7/12/89
DATE COMPLETED	7/12/89
STATIC WATER ELEVATION	19.28 FT. MSL
LOGGED BY	T.C.S.
SAMPLING METHODS	SEE NOTE 3
WELL COMPLETION	☐ SURFACE HOUSING ☒ STAND PIPE ____ FT.



DEPTH	SAMPLES: RECOVERY (FEET)	PENETRATION RESIST (BLOWS/6 IN.)	TYPE	USCS LOG
	0.5	50 – –		gw
	0.0	20 25 18		gp/gm
	0.3	4 4 6		gp/gm
5	0.3	5 18 14		gp/gm
	1.0	6 6 6		gp/gm
	1.0	11 7 5		gp/gm
10	1.5	3 8 4		sm cl
	1.5	4 3 4		sm cl
	1.5	2 2 3		cl sm
	1.5	2 2 6		cl sm
15	1.5	3 6 29		cl sm
	1.5	8 7 7		cl sm
	1.5	12 15 18		sp sm
20				

SAMPLE DESCRIPTION AND DRILLING REMARKS

BASE ROCK (WELL GRADED GRAVEL) 1.5'

POORLY GRADED GRAVEL WITH SILT AND SAND
Moderate brown to light brown, 60% gravel to 3-inch diameter, 25% medium to fine sand, 15% silt, loose to dense, moist to wet. 9.5'

SILTY SAND
With interbedded silty gravel and silty clay layers, dark yellowish brown with black mottling, loose, wet. 12.1'

SILTY CLAY
With sandy silt interbeds, dark yellowish brown to olive gray, medium stiff to stiff, moist to wet. 17.8'

POORLY GRADED SAND WITH SILT
With silty interbeds, olive gray to reddish black, medium to fine sand, wet. 19.5'

NOTES:

1. A pilot boring was drilled to 19.5 feet below ground surface to determine the lithologic conditions and backfilled with attapulgite slurry.
2. Top of casing elevation is 25.12 feet. Boring elevation is 24.43 feet.
3. K-27SS was sampled with a 2.5-inch split spoon sampler from 0 to 19.5 feet.

APPENDIX B
TEST PIT LOGS

Remedial Investigation Report
Petroleum Reclaiming Service, Inc.
3003 Taylor Way
Tacoma, Washington
SECOR PN: 00324-001-01
October 2, 1996

TEST PIT LOG TP-101

Sample	Water Content in Percent	H-Nu (ppm)	Depth in feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet 0.0
101A		1	1.0	(dense), damp, light brown, silty to very silty, gravelly, poorly graded, medium and coarse sand
				(dense), gray, gravelly, very silty-clayed sand
			2.0	(loose), damp, brown, gravelly, silty, poorly graded, medium and coarse sand
101B		15	3.0	
101C		6	4.0	
101D		10	5.0	(loose), damp, black, slightly silty, poorly graded, medium and coarse sand
				BOTTOM OF TEST PIT 5.0 FEET Completed 10/17/92
			6.0	

1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

TEST PIT LOG TP-102

Sample	Water Content in Percent	H-Nu (ppm)	Depth in feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet 0.0
102A		1	1.0	(loose to dense), damp, brown-gray, silty, gravelly, moderately graded, fine to coarse sand
				(dense), damp, black-gray, gravelly, very silty to clayey, poorly graded, medium and coarse sand
102B		1	3.0	
102C			4.0	(loose), damp, black, slighty silty, poorly graded, medium and coarse sand
				BOTTOM OF TEST PIT 4.0 FEET Completed 10/17/92

Depth scale: 0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0

1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION:
Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

TEST PIT LOG TP-103

Sample	Water Content in Percent	H-Nu (ppm)	Depth in feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet 0.0
103A		1	1.0	(loose to dense), damp, brown, gravelly, brown, moderately graded, medium and coarse sand
				(loose), damp, brown to black, slightly gravelly, silty, poorly graded, medium and coarse sand
			2.0	(dense), moist, gray, gravelly, very silty sand
103B		1	3.0	(loose), damp, black-brown, slightly silty, moderately graded, medium and coarse sand
			4.0	BOTTOM OF TEST PIT 4.0 FEET Completed 10/17/92
			5.0	
			6.0	

1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

TEST PIT LOG TP-104

Sample	Water Content in Percent	H-Nu (ppm)	Depth in feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet 0.0
			0	
104A		1	1.0	(dense) brown-gray alternating layers, slighty sandy to clayey-silty gravel
			2.0	
104B		1.5	3.0	(loose), moist, black, slightly silty, poorly graded, medium and coarse sand
			4.0	BOTTOM OF TEST PIT 3.8 FEET Completed 10/17/92
			5.0	
			6.0	

1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.
( ) = Density not based on blow counts

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION:
Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

TEST PIT LOG TP-105

Sample	Water Content in Percent	H-Nu (ppm)	Depth in feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet 0.0
105A		1	1.0	(loose), moist to damp, light brown, silty, poorly graded, medium and coarse sand
				(dense), moist, gray, very silty, medium and coarse sand
105B		1	3.0	
				(loose), moist, black, slightly silty, poorly graded, medium sand
				BOTTOM OF TEST PIT 4.6 FEET Completed 10/17/92

Depth scale: 0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0

1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

TEST PIT LOG TP-106

Sample	Water Content in Percent	H-Nu (ppm)	Depth in feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet 0.0
			0	
106A		1	1.0	
			0 – 2.0	(loose), damp to wet, light brown, slighty silty, gravelly, poorly graded, medium and coarse sand
106B		1	3.0	
			2.0 – 4.0	(loose), damp, black, slightly slighty silty, poorly graded, medium and coarse sand
			4.0	BOTTOM OF TEST PIT 4.0 FEET Completed 10/17/92
			5.0	
			6.0	

1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.
( ) = Density not based on blow counts

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

TEST PIT LOG TP-107

Sample	Water Content in Percent	H-Nu (ppm)	Depth in feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet 0.0
			0	
107A		1	1.0	
			0.0–1.5	(loose to dense), damp, brown-gray, silty, gravelly, moderately graded, fine to coarse sand
			1.5–1.8	(dense), damp, black-gray, gravelly, very silty to clayey, poorly graded, medium and coarse sand
			2.0	
107B		1	3.0	
			1.8–3.4	(loose), damp, black, slightly silty, poorly graded, medium and coarse sand
			3.4	BOTTOM OF TEST PIT 3.4 FEET Completed 10/17/92
			4.0	
			5.0	
			6.0	

1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.

Tacoma, WA

PROJECT NO: 39211

TEST PIT LOG TP-108

Sample	Water Content in Percent	H-Nu (ppm)	Depth in feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet 0.0
			0	
108A		1	1.0	(loose), moist to damp, light brown, silty, poorly graded, medium and coarse sandy gravel
			2.0	
108B		1	3.0	
			4.0	(loose), moist, black, sandy peat
				BOTTOM OF TEST PIT 4.2 FEET Completed 10/17/92
			5.0	
			6.0	

1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.
( ) = Density not based on blow counts

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

TEST PIT LOG TP-109

Sample	Water Content in Percent	H-Nu (ppm)	Depth in feet
		2	0
109A		8	1.0
109B		10	3.0
109C		10	4.0

SOIL DESCRIPTIONS
Ground Surface Elevation in Feet 0.0

Depth in feet	Soil Description
0 – 1.8	(dense), damp, brown, silty to very silty, gravelly, moderately graded, medium to coarse sand
1.8 – 2.6	(dense), damp, gray, very gravelly, very silty to clayey sand
2.6 – 5.0	(loose to dense), damp, silty, poorly graded, fine and medium sand

BOTTOM OF TEST PIT 5.0 FEET
WATER IN TEST PIT AT 5.0 FEET
Completed 10/17/92

1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.
(   ) = Density not based on blow counts

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

TEST PIT LOG TP-110

Sample	Water Content in Percent	H-Nu (ppm)	Depth in feet	SOIL DESCRIPTIONS Ground Surface Elevation in Feet 0.0
			0	
110A		1	1.0	(loose), damp to wet , dark brown, silty, gravelly, poorly graded, medium and coarse sand
			2.0	(loose), damp, dark brown, slightly silty to silty, moderately graded, fine to medium sand
110B		1	3.0	
			4.0	(loose), damp, brown, slightly silty, poorly graded, medium and coarse sand
				BOTTOM OF TEST PIT 4.1 FEET Completed 10/17/92
			5.0	
			6.0	

1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION:
Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

APPENDIX C
SHALLOW SOIL BORING LOGS

Remedial Investigation Report
Petroleum Reclaiming Service, Inc.
3003 Taylor Way
Tacoma, Washington
SECOR PN: 00324-001-01
October 2, 1996

BOREHOLE NO.111, GEOLOGIC LOG

WELL LOCATION: Loading Area

ELEVATION (Top of Casing):

WATER LEVEL BELOW GROUND SURFACE:

DRILLING CONTRACTOR: PRSI

DRILLING METHOD: Power Auger

SURFACE ELEVATION: 0.0 feet

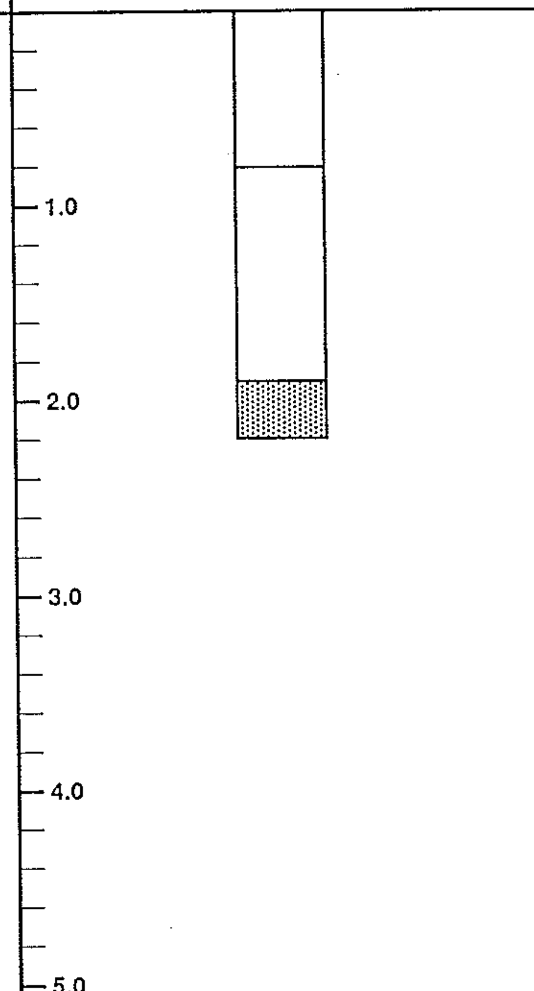
START DATE: 11/7/92

FINISH DATE: 11/7/92

SAMPLING METHOD: Hand Auger

DEPTH (FT)	SAMPLE: Sample Interval	Recov. %	Sample No.	H-Nu (ppm)	Group Symbol (USGS)	GEOLOGIC LOG & DESCRIPTION
0.0–0.8						Concrete
0.8–1.9						Undifferentiated soil
2.0	■	N/A	111A	6	SM	(loose), moist to wet, slightly silty, poorly graded, medium and coarse sand
3.0						
4.0						
5.0						

BOREHOLE



1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts

N/A = Not applicable

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.
Tacoma, WA

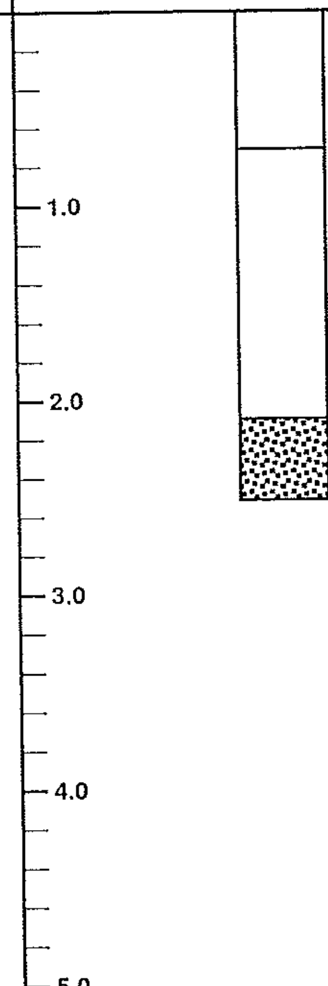
PROJECT NO: 39211

BOREHOLE NO.112, GEOLOGIC LOG

WELL LOCATION: Loading Area
ELEVATION (Top of Casing):
WATER LEVEL BELOW GROUND SURFACE:
DRILLING CONTRACTOR: PRSI
DRILLING METHOD: Power Auger
SURFACE ELEVATION: 0.0 feet
START DATE: 11/7/92
FINISH DATE: 11/7/92
SAMPLING METHOD: Hand Auger

DEPTH (FT)	SAMPLE: Sample Interval	Recov. %	Sample No.	H-Nu (ppm)	Group Symbol (USGS)	GEOLOGIC LOG & DESCRIPTION
0.0–0.7						Concrete
0.7–2.1						Undifferentiated soil
2.1–2.5	■	N/A	112A	1	PT	(loose), damp, black, poorly graded, medium and coarse sandy peat

BOREHOLE



1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts
N/A = Not applicable

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION:
Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

BOREHOLE NO.113, GEOLOGIC LOG

WELL LOCATION: Tank Farm A

ELEVATION (Top of Casing):

SURFACE ELEVATION: 0.0 feet

WATER LEVEL BELOW GROUND SURFACE: 2.0 feet

START DATE: 11/7/92

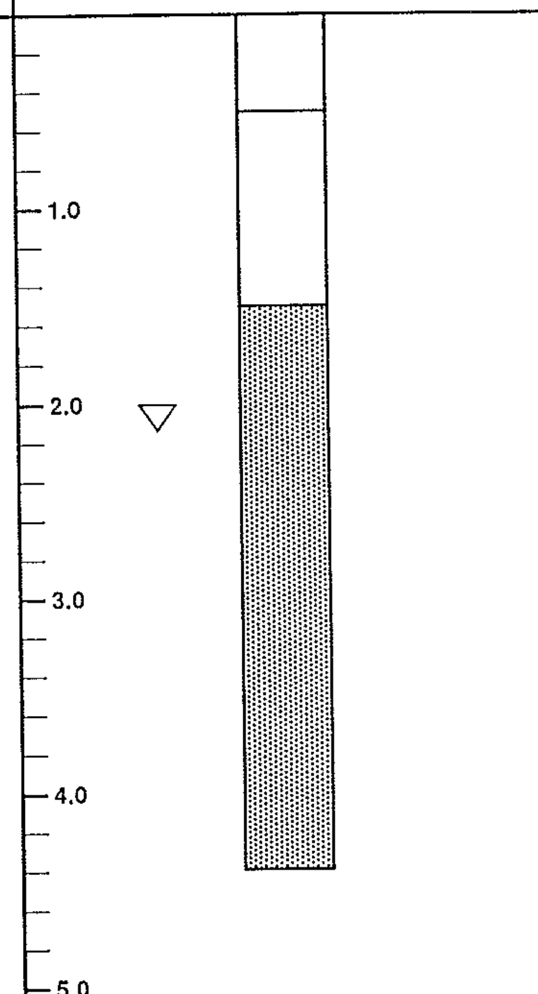
DRILLING CONTRACTOR: PRSI

FINISH DATE: 11/7/92

DRILLING METHOD: Power Auger

SAMPLING METHOD: Shelby Tube

DEPTH (FT)	Sample Interval	Recov. %	Sample No.	H-Nu (ppm)	Group Symbol (USGS)	GEOLOGIC LOG & DESCRIPTION
0–0.5						Concrete
0.5–1.5						Undifferentiated soil
1.5–2.0	■	N/A	113A	1	SM	(loose), wet, gray, very silty, fine to medium, poorly graded sand - petroleum product visible
3.5						Petroleum product visible in soil
4.5						Petroleum product visible in soil



1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts
N/A = Not applicable

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

BOREHOLE NO.114, GEOLOGIC LOG

WELL LOCATION: West of Laboratory
ELEVATION (Top of Casing):
WATER LEVEL BELOW GROUND SURFACE:
DRILLING CONTRACTOR: PRSI
DRILLING METHOD: Power Auger

SURFACE ELEVATION: 0.0 feet
START DATE: 11/7/92
FINISH DATE: 11/7/92
SAMPLING METHOD: Hand Auger

DEPTH (FT)	SAMPLE: Sample Interval	SAMPLE: Recov. %	SAMPLE: Sample No.	SAMPLE: H-Nu (ppm)	Group Symbol (USGS)	GEOLOGIC LOG & DESCRIPTION	BOREHOLE
1.0						Undifferentiated soil	
2.0	2.0–2.6	N/A	114A	1	SM	(loose), damp to wet, light brown, silty, poorly graded, fine and coarse sand	2.0–2.6
3.0							
4.0							
5.0							

BOREHOLE depth scale: 1.0, 2.0, 3.0, 4.0, 5.0

1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts
N/A = Not applicable

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION:
Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

BOREHOLE NO.115, GEOLOGIC LOG

WELL LOCATION: Tank Farm B

ELEVATION (Top of Casing):

WATER LEVEL BELOW GROUND SURFACE: 1.7 feet

DRILLING CONTRACTOR: PRSI

DRILLING METHOD: Power Auger

SURFACE ELEVATION: 0.0 feet

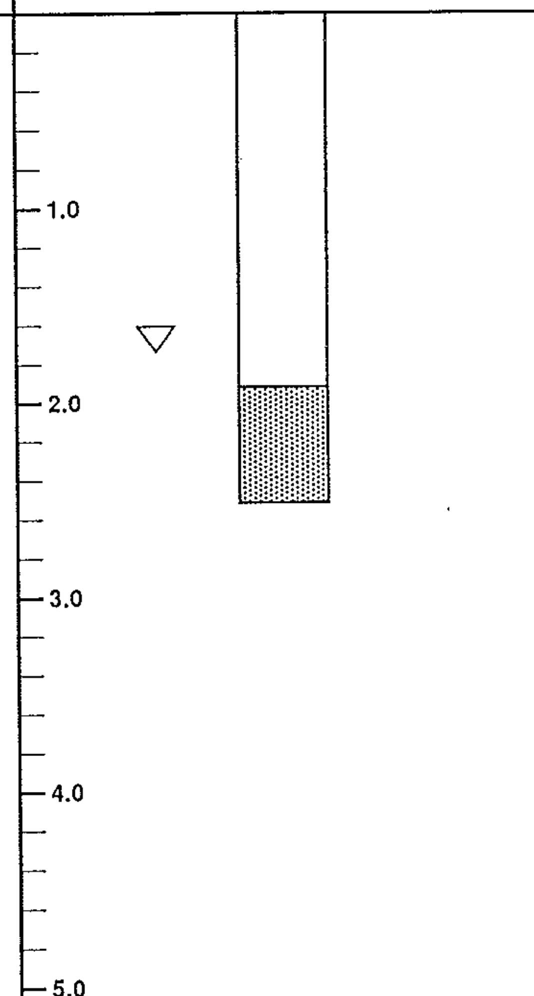
START DATE: 11/7/92

FINISH DATE: 11/7/92

SAMPLING METHOD: Shelby Tube

DEPTH (FT)	SAMPLE: Sample Interval	SAMPLE: Recov. %	SAMPLE: Sample No.	SAMPLE: H-Nu (ppm)	Group Symbol (USGS)	GEOLOGIC LOG & DESCRIPTION
0.0–0.7						Concrete
0.7–1.9						Undifferentiated soil
2.0	1.9–2.5	N/A	115A	1	SM	(loose), wet, light gray, silty to very silty, gravely, poorly graded, medium and coarse sand
3.0						
4.0						
5.0						

BOREHOLE



1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts

N/A = Not applicable

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION:

Petroleum Reclaiming Service, Inc.

Tacoma, WA

PROJECT NO: 39211

BOREHOLE NO.117, GEOLOGIC LOG

WELL LOCATION: Loading Area
ELEVATION (Top of Casing):
WATER LEVEL BELOW GROUND SURFACE:
DRILLING CONTRACTOR: PRSI
DRILLING METHOD: Power Auger
SURFACE ELEVATION: 0.0 feet
START DATE: 11/7/92
FINISH DATE: 11/7/92
SAMPLING METHOD: Hand Auger

DEPTH (FT)	SAMPLE: Sample Interval	Recov. %	Sample No.	H-Nu (ppm)	Group Symbol (USGS)	GEOLOGIC LOG & DESCRIPTION
0.0–0.5						Concrete
0.5–2.6						Undifferentiated soil
2.6–3.3	■	N/A	117A	3	SM	(loose), moist, black, silty, poorly graded, medium and coarse sand

BOREHOLE

1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts
N/A = Not applicable

Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

BOREHOLE NO.118, GEOLOGIC LOG

WELL LOCATION: Loading Area

ELEVATION (Top of Casing): ______

WATER LEVEL BELOW GROUND SURFACE: ______

DRILLING CONTRACTOR: PRSI

DRILLING METHOD: Power Auger

SURFACE ELEVATION: 0.0 feet

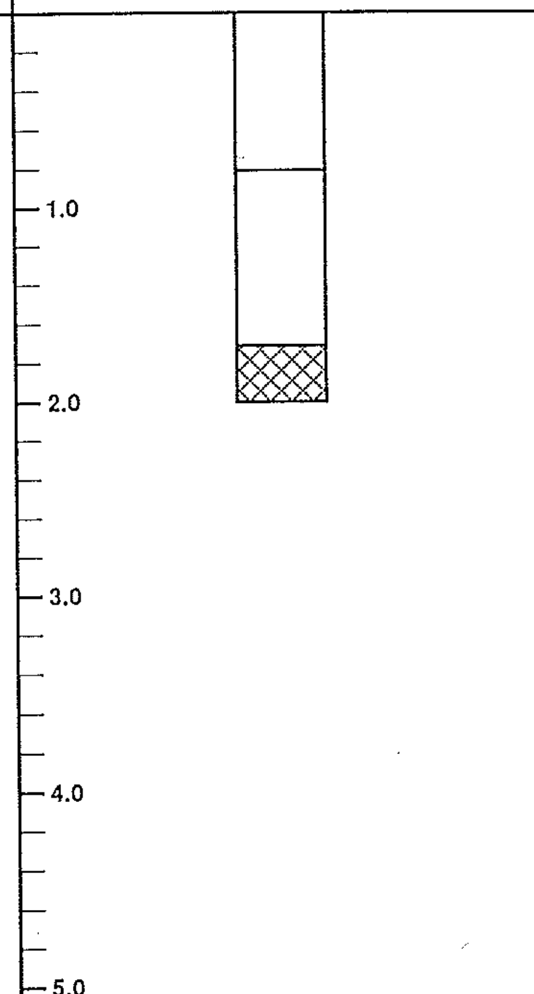
START DATE: 11/7/92

FINISH DATE: 11/7/92

SAMPLING METHOD: Hand Auger

DEPTH (FT)	SAMPLE: Sample Interval	SAMPLE: Recov. %	SAMPLE: Sample No.	SAMPLE: H-Nu (ppm)	Group Symbol (USGS)	GEOLOGIC LOG & DESCRIPTION
0.0–0.8						Concrete
0.8–1.7						Undifferentiated soil
1.7–2.0	1.7–2.0	N/A	118A			Undifferentiated soil and wood chips - drilling refusal

BOREHOLE



1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts

N/A = Not applicable

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

BOREHOLE NO.119, GEOLOGIC LOG

WELL LOCATION: Tank Farm A

ELEVATION (Top of Casing):

SURFACE ELEVATION: 0.0 feet

WATER LEVEL BELOW GROUND SURFACE: 2.4 feet

START DATE: 11/7/92

DRILLING CONTRACTOR: PRSI

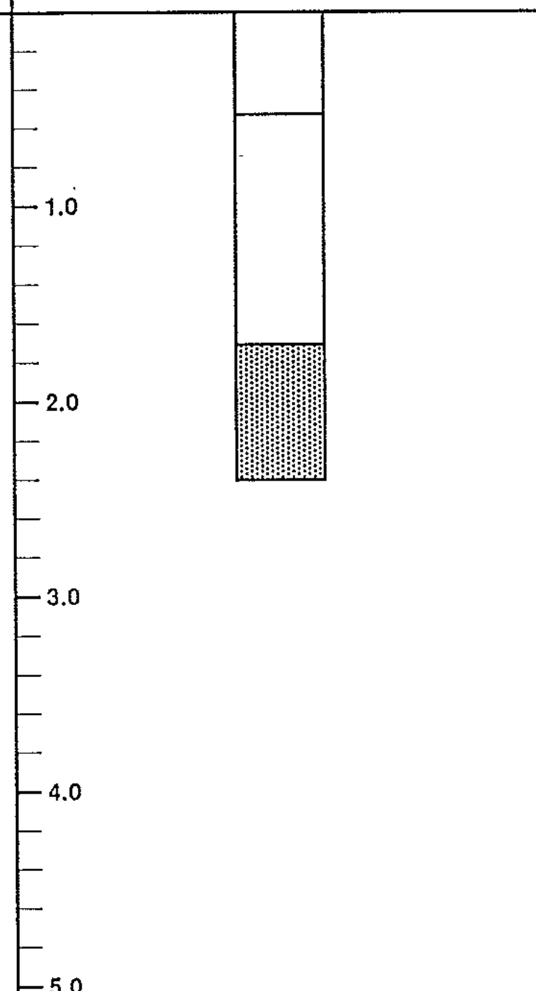
FINISH DATE: 11/7/92

DRILLING METHOD: Power Auger

SAMPLING METHOD: Hand Auger

DEPTH (FT)	SAMPLE: Sample Interval	SAMPLE: Recov. %	SAMPLE: Sample No.	SAMPLE: H-Nu (ppm)	Group Symbol (USGS)	GEOLOGIC LOG & DESCRIPTION
0.0–0.5						Concrete
0.5–1.7						Undifferentiated soil
1.7–2.4 (2.0)	1.7–2.4	N/A	119B	11	SM	(loose), wet, black, slightly silty, poorly graded sand
3.0						
4.0						
5.0						

BOREHOLE



1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts

N/A = Not applicable

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.

Tacoma, WA

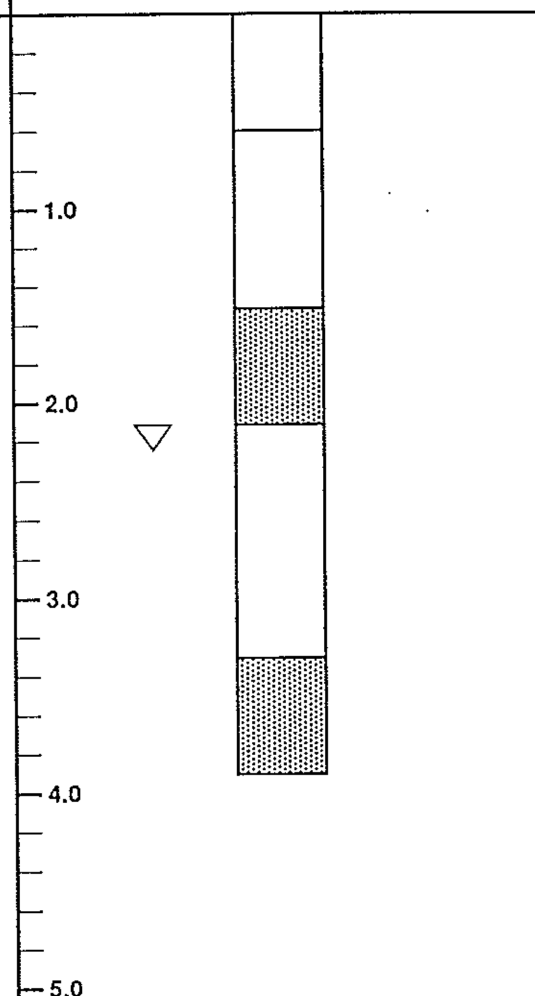
PROJECT NO: 39211

BOREHOLE NO.120, GEOLOGIC LOG

WELL LOCATION: Tank Farm A
ELEVATION (Top of Casing): ______
SURFACE ELEVATION: 0.0 feet
WATER LEVEL BELOW GROUND SURFACE: 2.1 feet
START DATE: 11/7/92
DRILLING CONTRACTOR: PRSI
FINISH DATE: 11/7/92
DRILLING METHOD: Power Auger
SAMPLING METHOD: Hand Auger

DEPTH (FT)	Sample Interval	Recov. %	Sample No.	H-Nu (ppm)	Group Symbol (USGS)	GEOLOGIC LOG & DESCRIPTION
0.0–0.6						Concrete
0.6–1.5						Undifferentiated soil
1.5–2.1	■	N/A	120 A		SM	(loose), damp, slightly silty to silty, poorly graded, medium and coarse sand - petroleum product on water
2.1–3.3						Undifferentiated soil
3.3–3.9	■	N/A	120 B		SM	(loose), wet, black, slightly silty, poorly graded, medium and coarse sand

BOREHOLE



1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts
N/A = Not applicable

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

BOREHOLE NO.121, GEOLOGIC LOG

WELL LOCATION: Tank Farm A

ELEVATION (Top of Casing):

SURFACE ELEVATION: 0.0 feet

WATER LEVEL BELOW GROUND SURFACE: 2.5 feet

START DATE: 11/7/92

DRILLING CONTRACTOR: PRSI

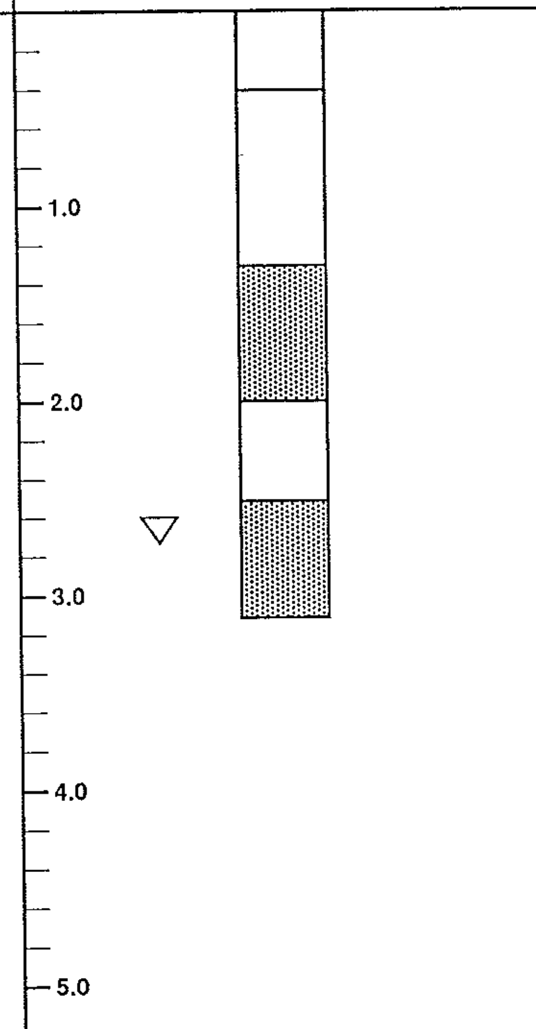
FINISH DATE: 11/7/92

DRILLING METHOD: Power Auger

SAMPLING METHOD: Shelby Tube

DEPTH (FT)	SAMPLE: Sample Interval	SAMPLE: Recov. %	SAMPLE: Sample No.	SAMPLE: H-Nu (ppm)	Group Symbol (USGS)	GEOLOGIC LOG & DESCRIPTION
0.0–0.4						Concrete
0.4–1.3						Undifferentiated soil
1.3–2.0	sampled	N/A	121 A	40	SM	(loose), damp, black, slightly silty, poorly graded, medium and coarse sand
2.0–2.5						
2.5–3.1	sampled	N/A	121 B	1	SM	(loose), wet, slightly silty, poorly graded, medium and coarse sand

BOREHOLE



1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts

N/A = Not applicable

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

BOREHOLE NO.122, GEOLOGIC LOG

WELL LOCATION: Loading Area

ELEVATION (Top of Casing):

SURFACE ELEVATION: 0.0 feet

WATER LEVEL BELOW GROUND SURFACE: 2.6 feet

START DATE: 11/7/92

DRILLING CONTRACTOR: PRSI

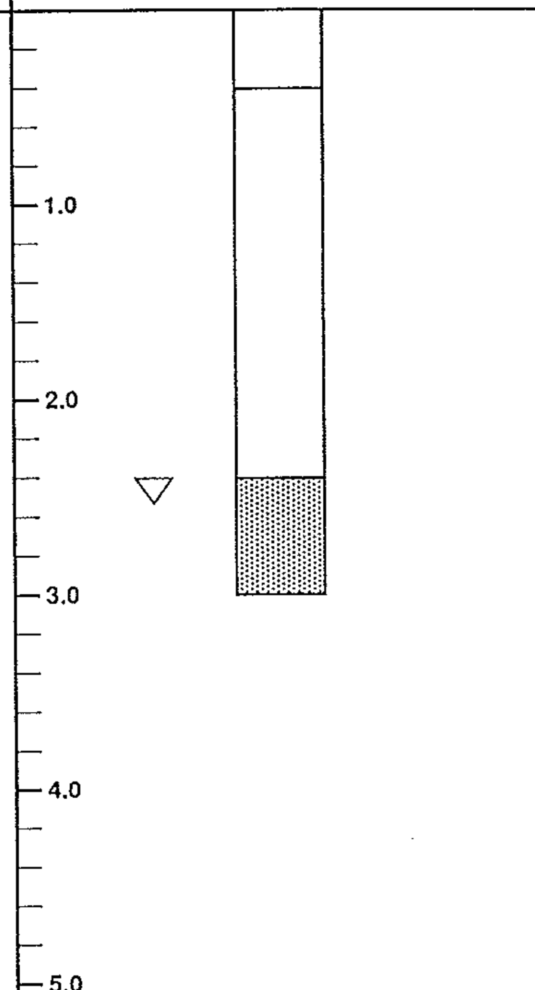
FINISH DATE: 11/7/92

DRILLING METHOD: Power Auger

SAMPLING METHOD: Hand Auger

DEPTH (FT)	SAMPLE: Sample Interval	SAMPLE: Recov. %	SAMPLE: Sample No.	SAMPLE: H-Nu (ppm)	Group Symbol (USGS)	GEOLOGIC LOG & DESCRIPTION
0.0–0.4						Concrete
0.4–2.4						Undifferentiated soil
2.4–3.0	2.4–3.0	N/A	122 A	7	SM	(loose), wet, black, slightly silty, poorly graded, medium and coarse sand

BOREHOLE



1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts

N/A = Not applicable

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc. Tacoma, WA

PROJECT NO: 39211

BOREHOLE NO.123, GEOLOGIC LOG

WELL LOCATION: Between Laboratory and Boilerroom

ELEVATION (Top of Casing):

WATER LEVEL BELOW GROUND SURFACE: 2.0 feet

DRILLING CONTRACTOR: PRSI

DRILLING METHOD: Hand Auger

SURFACE ELEVATION: 0.0 feet

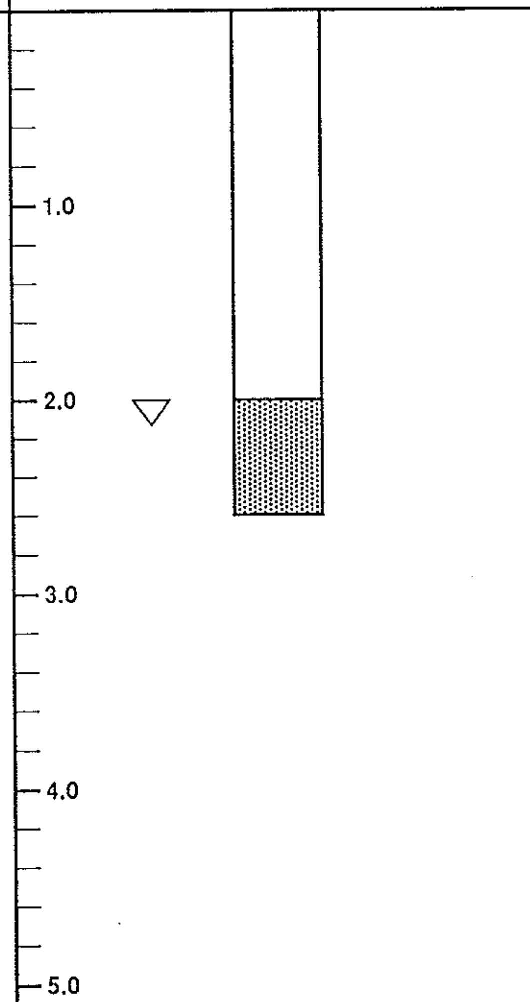
START DATE: 11/7/92

FINISH DATE: 11/7/92

SAMPLING METHOD: Shelby Tube

DEPTH (FT)	SAMPLE: Sample Interval	Recov. %	Sample No.	H-Nu (ppm)	Group Symbol (USGS)	GEOLOGIC LOG & DESCRIPTION
1.0						Undifferentiated soil
2.0	2.0–2.6	N/A	123 A	30	SM	(loose), moist, slightly silty, poorly graded, medium and coarse sand
3.0						
4.0						
5.0						

BOREHOLE



1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts
N/A = Not applicable

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION:
Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

BOREHOLE NO.124, GEOLOGIC LOG

WELL LOCATION: Loading Area

ELEVATION (Top of Casing):

SURFACE ELEVATION: 0.0 feet

WATER LEVEL BELOW GROUND SURFACE:

START DATE: 11/7/92

DRILLING CONTRACTOR: PRSI

FINISH DATE: 11/7/92

DRILLING METHOD: Power Auger

SAMPLING METHOD: Shelby Tube

DEPTH (FT)	SAMPLE: Sample Interval	Recov. %	Sample No.	H-Nu (ppm)	Group Symbol (USGS)	GEOLOGIC LOG & DESCRIPTION
1.0						Undifferentiated soil
2.0	2.0–2.2	N/A	124 A	30	SP	(loose), damp, black, slightly silty, gravelly, poorly graded, medium and coarse sand
3.0						
4.0						
5.0						

BOREHOLE

1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts
N/A = Not applicable

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

BOREHOLE NO.125, GEOLOGIC LOG

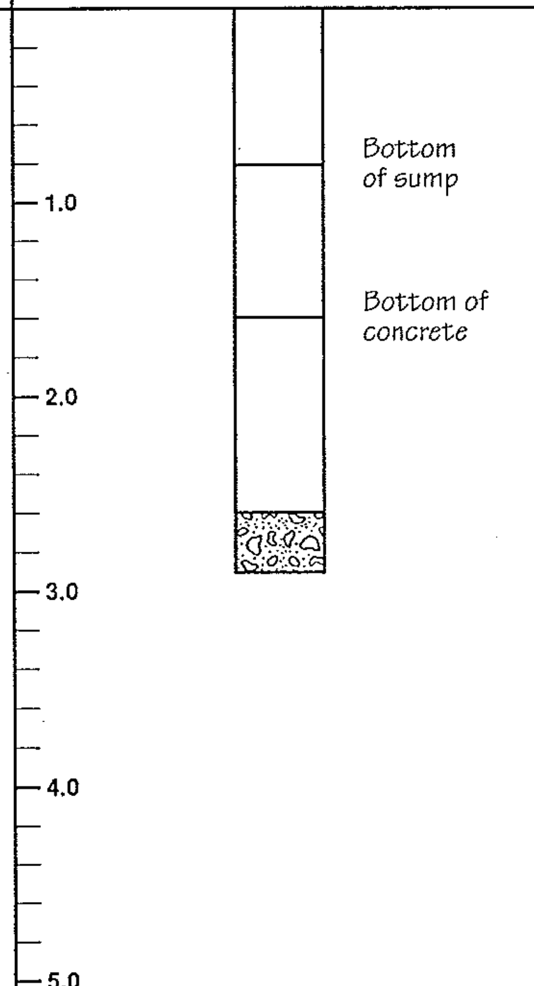
WELL LOCATION: Tank Farm B

ELEVATION (Top of Casing):	SURFACE ELEVATION: 0.0 feet
WATER LEVEL BELOW GROUND SURFACE:	START DATE: 11/7/92
DRILLING CONTRACTOR: PRSI	FINISH DATE: 11/7/92
DRILLING METHOD: Jack-hammer	SAMPLING METHOD: Hand Auger

DEPTH (FT)	SAMPLE: Sample Interval	Recov. %	Sample No.	H-Nu (ppm)	Group Symbol (USGS)	GEOLOGIC LOG & DESCRIPTION
0.0–1.6						Concrete
1.6–2.6						Undifferentiated soil
2.6–2.9	▓	25	125 A	1	GM	(dense), damp to wet, gray-brown, very silty, sandy, poorly graded, gravelly

Depth scale: 1.0, 2.0, 3.0, 4.0, 5.0

BOREHOLE



1. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual.
2. Groundwater conditions, if indicated, are at time of excavation. Conditions may vary with time.

( ) = Density not based on blow counts
N/A = Not applicable

EEC Environmental Engineering & Consulting, Inc.

PROJECT LOCATION: Petroleum Reclaiming Service, Inc.
Tacoma, WA

PROJECT NO: 39211

APPENDIX F

TABLE 7a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8240)
RESULTS IN ug/L (ppb)

		GROUNDWATER MONITORING WELL									REGULATORY CLEANUP LEVELS		
ANALYTE	SAMPLE DATE	SO1A	SO1A DUP	SO2A	CO1A	CO2A	CO3A	CO3AD	CO3A DUP	K27SS	MTCA[1] METHOD A	MTCA METHOD B[2] CARCINOGENIC	METHOD B NON-CARCINOGENIC
Chloromethane	9-91	(10)	--[4]	(10)[3]	(10)	(10)	(10)	--	--	--	--	3.37	--
	6-92	(20)	--	(20)	(20)	(20)	(20)	(20)	--	--			
	9-92	(20)	(20)	(20)	(20)	(20)	(20)	--	--	--			
	12-92	(20)	--	(20)	(20)	(20)	(20)	--	(20)	(20)			
Bromomethane	9-91	(10)	--	(10)	(10)	(10)	(10)	--	--	--	--	--	11.2
	6-92	(20)	--	(20)	(20)	(20)	(20)	(20)	--	--			
	9-92	(20)	(20)	(20)	(20)	(20)	(20)	--	--	--			
	12-92	(20)	--	(20)	(20)	(20)	(20)	--	(20)	(20)			
Vinyl Chloride	9-91	**150**	--	(10)	**200**	(10)	(10)	--	--	--	0.2	0.023	--
	6-92	**190**	--	(20)	**91**	(20)	(20)	(20)	--	--			
	9-92	**120**	**110**[5]	(20)	**2.0**	(20)	(20)	--	--	--			
	12-92	**32**	--	(20)	**5.4**	(20)	(20)	--	(20)	(20)			
Chloroethane	9-91	(10)	--	(10)	(10)	(10)	(10)	--	--	--	--	--	--
	6-92	(20)	--	(20)	(20)	(20)	(20)	(20)	--	--			
	9-92	(20)	(20)	(20)	6.4	(20)	(20)	--	--	--			
	12-92	(20)	--	(20)	14	(20)	(20)	--	(20)	(20)			
Methylene Chloride	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	5.0	--	--
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	**18**	**17**	**16**	**17**	**17**	**15**	--	--	--			
	12-92	(10)	--	**8.0**	(10)	(10)	(10)	--	**13**	(10)			
Acetone	9-91	(100)	--	(100)	(100)	(100)	(100)	--	--	--	--	--	800
	6-92	(100)	--	(100)	(100)	(100)	(100)	(100)	--	--			
	9-92	(100)	(100)	(100)	(100)	(100)	(100)	--	--	--			
	12-92	(100)	--	(100)	(100)	(100)	(100)	--	(100)	(100)			
Carbon Disulfide	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	--	800
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			

TABLE 7a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8240)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	GROUNDWATER MONITORING WELL									REGULATORY CLEANUP LEVELS		
		SO1A	SO1A DUP	SO2A	CO1A	CO2A	CO3A	CO3AD	CO3A DUP	K27SS	MTCA[1] METHOD A	MTCA METHOD B[2] CARCINOGENIC	METHOD B NON-CARCINOGENIC
1,1-Dichloroethene	9-91	(5)	--	(5)	18	(5)	(5)	--	--	--	--	0.0729	72
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			
1,1-Dichloroethane	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	--	800
	6-92	(50)	--	(10)	18	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	9.6	(10)	(10)	--	(10)	(10)			
1,2-Dichloroethene (Total)	9-91	21	--	(5)	(5)	(5)	(5)	--	--	--	--	--	--
	6-92	11	--	(10)	6.0	(10)	(10)	(10)	--	--			
	9-92	3.6	3.2	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			
Chloroform	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	7.17	80
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			
1,2-Dichloroethane	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	5.0	0.481	--
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			
2-Butanone	9-91	(25)	--	(25)	(25)	(25)	(25)	--	--	--	--	--	4800
	6-92	(50)	--	(50)	(50)	(50)	(50)	(50)	--	--			
	9-92	(50)	(50)	(50)	(50)	(50)	(50)	--	--	--			
	12-92	12	--	(50)	(50)	(50)	(50)	--	(50)	(50)			
1,1,1-Trichloroethane	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	200.0	--	7200
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			

TABLE 7a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8240)
RESULTS IN ug/L (ppb)

		GROUNDWATER MONITORING WELL									REGULATORY CLEANUP LEVELS		
ANALYTE	SAMPLE DATE	SO1A	SO1A DUP	SO2A	CO1A	CO2A	CO3A	CO3AD	CO3A DUP	K27SS	MTCA[1] METHOD A	MTCA METHOD B[2] CARCINOGENIC	METHOD B NON-CARCINOGENIC
Carbon Tetrachloride	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	0.337	5.6
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			
Vinyl Acetate	9-91	(25)	--	(25)	(25)	(25)	(25)	--	--	--	--	--	8000
	6-92	(50)	--	(50)	(50)	(50)	(50)	(50)	--	--			
	9-92	(50)	(50)	(50)	(50)	(50)	(50)	--	--	--			
	12-92	(50)	--	(50)	(50)	(50)	(50)	--	(50)	(50)			
Bromodichloromethane	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	0.706	160
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			
1,2-Dichloropropane	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	0.643	--
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			
Cis-1,3-Dichloropropene	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	--	--
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			
Trichloroethene	9-91	**32**	--	(5)	(5)	(5)	(5)	--	--	--	5.0	3.98	--
	6-92	10	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			
Dibromochloromethane	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	0.521	160
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			

TABLE 7a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8240)
RESULTS IN ug/L (ppb)

		GROUNDWATER MONITORING WELL									REGULATORY CLEANUP LEVELS		
ANALYTE	SAMPLE DATE	SO1A	SO1A DUP	SO2A	CO1A	CO2A	CO3A	CO3AD	CO3A DUP	K27SS	MTCA[1] METHOD A	MTCA METHOD B[2] CARCINOGENIC	METHOD B NON-CARCINOGENIC
1,1,2-Trichloroethane	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	0.768	32
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			
Benzene	9-91	(5)	--	(5)	**38**	(5)	(5)	--	--	--	5.0	1.51	--
	6-92	(50)	--	(10)	**30**	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	**27**	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	**28**	(10)	(10)	--	(10)	(10)			
Trans-1,3-Dichloropropene	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	--	--
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			
Bromoform	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	5.54	160
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			
4-Methyl-2-Pentanone	9-91	(25)	--	(25)	(25)	(25)	(25)	--	--	--	--	--	--
	6-92	(50)	--	(50)	(50)	(50)	(50)	(50)	--	--			
	9-92	(50)	(50)	(50)	(50)	(50)	(50)	--	--	--			
	12-92	(50)	--	(50)	(50)	(50)	(50)	--	(50)	(50)			
2-Hexanone	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	--	--
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	-- --	(10)	(10)	(10)	(10)	--	(10)	(10)			
Tetrachloroethene	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	5.0	0.858	80
	6-92	(50)	(10)	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	--	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)		(10)	(10)	(10)	(10)	--	(10)	(10)			

TABLE 7a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8240)
RESULTS IN ug/L (ppb)

		GROUNDWATER MONITORING WELL									REGULATORY CLEANUP LEVELS		
ANALYTE	SAMPLE DATE	SO1A	SO1A DUP	SO2A	CO1A	CO2A	CO3A	CO3AD	CO3A DUP	K27SS	MTCA[1] METHOD A	MTCA METHOD B[2] CARCINOGENIC	METHOD B NON-CARCINOGENIC
1,1,2,2-Tetrachloroethane	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	0.219	--
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			
Toluene	9-91	(5)	--	(5)	**52**	(5)	(5)	--	--	--	40.0	--	1600
	6-92	(50)	--	(10)	36	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	10	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	5.0	(10)	(10)	--	(10)	(10)			
Chlorobenzene	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	--	160
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			
Ethyl Benzene	9-91	(5)	--	(5)	59	(5)	(5)	--	--	--	30.0	--	800
	6-92	(50)	--	(10)	47	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	85	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	58	(10)	2.4	--	(10)	(10)			
Styrene	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	1.46	1600
	6-92	(50)	--	(10)	(10)	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)			
Total Xylenes	9-91	(5)	--	(5)	**58**	(5)	34	--	--	--	20.0	--	16,000
	6-92	(50)	--	(10)	**49**	(10)	(10)	(10)	--	--			
	9-92	(10)	(10)	(10)	**230**	(10)	(10)	--	--	--			
	12-92	(10)	--	(10)	**106**	(10)	2.4	--	(10)	(10)			

NOTES:

1. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels for Groundwater Chapter 173-340 WAC
2. MTCA Cleanup Levels and Risk Calculations (CLARC II) update February 1996
3. (10) analyte concentration not detected above PQL indicated within ( )
4. -- = analyte not analyzed or no published regulatory cleanup levels
5. **Bold** - analyte concentrations above cleanup level

TABLE 7b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8240)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] METHOD A	MTCA[2] METHOD B CARCINOGENIC	METHOD B NON-CARCINOGENIC
Chloromethane	9-91	(10)[3]	(10)	(10)	--[4]	3.37	--
	6-92	(20)	(20)	(20)			
	9-92	(20)	--	--			
	12-92	(20)	--	--			
Bromomethane	9-91	(10)	(10)	(10)	--	--	11.2
	6-92	(20)	(20)	(20)			
	9-92	(20)	--	--			
	12-92	(20)	--	--			
Vinyl Chloride	9-91	(10)	(10)	(10)	0.2	0.023	--
	6-92	(20)	(20)	(20)			
	9-92	(20)	--	--			
	12-92	(20)	--	--			
Chloroethane	9-91	(10)	(10)	(10)	--	--	--
	6-92	(20)	(20)	(20)			
	9-92	(20)	--	--			
	12-92	(20)	--	--			
Methylene Chloride	9-91	(5)	(5)	(5)	5.0	--	--
	6-92	(10)	(10)	(10)			
	9-92	**16**[5]	--	--			
	12-92	(10)	--	--			
Acetone	9-91	(100)	(100)	(100)	--	--	800
	6-92	(100)	(100)	(100)			
	9-92	(100)	--	--			
	12-92	(100)	--	--			
Carbon Disulfide	9-91	(5)	(5)	(5)	--	--	800
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
1,1-Dichloroethene	9-91	(5)	(5)	(5)	--	0.0729	72
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
1,1-Dichloroethane	9-91	(5)	(5)	(5)	--	--	800
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			

TABLE 7b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8240)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] METHOD A	MTCA[2] METHOD B CARCINOGENIC	METHOD B NON-CARCINOGENIC
1,2-Dichloroethene (Total)	9-91	(5)	(5)	(5)	--	--	--
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
Chloroform	9-91	(5)	(5)	(5)	--	7.17	80
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
1,2-Dichloroethane	9-91	(5)	(5)	(5)	5.0	0.481	--
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
2-Butanone	9-91	(25)	(25)	(25)	--	--	4800
	6-92	(50)	(50)	(50)			
	9-92	(50)	--	--			
	12-92	(50)	--	--			
1,1,1-Trichloroethane	9-91	(5)	(5)	(5)	200.0	--	7200
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
Carbon Tetrachloride	9-91	(5)	(5)	(5)	--	0.337	5.6
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
Vinyl Acetate	9-91	(25)	(25)	(25)	--	--	8000
	6-92	(50)	(50)	(50)			
	9-92	(50)	--	--			
	12-92	(50)	--	--			
Bromodichloromethane	9-91	(5)	(5)	(5)	--	0.706	160
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
1,2-Dichloropropane	9-91	(5)	(5)	(5)	--	0.643	--
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			

TABLE 7b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8240)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] METHOD A	MTCA[2] METHOD B CARCINOGENIC	METHOD B NON-CARCINOGENIC
Cis-1,3-Dichloropropene	9-91	(5)	(5)	(5)	--	--	--
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
Trichloroethene	9-91	(5)	(5)	(5)	5.0	3.98	--
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
Dibromochloromethane	9-91	(5)	(5)	(5)	--	0.521	160
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
1,1,2-Trichloroethane	9-91	(5)	(5)	(5)	--	0.768	32
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
Benzene	9-91	(5)	(5)	(5)	5.0	1.51	--
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
Trans-1,3-Dichloropropene	9-91	(5)	(5)	(5)	--	--	--
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
Bromoform	9-91	(5)	(5)	(5)	--	5.54	160
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
4-Methyl-2-Pentanone	9-91	(25)	(25)	(25)	--	--	--
	6-92	(50)	(50)	(50)			
	9-92	(50)	--	--			
	12-92	(50)	--	--			
2-Hexanone	9-91	(5)	(5)	(5)	--	--	--
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			

TABLE 7b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8240)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] METHOD A	MTCA[2] METHOD B CARCINOGENIC	METHOD B NON-CARCINOGENIC
Tetrachloroethene	9-91	(5)	(5)	(5)	5.0	0.858	80
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
1,1,2,2-Tetrachloroethane	9-91	(5)	(5)	(5)	--	0.219	--
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
Toluene	9-91	(5)	(5)	(5)	40.0	--	1600
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
Chlorobenzene	9-91	(5)	(5)	(5)	--	--	160
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
Ethyl Benzene	9-91	(5)	(5)	(5)	30.0	--	800
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
Styrene	9-91	(5)	(5)	(5)	--	1.46	1600
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			
Total Xylenes	9-91	(5)	(5)	(5)	20.0	--	16,000
	6-92	(10)	(10)	(10)			
	9-92	(10)	--	--			
	12-92	(10)	--	--			

NOTES:

1. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels for Groundwater Chapter 173-340 WAC
2. MTCA Cleanup Levels and Risk Calculations (CLARC II) update February 1996
3. (10) analyte concentration not detected above PQL indicated within ( )
4. -- = analyte not analyzed or no published regulatory cleanup levels
5. **Bold** - concentrations above regulatory cleanup levels

TABLE 7c
GROUNDWATER ANALYTICAL RESULTS - TRIP AND EQUIPMENT BLANKS
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8240)
RESULTS IN ug/l (ppb)

ANALYTE	TRIP BLANK 9-91	DUP TRIP BLANK 9-91	EQ BLANK C05 9-91	EQUIP BLANK 6-92	TRIP BLANK 6-92	EQUIP BLANK 9-92	TRIP BLANK 9-92	EQUIP BLANK 12-92	TRIP BLANK 12-92	MTCA[1] METHOD A	MTCA[2] METHOD B CARCINOGENIC	METHOD B NON-CARCINOGENIC
Chloromethane	(10)[3]	(10)	(10)	(20)	(20)	(20)	(20)	(20)	(20)	--[4]	3.37	--
Bromomethane	(10)	(10)	(10)	(20)	(20)	(20)	(20)	(20)	(20)	--	--	11.2
Vinyl Chloride	(10)	(10)	(10)	(20)	(20)	(20)	(20)	(20)	(20)	0.2	0.023	--
Chloroethane	(10)	(10)	(10)	(20)	(20)	(20)	(20)	(20)	(20)	--	--	--
Methylene Chloride	(5)	(5)	(5)	(10)	(10)	15	26	(10)	10	5.0	--	--
Acetone	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	--	--	800
Carbon Disulfide	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	--	800
1,1-Dichloroethene	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	0.0729	72
1,1-Dichloroethane	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	--	800
1,2-Dichloroethene (Total)	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--
Chloroform	(5)	(5)	(5)	(10)	(10)	(10)	(10)	2.2	(10)	--	7.17	80
1,2-Dichloroethane	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	5.0	0.481	--
2-Butanone	(25)	(25)	(25)	(50)	(50)	(50)	(50)	(50)	(50)	--	--	4800
1,1,1-Trichloroethane	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	200.0	--	7200
Carbon Tetrachloride	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	0.337	5.6
Vinyl Acetate	(25)	(25)	(25)	(50)	(50)	(50)	(50)	(50)	(50)	--	--	8000
Bromodichloromethane	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	0.706	160
1,2-Dichloropropane	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	0.643	--
Cis-1,3-Dichloropropene	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--
Trichloroethene	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	5.0	3.98	--
Dibromochloromethane	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	0.521	160

TABLE 7c
GROUNDWATER ANALYTICAL RESULTS - TRIP AND EQUIPMENT BLANKS
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8240)
RESULTS IN ug/l (ppb)

ANALYTE	TRIP BLANK 9-91	DUP TRIP BLANK 9-91	EQ BLANK C05 9-91	EQUIP BLANK 6-92	TRIP BLANK 6-92	EQUIP BLANK 9-92	TRIP BLANK 9-92	EQUIP BLANK 12-92	TRIP BLANK 12-92	MTCA[1] METHOD A	MTCA[2] METHOD B CARCINOGENIC	METHOD B NON-CARCINOGENIC
1,1,2-Trichloroethane	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	0.768	32
Benzene	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	5.0	1.51	--
Trans-1,3-Dichloropropene	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--
Bromoform	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	5.54	160
4-Methyl-2-Pentanone	(25)	(25)	(25)	(50)	(50)	(50)	(50)	(50)	(50)	--	--	--
2-Hexanone	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--
Tetrachloroethene	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	5.0	0.858	80
1,1,2,2-Tetrachloroethane	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	0.219	--
Toluene	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	40.0	--	1600
Chlorobenzene	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	--	160
Ethyl Benzene	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	30.0	--	800
Styrene	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	--	1.46	1600
Total Xylenes	(5)	(5)	(5)	(10)	(10)	(10)	(10)	(10)	(10)	20.0	--	16,000

NOTES:

1. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels for Groundwater Chapter 173-340 WAC
2. MTCA Cleanup Levels and Risk Calculations (CLARC II) update February 1996
3. (10) analyte concentration not detected above PQL indicated within ( )
4. -- = analyte not analyzed or no published regulatory cleanup levels

TABLE 8a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	S01A	SO2A	CO1A	CO2A	CO3A	CO3AD	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
Phenol	9-91	(10)[3]	(10)	(10)	(10)	(10)	--	--	9,600
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--[4]	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
bis (2-Chloroethyl) ether	9-91	(10)	(10)	(10)	(10)	(10)	--	0.0398	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
2-Chlorophenol	9-91	(10)	(10)	(10)	(10)	(10)	--	--	80
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
1,3-Dichlorobenzene	9-91	(10)	(10)	(10)	(10)	(10)	--	--	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
1,4-Dichlorobenzene	9-91	(10)	(10)	(10)	(10)	(10)	--	1.82	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Benzyl Alcohol	9-91	(20)	(20)	(20)	(20)	(20)	--	--	4,800
	6-92	(20)	(20)	(20)	(20)	(21)	(20)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
1,2-Dichlorobenzene	9-91	(10)	(10)	1.1	(10)	(10)	--	--	720
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
2-Methylphenol	9-91	(10)	(10)	(10)	(10)	(10)	--	--	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
bis (2-Chloroisopropyl) Ether	9-91	(10)	(10)	(10)	(10)	(10)	--	--	320
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
4-Methylphenol	9-91	(10)	(10)	(10)	(10)	(10)	--	--	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		

TABLE 8a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	S01A	SO2A	CO1A	CO2A	CO3A	CO3AD	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
N-Nitroso-Di-N-propylamine	9-91	(10)	(10)	(10)	(10)	(10)	--	0.0125	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Hexachloroethane	9-91	(10)	(10)	(10)	(10)	(10)	--	6.25	16
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Nitrobenzene	9-91	(10)	(10)	(10)	(10)	(10)	--	--	8.0
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Isophorone	9-91	(10)	(10)	(10)	(10)	(10)	--	92.1	3,200
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
2-Nitrophenol	9-91	(10)	(10)	(10)	(10)	(10)	--	--	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
2,4-Dimethylphenol	9-91	(10)	(10)	4.0	(10)	(10)	--	--	320
	6-92	(10)	(10)	2.5	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Benzoic Acid	9-91	(50)	(50)	(50)	(50)	(50)	--	--	64,000
	6-92	(50)	(51)	(50)	(50)	(52)	(51)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
bis (2-Chloroethoxy) methane	9-91	(10)	(10)	(10)	(10)	(10)	--	--	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
2,4-Dichlorophenol	9-91	(10)	(10)	(10)	(10)	(10)	--	--	48
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
1,2,4-Trichlorobenzene	9-91	(10)	(10)	(10)	(10)	(10)	--	--	80
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		

TABLE 8a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	S01A	SO2A	CO1A	CO2A	CO3A	CO3AD	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
Naphthalene	9-91	(10)	(10)	1.0	(10)	20	--	--	320
	6-92	(10)	(10)	(10)	(10)	7	6		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
4-Chloroaniline	9-91	(20)	(20)	(20)	(20)	(20)	--	--	64
	6-92	(20)	(20)	(20)	(20)	(21)	(20)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Hexachlorobutadiene	9-91	(10)	(10)	(10)	(10)	(10)	--	0.561	1.6
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
4-Chloro-3-methylphenol	9-91	(20)	(20)	(20)	(20)	(20)	--	--	--
	6-92	(20)	(20)	(20)	(20)	(21)	(20)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
2-Methylnaphthalene	9-91	(10)	(10)	(10)	(10)	29	--	--	--
	6-92	(10)	(10)	(10)	(10)	3	2		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Hexachlorocyclopentadiene	9-91	(10)	(10)	(10)	(10)	(10)	--	--	112
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
2,4,6-Trichlorophenol	9-91	(10)	(10)	(10)	(10)	(10)	--	7.95	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
2,4,5-Trichlorophenol	9-91	(10)	(10)	(10)	(10)	(10)	--	--	1,600
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
2-Chloronaphthalene	9-91	(10)	(10)	(10)	(10)	(10)	--	--	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
2-Nitroaniline	9-91	(50)	(50)	(50)	(50)	(50)	--	--	--
	6-92	(50)	(51)	(50)	(50)	(52)	(51)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		

TABLE 8a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	S01A	SO2A	CO1A	CO2A	CO3A	CO3AD	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
Dimethyl phthalate	9-91	(10)	(10)	(10)	(10)	(10)	--	--	16,000
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Acenaphthylene	9-91	(10)	(10)	(10)	(10)	(10)	--	--	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
3-Nitroaniline	9-91	(50)	(50)	(50)	(50)	(50)	--	--	--
	6-92	(50)	(51)	(50)	(50)	(52)	(51)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Acenaphthene	9-91	(10)	(10)	(10)	(10)	1.9	--	--	960
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
2,4-Dinitrophenol	9-91	(50)	(50)	(50)	(50)	(50)	--	--	32
	6-92	(50)	(51)	(50)	(50)	(52)	(51)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
4-Nitrophenol	9-91	(50)	(50)	(50)	(50)	(50)	--	--	--
	6-92	(50)	(51)	(50)	(50)	(52)	(51)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Dibenzofuran	9-91	(10)	(10)	(10)	(10)	(10)	--	--	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
2,4-Dinitrotoluene	9-91	(10)	(10)	(10)	(10)	(10)	--	--	32
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
2,6-Dinitrotoluene	9-91	(10)	(10)	(10)	(10)	(10)	--	--	16
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Diethylphthalate	9-91	(10)	(10)	(10)	(10)	1.8	--	--	12,800
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		

TABLE 8a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	S01A	SO2A	CO1A	CO2A	CO3A	CO3AD	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
4-Chlorphenyl phenyl ether	9-91	(10)	(10)	(10)	(10)	(10)	--	--	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Fluorene	9-91	(10)	(10)	(10)	(10)	3.2	--	--	640
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
4-Nitroaniline	9-91	(10)	(10)	(10)	(10)	(10)	--	--	--
	6-92	(50)	(51)	(50)	(50)	(52)	(51)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
4,6-Dinitro-2-methylphenol	9-91	(50)	(50)	(50)	(50)	(50)	--		
	6-92	(50)	(51)	(50)	(50)	(52)	(51)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
N-Nitrosodiphenylamine	9-91	(50)	(50)	(50)	(50)	(50)	--	17.9	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
4-Bromophenyl phenyl ether	9-91	(10)	(10)	(10)	(10)	(10)	--	--	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Hexachlorobenzene	9-91	(10)	(10)	(10)	(10)	(10)	--	0.0547	12.8
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Pentachlcrophenol	9-91	(50)	(50)	(50)	(50)	(50)	--	0.729	480
	6-92	(50)	(51)	(50)	(50)	(52)	(51)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Phenanthrene	9-91	(10)	(10)	(10)	(10)	2.6	--	--	--
	6-92	(10)	(10)	(10)	(10)	2	2		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Anthracene	9-91	(10)	(10)	(10)	(10)	(10)	--	--	4,800
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		

TABLE 8a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	S01A	SO2A	CO1A	CO2A	CO3A	CO3AD	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
Di-n-butylphthalate	9-91	2.3	(10)	(10)	(10)	2.8	--	--	--
	6-92	(10)	3	61	18	2	4		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Fluoranthene	9-91	(10)	(10)	(10)	(10)	(10)	--	--	640
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Pyrene	9-91	(10)	(10)	(10)	(10)	(10)	--	--	480
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Butyl benzyl phthalate	9-91	(10)	(10)	(10)	(10)	(10)	--	--	3,200
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
3,3'-Dichlorobenzidine	9-91	(10)	(10)	(10)	(10)	(10)	--	0.194	--
	6-92	(20)	(20)	(20)	(20)	(21)	(20)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Benzo (a) anthracene	9-91	(10)	(10)	(10)	(10)	(10)	--	0.012	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
bis (2-ethylhexyl) phthalate	9-91	1.6	0.7	0.5	1.7	2.0	--	6.25	320
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Chrysene	9-91	(10)	(10)	(10)	(10)	(10)	--	0.012	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Di-n-octyl phthalate	9-91	(10)	(10)	(10)	(10)	(10)	--	--	320
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Benzo (b) fluoranthene	9-91	(10)	(10)	(10)	(10)	(10)	--	0.012	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		

TABLE 8a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	S01A	SO2A	CO1A	CO2A	CO3A	CO3AD	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
Benzo (k) fluoranthene	9-91	(10)	(10)	(10)	(10)	(10)	--	0.012	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Benzo (a) pyrene	9-91	(10)	(10)	(10)	(10)	(10)	--	0.012	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Indeno (1,2,3-cd) pyrene	9-91	(10)	(10)	(10)	(10)	(10)	--	0.012	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Dibenzo (a,h) anthracene	9-91	(10)	(10)	(10)	(10)	(10)	--	0.012	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		
Benzo (g,h,i) Perylene	9-91	(10)	(10)	(10)	(10)	(10)	--	--	--
	6-92	(10)	(10)	(10)	(10)	(10)	(10)		
	9-92	--	--	--	--	--	--		
	12-92	--	--	--	--	--	--		

NOTES:

2. MTCA Cleanup Levels and Risk Calculations (CLARC II) update February 1996
3. (10) analyte concentration not detected above PQL indicated within ( )
4. -- = analyte not analyzed or no published regulatory cleanup levels

TABLE 8b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] Method A	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
Phenol	9-91	(10)[3]	(10)	(10)		--[4]	9,600
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
bis (2-Chloroethyl) ether	9-91	(10)	(10)	(10)		0.0398	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
2-Chlorophenol	9-91	(10)	(10)	(10)		--	80
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
1,3-Dichlorobenzene	9-91	(10)	(10)	(10)		--	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
1,4-Dichlorobenzene	9-91	(10)	(10)	(10)		1.82	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Benzyl Alcohol	9-91	(20)	(20)	(20)		--	4,800
	6-92	(20)	(20)	(20)			
	9-92	--	--	--			
	12-92	--	--	--			
1,2-Dichlorobenzene	9-91	(10)	(10)	(10)		--	720
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
2-Methylphenol	9-91	(10)	(10)	(10)		--	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
bis (2-Chloroisopropyl) Ether	9-91	(10)	(10)	(10)		--	320
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			

TABLE 8b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] Method A	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
4-Methylphenol	9-91	(10)	(10)	(10)		--	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
N-Nitroso-Di-N-propylamine	9-91	(10)	(10)	(10)		0.0125	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Hexachloroethane	9-91	(10)	(10)	(10)		6.25	16
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Nitrobenzene	9-91	(10)	(10)	(10)		--	8.0
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Isophorone	9-91	(10)	(10)	(10)		92.1	3,200
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
2-Nitrophenol	9-91	(10)	(10)	(10)		--	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
2,4-Dimethylphenol	9-91	(10)	(10)	(10)		--	320
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Benzoic Acid	9-91	(50)	(50)	(50)		--	64,000
	6-92	(50)	(50)	(51)			
	9-92	--	--	--			
	12-92	--	--	--			
bis (2-Chloroethoxy) methane	9-91	(10)	(10)	(10)		--	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			

TABLE 8b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] Method A	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
2,4-Dichlorophenol	9-91	(10)	(10)	(10)		--	48
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
1,2,4-Trichlorobenzene	9-91	(10)	(10)	(10)		--	80
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Naphthalene	9-91	(10)	(10)	(10)		--	320
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
4-Chloroaniline	9-91	(20)	(20)	(20)		--	64
	6-92	(20)	(20)	(20)			
	9-92	--	--	--			
	12-92	--	--	--			
Hexachlorobutadiene	9-91	(10)	(10)	(10)		0.561	1.6
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
4-Chloro-3-methylphenol	9-91	(20)	(20)	(20)		--	--
	6-92	(20)	(20)	(20)			
	9-92	--	--	--			
	12-92	--	--	--			
2-Methylnaphthalene	9-91	(10)	(10)	(10)		--	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Hexachlorocyclopentadiene	9-91	(10)	(10)	(10)		--	112
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
2,4,6-Trichlorophenol	9-91	(10)	(10)	(10)		7.95	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			

TABLE 8b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] Method A	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
2,4,5-Trichlorophenol	9-91	(10)	(10)	(10)		--	1,600
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
2-Chloronaphthalene	9-91	(10)	(10)	(10)		--	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
2-Nitroaniline	9-91	(50)	(50)	(50)		--	--
	6-92	(50)	(50)	(51)			
	9-92	--	--	--			
	12-92	--	--	--			
Dimethyl phthalate	9-91	(10)	(10)	(10)		--	16,000
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Acenaphthylene	9-91	(10)	(10)	(10)		--	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
3-Nitroaniline	9-91	(50)	(50)	(50)		--	--
	6-92	(50)	(50)	(51)			
	9-92	--	--	--			
	12-92	--	--	--			
Acenaphthene	9-91	(10)	(10)	(10)		--	960
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
2,4-Dinitrophenol	9-91	(50)	(50)	(50)		--	32
	6-92	(50)	(50)	(51)			
	9-92	--	--	--			
	12-92	--	--	--			
4-Nitrophenol	9-91	(50)	(50)	(50)		--	--
	6-92	(50)	(50)	(51)			
	9-92	--	--	--			
	12-92	--	--	--			

TABLE 8b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] Method A	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
Dibenzofuran	9-91	(10)	(10)	(10)		--	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
2,4-Dinitrotoluene	9-91	(10)	(10)	(10)		--	32
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
2,6-Dinitrotoluene	9-91	(10)	(10)	(10)		--	16
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Diethylphthalate	9-91	(10)	(10)	(10)		--	12,800
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
4-Chlorphenyl phenyl ether	9-91	(10)	(10)	(10)		--	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Fluorene	9-91	(10)	(10)	(10)		--	640
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
4-Nitroaniline	9-91	(10)	(10)	(10)		--	--
	6-92	(50)	(50)	(51)			
	9-92	--	--	--			
	12-92	--	--	--			
4,6-Dinitro-2-methylphenol	9-91	(50)	(50)	(50)			
	6-92	(50)	(50)	(51)			
	9-92	--	--	--			
	12-92	--	--	--			
N-Nitrosodiphenylamine	9-91	(50)	(50)	(50)		17.9	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			

TABLE 8b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] Method A	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
4-Bromophenyl phenyl ether	9-91	(10)	(10)	(10)		--	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Hexachlorobenzene	9-91	(10)	(10)	(10)		0.0547	12.8
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Pentachlorophenol	9-91	(50)	(50)	(50)		0.729	480
	6-92	(50)	(50)	(51)			
	9-92	--	--	--			
	12-92	--	--	--			
Phenanthrene	9-91	(10)	(10)	(10)		--	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Anthracene	9-91	(10)	(10)	(10)		--	4,800
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Di-n-butylphthalate	9-91	(10)	(10)	(10)		--	--
	6-92	10	(10)	2			
	9-92	--	--	--			
	12-92	--	--	--			
Fluoranthene	9-91	(10)	(10)	(10)		--	640
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Pyrene	9-91	(10)	(10)	(10)		--	480
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Butyl benzyl phthalate	9-91	(10)	(10)	(10)		--	3,200
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			

TABLE 8b

GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS

SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)

RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] Method A	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
3,3'-Dichlorobenzidine	9-91	(10)	(10)	(10)		0.194	--
	6-92	(20)	(20)	(20)			
	9-92	--	--	--			
	12-92	--	--	--			
Benzo (a) anthracene	9-91	(10)	(10)	(10)		0.012	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
bis (2-ethylhexyl) phthalate	9-91	3.0	1.0	1.9		6.25	320
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Chrysene	9-91	(10)	(10)	(10)		0.012	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Di-n-octyl phthalate	9-91	(10)	(10)	(10)		--	320
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Benzo (b) fluoranthene	9-91	(10)	(10)	(10)		0.012	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Benzo (k) fluoranthene	9-91	(10)	(10)	(10)		0.012	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Benzo (a) pyrene	9-91	(10)	(10)	(10)		0.012	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Indeno (1,2,3-cd) pyrene	9-91	(10)	(10)	(10)		0.012	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			

TABLE 8b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] Method A	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
Dibenzo (a,h) anthracene	9-91	(10)	(10)	(10)		0.012	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			
Benzo (g,h,i) Perylene	9-91	(10)	(10)	(10)		--	--
	6-92	(10)	(10)	(10)			
	9-92	--	--	--			
	12-92	--	--	--			

NOTES:

1. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels for Groundwater Chapter 173-340 WAC
2. MTCA Cleanup Levels and Risk Calculations (CLARC II) update February 1996
3. (10) analyte concentration not detected above PQL indicated within ( )
4. -- = analyte not analyzed or no published regulatory cleanup levels

TABLE 8c
GROUNDWATER ANALYTICAL RESULTS - TRIP AND EQUIPMENT BLANKS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/l (ppb)

ANALYTE	TRIP BLANK 9-91	EQ BLANK (C05) 9-91	TRIP BLANK 6-92	EQUIP BLANK 6-92	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
Phenol	(10)[3]	(10)	(10)	(10)	--[4]	9,600
bis (2-Chloroethyl) ether	(10)	(10)	(10)	(10)	0.0398	--
2-Chlorophenol	(10)	(10)	(10)	(10)	--	80
1,3-Dichlorobenzene	(10)	(10)	(10)	(10)	--	--
1,4-Dichlorobenzene	(10)	(10)	(10)	(10)	1.82	--
Benzyl Alcohol	(20)	(20)	(19)	(20)	--	4,800
1,2-Dichlorobenzene	(10)	(10)	(10)	(10)	--	7,200
2-Methylphenol	(10)	(10)	(10)	(10)	--	--
bis (2-Chloroisopropyl) Ether	(10)	(10)	(10)	(10)	--	320
4-Methylphenol	(10)	(10)	(10)	(10)	--	--
N-Nitroso-Di-N-propylamine	(10)	(10)	(10)	(10)	0.0125	--
Hexachloroethane	(10)	(10)	(10)	(10)	6.25	16
Nitrobenzene	(10)	(10)	(10)	(10)	--	8.0
Isophorone	(10)	(10)	(10)	(10)	92.1	3,200
2-Nitrophenol	(10)	(10)	(10)	(10)	--	--
2,4-Dimethylphenol	(10)	(10)	(10)	(10)	--	320
Benzoic Acid	(50)	(50)	(48)	(50)	--	64,000
bis (2-Chloroethoxy) methane	(10)	(10)	(10)	(10)	--	--
2,4-Dichlorophenol	(10)	(10)	(10)	(10)	--	48
1,2,4-Trichlorobenzene	(10)	(10)	(10)	(10)	--	80
Naphthalene	(10)	(10)	(10)	(10)	--	320
4-Chloroaniline	(20)	(20)	(19)	(20)	--	64
Hexachlorobutadiene	(10)	(10)	(10)	(10)	0.561	1.6
4-Chloro-3-methylphenol	(20)	(20)	(19)	(20)	--	--

TABLE 8c
GROUNDWATER ANALYTICAL RESULTS - TRIP AND EQUIPMENT BLANKS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/l (ppb)

ANALYTE	TRIP BLANK 9-91	EQ BLANK (C05) 9-91	TRIP BLANK 6-92	EQUIP BLANK 6-92	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
2-Methylnaphthalene	(10)	(10)	(10)	(10)	--	--
Hexachlorocyclopentadiene	(10)	(10)	(10)	(10)	--	112
2,4,6-Trichlorophenol	(10)	(10)	(10)	(10)	7.95	--
2,4,5-Trichlorophenol	(10)	(10)	(10)	(10)	--	1,600
2-Chloronaphthalene	(10)	(10)	(10)	(10)	--	--
2-Nitroaniline	(50)	(50)	(48)	(50)	--	--
Dimethyl phthalate	(10)	(10)	(10)	(10)	--	16,000
Acenaphthylene	(10)	(10)	(10)	(10)	--	--
3-Nitroaniline	(50)	(50)	(48)	(50)	--	--
Acenaphthene	(10)	(10)	(10)	(10)	--	960
2,4-Dinitrophenol	(50)	(50)	(48)	(50)	--	32
4-Nitrophenol	(50)	(50)	(48)	(50)	--	--
Dibenzofuran	(10)	(10)	(10)	(10)	--	--
2,4-Dinitrotoluene	(10)	(10)	(10)	(10)	--	32
2,6-Dinitrotoluene	(10)	(10)	(10)	(10)	--	16
Diethylphthalate	(10)	(10)	(10)	(10)	--	12,800
4-Chlorphenyl phenyl ether	(10)	(10)	(10)	(10)	--	--
Fluorene	(10)	(10)	(10)	(10)	--	640
4-Nitroaniline	(10)	(10)	(48)	(50)	--	--
4,6-Dinitro-2-methylphenol	(50)	(50)	(48)	(50)		
N-Nitrosodiphenylamine	(50)	(50)	(10)	(10)	17.9	--
4-Bromophenyl phenyl ether	(10)	(10)	(10)	(10)	--	--
Hexachlorobenzene	(10)	(10)	(10)	(10)	0.0547	12.8
Pentachlorophenol	(50)	(50)	(48)	(50)	0.729	480

TABLE 8c
GROUNDWATER ANALYTICAL RESULTS - TRIP AND EQUIPMENT BLANKS
SEMI VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8270)
RESULTS IN ug/l (ppb)

ANALYTE	TRIP BLANK 9-91	EQ BLANK (C05) 9-91	TRIP BLANK 6-92	EQUIP BLANK 6-92	MTCA[2] Method B Carcinogen	Method B Non-Carcinogen
Phenanthrene	(10)	(10)	(10)	(10)	--	--
Anthracene	(10)	(10)	(10)	(10)	--	4,800
Di-n-butylphthalate	(10)	(10)	2	(10)	--	--
Fluoranthene	(10)	(10)	(10)	(10)	--	640
Pyrene	(10)	(10)	(10)	(10)	--	480
Butyl benzyl phthalate	(10)	(10)	(10)	(10)	--	3,200
3,3'-Dichlorobenzidine	(10)	(10)	(19)	(20)	0.194	--
Benzo (a) anthracene	(10)	(10)	(10)	(10)	0.012	--
bis (2-ethylhexyl) phthalate	(10)	0.7	(10)	(10)	6.25	320
Chrysene	(10)	(10)	(10)	(10)	0.012	--
Di-n-octyl phthalate	(10)	(10)	(10)	(10)	--	320
Benzo (b) fluoranthene	(10)	(10)	(10)	(10)	0.012	--
Benzo (k) fluoranthene	(10)	(10)	(10)	(10)	0.012	--
Benzo (a) pyrene	(10)	(10)	(10)	(10)	0.012	--
Indeno (1,2,3-cd) pyrene	(10)	(10)	(10)	(10)	0.012	--
Dibenzo (a,h) anthracene	(10)	(10)	(10)	(10)	0.012	--
Benzo (g,h,i) Perylene	(10)	(10)	(10)	(10)	--	--

NOTES:

2. MTCA Cleanup Levels and Risk Calculations (CLARC II) update February 1996
3. (10) analyte concentration not detected above PQL indicated within ( )
4. -- = analyte not analyzed or no published regulatory cleanup levels

TABLE 9a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
ORGANOCHLORINE PESTICIDES AND PCB COMPOUNDS (EPA METHOD 8080)
RESULTS IN ug/l (ppb)

ANALYTE	SAMPLE DATE	SO1	SO1 DUP	SO2	CO1A	CO2A	CO3A	CO3AD	CO3A DUP	K27SS	MTCA[1] Method A	Method B[2] Non-Carcinogen	Method B Carcinogen
Aldrin	9-91	(0.01)[3]	--[4]	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	--	0.48	0.00515
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
a-BHC	9-91	(0.01)	--	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	--	--	--
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
b-BHC	9-91	(0.01)	--	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	--	--	--
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
g-BHC	9-91	(0.01)	--	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	--	--	--
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
y-BHC (Lindane)	9-91	(0.01)	--	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	0.2		
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
Chlordane (technical)	9-91	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	--	--	--	--	0.96	0.0673
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
4,4' -DDD	9-91	(0.01)	--	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	--	--	0.365
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
4,4' -DDE	9-91	(0.01)	--	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	--	--	0.257
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
4,4' -DDT	9-91	(0.01)	--	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	0.1	8.0	0.257
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
Dieldrin	9-91	(0.01)	--	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	--	0.8	0.00547
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			

TABLE 9a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
ORGANOCHLORINE PESTICIDES AND PCB COMPOUNDS (EPA METHOD 8080)
RESULTS IN ug/l (ppb)

ANALYTE	SAMPLE DATE	SO1	SO1 DUP	SO2	CO1A	CO2A	CO3A	CO3AD	CO3A DUP	K27SS	MTCA[1] Method A	Method B[2] Non-Carcinogen	Method B Carcinogen
Endosulfan I	9-91	(0.01)	--	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	--	--	--
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
Endosulfan II	9-91	(0.01)	--	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	--	--	--
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
Endosulfan sulfate	9-91	(0.01)	--	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	--	--	--
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
Endrin	9-91	(0.01)	--	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	--	4.8	--
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
Endrin aldehyde	9-91	(0.01)	--	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	--	--	--
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
Heptachlor	9-91	(0.01)	--	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	--	8.0	0.0194
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
Heptachlor epoxide	9-91	(0.01)	--	(0.01)	(0.01)	(0.01)	(0.01)	--	--	--	--	0.208	0.00962
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
Methoxychlor	9-91	(0.02)	--	(0.02)	(0.02)	(0.02)	(0.02)	--	--	--	--	80	--
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
Toxaphene	9-91	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	--	--	--	--	--	0.0795
	6-92	--	--	--	--	--	--	--	--	--			
	9-92	--	--	--	--	--	--	--	--	--			
	12-92	--	--	--	--	--	--	--	--	--			
Aroclor 1016	9-91	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	--	--	--	0.1	1.12	0.0114
	6-92	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	--	--			
	9-92	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	--	--	--			
	12-92	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	--	(0.1)	(0.1)			

TABLE 9a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
ORGANOCHLORINE PESTICIDES AND PCB COMPOUNDS (EPA METHOD 8080)
RESULTS IN ug/l (ppb)

ANALYTE	SAMPLE DATE	SO1	SO1 DUP	SO2	CO1A	CO2A	CO3A	CO3AD	CO3A DUP	K27SS	MTCA[1] Method A	Method B[2] Non-Carcinogen	Method B Carcinogen
Aroclor 1221	9-91	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	--	--	--	0.1	--	0.0114
	6-92	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	--	--			
	9-92	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	--	--	--			
	12-92	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	--	(0.1)	(0.1)			
Aroclor 1232	9-91	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	--	--	--	0.1	--	0.0114
	6-92	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	--	--			
	9-92	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	--	--	--			
	12-92	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	--	(0.1)	(0.1)			
Aroclor 1242	9-91	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	--	--	--	0.1	--	0.0114
	6-92	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	--	--			
	9-92	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	--	--	--			
	12-92	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	--	(0.1)	(0.1)			
Aroclor 1248	9-91	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	--	--	--	0.1	--	0.0114
	6-92	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	--	--			
	9-92	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	--	--	--			
	12-92	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	--	(0.1)	(0.1)			
Aroclor 1254	9-91	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	--	--	--	0.1	0.32	0.0114
	6-92	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	--	--			
	9-92	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	--	--	--			
	12-92	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	--	(0.1)	(0.1)			
Aroclor 1260	9-91[6]	**0.6**[5]	--	**0.3**	**1.2**	**1.4**	**0.3**	--	--	--	0.1	--	0.0114
	6-92	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	--	--			
	9-92	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	--	--	--			
	12-92	(0.1)	--	(0.1)	(0.1)	(0.1)	(0.1)	--	(0.1)	(0.1)			

NOTES:

1. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels for Groundwater Chapter 173-340 WAC
2. MTCA Cleanup Levels and Risk Calculations (CLARC II) update February 1996
3. (0.01) analyte concentration not detected above PQL indicated within ( )
4. -- = analyte not analyzed or no published regulatory cleanup levels
5. **Bold** - analyte concentrations above cleanup level
6. Sample analyzed not using Method 3630 Cleanup

TABLE 9b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
ORGANOCHLORINE PESTICIDES AND PCB COMPOUNDS (EPA METHOD 8080)
RESULTS IN ug/l (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] Method A	MTCA[2] Method B Non-Carcinogen	Method B Carcinogen
Aldrin	9-91	(0.01)[3]	(0.01)	(0.01)	--[4]	0.48	0.00515
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
a-BHC	9-91	(0.01)	(0.01)	(0.01)	--	--	--
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
b-BHC	9-91	(0.01)	(0.01)	(0.01)	--	--	--
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
g-BHC	9-91	(0.01)	(0.01)	(0.01)	--	--	--
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
y-BHC (Lindane)	9-91	(0.01)	(0.01)	(0.01)	0.2	--	--
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
Chlordane (technical)	9-91	(0.1)	(0.1)	(0.1)	--	0.96	0.0673
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
4,4' -DDD	9-91	(0.01)	(0.01)	(0.01)	--	--	0.365
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
4,4' -DDE	9-91	(0.01)	(0.01)	(0.01)	--	--	0.257
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
4,4' -DDT	9-91	(0.01)	(0.01)	(0.01)	0.1	8.0	0.257
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			

TABLE 9b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
ORGANOCHLORINE PESTICIDES AND PCB COMPOUNDS (EPA METHOD 8080)
RESULTS IN ug/l (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] Method A	MTCA[2] Method B Non-Carcinogen	Method B Carcinogen
Dieldrin	9-91	(0.01)	(0.01)	(0.01)	--	0.8	0.00547
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
Endosulfan I	9-91	(0.01)	(0.01)	(0.01)	--	--	--
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
Endosulfan II	9-91	(0.01)	(0.01)	(0.01)	--	--	--
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
Endosulfan sulfate	9-91	(0.01)	(0.01)	(0.01)	--	--	--
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
Endrin	9-91	(0.01)	(0.01)	(0.01)	--	4.8	--
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
Endrin aldehyde	9-91	(0.01)	(0.01)	(0.01)	--	--	--
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
Heptachlor	9-91	(0.01)	(0.01)	(0.01)	--	8.0	0.0194
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
Heptachlor epoxide	9-91	(0.01)	(0.01)	(0.01)	--	0.208	0.00962
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
Methoxychlor	9-91	(0.02)	(0.02)	(0.02)	--	80	--
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			

TABLE 9b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
ORGANOCHLORINE PESTICIDES AND PCB COMPOUNDS (EPA METHOD 8080)
RESULTS IN ug/l (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] Method A	MTCA[2] Method B Non-Carcinogen	Method B Carcinogen
Toxaphene	9-91	(0.1)	(0.1)	(0.1)	--	--	0.0795
	6-92	--	--	--			
	9-92	--	--	--			
	12-92	--	--	--			
Aroclor 1016	9-91	(0.1)	(0.1)	(0.1)	0.1	1.12	0.0114
	6-92	(0.1)	(0.1)	(0.1)			
	9-92	(0.1)	--	--			
	12-92	(0.1)	--	--			
Aroclor 1221	9-91	(0.1)	(0.1)	(0.1)	0.1	--	0.0114
	6-92	(0.1)	(0.1)	(0.1)			
	9-92	(0.1)	--	--			
	12-92	(0.1)	--	--			
Aroclor 1232	9-91	(0.1)	(0.1)	(0.1)	0.1	--	0.0114
	6-92	(0.1)	(0.1)	(0.1)			
	9-92	(0.1)	--	--			
	12-92	(0.1)	--	--			
Aroclor 1242	9-91	(0.1)	(0.1)	(0.1)	0.1	--	0.0114
	6-92	(0.1)	(0.1)	(0.1)			
	9-92	(0.1)	--	--			
	12-92	(0.1)	--	--			
Aroclor 1248	9-91	(0.1)	(0.1)	(0.1)	0.1	--	0.0114
	6-92	(0.1)	(0.1)	(0.1)			
	9-92	(0.1)	--	--			
	12-92	(0.1)	--	--			
Aroclor 1254	9-91	(0.1)	(0.1)	(0.1)	0.1	0.32	0.0114
	6-92	(0.1)	(0.1)	(0.1)			
	9-92	(0.1)	--	--			
	12-92	(0.1)	--	--			
Aroclor 1260	9-91[6]	0.7	**2.2**[5]	**0.3**	0.1	--	0.0114
	6-92	(0.1)	(0.1)	(0.1)			
	9-92	(0.1)	--	--			
	12-92	(0.1)	--	--			

NOTES:

1. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels for Groundwater Chapter 173-340 WAC
2. MTCA Cleanup Levels and Risk Calculations (CLARC II) update February 1996
3. (0.01) analyte concentration not detected above PQL indicated within ( )
4. -- = analyte not analyzed or no published regulatory cleanup levels
5. **Bold** - analyte concentrations above cleanup level
6. Analysis did not include Method 3630 Cleanup

TABLE 9c
GROUNDWATER ANALYTICAL RESULTS - TRIP AND EQUIPMENT BLANKS
PCB COMPOUNDS (EPA METHOD 8080)
RESULTS IN ug/l (ppb)

	GROUNDWATER SAMPLING								SHALLOW SOIL SAMPLING		REGULATORY CLEANUP LEVELS		
ANALYTE	Trip Blank 9-91	Eq Blank (C05) 9-91	Trip Blank 6-92	Equip. Blank 6-92	Trip Blank 9-92	Equip. Blank 9-92	Trip Blank 12-92	Equip. Blank 12/92	Trip Blank 11-92	Equip. Blank 11-92	MTCA[1] Method A	MTCA[2] Method B Non-Carcinogen	Method B Carcinogen
Aroclor 1016	(0.1)[3]	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	0.1	1.12	0.0114
Aroclor 1221	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	0.1	--[4]	0.0114
Aroclor 1232	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	0.1	--	0.0114
Aroclor 1242	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	0.1	--	0.0114
Aroclor 1248	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	0.1	--	0.0114
Aroclor 1254	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	0.1	0.32	0.0114
Aroclor 1260	(0.1)	2.4	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	0.1	--	0.0114

NOTES:

1. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels for Groundwater Chapter 173-340 WAC
2. MTCA Cleanup Levels and Risk Calculations (CLARC II) update February 1996
3. (0.1) analyte concentration not detected above PQL indicated within ( )
4. -- = analyte not analyzed or no published regulatory cleanup levels

TABLE 10a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
TOTAL PETROLEUM HYDROCARBONS
(EPA METHOD 418.1)
RESULTS IN ug/l (ppb)

ANALYTE	SAMPLE DATE	SO1	SO1 DUP	S02	CO1A	CO2A	CO3A	C03AD	K27SS	MTCA[1] Method A
Total Petroleum Hydrocarbons	9-91	(1000)[3]	--[4]	(1000)	(1000)	(1000)	**3,200**	--	--	1000
	6-92	**1200**	--	(1000)	(1000)	(1000)	(1000)	**1,300**	--	
	9-92	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	--	
	12-92	**130000**[5]	--	**150000**	**5400**	**2800**	**99000**	--	(1000)	

NOTES:

1. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels for Groundwater Chapter 173-340 WAC
3. (1000) analyte concentration not detected above PQL indicated within ( )
4. -- = analyte not analyzed or no published regulatory cleanup levels
5. **Bold** - analyte concentrations above cleanup level

TABLE 10b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
TOTAL PETROLEUM HYDROCARBONS
(EPA METHOD 418.1)
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	CO1B	C02B	C03B	MTCA[1] Method A
Total Petroleum Hydrocarbons	9-91	(1000)[3]	(1000)	(1000)	1000
	6-92	(1000)	(1000)	(1000)	
	9-92	(1000)	--[4]	--	
	12-92	**27,000**[5]	--	--	

NOTES:

1. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels for Groundwater Chapter 173-340 WAC
3. (1000) analyte concentration not detected above PQL indicated within ( )
4. -- = analyte not analyzed or no published regulatory cleanup levels
5. **Bold** - analyte concentrations above cleanup level

TABLE 10c
GROUNDWATER ANALYTICAL RESULTS - TRIP AND EQUIPMENT BLANKS
TOTAL PETROLEUM HYDROCARBONS
(EPA METHOD 418.1)
RESULTS IN ug/L (ppb)

ANALYTE	GROUNDWATER SAMPLING							TEST PIT SOIL SAMPLING	SHALLOW SOIL SAMPLING		REGULATORY CLEANUP LEVELS		
	Eq Blank (C05) 9-91	Trip Blank 6-92	Equip. Blank 6-92	Trip Blank 9-92	Equip. Blank 9-92	Trip Blank 12-92	Equip. Blank 12-92	Equip. Blank 10-92	Trip Blank 11-92	Equip. Blank 11-92	MTCA[1] Method A	MTCA[2] Method B Non-Carcinogen	Method B Carcinogen
Total Petroleum Hydrocarbons	(1,000)[3]	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(120,000)	(100,000)	(1,000)	(1,000)	1,000	--[4]	--

NOTES:

1. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels for Groundwater Chapter 173-340 WAC
2. MTCA Cleanup Levels and Risk Calculations (CLARC II) update February 1996
3. (1,000) analyte concentration not detected above PQL indicated within ( )
4. -- = analyte not analyzed or no published regulatory cleanup levels

TABLE 11a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
ICP METALS (EPA METHOD 6010/7470/7060) AND DISSOLVED METALS
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	SO1	SO1 DUP	SO2	CO1A	CO2A	CO3A	CO3AD	CO3A DUP	K27SS	MTCA[1] Method A	Method B[2] Non-Carcinogen	Method B[2] Carcinogen	Atochem
Antimony	9-91	(60)[3]	--[4]	(60)	(60)	(60)	(60)	--	--	--	--	--	--	--
	6-92	--	--	--	--	--	--	--	--	--				
	9-92	--	--	--	--	--	--	--	--	--				
	12-92	--	--	--	--	--	--	--	--	--				
Arsenic	9-91	**190**[5]	--	(10)	11	14	(10)	--	--	--	5.0	4.8	0.0583	40
	6-92	**690**	--	(10)	(10)	13	**78**	**76**	--	--				
	9-92	**330**	**330**	(10)	26	18	**140**	--	--	--				
	12-92	(100)	--	(10)	32	13	36	--	34	(10)				
Beryllium	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	80	0.0203	--
	6-92	--	--	--	--	--	--	--	--	--				
	9-92	--	--	--	--	--	--	--	--	--				
	12-92	--	--	--	--	--	--	--	--	--				
Cadmium	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	5.0	8	--	--
	6-92	**7**	--	**18**	**9**	(5)	**17**	**7**	--	--				
	9-92	**11**	**10**	**15**	**13**	**7**	**11**	--	--	--				
	12-92	(5)	--	(5)	(5)	**7**	**11**	--	6	(5)				
Chromium	9-91	(10)	--	(10)	(10)	10	(10)	--	--	--	50.0	--	--	--
	6-92	(100)	--	(10)	(10)	(100)	(10)	(10)	--	--				
	9-92	(10)	(10)	(10)	(10)	(10)	(10)	--	--	--				
	12-92	(10)	--	(10)	(10)	(10)	(10)	--	(10)	(10)				
Copper	9-91	(25)	--	(25)	54	(25)	(25)	--	--	--	--	592	--	10
	6-92	(25)	--	(25)	(25)	(25)	(25)	(25)	--	--				
	9-92	(25)	(25)	(25)	(25)	(25)	(25)	--	--	--				
	12-92	(25)	--	(25)	(25)	(25)	(25)	--	(25)	(25)				

TABLE 11a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
ICP METALS (EPA METHOD 6010/7470/7060) AND DISSOLVED METALS
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	SO1	SO1 DUP	SO2	CO1A	CO2A	CO3A	CO3AD	CO3A DUP	K27SS	MTCA[1] Method A	Method B[2] Non-Carcinogen	Method B[2] Carcinogen	Atochem
Lead	9-91	(5)	--	(25)	(5)	(5)	(5)	--	--	--	5.0	--	--	10
	6-92	(5)	--	(5)	(5)	(5)	(5)	(5)	--	--				
	9-92	(50)	(50)	(50)	(50)	(50)	(50)	--	--	--				
	12-92	(50)	--	(50)	(50)	(50)	(50)	--	(50)	(50)				
Mercury	9-91	(0.8)	--	(0.8)	(2)	(0.4)	(0.8)	--	--	--	2.0	4.8	--	--
	6-92	(0.4)	--	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)	--	--				
	9-92	--	--	--	--	--	--	--	--	--				
	12-92	--	--	--	--	--	--	--	--	--				
Nickel	9-91	(40)	--	(40)	(40)	(40)	(40)	--	--	--	--	--	--	--
	6-92	(40)	--	(40)	(40)	(40)	(40)	(40)	--	--				
	9-92	--	--	--	--	--	--	--	--	--				
	12-92	--	--	--	--	--	--	--	--	--				
Selenium	9-91	(5)	--	(5)	(5)	(5)	(5)	--	--	--	--	80	--	--
	6-92	--	--	--	--	--	--	--	--	--				
	9-92	--	--	--	--	--	--	--	--	--				
	12-92	--	--	--	--	--	--	--	--	--				
Silver	9-91	(20)	--	(20)	(20)	(20)	(20)	--	--	--	--	80	--	--
	6-92	--	--	--	--	--	--	--	--	--				
	9-92	--	--	--	--	--	--	--	--	--				
	12-92	--	--	--	--	--	--	--	--	--				
Thallium	9-91	(10)	--	(10)	(10)	(10)	(10)	--	--	--	--	--	--	--
	6-92	--	--	--	--	--	--	--	--	--				
	9-92	--	--	--	--	--	--	--	--	--				
	12-92	--	--	--	--	--	--	--	--	--				

TABLE 11a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
ICP METALS (EPA METHOD 6010/7470/7060) AND DISSOLVED METALS
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	SO1	SO1 DUP	SO2	CO1A	CO2A	CO3A	CO3AD	CO3A DUP	K27SS	MTCA[1] Method A	Method B[2] Non-Carcinogen	Method B[2] Carcinogen	Atochem
Zinc	9-91	(20)	--	(20)	(20)	(20)	(20)	--	--	--	--	4800	--	100
	6-92	(20)	--	(20)	(20)	(20)	(20)	(20)	--	--				
	9-92	--	--	--	--	--	--	--	--	--				
	12-92	--	--	--	--	--	--	--	--	--				

NOTES:

1. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels for Groundwater Chapter 173-340 WAC
2. MTCA Cleanup Levels and Risk Calculations (CLARC II) update February 1996
3. (60) analyte concentration not detected above PQL indicated within ( )
4. -- = analyte not analyzed or no published regulatory cleanup levels
5. **Bold** - analyte concentrations above cleanup level

TABLE 11b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
ICP METALS (EPA METHOD 6010/7470/7060) AND DISSOLVED METALS
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] Method A	MTCA[2] Method B Non-Carcinogen	Method B Carcinogen	Atochem
Antimony	9-91	(60)[3]	(60)	(60)	--[4]	--	--	--
	6-92	--	--	--				
	9-92	--	--	--				
	12-92	--	--	--				
Arsenic	9-91	(10)	(10)	(10)	5.0	4.8	0.0583	40
	6-92	(10)	(10)	(10)				
	9-92	(10)						
	12-92	(10)						
Beryllium	9-91	(5)	(5)	(5)	--	80	0.0203	--
	6-92	--	--	--				
	9-92	--	--	--				
	12-92	--	--	--				
Cadmium	9-91	(5)	(5)	(5)	5.0	8	--	--
	6-92	**7**[5]	(5)	**12**				
	9-92	**9**	--	--				
	12-92	(5)	--	--				
Chromium	9-91	13	(10)	(10)	50.0	--	--	--
	6-92	(10)	(100)	(10)				
	9-92	10	--	--				
	12-92	20	--	--				
Copper	9-91	**51**	(25)	(25)	--	592	--	10
	6-92	(25)	(25)	(25)				
	9-92	(25)	--	--				
	12-92	(25)	--	--				
Lead	9-91	6	(5)	(5)	5.0	--	--	10
	6-92	(5)	(5)	(5)				
	9-92	(50)	--	--				
	12-92	(50)	--	--				
Mercury	9-91	(0.2)	(0.2)	(0.2)	2.0	4.8	--	--
	6-92	(0.4)	(0.4)	(0.4)				
	9-92	--	--	--				
	12-92	--	--	--				
Nickel	9-91	(40)	(40)	(40)	--	--	--	--
	6-92	(40)	(40)	(40)				
	9-92	--	--	--				
	12-92	--	--	--				

TABLE 11b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
ICP METALS (EPA METHOD 6010/7470/7060) AND DISSOLVED METALS
RESULTS IN ug/L (ppb)

ANALYTE	SAMPLE DATE	CO1B	CO2B	CO3B	MTCA[1] Method A	MTCA[2] Method B Non-Carcinogen	Method B Carcinogen	Atochem
Selenium	9-91	(5)	(5)	(5)	--	80	--	--
	6-92	--	--	--				
	9-92	--	--	--				
	12-92	--	--	--				
Silver	9-91	(20)	(20)	(20)	--	80	--	--
	6-92	--	--	--				
	9-92	--	--	--				
	12-92	--	--	--				
Thallium	9-91	(10)	(10)	(10)	--	--	--	--
	6-92	--	--	--				
	9-92	--	--	--				
	12-92	--	--	--				
Zinc	9-91	**110**	(20)	(20)	--	4800	--	100
	6-92	(20)	(20)	(20)				
	9-92	--	--	--				
	12-92	--	--	--				

NOTES:

1. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels for Groundwater Chapter 173-340 WAC
2. MTCA Cleanup Levels and Risk Calculations (CLARC II) update February 1996
3. (60) analyte concentration not detected above PQL indicated within ( )
4. -- = analyte not analyzed or no published regulatory cleanup levels
5. **Bold** - analyte concentrations above cleanup level

TABLE 11c
GROUNDWATER ANALYTICAL RESULTS - TRIP AND EQUIPMENT BLANKS
ICP METALS (EPA METHOD 6010/7470/7060) TOTAL OR DISSOLVED METALS
RESULTS IN ug/L (ppb)

	GROUNDWATER SAMPLING								TEST PIT SOIL SAMPLING	SHALLOW SOIL SAMPLING		REGULATORY CLEANUP LEVELS			
ANALYTE	Trip Blank 9-91 (Total)	Eq Blank (C05) 9-91 (Dissolved)	Trip Blank 6-92	Equip. Blank 6-92	Trip Blank 9-92 (Dissolved)	Equip. Blank 9-92 (Dissolved)	Trip Blank 12-92 (Dissolved)	Equip. Blank 12/92 (Dissolved)	Equip. Blank 10-92	Trip Blank 11-92	Equip. Blank 11-92	MTCA[1] Method A	MTCA[2] Method B Non-Carcinogen	Method B Carcinogen	Atochem
Antimony	(60)[3]	(60)	--[4]	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(100)	(100)	(100)	5.0	4.8	0.0583	40
Beryllium	(5)	(5)	--	--	--	--	--	--	--	--	--	--	80	0.0203	--
Cadmium	(5)	(5)	15	7	8	8	(5)	(5)	(5)	8	(5)	5.0	8	--	--
Chromium	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	50.0	--	--	--
Copper	(25)	(25)	(25)	28	(25)	(25)	(25)	(25)	28	81	100	--	592	--	10
Lead	(5)	(5)	(5)	(5)	(50)	(50)	(50)	(50)	--	--	--	5.0	--	--	10
Mercury	(0.2)	(0.4)	(0.4)	(0.4)	--	--	--	--	(2)	(0.2)	(0.2)	2.0	4.8	--	--
Nickel	(40)	(40)	(40)	(40)	--	--	--	--	--	--	--	--	--	--	--
Selenium	(5)	(5)	--	--	--	--	--	--	--	--	--	--	80	--	--
Silver	(20)	(20)	--	--	--	--	--	--	--	--	--	--	80	--	--
Thallium	(10)	(10)	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	(20)	(20)	(20)	(20)	--	--	--	--	--	--	--	--	4800	--	100

NOTES:

1. Washington State Department of Ecology Model Toxic Control Act (MTCA) Method A Cleanup Levels for Groundwater Chapter 173-340 WAC
2. MTCA Cleanup Levels and Risk Calculations (CLARC II) update February 1996
3. (60) analyte concentration not detected above PQL indicated within ( )
4. -- = analyte not analyzed or no published regulatory cleanup levels

TABLE 12a
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
(TSS,TDS,pH,CONDUCTIVITY)

ANALYTE	SAMPLE DATE	SO1	S01 DUP	S02	CO1A	CO2A	CO3A	CO3AD	CO3A DUP	K27SS	Water Quality Standards[6]
Total Suspended Solids (ppm)	9-91	4,500	--[4]	1,400	290	600	2,300	--	--	--	--
	6-92	--	--	--	--	--	--	--	--	--	
	9-92	190	0.2	290	160	140	120	--	--	--	
	12-92	51	--	410	120	570	42	--	42	20	
Total Dissolved Solids (ppm)	9-91	1,800	--	3,000	2,500	2,500	2,800	--	--	--	500
	6-92	1,300	--	4,500	2,500	690	2,800	2,900	--	--	
	9-92	1,600	1,700	4,700	2,800	770	3,300	--	--	--	
	12-92	1,600	--	1,700	2,300	370	3,500	--	3,500	1,600	
pH	9-91	7.17	--	6.75	6.68	6.76	7.08	--	--	--	6.5-8.5
	6-92	7.07	--	7.17	6.67	6.80	6.97	6.87	--	--	
	9-92	6.99	6.97	6.70	6.63	6.61	6.71	--	--	--	
	12-92	7.17	--	6.98	6.73	6.68	6.77	--	6.79	7.14	
Conductivity (uhmos/cm)	9-91	3,100	--	5,100	4,500	1,100	17,000	--	--	--	--
	6-92	2,000	--	7,500	4,600	850	5,200	5,100	--	--	
	9-92	2,800	2,800	8,000	5,000	960	5,800	--	--	--	
	12-92	--	--	--	--	--	--	--	--	--	

NOTES:

4. -- = analyte not analyzed or no published regulatory cleanup levels
6. Water Quality Standards for Groundwaters of The State of Washington Chapter 173-202 WAC

TABLE 12b
GROUNDWATER ANALYTICAL RESULTS - INTERMEDIATE WELLS
(TSS,TDS,pH,CONDUCTIVITY)

ANALYTE	SAMPLE DATE	C01B	C02B	C03B	Water Quality Standards[6]
Total Suspended Solids (ppm)	9-91	5,600	560	2,800	--
	6-92	--[4]	--	--	
	9-92	33	--	--	
	12-92	--	--	--	
Total Dissolved Solids (ppm)	9-91	5,500	8,600	10,500	500
	6-92	7,500	780	9,500	
	9-92	7,500	--	--	
	12-92	--	--	--	
pH	9-91	6.86	7.06	6.93	6.5-8.5
	6-92	6.82	6.99	7.10	
	9-92	6.76	--	--	
	12-92	6.80	--	--	
Conductivity (uhmos/cm)	9-91	11,000	14,000	17,000	--
	6-92	12,000	14,000	16,000	
	9-92	12,000	--	--	
	12-92	--	--	--	

NOTES:

4. -- = analyte not analyzed or no published regulatory cleanup levels
6. Water Quality Standards for Groundwaters of The State of Washington Chapter 173-202 WAC

APPENDIX G

605 11th Ave. SE, Suite 201 • Olympia, WA • 98501
Phone: 360-352-9835 • Fax: 360-352-8164 • Email: admin@aegwa.com

Table 1
Summary of Analytical Data - Groundwater
Volatile Organic Compounds
May 29, 1997
Petroleum Reclaiming Services, Inc.
Tacoma, Washington

Analyte	CO2A	SO3A	CO3A	SO2A	SO4A	CO3A Duplicate
Vinyl Chloride	(30)	5	1 J	(3)	3	(3)
Carbon Disulfide	(30)	(3)	5	(3)	(3)	1 J
Methylene Chloride	7 J	(3)	(3)	(3)	(3)	(3)
trans-1,2-Dichloroethene	(30)	1 J	(3)	(3)	7	(3)
1,1-Dichloroethane	(30)	(3)	1 J	(3)	1 J	(3)
cis-1,2-Dichloroethene	(30)	37	(3)	(3)	4	(3)
Benzene	(30)	(3)	3	5	3	2 J
Trichlorethene	(30)	3	(3)	(3)	2 J	(3)
Tetrachloroethene	(30)	1 J	(3)	(3)	13	(3)
m,p-Xylenes	(30)	(3)	5	(3)	(3)	3

Note:

(30) Indicates analyte not detected at or above the enclosed laboratory Method Reporting Limit.
J Indicates analyte detected below the laboratory Method Reporting Limit. Reported concentration should be considered an estimate.
All data reported in micrograms per liter ($\mu g/l$).
Table includes only analytes detected in at least one sample.

Table 2
Summary of Analytical Data - Groundwater
Semivolatile Organic Compounds
May 29, 1997
Petroleum Reclaiming Services, Inc.
Tacoma, Washington

Analyte	CO2A	SO3A	CO3A	SO2A	SO4A	CO3A Duplicate
Naphthalene	(1)	(1)	2	(1)	2	1
2-Methylnaphthalene	(1)	(1)	1	(1)	(1)	1 J
Acenaphthene	(1)	(1)	4	(1)	3	4
Dibenzofuran	(1)	(1)	1 J	(1)	1	(1)
Fluorene	(1)	(1)	3	(1)	2	3
Fluoranthene	(1)	(1)	1 J	(1)	(1)	1 J
bis(2-ethylhexyl) phthalate	(1)	1	1 J	1	(1)	(1)

Note:
(1) Indicates analyte not detected at or above the enclosed laboratory Method Reporting Limit.
J Indicates analyte detected below the laboratory Method Reporting Limit. Reported concentration should be considered an estimate.
All data reported in micrograms per liter (μg/l).
Table includes only analytes detected in at least one sample.

Table 3
Summary of Analytical Data - Groundwater
Dissolved Metals
May 29, 1997
Petroleum Reclaiming Services, Inc.
Tacoma, Washington

Analyte	CO2A	SO3A	CO3A	SO2A	SO4A	CO3A Duplicate
Antimony	7	(5)	(5)	(5)	(5)	(5)
Arsenic	22	1,900	47	22	52	34
Beryllium	(1)	(1)	(1)	(1)	(1)	(1)
Cadmium	(1)	(1)	(1)	(1)	(1)	(1)
Chromium	10	3	9	6	10	8
Copper	2	1	(1)	(1)	(1)	(1)
Lead	(5)	(5)	(5)	(5)	(5)	(5)
Mercury	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Nickel	(2)	(2)	(2)	(2)	(2)	(2)
Selenium	(5)	(5)	(5)	(5)	(5)	(5)
Silver	(1)	(1)	(1)	(1)	(1)	(1)
Thallium	(5)	(5)	(5)	(5)	(5)	(5)
Zinc	5	2	2	3	3	2

Note:

(5.0) Indicates analyte not detected at or above the enclosed laboratory Method Reporting Limit.
All data reported in micrograms per liter (µg/l).

Table 4
Summary of Analytical Data - Groundwater
Total Petroleum Hydrocarbons
May 29, 1997
Petroleum Reclaiming Services, Inc.
Tacoma, Washington

Analyte	CO2A	SO3A	CO3A	SO2A	SO4A	CO3A Duplicate
Total Petroleum Hydrocarbons	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)

Note:

(1.0) Indicates analyte not detected at or above the enclosed laboratory Method Reporting Limit. All data reported in milligrams per liter (mg/l).

Table 5
Summary of Analytical Data - Groundwater
Volatile Organic Compounds
August 28, 1997
Petroleum Reclaiming Services, Inc.
Tacoma, Washington

Analyte	CO2A	SO3A	CO3A	SO2A	SO4A	CO3A Duplicate
Vinyl Chloride	(3)	3	(3)	(3)	2 J	(3)
Acetone	(5)	(5)	(5)	(5)	(5)	3J
trans-1,2-Dichloroethene	(3)	1 J	(3)	(3)	9	(3)
1,1-Dichloroethane	(3)	(3)	(3)	(3)	1 J	(3)
cis-1,2-Dichloroethene	(3)	18	(3)	(3)	4	(3)
Benzene	(3)	(3)	(3)	11	(3)	2 J
Trichlorethene	(3)	1 J	(3)	(3)	1 J	(3)
Tetrachloroethene	(3)	(3)	(3)	(3)	1 J	(3)
m,p-Xylenes	(3)	(3)	(3)	(3)	(3)	1 J

Note:

(3) Indicates analyte not detected at or above the enclosed laboratory Method Reporting Limit.
J Indicates analyte detected below the laboratory Method Reporting Limit. Reported concentration should be considered an estimate.
All data reported in micrograms per liter (µg/l).
Table includes only analytes detected in at least one sample.

Table 6
Summary of Analytical Data - Groundwater
Dissolved Metals
August 28, 1997
Petroleum Reclaiming Services, Inc.
Tacoma, Washington

Analyte	CO2A	SO3A	CO3A	SO2A	SO4A	CO3A Duplicate
Antimony	5	(5)	(5)	(5)	NA	(5)
Arsenic	16	920	48	10	NA	41
Beryllium	(1)	(1)	(1)	(1)	NA	(1)
Cadmium	(1)	(1)	(1)	(1)	NA	(1)
Chromium	10	3	9	5	NA	9
Copper	(1)	(1)	(1)	(1)	NA	(1)
Lead	19	(5)	(5)	(5)	NA	(5)
Mercury	0.49	(0.2)	(0.2)	(0.2)	NA	(0.2)
Nickel	(2)	(2)	(2)	(2)	NA	(2)
Selenium	(5)	(5)	(5)	(5)	NA	(5)
Silver	(1)	(1)	(1)	(1)	NA	(1)
Thallium	(5)	(5)	(5)	(5)	NA	(5)
Zinc	5	4	1	3	NA	2

Note:

(5.0) Indicates analyte not detected at or above the enclosed laboratory Method Reporting Limit.
NA Indicates analysis not performed on this sample due to laboratory error.
All data reported in micrograms per liter (μg/l).

Table 7
Summary of Analytical Data - Groundwater
Total Petroleum Hydrocarbons
August 28, 1997
Petroleum Reclaiming Services, Inc.
Tacoma, Washington

Analyte	CO2A	SO3A	CO3A	SO2A	SO4A	CO3A Duplicate
Total Petroleum Hydrocarbons	(1)	(1)	(1)	(1)	(1)	(1)

Note:

(1.0) Indicates analyte not detected at or above the enclosed laboratory Method Reporting Limit.
All data reported in milligrams per liter (mg/l).

APPENDIX H

ems Environmental Services
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Boring Number:	**MW-1A**	Sheet Number:	1 of 3
Job Name:	PRS-Monitoring Well Installation	Date:	3/22/2008
Client:	PRS		
Location:	3003 Taylor Way Tacoma, WA Southeast corner of property		

Casing Depth:	n/a	Casing Elevation:	flush mount	Drilling	
Well Screen Size:	n/a	Water Level:	3 feet bgs	Start	Finish
Surface Conditions:	Asphalt		Time:	8:27	8:55

Longitude:

Latitude:

Comments: Direct Push Probe used

Inches Driven	Inches Recovered	Sample Number	Sample Time & Interval	Depth to Water	Water Sampling Screen	Depth	Soil Description
						0 -	0-6" Asphalt
						-	6"-2'6": Brown medium to fine sand with silt and occasional gravel,
						1 -	resembling fill material
						-	
						2 -	2'6"-12': Wet brown medium to fine sand with silt and occasional gravel
						-	
				▽		3 -	
						-	
48	36					4 -	
						-	
						5 -	
			9:00			-	

						6	-	
							-	
						7	-	
							-	
48	48 SMW1-A5'					8	-	
							-	
						9	-	
							-	
						10	-	
							-	
						11	-	
							-	
48	48					12	-	
							-	
						13	-	
							-	
						14	-	
							-	
						15	-	
							-	
						16	-	
							-	
						17	-	
							-	Well developed @ 1200
						18	-	

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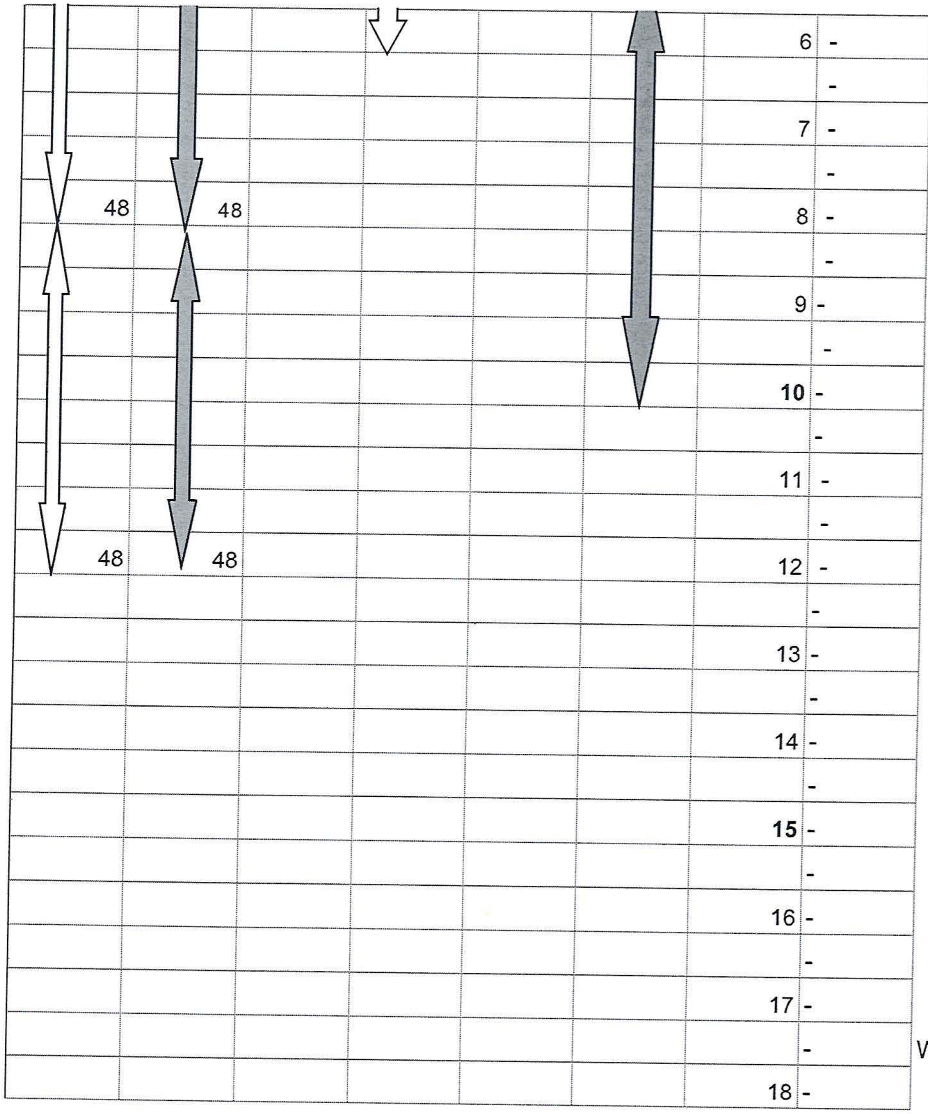
Boring Number:	MW02A	Sheet Number:	2	of	3
Job Name:	PRS Monitoring Well Installation	Date:	3/22/2008		
Client:	PRS				
Location:	3003 Taylor Way Tacoma, WA northeast corner of property				

Casing Depth:	n/a	Casing Elevation:	flush mount	Drilling	
Well Screen Size:	n/a	Water Level:	3 feet bgs	Start	Finish
Surface Conditions:	Asphalt		Time:	9:20	9:30
		Longitude:			
		Latitude:			
		Comments:	Direct Push Probe used		

Inches Driven	Inches Recovered	Sample Number	Sample Time & Interval	Depth to Water	Water Sampling Screen	Depth (ft)	Soil Description
						0 -	0-6" Asphalt
						-	6"-3'6": Brown medium to fine sand with silt and occasional gravel
						1 -	
						-	
						2 -	
						-	
				▽		3 -	
						-	4-12': Wet gray medium to fine sorted sand with silt
48	36					4 -	
						-	
		SMW2A4'	9:35			5 -	
						-	



Well Developed @ 1230

ems Environmental Services
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Boring Number:	MW03A	Sheet Number:	3 of 3
Job Name:	PRS Monitoring Well Installation	Date:	3/22/2008
Client:	PRS Monitoring Well Installation		
Location:	3003 Taylor Way Tacoma, WA center of north property line		

Casing Depth:	n/a	Casing Elevation:	n/a	Drilling	
Well Screen Size:	n/a	Water Level:	2.5 feet bgs	Start	Finish
Surface Conditions:	Asphalt		Time:	9:55	10:05
		Longitude:			
		Latitude:			
		Comments:	Direct Push Probe used		

Inches Driven	Inches Recovered	Sample Number	Sample Time & Interval	Depth to Water	Water Sampling Screen	Depth	Soil Description
						0 -	0-6" Asphalt
						-	6"-2'6": Gray medium to fine sand with silt and occasional gravel,
						1 -	
						-	
						2 -	2'6"-12': Wet brown medium to fine sand with silt and occasional gravel
				▽		-	
						3 -	
						-	
48	36					4 -	
						-	
						5 -	5-5'6": Gray and brown medium to fine well sorted sand with silt
						-	5'6"-6': Gray and white medium to fine well sorted sand with silt, moist

		Sample	Time	Depth	Description
		SMW3A3.5'	10:00	6 -	6-8': Gray well sorted silt with some fine sand, wet
		SMW3A3.5	10:20	-	
				7 -	
				-	
48	48			8 -	8-11'6": Gray poorly sorted silt with some clay, wet
				-	
				9 -	
				-	
				10 -	
				-	
				11 -	
				-	11'6"-16': Gray fine sorted sand with silt
48	48			12 -	
				-	
				13 -	
				-	
				14 -	
				-	
				15 -	
				-	
				16 -	
				-	
				17 -	
				-	Well Developed @1255
				18 -	

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Table 1 - Groundwater Sample Results
Petroleum Hydrocarbons, PCBs, Metals Arsenic, Chromium & Lead and Field Survey Information
3003 Taylor Way
Tacoma, Washington

April 16, 2008

Monitoring Well ID	Date Sampled	Target Analytes							Field Measurements			Depth To Water (ft)	Ground Water Elevation	Top Of Casing (ft)
		Diesel	Oil	Gasoline	Chromium	Arsenic	Lead	PCB	pH	Specific Conductivity	Temperature			
		ug/L	ug/L	ug/L	mg/L	mg/L	mg/L	ug/L	units	uS/cm	C	Ft.	Ft.	Ft.
MW1A	04/15/04	<100	<500	<50	**0.014**	**0.068**	<.001	<0.1	6.7	962	10.4	4.16	5.65	9.81
MW2A	04/15/04	<100	<500	<50	<.007	0.079	<.001	<0.1	6.94	885	13.2	3.45	6.77	10.22
MW3A	04/15/04	<100	<500	<50	<.007	0.074	<.001	<0.1	6.99	956	12.5	2.63	6.76	9.39
CO3A	04/15/04	<100	<500	<50	<.007	**0.016**	<.001	<0.1	6.98	1049	11.2	1.93	6.74	8.67
CO3B	04/15/04	<100	<500	<50	**0.033**	**0.002**	**0.003**	<0.1	6.75	1013	11.8	6.32	2.09	8.41
SO2A	04/15/04	<100	<500	<50	<.007	**0.006**	<.001	<0.1	7.06	970	12.5	2.01	6.74	8.75
SO4A	04/15/04	<100	<500	**74**	<.007	**1.3**	<.001	<0.1	6.83	990	13	3.43	6.53	9.96

<1.0 = Concentrations were not detected above the laboratory reporting limit
ug/L = Micrograms per liter
p = Purge sampling methods were used
NM = Not measured.

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Table 2 - Groundwater Sample Results
Volitale Organic Compounds
3003 Taylor Way
Tacoma, Washington

April 16, 2008

Sample Identifiation	Date Sampled	Volatile Organic Compounds by Method 8260B												
		2-Butanone	2-Hexanone	Benzene	Chlorobenzene	Methylene Chloride	Naphthalene	Tetrachloroethane	Toluene	Total Xylenes	Trichloroethane	Vinyl Chloride	Acetone	cis-1,2-Dichloroethane
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW1A	04/15/04	<10	<10	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
MW2A	04/15/04	<10	<10	<1	<1	<1	<1	<1	<1	<2	<1	<1	**287**	<1
MW3A	04/15/04	<10	<10	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
CO3A	04/15/04	<10	<10	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
CO3B	04/15/04	<10	<10	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
SO2A	04/15/04	<10	<10	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
SO4A	04/15/04	<10	<10	<1	<1	**3**	<1	5	<1	<2	**12**	**5**	<1	**28**

8260B = EPA method for volatile organic compounds
<1.0 = Concentrations were not detected above the laboratory reporting limit
ug/L = Micrograms per liter
NM = Not measured.

APPENDIX I

605 11th Ave. SE, Suite 201 • Olympia, WA • 98501
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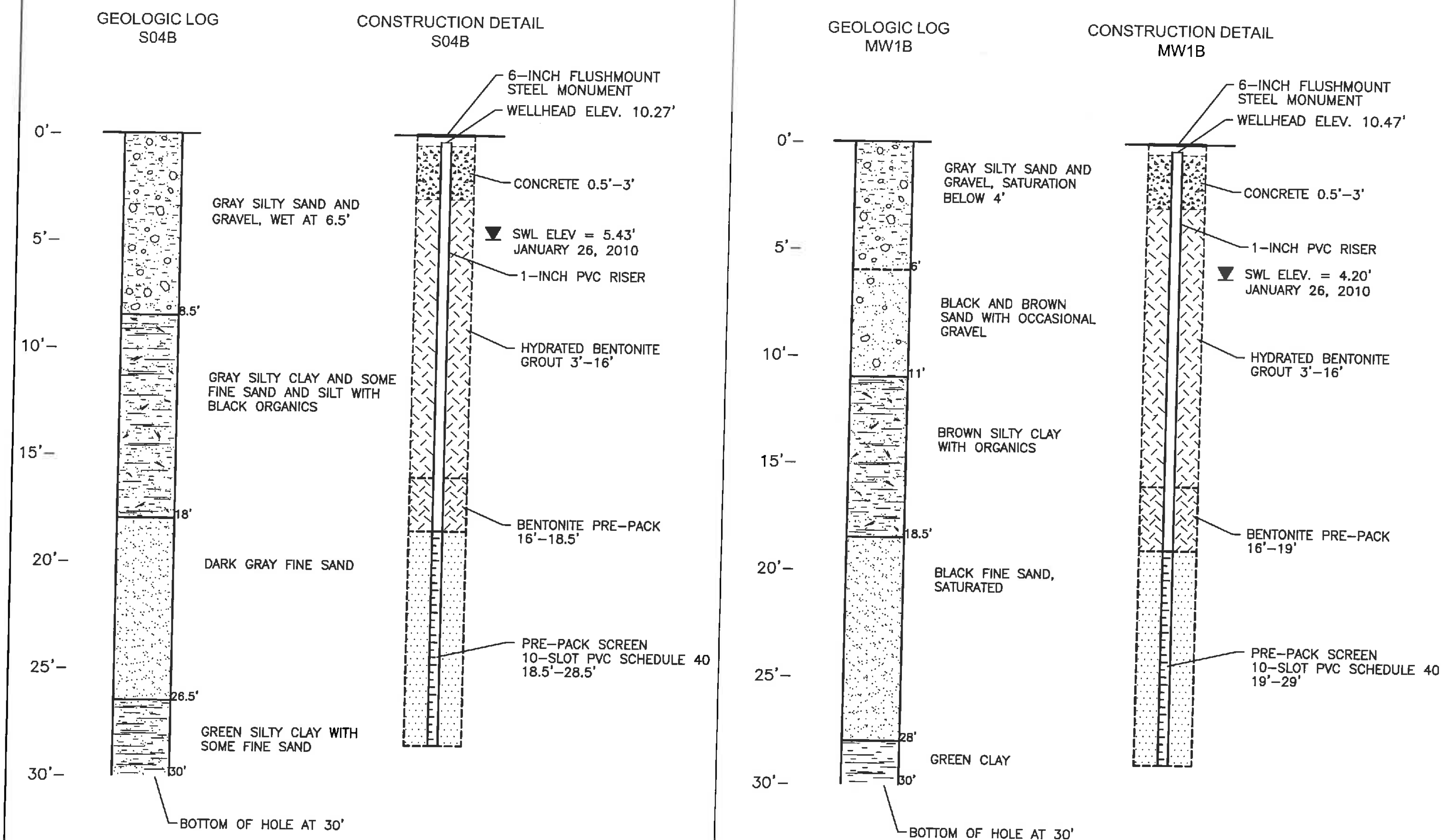

ROBINSON NOBLE SALTBUSH INC. GROUNDWATER & ENVIRONMENTAL SCIENTISTS	PM: RAB April 2010 2552-001A	Pierce County T 21 N/R 03 E - 36 Scale 1" = ~40'	Figure 2 Construction Detail and Geologic Logs PRS Group, Inc: GW Monitoring & Well Installation

APPENDIX J

605 11th Ave. SE, Suite 201 • Olympia, WA • 98501
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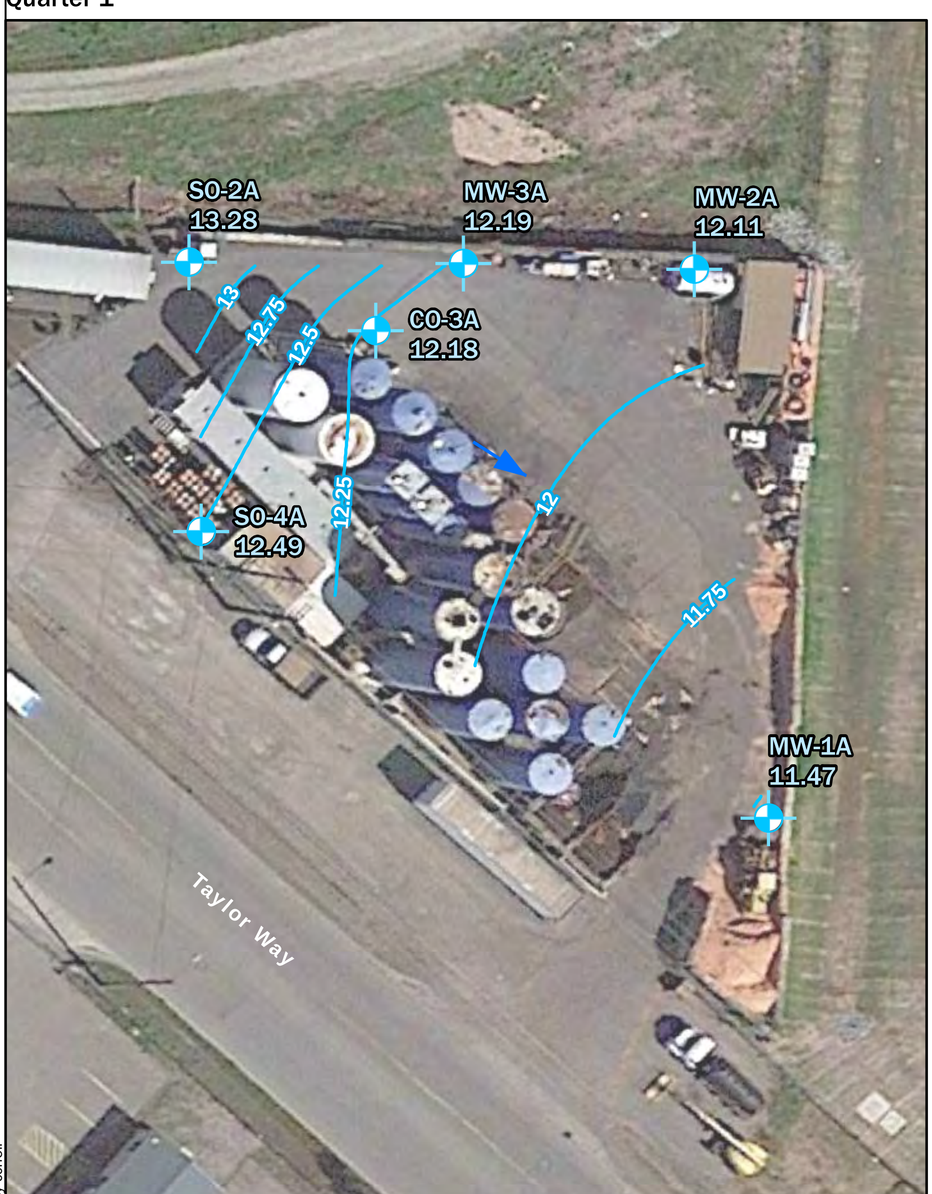
Quarter 1

Quarter 2



Quarter 3

Quarter 4

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Legend

MW-1A 9.33 — Shallow Aquifer Monitoring Well and Groundwater Elevation (NAVD 88)

Inferred Groundwater Flow Direction, Shallow Aquifer

9.25 — Inferred Groundwater Elevation Contours

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. Q1 water level measurements taken on June 11, 2015 between 7:58 AM and 2:18 PM.
4. Q2 water level measurements taken on September 8, 2015 between 7:30 AM and 2:07 PM.
5. Q3 water level measurements taken on December 10, 2015 between 8:36 AM and 9:50 AM.
6. Q4 Water level measurements taken on March 8, 2016 between 8:34 AM and 9:47 AM
7. Groundwater elevation contours estimated using Surfer (Golden Software) 8.0 contouring software using the Natural Neighbor gridding method.
8. Groundwater elevations calculated based on survey data provided by PRS Group, Inc.

Data Source: Aerial from Google Earth Pro 2015

Projection: NAD 1983 StatePlane Washington South FIPS 4602 Feet

N W E S

50 0 50

Feet

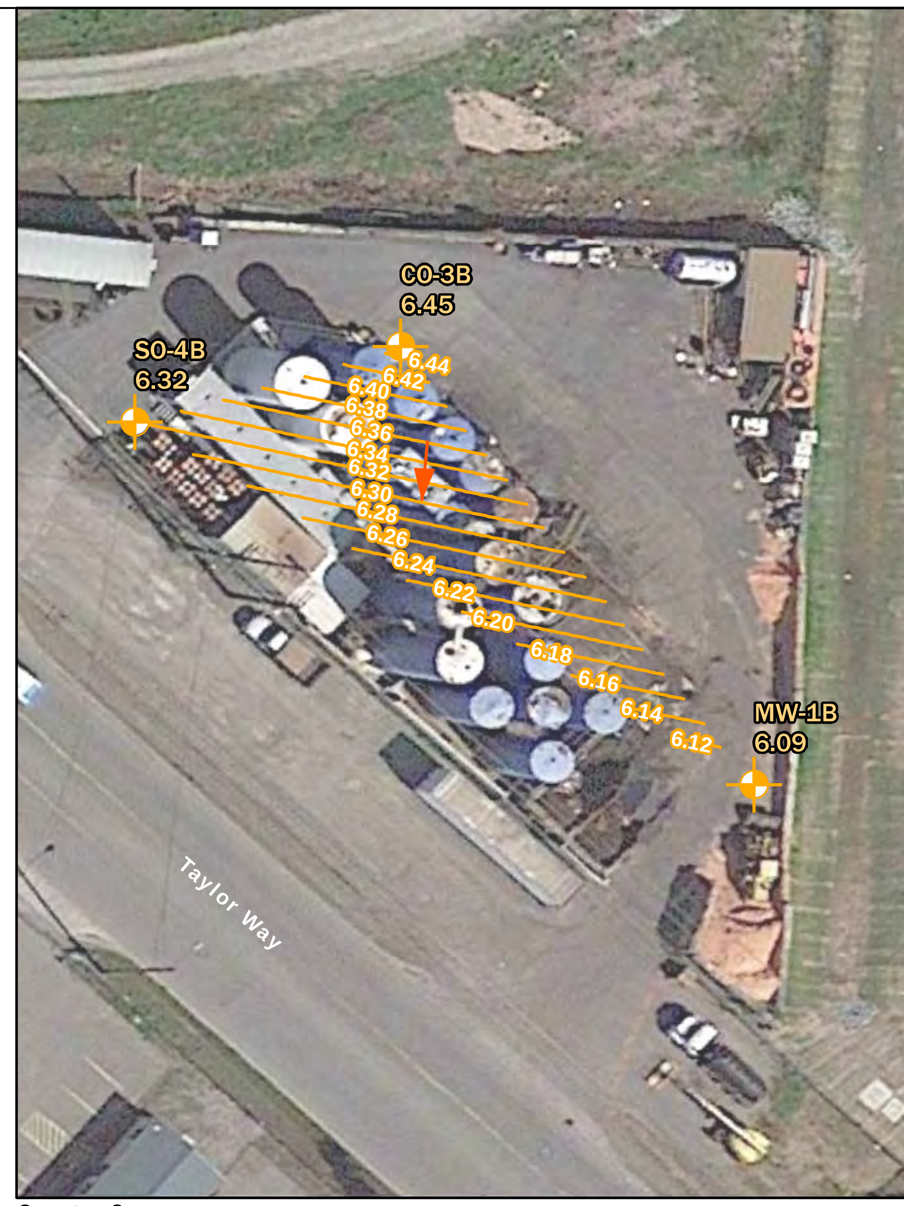
Groundwater Elevations - Shallow Aquifer
Quarters 1-4

PRS Plant
Tacoma, Washington

GEOENGINEERS

Figure 3

Quarter 1



Quarter 2

Quarter 3

Quarter 4

Legend

MW-1B 6.40 — Deep Aquifer Monitoring Well and Groundwater Elevation (NAVD 88)

Inferred Groundwater Flow Direction, Deep Aquifer

6.50 — Inferred Groundwater Elevation Contours

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
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8. Groundwater elevations calculated based on survey data provided by PRS Group, Inc.

Data Source: Aerial from Google Earth Pro 2015

Projection: NAD 1983 StatePlane Washington South FIPS 4602 Feet

N W E S

50 0 50

Feet

Groundwater Elevations - Deep Aquifer
Quarters 1-4

PRS Plant
Tacoma, Washington

GEOENGINEERS

Figure 4

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APPENDIX K

SOIL CLEANUP LEVEL CALCULATIONS FOR HUMAN HEALTH (Method B) WITH SURROGATE APPROACH for DIRECT SOIL CONTACT PATHWAY for Non-Carcinogenic and Carcinogenic TPH

Date of Cleanup Level Testing:	10/23/97			
Name of Site:	Petroleum Reclaiming Service, Inc.			
Address of Site:	3003 Taylor Way, Tacoma, WA			
Type of Contamination:	Max. TPH-D: 973, Max TPH-O: 1630 ppm			
Soil Sample ID:	SS-3			
Site Condition (enter the number):	2	Commercial Zone		
Passed for Non-Carcinogen?	*YES!*	HI; TPH =	0.136	1,630
Passed for Carcinogen?	*YES!*	Total Risk =	0.000E+00	

Factors

Condition	Non-Carcinogenic	Carcinogenic
(1) Residential	1.250E-05	1.000E-06
(2) Commercial	3.125E-06	2.500E-07
(3) Industrial	2.860E-07	7.620E-08

Non-Carcinogenic TPH Test Table

Compound	Soil Conc. (mg/kg)	ORfD (mg/kg-day)	Factor	Multiplier	HQ
Total Aliphatic	652.000	0.060	3.125E-06	5.208E-05	0.034
Total Aromatic	978.000	0.030	-	-	-
Benzene		0.030	3.125E-06	1.042E-04	0.000
Ethylbenzene		0.100	3.125E-06	3.125E-05	0.000
Toluene		0.200	3.125E-06	1.563E-05	0.000
Xylenes		2.000	3.125E-06	1.563E-06	0.000
Total Aromatic - E - X	978.000	0.030	3.125E-06	1.042E-04	0.102
Carcinogenic PAHs (all)		-	-	-	-
TPH in Soil =	***1,630***			**Hazard Index =**	***0.136***

Carcinogenic TPH Test Table

Compound	Soil Conc. (mg/kg)	OCPF (kg-day/mg)	Factor	Risk
Benzene	0.000	0.029	2.500E-07	*0.00E+00*
Carcinogenic PAHs(all)	0.000	7.300	2.500E-07	*0.00E+00*
			Total Risk =	***0.00E+00***

1. Analytical method for Total Aromatics should include Ethylbenzene and Xylenes but not Benzene and Toluene.
2. Carcinogenic PAHs should include Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Benzo(k)fluoranthene, Benzo(a)anthracene, and Benzo(b)fluoranthene.

SOIL CLEANUP LEVEL CALCULATIONS FOR HUMAN HEALTH WITH SURROGATE APPROACH for SOIL-TO-GROUNDWATER PATHWAY

Option 2: Soil/Pore Water Partitioning and Groundwater Mixing

Date of Cleanup Level Testing:	10/23/97
Name of Site:	Petroleum Reclaiming Service, Inc.
Address of Site:	3003 Taylor Way, Tacoma, WA
Type of Contamination:	Max. TPH-D: 973, Max TPH-O: 1630 ppm
Soil Sample ID:	SS-3
Groundwater Use (enter the number):	1 **Groundwater for Drinking Water Use**
Passed for TPH Test?	***YES!*** TPH in Water will be ***0.811*** mg/l

Groundwater Cleanup Level

Groundwater Use	TPH (mg/l)
(1) Drinking Water	1.000
(2) Nonpotable Water	5.000

Dilution Factor (DF): 20

Compound	Soil mg/kg	EC	MW g/mol	Moles mmol/kg	Mol Frac. %	Solubility mg/l	Effect. Sol. mg/l	DF	Conc. @well mg/l	Comp. %
Aliphatics										
EC 5-6		5.5	81	0.00E+00	0.00%	2.80E+01	0.00E+00	20	0.00E+00	0.00%
EC >6-8		7.0	100	0.00E+00	0.00%	4.20E+00	0.00E+00	20	0.00E+00	0.00%
EC >8-10		9.0	130	0.00E+00	0.00%	3.30E-01	0.00E+00	20	0.00E+00	0.00%
EC >10-12	652.000	11.0	160	4.08E+00	35.14%	2.60E-02	9.14E-03	20	4.57E-04	0.06%
EC >12-16		14.0	200	0.00E+00	0.00%	5.90E-04	0.00E+00	20	0.00E+00	0.00%
EC >16-21		19.0	270	0.00E+00	0.00%	1.00E-06	0.00E+00	20	0.00E+00	0.00%
Aromatics										
Benzene		6.5	78	0.00E+00	0.00%	1.78E+03	0.00E+00	20	0.00E+00	0.00%
Toluene		7.6	92	0.00E+00	0.00%	5.20E+02	0.00E+00	20	0.00E+00	0.00%
EC >8-10		9.0	120	0.00E+00	0.00%	6.50E+01	0.00E+00	20	0.00E+00	0.00%
EC >10-12	978.000	10.0	130	7.52E+00	64.86%	2.50E+01	1.62E+01	20	8.11E-01	99.94%
EC >12-16		14.0	150	0.00E+00	0.00%	5.80E+00	0.00E+00	20	0.00E+00	0.00%
EC >16-21		19.0	190	0.00E+00	0.00%	5.10E-01	0.00E+00	20	0.00E+00	0.00%
EC >21-35		28.0	240	0.00E+00	0.00%	6.60E-03	0.00E+00	20	0.00E+00	0.00%
TPH in Soil =	***1,630***		Total=	1.16E+01	100.00%		TPH in Water =		***0.811***	

PRS04201

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (425) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Secor 15400 SE 30th Place, Ste. 100 Bellevue, WA 98007	Project: PRSI FIFE Project Number: 00324-001-01 Project Manager: John North	Sampled: 9/29/97 Received: 9/29/97 Reported: 10/2/97 14:07

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
SS-1	B709604-01	Soil	9/29/97
SS-2	B709604-02	Soil	9/29/97
SS-3	B709604-03	Soil	9/29/97

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (425) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Secor 15400 SE 30th Place, Ste. 100 Bellevue, WA 98007	Project: PRSI FIFE Project Number: 00324-001-01 Project Manager: John North	Sampled: 9/29/97 Received: 9/29/97 Reported: 10/2/97 14:07

Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended) with Silica Gel Clean-up
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
SS-1			**B709604-01**				**Soil**	
Diesel Range Hydrocarbons	0970765	10/2/97	10/2/97		10.0	145	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	553	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*43.4*	*%*	1
SS-2			**B709604-02**				**Soil**	
Diesel Range Hydrocarbons	0970765	10/2/97	10/2/97		10.0	ND	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	ND	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*60.2*	*%*	
SS-3			**B709604-03**				**Soil**	
Diesel Range Hydrocarbons	0970765	10/2/97	10/2/97		10.0	973	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	1630	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*112*	*%*	

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (425) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Secor 15400 SE 30th Place, Ste. 100 Bellevue, WA 98007	Project: PRSI FIFE Project Number: 00324-001-01 Project Manager: John North	Sampled: 9/29/97 Received: 9/29/97 Reported: 10/2/97 14:07

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

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
SS-1			**B709604-01**				**Soil**	
Arsenic	0970789	9/30/97	9/30/97	EPA 6010A	10.0	ND	mg/kg dry	
SS-2			**B709604-02**				**Soil**	
Arsenic	0970789	9/30/97	9/30/97	EPA 6010A	10.0	ND	mg/kg dry	
SS-3			**B709604-03**				**Soil**	
Arsenic	0970789	9/30/97	9/30/97	EPA 6010A	10.0	74.9	mg/kg dry	

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PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Secor	Project: PRSI FIFE	Sampled: 9/29/97
15400 SE 30th Place, Ste. 100	Project Number: 00324-001-01	Received: 9/29/97
Bellevue, WA 98007	Project Manager: John North	Reported: 10/2/97 14:07

Dry Weight Determination
North Creek Analytical - Bothell

Sample Name	Lab ID	Matrix	Result	Units
SS-1	B709604-01	Soil	92.4	%
SS-2	B709604-02	Soil	85.4	%
SS-3	B709604-03	Soil	92.3	%

h Creek Analytical, Inc.

Matthew Essig, Project Manager

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Secor 15400 SE 30th Place, Ste. 100 Bellevue, WA 98007	Project: PRSI FIFE Project Number: 00324-001-01 Project Manager: John North	Sampled: 9/29/97 Received: 9/29/97 Reported: 10/2/97 14:07

Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended) with Silica Gel Clean-up/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0970765	**Date Prepared: 10/2/97**				**Extraction Method: EPA 3550**					
Blank	**0970765-BLK2**									
Diesel Range Hydrocarbons	10/2/97			ND	mg/kg dry	10.0				
Heavy Oil Range Hydrocarbons	"			ND	"	25.0				
Surrogate: 2-FBP	"	*11.9*		*8.11*	"	*50.0-150*	*68.2*			
LCS	**0970765-BS2**									
Diesel Range Hydrocarbons	10/2/97	66.7		57.1	mg/kg dry	59.0-119	85.6			
Surrogate: 2-FBP	"	*11.9*		*10.4*	"	*50.0-150*	*87.4*			
Duplicate	**0970765-DUP1**		**B709604-01**							
Diesel Range Hydrocarbons	10/2/97		145	257	mg/kg dry			56.0	55.7	
Heavy Oil Range Hydrocarbons	"		553	809	"			56.0	37.6	
Surrogate: 2-FBP	"	*12.9*		*8.61*	"	*50.0-150*	*66.7*			

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SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Secor 15400 SE 30th Place, Ste. 100 Bellevue, WA 98007	Project: PRSI FIFE Project Number: 00324-001-01 Project Manager: John North	Sampled: 9/29/97 Received: 9/29/97 Reported: 10/2/97 14:07

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

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0970789	**Date Prepared: 9/30/97**				**Extraction Method: EPA 3050**					
Blank	**0970789-BLK1**									
Arsenic	9/30/97			ND	mg/kg dry	10.0				
LCS	**0970789-BS1**									
Arsenic	9/30/97	50.0		42.2	mg/kg dry	70.0-130	84.4			
Duplicate	**0970789-DUP1**		**B709604-01**							
Arsenic	9/30/97		ND	ND	mg/kg dry			20.0		
Matrix Spike	**0970789-MS1**		**B709604-01**							
Arsenic	9/30/97	53.0	ND	55.4	mg/kg dry	60.0-140	105			
Matrix Spike Dup	**0970789-MSD1**		**B709604-01**							
nic	9/30/97	53.6	ND	57.1	mg/kg dry	60.0-140	107	20.0	1.89	

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BOTHELL ▪ (425) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Secor 15400 SE 30th Place, Ste. 100 Bellevue, WA 98007	Project: PRSI FIFE Project Number: 00324-001-01 Project Manager: John North	Sampled: 9/29/97 Received: 9/29/97 Reported: 10/2/97 14:07

Notes and Definitions

#	Note
1	The surrogate recovery for this sample is outside of established control limits. Review of associated QC indicates the recovery for this surrogate does not represent an out-of-control condition.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

Creek Analytical, Inc.

Matthew Essig, Project Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (2__) _81-9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

Work Order # B709604

REPORT TO:
ATTENTION: JOHN NORTH
ADDRESS: SECOR - BELLEVUE
PHONE: 641 9900 FAX: 641 9092
PROJECT NAME: PRSI
PROJECT NUMBER: 00324-001-01
SAMPLED BY: J. NORTH

INVOICE TO:
ATTENTION:
ADDRESS:
P.O. NUMBER:
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 (Standard) 7 5 4 3 2 1 Same Day — (1 circled)
Fuels & Hydrocarbon Analyses: 5 (Standard) 3-4 2 1 Same Day — (1 circled)
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

Analysis Request: NWTPH-Dx | Arsenic-ICP | NWTPH-Dx w/ Silica

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	NWTPH-Dx	Arsenic-ICP	NWTPH-Dx w/ Silica							MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	SS-1	9/25/97 14:20	B709604-01	X	X	(X)							S	1	
2.	SS-2	9/29/97 14:25	02	X	X	(X)							S	1	
3.	SS-3	9/25/97 14:30	03	X	X	(X)							S	1	
4.															
5.															
6.															
7.															
8.															
9.															
10.															

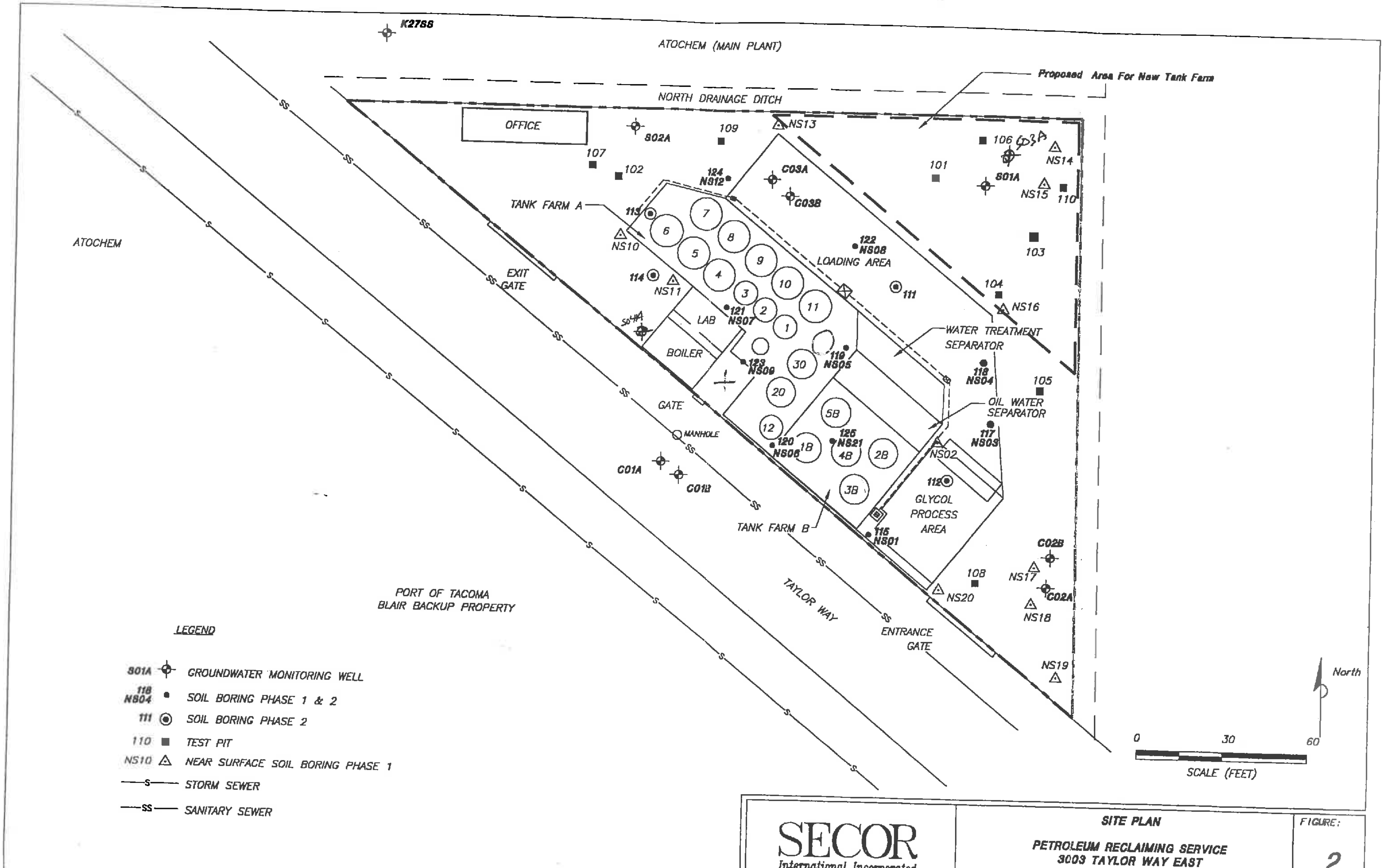
RELINQUISHED BY (Signature): John North DATE: 9/29/97
PRINT NAME: John North FIRM: SECOR TIME: 15:30
RECEIVED BY (Signature): Lisa Hurley DATE: 9/29/97
PRINT NAME: Lisa Hurley FIRM: NCA TIME: 1530

RELINQUISHED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:
RECEIVED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS: (X) 24-Hour Per J. North 10/1/97 (initials)

PAGE OF

PRS04210



SECOR
International Incorporated

SITE PLAN

PETROLEUM RECLAIMING SERVICE
3003 TAYLOR WAY EAST
TACOMA, WASHINGTON

FIGURE: 2

JOB#: 00324-001-01 APPR: DWN: AW/SS DATE: 8/20/96

DWG: M3321038

APPENDIX L

605 11th Ave. SE, Suite 201 • Olympia, WA • 98501
Phone: 360-352-9835 • Fax: 360-352-8164 • Email: admin@aegwa.com

TABLE 2-1 - Arkema Environmental Chronology

Period	Item	Comment
1927 - 1997 (70 yrs.)	Chemical Production	Primarily chlorine, caustic soda, sodium chlorate; also hydrochloric acid and **arsenical herbicide** 1)1940 to 1972 - Penite Production (created Penite Pits) 2)1950s to 1989 - Taylor Lake discharges (alkaline muds) 3)1969 to 1986 - Waggoner's Wallow discharges (VOCs)
Mid-1950s to 1987	Operations on Wypenn Property	Agricultural testing of pesticides/herbicides; storage of caustic and Bunker C fuel
1981 to present	Investigation, Remediation, and Monitoring	Groundwater contamination first discovered in 1981; Upper Aquifer - arsenic concentrations > 2,000 mg/l - 1990
June 1987	Consent Decree (Upland)	No. 87-2-01199-0 (between Ecology and Arkema) for upland source control
Nov. 1987 to 1988	Upper Aquifer Arsenic Mitigation Alternatives (Original)	1) Waterway barrier 2) Focused containment/capping 3) Arsenic performance level of 1 mg/l
May to Nov. 1989	Remedial Action Work	Groundwater extraction and treatment Intermediate Aquifer arsenic concentrations >1,000 mg/l
Sept. 1989	Record of Decision	Cleanup of Hylebos Waterway - Requires Sediment Quality Objectives (SQOs) as Site Specific Cleanup Levels
1990	Expedited Actions	1) Excavation/off-site disposal Penite Area (2,300 to 3,000 CY); additional removal in 2003 (185 CY). 2) Elimination of discharges to Taylor Lake Area 3) Installed sheet pile wall (addition of wings 1995 and 1997) 4) Excavation material from asbestos pond (1,200 CY)
Dec. 1990	Final Remedial Action Plan (FRAP)	1) Pump and treat to remove arsenic from GW - for 10 yrs. 2) Leading to in-situ treatments
2000	Hylebos Explanation of Significant Differences (ESD)	August 2000 - PCB SQO revised and CAP Performance Stds.
Oct. 1992 to Dec. 2003	Pump and Treat System	Removed 22,260 pounds of arsenic from groundwater; By 2003 system at end of service life and Arkema completed in-situ in-situ treatments consistent with the FRAP.
Sept. 1996 to Dec. 1999	In-situ VOC treatment System	Waggoner's Wallow Area
Nov. 2001 to June 2004	In-situ Chemical Injections	1) Stabilize arsenic in groundwater 2) Pilot and full scale treatments 3) Hydrogen peroxide and ferric chloride 4) Upper and intermediate aquifers
2002	UAO CERCLA 10-2002-0065 (Hylebos Waterway)	Issued by EPA to HHCG - Cleanup of Hylebos
2003 to 2007	Trimester monitoring	Assess impact of in-situ treatments
2003 to 2005	Hylebos Dredging (approved by EPA)	Objective: Clean bottom (meet SQOs)
2003	Shoreline Wedge Material	1) Upper aquifer "wedge material" identified 2) Investigation - borings

TABLE 2-1 - Arkema Environmental Chronology

Period	Item	Comment
2004	Intertidal Cap (approved by EPA)	1) Finish design of intertidal cap over wedge material 2) Construct intertidal cap
2004	Intermediate Aquifer Outcrop Arsenic Conc. Discovered	Testing indicated dredging likely not meet SQOs with removal of "recent" sediment. Arsenic concentrations above SQOs discovered in intermediate aquifer native material along portion of Arkema shoreline
	Hylebos Work Plan Addendum No. 1	2) Preliminary design of subtidal cap (cap sediment with arsenic concentrations above SQOs)
	Dredge Portion of Arkema Shoreline Area	3) Post-dredge sampling provided basis for final design of subtidal cap footprint (December 2004)
	Shoreline OMMP Wells Installed and Sampled	4) First sampling in December 2004
Sept. 2004	Consent Decree (Hylebos Waterway)	No. C055319RBL (between EPA and HHCG) (RD/RA - Segs. 1 and 2 Hylebos Waterway); Replace UAO
2005	Sample OMMP Wells	March and May
	Hylebos Work Plan Addendum No. 2	Final design of subtidal cap (October)
	Finish Dredging Along Arkema Shoreline	Exposed high arsenic concentrations in native sediment
2006	Subtidal Cap (approved by EPA)	Completed February 06
	OMMP Arkema Sediment Caps	Submitted to EPA; never finalized or fully implemented
2007	Soil Testing (Upland)	by Malcolm Pirnie started for Arkema (May 07); report completed for Port (Oct. 07)
	Port Purchased Property	**Port assumed Arkema liabilities (May 07)**
2008	Blair Terminal Dev. Project	Started "full speed" consideration of environmental aspects; coordination with development aspects Taylor Yard.
	RI Work Plan	by Dalton, Olmsted & Fuglevand, Inc. (DOF); Submitted to Ecology and EPA in July. Informal comments received and incorporated into Work Plan.
	Upland Sampling	New wells; groundwater sampling/analysis (Nov. and Dec. 08)
	Shoreline Sediment and Porewater Sampling	Sept. (intertidal sediment); Dec. (subtidal cap - sediment and porewater) - OMMP Type Sampling
2009	Compilation and Review Environmental Data	Continued coordination with development project; likely alternatives identified and preliminarily evaluated, included numerica modeling of containment options
	Blair Terminal Dev. Project Canceled	Based on economic considerations
2010	Conceptual model	Refined conceptual model incorporating results of geochemical testing program.
2011	Agreed Order DE 5568	Between Ecology and Port for completion of RI/FS; Effective July 25, 2011
	Site Characterization Data Report	Agreed Order Deliverable 1 - Submitted August 2011; Identified additional data gaps.

TABLE 2-1 - Arkema Environmental Chronology

Period	Item	Comment
2012	Data Gap Work Plan	Agreed Order Deliverable 3 - Submitted January 2012
	Wypenn Interim Action Plan	Agreed Order Deliverable 8 - Submitted May 2012
	Implementation of Data Gap Work Plan	Agreed Order Action 4 - Generally completed 3rd. Quarter 2012
	Draft Data Gap Technical Memorandum	Agreed Order Deliverable 5 - Submitted November 2012 (Ecology did not require preparing a final technical memorandum - Deliverable 6 - comments to be incorporated into draft RI report). Memorandum identifies a number of additional data gaps to be filled. This work completed during January and February 2013.