Remedial Investigation Work Plan
Verbeek Wrecking Site
Bothell, Washington

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Prepared for

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LIST OF ABBREVIATIONS AND ACRONYMS

BGS	Below the Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CMSI	Construction Management Services of Washington
CLARC	Cleanup Levels and Risk Calculations
CPAHs	Carcinogenic polycyclic aromatic hydrocarbons
DO	Dissolved Oxygen
Ecology	Washington State Department of Ecology
ESA	Environmental Site Assessment
ESN	Environmental Services Northwest, Inc.
HCID	Hydrocarbon Identification
MTBE	Methyl tertiary butyl ether
MTCA	Model Toxics Control Act
ORP	Oxidation Reduction Potential
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PCOC	Potential Constituents of Concern
PQL	Practical Quantitation Limit
PSE	Puget Sound Energy
Qva	Vashon Advanced Glacial Outwash
Qvt	Vashon Glacial Till
RI	Remedial Investigation
SAP	Sampling and Analysis Plan
TEFs	Toxicity Equivalency Factors
TEQ	Toxicity Equivalency Quotient
TPH-D	Diesel-range Petroleum Hydrocarbons
TPH-G	Gasoline-range Petroleum Hydrocarbons
TPH-O	Oil-range Petroleum Hydrocarbons
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds
VCP	Voluntary Cleanup Program

1.0 INTRODUCTION

This document presents a work plan to conduct a Remedial Investigation (RI) for the Verbeek Wrecking Site (Site), located at 18416 Bothell-Everett Highway in unincorporated Snohomish County north of Bothell, Washington (Figure 1). The purpose of the RI Work Plan is to fill remaining data gaps that are necessary to evaluate the nature and extent of contamination at the Site to enable the selection of the final cleanup action, if needed. The Site is enrolled in the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP), and the VCP reference number for the Site is NW 1982 (FSID 51544175). Site characterization and interim cleanup actions previously conducted at the Site are summarized in the Interim Action Cleanup Report (Landau Associates 2009).

This work plan was prepared to meet the general requirements of an RI as defined by the Washington Model Toxics Control Act (MTCA) Cleanup Regulation (WAC 173-340-350). It describes the RI activities to be performed and the planned reporting. Appendices to this work plan consist of resource protection well reports (Appendix A); Environmental Services Northwest drilling information (Appendix B), a project Health and Safety Plan (Appendix C); and a Soil and Groundwater Investigation Sampling and Analysis Plan (SAP; Appendix D).

2.0 BACKGROUND

This section presents information on Site background, including a description of the Site (Section 2.1), a summary of historic and current uses of the Site (Section 2.2), and the Site's physical and hydrogeologic setting (Section 2.3). Note that a detailed historical review was previously completed for the Site and is presented in the Interim Cleanup Action Report (Landau Associates 2009), which should be reviewed for a more thorough description of Site historical uses and potential environmental concerns.

2.1 SITE DESCRIPTION

Figure 1 shows the location of the Site with respect to its vicinity. Figure 2 presents a site plan showing the property boundary and relevant historical Site features. The Site is bounded to the east by Bothell-Everett Highway and a commercial property (18332 Bothell-Everett Highway) currently used for storage of landscaping material, to the north by 183rd Street, to the west by a residential neighborhood, and to the south by Golds Gym and Lease Crutcher Lewis (a construction company). Figure 3 shows the current Site features and topography. As shown on Figure 3, the Site slopes to a north south trending drainage depression, and stormwater runoff is drained by a series of catch basins that connect to a centrally located north south trending stormwater drain. The approximate center of the Site is located at North 47.83092° and West 122.21085°. Verbeek Properties, LLC currently owns the property within the Site.

2.2 HISTORICAL AND CURRENT SITE USE

Verbeek Wrecking purchased the southern portion of the Site in 1956 and began its automobile salvage operations in the early 1960s. Verbeek Wrecking purchased the northern portion of the Site in the mid 1980s. Prior to 1957, the Site was heavily wooded and was occupied, in part, by several residences. Over the period of Verbeek Wrecking's operational history, auto wrecking and salvage activities were conducted in various portions of the Site.

Auto wrecking and salvage operations ceased in early 2008 in advance of the interim cleanup action activities. The Site was cleared of the salvaged materials and structures used for the wrecking and salvage processes. Currently, the Site is not in use, pending further environmental assessment and redevelopment.

For organizational purposes, the Site is sub-divided into four areas: A, B, C and D (Figure 2). Area A encompasses the western third of the property, was historically leased to other auto wrecking companies, and was separated from other portions of the Site by a fence. Area B is located in the southern portion of the Site, was used for storage, truck parking, and automobile salvage operations, and

was the location where contaminated soil originating from the Gas Works Park Site was used as fill. Area C is located in the northeastern portion of the Site and was used for heavy auto wrecking operations. Area D is located in the eastern portion of the Site and has several structures, including a residence/office building, a shop building, and truck scale. The following section presents descriptions of the historical activities conducted in each of the four areas.

As indicated above, the source of contamination in Area B is contaminated soil originating from the Gas Works Park Site which, based on aerial photograph interpretation, was brought to the Site in the mid 1960s to early 1970s. Characterization of the nature and extent of contamination associated with this material is being conducted by Puget Sound Energy (PSE) a former owner of the Gas Works Park site. As a result, Area B is not addressed in this work plan, although information related to environmental conditions and interim action activities for this area are discussed to provide the reader a more complete understanding of Site environmental conditions.

2.2.1 AREA A

Area A encompasses about the western 1/3 of the Site, and was accessed at the north end from 183rd Street SE (mailing address: 18414 Bothell Everett Highway). Verbeek Wrecking leased the property since the early 1970s to various tenants that operated auto parts salvage businesses. Figure 2 shows the location of Area A and associated features. Its longest and most recent tenant, Cascade Wrecking, leased the property from 1981 to mid 2008. The configuration of Area A has been consistent since the mid 1980s. In the mid 1980s, Verbeek Wrecking purchased the northern portion of the Site and expanded its operations and the Cascade Wrecking operations into this area.

The ground surface in Area A consisted of gravel prior to implementation of the interim action. The ground surface surrounding the parts sheds (engine disassembly building) was reportedly stained and numerous petroleum-stained areas were observed beneath the vehicle shells during a 2008 Phase II environmental site assessment (Geotech Consultants 2008a). According to Renee West of Verbeek Properties, LLC, the ground surface surrounding the engine and transmissions storage area also exhibited petroleum-staining (West, R. 2009 Personal Communication). An oil-water separator was located on the eastern edge of the property. Runoff from the nearby steam cleaning/parts shed area passed through the oil-water separator prior to discharge to the stormwater system. Current conditions are discussed in Section 6.1.

2.2.2 AREA B

Area B is located in the southeastern quarter of the Site and is shown on Figure 2. Area B encompasses a portion of the Site that contains contaminated fill material originating from the Gas Works Park Site. According to Verbeek Wrecking personnel, the general site grade in this area was raised in some areas up to 16 ft to fill in the drainage depression noted in the pre-1976 aerial photographs described in Section 2.2.

Historical Site activities in this area consisted of auto salvaging, truck parking, and storage. Prior to Verbeek Wrecking purchasing the northern portion of the Site and expanding their operations in the mid 1980s, the western portion of Area B was used as the primary wrecking yard for Verbeek Wrecking. The eastern portion of Area B, near the Bothell-Everett Highway, was used for truck parking and as an entrance to the Site. It should be noted that the oval shaped track feature that can be seen on Figure 2 is a dirt track that was used by Verbeek Wrecking for recreational purposes. The ground surface in Area B consisted of gravel surfacing prior to implementation of the interim action.

2.2.3 AREA C

Area C is located in the north portion of the Site, and was used for automobile wrecking activities. An east-west trending fence separated the original property in the south from the more recent expansion of the property to the north prior to implementation of the interim action. The property in the south portion of Area C was used for auto salvaging operations from the late 1950s to the mid 1980s, and was more recently used for storage purposes. Verbeek Wrecking expanded their operations to the north in the mid 1980s, and increased their automobile processing capabilities by adding automobile crushing and sheering equipment. The most recent automobile wrecking activities that took place in the northern portion of Area C include:

- **Automobile processing:** Batteries and tires were removed, and fluids were drained from automobiles in the processing building. The fluids were drained to containers, for subsequent recycling.
- **Automobile crushing:** Processed automobiles were crushed in a crushing press. Crushed automobiles were then sold to offsite recycling companies.
- **Metal shearing:** Crushed vehicles that were too large to be transported offsite were sheared into smaller pieces in the shearing area. This was conducted using a shearing attachment on a track hoe. Sheared metal was then sold to offsite recycling companies.

As shown on Figure 2, concrete pads covered the processing/crushing and the shearing areas. Runoff from the concrete pads was captured in centrally-located catch basins, which then drained to an oil-water separator. Water discharged from the oil-water separator to the sanitary sewer. According to

Verbeek Wrecking personnel, the fluids captured in the oil-water separator were periodically pumped out. The pumped fluid was then stored in the 8,000-gallon waste oil underground storage tank (UST) located off the west end of, and partially beneath, the shop building in Area D. The fill port for the UST is located inside the shop building. The ground surface beyond the boundaries of the concrete pads was covered with gravel surfacing prior to implementation of the interim action, and current surface conditions are discussed in Section 6.3.

2.2.4 AREA D

Area D is located in the eastern portion of the Site and encompasses the residence/office building, truck scale, the shop building, an active waste oil UST, and two former UST areas. The ground surface in Area D is primarily covered with gravel in the western portion and asphalt in the eastern portion, as shown on Figure 3.

The western UST area corresponded to the former fuel dispenser island, as shown on Figure 2. Verbeek Wrecking removed five USTs from two areas of Area D in November 1995. The tanks were removed by Coastal Tank Cleaning, Incorporated. The approximate locations of the removed tanks are shown on Figure 4. According to the UST Closure and Site Assessment report, the following USTs were removed:

- 6,000-gallon diesel tank associated with the fuel dispenser
- 5,000-gallon diesel tank associated with the fuel dispenser
- 800-gallon lube oil tank located immediately north of the shop
- 550-gallon fuel oil tank located immediately north of the shop
- 500-gallon fuel oil tank located immediately north of the shop.

A total of nine soil confirmation samples were collected from the bottom and sidewalls of the two excavations. Of the nine samples, two (USS-2 and USS-8) exhibited concentrations of diesel-range petroleum hydrocarbons (TPH-D) above the MTCA Method A cleanup level (2,000 mg/kg). Soil sample USS-2 was located beneath the 6,000-gallon diesel UST, and exhibited a concentration of TPH-D at 14,000 mg/kg; soil sample USS-8 was located beneath the 800-gallon lube oil tank, and exhibited a concentration of TPH-D at 2,400 mg/kg. All other sample analytical results were below the MTCA Method A cleanup levels. Figure 4 presents the locations of the samples and the associated laboratory analytical results.

An 8,000-gallon waste oil UST is located partially beneath the shop building as shown on Figure 2. The tank was historically used for storing waste oil that was recovered from the processed automobiles and oil-water separators located at the Site. According to Verbeek Wrecking personnel, the waste oil was either recycled periodically by a waste oil recycling company (e.g., Emerald Services) or was used to fuel the waste oil furnace in the shop building. The liquid contents of the tank were recently recycled, and sludge remains in the bottom of the tank.

2.3 PHYSICAL AND HYDROGEOLOGIC SETTING

Our understanding of the physical and hydrogeologic conditions at the site is based on the investigative work conducted by Geotech Consultants (Geotech Consultants 2008a,b), information obtained during the interim action, and a United States Geologic Service (USGS) report on the groundwater system and quality in western Snohomish County, Washington (USGS 1997).

2.3.1 REGIONAL GEOLOGY

The Site is located in the Puget Sound Lowland, which consists mainly of glacially deposited sediments. The Puget Sound Lowland is a basin lying between the Cascade Mountains to the east and the Olympic Mountains to the west. More specifically, the Site is situated in the North Creek Channel within the Intercity Plateau geomorphic province. The topography surrounding the Site slopes down to the south-southwest. Geologic maps of the area indicate that the Site lies within an area mapped as Vashon advanced glacial outwash (Qva); however, it is possible for Vashon glacial till (Qvt) to be present at the Site as well because it is commonly located stratigraphically higher than the advanced outwash and is mapped in areas within 5 miles of the Site. The presence or absence of glacial till at the Site has not been clearly identified during previous Site investigations.

Glacial till is described as a dense, and in some places concrete like, glacially compressed mixture of silt, sand, gravel, and clay. Typically, till exhibits relatively low vertical hydraulic conductivity that frequently results in the formation of perched groundwater along its upper contact. The "perched" water (if present) is frequently seasonal and derives recharge primarily from the infiltration of precipitation through more permeable overlying soil.

The advance outwash deposit is described as clean, gray, well stratified, fine sand that grades to sand and gravel and contains some lenses of silt. The unit is 120 to 350 ft thick. The unit has a higher hydraulic conductivity than glacial till, is largely unconfined, and is known to be the principal aquifer (in terms of use) in western Snohomish County (USGS 1997). If present at the Site, the advance outwash

unit would likely contain the uppermost hydrostratigraphic unit that would meet the definition of a potable water source under MTCA [WAC 173-340-720(2)].

2.3.2 SITE GEOLOGIC CONDITIONS

Based on soil information gathered during the two Phase II ESAs, a significant percentage of the Site appears to have been filled for Site leveling purposes. According to Verbeek Wrecking personnel, an area of peat was removed from near the northeast corner of the Site, and a former generally north to south trending drainage feature was filled in near the center of the property. As a result, fill material was placed up to about 15 to 20 ft thick in the southeastern quadrant of the Site in Area B, but generally less than about 5 ft deep in other portions of the Site.

Based on available field data, soil underlying the fill consists of gravely sand to silty sand. According to GreenCo Environmental (GreenCo), a dense silt layer was encountered within the upper 5 to 10 ft below the ground surface (BGS) during interim cleanup activities and was interpreted by GreenCo to be glacial till. However, glacial till was not encountered by Geotech during the Phase II ESAs. Consequently, glacial till, if present, appears to be intermittent and is not extensively distributed within the Site. In general, explorations conducted during previous Site investigation activities were not extended to sufficient depth to develop a clear understanding of Site geologic conditions. However, the information obtained during installation of Monitoring Wells MW-1 and MW-2 suggest that the Site is underlain by Vashon advanced glacial outwash (Qva), as described in the following section.

2.3.3 HYDROGEOLOGY

Groundwater conditions are not well understood at this time due to the lack of available data. However, it appears that limited, shallow groundwater is often encountered at the Site between 5 and 10 ft BGS perched on a relatively low permeability native or fill soil, particularly during the wet season. Excavations were extended to depths of up to about 16 ft BGS during the interim action, and while limited dewatering was conducted, inflows reportedly dissipated quickly. Based on these conditions, it is anticipated that shallow perched groundwater is very limited and is only present on an intermittent basis, and that the underlying Qva advanced outwash unit likely represents the uppermost hydrostratigraphic unit for groundwater monitoring purposes.

As discussed in Section 3.1.2, two groundwater monitoring wells (MW-1 and MW-2) were installed during the interim action and the locations as shown on Figure 3. The wells were installed to at depths of 39 ft and 48 ft, respectively, and the static water level in both wells was 35 ft BGS at the time of drilling (Appendix A), or about Elevation 235 ft based on the elevation data provided on Figure 2. Soil

samples were not collected during drilling for geologic logging purposes, and the only available geologic information is a generalized driller's description based on observation of the auger cuttings (Attachment B). Based on the driller's observations, wet sand was initially encountered at 22 ft BGS and a 1 ft gravel/cobble layer was encountered at 38 ft BGS. Although the available hydrogeologic information is limited, it suggests that the uppermost hydorstratigraphic unit is located somewhere between 22 ft and 38 ft BGS.

3.0 PREVIOUS INVESTIGATIONS AND INTERIM ACTION

This section briefly describes the environmental investigations and the interim action previously conducted at the Site. These investigations and the interim action are documented in the Interim Cleanup Action Report (Landau Associates 2009), which provides a comprehensive overview of the previous activities. The Interim Action Cleanup Report was compiled based on the works of others, including two limited Phase II Environmental Site Assessments (ESAs) completed by Geotech Consultants (Geotech Consultants 2008a,b), and the interim cleanup action completed by GreenCo and Construction Management Services of Washington (CMSI; GreenCo and CMSI 2008).

3.1 ENVIRONMENTAL INVESTIGATIONS

Two limited Phase II ESAs were conducted at the Site by Geotech Consultants of Bellevue, Washington. These investigations were conducted on behalf of RG properties, which at that time, was a prospective purchaser of the property. The investigations were conducted in April and May of 2008 (Geotech Consultants 2008a,b). The purpose of the investigations was to obtain initial site characterization data for evaluating Site environmental conditions. The interim action report should be reviewed for a more thorough description of the activities and results of the Phase II ESAs.

The number of soil and groundwater samples collected for characterization purposes and the types of chemical analyses performed for each are described below.

3.1.1 Soil

Investigation of soil at the Site included collecting and testing of a total of 38 soil samples located throughout the Site during the Phase II ESAs. Laboratory analysis of the soil samples included diesel-, oil- and gasoline-range petroleum hydrocarbons (TPH-D; TPH-O and TPH-G); metals [arsenic (As), lead (Pb), barium (Ba), mercury (Hg), cadmium (Cd), selenium (Se), chromium (Cr), silver (Ag)]; benzene, toluene, ethylbenzene, xylenes (BTEX); volatile organic compounds (VOCs); polycyclic aromatic hydrocarbons (PAHs); and ethylene glycol. Table 1 presents the Phase II ESA analytical results for constituents detected in soil. Phase II ESA environmental soil sampling locations and results are shown on Figures 5 and 6.

As shown on these figures, limited exceedances of the preliminary cleanup levels were detected in the borings and test pits. Of the 10 soil samples collected in Area A, none exhibited detections of the tested constituents above the laboratory reporting limits. Of the 17 soil samples collected in Area B, 4 samples exhibited exceedances of the preliminary cleanup level; constituents that exceeded the preliminary cleanup levels in Area B were limited to benzene, cPAHs, naphthalene, and oil-range

petroleum hydrocarbons. Of the 8 samples collected in Area C, only one sample exhibited an exceedance of the preliminary cleanup level; the constituent that exceeded the preliminary cleanup level in Area C was limited to benzene.

3.1.2 GROUNDWATER

Investigation of groundwater at the Site included collecting and testing of a total of 8 groundwater samples located throughout the Site during the Phase II ESAs. Laboratory analysis of the groundwater samples included TPH-D, TPH-O, and TPH-G; BTEX; methyl tertiary butyl ether (MTBE); naphthalene; carcinogenic polycyclic aromatic hydrocarbons (cPAHs), and VOCs. Table 2 presents the Phase II ESA analytical results for constituents detected in groundwater. Previous environmental groundwater sampling locations are shown on Figure 7.

As shown on this figure, only two exceedances of the groundwater preliminary cleanup levels were observed. Sample B1 H2O located in the northern portion of the Site (Area C) exhibited a concentration of benzene that was slightly greater than the cleanup level. Sample B8 H2O located in the southern portion of the Site (Area B) exhibited concentrations of gasoline-range petroleum hydrocarbons, benzene, and naphthalene that were greater than the cleanup levels. All other groundwater samples collected from the Site during the Phase II ESAs did not exhibit any exceedances of the preliminary cleanup levels.

During the interim cleanup action (described below), GreenCo installed two groundwater monitoring wells, MW-1 and MW-2, in the western portion of Area B. The well locations are shown on Figure 3. The wells were installed by Environmental Services Northwest, Inc. of Olympia, Washington (ESN). According to the resource protection well reports, the wells were installed using a hollow-stem auger and were constructed of 2-inch diameter, schedule 40 PVC. The well screens were constructed from 34 to 39 ft and 38 to 48 ft. Resource protection well reports for the wells are presented in Appendix A. Although no official geologic logs were prepared by GreenCo or ESN, ESN provided field notes made by the driller at MW-1, which are summarized in Appendix B.

3.2 INTERIM CLEANUP ACTION

An interim soil cleanup action was conducted at the Site by GreenCo between July and October 2008 in Areas A, B and C. According to GreenCo (GreenCo and CMSI 2008), the interim cleanup action was focused in these areas to address potential areas of soil contamination identified in the Geotech Consultant's Phase II ESAs. Figure 8 presents the areas of soil and groundwater contamination identified by Geotech Consultants based on their interpretation of the Phase II ESA results.

In Areas A and C, the interim action included excavation and onsite treatment of petroleum hydrocarbon impacted soil. Soil was excavated based on the presence of soil cleanup level exceedances identified during the Phase II ESA and field screening techniques (visual and olfactory senses). The excavated soil was then treated by amending it with "bio-enhancement chemicals" (assumed to be nitrate-based fertilizer) and mechanically mixing the amended soil to facilitate bio-remediation of the contaminants. Confirmation samples were collected from the bottom and sidewalls of the excavations and from the remediation piles following treatment to verify that the preliminary cleanup levels were achieved. The excavations in Areas A and C were then backfilled with the treated soil. Interim Action Areas A and C are shown on Figure 9. A detailed description of the interim action conducted in these areas is presented in the Interim Cleanup Action Report (Landau Associates 2009).

As previously discussed, characterization of Area B for final is being addressed separately from the other portions of the Site due to the nature and source of the contamination in this area. However, GreenCo conducted cleanup activities in Area B that impact current conditions elsewhere on the Site. The contaminated soil excavated from Area B was stockpiled in Area A. GreenCo intended to treat the soil in the same manner as that used for Areas A and C. However, after a pilot project demonstrated that treatment for MGP contaminants was ineffective, GreenCo was directed by Verbeek Wrecking to cease treatment of Area B soil, and was directed to consolidate and secure the contaminated soil. The approximate location of the Area B excavation from which contaminated soil was removed and the location of the associated contaminated soil stockpile is shown on Figure 11.

4.0 PRELIMINARY CLEANUP LEVELS

Preliminary soil and groundwater cleanup levels have been developed to evaluate Site environmental conditions based on available soil and groundwater analytical results, and to identify potential constituents of concern for further evaluation during the RI. In addition to developing preliminary groundwater cleanup levels for the constituents detected in groundwater, preliminary groundwater cleanup levels were developed for constituents detected in soil that were not detected or analyzed for in groundwater. This section presents the preliminary cleanup levels and the process used to development them. Preliminary soil and groundwater cleanup levels are also presented in Tables 3 and 4, respectively.

4.1 PRELIMINARY SOIL CLEANUP LEVELS

Preliminary soil cleanup levels were developed in accordance with MTCA. Under MTCA, soil cleanup levels are developed based on the reasonable maximum exposure expected to occur at the site. Current and potential future land uses were used to determine the reasonable maximum exposure. The Site is currently zoned for light industrial use. Future use of the land has not been decided, but could include commercial or residential uses. The preliminary soil cleanup levels were developed using the MTCA Method B cleanup levels for unrestricted site use, which represents a conservative basis for screening available analytical data. Under MTCA Method B, soil cleanup levels must be as stringent as:

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

No soil cleanup levels have been established under state or federal laws for hazardous substances detected in Site soil. Standard MTCA Method B soil cleanup levels protective of direct human contact were determined in accordance with WAC 173-340-740(3) using Ecology's on-line Cleanup Levels and Risk Calculations (CLARC) database (https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx). The Method B cleanup level for benzo(a)pyrene was used for the sum of cPAHs, using toxicity equivalency factors (TEFs) to calculate a toxicity equivalency quotient (TEQ) for total cPAHs in accordance with WAC 173-340-708(8)(e).

Soil preliminary cleanup levels protective of groundwater were determined using the fixed parameter three-phase partitioning model in accordance with WAC 173-340-747(4). Preliminary

groundwater cleanup levels were developed for those constituents detected in soil and used in the three-phase partitioning model. Preliminary groundwater cleanup levels are presented in Section 5.2. For constituents that do not have a Method B soil cleanup level, MTCA Method A soil cleanup levels for unrestricted land uses, where available, were applied.

The lowest criteria developed under Method B was selected as the Site preliminary cleanup level for each constituent; however, in accordance with WAC 173-340-720(7)(c), further adjustments to the preliminary soil cleanup levels were made as needed so that the cleanup levels are not less than the practical quantitation limit (PQL) or natural background. Analytical reporting limits for previous investigations were used as the PQLs, and are presented in Table 3. The MTCA Method B soil criteria are all greater than the PQL, so no adjustments to the preliminary soil cleanup for PQLs were necessary. Adjustments to the MTCA Method B soil criteria based on background concentrations for the State of Washington (Ecology 1994) were made for cadmium. The Site preliminary soil cleanup levels are presented in Table 3.

4.2 GROUNDWATER PRELIMINARY CLEANUP LEVELS

Preliminary groundwater cleanup levels were developed based on the highest beneficial use and reasonable maximum exposure expected to occur under both current and potential future land. Ecology considers the use of groundwater as a source of drinking water as the beneficial use requiring the highest quality of groundwater and exposure of hazardous substances through ingestion of drinking water and other domestic uses represents the reasonable maximum exposure. Although the groundwater at the Site is not expected to be used as drinking water, Site groundwater has the potential to be used for this purpose and preliminary cleanup levels were developed based on MTCA Method B groundwater cleanup levels for potable water.

MTCA Method B groundwater cleanup levels must be as stringent as:

- Concentrations established under applicable state and federal laws
- Concentrations protective of human consumption of groundwater
- Concentrations protective of surface water.

It is not anticipated that groundwater discharges to surface water in proximity to the Site, so groundwater cleanup levels protective of surface water were not developed. MTCA and other Washington State and federal regulations have identified criteria that are considered protective of groundwater as drinking water for most of the constituents detected in Site groundwater. These criteria are presented in Table 4. The lowest criteria developed under Method B for each constituent was selected as the Site preliminary cleanup level. However, in accordance with WAC 173-340-720(7)(c), further

adjustments to the preliminary cleanup levels can be made so that a preliminary groundwater cleanup level is not less than the PQL. PQLs are based on analytical reporting limits for previous Site investigations and are presented in Table 4. No adjustments to the preliminary cleanups based on PQLs were necessary because the PQLs are less than the preliminary cleanup levels. MTCA also allows adjustments to cleanup levels so that they are not less than the natural background. The preliminary cleanup level screening level for arsenic was adjusted upward to the MTCA Method A cleanup level for unrestricted Site use because this concentration is based on natural arsenic background concentrations for the State of Washington. The preliminary groundwater cleanup levels, adjusted as necessary, are presented in Table 4.

5.0 PRELIMINARY CONCEPTUAL SITE MODEL

This section presents a preliminary conceptual site model that identifies the main contaminants encountered at the Site, the potential sources for the contaminants previously found, the media where these contaminants were found, the potential contaminant migration pathways, and potential contaminant receptors and exposure pathways.

5.1 POTENTIAL CONSTITUENTS OF CONCERN

Available data were evaluated against the preliminary cleanup levels developed in Section 4.0 to develop Site PCOCs for soil and groundwater based on data from the previous Phase II ESAs and the interim action. PCOCs for soil was developed for Site Area subdivisions A, C and D; as previously indicated, Area B is being addressed separately. Because groundwater quality and hydrology have not been fully characterized, groundwater PCOCs for Areas A, C and D can not yet be differentiated from groundwater PCOCs for Area B, so groundwater quality data from Area B were also used in developing groundwater PCOCs. It is anticipated that the RI will provide the data needed to differentiate Area B groundwater PCOCs from the rest of the Site, if applicable.

The data used for the evaluation is summarized in Table 5 (soil PCOCs) and Table 6 (groundwater PCOCs), which include the analytical testing, the number of detections, and the number of samples that exceeded the preliminary cleanup levels for the previous investigations and the interim action. These tables also summarize the constituent frequency of detection, maximum detected concentrations and reporting limits, and the analytes identified as PCOCs for soil and groundwater. Constituents identified in the tables as selected PCOCs will be evaluated in the RI.

It should be noted that only limited soil data were collected from potentially affected areas prior to the Site interim action, and a large number of samples were analyzed for interim action compliance monitoring and treated soil piles. Consequently, the data in Table 5 are primarily associated with samples collected from unaffected soil at the excavation boundaries and from treatment pile soil, resulting in a large percentage of nondetects or concentrations below the preliminary cleanup levels for most analytes. As a result, the identification of PCOCs considered hazardous substances that are commonly associated with historic Site operations in addition to analytes detected above the preliminary cleanup levels. Similarly, only limited Site groundwater data are available, soil and groundwater PCOCs were identified based on historic Site activities in addition to a comparison of analytical results to the preliminary cleanup levels.

Soil PCOCs identified for the Areas A, C and D include:

- cPAHs
- Metals (cadmium and lead)
- TPH-G, TPH-D, and TPH-O
- BTEX
- Naphthalene.

Site groundwater PCOCs identified based historical Site uses, identified soil PCOCs, and previous groundwater testing conducted during previous investigations include:

- cPAHs
- Metals (cadmium and lead)
- TPH-G, TPH-D, and TPH-O
- BTEX
- Naphthalene.

5.2 POTENTIAL CONTAMINANT SOURCES

Two primary potential contaminant sources have been identified for Areas A, C and D: 1) former auto wrecking activities, and 2) former and current USTs. Areas where these potential contaminant sources exist or existed, and the contaminants associated with each source, are described below. However, it should be noted that most of these potential contaminant sources no longer exist at the Site because the activities that may have resulted in a release or spill have ceased and most of the previously releases were addressed by the interim action described in Section 3.2.

5.2.1 AUTO WRECKING ACTIVITIES

Areas of the Site used for auto wrecking activities (Areas A and C) experienced incidental surface spills of automotive fluids and possibly metals contamination from automobile crushing activities. Potential contaminants associated with these activities include petroleum hydrocarbons, ethylene glycol, and metals.

5.2.2 USTs

USTs containing diesel, gasoline, and/or waste oil were located in Area D. The former locations of these tanks are shown on Figure 2. Releases of petroleum hydrocarbons to the Site soil may have occurred due to spills to the ground surface during dispensing of petroleum products to or from the USTs, and/or from potentially leaky tanks and/or pipelines associated with the tanks.

5.3 CONTAMINANT MIGRATION PATHWAYS

Based on the presence of potentially potable groundwater below the Site, and the presence of an unsaturated soil zone, the potential pathways for contaminant migration at the Site include:

- Erosion and stormwater transport of surface soil contamination
- Leaching of contaminants from soil to groundwater
- Soil vapor migration of volatile organic compounds and intrusion to indoor air (depending on future use of the Site)
- Transport of contaminants in soil to outdoor air via wind or fugitive dust emissions.

Based on potential migration pathways, the Site media of potential concern consist of soil, groundwater, surface water, and indoor/outdoor air.

5.4 CURRENT AND FUTURE LAND AND WATER USES

The Site is located in unincorporated Snohomish County and is currently zoned as light industrial, which allows for commercial, residential, and limited commercial and light industrial uses. The Site is currently not being used for any commercial, residential or industrial uses. It is unknown how the Site will be used in the future and whether the zoning or use will change in conjunction with Site redevelopment. However, the Site is located in an urban area on a major highway and is a valuable commercial property. It is expected that the Site will be redeveloped for multi-family residential, commercial, or light industrial purposes. Drinking water for the Site is currently supplied by a municipal water source.

5.5 POTENTIAL RECEPTORS AND EXPOSURE PATHWAYS

The potential receptors that may be exposed to the contaminants present at the Site and the potential exposure pathways depend primarily on the current and likely future land uses for the Site. This

section identifies potential receptors and the potential exposure pathways for the receptors based on the future land uses described in Section 5.4.

5.5.1 POTENTIAL RECEPTORS

Potential receptors of Site contaminants could be humans and terrestrial ecological receptors (i.e., wildlife, soil biota, and plants). Each of these was evaluated based on the future land use of the Site, as follows:

- **Humans:** Because the Site is zoned light industrial, which allows for multi-family residential, commercial and light industrial use, construction worker, employees of commercial or light industrial businesses, and residents are considered potential human receptors.

- **Terrestrial Ecological Receptors:** It is anticipated that following redevelopment, the site will be almost entirely covered with buildings and pavement, with landscaping confined to small areas around buildings, along roadways, and within parking areas. Therefore, terrestrial ecological receptors (wildlife, soil biota, and plants) are not considered to be potential receptors.

- **Aquatic Biota:** Aquatic biota present in surface water downstream from the Site stormwater system could be affected by any contaminants released from the Site in conjunction with stormwater discharge. Therefore, fresh water aquatic biota are considered to be potential receptors for Site stormwater.

Based on this evaluation, potential receptors for Site contaminants are limited to humans and aquatic biota.

5.5.2 POTENTIAL EXPOSURE PATHWAYS

Potential exposure pathways were identified for the receptors identified in Section 4.5.1 and are presented by medium below.

5.5.2.1 Soil

The potential human health exposure pathways for Site soil are:

- Ingestion and dermal contact with constituents in Site soil

- Inhalation of indoor air affected by soil vapor intrusion.

Because gasoline-range petroleum hydrocarbons and BTEX were identified as soil PCOCs, inhalation of vapors in indoor air resulting from soil gas intrusion of these compounds is a potential exposure pathway. This potential exposure pathway will be assessed further during the RI based on the analytical results for soil remaining at the Site after completion of the interim action.

5.5.2.2 Groundwater

The potential human health exposure pathways for Site groundwater are:

- Ingestion and dermal contact with constituents in Site groundwater.
- Inhalation of volatile groundwater contaminants (as vapor) that have migrated into soil vapor and intruded into buildings.

Because gasoline-range petroleum hydrocarbons, and BTEX were identified as soil PCOCs, inhalation of vapors in indoor air resulting from volatilization of these compounds in groundwater is a potential exposure pathway that will be assessed further during the RI based on the results for soil remaining at the Site after completion of the interim action.

5.5.2.3 Surface Water

The potential human health exposure pathways for Site surface water are direct contact or ingestion of surface water affected by Site stormwater by aquatic biota. Surface water is not present on the Site, so exposure would occur downgradient of the Site at the point where Site stormwater discharges to North Creek.

6.0 CURRENT ENVIRONMENTAL CONDITIONS

Current environmental conditions for Areas A, C and D are evaluated in this section using analytical results for soil samples representing soil remaining at the Site following implementation of the interim action discussed in Section 3.2 and analytical results for groundwater samples collected during previous investigations and the interim action. As discussed in Section 3.2, extensive excavation and soil treatment was conduced in Areas A and C, as shown on Figure 9. Limited cleanup was conducted in Area D during removal of the USTs, as discussed below.

6.1.1 AREA A

Soil and groundwater samples were collected in Area A during the Phase II ESAs completed in April and May of 2008. During these investigations, soil samples were collected at varying depths from six boring and test pit locations, and groundwater samples were collected from two boring locations. In the summer of 2008, interim soil cleanup activities were implemented to treat soil containing contaminants above the preliminary cleanup levels (Landau Associates 2009) in this area.

As part of the interim cleanup action, surface gravel was removed from the majority of Area A and was stockpiled for future use. Stained areas were excavated for treatment in advance of removing the gravel for future use. The stockpiled gravel has not been tested to determine whether constituents are present at levels exceeding the preliminary cleanup levels. Two gravel piles with an approximate combined volume of 1,000 cubic yards are present in the southern portion of Area A. The majority of the gravel is from Area A, but a portion of this gravel originated from Area C.

Following removal of the surface gravel, approximately 7,700 cubic yards of soil were excavated from Area A and were treated GreenCo, reportedly using bio-enhancement and cultivation techniques. A total of 61 remediation pile soil samples were collected and submitted to a laboratory for analytical testing. A total of 50 confirmation soil samples were collected from the base and sidewalls of the cleanup action area in Area A. All confirmation and remediation pile samples were tested for TPH-G, TPH-D, and TPH-O; many samples were also tested for BTEX. Several of these samples were also tested for PAHs, metals, selected VOCs, and polychlorinated biphenyls (PCBs). Analytical results for the confirmation and remediation pile soil samples are summarized in Table 7. These analytical results are representative of soil remaining in Area A. Confirmation soil samples representing soil remaining are shown on Figure 10.

6.1.2 SOIL CONDITIONS

The comparison of analytical results for soil remaining to the preliminary cleanup levels (Table 3) indicates that the soil in Area A is in compliance with preliminary cleanup levels and does not pose a threat to human health and the environment. However, there are several data gaps in the soil confirmation and characterization data in this area, including insufficient confirmation sample coverage, and surface soil quality in areas where treatment piles were located and in undisturbed surface areas. A more detailed discussion of Area A soil quality data gaps is presented in Section 7.0.

6.1.3 GROUNDWATER CONDITIONS

Evaluation of groundwater conditions in Area A rely on groundwater samples collected during the Phase II ESAs. Two groundwater samples (B3 H2O and B4 H2O) were collected within Area A from direct push borings. The borings were completed in the central portion of Area A in the immediate vicinity of the parts storage buildings where car dismantling activities took place. All of the tested constituents were below the laboratory reporting limits in both of the borings. Table 2 presents Phase II ESA groundwater analytical results.

If any groundwater impacts existed, soil treatment in this area is expected to have improved the current groundwater quality in the area. Additional groundwater testing will be conducted in this area as part of the RI to more thoroughly evaluate groundwater quality in this area. A detailed discussion of Area A groundwater quality data gaps is presented in Section 7.0.

6.1.4 AREA C

Soil and groundwater samples were collected in Area C during the Phase II ESAs completed in April and May of 2008. During these investigations, soil and groundwater samples were collected at three boring locations in Area C. In the summer of 2008, an interim action was implemented to remediate soil containing contaminants above the preliminary cleanup levels (Landau Associates 2009).

As part of the interim cleanup action, surface gravel was removed from Cleanup Action Area C and was stockpiled in the southern portion of the Site in Area A. Stained gravel areas were excavated for treatment in advance of removing the general gravel surface. As indicated in Section 6.1, the stockpiled gravel has not been tested to determine whether constituents are present at levels exceeding the preliminary cleanup levels.

Following removal of the surface gravel, approximately 8,000 cubic yards were excavated from Area C and were treated by GreenCo, reportedly through the bio-enhancement and cultivation techniques. A total of 46 remediation pile soil samples were collected and submitted to a laboratory for analytical

testing. A total of 83 confirmation soil samples were collected from the base and sidewalls of excavation area in Area C. All confirmation and remediation pile samples were tested for TPH-G, TPH-D, TPH-O, and BTEX; several samples were tested for total lead. Analytical results for the confirmation and remediation pile soil samples are summarized in Table 8. These analytical results are representative of soil remaining in Area C. Confirmation soil samples representing soil remaining are shown on Figure 10.

6.1.5 SOIL CONDITIONS

The comparison of analytical results for soil remaining to the preliminary cleanup levels (Table 5) indicates that the soil in Area A is in compliance with preliminary cleanup levels and does not pose a threat to human health and the environment. However, there are several data gaps in the soil confirmation data in this area, including adequate confirmation sample coverage, and surface soil quality in areas where treatment piles were located and undisturbed surface areas. A more detailed discussion of Area C soil data gaps is presented in Section 7.0.

6.1.6 GROUNDWATER CONDITIONS

Evaluation of groundwater conditions in Area C rely on groundwater samples collected during the Phase II ESAs. Three groundwater samples (B1 H2O, B2 H2O, and B5 H2O) were collected within the central portion of Area C from direct push borings. Of the three samples collected, only one (B1 H2O) exhibited concentrations of tested constituents above the preliminary cleanup levels. Sample B1 H2O exhibited a concentration of benzene at 7.0 µg/L, which is slightly greater than its preliminary cleanup level of 5.0 µg/L. All other tested constituents were below either the laboratory reporting limits or the preliminary cleanup level, if detected. A more detailed discussion of Area C groundwater data gaps is presented in Section 7.0.

Soil treatment in this area is expected to have improved groundwater quality in this area. However, additional groundwater testing will be conducted in this area as part of this work plan. A detailed discussion of data gaps is presented in Section 7.0.

6.2 AREA D

Site characterization and cleanup activities were not conducted in this area as part of the Phase II ESAs and 2008 interim cleanup action. As described in Section 2.2.4, Verbeek Wrecking removed five USTs from two areas of Area D in November 1995. A total of 9 confirmation soil samples were collected from the two UST excavation areas, and one confirmation sample from each area exhibited an exceedance of the TPH-D preliminary cleanup level. Soil removed from the excavation was stockpiled and a

composite sample of the stockpiled material was collected. The composite sample (USS-10) exhibited a TPH-D concentration of 470 mg/kg, which is lower than the preliminary cleanup level of 2,000 mg/kg. According to Verbeek Wrecking personnel, the material was not disposed of offsite. Groundwater was not present in the UST excavation and groundwater quality samples were not collected from the UST locations.

An 8,000-gallon waste oil UST is presently located partially beneath the shop building, as shown on Figure 2. The tank was historically used for storing waste oil that was recovered from the processed automobiles and oil-water separators located at the Site. Soil and groundwater samples have not been collected in the vicinity of the waste oil UST to evaluate any potential releases from the tank to the environment.

6.2.1 SOIL CONDITIONS

As mentioned above, residual TPH-D contamination may be present in the two former UST locations based on historic sample analytical data collected at the time of tank removal. The soil sample analytical results for these samples are shown on Figure 4. Soil testing will be conducted in these areas as part of the RI. Additionally, because the soil conditions surrounding the waste oil UST have not been investigated, soil quality monitoring will also be conducted in the vicinity of the waste oil UST as part of the RI. A more detailed discussion of Area D soil data gaps is presented in Section 7.0.

6.2.2 GROUNDWATER CONDITIONS

Groundwater conditions have not been evaluated during previous Site characterization or cleanup activities in Area D. Groundwater testing will be conducted in this area as part of this work plan. A more detailed discussion of Area D groundwater data gaps is presented in Section 7.0.

7.0 DATA GAPS

This section identifies the areas and type within the Site that require further investigation to adequately delineate the nature and extent of contamination. Primary data gaps identified for the Site include the following:

- The quality of the undisturbed surface soil that may be affected by historical Site uses is unknown.
- The quality of current surface soil in areas where soil treatment piles were located is unknown.
- The quality of near-surface soils adjacent to the north edge of the GWP soil is unknown.
- The quality of the remediated soil that was used for backfilling the interim cleanup action excavations should be verified through limited additional testing.
- The quality of soil in portions of the cleanup action areas where insufficient confirmation sample coverage occurred should be verified through limited additional testing.
- The quality of the two gravel piles located in the southern portion of the Site is unknown.
- The quality of soil and groundwater associated with the former and current USTs in Area D is unknown.
- The quality of groundwater in Areas A and C following cleanup activities is unknown.
- Groundwater hydrogeology is not well understood, including direction of groundwater flow and the identification of the uppermost hydrostratigraphic unit.
- The quality of Site stormwater offsite discharge is unknown.

The remainder of this section presents a detailed discussion regarding the Site data gaps for Areas A, C and D. Background information regarding each data gap is presented first, followed by the identified data gap presented in bold text.

7.1.1 AREA A

The excavation boundaries for Area A were determined largely by field screening using visual or olfactory evidence of contamination; a total of 10 soil samples were collected from this area prior to excavation. A total of 61 soil samples were collected from the remediation stockpiles for testing prior to placing the soil back into the excavation as backfill, although documentation on the timing and completeness of the soil pile testing is limited. Based on available data, remediation piles were placed on unprotected ground surface and samples were not collected from the ground surface beneath the piles

once the soil from the pile was returned to the excavation. Figure 12 presents the locations where soil treatment piles were located on the Site. Surface soil quality in the area of the former remediation piles is a data gap that needs to be filled. Additionally, the quality of the treated soil backfill needs to be verified through limited additional testing due to the limited documentation provided by the interim action reporting.

A total of 50 confirmation soil samples were collected from the base and sidewalls of the excavation which was completed to depths ranging from 4 ft to 12 ft BGS. The distribution of the soil confirmation samples (shown on Figure 10) indicates that portions of Cleanup Action Area A, such as the west-central portion of the excavation, were not adequately tested to demonstrate compliance with the preliminary cleanup levels. Additional confirmation samples are needed in the west-central portion of the Area A to verify that cleanup levels were achieved by the interim action.

Groundwater samples were collected from two direct push borings completed in Area A prior to implementation of the interim action. PCOCs were not detected in the groundwater samples at concentrations greater than the laboratory detection limits. Only limited samples were collected and they were not collected from the locations that required the most extensive soil excavation during the interim action. Additionally, it does not appear that the groundwater samples that were collected were obtained from the uppermost hydrostratigraphic unit, and not collected following implementation of the interim action from the affected areas. As a result, groundwater quality in uppermost hydrostratigraphic unit underlying the areas most affected by historic Site activities is not known. Current groundwater quality at and downgradient of locations most significantly affected by historic activities in Area A is a data gap that needs to be addressed. Additionally, Site hydrogeology needs to be better defined to develop an adequate understanding of groundwater migration to assess the adequacy of groundwater quality data collected during the RI.

Prior to excavation in Area A, surface gravel was removed from the surface and stockpiled along the western property boundary. Although gravel that was visibly contaminated was removed for treatment, analytical testing was not conducted to verify that the material is not contaminated. The quality of the gravel stockpiles is a data gap that needs to be addressed.

An area of undisturbed surface soil is present in the southern portion of Area A, where historic auto wrecking activities were conducted that could have resulted in the release of hazardous substances. Shallow soil in this area was not testing during previous Site investigations. The quality of the surface soil in this area is a data gap that needs to be addressed.

In addition, contaminated fill material removed from Area B (which originated from Gas Works Park in Seattle) has been temporarily stockpiled on unprotected ground surface in Area A. This material is being addressed separately and is discussed in the following section. It is anticipated that surface soil

quality in this area will be characterized following removal of the soil pile, in conjunction with remediation of Area B. As a result, soil quality in this area will not be addressed as part of the RI.

7.2 AREA C

Approximately 8,000 cubic yards of soil were excavated from Area C during the interim cleanup action. The excavation boundaries were determined largely by field screening for visual or olfactory evidence of contamination, and by the collection of characterization samples prior to and during the interim action; eight soil samples were collected from this area prior to the interim action and five characterization soil samples were collected during the interim action. Excavated soil was placed in stock piles onsite and treated by GreenCo, reportedly using bio-enhancement and cultivation. A total of 46 soil samples were collected from the remediation stockpiles for testing prior to placing the soil back into the excavation as backfill, although documentation on the timing and completeness of the soil pile testing is limited. Based on available data, remediation piles were placed on unprotected ground surface and samples were not collected from the ground surface beneath the piles once the soil from the pile was returned to the excavation. Figure 12 presents the locations where soil treatment piles were located on the Site. Surface soil quality in the area of the former remediation piles is a data gap that needs to be filled. Additionally, the quality of the treated soil backfill needs to be verified through limited additional testing due to the limited documentation provided by the interim action reporting.

A total of 83 confirmation soil samples were collected from the base and sidewalls of the excavation which was completed to depths ranging from 5 ft to 20 ft BGS. The distribution of the soil confirmation samples (shown on Figure 10) indicates that portions of Cleanup Action Area C such as the northern portion of the excavation, were not adequately tested to demonstrate compliance with the preliminary cleanup levels. Additional confirmation samples are needed in the northern portion of the Area A to verify that cleanup levels were achieved by the interim action.

Groundwater samples were collected from three direct push borings completed in Area C prior to implementation of the interim action and benzene was the only PCOC detected above the preliminary groundwater cleanup levels. However, only a limited number of groundwater samples were collected and they were not collected from the locations with the greatest potential to exhibit groundwater quality impacts. Additionally, it does not appear that the groundwater samples that were collected were obtained from the uppermost hydrostratigraphic unit, and no samples were collected following implementation of the interim action from the affected areas. As a result, Area C groundwater quality in uppermost hydrostratigraphic unit underlying the areas most affected by historic Site activities is not known. Current groundwater quality at and downgradient of locations most significantly affected by historic activities in

Area C is a data gap that needs to be addressed. Additionally, Site hydrogeology needs to be better defined to develop an adequate understanding of groundwater migration to assess the adequacy of groundwater quality data collected during the RI.

Prior to excavation in Area C, gravel was removed from the surface and stockpiled along the western boundary of Area A. This material was assumed to be contaminated based on the historical operations in this area and the presence of petroleum staining in several areas; however, analytical testing has not been conducted to verify that the material is contaminated. The quality of the gravel stockpiles is a data gap that needs to be addressed.

An area of undisturbed surface soil is present in the southern portion and the northeast corner of Area C, where historic auto wrecking activities were conducted that could have resulted in the release of contaminants. The quality of the surface soil in these areas is a data gap that needs to be addressed.

7.3 AREA D

Site characterization and cleanup activities were not conducted in this area as part of the Phase II ESAs and 2008 interim cleanup action, although affected soil was removed from the UST excavation during tank removal in 1995. Current soil and groundwater conditions in Area D are unknown.

As described in Section 2.2.4, Verbeek Wrecking removed five USTs from two areas of Area D in November 1995. Confirmation soil samples were collected from the two UST excavation areas. One confirmation sample from each area exhibited an exceedance of TPH-D. Figure 4 presents the locations of the samples and the associated laboratory analytical results. Groundwater quality conditions in the area of the former USTs have not been evaluated. Soil and groundwater quality in the areas of the former UST locations in Area D is a data gap that needs to be addressed. Additionally, Site hydrogeology needs to be better defined to develop an adequate understanding of groundwater migration to assess the adequacy of groundwater quality data collected during the RI.

An 8,000-gallon waste oil UST is presently located partially beneath the shop building as shown on Figure 2. Soil and groundwater samples have not been collected in the vicinity of the UST to evaluate any potential releases from the tank to the environment. Soil and groundwater quality in the vicinity of the waste oil UST is a data gap that needs to be addressed.

7.4 SURFACE WATER

Although surface water is not present on the Site, Site stormwater discharges to North Creek via a stormwater system that exits the Site at the south property boundary. There is the potential for any hazardous substances released from historic Site activities to the ground surface to be conveyed via

stormwater to surface water. Stormwater quality has not been evaluated during any previous Site investigation activities. Site stormwater quality is a data gap that needs to be evaluated to determine the potential for impact to surface water.

8.0 REMEDIAL INVESTIGATION

As described in Section 7.0, further investigation of Site soil, groundwater and surface water (stormwater) is needed to evaluate the effectiveness of the interim cleanup action, develop and determine the nature and extent of contamination for affected media (if any). Results from previous soil and groundwater investigations and compliance monitoring associated with the interim action conducted at the Site provide extensive information regarding Site environmental conditions, but data gaps exist that need to be filled to fully delineate the nature and extent of contamination. The RI described in this section will be implemented to fill these data gaps.

8.1 SOIL INVESTIGATION

Soil data gaps were identified in Section 7.0 for Areas A, C, and D. The distribution of the soil confirmation samples for the interim cleanup action excavations in Areas A and C indicate that portions of each area were not adequately tested to demonstrate compliance with the preliminary cleanup levels. In addition, soil samples were not collected from the areas where the remediation piles were located, from the stockpiles of gravel surfacing material removed Areas A and C prior to excavation, or from several undisturbed areas of the Site where historical site uses were conducted that could have caused soil contamination. Additionally, soil concentrations greater than the preliminary cleanup levels were identified in the area of the former USTs in Area D at the time the tanks were removed in 1995, and the extent of soil contamination in this area has not been delineated. In addition, soil sampling has not been conducted in the area of the remaining waste oil UST in Area D.

The soil investigation consists of exploring soil conditions and collecting soil samples for analytical testing purposes at a total of 10 boring locations and 9 surface soil sampling locations. The borings will be completed using hollow stem auger drilling technology and the surface samples will be collected using hand tools. Soil will be classified in the field using the Unified Soil Classification System, and field screened for observable signs of contamination. Field screening will be accomplished using visual and olfactory senses and a photoionization detector (PID). Soil types and field screening results will be recorded on a log of exploration form.

The following sections describe the proposed RI soil sampling locations for each area. Soil sampling locations are also summarized in Table 9.

8.1.1 AREA A (FORMER CASCADE WRECKING LEASEHOLD)

In Area A, the soil investigation will focus on characterization of soil in portions of the previous excavation area that were not adequately characterized during interim action compliance monitoring, the

area of the former remediation piles, the gravel stockpiles located in the southwest corner of the Site, and undisturbed portions of the area where historical Site uses could have caused soil contamination. In addition, samples will be collected from the treated backfill material to confirm that cleanup levels were achieved in the remediation piles prior to use as backfill. Based on the sample analytical results of the remediation soil pile testing and the confirmation soil testing, the excavation area in Area A appears to have achieved preliminary soil cleanup levels. Therefore, soil samples will be limited to the areas identified above. Soil samples will be collected from borings locations, surface sample locations, and the gravel stock piles in Area A shown on Figure 13, and as described below.

Four soil borings will be completed in the area of the previous excavation. Two of the borings (A-B1 and A-B2) will be completed solely to verify backfill quality and supplement existing interim action compliance monitoring data, and will be extended to about 8 ft BGS. The other two borings will be completed as monitoring wells MW-3 and MW-4, and will be completed to at least 5 ft into the uppermost hydrostatigraphic unit, estimated to be up to 40 ft BGS. The proposed locations are shown on Figure 13. At each of the 4 soil borings, soil samples will be collected from the surface, from within the excavation backfill, and at the depth of the bottom of the previous excavation (if contact is visible). Soil samples collected from these borings will be tested for the soil PCOCs, including total petroleum hydrocarbons using the hydrocarbon identification (HCID) method, metals (arsenic, cadmium, chromium, lead, and mercury), and cPAHs. Follow-up analysis for TPH-G, TPH-D, and TPH-O, and/or BTEX will be conducted based on the HCID results.

Three surface soil samples will be collected from the areas of the where former remediation soil piles were located, and from undisturbed portions of Area A where historical activities could have resulted in the release of hazardous substances. The footprint of the remediation soil piles is shown on Figure 12. The full extent of the undisturbed surfaces in Area A has not been determined, so undisturbed surfaces will be mapped in the field during the RI, and based on the results of the assessment, additional samples may be added. Currently, undisturbed surface soil appears to be in located in the southern portion of Area A. The proposed surface soil sample locations (A-S1, -S2, and –S3) are shown on Figure 13. Surface soil samples will be collected from the upper 6 inches if soil using hand tools (hand auger, shovel, etc.) and will be tested for the PCOCs, including total petroleum hydrocarbons using the HCID method, metals, and cPAHs. Additionally, samples A-S1 and A-S2 will be analyzed for PCBs. Follow-up analysis for TPH-G, TPH-D, and TPH-O, and/or BTEX will be conducted based on the HCID results.

Grab samples will be collected from the gravel stockpile located in the southwestern corner of Area A using hand tools (hand auger, shovel, etc.). Based on the total volume of material in the stockpile (approximately 1,000 cubic yards) and discussions with Ecology, six samples will be collected to evaluate stockpile soil quality. Stockpile samples will be tested for PCOCs, including total petroleum

hydrocarbons using the HCID method, metals, and cPAHs. Follow-up analysis for TPH-G, TPH-D, and TPH-O, and/or BTEX will be conducted based on the HCID results.

8.1.2 AREA C

In Area C, the soil investigation will focus on characterization of soil in portions of the previous excavation area that were not adequately characterized during compliance monitoring, the area of the former remediation piles, and undisturbed portions of the Site where historical information suggests the potential for soil contamination. In addition, a limited number of samples will be collected from the backfill material within the former excavation areas to confirm that preliminary cleanup levels were achieved in the remediation piles prior to using the soil as backfill. Based on the sample analytical results of the remediation soil pile testing and the confirmation soil testing, Soil in Area C appears to comply with the preliminary soil cleanup levels. Soil samples will be collected from boring locations and surface sampling locations in Area C shown on Figure 13 and described below.

Two soil borings will be advanced in the area of the previous excavation and one soil boring will be advanced in the central portion of the former vehicle processing area. Two of the borings will be completed as monitoring wells. One of the borings (C-B1) will be completed solely to verify backfill quality and supplement existing interim action compliance monitoring data, and will be extended to about 8 ft BGS. The other two borings will be completed as monitoring wells MW-5 and MW-6, and will be completed to at least 5 ft into the uppermost hydrostatigraphic unit, estimated to be up to 40 ft BGS. The proposed locations are shown on Figure 13. For the three soil borings located within the former excavation area, soil samples will be collected from the surface, from within the excavation backfill, and at the depth of the bottom of the previous excavation (if contact is visible). For the soil boring located in the central portion of the former processing area (MW-5), one soil sample will be collected from the capillary fringe zone above the top of the groundwater table, or from the most contaminated soil interval as dictated by field screening and general field observations. Soil samples collected from these borings will be tested for the PCOCs, including total petroleum hydrocarbons using the HCID method, metals, and cPAHs. Additionally, the sample being collected from the capillary fringe at MW-5 will be tested for VOCs. Follow-up analysis for TPH-G, TPH-D, and TPH-O, and/or BTEX will be conducted based on the HCID results.

Six surface soil samples (C-S1 through C-S6) will be collected from the areas of the former remediation soil piles and from undisturbed portions of Area C where historical information suggests the potential for environmental impact. The footprint of the remediation soil piles is shown on Figure 12. Currently, undisturbed surface soil appears to be in located in the southern portion of Area C. The

proposed surface soil sample locations are shown on Figure 13. As in Area A, surface soil samples will be collected using hand tools (hand auger, shovel, etc.) and will be tested for constituents of concern, including total petroleum hydrocarbons using the HCID method, metals, and cPAHs. Additionally, samples C-S3 and C-S6 will be analyzed for PCBs. Follow-up analysis for TPH-G, TPH-D, and TPH-O, and/or BTEX will be conducted based on the HCID results.

A shallow soil investigation will be conducted to evaluate potential wrecking yard TPH impacts adjacent to the north edge of the GWP soil. These borings will be advanced to a depth of approximately 8 ft in order to obtain soil samples from the zone potentially affected by wrecking yard activities. One of these borings (C-SS1) will be located in Area C. The remaining three borings in the shallow soil investigation are located in Area D. Soil samples will be collected on a continuous basis and samples will be field screened based on visual appearance to select up to two samples for analysis. The samples will be analyzed for hydrocarbon identification by the TPH-HCID method. Follow-up analysis for TPH-G, TPH-D, and TPH-O, and/or BTEX will be conducted based on the HCID results.

8.1.3 AREA D

In Area D, the soil investigation will focus on characterization of soil near the former USTs and the existing waste oil UST. Based on the confirmation sample analytical results collected following removal of the five USTs from two excavations (shown on Figure 2), TPH-D was detected in one soil sample from each excavation at a concentration greater than the preliminary cleanup level, and Sampling has not been conducted in the area of the existing 8,000 gallon waste oil UST. Historical information suggests that with the exception of the UST areas, Area D has been used predominately as an office area and as an ingress/egress to the wrecking yard; therefore, soil samples will be limited to the UST areas.

Three soil borings will be advanced in Area D. The soil boring locations are shown on Figure 13. Soil borings will be advanced within each of the former UST areas. Two of the borings will be completed as monitoring wells (MW-7 and MW-8). At each location, one soil sample will be collected from the capillary fringe zone above the top of the groundwater table, or from the most contaminated soil interval as dictated by field screening and general field observations.

Soil samples collected from these borings will be tested for diesel-range petroleum hydrocarbons. In addition, the soil sample collected from the south side of the current UST will be analyzed for cPAHs, VOCs and metals.

Up to three borings will be advanced in Area D as part of the shallow soil investigation to evaluate potential wrecking yard TPH impacts adjacent to the north edge of the GWP soil described

above for Area C. Three borings (D-SS1 through D-SS3) will be completed at the locations shown on Figure 13, and will be sampled and analyzed as described above for boring near C-SS1.

8.2 GROUNDWATER INVESTIGATION

The RI groundwater investigation is designed to 1) evaluate groundwater quality in Areas A, C and, 2) evaluate groundwater hydrology throughout the Site. Prior to the interim cleanup action excavations, two groundwater quality samples were collected from direct push borings in Area A and five groundwater quality samples were collected from direct push borings in Area C. Groundwater quality monitoring has not been conducted in Area D. No groundwater monitoring wells were installed in areas A, C or D, although two monitoring wells (MW-1 and MW-2) were installed in Area B, as discussed in Section 3.1.2.

Benzene was detected at a concentration slightly greater than the preliminary cleanup level in one groundwater sample collected from the former vehicle processing area in Area C. No other PCOCs were detected in groundwater at concentrations greater than the preliminary cleanup levels, or in most cases, the laboratory reporting limits.

The proposed scope for the RI groundwater investigation is discussed below. Groundwater monitoring locations are also summarized in Table 9. Detailed procedures for groundwater sample collection and analyses and quality assurance are provided in the Sampling and Analysis Plan provided in Appendix D of this work plan.

8.2.1 AREA A (FORMER CASCADE WRECKING LEASEHOLD)

In Area A, the groundwater investigation will focus primarily on characterization of groundwater quality in the area of the interim cleanup action. The potential sources of groundwater contamination in Area A have likely been removed through the discontinuation of auto wrecking and the implementation of the interim action. Two groundwater monitoring wells will be installed within Area A to evaluate groundwater quality in the most heavily contaminated locations encountered during the interim action, and to assist in determining Site hydrogeologic conditions. The Area A groundwater monitoring activities are described below.

As previously discussed, the petroleum hydrocarbon preliminary cleanup levels were not exceeded in the groundwater samples collected from the Area A prior to the interim action cleanup excavation. However, because of the size of the cleanup area and the limited amount of groundwater quality data, two monitoring wells will be installed in Area A. Because groundwater flow in Area A is inferred to be to the south, groundwater monitoring wells will be installed either within, or to the south of

the most heavily affected areas observed during the interim action. MW-3 will be installed within a deep excavation area that appeared to be affected by previous auto wrecking activities. MW-4 will be installed to the south of the former steam cleaner and parts sheds. The proposed locations for MW-3 and MW-4 are shown on Figure 13. .

Groundwater samples collected from these wells will be tested for PCOCs, including total petroleum hydrocarbons using the HCID method, dissolved metals, and PAHs. Follow-up analysis for TPH-G, TPH-D, and TPH-O, and/or BTEX will be conducted based on the HCID results.

Two-inch diameter PVC monitoring wells will be installed at the above described locations and groundwater will be monitored for one sampling event as part of the RI. During groundwater sampling at each well, standard and natural attenuation field parameters will also be obtained [i.e., pH, specific conductance, temperature, dissolved oxygen (DO), oxidation/reduction potential (ORP), and ferrous iron].

8.2.2 AREA C

In Area C, the groundwater investigation will focus primarily on characterization of groundwater in the area of the interim cleanup action and in the central portion of the former vehicle processing area. As in Area A, the potential sources of groundwater contamination in Area C appear to have been removed through the termination of auto wrecking activities and implementation of the interim action. Monitoring wells MW-5 and MW-6 will be installed in Area C. Groundwater monitoring activities for Area C are described below.

As previously discussed, the preliminary cleanup levels were not exceeded in the groundwater samples collected from the Area C prior to the interim action cleanup excavation, with the exception of one exceedance of the benzene preliminary cleanup level in a sample collected east of the former processing area (B1-H2O). The location of the benzene exceedance was encompassed by the interim action cleanup area. Because of the size of the cleanup action area and the limited amount of groundwater data, two monitoring wells will be installed in Area C. Groundwater monitoring will be conducted within the former excavation area, within the former automobile shearing area and the former vehicle processing area, as shown on Figure 13. Groundwater samples collected from these wells will be tested for total petroleum hydrocarbons using the HCID method, dissolved metals, and PAHs. Follow-up analysis for TPH-G, TPH-D, and , and/or BTEX will be conducted based on the HCID results.

Two-inch diameter PVC monitoring wells will be installed at the above described locations and groundwater will be monitored for one sampling event as part of the RI. During groundwater sampling at each well standard and natural attenuation field parameters will be obtained [i.e., pH, specific conductance, temperature, DO, ORP, and ferrous iron].

Although existing well MW-1 is located within Area B, it is likely downgradient of Area C and/or Area D. As a result, a groundwater sample will be also be collected from MW-1 and tested for the same parameters as the Area C wells.

8.2.3 AREA D

The primary objective of the RI groundwater investigation in Area D is to characterize groundwater quality in the vicinity of the existing and former USTs. Two monitoring wells, MW-7 and MW-8, will be installed in this area, as shown on Figure 13. The monitoring wells were located to be within the source area of the former UST areas. Groundwater samples collected from these wells will be tested for TPH-D.

Two-inch diameter PVC monitoring wells will be installed at the above described locations and groundwater will be monitored for one sampling event as part of the RI. During groundwater sampling at each well, standard and natural attenuation field parameters will be obtained [i.e., pH, specific conductance, temperature, DO, ORP, and ferrous iron].

In addition, a groundwater grab sample will be collected from a soil boring advanced adjacent to the existing 8,000 gallon waste oil UST (D-B1). The groundwater sample collected from this location will be tested for TPH-D, VOCs, PAHs, and dissolved metals.

8.2.4 HYDROGEOLOGIC CHARACTERIZATION

Hydrogeologic characterization will be conducted to characterize the groundwater flow direction and migration rate. The elevation for all monitoring wells will be determined by land surveying to the nearest 0.01 ft. All wells will be gauged at the time of groundwater sampling to evaluated groundwater flow direction. Soil samples will be collected from the saturated zone at the time of drilling, and at least three samples will be submitted for mechanical grain size analyses to allow estimation of the hydraulic conductivity for the uppermost hydrostratigraphic unit. The hydraulic conductivity data in conjunction with the average hydraulic gradient determined from monitoring well gauging will be used to estimate Site groundwater velocities. Monitoring Wells MW-1 and MW-2 will be gauged to assist in evaluation Site hydrogeologic conditions.

8.3 SURFACE WATER INVESTIGATION

Surface water quality will be evaluated by collecting and testing one surface water grab sample from the most down gradient stormwater catch basin located on Site. The catch basin sampling location (SW-1) is shown on Figure 13. The sample will be tested for total petroleum hydrocarbons by HCID,

metals (arsenic, cadmium, chromium, lead, mercury, and zinc), VOCs, and cPAHs. Follow-up analysis for TPH-G, TPH-D, and TPH-O will be conducted based on the HCID results.

The laboratory analytical results from this sample will be evaluated against surface water quality criteria. If the sample results exceed surface water quality criteria, surface water quality will be monitored at the upgradient catch basins. The results from the upgradient surface water samples will be used to identify or rule-out offsite surface water contaminant sources.

9.0 LIMITATIONS

This work plan has been prepared for the exclusive use of Verbeek Wrecking for specific application to the Verbeek Wrecking Site. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of the Verbeek Wrecking and Landau Associates. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by the Port and Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

LANDAU ASSOCIATES, INC.

Lawrence D. Beard, P.E., L.G.
Principal

David Nelson, L.G.
Senior Staff Geologist

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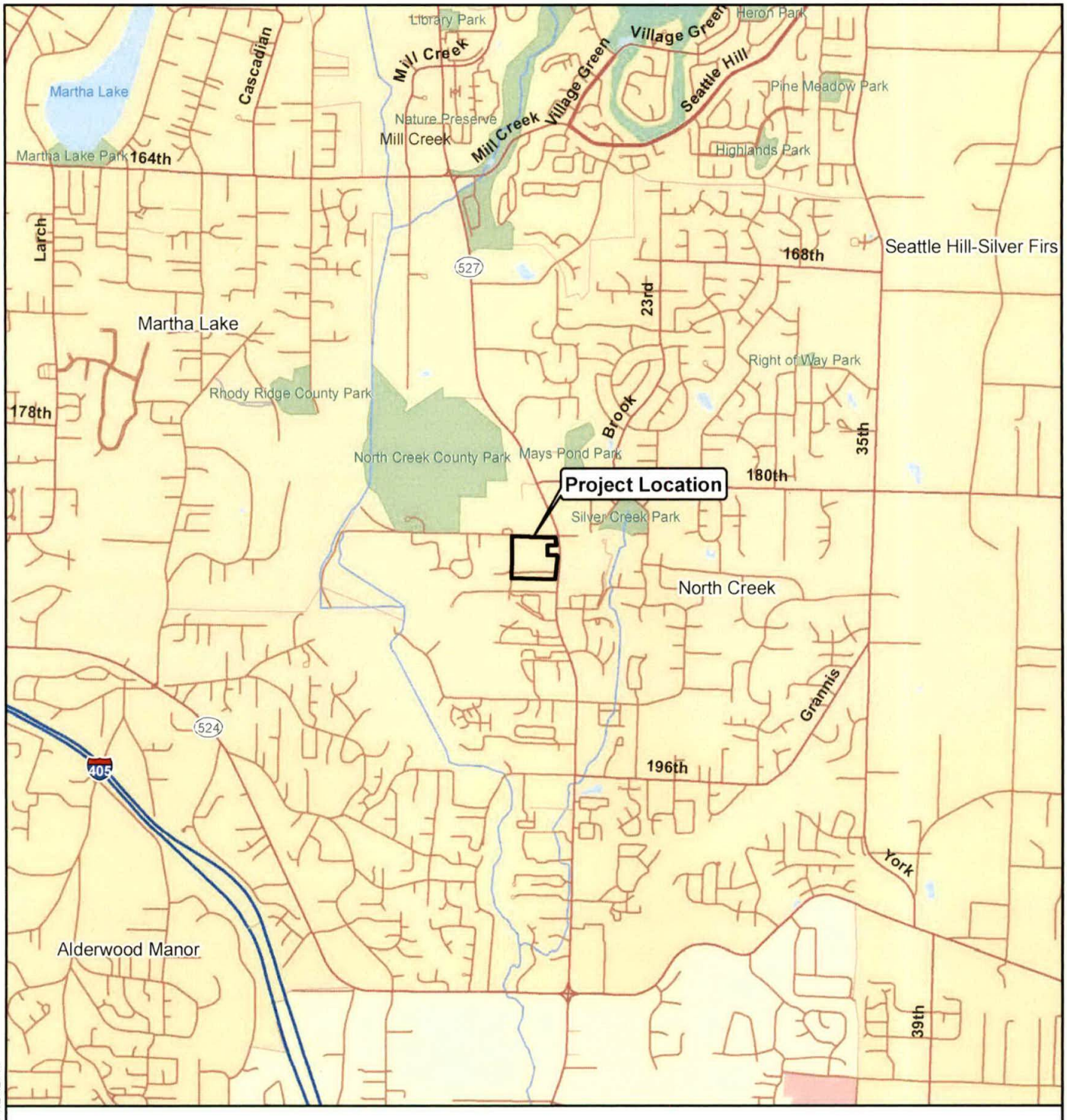

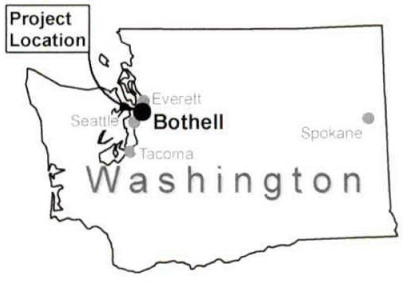

N

0 0.5 1

Miles

Data Source: ESRI 2008

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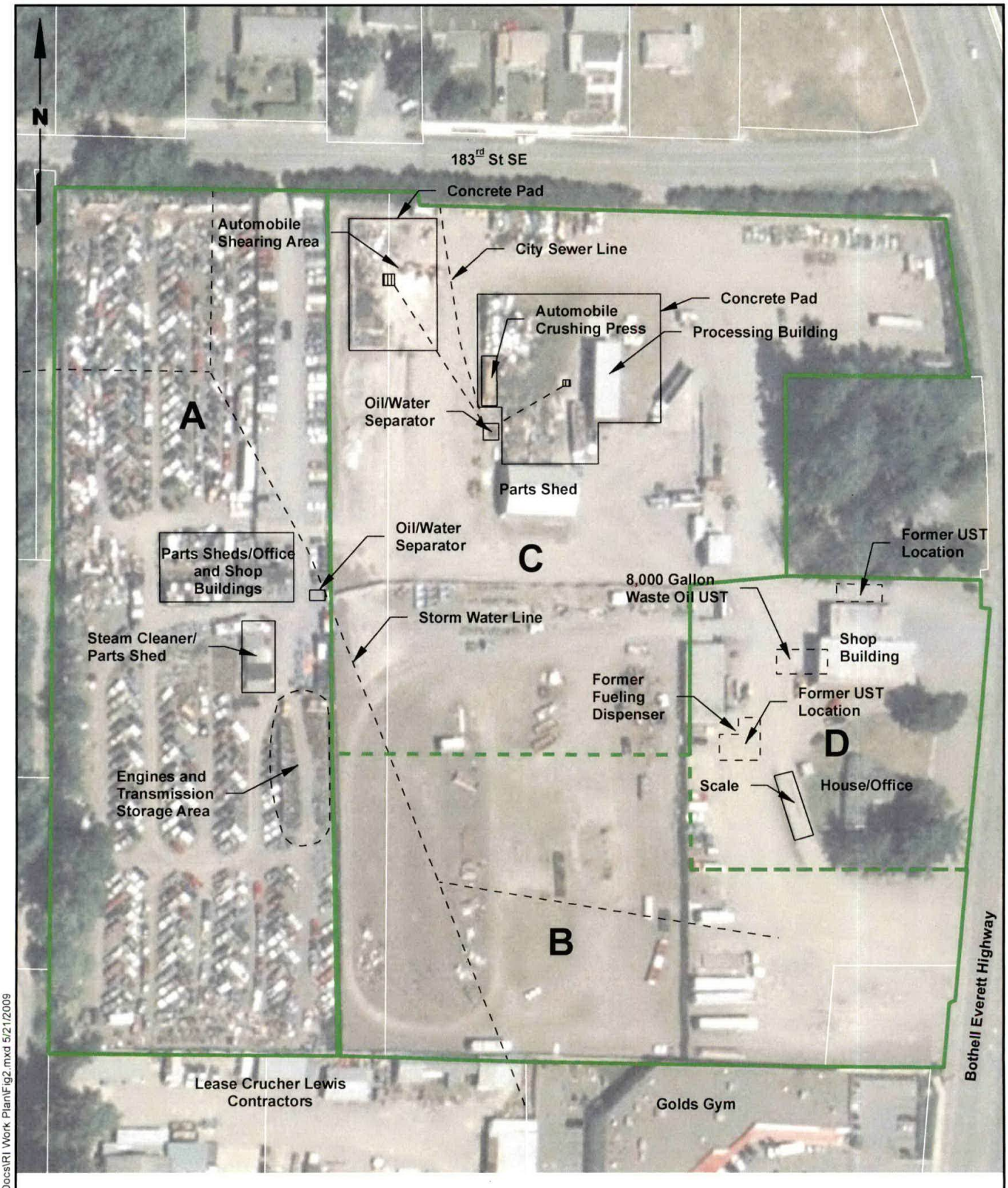
Verbeek Wrecking RI Work Plan Bothell/Snohomish County Washington	**Vicinity Map**	Figure 1



Data Source: Snohomish County; ESRI

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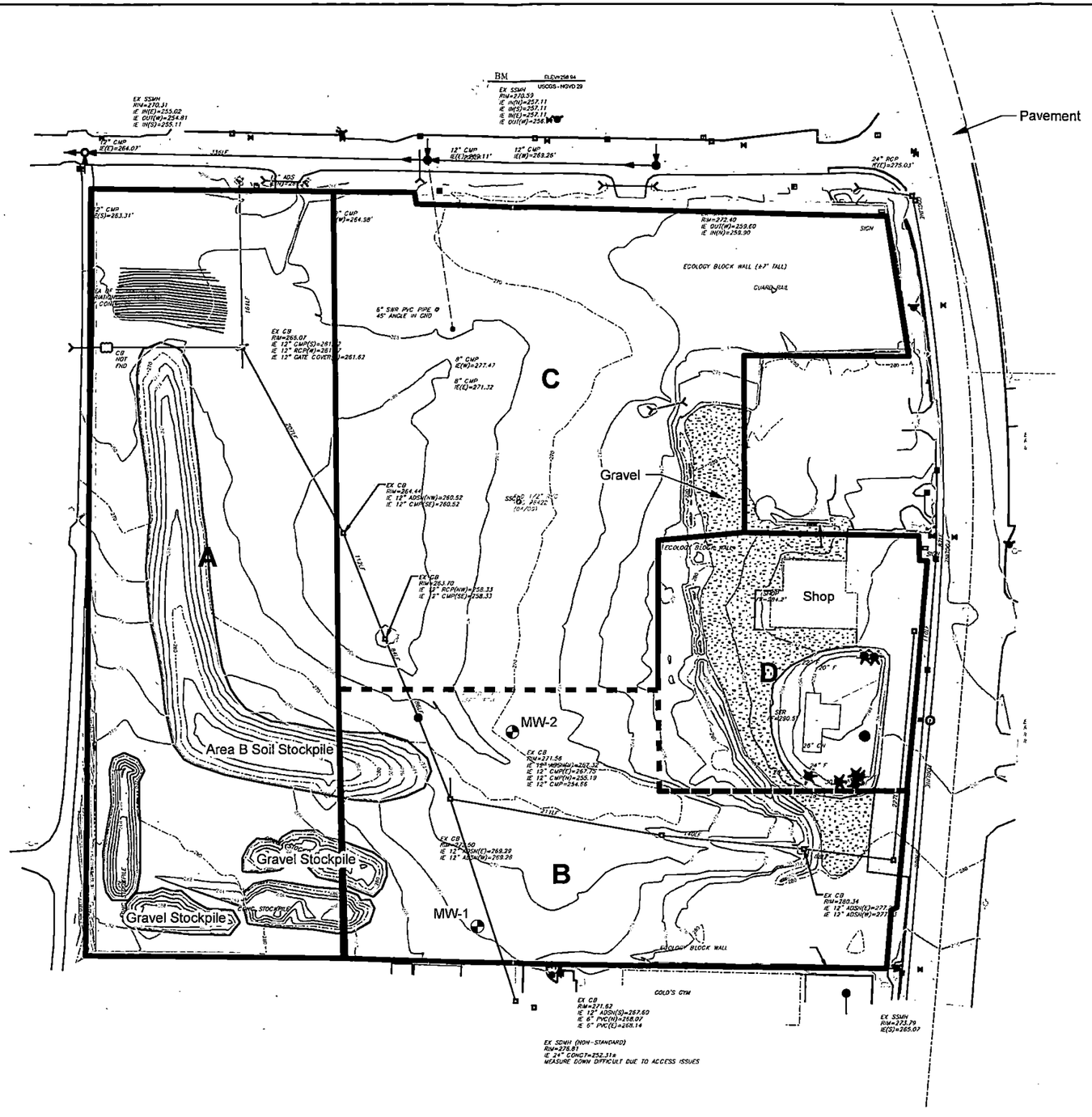
Verbeek Wrecking RI Work Plan Bothell/Snohomish County Washington	**Historic Site Plan**	Figure 2



Data Source: Western Engineers Inc.

LANDAU ASSOCIATES

Verbeek Wrecking RI Work Plan Bothell/Snohomish County Washington	**Current Site Conditions**	Figure 3

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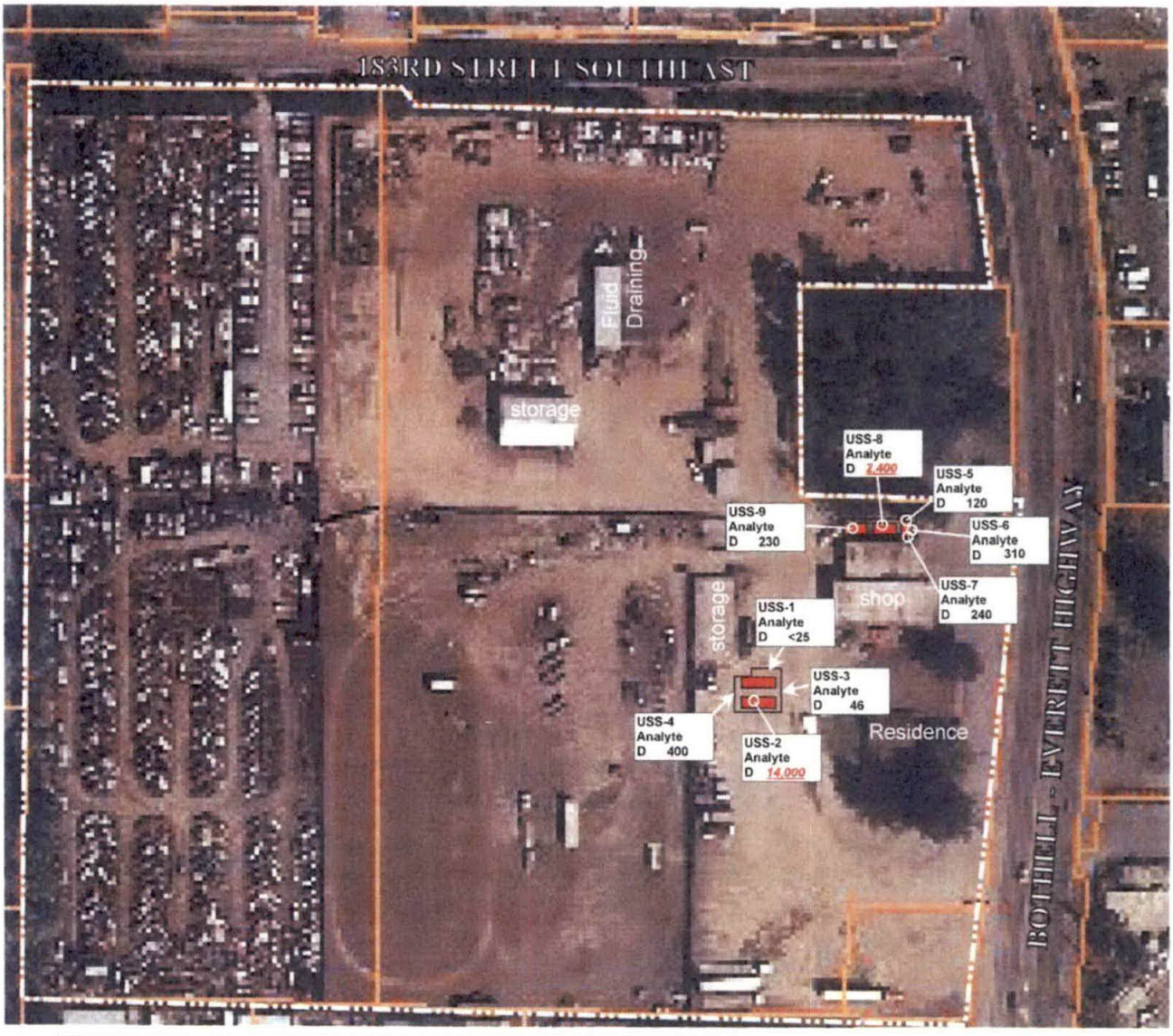

LEGEND:

Approximate bottom sample

Approximate wall sample

USS-3 Analyte D 46

Approximate limits of excavation and sample location
Based Upon Sample Location Map Coastal Tank Services November 1995
(depth of sample not reported)

Approximate project boundary

Inferred Direction of Shallow Groundwater Flow

Analyte
D Diesel

Results reported in parts per million (ppm)
ND Not Detected above practical quantitation limit
NS Not Sampled
Italicized and underlined values exceed Method A Table 740-1 Cleanup Levels

N

SOURCE: Snohomish County, 2005 Aerial

Scale 1"=: 130'

GEOTECH CONSULTANTS, INC.

PREVIOUS TPH RESULTS MAP

Verbeek Wrecking
18416 Bothell - Everett Highway
Bothell, Washington

Job No:	Date:		Plate:
08094E	October 2008		5

Figure 4

LANDAU ASSOCIATES

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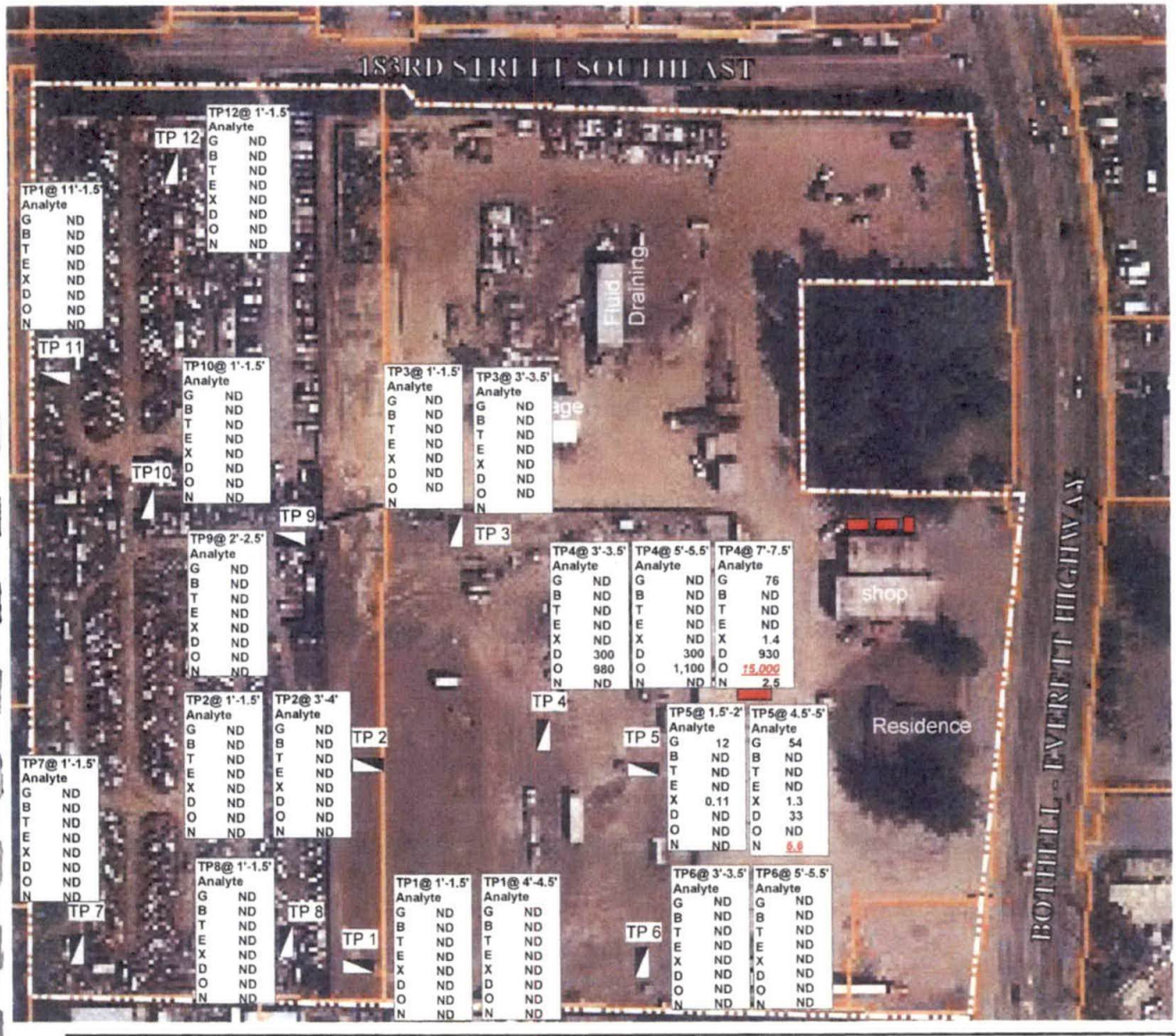

LEGEND: TP 1 — Approximate Location of Geotech Consultants Test Pit, April 2008

TP1@ Depth
Analyte
G Gasoline
B Benzene
T Toluene
E Ethylbenzene
X Xylenes
D Diesel
O Oil
N Naphthalene

Results reported in parts per million (ppm)
ND Not Detected above practical quantitation limit
NS Not Sampled
Italicized and underlined values exceed Method A Table 740-1 Cleanup Levels

Approximate project boundary

Inferred Direction of Shallow Groundwater Flow

N

SOURCE: Snohomish County, 2005 Aerial

Scale 1"=: 130'

GEOTECH CONSULTANTS, INC.

TPH RESULTS MAP

Verbeek Wrecking
18416 Bothell - Everett Highway
Bothell, Washington

Job No:	Date:		Plate:
08094E	October 2008		6

Figure 5

LANDAU ASSOCIATES

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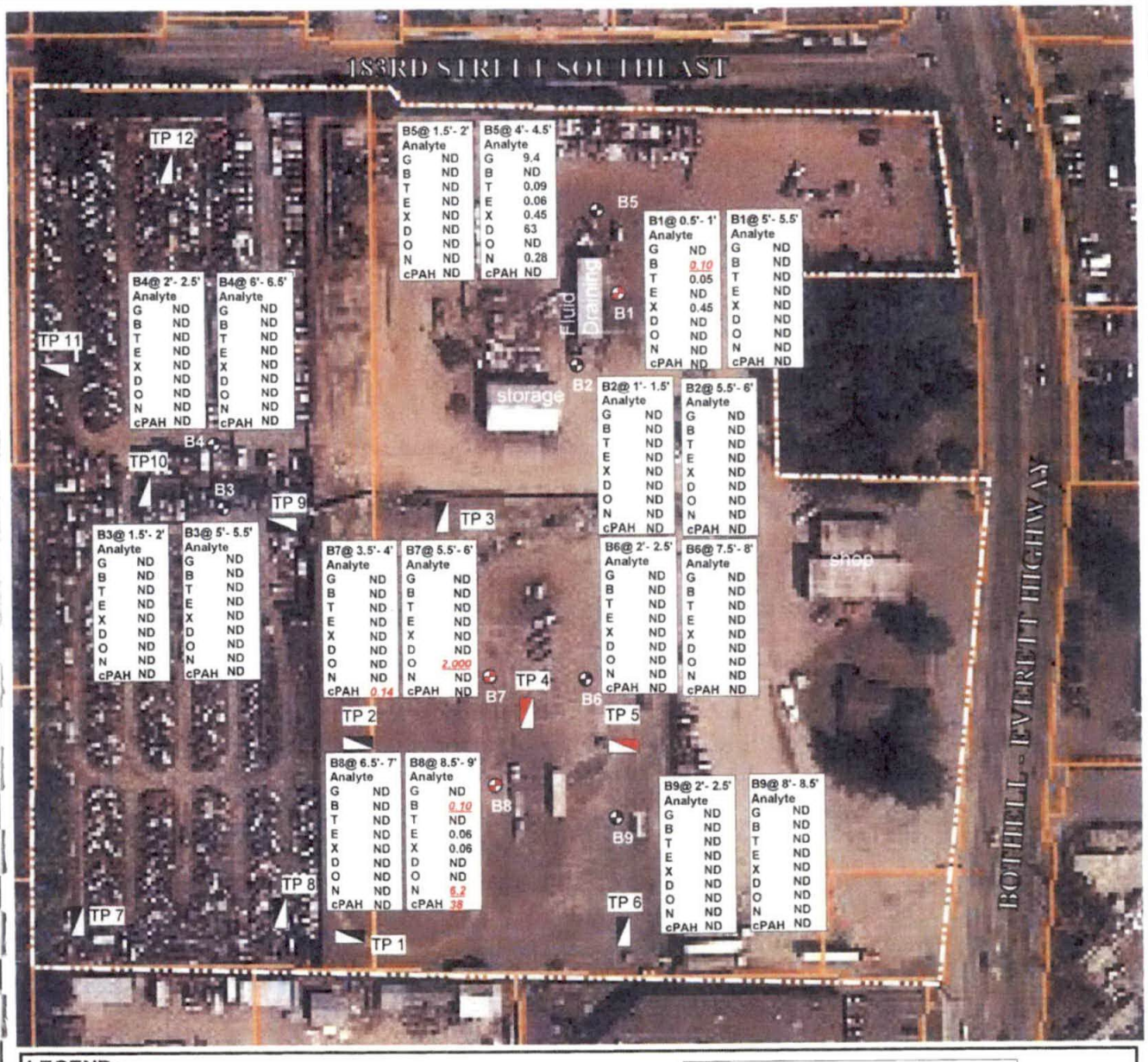

LEGEND:

TP 1 — Approximate location of test pit excavated April 2008.
(red coloration indicates analyte levels above applicable cleanup levels)

B1 — Approximate location of direct push boring drilled May 2008.
(red coloration indicates analyte levels above applicable cleanup levels)

Approximate project boundary

Inferred Direction of Shallow Groundwater Flow

SOURCE: Snohomish County, 2005 Aerial

B1@ Depth

Analyte	
G	Gasoline
B	Benzene
T	Toluene
E	Ethylbenzene
X	Xylenes
D	Diesel
O	Oil
N	Naphthalene
cPAH	carcinogenic Polycyclic Aromatic Hydrocarbons

Results reported in parts per million (ppm)
ND Not Detected above practical quantitation limit
NS Not Sampled
Italicized and underlined values exceed Method A Table 740-1 Cleanup Levels

N

Scale 1"=: 130'

GEOTECH CONSULTANTS, INC.

TPH BTEX & cPAH RESULTS - SOIL

Verbeek Wrecking
18416 Bothell - Everett Highway
Bothell, Washington

Job No:	Date:		Plate:
08094E	November 2008		6

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LANDAU ASSOCIATES

Figure 6

LEGEND:

TP 1 — Approximate location of test pit excavated April 2008.
(red coloration at TP4 indicates visual indication of groundwater contamination)

B1 — Approximate location of direct push boring drilled May 2008.
(red coloration indicates analyte levels above applicable cleanup levels)

Approximate project boundary

Inferred Direction of Shallow Groundwater Flow

SOURCE: Snohomish County, 2005 Aerial

B1H2O

Analyte	
G	Gasoline
B	Benzene
T	Toluene
E	Ethylbenzene
X	Xylenes
D	Diesel
O	Oil
N	Naphthalene
MTBE	Methyl-t-butyl ether

Results reported in parts per billion (ppb)
ND Not Detected above practical quantitation limit
NS Not Sampled
Italicized and underlined values exceed Method A Table 720-1 Cleanup Levels

N

Scale 1"=: 130'

GEOTECH CONSULTANTS, INC.

TPH & BTEX RESULTS - H_2O

Verbeek Wrecking
18416 Bothell - Everett Highway
Bothell, Washington

Job No:	Date:		Plate:
08094E	November 2008		7

Figure 7

LANDAU ASSOCIATES

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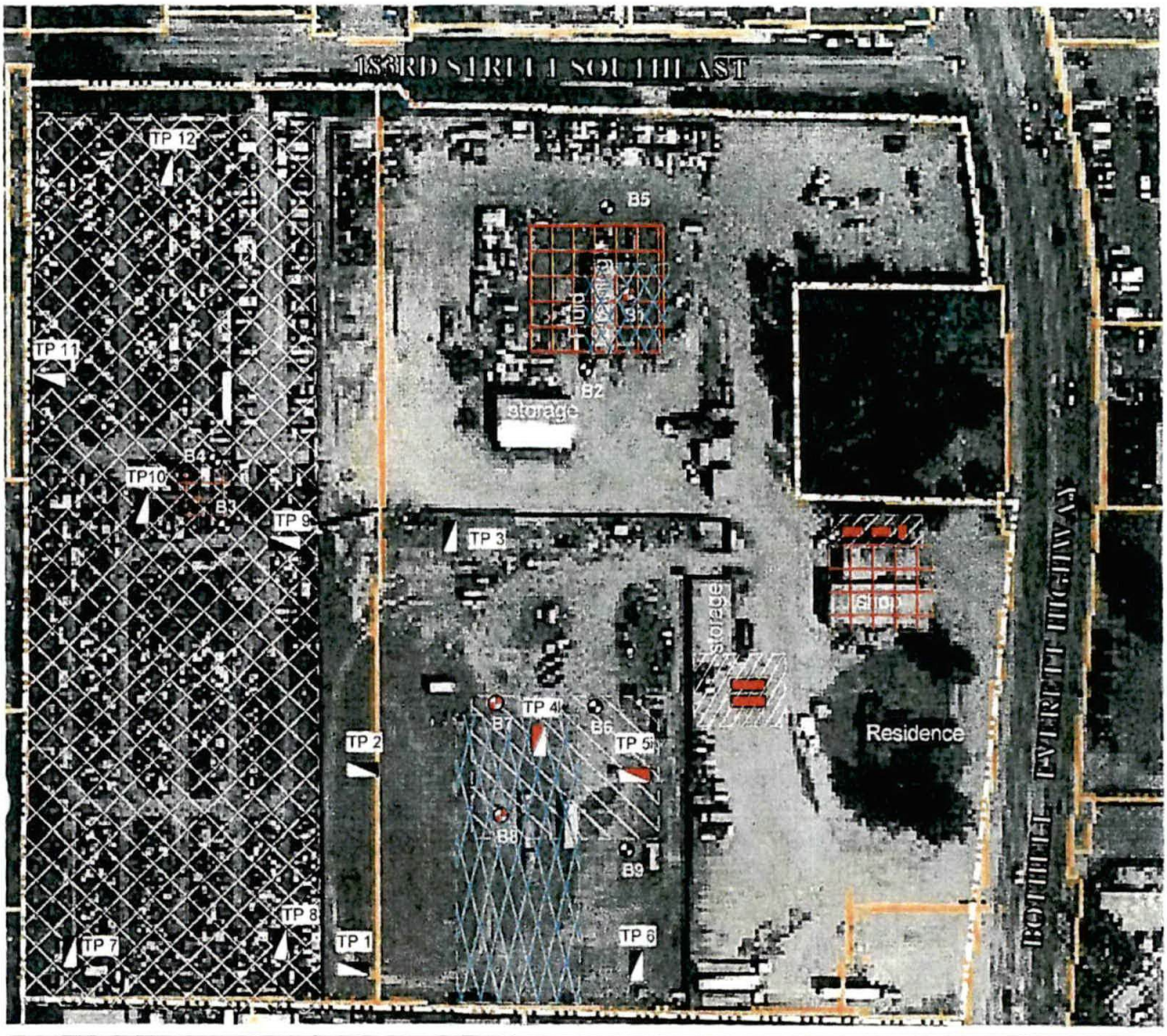

LEGEND:

TP 1 — Approximate location of test pit excavated April 2008. (red coloration indicates analyte levels above applicable cleanup levels)

B1 — Approximate location of direct push boring drilled May 2008. (red coloration indicates analyte levels above applicable cleanup levels)

Approximate location former USTs

1 — Approximate shallow contamination (0 to 1 foot, boundaries not confirmed)

2 — Approximate near surface contamination (0 to 5 feet, boundaries not confirmed)

3 — Approximate mid depth contamination (4 to 10 feet, boundaries not confirmed)

4 — Approximate deep contamination (5 to 10 feet, boundaries not confirmed)

Approximate project boundary

Area of suspected groundwater contamination (boundaries not confirmed)

Inferred Direction of Shallow Groundwater Flow

N

SOURCE: Snohomish County, 2005 Aerial

Scale 1"=: 130'

GEOTECH CONSULTANTS, INC.

CONTAMINATED AREAS MAP

Verbeek Wrecking
18416 Bothell - Everett Highway
Bothell, Washington

Job No:	Date:		Plate:
08094E	May 2008		8

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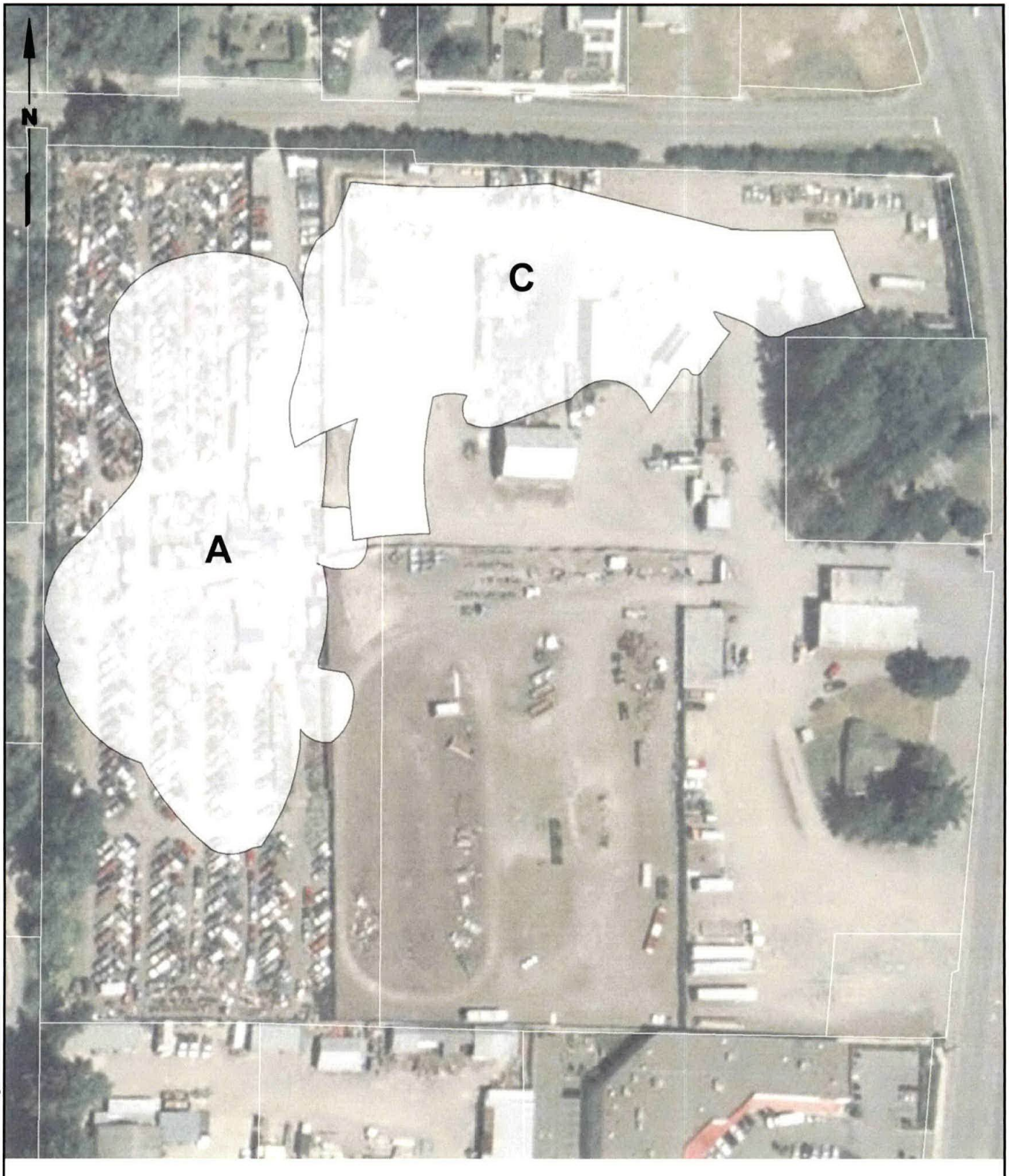
Figure 8



Legend

Soil cleanup action area (approximate limits)

0 120 240

Scale in Feet

Data Source: Snohomish County; ESRI

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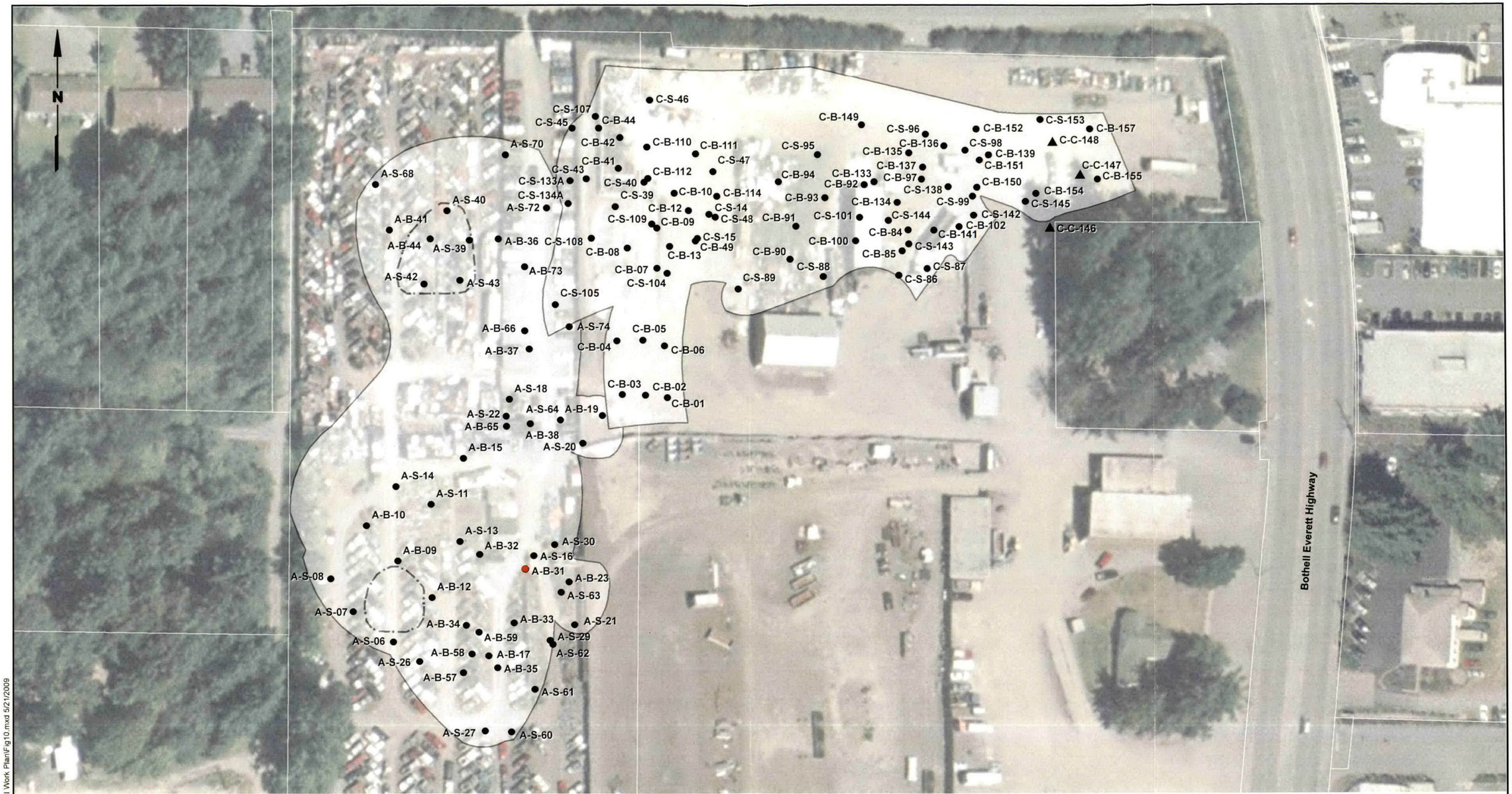
Verbeek Wrecking RI Work Plan Bothell/Snohomish County Washington	**Cleanup Action Areas A and C**	Figure 9



Legend

- ● Confirmation soil sample location with analytical results below cleanup levels or below the laboratory reporting limits
- ● Confirmation soil sample location with analytical results above cleanup levels
- ▲ Characterization soil sample location with analytical results below cleanup levels or below the laboratory reporting limits
- Approximate locations of deeper soil excavation (12 ft BGS)
- Soil cleanup action areas A and C (approximate limits)

0 80 160

Scale in Feet

Data Source: Snohomish County; ESRI

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Verbeek Wrecking
RI Work Plan
Bothell/Snohomish County
Washington

Final Confirmation Soil Samples in Area A and C

Figure 10

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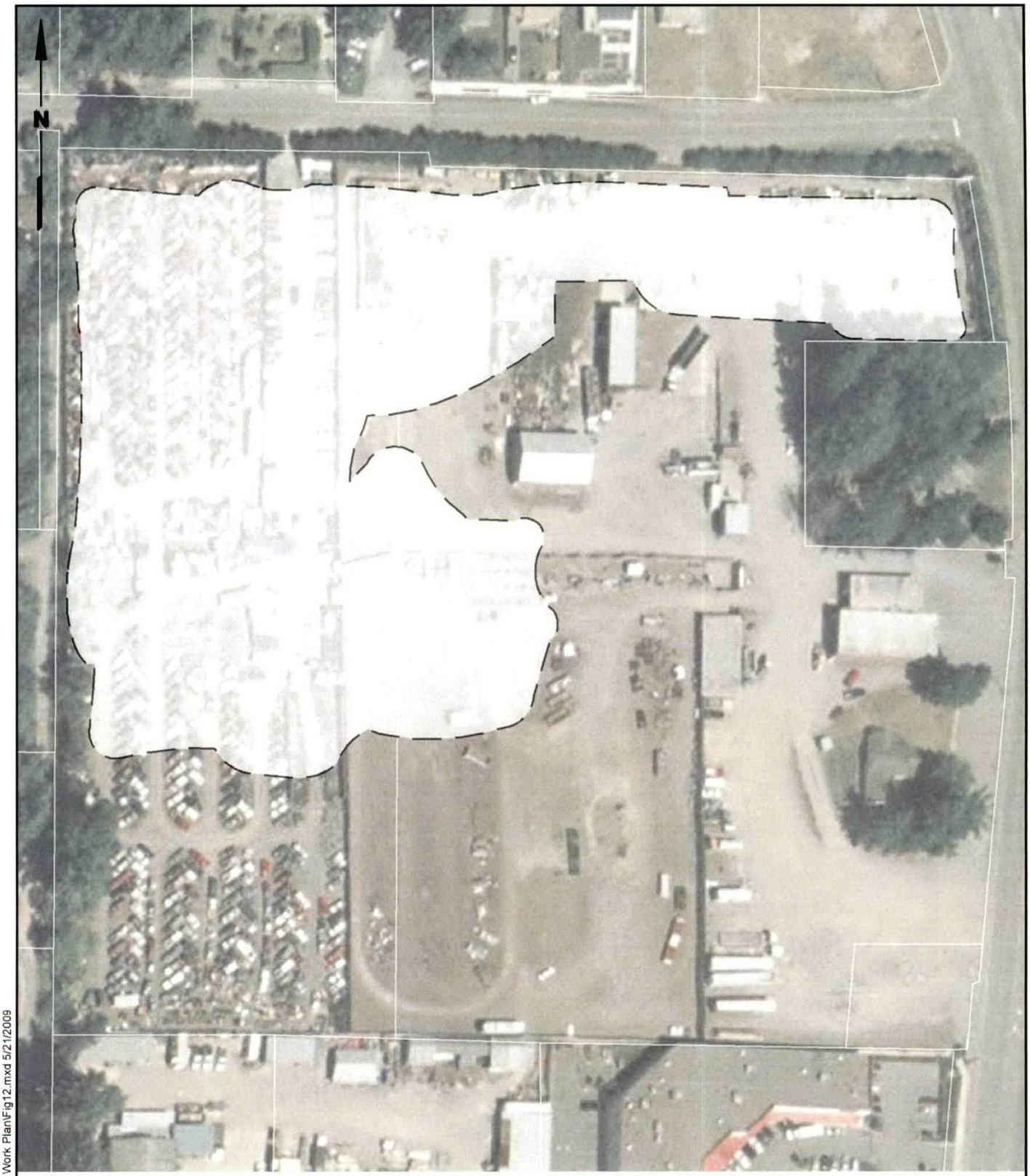
Verbeek Wrecking RI Work Plan Bothell/Snohomish County Washington	**Approximate Extent of Area B Excavation and Stock Pile Location**	Figure 11



Legend

Soil treatment areas (approximate limits)

0 120 240

Scale in Feet

Data Source: Snohomish County; ESRI

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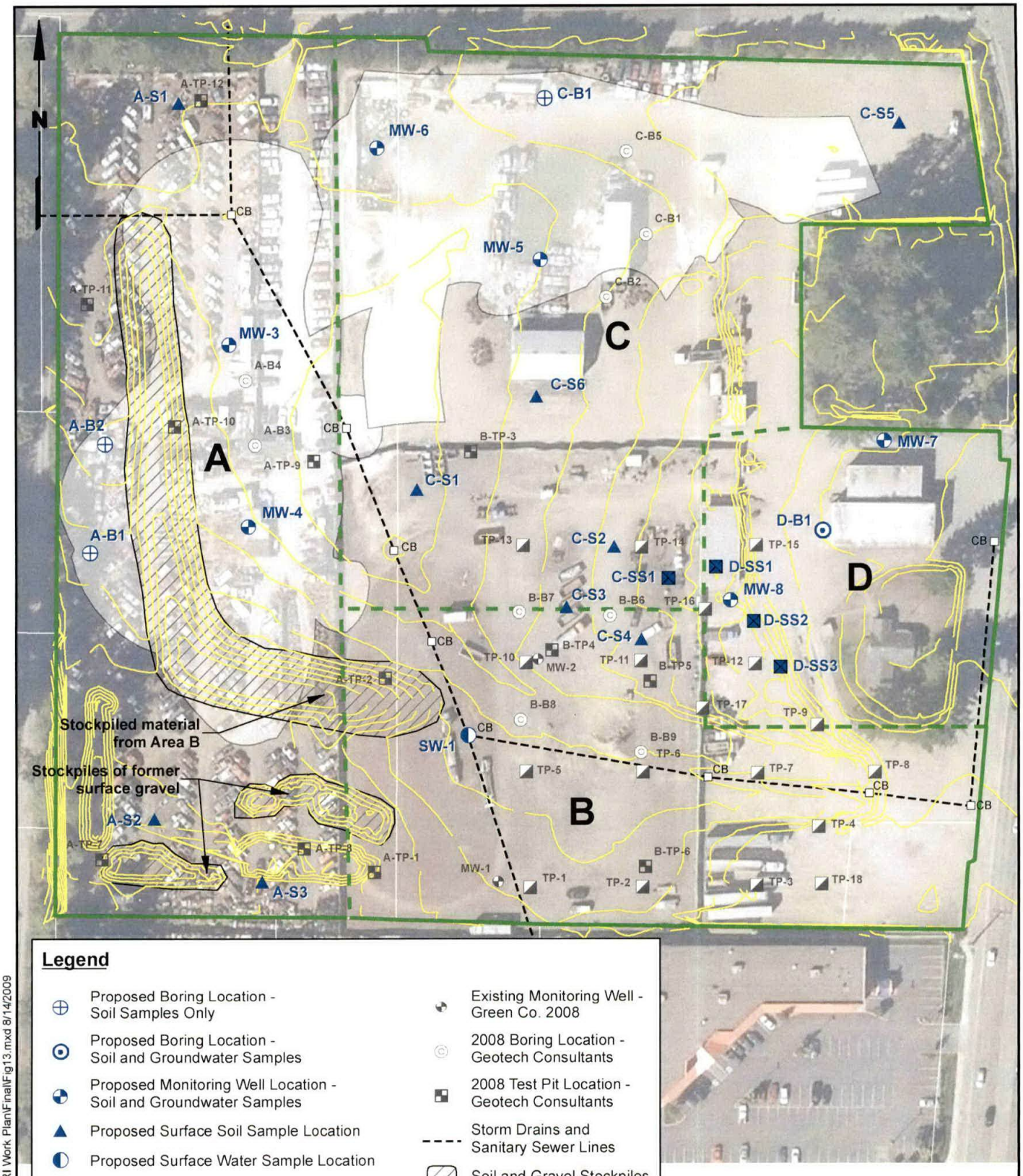
LANDAU ASSOCIATES

Verbeek Wrecking
RI Work Plan
Bothell/Snohomish County
Washington

Footprint of Soil Remediation Piles

Figure
12



Legend

- Proposed Boring Location - Soil Samples Only
- Proposed Boring Location - Soil and Groundwater Samples
- Proposed Monitoring Well Location - Soil and Groundwater Samples
- Proposed Surface Soil Sample Location
- Proposed Surface Water Sample Location
- Proposed Shallow Soil Sample Location
- DOF April 2009 Test Pit Location (Approximate)
- Existing Monitoring Well - Green Co. 2008
- 2008 Boring Location - Geotech Consultants
- 2008 Test Pit Location - Geotech Consultants
- Storm Drains and Sanitary Sewer Lines
- Soil and Gravel Stockpiles
- Soil cleanup action area (approximate limits)
- Elevation Contour

0 120 240

Scale in Feet

Data Source: Snohomish County; ESRI; Western Engineers Inc.

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LANDAU ASSOCIATES

Verbeek Wrecking
RI Work Plan
Bothell/Snohomish County
Washington

Proposed Investigation Locations

Figure 13

TABLE 1
PHASE II ESA SOIL ANALYTICAL RESULTS OF DETECTED CONSTITUENTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-B3	A-B3	A-B4	A-B4	A-TP-1	A-TP-1	A-TP-10	A-TP-11
Sample Location ID		B3S1	B3S2	B4S1	B4S2	TP1 S1	TP1 S2	TP10 S1	TP11 S1
Top Depth						1	4	1	1
Bottom Depth						1.5	4.5	1.5	1.5
Lab Sample ID	Preliminary Cleanup Levels	05/22/08	05/22/08	05/22/08	05/22/08	04/17/08	04/17/08	04/17/08	04/17/08
METALS (mg/kg)									
Arsenic	20	<5	<5	<5	<5	<2.0	<2.0	<2.0	**2.4**
Barium	1700	**53**	<50	<50	<50	<10	<10	<10	<10
Cadmium	1	<1	<1	<1	<1	<1.0	<1.0	<1.0	<1.0
Chromium	120000	**9.6**	**9.9**	**11**	**7.7**	**5.4**	**3.4**	**8**	**9.8**
Lead	250	**18**	<5	**10**	<5	**4.5**	**3.8**	**100**	**81**
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	100/30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<40	<40	<40	<40	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.050	<0.050	<0.050	<0.050
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
GLYCOLS (mg/kg)									
Ethylene Glycol	160000	<10	<10	<10	<10	<1.0	<1.0	<1.0	<1.0
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
1,3,5-Trimethylbenzene	4000	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Isopropylbenzene		<0.05	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Isopropyltoluene		<0.05	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
n-Butylbenzene		<0.05	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
n-Propylbenzene		<0.05	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
tert-Butylbenzene		<0.05	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050

TABLE 1
PHASE II ESA SOIL ANALYTICAL RESULTS OF DETECTED CONSTITUENTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-B3	A-B3	A-B4	A-B4	A-TP-1	A-TP-1	A-TP-10	A-TP-11
Sample Location ID		B3S1	B3S2	B4S1	B4S2	TP1 S1	TP1 S2	TP10 S1	TP11 S1
Top Depth						1	4	1	1
Bottom Depth	Preliminary					1.5	4.5	1.5	1.5
Lab Sample ID	Cleanup Levels	05/22/08	05/22/08	05/22/08	05/22/08	04/17/08	04/17/08	04/17/08	04/17/08
PAHs (mg/kg)									
Naphthalene	4.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1-Methylnaphthalene		<0.10	<0.10	<0.10	<0.10				
2-Methylnaphthalene	320	<0.10	<0.10	<0.10	<0.10				
1,2-Methylnaphthalene						<0.10	<0.10	<0.10	<0.10
Acenaphthene	98	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene	101	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	630	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Pyrene	650	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(g,h,i)perylene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	2.3	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)anthracene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(b)fluoranthene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dibenzo(a,h)anthracene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Indeno(1,2,3-cd)pyrene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total cPAH TEQ	0.14	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 1
PHASE II ESA SOIL ANALYTICAL RESULTS OF DETECTED CONSTITUENTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-TP-12	A-TP-2	A-TP-2	A-TP-7	A-TP-8	A-TP-9	B-B6	B-B6
Sample Location ID		TP12 S1	TP2 S1	TP2 S2	TP7 S1	TP8 S1	TP9 S1	B6S1	B6S2
Top Depth		1	1	3	1	1.5	2		
Bottom Depth	Preliminary	1.5	1.5	4	1.5	2	2.5		
Lab Sample ID	Cleanup Levels	04/17/08	04/17/08	04/17/08	04/17/08	04/17/08	04/17/08	05/22/08	05/22/08
METALS (mg/kg)									
Arsenic	20	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5	<5
Barium	1700	<10	<10	<10	<10	<10	<10	<50	<50
Cadmium	1	<1.0	<1.0	**1**	<1.0	<1.0	<1.0	<1	<1
Chromium	120000	**3.1**	**5.6**	**7.6**	**2**	**3.5**	**3.4**	**8.9**	**8.5**
Lead	250	**8.8**	**9.3**	**14**	**2.5**	**3.9**	**6.8**	<5	<5
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	100/30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<40	<40
BTEX (mg/kg)									
Benzene	0.03	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.02	<0.02
Ethylbenzene	6	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05
Toluene	4.7	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05
Xylenes	15	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05
GLYCOLS (mg/kg)									
Ethylene Glycol	160000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05
1,3,5-Trimethylbenzene	4000	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05
Isopropylbenzene		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05
Isopropyltoluene		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05
n-Butylbenzene		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05
n-Propylbenzene		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05
tert-Butylbenzene		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05

TABLE 1
PHASE II ESA SOIL ANALYTICAL RESULTS OF DETECTED CONSTITUENTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-TP-12	A-TP-2	A-TP-2	A-TP-7	A-TP-8	A-TP-9	B-B6	B-B6
Sample Location ID		TP12 S1	TP2 S1	TP2 S2	TP7 S1	TP8 S1	TP9 S1	B6S1	B6S2
Top Depth		1	1	3	1	1.5	2		
Bottom Depth	Preliminary	1.5	1.5	4	1.5	2	2.5		
Lab Sample ID	Cleanup Levels	04/17/08	04/17/08	04/17/08	04/17/08	04/17/08	04/17/08	05/22/08	05/22/08
PAHs (mg/kg)									
Naphthalene	4.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1-Methylnaphthalene								<0.10	<0.10
2-Methylnaphthalene	320							<0.10	<0.10
1,2-Methylnaphthalene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10		
Acenaphthene	98	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene	101	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	630	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Pyrene	650	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(g,h,i)perylene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	2.3	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)anthracene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(b)fluoranthene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dibenzo(a,h)anthracene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Indeno(1,2,3-cd)pyrene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total cPAH TEQ	0.14	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 1
PHASE II ESA SOIL ANALYTICAL RESULTS OF DETECTED CONSTITUENTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		B-B7	B-B7	B-B8	B-B8	B-B9	B-B9	B-TP-3	B-TP-3
Sample Location ID		B7S1	B7S2	B8S1	B8S2	B9S1	B9S2	TP3 S1	TP3 S2
Top Depth								1	3
Bottom Depth	Preliminary							1.5	3.5
Lab Sample ID	Cleanup Levels	05/22/08	05/22/08	05/22/08	05/22/08	05/22/08	05/22/08	04/17/08	04/17/08
METALS (mg/kg)									
Arsenic	20	<5	<5	5.7	<5	<5	<5	<2.0	<2.0
Barium	1700	60	<50	140	87	130	65	<10	<10
Cadmium	1	<1	<1	<1	<1	<1	<1	<1.0	<1.0
Chromium	120000	10	7.1	14	11	17	11	8.5	7.1
Lead	250	34	21	33	19	12	24	7.3	5.8
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	100/30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<40	2000	<40	<40	<40	<40	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	0.1	<0.02	<0.02	<0.050	<0.050
Ethylbenzene	6	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.050	<0.050
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050
Xylenes	15	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.050	<0.050
GLYCOLS (mg/kg)									
Ethylene Glycol	160000	<10	<10	<10	<10	<10	<10	<1.0	<1.0
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050
1,3,5-Trimethylbenzene	4000	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050
Isopropylbenzene		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050
Isopropyltoluene		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050
n-Butylbenzene		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050
n-Propylbenzene		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050
tert-Butylbenzene		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050

TABLE 1
PHASE II ESA SOIL ANALYTICAL RESULTS OF DETECTED CONSTITUENTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		B-B7	B-B7	B-B8	B-B8	B-B9	B-B9	B-TP-3	B-TP-3
Sample Location ID		B7S1	B7S2	B8S1	B8S2	B9S1	B9S2	TP3 S1	TP3 S2
Top Depth								1	3
Bottom Depth	Preliminary							1.5	3.5
Lab Sample ID	Cleanup Levels	05/22/08	05/22/08	05/22/08	05/22/08	05/22/08	05/22/08	04/17/08	04/17/08
PAHs (mg/kg)									
Naphthalene	4.5	<0.10	<0.10	<0.10	**6.2**	<0.10	<0.10	<0.10	<0.10
1-Methylnaphthalene		<0.10	<0.10	<0.10	**1.2**	<0.10	<0.10		
2-Methylnaphthalene	320	<0.10	<0.10	<0.10	**1.9**	<0.10	<0.10		
1,2-Methylnaphthalene								<0.10	<0.10
Acenaphthene	98	<0.10	<0.10	<0.10	**1.1**	<0.10	<0.10	<0.10	<0.10
Fluorene	101	<0.10	<0.10	<0.10	**0.77**	<0.10	<0.10	<0.10	<0.10
Phenanthrene		<0.10	**0.26**	<0.10	**12**	<0.10	<0.10	<0.10	<0.10
Fluoranthene	630	<0.10	**0.8**	<0.10	**17**	<0.10	<0.10	<0.10	<0.10
Pyrene	650	**0.11**	<0.10	<0.10	**22**	<0.10	<0.10	<0.10	<0.10
Benzo(g,h,i)perylene		<0.10	<0.10	<0.10	**7.1**	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	2.3	<0.10	<0.10	<0.10	**4.7**	<0.10	<0.10	<0.10	<0.10
Benzo(a)anthracene		<0.10	<0.10	<0.10	**3.8**	<0.10	<0.10	<0.10	<0.10
Benzo(b)fluoranthene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene		<0.10	<0.10	<0.10	**6.1**	<0.10	<0.10	<0.10	<0.10
Chrysene		**0.14**	<0.10	<0.10	**8.4**	<0.10	<0.10	<0.10	<0.10
Dibenzo(a,h)anthracene		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Indeno(1,2,3-cd)pyrene		<0.10	<0.10	<0.10	**15**	<0.10	<0.10	<0.10	<0.10
Total cPAH TEQ	0.14	**0.0014**	NA	NA	**7.274**	NA	NA	NA	NA

TABLE 1
PHASE II ESA SOIL ANALYTICAL RESULTS OF DETECTED CONSTITUENTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		B-TP-4	B-TP-4	B-TP-4	B-TP-5	B-TP-5	B-TP-6	B-TP-6	C-B1
Sample Location ID		TP4 S1	TP4 S2	TP4 S3	TP5 S1	TP5 S2	TP6 S1	TP6 S2	B1S1
Top Depth		3	5	7	1.5	4.5	3	5	
Bottom Depth	Preliminary	3.5	5.5	7.5	2	5	3.5	5.5	
Lab Sample ID	Cleanup Levels	04/17/08	04/17/08	04/17/08	04/17/08	04/17/08	04/17/08	04/17/08	05/22/08
METALS (mg/kg)									
Arsenic	20	<2.0	2	<2.0	<2.0	<2.0	<2.0	<2.0	<5
Barium	1700	<10	<10	<10	<10	<10	<10	<10	61
Cadmium	1	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1
Chromium	120000	19	7.5	4	3.8	5.4	2	4.9	6.7
Lead	250	2.4	170	87	7.4	38	3.4	5.2	20
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	170	300	930	<20	33	<20	<20	<20
Gasoline-Range	100/30	<5	<5	76	12	54	<5	<5	<5
Oil-Range	2000	980	1100	15000	<50	<50	<50	<50	<40
BTEX (mg/kg)									
Benzene	0.03	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.1
Ethylbenzene	6	<0.050	<0.050	0.056	<0.050	0.66	<0.050	<0.050	<0.05
Toluene	4.7	<0.050	<0.050	0.1	<0.050	0.24	<0.050	<0.050	0.05
Xylenes	15	<0.050	<0.050	1.4	0.11	1.3	<0.050	<0.050	0.42
GLYCOLS (mg/kg)									
Ethylene Glycol	160000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000	<0.050	<0.050	0.77	0.082	1.4	<0.050	<0.050	
1,3,5-Trimethylbenzene	4000	<0.050	<0.050	0.26	<0.050	0.48	<0.050	<0.050	
Isopropylbenzene		<0.050	<0.050	0.14	<0.050	0.1	<0.050	<0.050	<0.05
Isopropyltoluene		<0.050	<0.050	0.1	<0.050	0.071	<0.050	<0.050	
n-Butylbenzene		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
n-Propylbenzene		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
tert-Butylbenzene		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	

TABLE 1
PHASE II ESA SOIL ANALYTICAL RESULTS OF DETECTED CONSTITUENTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		B-TP-4	B-TP-4	B-TP-4	B-TP-5	B-TP-5	B-TP-6	B-TP-6	C-B1
Sample Location ID		TP4 S1	TP4 S2	TP4 S3	TP5 S1	TP5 S2	TP6 S1	TP6 S2	B1S1
Top Depth		3	5	7	1.5	4.5	3	5	
Bottom Depth	Preliminary	3.5	5.5	7.5	2	5	3.5	5.5	
Lab Sample ID	Cleanup Levels	04/17/08	04/17/08	04/17/08	04/17/08	04/17/08	04/17/08	04/17/08	05/22/08
PAHs (mg/kg)									
Naphthalene	4.5	<0.10	<0.10	2.5	<0.10	9.8	0.73	<0.10	<0.10
1-Methylnaphthalene									<0.10
2-Methylnaphthalene	320								<0.10
1,2-Methylnaphthalene		<0.10	0.12	8	<0.10	4.9	0.31	<0.10	
Acenaphthene	98	<0.10	0.26	4.1	<0.10	0.47	<0.10	<0.10	<0.10
Fluorene	101	<0.10	<0.10	4.8	<0.10	0.46	<0.10	<0.10	<0.10
Phenanthrene		<0.10	0.26	17	<0.10	1.4	0.1	<0.10	<0.10
Fluoranthene	630	<0.10	0.36	26	<0.10	0.96	<0.10	<0.10	<0.10
Pyrene	650	<0.10	0.59	41	<0.10	1.4	<0.10	<0.10	<0.10
Benzo(g,h,i)perylene		<0.10	<0.10	4.8	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	2.3	<0.10	<0.10	5.2	<0.10	0.35	<0.10	<0.10	<0.10
Benzo(a)anthracene		<0.10	0.15	5.8	<0.10	0.28	<0.10	<0.10	<0.10
Benzo(b)fluoranthene		<0.10	<0.10	6.4	<0.10	0.58	<0.10	<0.10	<0.10
Benzo(k)fluoranthene		<0.10	<0.10	7.5	<0.10	0.58	<0.10	<0.10	<0.10
Chrysene		<0.10	0.45	6.8	<0.10	0.55	0.29	<0.10	<0.10
Dibenzo(a,h)anthracene		<0.10	<0.10	1.1	<0.10	0.47	<0.10	<0.10	<0.10
Indeno(1,2,3-cd)pyrene		<0.10	<0.10	3.9	<0.10	0.24	<0.10	<0.10	<0.10
Total cPAH TEQ	0.14	NA	0.0195	7.738	NA	0.5705	0.0029	NA	NA

TABLE 1
PHASE II ESA SOIL ANALYTICAL RESULTS OF DETECTED CONSTITUENTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		C-B1	C-B2	C-B2	C-B2	C-B5	C-B5
Sample Location ID		B1S2	B1S1	B2S1	B2S2	B5S1	B5S2
Top Depth							
Bottom Depth	Preliminary						
Lab Sample ID	Cleanup Levels	05/22/08	05/23/08	05/22/08	05/22/08	05/22/08	05/22/08
METALS (mg/kg)							
Arsenic	20	<5		<5	<5	<5	<5
Barium	1700	<50		<50	<50	<50	<50
Cadmium	1	<1		<1	<1	<1	<1
Chromium	120000	**8.7**		**9.3**	**9.9**	**7.7**	**6**
Lead	250	<5		<5	<5	<5	**26**
TOTAL PETROLEUM HYDROCARBONS (mg/kg)							
Diesel-Range	2000	<20		<20	<20	<20	**63**
Gasoline-Range	100/30	<5		<5	<5	<5	**9.4**
Oil-Range	2000	<40		<40	<40	<40	<40
BTEX (mg/kg)							
Benzene	0.03	<0.02		<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05		<0.05	<0.05	<0.05	**0.06**
Toluene	4.7	<0.05		<0.05	<0.05	<0.05	**0.09**
Xylenes	15	<0.05		<0.05	<0.05	<0.05	**0.45**
GLYCOLS (mg/kg)							
Ethylene Glycol	160000	<10		<10	<10	<10	**87**
VOLATILES (mg/kg)							
1,2,4-Trimethylbenzene	4000	<0.05	<0.05	<0.05	<0.05	<0.05	**0.56**
1,3,5-Trimethylbenzene	4000	<0.05	<0.05	<0.05	<0.05	<0.05	**0.14**
Isopropylbenzene		<0.05		<0.05	<0.05	<0.05	<0.05
Isopropyltoluene		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
n-Butylbenzene		<0.05	<0.05	<0.05	<0.05	<0.05	**0.07**
n-Propylbenzene		<0.05	<0.05	<0.05	<0.05	<0.05	**0.05**
tert-Butylbenzene		<0.05	<0.05	<0.05	<0.05	<0.05	**0.07**

TABLE 1
PHASE II ESA SOIL ANALYTICAL RESULTS OF DETECTED CONSTITUENTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		C-B1	C-B2	C-B2	C-B2	C-B5	C-B5
Sample Location ID		B1S2	B1S1	B2S1	B2S2	B5S1	B5S2
Top Depth							
Bottom Depth							
Lab Sample ID	Preliminary Cleanup Levels	05/22/08	05/23/08	05/22/08	05/22/08	05/22/08	05/22/08
PAHs (mg/kg)							
Naphthalene	4.5	<0.10		<0.10	<0.10	<0.10	**0.21**
1-Methylnaphthalene		<0.10		<0.10	<0.10	<0.10	**0.15**
2-Methylnaphthalene	320	<0.10		<0.10	<0.10	<0.10	**0.33**
1,2-Methylnaphthalene							
Acenaphthene	98	<0.10		<0.10	<0.10	<0.10	<0.10
Fluorene	101	<0.10		<0.10	<0.10	<0.10	<0.10
Phenanthrene		<0.10		<0.10	<0.10	<0.10	<0.10
Fluoranthene	630	<0.10		<0.10	<0.10	<0.10	<0.10
Pyrene	650	<0.10		<0.10	<0.10	<0.10	<0.10
Benzo(g,h,i)perylene		<0.10		<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	2.3	<0.10		<0.10	<0.10	<0.10	<0.10
Benzo(a)anthracene		<0.10		<0.10	<0.10	<0.10	<0.10
Benzo(b)fluoranthene		<0.10		<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene		<0.10		<0.10	<0.10	<0.10	<0.10
Chrysene		<0.10		<0.10	<0.10	<0.10	<0.10
Dibenzo(a,h)anthracene		<0.10		<0.10	<0.10	<0.10	<0.10
Indeno(1,2,3-cd)pyrene		<0.10		<0.10	<0.10	<0.10	<0.10
Total cPAH TEQ	0.14	NA		NA	NA	NA	NA

Bold = Analyte found above detection limit.
Box = Exceeds MTCA Method A Cleanup Level.

TABLE 2
PHASE II ESA GROUNDWATER ANALYTICAL RESULTS OF DETECTED CONSTITUENTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

Sample Location ID / Lab Sample ID / Sample Date	Preliminary Cleanup levels	A-B3 B3 H2O 5/22/2008	A-B4 B4 H2O 5/22/2008	B-B6 B6 H2O 5/22/2008	B-B7 B7 H2O 5/22/2008	B-B8 B8 H2O 5/24/2008	C-B1 B1 H2O 5/22/2008	C-B2 B2 H2O 5/22/2008	C-B5 B5 H2O 5/22/2008
TOTAL PETROLEUM HYDROCARBONS (µg/L)									
Diesel-Range	500	<200	<200	<200	<200	<200	<200	<200	<200
Oil-Range	500	<400	<400	<400	<400	<400	<400	<400	<400
Gasoline-Range	800	<100	<100	<100	<100	**1,900**	<100	<100	<100
BTEX (µg/L)									
Benzene	5.0	<1.0	<1.0	**1.4**	<1.0	**84**	**7**	<1.0	<1.0
Ethylbenzene	700	<1.0	<1.0	<1.0	<1.0	**77**	<1.0	<1.0	<1.0
Toluene	640	<1.0	<1.0	<1.0	<1.0	**5.4**	<1.0	<1.0	**1.5**
Xylenes	1,600	<1.0	<1.0	<1.0	<1.0	**70**	**1.2**	<1.0	**2.1**
VOLATILES (µg/L)									
Acetone	800	<10.0	<10.0	<10.0	<10.0	**37**	<10.0	<10.0	<10.0
2- Butanone (MEK)	4,800	<10.0	<10.0	<10.0	<10.0	**6.9**	<10.0	<10.0	<10.0
1,2,4-Trimethylbenzene	400	<1.0	<1.0	<1.0	<1.0	**16**	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	400	<1.0	<1.0	<1.0	<1.0	**4**	<1.0	<1.0	<1.0
Isopropylbenzene	--	<1.0	<1.0	<1.0	<1.0	**1.7**	<1.0	<1.0	<1.0
Methyl-t-butyl ether	24	<1.0	<1.0	<1.0	<1.0	<1.0	**1.6**	<1.0	<1.0
tert-Butylbenzene	--	<1.0	<1.0	<1.0	<1.0	**2**	<1.0	<1.0	<1.0
PAHs (µg/L)									
2-Methylnaphthalene	32	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1-Methylnaphthalene	160	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthene	960	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Fluorene	640	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Phenanthrene	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Fluoranthene	640	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pyrene	480	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(g,h,i)perylene	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	160	<0.2	<0.2	<0.2	<0.2	**3,700**	<0.2	<0.2	<0.2
Anthracene	4,800	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
cPAHs (µg/L)									
Benzo(a)pyrene	0.12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)anthracene	see total cPAHs	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(b)fluoranthene	see total cPAHs	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(k)fluoranthene	see total cPAHs	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chrysene	see total cPAHs	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibenzo(a,h)anthracene	see total cPAHs	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Indeno(1,2,3-cd)pyrene	see total cPAHs	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total cPAHs - TEQ	0.12	NA	NA	NA	NA	NA	NA	NA	NA

Bold = Analyte found above detection limit.
Box = Exceeds MTCA Method A Cleanup Level.
-- Indicates no cleanup level criteria available.

TABLE 3
SOIL CONSTITUENTS OF CONCERN EVALUATION
VERBEEK WRECKING
BOTHELL, WASHINGTON

Analyte	Number of Soil Samples Analyzed	Number of Samples with Detected Concentrations	Frequency of Detection (%)	Number of Soil Samples with Concentrations Exceeding Cleanup Levels	Units	Cleanup Level	Max Detection	PCOC?	Rationale Inclusion or Exclusion as PCOC
METALS									
Arsenic	56	1	1.8	0	mg/kg	20	2.4	No	Analyte did not exceed cleanup level, was only detected once above the laboratory reporting limits (1.8%), and was sufficiently tested throughout the Site; further, this analyte is not commonly associated with wrecking yards.
Barium	39	4	10.3	0	mg/kg	1,700	78	No	Analyte did not exceed cleanup level, was only detected once above the laboratory reporting limits, and was sufficiently tested throughout the Site; further, this analyte is not commonly associated with wrecking yards.
Cadmium	56	2	3.6	1	mg/kg	1.0	2.1	Yes	Analyte exceeded the cleanup level .
Chromium	56	50	89.3	0	mg/kg	120,000	14	No	Analyte not commonly associated with automobile wrecking yards.
Lead	60	38	63.3	0	mg/kg	250	100	Yes	Analyte is present in lead acid car batteries and was frequently detected (63%).
Mercury	56	0	0.0	--		--	--	No	Analyte was not detected above laboratory reporting limits and was sufficiently tested at the Site.
PETROLEUM HYDROCARBONS									
Gasoline range	279	27	9.7	13	mg/kg	100/30 (a)	28,000	Yes	Analyte exceeded the cleanup level.
Diesel range	292	16	5.5	3	mg/kg	2000	3,000	Yes	Analyte exceeded the cleanup level.
Motor oil range	280	29	10.4	3	mg/kg	2000	44,000	Yes	Analyte exceeded the cleanup level.
BTEX									
Benzene	264	15	5.7	14	mg/kg	0.03	26	Yes	Analyte exceeded the cleanup level.
Ethylbenzene	264	19	7.2	4	mg/kg	6.0	3,100	No	Analyte exceeded the cleanup level.
Toluene	264	26	9.8	4	mg/kg	4.7	240	Yes	Analyte exceeded the cleanup level.
Xylenes (total)	264	1	0.4	4	mg/kg	15	540	Yes	Analyte exceeded the cleanup level.
GLYCOLS									
Ethylene Glycol	22	1	4.5	0	mg/kg	160,000	87	No	Analyte did not exceed the cleanup level.
VOLATILES									
1,2,4-Trimethylbenzene	39	1	2.6	0	mg/kg	4,000	0.56	No	Analyte did not exceed the cleanup level.
1,3,5-Trimethylbenzene	39	1	2.6	0	mg/kg	4,000	0.14	No	Analyte did not exceed the cleanup level.
Isopropylbenzene	39	1	2.6	--	mg/kg	--	0.05	No	Analyte has no cleanup level.
Isopropyltoluene	39	2	5.1	--	mg/kg	--	1.7	No	Analyte has no cleanup level.
n-Butylbenzene	39	1	2.6	--	mg/kg	--	0.07	No	Analyte has no cleanup level.
n-Propylbenzene	39	1	2.6	--	mg/kg	--	0.05	No	Analyte has no cleanup level.
tert-Butylbenzene	39	1	2.6	--	mg/kg	--	0.07	No	Analyte has no cleanup level.

TABLE 3
SOIL CONSTITUENTS OF CONCERN EVALUATION
VERBEEK WRECKING
BOTHELL, WASHINGTON

Analyte	Number of Soil Samples Analyzed	Number of Samples with Detected Concentrations	Frequency of Detection (%)	Number of Soil Samples with Concentrations Exceeding Cleanup Levels	Units	Cleanup Level	Max Detection	PCOC?	Rationale Inclusion or Exclusion as PCOC
PAHs									
Naphthalene	91	4	4.4	2	mg/kg	4.5	34	Yes	Analyte exceeded the cleanup level.
1-Methylnaphthalene	27	1	3.7	--	mg/kg	--	0.15	No	Analyte has no cleanup level.
2-Methylnaphthalene	27	1	3.7	0	mg/kg	320	0.33	No	Analyte did not exceed the cleanup level.
1,2-Methylnaphthalenes	12	0	0.0	--	mg/kg	--	--	No	Analyte has no cleanup level.
Acenaphthene	56	1	1.8	0	mg/kg	98	0.15	No	Analyte did not exceed the cleanup level.
Fluorene	56	2	3.6	0	mg/kg	101	0.85	No	Analyte has no cleanup level.
Phenanthrene	56	2	3.6	--	mg/kg	--	0.96	No	Analyte has no cleanup level.
Fluoranthene	56	1	1.8	0	mg/kg	630	0.16	No	Analyte did not exceed the cleanup level.
Pyrene	56	2	3.6	0	mg/kg	650	0.42	No	Analyte did not exceed the cleanup level.
Benzo(g,h,i)perylene	56	0	0.0	--	mg/kg	--	--	No	Analyte has no cleanup level.
cPAHs									
Benzo(a)anthracene	56	1	1.8	--	mg/kg	TEQ	0.13	Yes	See TEQ.
Chrysene	56	1	1.8	--	mg/kg	TEQ	0.12	Yes	See TEQ.
Benzo(b)fluoranthene	56	0	0.0	--	mg/kg	TEQ	--	Yes	See TEQ.
Benzo(k)fluoranthene	56	0	0.0	--	mg/kg	TEQ	--	Yes	See TEQ.
Benzo(a)pyrene	56	0	0.0	--	mg/kg	TEQ	--	Yes	See TEQ.
Indeno(1,2,3-cd)pyrene	56	0	0.0	--	mg/kg	0.14	--	Yes	See TEQ.
Dibenz(a,h)anthracene	56	0	0.0	--	mg/kg	TEQ	--	Yes	See TEQ.
cPAH TEQ	56	1	1.8	--	mg/kg	0.14		Yes	Although cPAHs have not exceeded preliminary cleanup levels in Areas A or C, cPAHs is identified as a PCOC based on historical site uses, and presence of other petroleum hydrocarbon compounds at the Site, such as weathered motor oil.

(a) Gasoline-range petroleum hydrocarbon cleanup level is 100 mg/kg in areas where benzene is not present and 30 mg/kg where benzene is present.

TEQ = Toxicity Equivalency Quotient. TEQ is based on individual Toxicity Equivalency Factors (TEFs) of benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene.

TABLE 4
GROUNDWATER CONSTITUENTS OF CONCERN EVALUATION
VERBEEK WRECKING
BOTHELL, WASHINGTON

Analyte	Number of Soil Samples Analyzed	Number of Samples with Detected Concentrations	Frequency of Detection (%)	Units	Cleanup Level	Max Detection	Number of Soil Samples with Concentrations Exceeding Cleanup Levels	PCOC?	Rationale Inclusion or Exclusion as PCOC
TOTAL METALS									
Arsenic	0	0	--	--	--	--	--	No	Analyte not commonly associated with automobile wrecking yards.
Barium	0	0	--	--	--	--	--	No	Analyte not commonly associated with automobile wrecking yards.
Cadmium	0	0	--	--	--	--	--	Yes	Historical Site uses could have resulted in metals contamination; cadmium was detected above the preliminary cleanup level in soil.
Chromium (total)	0	0	--	--	--	--	--	No	Analyte not commonly associated with automobile wrecking yards.
Lead	0	0	--	--	--	--	--	Yes	Lead is identified as a soil PCOC because of its use in car batteries (lead acid batteries); therefore, it is a groundwater PCOC.
Mercury	0	0	--	--	--	--	--	No	Analyte was not detected above laboratory reporting limits in soil and was sufficiently tested in Site soil. Because analyte is not present in soil, there is no risk to groundwater.
PETROLEUM HYDROCARBONS									
Gasoline-Range	8	1	12.5	ug/L	1000/800 (a)	1,900	1	Yes	Analyte exceeded the cleanup level and is a soil PCOC.
Diesel-Range	8	0	0.0	ug/L	500	--	0	Yes	Analyte is a soil PCOC.
Motor oil-Range	8	0	0.0	ug/L	500	--	0	Yes	Analyte is a soil PCOC.
BTEX									
Benzene	8	3	37.5	ug/L	5	84	2	Yes	Analyte exceeded the cleanup level and is a soil PCOC.
Ethylbenzene	8	1	12.5	mg/kg	700	77	0	Yes	Analyte is a soil PCOC.
Toluene	8	1	12.5	ug/L	640	5.4	0	Yes	Analyte is a soil PCOC.
Xylenes (total)	8	3	37.5	ug/L	1600	70	0	Yes	Analyte is a soil PCOC.
VOLATILES									
Acetone	8	1	--	ug/L	800	37	0	No	Analyte did not exceed the cleanup level.
2- Butanone (MEK)	8	1	12.5	ug/L	4,800	6.9	0	No	Analyte did not exceed the cleanup level.
1,2,4-Trimethylbenzene	8	1	12.5	ug/L	400	16	0	No	Analyte did not exceed the cleanup level.
1,3,5-Trimethylbenzene	8	1	12.5	ug/L	400	4.0	0	No	Analyte did not exceed the cleanup level.
Isopropylbenzene	8	1	12.5	ug/L	--	1.70	0	No	Analyte has no cleanup level.
Methyl-t-butyl ether	8	1	12.5	ug/L	24	1.60	0	No	Analyte did not exceed cleanup level.
tert-Butylbenzene	8	1	12.5	ug/L	--	2.0	0	No	Analyte has no cleanup level.

TABLE 4
GROUNDWATER CONSTITUENTS OF CONCERN EVALUATION
VERBEEK WRECKING
BOTHELL, WASHINGTON

Analyte	Number of Soil Samples Analyzed	Number of Samples with Detected Concentrations	Frequency of Detection (%)	Units	Cleanup Level	Max Detection	Number of Soil Samples with Concentrations Exceeding Cleanup Levels	PCOC?	Rationale Inclusion or Exclusion as PCOC
PAHs									
Naphthalene	8	1	12.5	mg/kg	160	3,700	1	Yes	Analyte exceeded the cleanup level and is a soil PCOC.
2-Methylnaphthalene	8	0	0.0	mg/kg	32	--	--	No	Analyte did not exceed the cleanup level.
1-Methylnaphthalene	8	0	0.0	mg/kg	160	--	0	No	Analyte did not exceed the cleanup level.
Acenaphthene	8	0	0.0	mg/kg	960	--	--	No	Analyte did not exceed the cleanup level.
Fluorene	8	0	0.0	mg/kg	640	--	0	No	Analyte did not exceed the cleanup level.
Phenanthrene	8	0	0.0	mg/kg	--	--	0	No	Analyte has no cleanup level.
Anthracene	8	0	0.0	mg/kg	--	--	--	No	Analyte has no cleanup level.
Fluoranthene	8	0	0.0	mg/kg	640	--	0	No	Analyte did not exceed the cleanup level.
Pyrene	8	0	0.0	mg/kg	480	--	0	No	Analyte did not exceed the cleanup level.
Benzo(g,h,i)perylene	8	0	0.0	mg/kg	--	--	--	No	Analyte has no cleanup level.
cPAHs									
Benzo(a)pyrene	8	0	0.0	ug/L	0.12	--	--	Yes	See TEQ.
Benzo(a)anthracene	8	0	0.0	ug/L	TEQ	--	--	Yes	See TEQ.
Benzo(b)fluoranthene	8	0	0.0	ug/L	TEQ	--	--	Yes	See TEQ.
Benzo(k)fluoranthene	8	0	0.0	ug/L	TEQ	--	--	Yes	See TEQ.
Chrysene	8	0	0.0	ug/L	TEQ	--	--	Yes	See TEQ.
Dibenzo(a,h)anthracene	8	0	0.0	ug/L	TEQ	--	--	Yes	See TEQ.
Indeno(1,2,3-cd)pyrene	8	0	0.0	ug/L	TEQ	--	--	Yes	See TEQ.
Total cPAHs - TEQ	8	0	0.0	ug/L	0.12	--		Yes	cPAHs can be associated with weathered motor oil, which is a groundwater PCOC.

(a) TPH-G cleanup level is 1,000 ug/L in areas where benzene is not present and 800 ug/L where benzene is present.

TEQ = Toxicity Equivalency Quotient. TEQ is based on individual Toxicity Equivalency Factors (TEFs) of benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene.

TABLE 5
PRELIMINARY SOIL CLEANUP LEVELS
VERBEEK WRECKING
BOTHELL, WASHINGTON

Constituent	Protective of Direct Human Contact: MTCA Method B Unrestricted Land Use Carcinogen	Protective of Direct Human Contact: MTCA Method B Unrestricted Land Use Non-Carcinogen	Protective of Groundwater as Drinking Water: MTCA Method B (a)	Adjustments: PQL (b)	Adjustments: Soil Background (c)	**Preliminary Cleanup Level**
METALS (mg/kg)						
Arsenic	0.67	24	20 (d)	5	7	20
Barium	--	16,000	1,700	50	--	1,700
Cadmium	--	80	0.69	1	1.0	1.0
Chromium III	--	120,000	3,600,000	5	48	120,000
Chromium VI	--	240	18			18
Lead	--	250 (e)	-- (f)	5	24	250
TOTAL PETROLEUM HYDROCARBONS (mg/kg)						
Diesel-Range	--	2,000 (g)	2000 (g)	20	--	2000 (g)
Gasoline-Range	--	100/30 (g, h)	100/30 (g, h)	5.0	--	100/30 (g,h)
Oil-Range	--	2,000 (g)	2000 (g)	50	--	2000 (g)
BTEX (mg/kg)						
Benzene	18	320	0.03	0.02	--	0.03
Ethylbenzene	--	8,000	6.0	0.05	--	6.0
Toluene	--	6,400	4.7	0.05	--	4.7
Xylenes (total)	--	16,000	15	0.05	--	15
m,p-Xylene	--	160,000	84	0.05	--	84
o-Xylene	--	160,000	92	0.05	--	92
Ethylene Glycol	--	160,000	-- (f)		--	160,000
VOLATILES (mg/kg)						
1,2,4-Trimethylbenzene	--	4,000	-- (f)	0.05	--	4,000
1,3,5-Trimethylbenzene	--	4,000	-- (f)	0.05	--	4,000
Isopropylbenzene	--	--	--	0.05	--	--
Isopropyltoluene	--	--	--	0.05	--	--
n-Butylbenzene	--	--	--	0.05	--	--
n-Propylbenzene	--	--	--	0.05	--	--
tert-Butylbenzene	--	--	--	0.05	--	--

TABLE 5
PRELIMINARY SOIL CLEANUP LEVELS
VERBEEK WRECKING
BOTHELL, WASHINGTON

Constituent	Protective of Direct Human Contact: MTCA Method B Unrestricted Land Use Carcinogen	Protective of Direct Human Contact: MTCA Method B Unrestricted Land Use Non-Carcinogen	Protective of Groundwater as Drinking Water: MTCA Method B (a)	Adjustments: PQL (b)	Adjustments: Soil Background (c)	**Preliminary Cleanup Level**
PAHS (mg/kg)						
Naphthalene	--	1,600	4.5		--	4.5
1-Methylnaphthalene	--	--	-- (f)	0.10	--	--
2-Methylnaphthalene	--	320	-- (f)	0.10	--	320
1,2-Methylnaphthalenes		--	--	--	--	--
Acenaphthene	--	4,800	98	0.10	--	98
Fluorene	--	3,200	101	0.10	--	101
Phenanthrene	--	--	--	0.10	--	
Fluoranthene	--	3,200	630	0.10	--	630
Pyrene	--	2,400	650	0.10	--	650
Benzo(g,h,i)perylene	--	--	--	0.10	--	--
Benzo(a)pyrene	see total cPAHs	--	see total cPAHs	0.10	--	see total cPAHs
Benzo(a)anthracene	see total cPAHs	--	see total cPAHs	0.10	--	see total cPAHs
Benzo(b)fluoranthene	see total cPAHs	--	see total cPAHs	0.10	--	see total cPAHs
Benzo(k)fluoranthene	see total cPAHs	--	see total cPAHs	0.10	--	see total cPAHs
Chrysene	see total cPAHs	--	see total cPAHs	0.10	--	see total cPAHs
Dibenzo(a,h)anthracene	see total cPAHs	--	see total cPAHs	0.10	--	see total cPAHs
Indeno(1,2,3-cd)pyrene	see total cPAHs	--	see total cPAHs		--	see total cPAHs
Total cPAH - benzo(a)pyrene TEQ (i)	0.14	--	--	--	--	0.14

Shaded cell indicates basis for screening levels.

-- Indicates no criterion available.

(a) Calculated using fixed parameter 3-phase partitioning model, WAC 173-340-747(4) and preliminary groundwater cleanup levels shown in Table 2 of this report.

(b) Practical quantitation limit calculated using ten times Analytical Resources, Inc.'s 2008 method detection limit.

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

(d) The MTCA Method A soil cleanup level for unrestricted site use was used for arsenic because it was established based on adjustments for background. From Responsiveness Summary for the Amendments to the MTCA Cleanup Regulation Chapter 173-340 WAC 1991.

(e) No MTCA Method B criteria available. MTCA Method A criteria based on preventing unacceptable blood lead levels is presented.

(f) Value cannot be calculated because Koc value is not available for this constituent.

(g) MTCA Method A soil cleanup levels for unrestricted land use.

TABLE 5
PRELIMINARY SOIL CLEANUP LEVELS
VERBEEK WRECKING
BOTHELL, WASHINGTON

	Protective of Direct Human Contact		Protective of Groundwater as Drinking Water	Adjustments		
Constituent	MTCA Method B Unrestricted Land Use Carcinogen	MTCA Method B Unrestricted Land Use Non-Carcinogen	MTCA Method B (a)	PQL (b)	Soil Background (c)	**Preliminary Cleanup Level**

(h) MTCA Method A cleanup level is 30 mg/kg when benzene is present and 100 mg/kg when benzene is not present.

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

TABLE 6
PRELIMINARY GROUNDWATER CLEANUP LEVELS
VERBEEK WRECKING
BOTHELL, WASHINGTON

	Federal and State Criteria Protective of Drinking Water						MTCA Method B Unadjusted Site Screening Levels		MTCA Method B Adjusted Preliminary Cleanup Levels
Constituent	Federal MCL	State MCL	MTCA Method A	MTCA Method B (Formula Value) Carcinogen	MTCA Method B - Non Carcinogen	Concentration Associated with 10^{-5} Risk (if carcinogen)	**Protective of Drinking Water**	PQL (a)	**Protective of Drinking Water**
TOTAL METALS (µg/L)									
Arsenic	10	10	5.0	0.058	4.8	0.58	0.58	0.20	5.0 (c)
Barium	2,000	2,000	--	--	3,200	--	2,000	0.50	2,000
Cadmium	5.0	5.0	5.0		8.0	--	5.0	0.20	5.0
Chromium (total)	100	100	50	--	--	--	100	0.50	100
Chromium (III)	--	100	--	--	24,000	--	100	--	100
Chromium (VI)	--	100	--	--	48	--	48	--	48
Lead	15	15	15	--	--	--	15	1.0	15
TOTAL PETROLEUM HYDROCARBONS (µg/L)									
Diesel-Range	--	--	500	--	--	--			500
Gasoline-Range	--	--	1,000/800 (b)	--	--	--			1,000/800 (b)
Oil-Range	--	--	500	--	--	--			500
BTEX (µg/L)									
Benzene	5.0	5.0		0.8	32	8.0	5	1.0	5
Ethylbenzene	700	700		--	800	--	700	1.0	700
Toluene	1,000	1,000		--	640	--	640	1.0	640
Xylenes (total)	10,000	10,000		--	1,600	--	1,600	1.0	1,600
VOLATILES (µg/L)									
Acetone	--	--	--	--	800	--	800	10.0	800
2- Butanone (MEK)	--	--	--	--	4,800	--	4,800	10.0	4,800
1,2,4-Trimethylbenzene	--	--	--	--	400	--	400	1.0	400
1,3,5-Trimethylbenzene	--	--	--	--	400	--	400	1.0	400
Isopropylbenzene	--	--	--	--	--	--	--	1.0	--
Methyl-t-butyl ether	--	--	--	24	6,900	--	24	1.0	24
tert-Butylbenzene	--	--	--	--	--	--			

TABLE 6
PRELIMINARY GROUNDWATER CLEANUP LEVELS
VERBEEK WRECKING
BOTHELL, WASHINGTON

	Federal and State Criteria Protective of Drinking Water						MTCA Method B Unadjusted Site Screening Levels		MTCA Method B Adjusted Preliminary Cleanup Levels
Constituent	Federal MCL	State MCL	MTCA Method A	MTCA Method B (Formula Value) Carcinogen	MTCA Method B - Non Carcinogen	Concentration Associated with 10^{-5} Risk (if carcinogen)	**Protective of Drinking Water**	PQL (a)	**Protective of Drinking Water**
PAHs (µg/L)									
Naphthalene	--	--	160 (c)	--	160	--	160 (c)	0.38	160 (c)
2-Methylnaphthalene	--	--	160 (c)	--	32 (d)	--	32 (d)	0.32	32 (d)
1-Methylnaphthalene	--	--	160 (c)	--	--	--	160 (c)	0.41	160 (c)
Acenaphthene	--	--	--	--	960	--	960	0.42	960
Fluorene	--	--	--	--	640	--	640	0.39	640
Phenanthrene	--	--	--	--	--	--	--	--	--
Anthracene	--	--	--	--	4,800	--	4,800	0.35	4,800
Fluoranthene	--	--	--	--	640	--	640	0.26	640
Pyrene	--	--	--	--	480	--	480	0.35	480
Benzo(g,h,i)perylene	--	--	--	--	--	--	--	--	--
cPAHs (µg/L)									
Benzo(a)pyrene	0.20	0.20	see total cPAHs	0.012	--	0.12	0.12	0.014	0.12
Benzo(a)anthracene	--	--	see total cPAHs	see total cPAHs	--	--	see total cPAHs	0.020	see total cPAHs
Benzo(b)fluoranthene	--	--	see total cPAHs	see total cPAHs	--	--	see total cPAHs	0.017	see total cPAHs
Benzo(k)fluoranthene	--	--	see total cPAHs	see total cPAHs	--	--	see total cPAHs	0.036	see total cPAHs
Chrysene	--	--	see total cPAHs	see total cPAHs	--	--	see total cPAHs	0.019	see total cPAHs
Dibenzo(a,h)anthracene	--	--	see total cPAHs	see total cPAHs	--	--	see total cPAHs	0.014	see total cPAHs
Indeno(1,2,3-cd)pyrene	--	--	see total cPAHs	see total cPAHs	--	--	see total cPAHs	0.017	see total cPAHs
Total cPAHs - TEQ	--	--	0.10	0.012	--	0.12 (e)	0.12	--	0.12 (e)

Shaded cell indicates basis for screening levels.

-- Indicates no cleanup level criteria available.

(a) Practical quantitation limit based on reporting limit from previous investigation except for metals. Metals PQL is based on Analytical Resources, Inc. laboratory reporting limit for analytical method 6020.

(b) Preliminary cleanup level of gasoline-range petroleum hydrocarbons is 800 ug/L if benzene is present, or is 1,000 ug/L if no detectable benzene is present in groundwater.

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

(d) The concentration of 2-methylnapthalene cannot exceed 32 ug/L. The total concentration of naphthalene, 1-methylnaphthelene, and 2-methylnaphthalene cannot exceed 160 ug/L.

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

TABLE 7
AREA A - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-B-09	A-B-10	A-B-12	A-B-15	A-B-17	A-B-19	A-B-23	A-B-31
Sample Location ID		9	10	12	15	17	19	23	31
Top Depth		16	10	7	7	6	6		4
Bottom Depth	Preliminary	16	10	7	7	6	6		6
Lab Sample ID	Cleanup Levels	07/25/08	07/25/08	07/25/08	07/25/08	07/25/08	07/25/08	07/29/08	08/07/08
METALS (mg/kg)									
Arsenic	20								<2
Barium	1700								
Cadmium	1								2.1
Chromium	120000								3.3
Lead	250								12
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<50	<50	<50	<50	<50	<50	<20	<20
Gasoline-Range	30	<20	<20	<20	<20	<20	<20	<5	<5
Oil-Range	2000	<100	<100	<100	<100	<100	<100	1600	<50
BTEX (mg/kg)									
Benzene	0.03							<0.02	<0.02
Ethylbenzene	6							<0.05	<0.05
Toluene	4.7							<0.05	<0.05
Xylenes	15							<0.05	<0.05
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000								
1,3,5-Trimethylbenzene	4000								
Isopropylbenzene									
Isopropyltoluene									
n-Butylbenzene									
n-Propylbenzene									
tert-Butylbenzene									
PAHs (mg/kg)									
Naphthalene	4.5								<0.05
1-Methylnaphthalene									
2-Methylnaphthalene	320								
Acenaphthene	98								<0.1
Fluorene	101								<0.1
Phenanthrene									<0.1
Fluoranthene	630								<0.1
Pyrene	650								<0.1
Benzo(ghi)perylene									<0.1
Benzo(a)pyrene	2.3								<0.1
Benzo(a)anthracene									<0.1
Benzo(b)fluoranthene									<0.1
Benzo(k)fluoranthene									<0.1
Chrysene									<0.1
Dibenzo(a,h)anthracene									<0.1
Indeno(1,2,3-cd)pyrene									<0.1
Total cPAH teq									NA

TABLE 7
AREA A - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-B-32	A-B-33	A-B-34	A-B-35	A-B-36	A-B-37	A-B-38	A-B-41
Sample Location ID		32	33	34	35	36	37	38	41
Top Depth		4	4	4	4	10	5	5	5
Bottom Depth	Preliminary	6	6	6	6	10	5	5	5
Lab Sample ID	Cleanup Levels	08/07/08	08/07/08	08/07/08	08/07/08	08/07/08	08/07/08	08/07/08	08/07/08
METALS (mg/kg)									
Arsenic	20	<2	<2	<2	<2		<2		
Barium	1700								
Cadmium	1	<1	<1	<1	<1		<1		
Chromium	120000	**4.2**	**12**	**6.4**	**10**		**8.2**		
Lead	250	**22**	**6.7**	**5.3**	**18**		**46**		
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	**5.9**	**12**	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	**120**	**240**	**240**	**200**
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	**0.1**	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	**0.18**	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	**0.55**	<0.05	<0.05	<0.05	<0.05
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000								
1,3,5-Trimethylbenzene	4000								
Isopropylbenzene									
Isopropyltoluene									
n-Butylbenzene									
n-Propylbenzene									
tert-Butylbenzene									
PAHs (mg/kg)									
Naphthalene	4.5	<0.05	<0.05	<0.05	<0.05		<0.05		
1-Methylnaphthalene									
2-Methylnaphthalene	320								
Acenaphthene	98	<0.1	<0.1	<0.1	<0.1		<0.1		
Fluorene	101	<0.1	<0.1	<0.1	<0.1		<0.1		
Phenanthrene		<0.1	<0.1	<0.1	<0.1		<0.1		
Fluoranthene	630	<0.1	<0.1	<0.1	<0.1		<0.1		
Pyrene	650	<0.1	<0.1	<0.1	<0.1		<0.1		
Benzo(ghi)perylene		<0.1	<0.1	<0.1	<0.1		<0.1		
Benzo(a)pyrene	2.3	<0.1	<0.1	<0.1	<0.1		<0.1		
Benzo(a)anthracene		<0.1	<0.1	<0.1	<0.1		<0.1		
Benzo(b)fluoranthene		<0.1	<0.1	<0.1	<0.1		<0.1		
Benzo(k)fluoranthene		<0.1	<0.1	<0.1	<0.1		<0.1		
Chrysene		<0.1	<0.1	<0.1	<0.1		<0.1		
Dibenzo(a,h)anthracene		<0.1	<0.1	<0.1	<0.1		<0.1		
Indeno(1,2,3-cd)pyrene		<0.1	<0.1	<0.1	<0.1		<0.1		
Total cPAH teq		NA	NA	NA	NA		NA		

TABLE 7
AREA A - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-B-44	A-B-57	A-B-58	A-B-59	A-B-65	A-B-66	A-B-73	A-S-06
Sample Location ID		44	57	58	59	65	66	73	6
Top Depth		12		3	3	3	6	3	8
Bottom Depth	Preliminary	12		3	3	3	6	3	8
Lab Sample ID	Cleanup Levels	08/07/08	08/11/08	08/11/08	08/11/08	08/11/08	08/11/08	08/11/08	07/25/08
METALS (mg/kg)									
Arsenic	20		<5	<5	<5	<5	<5	<5	
Barium	1700		<50	<50	<50	**78**	**51**	<50	
Cadmium	1		<1	<1	<1	<1	<1	<1	
Chromium	120000		<5	<5	**6**	**12**	**9.8**	<5	
Lead	250		<5	<5	<5	<5	<5	<5	
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<50
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<20
Oil-Range	2000	<50	<40	<40	<40	<40	<40	<40	<100
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.08**	
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.38**	
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.46**	
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
1,3,5-Trimethylbenzene	4000		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Isopropylbenzene			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Isopropyltoluene			<0.05	<0.05	<0.05	<0.05	<0.05	**0.1**	
n-Butylbenzene			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
n-Propylbenzene			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
tert-Butylbenzene			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
PAHs (mg/kg)									
Naphthalene	4.5		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
1-Methylnaphthalene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
2-Methylnaphthalene	320		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Acenaphthene	98		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Fluorene	101		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Phenanthrene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Fluoranthene	630		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Pyrene	650		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Benzo(ghi)perylene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Benzo(a)pyrene	2.3		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Benzo(a)anthracene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Benzo(b)fluoranthene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Benzo(k)fluoranthene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Chrysene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Dibenzo(a,h)anthracene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Indeno(1,2,3-cd)pyrene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Total cPAH teq			NA	NA	NA	NA	NA	NA	

TABLE 7
AREA A - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-S-07	A-S-08	A-S-11	A-S-13	A-S-14	A-S-16	A-S-18	A-S-20
Sample Location ID		7	8	11	13	14	16	18	20
Top Depth		9	8	7	9	6	6	6	4
Bottom Depth	Preliminary	9	8	7	9	6	6	6	4
Lab Sample ID	Cleanup Levels	07/25/08	07/25/08	07/25/08	07/25/08	07/25/08	07/25/08	07/25/08	07/25/08
METALS (mg/kg)									
Arsenic	20								
Barium	1700								
Cadmium	1								
Chromium	120000								
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
Gasoline-Range	30	<20	<20	<20	<20	<20	<20	<20	<20
Oil-Range	2000	<100	<100	<100	<100	<100	<100	<100	<100
BTEX (mg/kg)									
Benzene	0.03								
Ethylbenzene	6								
Toluene	4.7								
Xylenes	15								
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000								
1,3,5-Trimethylbenzene	4000								
Isopropylbenzene									
Isopropyltoluene									
n-Butylbenzene									
n-Propylbenzene									
tert-Butylbenzene									
PAHs (mg/kg)									
Naphthalene	4.5								
1-Methylnaphthalene									
2-Methylnaphthalene	320								
Acenaphthene	98								
Fluorene	101								
Phenanthrene									
Fluoranthene	630								
Pyrene	650								
Benzo(ghi)perylene									
Benzo(a)pyrene	2.3								
Benzo(a)anthracene									
Benzo(b)fluoranthene									
Benzo(k)fluoranthene									
Chrysene									
Dibenzo(a,h)anthracene									
Indeno(1,2,3-cd)pyrene									
Total cPAH teq									

TABLE 7
AREA A - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-S-21	A-S-22	A-S-26	A-S-27	A-S-29	A-S-30	A-S-39	A-S-40
Sample Location ID		21	22	26	27	29	30	39	40
Top Depth				0	0	0	0	5	5
Bottom Depth	Preliminary			4	4	4	4	12	12
Lab Sample ID	Cleanup Levels	07/29/08	07/29/08	08/07/08	08/07/08	08/07/08	08/07/08	08/07/08	08/07/08
METALS (mg/kg)									
Arsenic	20								
Barium	1700								
Cadmium	1								
Chromium	120000								
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	**190**	<50	<50	<50	<50	<50	**76**	**140**
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000								
1,3,5-Trimethylbenzene	4000								
Isopropylbenzene									
Isopropyltoluene									
n-Butylbenzene									
n-Propylbenzene									
tert-Butylbenzene									
PAHs (mg/kg)									
Naphthalene	4.5								
1-Methylnaphthalene									
2-Methylnaphthalene	320								
Acenaphthene	98								
Fluorene	101								
Phenanthrene									
Fluoranthene	630								
Pyrene	650								
Benzo(ghi)perylene									
Benzo(a)pyrene	2.3								
Benzo(a)anthracene									
Benzo(b)fluoranthene									
Benzo(k)fluoranthene									
Chrysene									
Dibenzo(a,h)anthracene									
Indeno(1,2,3-cd)pyrene									
Total cPAH teq									

TABLE 7
AREA A - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-S-42	A-S-43	A-S-60	A-S-61	A-S-62	A-S-63	A-S-64	A-S-68
Sample Location ID		42	43	60	61	62	63	64	68
Top Depth		5	5	3	2	2	2	3	4
Bottom Depth	Preliminary	12	12	3	2	2	2	3	4
Lab Sample ID	Cleanup Levels	08/07/08	08/07/08	08/11/08	08/11/08	08/11/08	08/11/08	08/11/08	08/11/08
METALS (mg/kg)									
Arsenic	20		<2	<5	<5	<5	<5	<5	<5
Barium	1700			<50	<50	<50	<50	<50	<50
Cadmium	1		<1	<1	<1	<1	<1	<1	<1
Chromium	120000		**3.7**	**9.3**	**10**	**6**	**7**	<5	**9.8**
Lead	250		**88**	<5	<5	<5	<5	<5	**39**
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	**100**	<40	<40	<40	<40	<40	<40
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.33**	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	**0.05**	<0.05	<0.05	**1.2**	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**1.3**	<0.05
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,3,5-Trimethylbenzene	4000			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Isopropylbenzene				<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Isopropyltoluene				<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
n-Butylbenzene				<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
n-Propylbenzene				<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
tert-Butylbenzene				<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
PAHs (mg/kg)									
Naphthalene	4.5		<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-Methylnaphthalene				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylnaphthalene	320			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	98		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	101		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	630		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	650		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	2.3		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total cPAH teq			NA	NA	NA	NA	NA	NA	NA

TABLE 7
AREA A - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-S-70	A-S-72	A-S-74	A-RP1-45	A-RP1-46	A-RP1-47	A-RP1-48	A-RP1-49
Sample Location ID		70	72	74	45	46	47	48	49
Top Depth		4	4	3					
Bottom Depth	Preliminary	4	4	3					
Lab Sample ID	Cleanup Levels	08/11/08	08/11/08	08/11/08	08/07/08	08/07/08	08/07/08	08/07/08	08/07/08
METALS (mg/kg)									
Arsenic	20	<5	<5	<5	<2.0			<2.0	
Barium	1700	<50	<50	<50					
Cadmium	1	<1	<1	<1	<1.0			<1.0	
Chromium	120000	**10**	**12**	**9.3**	**4.5**			**4**	
Lead	250	<5	<5	<5	**36**			**37**	
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5.0	<5.0	<5.0	<5.0	<5.0
Oil-Range	2000	<40	<40	<40	**400**	**550**	**170**	**230**	**170**
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	4.7	**0.09**	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Xylenes	15	**0.06**	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000	<0.05	<0.05	<0.05					
1,3,5-Trimethylbenzene	4000	<0.05	<0.05	<0.05					
Isopropylbenzene		<0.05	<0.05	<0.05					
Isopropyltoluene		**1.7**	<0.05	<0.05					
n-Butylbenzene		<0.05	<0.05	<0.05					
n-Propylbenzene		<0.05	<0.05	<0.05					
tert-Butylbenzene		<0.05	<0.05	<0.05					
PAHs (mg/kg)									
Naphthalene	4.5	<0.1	<0.1	<0.1	<0.050			<0.050	
1-Methylnaphthalene		<0.1	<0.1	<0.1					
2-Methylnaphthalene	320	<0.1	<0.1	<0.1					
Acenaphthene	98	<0.1	<0.1	<0.1	<0.10			<0.10	
Fluorene	101	<0.1	<0.1	<0.1	<0.10			<0.10	
Phenanthrene		<0.1	<0.1	<0.1	<0.10			<0.10	
Fluoranthene	630	<0.1	<0.1	<0.1	<0.10			<0.10	
Pyrene	650	<0.1	<0.1	<0.1	<0.10			<0.10	
Benzo(ghi)perylene		<0.1	<0.1	<0.1	<0.10			<0.10	
Benzo(a)pyrene	2.3	<0.1	<0.1	<0.1	<0.10			<0.10	
Benzo(a)anthracene		<0.1	<0.1	<0.1	<0.10			<0.10	
Benzo(b)fluoranthene		<0.1	<0.1	<0.1	<0.10			<0.10	
Benzo(k)fluoranthene		<0.1	<0.1	<0.1	<0.10			<0.10	
Chrysene		<0.1	<0.1	<0.1	<0.10			<0.10	
Dibenzo(a,h)anthracene		<0.1	<0.1	<0.1	<0.10			<0.10	
Indeno(1,2,3-cd)pyrene		<0.1	<0.1	<0.1	<0.10			<0.10	
Total cPAH teq		NA	NA	NA	NA			NA	

TABLE 7
AREA A - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-RP1-50	A-RP1-51	A-RP1-52	A-RP1-53	A-RP1-54	A-RP1-55	A-RP1-56	A-RP2-20
Sample Location ID		50	51	52	53	54	55	56	20
Top Depth									
Bottom Depth									
Lab Sample ID	Preliminary Cleanup Levels	08/07/08	08/07/08	08/07/08	08/07/08	08/07/08	08/07/08	08/07/08	08/27/08
METALS (mg/kg)									
Arsenic	20		<2.0			<2.0			
Barium	1700								
Cadmium	1		<1.0			<1.0			
Chromium	120000		**5.2**			**4.9**			
Lead	250		**27**			**54**			
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5
Oil-Range	2000	<50	<50	**200**	**250**	**160**	**210**	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.02
Ethylbenzene	6	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05
Toluene	4.7	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05
Xylenes	15	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000								
1,3,5-Trimethylbenzene	4000								
Isopropylbenzene									
Isopropyltoluene									
n-Butylbenzene									
n-Propylbenzene									
tert-Butylbenzene									
PAHs (mg/kg)									
Naphthalene	4.5		<0.050			<0.050			
1-Methylnaphthalene									
2-Methylnaphthalene	320								
Acenaphthene	98		<0.10			<0.10			
Fluorene	101		<0.10			<0.10			
Phenanthrene			<0.10			<0.10			
Fluoranthene	630		<0.10			<0.10			
Pyrene	650		<0.10			<0.10			
Benzo(ghi)perylene			<0.10			<0.10			
Benzo(a)pyrene	2.3		<0.10			<0.10			
Benzo(a)anthracene			<0.10			<0.10			
Benzo(b)fluoranthene			<0.10			<0.10			
Benzo(k)fluoranthene			<0.10			<0.10			
Chrysene			<0.10			<0.10			
Dibenzo(a,h)anthracene			<0.10			<0.10			
Indeno(1,2,3-cd)pyrene			<0.10			<0.10			
Total cPAH teq			NA			NA			

TABLE 7
AREA A - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Top Depth Bottom Depth Lab Sample ID	Preliminary Cleanup Levels	A-RP2-21 21 08/27/08	A-RP2-22 22 08/27/08	A-RP2-23 23 08/27/08	A-RP2-24 24 08/27/08	A-RP2-25 25 08/27/08	A-RP2-26 26 08/27/08	A-RP2-27 27 08/27/08	A-RP2-28 28 08/27/08
METALS (mg/kg)									
Arsenic	20								
Barium	1700								
Cadmium	1								
Chromium	120000								
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000								
1,3,5-Trimethylbenzene	4000								
Isopropylbenzene									
Isopropyltoluene									
n-Butylbenzene									
n-Propylbenzene									
tert-Butylbenzene									
PAHs (mg/kg)									
Naphthalene	4.5								
1-Methylnaphthalene									
2-Methylnaphthalene	320								
Acenaphthene	98								
Fluorene	101								
Phenanthrene									
Fluoranthene	630								
Pyrene	650								
Benzo(ghi)perylene									
Benzo(a)pyrene	2.3								
Benzo(a)anthracene									
Benzo(b)fluoranthene									
Benzo(k)fluoranthene									
Chrysene									
Dibenzo(a,h)anthracene									
Indeno(1,2,3-cd)pyrene									
Total cPAH teq									

TABLE 7
AREA A - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Top Depth Bottom Depth Lab Sample ID	Preliminary Cleanup Levels	A-RP2-29 29 08/27/08	A-RP2-30 30 08/27/08	A-RP2-31 31 08/27/08	A-RP2-32 32 08/27/08	A-RP2-33 33 08/27/08	A-RP2-34 34 08/27/08	A-RP2-35 35 08/27/08	A-RP3-118 118 09/29/08
METALS (mg/kg)									
Arsenic	20								
Barium	1700								
Cadmium	1								
Chromium	120000								
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000								
1,3,5-Trimethylbenzene	4000								
Isopropylbenzene									
Isopropyltoluene									
n-Butylbenzene									
n-Propylbenzene									
tert-Butylbenzene									
PAHs (mg/kg)									
Naphthalene	4.5								
1-Methylnaphthalene									
2-Methylnaphthalene	320								
Acenaphthene	98								
Fluorene	101								
Phenanthrene									
Fluoranthene	630								
Pyrene	650								
Benzo(ghi)perylene									
Benzo(a)pyrene	2.3								
Benzo(a)anthracene									
Benzo(b)fluoranthene									
Benzo(k)fluoranthene									
Chrysene									
Dibenzo(a,h)anthracene									
Indeno(1,2,3-cd)pyrene									
Total cPAH teq									

TABLE 7
AREA A - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-RP3-119	A-RP3-122	A-RP3-123	A-RP3-124	A-RP3-125	A-RP3-126	A-RP3-127	A-RP3-128
Sample Location ID		119	122	123	124	125	126	127	128
Top Depth									
Bottom Depth	Preliminary								
Lab Sample ID	Cleanup Levels	09/29/08	09/29/08	09/29/08	09/29/08	09/29/08	09/29/08	09/29/08	09/29/08
METALS (mg/kg)									
Arsenic	20								
Barium	1700								
Cadmium	1								
Chromium	120000								
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000								
1,3,5-Trimethylbenzene	4000								
Isopropylbenzene									
Isopropyltoluene									
n-Butylbenzene									
n-Propylbenzene									
tert-Butylbenzene									
PAHs (mg/kg)									
Naphthalene	4.5								
1-Methylnaphthalene									
2-Methylnaphthalene	320								
Acenaphthene	98								
Fluorene	101								
Phenanthrene									
Fluoranthene	630								
Pyrene	650								
Benzo(ghi)perylene									
Benzo(a)pyrene	2.3								
Benzo(a)anthracene									
Benzo(b)fluoranthene									
Benzo(k)fluoranthene									
Chrysene									
Dibenzo(a,h)anthracene									
Indeno(1,2,3-cd)pyrene									
Total cPAH teq									

TABLE 7
AREA A - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-RP3-129	A-RP3-130	A-RP3-131	A-RP3-132	A-RP4-51	A-RP4-52	A-RP4-53	A-RP4-54
Sample Location ID		129	130	131	132	51	52	53	54
Top Depth									
Bottom Depth									
Lab Sample ID	Preliminary Cleanup Levels	09/29/08	09/29/08	09/29/08	09/29/08	09/04/08	09/04/08	09/04/08	09/04/08
METALS (mg/kg)									
Arsenic	20								
Barium	1700								
Cadmium	1								
Chromium	120000								
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000								
1,3,5-Trimethylbenzene	4000								
Isopropylbenzene									
Isopropyltoluene									
n-Butylbenzene									
n-Propylbenzene									
tert-Butylbenzene									
PAHs (mg/kg)									
Naphthalene	4.5								
1-Methylnaphthalene									
2-Methylnaphthalene	320								
Acenaphthene	98								
Fluorene	101								
Phenanthrene									
Fluoranthene	630								
Pyrene	650								
Benzo(ghi)perylene									
Benzo(a)pyrene	2.3								
Benzo(a)anthracene									
Benzo(b)fluoranthene									
Benzo(k)fluoranthene									
Chrysene									
Dibenzo(a,h)anthracene									
Indeno(1,2,3-cd)pyrene									
Total cPAH teq									

TABLE 7
AREA A - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-RP4-55	A-RP4-56	A-RP4-57	A-RP4-58	A-RP4-60	A-RP4-61	A-RP4-62	A-RP4-65
Sample Location ID		55	56	57	58	60	61	62	65
Top Depth									
Bottom Depth									
Lab Sample ID	Preliminary Cleanup Levels	09/04/08	09/04/08	09/04/08	09/04/08	09/04/08	09/04/08	09/04/08	09/04/08
METALS (mg/kg)									
Arsenic	20								
Barium	1700								
Cadmium	1								
Chromium	120000								
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	**12**	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	**180**	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	**0.11**	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	**0.21**	<0.05	<0.05	<0.05	<0.05
VOLATILES (mg/kg)									
1,2,4-Trimethylbenzene	4000								
1,3,5-Trimethylbenzene	4000								
Isopropylbenzene									
Isopropyltoluene									
n-Butylbenzene									
n-Propylbenzene									
tert-Butylbenzene									
PAHs (mg/kg)									
Naphthalene	4.5								
1-Methylnaphthalene									
2-Methylnaphthalene	320								
Acenaphthene	98								
Fluorene	101								
Phenanthrene									
Fluoranthene	630								
Pyrene	650								
Benzo(ghi)perylene									
Benzo(a)pyrene	2.3								
Benzo(a)anthracene									
Benzo(b)fluoranthene									
Benzo(k)fluoranthene									
Chrysene									
Dibenzo(a,h)anthracene									
Indeno(1,2,3-cd)pyrene									
Total cPAH teq									

TABLE 7
AREA A - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location		A-RP4-66	A-RP4-67
Sample Location ID		66	67
Top Depth			
Bottom Depth			
Lab Sample ID	Preliminary Cleanup Levels	09/04/08	09/04/08
METALS (mg/kg)			
Arsenic	20		
Barium	1700		
Cadmium	1		
Chromium	120000		
Lead	250		
TOTAL PETROLEUM HYDROCARBONS (mg/kg)			
Diesel-Range	2000	<20	<20
Gasoline-Range	30	<5	<5
Oil-Range	2000	<50	<50
BTEX (mg/kg)			
Benzene	0.03	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05
Toluene	4.7	<0.05	<0.05
Xylenes	15	<0.05	<0.05
VOLATILES (mg/kg)			
1,2,4-Trimethylbenzene	4000		
1,3,5-Trimethylbenzene	4000		
Isopropylbenzene			
Isopropyltoluene			
n-Butylbenzene			
n-Propylbenzene			
tert-Butylbenzene			
PAHs (mg/kg)			
Naphthalene	4.5		
1-Methylnaphthalene			
2-Methylnaphthalene	320		
Acenaphthene	98		
Fluorene	101		
Phenanthrene			
Fluoranthene	630		
Pyrene	650		
Benzo(ghi)perylene			
Benzo(a)pyrene	2.3		
Benzo(a)anthracene			
Benzo(b)fluoranthene			
Benzo(k)fluoranthene			
Chrysene			
Dibenzo(a,h)anthracene			
Indeno(1,2,3-cd)pyrene			
Total cPAH teq			

Bold = Analyte found above detection limit.
Box = Exceeds MTCA Method A Cleanup Level.

TABLE 8
AREA C - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Lab Sample ID	Preliminary Cleanup Levels	C-B-01 1 08/22/08	C-B-02 2 08/22/08	C-B-03 3 08/22/08	C-B-04 4 08/22/08	C-B-05 5 08/22/08	C-B-06 6 08/22/08	C-B-07 7 08/22/08	C-B-08 8 08/22/08
METALS (mg/kg)									
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TABLE 8
AREA C - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Lab Sample ID	Preliminary Cleanup Levels	C-B-09 9 08/22/08	C-B-10 10 08/22/08	C-B-100 100 09/16/08	C-B-102 102 09/16/08	C-B-110 110 09/19/08	C-B-111 111 09/19/08	C-B-112 112 09/19/08	C-B-114 114 09/19/08
METALS (mg/kg)									
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	18
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.3

TABLE 8
AREA C - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Lab Sample ID	Preliminary Cleanup Levels	C-B-12 12 08/22/08	C-B-13 13 08/22/08	C-B-133 133 10/01/08	C-B-134 134 10/01/08	C-B-135 135 10/01/08	C-B-136 136 10/01/08	C-B-137 137 10/01/08	C-B-139 139 10/01/08
METALS (mg/kg)									
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TABLE 8
AREA C - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Lab Sample ID	Preliminary Cleanup Levels	C-B-141 141 10/01/08	C-B-149 149 10/03/08	C-B-150 150 10/03/08	C-B-151 151 10/03/08	C-B-152 152 10/03/08	C-B-154 154 10/03/08	C-B-155 155 10/03/08	C-B-157 157 10/03/08
METALS (mg/kg)									
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	**5.9**	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	**0.1**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	**0.29**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TABLE 8
AREA C - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Lab Sample ID	Preliminary Cleanup Levels	C-B-41 41 09/04/08	C-B-42 42 09/04/08	C-B-44 44 09/04/08	C-B-49 49 09/04/08	C-B-84 84 09/16/08	C-B-85 85 09/16/08	C-B-90 90 09/16/08	C-B-91 91 09/16/08
METALS (mg/kg)									
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TABLE 8
AREA C - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Lab Sample ID	Preliminary Cleanup Levels	C-B-92 92 09/16/08	C-B-93 93 09/16/08	C-B-94 94 09/16/08	C-B-97 97 09/16/08	C-S-101 101 09/16/08	C-S-104 104 09/19/08	C-S-105 105 09/19/08	C-S-107 107 09/19/08
METALS (mg/kg)									
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	**12**
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.05**
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.3**
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.32**

TABLE 8
AREA C - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Lab Sample ID	Preliminary Cleanup Levels	C-S-108 108 09/19/08	C-S-109 109 09/19/08	C-S-133A 133 09/29/08	C-S-134A 134 09/29/08	C-S-138 138 10/01/08	C-S-14 14 08/22/08	C-S-142 142 10/01/08	C-S-143 143 10/01/08
METALS (mg/kg)									
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	**8.8**	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	**0.094**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	**0.096**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TABLE 8
AREA C - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Lab Sample ID	Preliminary Cleanup Levels	C-S-144 144 10/01/08	C-S-145 145 10/01/08	C-S-15 15 08/22/08	C-S-153 153 10/03/08	C-S-39 39 09/04/08	C-S-40 40 09/04/08	C-S-43 43 09/04/08	C-S-45 45 09/04/08
METALS (mg/kg)									
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TABLE 8
AREA C - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Lab Sample ID	Preliminary Cleanup Levels	C-S-46 46 09/04/08	C-S-47 47 09/04/08	C-S-48 48 09/04/08	C-S-86 86 09/16/08	C-S-87 87 09/16/08	C-S-88 88 09/16/08	C-S-89 89 09/16/08	C-S-95 95 09/16/08
METALS (mg/kg)									
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TABLE 8
AREA C - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Lab Sample ID	Preliminary Cleanup Levels	C-S-96 96 09/16/08	C-S-98 98 09/16/08	C-S-99 99 09/16/08	C-RP1-70 70 09/09/08	C-RP1-71 71 09/09/08	C-RP1-72 72 09/09/08	C-RP1-73 73 09/09/08	C-RP1-74 74 09/09/08
METALS (mg/kg)									
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TABLE 8
AREA C - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Lab Sample ID	Preliminary Cleanup Levels	C-RP1-75 75 09/09/08	C-RP1-76 76 09/09/08	C-RP1-77 77 09/09/08	C-RP1-78 78 09/09/08	C-RP2-79 79 09/09/08	C-RP2-80 80 09/09/08	C-RP2-81 81 09/09/08	C-RP2-82 82 09/09/08
METALS (mg/kg)									
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TABLE 8
AREA C - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Lab Sample ID	Preliminary Cleanup Levels	C-RP2-83 83 09/09/08	C-RP4-115 115 09/24/08	C-RP4-116 116 09/24/08	C-RP4-117 117 09/24/08	C-RP5-158 158 10/03/08	C-RP5-159 159 10/03/08	C-RP5-160 160 10/03/08	C-RP5-161 161 10/03/08
METALS (mg/kg)									
Lead	250								
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	49	120	140	<20	<20	<20	<20
Gasoline-Range	30	<5	140	390	270	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	0.035	0.15	0.12	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	0.51	0.94	0.22	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	0.52	0.37	0.15	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	5.2	10	5.5	<0.05	<0.05	<0.05	<0.05

TABLE 8
AREA C - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Lab Sample ID	Preliminary Cleanup Levels	C-RP5-162 162 10/03/08	C-RP5-163 163 10/03/08	C-RP5-164 164 10/03/08	C-RP5-165 165 10/03/08	C-RP5-166 166 10/03/08	C-RP5-167 167 10/03/08	C-RP6-168 149 (168) 10/13/08	C-RP6-169 150 (169) 10/13/08
METALS (mg/kg)									
Lead	250							**5.6**	
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TABLE 8
AREA C - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Lab Sample ID	Preliminary Cleanup Levels	C-RP6-170 151 (170) 10/13/08	C-RP6-171 152 (171) 10/13/08	C-RP6-172 153 (172) 10/13/08	C-RP6-173 154 (173) 10/13/08	C-RP6-174 155 (174) 10/13/08	C-RP6-175 156 (175) 10/13/08	C-RP6-176 157 (176) 10/13/08	C-RP6-177 158 (177) 10/13/08
METALS (mg/kg)									
Lead	250						**82**		
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)									
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TABLE 8
AREA C - FINAL CONFIRMATION AND REMEDIATION PILE SAMPLE ANALYTICAL RESULTS
VERBEEK WRECKING
BOTHELL, WASHINGTON

General Location Sample Location ID Lab Sample ID	Preliminary Cleanup Levels	C-RP6-178 159 (178) 10/13/08	C-RP6-179 160 (179) 10/13/08	C-RP6-180 161 (180) 10/13/08	C-RP6-181 162 (181) 10/13/08	C-RP6-182 163 (182) 10/13/08	C-RP6-183 164 (183) 10/13/08	C-RP6-184 165 (184) 10/13/08
METALS (mg/kg)								
Lead	250		**18**				**8.7**	
TOTAL PETROLEUM HYDROCARBONS (mg/kg)								
Diesel-Range	2000	<20	<20	<20	<20	<20	<20	<20
Gasoline-Range	30	<5	<5	<5	<5	<5	<5	<5
Oil-Range	2000	<50	<50	<50	<50	<50	<50	<50
BTEX (mg/kg)								
Benzene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Bold = Analyte found above detection limit.
Box = Exceeds MTCA Method A Cleanup Level.

TABLE 9
SUMMARY OF REMEDIAL INVESTIGATION SOIL AND GROUNDWATER SAMPLE LOCATIONS
VERBEEK WRECKING
BOTHELL, WASHINGTON

Location ID	Location	Data Gap Addressed	Sample Types	Surface Soil Analyses	Subsurface Soil Analyses	Groundwater/ Stormwater Analyses
MW-3	Area A	Verify effectiveness of interim cleanup action, evaluate groundwater quality, characterize surface soil conditions in area of former remediation soil piles.	Surface Soil; Subsurface Soil [backfill testing (approx. 2-4 ft BGS); excavation bottom (based on visual)]; Groundwater sample from MW-3	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)
MW-4	Area A	Verify effectiveness of interim cleanup action, evaluate groundwater quality, characterize surface soil conditions in area of former remediation soil piles.	Surface Soil; Subsurface Soil [backfill testing (approx. 2-4 ft BGS); excavation bottom (based on visual)]; Groundwater sample from MW-4	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)
A-B1	Area A	Verify effectiveness of interim cleanup action, evaluate groundwater quality, characterize surface soil conditions in area of former remediation soil piles.	Surface Soil; Subsurface Soil [backfill testing (approx. 2-4 ft BGS); excavation bottom (based on visual)]	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	--
A-B2	Area A	Verify effectiveness of interim cleanup action, evaluate groundwater quality, characterize surface soil conditions in area of former remediation soil piles.	Surface Soil; Subsurface Soil [backfill testing (approx. 2-4 ft BGS); excavation bottom (based on visual)]	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	--
A-S1	Area A	Evaluate surface soil conditions in area of former remediation soil piles.	Surface Soil	TPH-HCID (a), Metals (b), PAHs, PCBs, BTEX (archive)	--	--
A-S2	Area A	Evaluate surface soil in undisturbed portions of the area due to previous use.	Surface Soil	TPH-HCID (a), Metals (b), PAHs, PCBs, BTEX (archive)	--	--
A-S3	Area A	Evaluate surface soil in undisturbed portions of the area due to previous use.	Surface Soil	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	--	--
A-GP-1	Area A	Quality of gravel stock piles	Surface (stockpile)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	--	--
A-GP-2	Area A	Quality of gravel stock piles	Surface (stockpile)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	--	--
A-GP-3	Area A	Quality of gravel stock piles	Surface (stockpile)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	--	--

TABLE 9
SUMMARY OF REMEDIAL INVESTIGATION SOIL AND GROUNDWATER SAMPLE LOCATIONS
VERBEEK WRECKING
BOTHELL, WASHINGTON

Location ID	Location	Data Gap Addressed	Sample Types	Surface Soil Analyses	Subsurface Soil Analyses	Groundwater/ Stormwater Analyses
A-GP-4	Area A	Quality of gravel stock piles	Surface (stockpile)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	–	–
A-GP-5	Area A	Quality of gravel stock piles	Surface (stockpile)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	–	–
A-GP-6	Area A	Quality of gravel stock piles	Surface (stockpile)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	–	–
SW-1	Area B	Evaluate stormwater quality at the most downgradient stormwater catch basing on Site	–	–	–	TPH-HCID (a), Metals (c), PAHs, BTEX (archive)
MW-5	Area C	Evaluate conditions within former vehicle processing area.	Subsurface Soil (capillary fringe); Groundwater sample from MW-5	–	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)
MW-6	Area C	Verify effectiveness of interim cleanup action, evaluate groundwater quality, characterize surface soil conditions in area of former remediation soil piles.	Surface Soil; Subsurface Soil [backfill testing (approx. 2-4 ft BGS); excavation bottom (based on visual)]; Groundwater sample from MW-3	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)
C-B1	Area C	Verify effectiveness of interim cleanup action, characterize surface soil conditions in area of former remediation soil piles.	Surface Soil; Subsurface Soil [backfill testing (approx. 2-4 ft BGS); excavation bottom (based on visual)]	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	–
C-S1	Area C	Evaluate surface soil conditions in area of former remediation soil piles.	Surface Soil	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	–	–
C-S2	Area C	Evaluate surface soil conditions in area of former remediation soil piles.	Surface Soil	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	–	–
C-S3	Area C	Evaluate surface soil in undisturbed portions of the area due to previous use.	Surface Soil	TPH-HCID (a), Metals (b), PAHs, PCBs, BTEX (archive)	–	–
C-S4	Area C	Evaluate surface soil in undisturbed portions of the area due to previous use.	Surface Soil	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	–	–
C-S5	Area C	Evaluate surface soil in undisturbed portions of the area due to previous use.	Surface Soil	TPH-HCID (a), Metals (b), PAHs, BTEX (archive)	–	–

TABLE 9
SUMMARY OF REMEDIAL INVESTIGATION SOIL AND GROUNDWATER SAMPLE LOCATIONS
VERBEEK WRECKING
BOTHELL, WASHINGTON

Location ID	Location	Data Gap Addressed	Sample Types	Surface Soil Analyses	Subsurface Soil Analyses	Groundwater/ Stormwater Analyses
C-S6	Area C	Evaluate surface soil	Surface Soil	TPH-HCID (a), Metals (b), PAHs, PCBs, BTEX (archive)	–	–
C-SS1	Area C	Evaluate near-surface soil in undisturbed area north of GWP soils.	Evaluate near-surface soil in undisturbed area north of GWP soils.		TPH-HCID (a)	–
MW-7	Area D	Former underground storage tank area north of shop.	Subsurface Soil (capillary fringe); Groundwater sample from MW-7	–	TPH-Dx	TPH-Dx
MW-8	Area D	Former underground storage tank area west of house/ office.	Subsurface Soil (capillary fringe); Groundwater sample from MW-8	–	TPH-Dx	TPH-Dx
D-SS1	Area D	Evaluate near-surface soil in undisturbed area north of GWP soils.	Evaluate near-surface soil in undisturbed area north of GWP soils.		TPH-HCID (a)	
D-SS2	Area D	Evaluate near-surface soil in undisturbed area north of GWP soils.	Evaluate near-surface soil in undisturbed area north of GWP soils.		TPH-HCID (a)	
D-SS3	Area D	Evaluate near-surface soil in undisturbed area north of GWP soils.	Evaluate near-surface soil in undisturbed area north of GWP soils.		TPH-HCID (a)	
D-B1	Area D	Adjacent to the underground waste oil tank	Subsurface Soil (capillary fringe); Groundwater grab sample	–	TPH-Dx	TPH-Dx, VOCs, Metals, PAHs

(a) samples will be archived for potential follow-up analysis for TPH-Dx and TPH-G/BTEX based on HCID results.

(b) Metals = (MTCA 5 Metals) arsenic, cadmium, chromium, lead, and mercury

(c) Metals = cadmium, chromium, lead, mercury, and zinc

Please print, sign and return to the Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. RE02665

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *("x" in box)*

☒ Construction

☐ Decommission

ORIGINAL INSTALLATION Notice of Intent Number:

Type of Well *("x in box)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Verbeek Properties

Site Address 18416 Bothell Everett Hwy

City Bothell County King

Location NE1/4-1/4 NE1/4 Sec 18 Twn 27 R 05

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____

Long Deg ____ Min ____ Sec ____

Tax Parcel No. 27051800103700

Cased or Uncased Diameter 9" Static Level 35'

Work/Decommission Start Date 9/22/08

Work/Decommission Completed Date 9/22/08

Consulting Firm GreenCo

Unique Ecology Well IDTag No. BAF235

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller ☐ Engineer ☒ Trainee

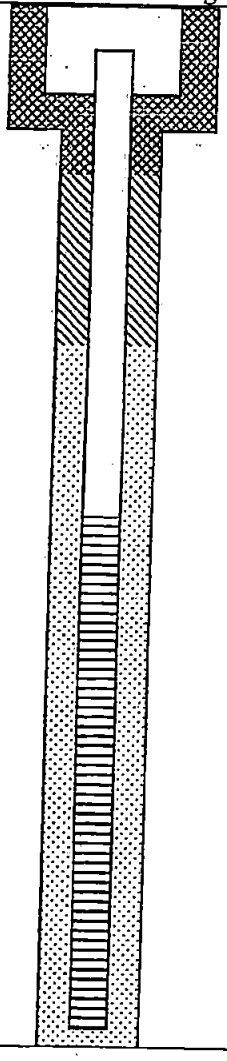
Name (Print Last, First Name) Knopf, Noel

Driller/Engineer/Trainee Signature

Driller or Trainee License No. T2872

If trainee, licensed driller's Signature and License Number: Chris Harnden 2508

Construction Design



Well Data

MONUMENT TYPE: 8" flush mount

CONCRETE SURFACE SEAL: 0'-1'

ANNULAR SPACE: ____

BACKFILL: 1'-36'

TYPE: 3/8" bent chips

PVC BLANK: 0'-38'

SCREEN: 38'-48'

SLOT SIZE: 0.010"

TYPE: 2" sch 40 PVC

SAND PACK: 36'-48'

MATERIAL: 10/20 silica

DRILLING METHOD: H.S.A

WELL DEPTH: 48'

BORING DIAMETER: 9"

Formation Description

N/A

SCALE: 1"= ____ PAGE 1 OF 2

ECY 050-12 (Rev. 7/06)

Ecology is an Equal Opportunity Employer

Please print, sign and return to the Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. RE02665

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *("x" in box)*

☒ Construction
☐ Decommission

ORIGINAL INSTALLATION Notice of Intent Number:

Type of Well *("x in box)*

☒ Resource Protection
☐ Geotech Soil Boring

Property Owner Verbeek Properties

Site Address 18416 Bothell Everett Hwy

Consulting Firm GreenCo

City Bothell County King

Unique Ecology Well IDTag No. BAF 236

Location NE1/4-1/4 NE1/4 Sec 18 Twn 27 R 05

EWM ☒ or WWM ☐

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____

Long Deg ____ Min ____ Sec ____

☐ Driller ☐ Engineer ☒ Trainee

Name (Print Last, First Name) Knopf, Noel

Driller/Engineer/Trainee Signature

Driller or Trainee License No. T2872

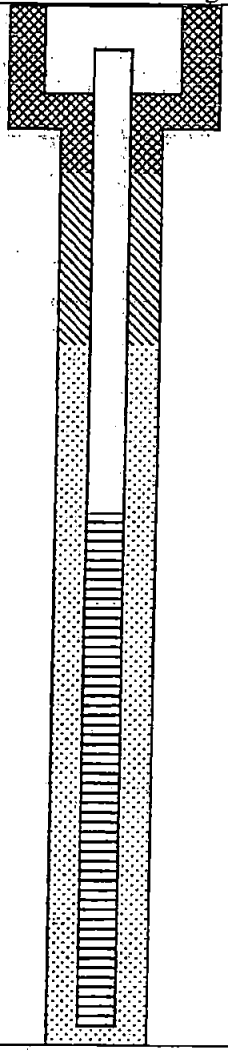
Tax Parcel No. 27051800103700

Cased or Uncased Diameter 9" Static Level 35'

Work/Decommission Start Date 9/22/08

If trainee, licensed driller's Signature and License Number: Travis Harnden 2508

Work/Decommission Completed Date 9/22/08

Construction Design	Well Data	Formation Description
	MONUMENT TYPE: 8" flush mount CONCRETE SURFACE SEAL: 0'-1' ANNULAR SPACE: ____ BACKFILL: 1'-32' TYPE: 3/8" bent chips PVC BLANK: 0'-34' SCREEN: 34'-39' SLOT SIZE: 0.010" TYPE: 2" sch 40 PVC SAND PACK: 32'-39' MATERIAL: 10/20 silica DRILLING METHOD: HSA WELL DEPTH: 39' BORING DIAMETER: 9"	N/A

SCALE: 1"= ____ PAGE 2 OF 2

ECY 050-12 (Rev. 7/06)

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MW-1 and MW-2
Driller's Observations (a)
Verbeek Wrecking
Bothell, Washington

Soil Interval (ft)	Soil Description
0-4	Gravels
4-12	Grey silty sand
12-22	Brown silty sand
22-28	Wet brown silty sand
28-38	Dense silty sand
38-39	Gravels/cobbles
39-52	Wet silt

(a) Soil information provided by Environmental Services Northwest, Inc. in an email dated February 6, 2009.

LANDAU ASSOCIATES
ENVIRONMENTAL | GEOTECHNICAL | NATURAL RESOURCES

WORK LOCATION PERSONNEL PROTECTION AND SAFETY EVALUATION FORM

Attach Pertinent Documents/Data
Fill in Blanks As Appropriate

Job No.:	1173001.010.031		
Prepared by:	Erik Gerking	Reviewed by:	Chris Kimmel
Date:	June 19, 2009	Date:	June 19, 2009

A. WORK LOCATION DESCRIPTION

1. **Project Name:** Verbeek Wrecking, Remedial Investigation
2. **Location:** Verbeek Wrecking Site
3. **Anticipated Activities:** Monitoring well installation using hollow-stem auger drilling technology; soil and groundwater sample collection
4. **Size:** Approximately 13 acres
5. **Surrounding Population:** Residential, commercial, light industrial
6. **Buildings/Homes/Industry:** Residential, commercial, light industrial
7. **Topography:** Central drainage swale, with some steep hills in the southeast portion of the Site
8. **Anticipated Weather:** Rain and sun, 55 to 85 degrees Fahrenheit.
9. **Unusual Features:** None
10. **Site History:** Verbeek Wrecking was used as an automobile wrecking yard for the past 40 years; an interim cleanup action was conducted in the summer of 2008 to address petroleum hydrocarbon soil and groundwater contamination.

B. HAZARD DESCRIPTION

1. **Background Review:** ☒ Complete ☐ Partial

   If partial, why?

2. **Hazardous Level:** ☐ B ☐ C ☒ D ☐ Unknown

   Justification: General site conditions and contaminants have been identified and documented in previous investigations, UST removal reports, and interim action report. Anticipated work zone conditions could require an upgrade in the level of protection if elevated air-born contaminants are detected.

3. **Types of Hazards:** (Attach additional sheets as necessary)

A. ☒ Chemical ☒ Inhalation ☒ Explosive
☐ Biological ☒ Ingestion ☐ O2 Def. ☒ Skin Contact

Describe: Possible contact with contaminated soil, groundwater, inhalation of vapors, or ingestion of contaminated soil.

B. ☒ Physical ☐ Cold Stress ☒ Noise ☒ Heat Stress ☐ Other

Describe: Hazards associated with work around heavy machinery. Work will be performed in summer months and could reach temperatures higher than 80 deg F.

C. ☐ Radiation

Describe:

4. **Nature of Hazards:**

☒ Air	Describe:	Inhalation of vapors
☒ Soil	Describe:	Dermal contact with or ingestion of contaminated soil
☒ Surface Water	Describe:	Dermal contact with or ingestion of contaminated water
☒ Groundwater	Describe:	Dermal contact with or ingestion of contaminated water
☐ Other	Describe:	

5. Chemical Contaminants of Concern ☐ N/A

Contaminant	PEL (ppm)	I.D.L.H./ STEL (ppm)	Source/Quantity Characteristics	Route of Exposure	Symptoms of Acute Exposure	Instruments Used to Monitor Contaminant
Benzene	1.0 (0.5 TLV)	5	Possibly present	Inhalation, ingestion, absorption, and skin or eye contact	Irritated eyes, skin, nose, and respiratory system; giddiness; headache; nausea; staggered gait; dermatitis; fatigue. Carcinogenic	PID
Toluene	100	150	Possibly present	Inhalation, ingestion, dermal contact	Skin, nose, throat irritation; dizziness; vomiting	PID
Xylene	100	150	Possibly present	Inhalation, skin or eye contact, ingestion	Skin, nose, eye, throat irritation; dizziness; drowsiness; excitement; vomiting, abdominal pain	PID
Ethylbenzene	100	125	Possibly present	Inhalation, ingestion, skin and eye contact	Eye, skin, mucous membrane irritation; headache, narcosis	PID
Total Petroleum Hydrocarbons	300	500	Possibly present	Inhalation, ingestion, skin and eye contact	Eye, skin, mucous membrane irritation; headache, narcosis	PID
Lead	0.05 mg/m^3	100 mg/m^3	Common contaminant at auto wrecking yards	Inhalation, ingestion, dermal contact	Weakness, lassitude, facial pallor	Visual (Dust)
Carcinogenic Polycyclic Aromatic Hydrocarbons	0.01 mg/m	80 mg/m^3	Found throughout Area B	Inhalation, ingestion, dermal and eye contact	Nausea, vomiting, low blood pressure, abdominal pain, convulsions, and coma	Visual (Dust)

* See attachment A for Air Monitoring Strategy and Equipment Calibration

6. Physical Hazards of Concern ☐ N/A

Hazard	Description	Location	Procedures Used to Monitor Hazard
Hollow-Stem Auger	Falling, moving, spinning or swinging objects	Work area	Be observant. Stay out of the path of the machinery. Driller will provide a health and safety meeting prior to conducting work.
Uneven ground	Entire site consists of disturbed ground surface	Work area	Watch footing, be alert, and wear steel toed high ankle work boots.

7. Work Location Instrument Readings ☒ N/A

Location: _____

Percent O_2: _____ Percent LEL: _____

Radioactivity: _____ PID: _____

FID: _____ Other: _____

Other: _____ Other: _____

Other: _____ Other: _____

Location: _____

Percent O_2: _____ Percent LEL: _____

Radioactivity: _____ PID: _____

FID: _____ Other: _____

Other: _____ Other: _____

Other: _____ Other: _____

Location: _____

Percent O_2: _____ Percent LEL: _____

Radioactivity: _____ PID: _____

FID: _____ Other: _____

Other: _____ Other: _____

Other: _____ Other: _____

Location: _____

Percent O_2: _____ Percent LEL: _____

Radioactivity: _____ PID: _____

FID: _____ Other: _____

Other: _____ Other: _____

Other: _____ Other: _____

8. Hazards Expected In Preparation For Work Assignment ☒ N/A

Describe:

C. PERSONAL PROTECTIVE EQUIPMENT

1. Level of Protection

☐ A ☐ B ☐ C ☒ D

Location/Activity: All

☐ A ☐ B ☐ C ☐ D

Location/Activity:

2. Protective Equipment (specify probable quantity required)

Respirator ☐ N/A

- ☐ SCBA, Airline
- ☐ Full-Face Respirator
- ☒ Half-Face Respirator (Cart. organic vapor) (Only if upgrade to Level C)
- ☐ Escape mask
- ☐ None
- ☐ Other:
- ☐ Other:

Clothing ☐ N/A

- ☐ Fully Encapsulating Suit
- ☐ Chemically Resistant Splash Suit
- ☐ Apron, Specify:
- ☐ Tyvek Coverall
- ☐ Saranex Coverall
- ☐ Coverall, Specify
- ☒ Other: Dedicated field clothing

Head & Eye ☐ N/A

- ☒ Hard Hat
- ☐ Goggles
- ☐ Face Shield
- ☒ Safety Eyeglasses
- ☐ Other:

Hand Protection ☐ N/A

- ☒ Undergloves; Type:
- ☒ Gloves; Type: Nitrile
- ☐ Overgloves; Type:
- ☐ None
- ☐ Other:

Foot Protection ☐ N/A

- ☐ Neoprene Safety Boots with Steel Toe/Shank
- ☐ Disposable Overboots
- ☒ Other: Steel-toed Work Boots

3. Monitoring Equipment ☐ N/A

☐ CGI	☒ PID
☐ O^2 Meter	☐ FID
☐ Rad Survey	☐ Other
☐ Detector Tubes (optional)	

Type: Gasport meter (LEL/Methane)

D. PERSONNEL DECONTAMINATION

☒ Required: Soap & water – hands ☐ Not Required

EQUIPMENT DECONTAMINATION

☒ Required ☐ Not Required

If required, describe and list equipment:

Any non-disposable sampling equipment will be washed with tap water and Alconox, and rinsed with tap water, prior to each use. Down-the-hole drilling equipment will be decontaminated with a hot-water, high-pressure steam cleaner between boring locations.

E. PERSONNEL

	Name	Work Location Title/Task	Medical Current	Fit Test Current
1.	**Alan Starr**	**Field Technician**	☒	☒
2.	**Alyssa Johnson**	**Field scientist**	☒	☒
3.			☐	☐
4.			☐	☐
5.			☐	☐
6.			☐	☐
7.			☐	☐
8.			☐	☐
9.			☐	☐
10.			☐	☐

Site Safety Coordinator: **Alan Starr**

F. ACTIVITIES COVERED UNDER THIS PLAN

Task No.	Description	Preliminary Schedule
1.	Remedial Investigation	August 2009
2.		

G. SUBCONTRACTOR'S HEALTH AND SAFETY PROGRAM EVALUATION ☒ N/A

Name and Address of Subcontractor: Cascade Drilling

EVALUATION CRITERIA

Item	Adequate	Inadequate	Comments
Medical Surveillance Program	☒	☐	
Personal Protective Equipment Availability	☒	☐	
Onsite Monitoring Equipment Availability	☒	☐	
Safe Working Procedures Specification	☒	☐	
Training Protocols	☒	☐	
Ancillary Support Procedures (if any)	☒	☐	
Emergency Procedures	☒	☐	
Evacuation Procedures Contingency Plan	☒	☐	
Decontamination Procedures Equipment	☒	☐	
Decontamination Procedures Personnel	☒	☐	

GENERAL HEALTH AND SAFETY PROGRAM EVALUATION: ☒ Adequate ☐ Inadequate

Additional Comments: Information on file, review based on conditions of Basic Agreement with Landau Associates.

Evaluation Conducted By: _____ Date: _____

EMERGENCY FACILITIES AND NUMBERS

EMERGENCY INFORMATION

HOSPITAL - Evergreen Medical Center
17000 140th Ave. NE #101
Woodinville, WA 98072
Phone: 425.488.2273
Fax: 425.488.4971

DIRECTIONS -

1. Head north on Bothell Everett Hwy/WA-527 toward 183rd St SE (0.3 miles)
2. Turn right at 180th St SE 1.2 mi
3. Turn right at 35th Ave SE/York Rd, Continue to follow York Rd (1.6 mi)
4. Turn left at Maltby Rd/WA-524 (2.0 mi)
5. Turn right at Snohomish Woodinville Rd/WA-9 SE (1.4 mi)
6. Merge onto WA-522 W via the ramp to Monroe (2.0 mi)
7. Take the WA-202 exit toward Woodinville/Redmond (0.2 mi)
8. Turn left at 132nd Ave NE/WA-202, Continue to follow WA-202 (0.3 mi)
9. Turn left at NE 175th St (0.6 mi)
10. Turn right at 140th Ave NE (0.2 mi)
11. Turn left at NE 171st St (285 ft)

Destination will be on the right

TELEPHONE - Cellular telephones to be carried by each team on/off shore.
EMERGENCY TRANSPORTATION SYSTEMS (Fire, Police, Ambulance) **-911**
EMERGENCY ROUTES - Map (HASP Figure 1)

EMERGENCY CONTACTS -

Poison Control Center:	(206) 526-2121
Project Manager – Larry Beard	(425) 778-0907
Corporate H&S Manager – Chris Kimmel	(206) 786-3801
Verbeek Wrecking – Renee West	(425) 478-2251
National Response Center	(800) 424-8802
WA Div. of Emergency Management	(800) 258-5990

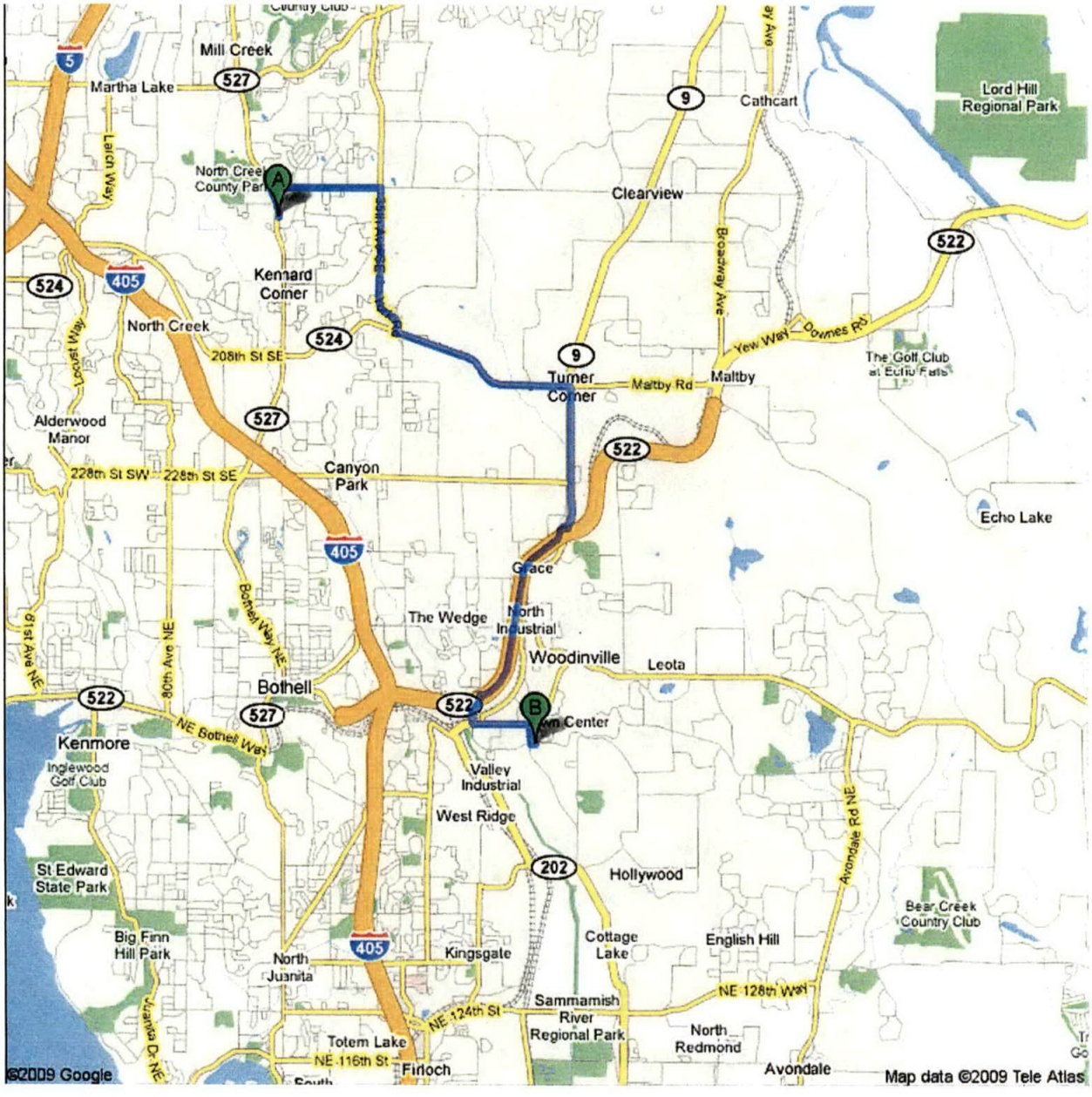
In the event of an emergency on land, call for help as soon as possible. Dial 911; give the following information:

- WHERE the emergency is - use cross streets or landmarks
- PHONE NUMBER you are calling from

- WHAT HAPPENED - type of injury
- HOW MANY persons need help
- WHAT is being done for the victim(s)
- YOU HANG UP LAST - let the person you called hang up first

FIGURE 1

HOSPITAL ROUTE AND MAP



HEALTH AND SAFETY PLAN
APPROVAL/SIGN OFF FORMAT

I have read, understood, and agreed with the information set forth in this Health and Safety Plan (and attachments) and discussed in the Personnel Health and Safety briefing.

Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Erik Gerking Site Safety Coordinator	Signature	Date
Chris Kimmel Landau Health and Safety Manager	Signature	Date

Personnel Health and Safety Briefing Conducted By:

Name	Signature	Date

ATTTACHMENT A
AIR MONITORING STRATEGY AND EQUIPMENT CALIBRATION

EXPOSURE	METHOD	MONITORING DESCRIPTION	ACTION LEVEL	ACTION
Total Volatile Organics	Photoionization Detector (PID)	Periodically, or when odors are noted	<5 ppm	Level D Protection
			5-25 ppm	Level C Protection
			>25 ppm	Shut Down; Contact Corp. Health & Safety Officer; Implement Engineering Controls
Particulate Contaminants	Visual	Handling samples/ Continuously	No Visible Dust	Level D Protection
			Visible Dust	Implement Engineering Controls; Upgrade to Level C in Interim
Explosive	4 gas meter	Periodically, or when odors are noted	10% of LEL	Shut Down; Contact Corp. Health & Safety Officer; Implement Engineering Controls

(a) Sustained readings

Sampling and Analysis Plan
Verbeek Wrecking Site
Bothell, Washington

August 19, 2009

Prepared for

Verbeek Wrecking
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1.0 INTRODUCTION

This sampling and analysis plan (SAP) describes the procedures for conducting field activities during the remedial investigation (RI) at the Verbeek Wrecking Site (Site) located at 18416 Bothell-Everett Highway, Bothell, Snohomish County, Washington (Figure A-1). This SAP is an appendix to the Verbeek Wrecking RI work plan (work plan). The RI is being conducted under the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP). The VCP reference number for the Site is NW 1982. The primary objective of this plan is to provide sampling and analysis procedures and methodologies consistent with accepted procedures such that the data collected will be adequate for use in characterizing Site environmental conditions. The plan was prepared consistent with the requirements of WAC 173-340-820. It provides field, sampling, and analytical procedures to be used during the RI.

The RI focuses on the characterization of Site soil, groundwater and surface water. As discussed in Section 7.0 of the work plan, soil and groundwater quality data gaps were identified for Areas A, C, and D; Area B is being addressed separately by Puget Sound Energy. These areas are shown on Figure A-2. As discussed in the work plan, results of previous soil investigations and interim action compliance monitoring have not adequately characterized soil conditions in Areas A and C and results for soil sampling in Area D indicate some exceedances of the Site preliminary cleanup levels. In addition, analytical results for groundwater quality samples collected prior to implementation of the interim action in Area C indicate one groundwater quality exceedance of the Site preliminary cleanup level for benzene. Preliminary cleanup levels are presented in Section 5.1 of the work plan.

Because the assessment of groundwater quality in Areas A and C is based on samples collected prior to implementation of the interim action, and because environmental characterization conducted prior to implementation of the interim action was not adequate to fully characterize soil and groundwater quality, additional data are needed to evaluate the current soil and groundwater quality. Characterization will consist of determining the extent of concentrations of constituents in soil and groundwater exceeding the preliminary cleanup levels, if any, and evaluating hydrogeologic conditions.

2.0 SOIL INVESTIGATION

The soil investigation in Areas A and C will be conducted within the previous interim cleanup actions areas, and in undisturbed areas of the Site where soil sampling has not been previously conducted. In addition, soil samples will be collected from gravel stockpiles located in the southwestern corner of Area A for characterization. The soil investigation in Area D will be conducted in the immediate vicinity of existing and former USTs. The proposed soil sampling locations and rationale for each monitoring location in Areas A, C, and D are summarized in Tables A-1, A-2, and A-3, respectively, and are discussed below.

2.1 AREA A

In Area A, the soil investigation will focus on characterization of soil in portions of Cleanup Action Area A that were not adequately characterized during compliance monitoring, the area of the former remediation piles, the gravel stockpiles located along the western boundary of the Site, and undisturbed portions of the Site where historical uses could have resulted in soil contamination. In addition, samples will be collected from the backfill material within the previous excavation area to confirm that cleanup levels were achieved in the remediation piles prior to using the treated soil as backfill. To a large extent, the potential sources of soil contamination in Area A have been removed through excavation of contaminated soil. However, because of the size of the excavation and that groundwater compliance monitoring was not conducted following the interim cleanup action, four soil borings will be advanced in Cleanup Action Area A. The proposed locations are identified as MW-3, MW-4, A-B1 and A-B2 and are shown on Figure A-3. At each of the soil borings, soil samples will be collected from the three following intervals:

- The surface soil [0 to 1 ft below ground surface (BGS)],
- Within the treated backfill material (2 to 4 ft BGS), and
- The bottom of the previous excavation, if contact is visible (the top 1 ft of the native soil).

Three surface soil samples will be collected from the areas of the former remediation soil piles and from undisturbed portions of Area A where Site uses could have resulted in soil contamination. Prior to collecting the samples from the undisturbed surfaces, the undisturbed surfaces will be mapped in the field and environmental conditions will be noted. Based on the actual distribution of the undisturbed surface soil and noted environmental conditions, sample locations may be adjusted to locations with observable indications of contamination and/or samples may be added to the sampling plan; however,

undisturbed surfaces appear to only be present in the southern portion of Area A. The proposed surface soil sample locations are shown on Figure A-3. Surface soil samples will be collected using hand tools (hand auger, shovel, etc.).

Grab samples will be collected from the two gravel stockpiles located in the southwestern corner of Area A using hand tools (hand auger, shovel, etc.). Based on the total volume of material in the stockpiles (approximately 1,000 cubic yards) and the uniform appearance of the gravel, a total of six samples from the stockpiles will be collected to evaluate the soil quality of this material.

2.2 AREA C

In Area C, the soil investigation will focus on characterization of soil in portions Cleanup Action Area C that were not adequately characterized during compliance monitoring, the area of the former remediation piles, and undisturbed portions of the site where historical Site uses could have resulted in soil contamination. In addition, samples will be collected from the backfill material within the former excavation areas to confirm that preliminary cleanup levels were achieved in the remediation piles prior to use as backfill.

Four soil borings will be advanced in Area C. In addition, four surface soil samples will be collected from locations of former remediation soil piles and undisturbed portions of the area. The soil boring locations and surface sample locations are shown on Figure A-3 and are described below.

Three soil borings will be advanced in the area of the previous excavation and one soil boring will be advanced to the south and downgradient of the former vehicle processing area. The proposed locations are shown on Figure A-3. For the two soil borings located within the former excavation area, soil samples will be collected from the three following intervals:

- The surface soil interval (0 to 1 ft BGS),
- Within the treated backfill material (2 to 4 ft BGS), and
- The bottom of the previous excavation, if contact is visible (the top 1 ft of the native soil).

For the soil boring located downgradient of the former processing area, one soil sample will be collected from the capillary fringe zone above the top of the groundwater table.

Five surface soil samples will be collected from the areas of the former remediation soil piles and from undisturbed portions of Area C where historical Site uses could have resulted in soil contamination. Prior to collecting the samples from an undisturbed surface, the undisturbed surface will be mapped in the field and environmental conditions will be noted. Based on the actual distribution of the undisturbed surface soil and noted environmental conditions, sample locations may be adjusted to locations with

observable indications of contamination and/or additional samples may be added to the sampling plan; however, undisturbed surfaces appear to only be present in the southern portions of Area C. The proposed surface soil sample locations are shown on Figure A-3. Surface soil samples will be collected using hand tools (hand auger, shovel, etc.).

A shallow soil investigation will be conducted to evaluate potential wrecking yard TPH impacts adjacent to the north edge of the GWP soil. Direct-push drilling techniques will be used to advance up to four borings to a depth of approximately 8 ft bgs in order to obtain soil samples from the zone potentially affected by wrecking yard activities. One of these borings (C-SS1) will be located in Area C as shown on Figure A-3. The remaining three borings are located in Area D.

Soil samples will be collected on a continuous basis and samples will be field screened based on visual appearance. If evidence of TPH impacts are encountered, up to two soil samples will be selected for analysis:

- One soil sample will be collected from the depth interval that exhibits the highest indications of impacts, and
- One soil sample will be collected the depth interval below the impacted zone where field observations indicate that TPH impacts are not longer present.

If no evidence of TPH impacts to soils is encountered, one soil sample will be collected from the depth where the backfill overlies the underlying original ground surface (prior to implementation of the interim action) if the contact is apparent.

2.3 AREA D

Historical information suggests that with the exception of the UST areas, Area D has been used predominately as an office area and as an ingress/egress to the wrecking yard. Therefore, soil quality evaluation will be limited to the former USTs and the existing waste oil UST. Based on the confirmation sample analytical results collected following removal of five USTs from two excavations, diesel-range petroleum hydrocarbons were detected in one soil sample from each excavation at a concentration greater than the preliminary cleanup level. Sampling has not been conducted in the area of the existing 8,000-gallon waste oil UST.

Three soil borings will be advanced in Area D. The soil boring locations are shown on Figure A-3. Two of the borings will be completed as monitoring wells (MW-7 and MW-8). One soil boring will be advanced on the south side of the existing 8,000-gallon UST. At each location, one soil sample will be collected from the capillary fringe zone above the top of the groundwater table, or from the most contaminated soil interval identified by field screening and observations.

Up to three borings (D-SS1 through D-SS3) will be advanced in Area D as part of the shallow soil investigation to evaluate potential wrecking yard TPH impacts adjacent to the north edge of the GWP soil described above for Area C. Three borings (D-SS1 through D-SS3) will be completed at the locations shown on A-3.

3.0 GROUNDWATER INVESTIGATION

The RI groundwater investigation is designed to 1) evaluate groundwater quality in Areas A, C and D and, 2) evaluate groundwater hydrology throughout the Site. Prior to the interim cleanup action, two groundwater quality samples were collected from direct push borings in Area A, and five groundwater quality samples were collected from direct push borings in Area C. Groundwater quality monitoring has not been conducted in Area D. No groundwater monitoring wells were installed in areas A, C or D, although two monitoring wells (MW-1 and MW-2) were installed in Area B, as discussed in Section 3.1.2 of the work plan.

The groundwater investigation in Areas A and C will be conducted within the previous interim cleanup actions areas and downgradient of former operational areas to determine whether constituents of concern are present in groundwater at concentrations above the preliminary cleanup levels. Groundwater quality monitoring in Area D will focus on evaluating groundwater quality conditions in the vicinity of the existing and former underground storage tanks (USTs).

Groundwater elevation data from all three areas (A, C, and D), and Area B, will be evaluated to characterize Site groundwater flow direction and gradients. Soil samples will be collected from that saturated zone at up to three locations for potential analysis for grain size distribution and total organic carbon (TOC) to assist in evaluating groundwater and contaminant migration rates. Grain size distribution would be used to estimate hydraulic conductivity and TOC would be used in the evaluation of contaminant migration rates. Grain size and TOC analyses would only be conducted if groundwater quality monitoring indicates that groundwater contamination is present.

The proposed groundwater monitoring locations and rationale for each monitoring location in Areas A, C, and D are summarized in Tables A-1, A-2, and A-3, respectively, and are discussed below.

3.1 AREA A

In Area A, the groundwater investigation will focus primarily on characterization of groundwater quality within the previous interim cleanup action where historical operations may have impacted groundwater. The interim action appears to have removed the potential sources of groundwater contamination in Area A. As previously discussed, the petroleum hydrocarbon preliminary cleanup levels were not exceeded in the groundwater samples collected from the Area A prior to the interim action cleanup excavation. However, because of the size of the cleanup area and the limited amount of available groundwater quality data, two monitoring wells will be installed in Area A. Because groundwater flow in Area A is inferred to be to the south, groundwater monitoring wells will be installed either within, or to the south of, the most heavily affected areas of soil contamination observed during the interim action.

MW-3 will be installed within a deep excavation area that appeared to be affected by previous auto wrecking activities. MW-4 will be installed to the south of the former steam cleaner and parts sheds. The proposed locations for MW-3 and MW-4 are shown on Figure A-3.

Groundwater monitoring wells will be sampled one time as part of the RI. Sampling will be conducted approximately one week following the installation and development of the monitoring wells.

3.2 AREA C

In Area C, the groundwater investigation will focus primarily on characterization of groundwater quality in the area of the interim cleanup action, including the central portion of the former vehicle processing area and the automobile shearing area. As in Area A, the potential sources of groundwater contamination in Area C appear to have been removed through the termination of auto wrecking activities and implementation of the interim action.

As previously discussed, the preliminary cleanup levels were not exceeded in the groundwater samples collected from the Area C prior to the interim action cleanup excavation, with the exception of a minor exceedance of the benzene preliminary cleanup level in a sample collected east of the former processing area (B1-H2O). The location of the benzene exceedance was addressed by the interim action. Because of the size of the cleanup action area and the limited amount of groundwater data, two monitoring wells will be installed in Area C. Groundwater monitoring will be conducted within the former automobile shearing area and the former vehicle processing area. The proposed locations are identified as MW-5 and MW-6 and are shown on Figure A-3. MW-5 will be installed within the former vehicle processing area and MW-6 will be installed within the previous excavation area in the central portion of the former vehicle shearing area.

Groundwater monitoring wells will be sampled one time as part of the RI. Sampling will be conducted approximately one week following the installation and development of the monitoring wells.

3.3 AREA D

The primary objective of the RI groundwater investigation in Area D is to characterize groundwater quality in the vicinity of the existing and former USTs. Two monitoring wells, MW-7 and MW-8, will be installed in this area, as shown on Figure A-3. The monitoring wells were located to be within the source area of the former UST areas. In addition, a groundwater grab sample will be collected from a boring located on the downgradient side of the existing 8,000-gallon UST.

Groundwater monitoring wells will be sampled one time as part of the RI. Sampling will be conducted approximately one week following the installation and development of the monitoring wells.

4.0 SURFACE WATER INVESTIGATION

Site surface water quality will be evaluated by collecting and testing one surface water grab sample from the most down gradient stormwater catch basin located on Site. The catch basin sampling location (SW-1) is shown on A-3. The laboratory analytical results from this sample will be evaluated against surface water quality criteria. If the sample results exceed surface water quality criteria, surface water quality will be monitored at the upgradient catch basins to determine whether offsite surface water entering the Site is the source of the observed surface water quality exceedance.

5.0 FIELD INVESTIGATION PROCEDURES

This section presents procedures for soil sample collection, well construction and installation, and groundwater sample collection procedures. Equipment decontamination and residual waste management procedures are also discussed below.

5.1 SOIL SAMPLING

Soil samples will be collected from both boring locations, surface soil sampling locations, and the two gravel stockpiles. The following subsections present the procedures for each. Groundwater samples will be submitted to the laboratory for identified analyses listed in Table A-1, A-2 and A-3 and discussed in Section 6.0.

5.1.1 SOIL SAMPLING FROM BORINGS

Borings will be completed using hollow stem auger drilling technologies. Soil samples consisting of 1.5-ft long (i.e., length of standard spilt-spoon sampler) soil cores will be collected on a 2.5-ft sampling interval from the ground surface to the target boring depth. Soil samples will be field-screened for evidence of contamination by visual inspection (e.g., stained soil, free product) and measuring volatile vapors using a photoionization detector (PID). After the field-screening has been completed, the lithology of the soil sample will be recorded on the Log of Exploration form. Soil samples from each boring will be selected for laboratory analysis. The samples will be selected from the intervals described in Sections 2.1.1 though 2.1.3 and from depths that indicate the highest likelihood for potential contamination based on field-screening results [i.e., visual presence of potential contamination and/or a PID measurement greater than 50 parts per million (ppm)]. In order to evaluate the vertical extent of impact, multiple samples may be selected from some borings. If field-screening results do not indicate the potential presence of contamination, soil samples will be collected for laboratory analysis from depths where contamination would be anticipated based on historical site use, as described in Section 2.1.1 through 2.1.3.

The U.S. Environmental Protection Agency (EPA) 5035A soil sampling procedures will be used to collect soil samples planned for volatile organic compounds (VOCs); gasoline-range petroleum hydrocarbons (TPH-G); and benzene, toluene, ethylbenzene, and xylene (BTEX) analyses; consistent with Ecology guidance. The EPA 5035A soil sampling method is intended to reduce volatilization and biodegradation of samples. The EPA 5035A procedure for soil sample collection is as follows:

- Collect soil "cores" using coring devices (i.e., EnCore® sampler, EasyDraw Syringe®, or a Terra Core™ sampling device). Each "core" will consist of approximately 5 grams of

soil. Collect three discrete "cores" from each sampling location. One EasyDraw Syringe® or Terra Core™ device will be used to collect the three discrete "cores"; however, if the EnCore® samplers are used, then three sampling devices are required.

- Remove excess soil from coring device. If EasyDraw Syringe® or Terra Core™ sampling device are used for sample collection then place the "cored" soil directly into unpreserved 40 ml vials with a stirbar. If the EnCore® sampler is used, then close the sampler for transport to the laboratory.

- Collect one 2-oz soil jar of representative soil for moisture content and laboratory screening purposes. Fill the jar to minimize headspace.

Soil samples to be tested for non-volatile parameters (e.g., metals, PAHs, and TPH-Dx) will be collected from the identified soil sampling interval using the following methods:

- Scrape the outside of the soil core to expose a fresh sampling surface using a clean stainless steel spoon.

- Collect equal portions of soil from the sampling interval into a clean stainless steel bowl.

- Homogenize the soil in the bowl using the stainless steel spoon.

- Transfer the homogenized soil into the appropriate laboratory supplied sample container.

Before and between drilling of each boring and at the completion of the project, downhole drilling equipment will be cleaned using a high-pressure hot water or steam washer. Re-usable soil sampling equipment (stainless steel bowls and spoons, and shovels) will be decontaminated between sampling intervals and locations. Equipment decontamination procedures are presented in Section 4.7.

5.1.2 SURFACE SOIL SAMPLING

Surface soil samples will be collected using decontaminated hand tools and stainless steel bowls and spoons. The upper six inches of soil at the sampling location will be placed into a clean stainless steel bowl and homogenized using a clean stainless steel spoon. Material greater than 1/4-inch in size will be removed prior to placement into the sample container. The homogenized soil will then be placed into the appropriate laboratory supplied container.

Sample locations A-S2, A-S3, C-S2, C-S3, and C-S4 shown on Figure A-3 are currently located in areas of known undisturbed surface soil. As mentioned above, the undisturbed surface soils in Areas A and C will be mapped prior to determining the final sampling locations. Based on the actual distribution of the undisturbed surface soil and noted environmental conditions, sample locations may be adjusted to locations with observable indications of contamination and/or additional samples may be added to the sampling plan. Any need for additional soil samples will be determined in consultation with the project manager prior to their collection.

5.1.3 GRAVEL STOCK PILE SAMPLING

Stock pile samples will be collected using decontaminated hand tools and stainless steel bowls and spoons. Soil samples will be collected from three representative locations within each stockpile. At each sample location, a decontaminated shovel or other hand tool will be used to remove at least 1 ft of surface material to provide a fresh sampling surface within the stockpile. The sample volume will be collected from the fresh surface and will be placed into a clean stainless steel bowl and homogenized using a clean stainless steel spoon. Material greater than 1/4-inch in size will be removed prior to placement into the sample container. The homogenized soil will then be placed into the appropriate laboratory supplied container.

5.2 GROUNDWATER MONITORING

This section describes the activities to be conducted to collect groundwater samples from monitoring wells. Six monitoring wells will be installed in Areas A, C and D. This section describes well installation procedures and construction, well development, procedures for collecting groundwater samples from the wells, sampling frequency and duration, and laboratory analysis. Groundwater samples will be submitted to the laboratory for identified analyses listed in Table A-1, A-2, and A-3 and discussed in Section 6.0.

5.2.1 INSTALLATION AND CONSTRUCTION OF MONITORING WELLS

Boreholes for groundwater monitoring wells will be drilled using a hollow-stem auger drilling equipment. Depending on the depth-to-water at each monitoring well location, the borings will be advanced to approximately 25 to 35 ft BGS, or until the target interval is reached. Borings will be extended at least 5 ft into the saturated zone, and up to 10 ft if an aquitard in not encountered prior to reaching 10 ft if saturated thickness.

Prior to initiation of drilling, or any other invasive subsurface activity, the locations of each proposed exploration will be checked in the field to locate aboveground utilities or physical limitations that would prevent drilling at the proposed location. In addition, a public utility locate service will be contacted to locate underground utilities at the perimeter of the Site and a private utility locate service will be contacted to clear explorations for underground utilities. The final location for each borehole will be based on the findings of the field check.

Before and between drilling of each boring and at completion of the project, down-hole drilling equipment will be cleaned using a high-pressure hot water or steam washer as described in Section 4.7. Monitoring wells will be constructed by a licensed drilling contractor in the state of Washington using the

hollow-stem auger method, in accordance with the *Minimum Standards for Construction and Maintenance of Wells* (WAC 173-160; Ecology 2008). Oversight of drilling and well installation activities will be performed by an environmental professional familiar with environmental sampling and construction of resource protection wells.

The monitoring wells will be constructed with 2-inch diameter, flush-threaded, Schedule 40 PVC pipe and 10-ft screens with 0.020-inch machine slotted casing and filter pack material consisting of pre-washed, pre-sized number 10/20 silica sand. The filter pack will be placed from the bottom of the well to approximately 2 ft above the top of the screen. Filter pack material will be placed slowly and carefully to avoid bridging of material. A bentonite seal will be placed above the filter sand pack material to within about 3 ft of ground surface. Grout will be used to backfill the boring to the subgrade for placement of the protective cover. The wells will be completed with flush-mounted protective casings.

The well names and the identification numbers assigned by Ecology will be marked on the well identification tags supplied by Ecology and will be attached to each well casing following well installation.

5.2.2 WELL DEVELOPMENT

The monitoring wells will be developed after construction to remove formation material from the well borehole and the filter pack prior to groundwater level measurement and sampling. Development will be achieved by repeatedly surging the well with a surge block and purging the well until the water runs clear, but no less than 5 well casing volumes. During development, the purged groundwater will be monitored for the following field parameters:

- pH
- Conductivity
- Temperature
- Turbidity.

The wells will be developed until the turbidity of the purged groundwater decreases to 5 Nephelometric turbidity units (NTUs), if practicable. If the well dewaters during the initial surging and purging effort, one final well casing volume will be removed after the well has fully recharged, if practicable. Well development activities will be recorded on a Well Development form.

5.2.3 GROUNDWATER SAMPLE COLLECTION

The groundwater samples will be collected at least 2 days after well development. Collection of groundwater samples will be completed using low-flow sampling techniques at each monitoring well using the following procedures:

- Immediately following removal of each well monument cover, the well head will be observed for damage, leakage, and staining. Additionally, immediately following removal of the well head cap, any odors will be recorded and the condition of the well opening will be observed. Any damage, leakage, or staining to the well head or well opening will be recorded.

- Prior to sampling, each well will be purged using a pump that is attached to dedicated purge and sample collection tubing (types of pumps used may vary depending on purge volume and depth and include a centrifugal pump, a peristaltic pump, and an electric submersible pump). Purging will begin with a small pumping rate. The pumping rate will be maintained at less than 1 liter per minute and with drawdown of less than 1 foot during purging. Purging will continue until specific conductance, pH, temperature and dissolved oxygen (field parameters) have stabilized.

- Field parameters, including pH, temperature, conductivity, dissolved oxygen, and turbidity, will be continuously monitored during purging using a flow cell. Purging of the well will be considered to be complete when all field parameters become stable for three successive readings. The successive readings should be within +/- 0.1 pH units for pH, +/- 3% for conductivity, and +/- 10% for dissolved oxygen and turbidity.

- Purge data will be recorded on a Groundwater Sample Collection form including purge volume; time of commencement and termination of purging; any observations regarding color, turbidity, or other factors that may have been important in evaluation of sample quality; and field measurements of pH, specific conductance, temperature, dissolved oxygen, and turbidity.

- Following the stabilization of field parameters, the flow cell will be disconnected and groundwater samples will be collected. Sample data will be recorded on a Groundwater Sample Collection form, including sample number and time collected; the observed physical characteristics of the sample (e.g., color, turbidity, etc.); and field parameters (pH, specific conductance, temperature, and turbidity).

- Any problems or significant observations will be noted in the "comments" section of the Groundwater Sample Collection form.

- Groundwater samples will be collected into the appropriate sample containers using a peristaltic pump. To prevent degassing during sampling for VOCs, a pumping rate will be maintained below about 100 ml/min. The VOC containers will be filled completely so that no head space remains. Samples will be chilled to 4°C immediately after collecting the sample. Clean gloves will be worn when collecting each sample.

- Groundwater for dissolved metals analyses will be collected last and field filtered through a 0.45 micron, in-line disposable filter. Dissolved metal samples will be preserved, as specified in Table A-5. A note will be made on the sample label, sample collection form, and

chain-of-custody (COC) to indicate the sample has been field filtered and preserved, including the type of preservative used.

5.2.4 GROUNDWATER FIELD PARAMETERS

Field parameters, including pH, temperature, conductivity, dissolved oxygen, turbidity, and oxidation reduction potential (Redox) will be measured at each groundwater monitoring location in Areas A, C, and D using a flow-through cell. Field parameters will be measured during all groundwater monitoring events.

5.3 SURFACE WATER SAMPLE COLLECTION

The surface water samples will be collected from within the identified catch basin or other storm drain structure. The primary purpose of the surface water sampling event will be to evaluate whether surface water base flow that transects the Site is being impacted by Site groundwater that may be infiltrating into the stormwater system. Because the interim action has addressed the vast majority of Site surface soil, stormwater quality is not considered an issue beyond surface water quality monitoring that will be required in conjunction with the construction stormwater permit currently being obtained by the owner.

Surface water samples will be collected using sampling methods generally consistent with Ecology's stormwater sampling guidance (Ecology 2002). Surface water quality samples will be collected using a peristaltic pump and new polyethylene tubing using the following procedure:

- Inspect the inside of the catch basin or other storm drain structure, noting inlet and outlet pipes, flow conditions, visual or olfactory indications of contaminants, and dimensions of the structure.

- Measure depth to water and record on the sample collection form.

- Position the intake of the sample tubing in the approximate center of the water flow within the catch basin. To avoid collecting solids in the sample, make sure the tubing is not contacting the wall or base of the catch basin.

- Prior to obtaining the sample, purge water from the catch basin using a peristaltic pump and new polyethylene tubing and collect field parameters (specific conductance, pH, temperature and dissolved oxygen) in two-minute intervals using a flow cell. Purging of the catch basin will be considered to be complete when all field parameters become stable for three successive readings. The successive readings should be within +/- 0.1 pH units for pH, +/- 3% for conductivity, and +/- 10% for dissolved oxygen and turbidity.

- Following the stabilization of field parameters, the flow cell will be disconnected and surface water samples will be collected. Sample data will be recorded on a Sample Collection form, including sample number and time collected; the observed physical characteristics of the

sample (e.g., color, turbidity, etc.); and field parameters (pH, specific conductance, temperature, and turbidity).

- Surface water samples will be collected into the appropriate sample containers using a peristaltic pump. To prevent degassing during sampling for VOCs, a pumping rate will be maintained below about 100 ml/min. The VOC containers will be filled completely so that no head space remains. Samples will be chilled to 4°C immediately after collecting the sample. Clean gloves will be worn when collecting each sample.

Surface water samples will be submitted to the laboratory for identified analyses in Table A-4 and as presented in Section 6.0.

5.4 SAMPLE CONTAINERS, PRESERVATION, AND STORAGE

Soil and groundwater samples submitted to the analytical laboratory for analysis will be collected in the appropriate sample container provided by the analytical laboratory. The samples will be preserved by cooling to a temperature of 4°C and as required by the analytical method. Maximum holding and extraction times until analysis is performed will be strictly adhered to by field personnel and the analytical laboratory. Sample containers, preservatives, and holding times for each chemical analysis are presented in Tables A-5 and A-6.

5.5 SAMPLE TRANSPORTATION AND HANDLING

The transportation and handling of soil and groundwater samples will be accomplished in a manner that not only protects the integrity of the sample, but also prevents any detrimental effects due to release of samples. Samples will be logged on a COC form and will be kept in coolers on ice until delivery to the analytical laboratory. The COC will accompany each shipment of samples to the laboratory.

5.6 SAMPLE CUSTODY

The primary objective of sample custody is to create an accurate, written record that can be used to trace the possession and handling of samples so that their quality and integrity can be maintained from collection until completion of all required analyses. Adequate sample custody will be achieved by means of approved field and analytical documentation. Such documentation includes the COC record that is initially completed by the sampler and is, thereafter, signed by those individuals who accept custody of the sample. A sample is in custody if at least one of the following is true:

- It is in someone's physical possession.

- It is in someone's view.
- It is secured in a locked container or otherwise sealed so that tampering will be evident.
- It is kept in a secured area, restricted to authorized personnel only.

Sample control and COC in the field and during transportation to the laboratory will be conducted in general conformance with the procedures described below:

- As few people as possible will handle samples.
- Sample containers will be obtained new or pre-cleaned from the laboratory performing the analyses.
- The sample collector will be personally responsible for the completion of the COC record and the care and custody of samples collected until they are transferred to another person or dispatched properly under COC rules.
- The cooler in which the samples are shipped will be accompanied by the COC record identifying its contents. The original record and laboratory copy will accompany the shipment (sealed inside the shipping container). The other copy will be forwarded to Landau Associates along with sample collection forms.
- Coolers will be sealed with strapping tape and custody seals for shipment to the laboratory. The method of shipment, name of courier, and other pertinent information will be entered in the "remarks" section of the COC record and traffic report.

When samples are transferred, the individuals relinquishing and receiving the samples will sign the COC form and record the date and time of transfer. The sample collector will sign the form in the first signature space. Each person taking custody will observe whether the shipping container is correctly sealed and in the same condition as noted by the previous custodian (if applicable); deviations will be noted on the appropriate section of the COC record.

A designated sample custodian at the laboratory will accept custody of the shipped samples, verify the integrity of the custody seals, and certify that the sample identification numbers match those on the COC record. The custodian will then enter sample identification number data into a bound logbook, which is arranged by a project code and station number. If containers arrive with broken custody seals, the laboratory will note this on the COC record and will immediately notify the sampler and Landau Associates.

5.7 SURVEYING

The location of each monitoring well and soil sampling location will be surveyed using differential global positioning system (DGPS) equipment to facilitate accurate placement of these features on project figures and drawings, as well for submittal to Ecology. Monitoring well reference elevations

will be surveyed to the nearest 0.01 ft for use in evaluating groundwater and lithologic unit elevations. Both the top of the monitoring wells casing elevation and ground surface elevation adjacent to the monitoring well will be obtained. This information will be used to develop groundwater elevation contour maps. Vertical Datum (NAVD)88 will be used as the reference elevation datum. Surveying will be accomplished after completion of the well installations.

5.7.1 WATER LEVEL MEASUREMENTS

Water level measurements will be obtained at each monitoring well prior to purging and sample collection. All water levels will be measured using an electronic water level indicator and will be recorded to the nearest 0.01 ft. Measurements will be taken from the top of the well casing.

5.8 EQUIPMENT DECONTAMINATION

The decontamination procedures described below are to be used by field personnel to clean drilling, sampling, and related field equipment. Deviation from these procedures must be documented in field records.

5.8.1 SAMPLING EQUIPMENT

All sampling equipment used (e.g., stainless-steel bowls, stainless-steel spoons, hand augers, etc.) will be cleaned using a three-step process, as follows:

1. Scrub surfaces of equipment that would be in contact with the sample with brushes using an Alconox solution
2. Rinse and scrub equipment with clean tap water
3. Rinse equipment a final time with deionized water to remove tap water impurities.

Decontamination of the reusable sampling devices will occur between collection of each sample. Decontamination of sampling equipment that contains a visible sheen will include a hexane rinse (or other appropriate solvent) prior to the tap water rinse.

5.8.2 HEAVY EQUIPMENT

Heavy equipment (e.g., the drilling rigs and drilling equipment that is used downhole, or that contacts material and equipment going downhole) will be cleansed by a hot water, high pressure wash before each use and at completion of the project. Potable tap water will be used as the cleansing agent.

5.9 RESIDUAL WASTE MANAGEMENT

Soil cuttings and decontamination water generated during drilling and water generated during well development, purging, and decontamination, will be drummed in 55-gallon drums or 5-gallon buckets secured with a lid for offsite disposal. Disposal methods for soil and groundwater stored in drums and/or buckets will be determined based on the analytical results for the soil and groundwater samples. Drums will be stored in a secure location at the Site pending receipt of analytical results.

6.0 LABORATORY ANALYSES

Soil, groundwater, and surface water samples will be analyzed for constituents previously detected in soil at concentrations exceeding the preliminary cleanup levels or constituents identified as potential constituents of concern based on the former operations in the area of the Site being investigated. The planned analyses for each sample are discussed below and summarized in Tables A-1, A-2, A-3, and A-4. The rationale for the analyses to be performed for each sample is also provided in these tables.

The analyses to be performed for soil and groundwater samples include dissolved metals (arsenic, cadmium, chromium, lead and mercury); PAHs; HCID, VOCs; gasoline-, diesel-, motor oil-range petroleum hydrocarbons. The metals analyses to be performed on the surface water sample will include the following total metals: arsenic, cadmium, chromium, copper, lead, mercury and zinc. Methods and reporting limit goals for the analysis of each of the above constituents are summarized in Table A-7. For all groundwater analyses except dissolved metals, any suspended material in the sample will be allowed to settle and the sample will not be agitated prior to analysis of the supernatant. For the dissolved metal analyses, the samples will be filtered in the field to remove any suspended sediment. An acid/silica gel cleanup will be applied to all groundwater samples analyzed for diesel-range and motor oil-range petroleum hydrocarbons.

6.1 AREA A SOIL AND GROUNDWATER SAMPLE ANALYSES

The soil and groundwater samples collected from Area A will be analyzed for total petroleum hydrocarbons using the hydrocarbon identification method (NWTPH-HCID), total metals by US Environmental Protection Agency (EPA) Methods 6010B and 7471 (soil), dissolved metals by EPA Method Methods 200.8, 6010B, and 7470A (groundwater), and PAHs by Method 8270 (method 8270-SIM will be used for groundwater). Surface soil samples A-S1 and A-S2 will also be analyzed for PCBs by EPA Method 8082. Follow-up analysis for gasoline, diesel, and oil-range petroleum hydrocarbons by Northwest Methods TPH-Gx and TPH-Dx, and/or BTEX by EPA Method 8021 will be conducted based on the HCID results.

6.2 AREA B SOIL AND GROUNDWATER SAMPLE ANALYSES

As previously indicated in Section 5.1 of the RI workplan, Area B is being addressed separately. Although existing well MW-1 is located within Area B, it is also likely to be at a downgradient location with respect to Area C and Area D. A groundwater sample will be collected from MW-1 and analyzed for total petroleum hydrocarbons using method NWTPH-HCID, dissolved metals by EPA Method Methods 200.8, 6010B, and 7470A, and PAHs by Method 8270 SIM will be used for groundwater.

6.3 AREA C SOIL AND GROUNDWATER SAMPLE ANALYSES

The soil and groundwater samples collected from Area C will be analyzed for total petroleum hydrocarbons using the hydrocarbon identification method (NWTPH-HCID); dissolved metals by EPA Method Methods 200.8, 6010B, and 7470A (groundwater); VOCs by EPA Method 8260 PAHs by EPA Method 8270 (method 8270-SIM will be used for groundwater). Surface soil samples C-S3 and C-S6 will also be analyzed for PCBs by EPA Method 8082. Follow-up analysis for gasoline, diesel, and oil-range petroleum hydrocarbons by Northwest Methods TPH-Gx and TPH-Dx, and/or BTEX by EPA Method 8021 will be conducted based on the HCID results.

The soil sample collected from boring C-SS1 will be analyzed for total petroleum hydrocarbons using the HCID method. Follow-up analysis for TPH-G, TPH-D, and TPH-O, and/or BTEX will be conducted based on the HCID results

6.4 AREA D SOIL AND GROUNDWATER SAMPLE ANALYSES

Soil and groundwater samples collected from the former UST locations (MW-7 and MW-8) in Area D will be analyzed for diesel-range petroleum hydrocarbons by Method NWTPH-Dx.

Soil and groundwater samples collected from the boring located immediately downgradient of the waste oil UST will be analyzed for total petroleum hydrocarbons using the hydrocarbon identification method (NWTPH-HCID); VOCs by EPA Method 8260 and PAHs by EPA Method 8270 (method 8270-SIM will be used for groundwater). Follow-up analysis for gasoline, diesel, and oil-range petroleum hydrocarbons by Northwest Methods TPH-Gx and TPH-Dx, will be conducted based on the HCID results.

Soil samples collected from borings D-SS1 through D-SS3 will be analyzed for total petroleum hydrocarbons using the HCID method. Follow-up analysis for TPH-G, TPH-D, and TPH-O, and/or BTEX will be conducted based on the HCID results.

6.5 SURFACEWATER SAMPLE ANALYSES

Surface water collected from sample location SW-1 will be analyzed for total petroleum hydrocarbons using the hydrocarbon identification method (NWTPH-HCID); total metals by EPA Method Methods 6020/200.8, 6010B, and 7470A; VOCs by EPA Method 8260 and PAHs by EPA Method 8270-SIM. Follow-up analysis for gasoline, diesel, and oil-range petroleum hydrocarbons by Northwest Methods TPH-Gx and/or TPH-Dx will be conducted based on the HCID results.

7.0 QUALITY ASSURANCE

The overall goal of the project quality assurance (QA) program is to provide a reasonable degree of confidence in project data and results through establishment of a rigorous system of quality and performance checks on data collection, analysis, and reporting activities, as well as to provide for appropriate and timely corrective action to achieve compliance with established performance and quality criteria.

This section presents data quality objectives (DQO) and the quality control (QC) procedures developed to meet these DQOs, sample handling and chain-of-custody procedures, laboratory control samples, performance and system audits, corrective actions, and data validation.

7.1 DATA QUALITY OBJECTIVES

Results from the soil and groundwater quality investigation activities will be used to document and evaluate current soil and groundwater quality conditions in Areas A, C, and D. The sample results must be precise, accurate, representative, complete, and comparable to a degree commensurate with this use.

The QA procedures presented are based on DQOs that were developed in accordance with Ecology guidelines (Ecology 2004; 1999, 2004b).

The target control limits (the range within which project data of acceptable quality should fall) for data quality will be laboratory acceptance limits generated according to EPA guidelines. The target control limits will be used to evaluate data acceptability and are considered to be QC goals for data acceptance.

Completeness of the project will be calculated as the proportion of data generated is validated.

Comparability is an expression of the confidence with which one data set can be compared to another. Data generated will be reported in units consistent with EPA guidelines. Statistical tests used to determine data precision, accuracy, and completeness are presented in the following subsections. Statistical definitions for representativeness and comparability are also provided in the following subsections.

7.1.1 PRECISION

Precision is a measure of mutual agreement among individual measurements of the same property under prescribed conditions. Precision is best expressed in terms of the standard deviation or relative percent difference (RPD). QA/QC sample types that test precision include field and laboratory duplicates and matrix or blank spike duplicates. The estimate of precision of duplicate measurements will be expressed as RPD, which is calculated:

$$RPD = \left| \frac{D_1 - D_2}{(D_1 + D_2)/2} \right| x\,100$$

where: D_1 = first sample value

D_2 = second sample value (duplicate).

The RPDs will be routinely calculated and compared with DQO control limits. RPD control limits for field duplicate samples will be 50 percent.

7.1.2 ACCURACY

Accuracy is the degree of agreement of a measurement (or an average of measurements of the same property) X, with an accepted reference or true value T, usually expressed as the difference between the two values (X-T), the difference as a percentage of the reference or true value (100 (X-T)/T), or as a ratio (X/T). Accuracy is a measure of the bias in a system and is expressed as the percent recovery of spiked (matrix or surrogate spike) samples:

$$Percent\ Recovery = \frac{(Spiked\ Sample\ Result - Unspiked\ Sample\ Result)}{Amount\ of\ Spike\ Added} x\,100$$

The percent recovery will be routinely calculated and checked against DQO control limits.

7.1.3 REPRESENTATIVENESS

Representativeness expresses the degree to which data accurately and precisely represent an actual condition or characteristic of a population. Representativeness can be evaluated using replicate samples, additional sampling locations, and blanks.

7.1.4 COMPLETENESS

Completeness is a measure of the proportion of data obtained from a task sampling plan that is determined to be valid. It is calculated as the number of valid data points divided by the total number of data points requested. The QA objective for completeness during this project will be 95 percent. Completeness will be routinely determined and compared to the DQO acceptable percentage.

7.1.5 COMPARABILITY

Comparability is an expression of the confidence with which one data set can be compared to another. QA procedures in this document will provide for measurements that are consistent and representative of the media and conditions measured. All sampling procedures and analytical methods

used for the soil and groundwater investigation sampling activities will be consistent to provide comparability of results for samples and split samples. Data collected under this plan also will be calculated, qualified, and reported in units consistent with EPA guidelines.

7.2 FIELD AND LABORATORY QUALITY CONTROL SAMPLES

Field and laboratory control samples will used to evaluate data precision, accuracy, representativeness, completeness, and comparability of the analytical results for the verification sampling. A summary of the QC samples is presented in the following subsections.

7.2.1 BLIND FIELD DUPLICATE

One blind field duplicate will be collected from a monitoring well during each sampling event. The blind field duplicate will consist of a split sample collected at a single sample location. The sample will be split into duplicate sample containers and submitted blind to the laboratory as a discrete sample. The blind field duplicate samples will be used to evaluate data precision. The blind field duplicates will be analyzed for the same constituents as the groundwater samples collected from the same location. Blind field duplicate samples will be not identified in the sample label to ensure unbiased analysis by the laboratory, but will be clearly identified in the field log. Field duplicates will not be collected for soil samples due to variability in soil conditions.

7.2.2 FIELD TRIP BLANKS

Field trip blanks will consist of deionized water sealed in a sample container by the analytical laboratory. The trip blank will accompany BTEX and gasoline-range petroleum hydrocarbon (NWTPH-G) groundwater sample containers during transportation to and from the field, and then will be returned to the laboratory with each shipment of BTEX and NWTPH-G samples. The trip blank will remain unopened until submitted to the laboratory for analysis of BTEX and NWTPH-G to determine possible sample contamination during transport.

7.2.3 FIELD RINSATE BLANKS

Field rinsate blanks will consist of deionized water passed over decontaminated sampling equipment and transferred to sample containers for analysis at the laboratory. Field rinsate blanks are used to identify potential cross contamination between the sampling equipment and the sample. Currently, groundwater sample collection will be conducted using disposable and/or dedicated equipment, thereby eliminating potential cross contamination between samples via sampling equipment. As a result,

collection of rinsate blanks is not currently planned. If non-dedicated equipment is used during groundwater sample collection at least one field equipment blank will be collected for laboratory analysis.

7.2.4 LABORATORY METHOD BLANKS

One laboratory method blank will be analyzed for all parameters (except total solids) to assess possible laboratory contamination. Dilution water will be used whenever possible. Method blanks will contain all reagents used for analysis. The generation and analysis of additional method, reagent, and glassware blanks may be necessary to verify that laboratory procedures do not contaminate samples.

7.2.5 LABORATORY CONTROL SAMPLE

One laboratory control sample will be analyzed for all parameters except total solids.

7.2.6 SURROGATE SPIKES

Samples analyzed for organic constituents will be spiked with appropriate surrogate compounds as defined by the analytical methods.

7.2.7 LABORATORY MATRIX SPIKE

A minimum of 1 laboratory matrix spike per 20 samples, not including QC samples, or 1 matrix spike sample per batch of samples if fewer than 20 samples are obtained, will be analyzed for metals, PAHs, and TPH (NWTPH-Dx and NWTPH-Gx). The matrix spikes will be performed using a project sample. These analyses will be performed to provide information on accuracy and to verify that extraction and concentration levels are acceptable. The laboratory spikes will follow EPA guidelines for matrix and blank spikes.

7.2.8 LABORATORY MATRIX SPIKE DUPLICATE

A minimum of 1 laboratory matrix spike duplicate per 20 samples, not including QC samples, or 1 matrix spike duplicate sample per batch of samples if fewer than 20 samples are obtained, will be analyzed for metals, PAHs, and TPH (NWTPH-Dx and NWTPH-Gx). The matrix spikes will be performed using a project sample. These analyses will be performed to provide information on the precision of the analyses. The laboratory spikes will follow EPA guidelines for matrix and blank spikes.

7.2.9 LABORATORY DUPLICATE

A minimum of 1 laboratory duplicate per 20 samples, not including QC samples, or 1 laboratory duplicate sample per batch of samples if fewer than 20 samples are obtained, will be analyzed for metals, PAHs, and TPH (NWTPH-Dx and NWTPH-Gx). These analyses will be performed to provide information on the precision of the chemical analyses. The laboratory duplicate will follow EPA guidance in the method.

7.3 CORRECTIVE ACTIONS

Corrective actions will be needed for two categories of nonconformance:

- Deviations from the methods or QA requirements established in this plan
- Equipment or analytical malfunctions.

Corrective action procedures to be implemented based on detection of unacceptable data are developed on a case-by-case basis. Such actions may include one or more of the following:

- Altering procedures in the field
- Using a different batch of sample containers
- Performing an audit of field or laboratory procedures
- Reanalyzing samples (if holding times allow)
- Resampling and analyzing
- Evaluating sampling and analytical procedures to determine possible causes of the discrepancies
- Accepting the data without action, acknowledging the level of uncertainty
- Rejecting the data as unusable.

During field operations and sampling procedures, the field personnel will be responsible for conducting and reporting required corrective actions. A description of any action taken will be entered in the daily field notebook. The project manager will be consulted immediately if field conditions are such that conformance with this plan is not possible. The field coordinator will consult with the Landau Associates' project manager, who may authorize changes or exceptions to the QA/QC portion of the plan, as necessary and appropriate.

During laboratory analysis, the laboratory QA officer will be responsible for taking required corrective actions in response to equipment malfunctions. If an analysis does not meet DQOs outlined in this plan, corrective action will follow the guidelines in the noted EPA analytical methods and the EPA guidelines for data validation for organics and inorganics analyses (EPA 1999; 2004). At a minimum, the laboratory will be responsible for monitoring the following:

- Calibration check compounds must be within performance criteria specified in the EPA method or corrective action must be taken prior to initiation of sample analysis. No analyses may be performed until these criteria are met.

- Before processing any samples, the analyst should demonstrate, through analysis of a reagent blank, that interferences from the analytical system, glassware, and reagents are within acceptable limits. Each time a set of samples is extracted or there is a change in reagents, a reagent blank should be processed as a safeguard against chronic laboratory contamination. The blank samples should be carried through all stages of the sample preparation and measurement steps.

- Method blanks should, in general, be below instrument detection limits. If contaminants are present, then the source of contamination must be investigated, corrective action taken and documented, and all samples associated with a contaminated blank reanalyzed. If upon reanalysis, blanks do not meet these requirements, Landau Associates will be notified immediately to discuss whether analyses may proceed.

- Surrogate spike analysis must be within the specified range for recovery limits for each analytical method utilized or corrective action must be taken and documented. Corrective action includes: 1) reviewing calculations, 2) checking surrogate solutions, 3) checking internal standards, and 4) checking instrument performance. Subsequent action could include recalculating the data and/or reanalyzing the sample if any of the above checks reveal a problem. If the problem is determined to be caused by matrix interference, reanalysis may be waived if so directed following consultation with Landau Associates. If the problem cannot be corrected through reanalysis, the laboratory will notify Landau Associates prior to data submittal so that additional corrective action can be taken, if appropriate.

- If the recovery of a surrogate compound in the method blank is outside the recovery limits, the blank will be reanalyzed along with all samples associated with that blank. If the surrogate recovery is still outside the limits, Landau Associates will be notified immediately to discuss whether analyses may proceed.

- If quantitation limits or matrix spike control limits cannot be met for a sample, Landau Associates will be notified immediately to discuss corrective action required.

- If holding times are exceeded, all positive and undetected results may need to be qualified as estimated concentrations. If holding times are grossly exceeded, Landau Associates may determine the data to be unusable.

If analytical conditions are such that nonconformance with this plan is indicated, Landau Associates will be notified as soon as possible so that any additional corrective actions can be taken. The laboratory project manager will then document the corrective action by a memorandum submitted to Landau Associates. A narrative describing the anomaly, the steps taken to identify and correct the anomaly, and any recalculation, reanalysis, or re-extractions will be submitted with the data package in the form of a cover letter.

7.4 DATA VERIFICATION AND VALIDATION

All RI data will be verified and validated to determine the results are acceptable and meet the quality objectives described in Section 5.1. Prior to submitting a laboratory report, the laboratory will verify that all the data are consistent, correct, and complete, with no errors or omissions.

Validation of the data will be performed by Landau Associates following the guidelines in the appropriate sections of the EPA Contract Laboratory Program *National Functional Guidelines for Organic and Inorganic Data Review* (EPA 1999 and 2004) and will include evaluations of the following:

- Chain-of-custody records
- Holding times
- Laboratory method blanks
- Surrogate recoveries
- Laboratory matrix spikes and matrix spike duplicates
- Blank spikes/laboratory control samples
- Laboratory duplicates
- Corrective action records
- Completeness
- Overall assessment of data quality.

In the event that a portion of the data is outside the DQO limits or the EPA guidance (EPA 1999 and 2004), or sample collection and/or documentation practices are deficient, corrective action(s) will be initiated. Corrective action, as described in Section 5.3, will be determined by the field coordinator and Landau Associates' QA officer in consultation with the Landau Associates' project/task manager and may include any of the following:

- Rejection of the data and resampling
- Qualification of the data
- Modified field and/or laboratory procedures.

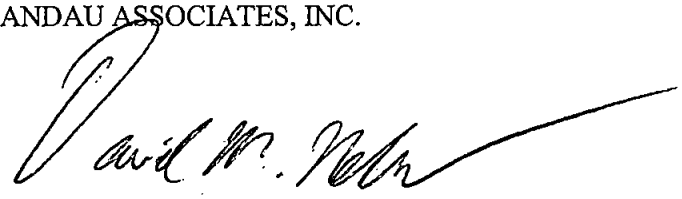
Data qualification arising from data validation activities will be described in the data validation report, rather than in individual corrective action reports.

8.0 DATA MANAGEMENT PROCEDURES

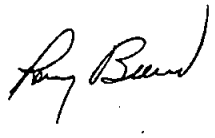
All laboratory analytical results, including QC data, will be submitted in hard copy and electronically to Landau Associates. Electronic format will include comma separated value (CSV) files that will be downloaded directly to an Excel spreadsheet. Following validation of the data, any qualifiers will be added to the Excel spreadsheets. All survey data will be provided electronically in a format that can be downloaded into an Excel spreadsheet. All field data (groundwater field parameter data and water levels measurements) will be entered into an Excel spreadsheet and verified to determine all entered data is correct and without omissions and errors. Following receipt of all RI data all survey data, water level measurements, field parameters, and analytical results will be formatted electronically and downloaded to Ecology's Environmental Information Management (EIM) system.

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

LANDAU ASSOCIATES, INC.



David Nelson, L.G.
Senior Staff Geologist



Lawrence D. Beard, P.E.
Principal

ERG/LDB/rgm

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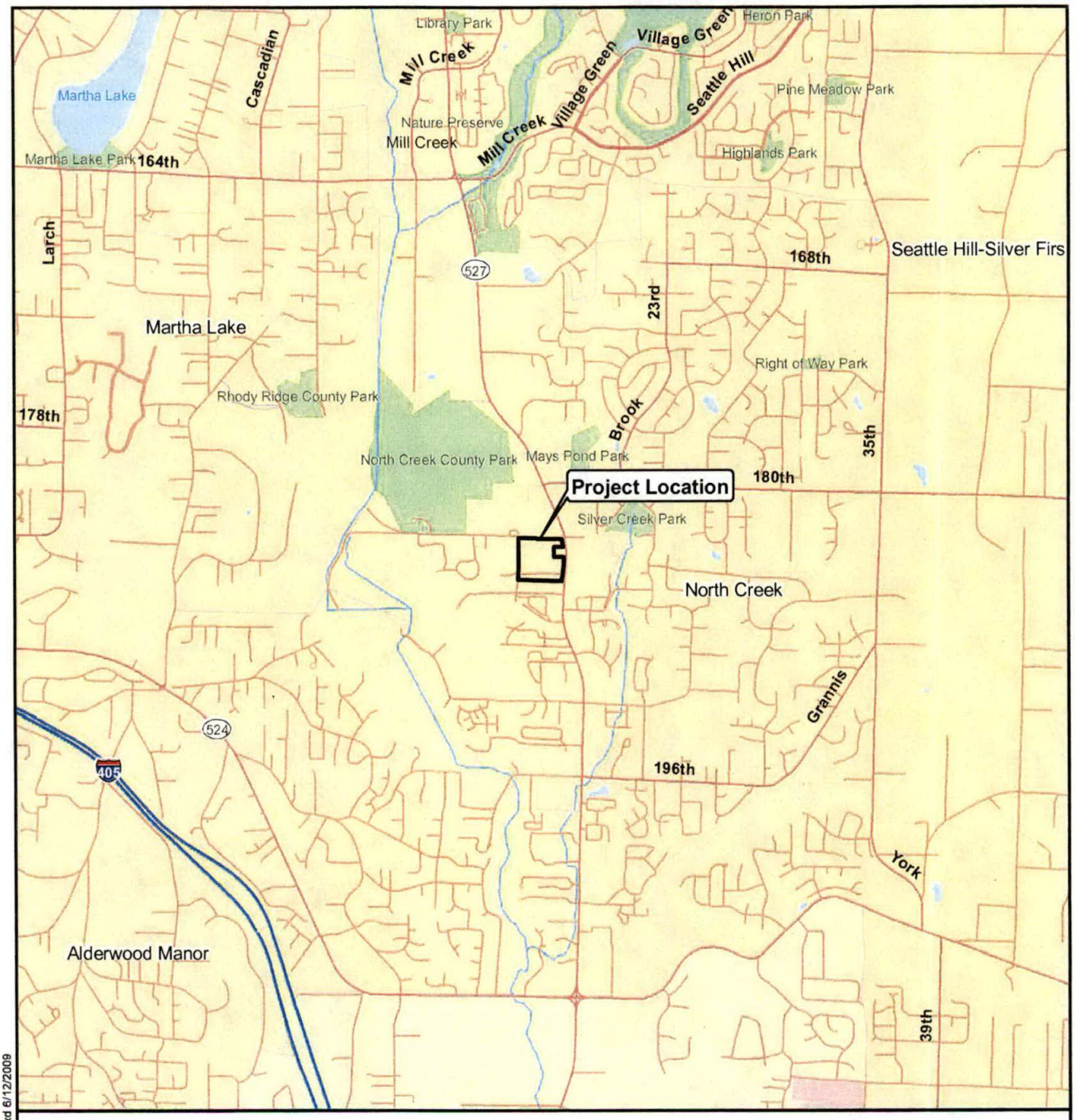

N

0 0.5 1

Miles

Data Source: ESRI 2008

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Verbeek Wrecking RI Work Plan Bothell/Snohomish County Washington	**Vicinity Map**	Figure A-1

N

Pavement

Gravel

Shop

Area B Soil Stockpile

Gravel Stockpile

Gravel Stockpile

MW-1

MW-2

A

B

C

D

ECOLOGY BLOCK WALL (±7' TALL)

GUARD RAIL

ECOLOGY BLOCK WALL

GOLD'S GYM

0 120 240

Scale in Feet

Data Source: Western Engineers Inc.

Verbeek Wrecking RI Work Plan Bothell/Snohomish County Washington	**Current Site Conditions**	Figure A-2

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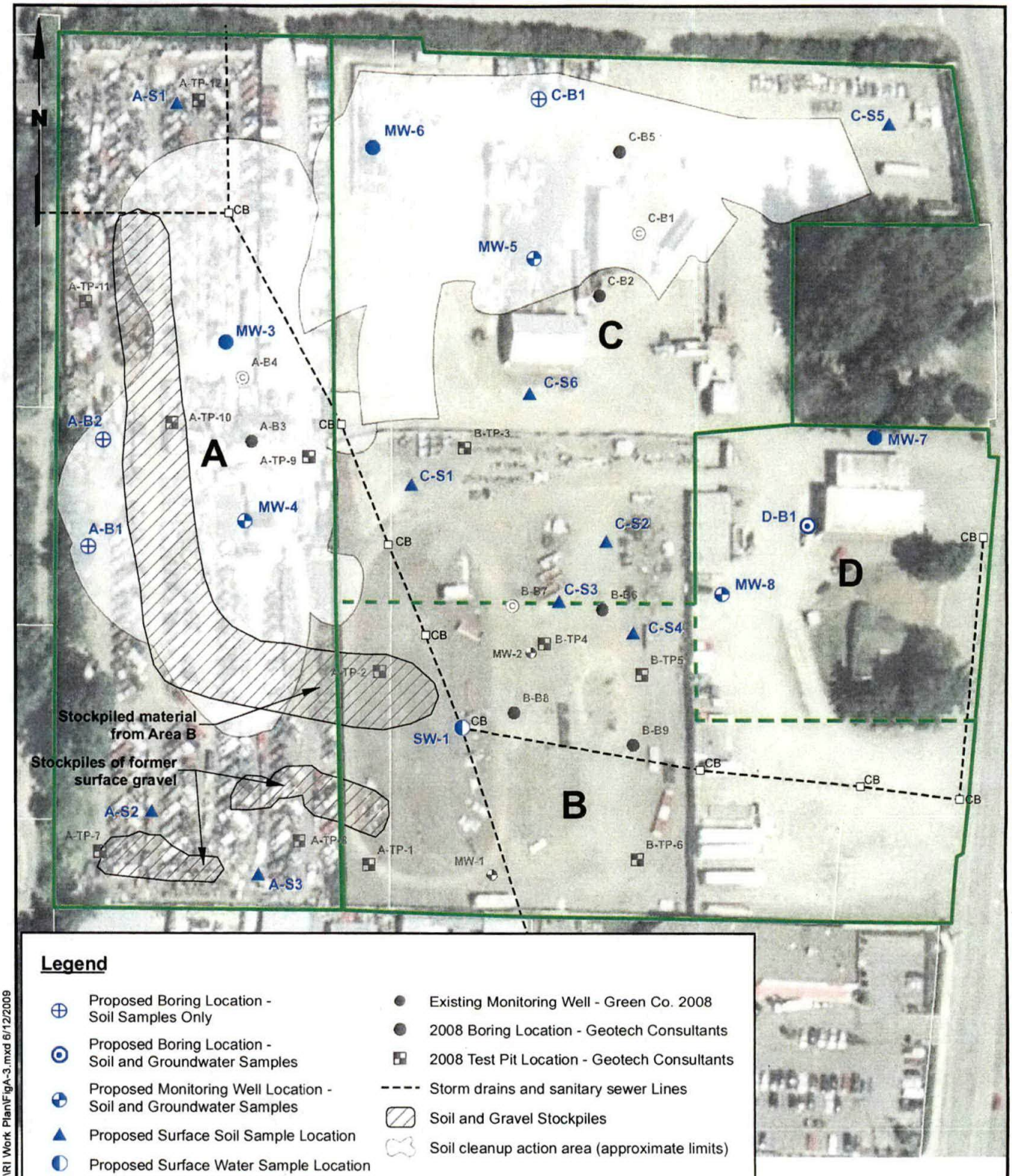

Data Source: Snohomish County; ESRI

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Verbeek Wrecking RI Work Plan Bothell/Snohomish County Washington	**Proposed Investigation Locations**	Figure A-3

TABLE A-1
AREA A - SUMMARY OF SOIL AND GROUNDWATER SAMPLE ANALYSIS AND RATIONALE
VERBEEK WRECKING
BOTHELL, WA

Sample Location	Media	Analyses: Metals	Petroleum Hydrocarbons	VOCs	SVOCs	PCBs	TOC	Physical Testing	Field Parameters	Rationale
MW-3	Groundwater	dissolved arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs		TOC	--	pH, temp, conductivity, turbidity, DO, ORP	Determine if interim action achieved groundwater Cleanup levels (CULs) for metals, petroleum hydrocarbons and cPAHs.
MW-3	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs		--	Grain size (below water table)	visual and/or olfactory indications of impact, PID screening	Determine if interim action achieved soil CULs for metals, petroleum hydrocarbons and cPAHs, evaulate surface soil conditions in the area of the former remediation soil piles, and determine if CULs were achieved in remediation soil piles.
MW-4	Groundwater	dissolved arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs		--	--	pH, temp, conductivity, turbidity, DO, ORP	Determine if interim action achieved groundwater Cleanup levels (CULs) for metals, petroleum hydrocarbons and cPAHs.
MW-4	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs		--	--	visual and/or olfactory indications of impact, PID screening	Determine if interim action achieved soil CULs for metals, petroleum hydrocarbons and cPAHs, evaulate surface soil conditions in the area of the former remediation soil piles, and determine if CULs were achieved in remediation soil piles.
A-B1	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs		--	--	visual and/or olfactory indications of impact, PID screening	Determine if interim action achieved soil CULs for metals, petroleum hydrocarbons and cPAHs, evaulate surface soil conditions in the area of the former remediation soil piles, and determine if CULs were achieved in remediation soil piles.
A-B2	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs		--	--	visual and/or olfactory indications of impact, PID screening	Determine if interim action achieved soil CULs for metals, petroleum hydrocarbons and cPAHs, evaluate surface soil conditions in the area of the former remediation soil piles, and determine if CULs were achieved in remediation soil piles.
A-S1	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs	PCBs	--	--	visual and/or olfactory indications of impact, PID screening	Evaluate surface soil conditions in the area of the former remediation soil piles
A-S2	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs	PCBs	--	--	visual and/or olfactory indications of impact, PID screening	Evaluate surface soil conditions in undisturbed areas of the Site where historical operations may have impacted surface soil.
A-S3	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs		--	--	visual and/or olfactory indications of impact, PID screening	Evaluate surface soil conditions in undisturbed areas of the Site where historical operations may have impacted surface soil.

PAH = polycyclic aromatic hydrocarbons
ORP = Oxidation Reduction Potential
DO = Dissolved Oxygen
TOC = Total Organic Carbon
(a) = Initial analysis by the hydrocarbon identification (HCID) method.
Follow-up quantification for gasoline, diesel, or oil will be conducted, as appropriate, based on the HCID results.
(b) Benzene, toluene, ethylbenzene, xylene. Samples will be archived and analyzed if gasoline is identified by the HCID method.

TABLE A-2
AREA C - SUMMARY OF SOIL AND GROUNDWATER SAMPLE ANALYSIS AND RATIONALE
VERBEEK WRECKING
BOTHELL, WA

Sample Location	Media	Analyses: Metals	Petroleum Hydrocarbons	VOCs	SVOCs	PCBs	TOC	Physical Testing	Field Parameters	Rationale
MW-5	Groundwater	dissolved arsenic, cadmium, chromium, lead, mercury	HCID (a)	VOCs	PAHs		--		pH, temp, conductivity, turbidity, DO, ORP	Evaluate groundwater conditions downgradient of the former vehicle processing area.
MW-5	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs		--	Grain size (below water table)	visual and/or olfactory indications of impact, PID screening	Evaluate soil conditions downgradient of the former vehicle processing area.
MW-6	Groundwater	dissolved arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs		TOC		pH, temp, conductivity, turbidity, DO, ORP	Determine if interim action achieved groundwater Cleanup levels (CULs) for metals, petroleum hydrocarbons and cPAHs.
MW-6	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs		--	Grain size (below water table)	visual and/or olfactory indications of impact, PID screening	Determine if interim action achieved soil CULs for metals, petroleum hydrocarbons and cPAHs, evaulate surface soil conditions in the area of the former remediation soil piles, and determine if CULs were achieved in remediation soil piles.
C-B1	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs		--		visual and/or olfactory indications of impact, PID screening	Determine if interim action achieved soil CULs for metals, petroleum hydrocarbons and cPAHs, evaulate surface soil conditions in the area of the former remediation soil piles, and determine if CULs were achieved in remediation soil piles.
C-S1	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs		--		visual and/or olfactory indications of impact, PID screening	Evaluate surface soil conditions in the area of the former remediation soil piles
C-S2	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs		--		visual and/or olfactory indications of impact, PID screening	Evaluate surface soil conditions in the area of the former remediation soil piles
C-S3	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs	PCBs	--		visual and/or olfactory indications of impact, PID screening	Evaluate surface soil conditions in undisturbed areas of the Site where historical operations may have impacted surface soil.
C-S4	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs		--		visual and/or olfactory indications of impact, PID screening	Evaluate surface soil conditions in undisturbed areas of the Site where historical operations may have impacted surface soil.
C-S5	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs	PCBs	--		visual and/or olfactory indications of impact, PID screening	Evaluate surface soil conditions in undisturbed areas of the Site where historical operations may have impacted surface soil.
C-SS1	Soil	total petroleum hydrocarbons	HCID (a)				--		indications of impact, PID screening	Evaluate shallow soil in undisturbed area north of GWP soils.

PAH = polycyclic aromatic hydrocarbons
ORP = Oxidation Reduction Potential
DO = Dissolved Oxygen
TOC = Total Organic Carbon
(a) = Initial analysis by the hydrocarbon identification (HCID) method.
Follow-up quantification for gasoline, diesel, or oil will be conducted, as appropriate, based on the HCID results.
(b) Benzene, toluene, ethylbenzene, xylene. Samples will be archived and analyzed if gasoline is identified by the HCID method.

TABLE A-3
AREA D - SUMMARY OF SOIL AND GROUNDWATER SAMPLE ANALYSIS AND RATIONALE
VERBEEK WRECKING
BOTHELL, WA

Sample Location	Media	Analyses				Field Parameters	Rationale
		Metals	Petroleum Hydrocarbons	VOCs	SVOCs		
MW-7	Groundwater	--	diesel range	--	--	pH, temp, conductivity, turbidity, DO, ORP	Evaluate groundwater conditions downgradient of former UST location #1.
MW-7	Soil	--	diesel range	--	--	visual and/or olfactory indications of impact, PID screening	Evaluate soil conditions downgradient of former UST location #1.
MW-8	Groundwater	--	diesel range	--	--	pH, temp, conductivity, turbidity, DO, ORP	Evaluate groundwater conditions downgradient of former UST location #2.
MW-8	Soil	--	diesel range	--	--	visual and/or olfactory indications of impact, PID screening	Evaluate soil conditions downgradient of former UST location #2.
D-SS1	Soil	--	HCID (a)	--	--	visual and/or olfactory indications of impact, PID screening	Evaluate near-surface soil in undisturbed area north of GWP soils.
D-SS2	Soil	--	HCID (a)	--	--	visual and/or olfactory indications of impact, PID screening	Evaluate near-surface soil in undisturbed area north of GWP soils.
D-SS3	Soil	--	HCID (a)	--	--	visual and/or olfactory indications of impact, PID screening	Evaluate near-surface soil in undisturbed area north of GWP soils.
D-B1	Groundwater	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs	pH, temp, conductivity, turbidity, DO, ORP	Evaluate groundwater conditions downgradient of existing waste oil UST.
D-B1	Soil	arsenic, cadmium, chromium, lead, mercury	HCID (a)	BTEX (b)	PAHs	visual and/or olfactory indications of impact, PID screening	Evaluate soil conditions downgradient of existing waste oil UST.

PAH = polycyclic aromatic hydrocarbons
ORP = Oxidation Reduction Potential
DO = Dissolved Oxygen
(a) = Initial analysis by the hydrocarbon identification (HCID) method.
Follow-up quantification for gasoline, diesel, or oil will be conducted, as appropriate, based on the HCID results.
(b) Benzene, toluene, ethylbenzene, xylene. Samples will be archived and analyzed if gasoline is identified by the HCID method.

TABLE A-4
SUMMARY OF STORMWATER SAMPLE ANALYSIS AND RATIONALE
VERBEEK WRECKING
BOTHELL, WA

Sample Location	Analyses: Metals	Petroleum Hydrocarbons	VOCs	SVOCs	Media	Field Parameters	Rationale
SW-1	arsenic, cadmium, chromium, lead, and zinc	HCID (a)	VOCs	PAHs	Stormwater/ Surface Water	pH, temp, conductivity, turbidity	Evaluate surface water quality in down gradient storm drain catch basin

PAH = polycyclic aromatic hydrocarbons
(a) = Initial analysis by the hydrocarbon identification (HCID) method.
Follow-up quantification for gasoline, diesel, or oil will be conducted, as appropriate, based on the HCID results.
(b) Benzene, toluene, ethylbenzene, xylene. Samples will be archived and analyzed if gasoline is identified by the HCID method.

TABLE A-5
SOIL SAMPLE CONTAINERS, PRESERVATIVES, AND HOLDING TIMES
VERBEEK WRECKING
BOTHELL, WASHINGTON

Analyses	Sample Container	Preservation	Holding Time
NW-TPH-HCID	1 - 8 oz wide mouth glass	Cool, 4°C	14 days
NWTPH-G	4 - 40 ml vial	$Na_2S_2O_4$ (2 vials), methanol (2 vials); Cool 4°C	14 days
NWTPH-Dx	1 - 8 oz wide mouth glass	Cool, 4°C	14 days
PAHs	1 - 8 oz wide mouth glass	Cool, 4°C	14 days
VOCs/ BTEX	4 - 40 ml vial	$Na_2S_2O_4$ (2 vials), methanol (2 vials); Cool 4°C	14 days
Metals	1 - 4 oz wide mouth glass	Cool, 4°C	6 months

TABLE A-6
GROUNDWATER SAMPLE CONTAINERS, PRESERVATIVES, AND HOLDING TIMES
VERBEEK WRECKING
BOTHELL, WA

Analyses	Sample Container	Preservation	Holding Time
NW-TPH-HCID	2 - 500 ml amber glass	Cool, 4°C	7 days
NWTPH-G	3 - 40 ml vial	HCl to pH <2; Cool 4°C	14 days
NWTPH-Dx	2 - 500 ml amber glass	Cool, 4°C	7 days
PAHs	2 - 500 ml amber glass	Cool, 4°C	7 days
VOCs/ BTEX	3 - 40 ml vial	HCl to pH <2; Cool 4°C	14 days
Dissolved metals (a)	1 - 500 ml polyethelene	2.5 ml - HNO_3 (c); Cool 4°C	6 months

(a) Dissolved metals samples must be filtered prior to preservation; therefore, samples will be filtered in the field.

TABLE A-7
SUMMARY OF SOIL AND GROUNDWATER SAMPLE ANALYTICAL METHODS AND TARGET REPORTING LIMITS
VERBEEK WRECKING
BOTHELL, WASHINGTON

Analyte	Analytical Method (a)	Target Reporting Limits (b) Groundwater	Target Reporting Limits (b) Soil	
Petroleum Hydrocarbons				
Gasoline-Range Petroleum Hydrocarbons	NWTPH-Gx (c)	0.25 mg/L	20	mg/kg
Diesel-Range Petroleum Hydrocarbons	NWTPH-Dx (d)	0.25 mg/L	50	mg/kg
Heavy Oil-Range Petroleum Hydrocarbons	NWTPH-Dx	0.5 mg/L	100	mg/kg
BTEX				
Benzene	EPA Method 8022	1 µg/L	25	µg/kg
Toluene	EPA Method 8023	1 µg/L	25	µg/kg
Ethylbenzene	EPA Method 8024	1 µg/L	25	µg/kg
Xylenes	EPA Method 8025	1 µg/L	50	µg/kg
	EPA Method 8026			
Metals (e)				
Arsenic	EPA Method 200.8	0.2 µg/L	0.2	mg/kg
Cadmium	EPA Method 6010	2.0 µg/L	0.2	mg/kg
Chromium	EPA Method 6010	5.0 µg/L	0.5	mg/kg
Copper	EPA Method 6020/200.8	2.0 µg/L	--	--
Lead	EPA Method 200.8	1.0 µg/L	2	mg/kg
Mercury	EPA Method 7470	0.1 µg/L	0.05	mg/kg
Zinc	EPA Method 6020/200.8	10.0 µg/L	--	--
Polycyclic Aromatic Hydrocarbons (PAHs)				
1-Methylnaphthalene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
2-Methylnaphthalene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Acenaphthene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Acenaphthylene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Anthracene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Benzo(a)anthracene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Benzo(a)pyrene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Benzo(b)fluoranthene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Benzo(g,h,i)perylene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Benzo(k)fluoranthene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Chrysene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Dibenz(a,h)anthracene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Dibenzofuran	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Fluoranthene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Fluorene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Indeno(1,2,3-cd)pyrene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Naphthalene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Phenanthrene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Pyrene	EPA Method 8270 SIM (f)	0.1 µg/L	60	µg/kg
Volatile Organic Compounds (VOCs)				
1,1,1,2-Tetrachloroethane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
1,1,1-Trichloroethane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
1,1,2,2-Tetrachloroethane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA Method 8260B	0.2 µg/L	2.0	µg/kg
1,1,2-Trichloroethane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
1,1-Dichloroethane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
1,1-Dichloroethene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
1,1-Dichloropropene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
1,2,3-Trichlorobenzene	EPA Method 8260B	0.5 µg/L	5.0	µg/kg
1,2,3-Trichloropropane	EPA Method 8260B	0.5 µg/L	2.0	µg/kg
1,2,4-Trichlorobenzene	EPA Method 8260B	0.5 µg/L	5.0	µg/kg
1,2,4-Trimethylbenzene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
1,2-Dibromo-3-Chloropropane	EPA Method 8260B	0.5 µg/L	5.0	µg/kg
1,2-Dibromoethane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
1,2-Dichlorobenzene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg

TABLE A-7
SUMMARY OF SOIL AND GROUNDWATER SAMPLE ANALYTICAL METHODS AND TARGET REPORTING LIMITS
VERBEEK WRECKING
BOTHELL, WASHINGTON

Analyte	Analytical Method (a)	Target Reporting Limits (b) Groundwater	Target Reporting Limits (b) Soil	
1,2-Dichloroethane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
1,2-Dichloropropane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
1,3,5-Trimethylbenzene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
1,3-Dichlorobenzene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
1,3-Dichloropropane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
1,4-Dichlorobenzene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
2,2-Dichloropropane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
2-Butanone	EPA Method 8260B	2.5 µg/L	5.0	µg/kg
2-Chloroethyl Vinyl Ether	EPA Method 8260B	1.0 µg/L	5.0	µg/kg
2-Chlorotoluene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
2-Hexanone	EPA Method 8260B	2.5 µg/L	5.0	µg/kg
4-Chlorotoluene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
4-Isopropyl Toluene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
4-Methyl-2-Pentanone	EPA Method 8260B	2.5 µg/L	5.0	µg/kg
Acetone	EPA Method 8260B	3.0 µg/L	5.0	µg/kg
Acrolein	EPA Method 8260B	5.0 µg/L	50	µg/kg
Acrylonitrile	EPA Method 8260B	1.0 µg/L	5.0	µg/kg
Benzene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Bromobenzene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Bromochloromethane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Bromodichloromethane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Bromoethane	EPA Method 8260B	0.2 µg/L	2.0	µg/kg
Bromoform	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Bromomethane	EPA Method 8260B	0.5 µg/L	1.0	µg/kg
Carbon Disulfide	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Carbon Tetrachloride	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Chlorobenzene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Chlorodibromomethane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Chloroethane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Chloroform	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Chloromethane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
cis-1,2-Dichloroethene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
cis-1,3-Dichloropropene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Dibromomethane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Ethyl Benzene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Hexachloro-1,3-Butadiene	EPA Method 8260B	0.2 µg/L	5.0	µg/kg
Iodomethane	EPA Method 8260B	1.0 µg/L	1.0	µg/kg
Isopropyl Benzene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
m,p-Xylene	EPA Method 8260B	0.4 µg/L	1.0	µg/kg
Methylene Chloride	EPA Method 8260B	0.5 µg/L	2.0	µg/kg
Methyl-t-butyl ether (MTBE)	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Naphthalene	EPA Method 8260B	0.5 µg/L	5.0	µg/kg
n-Butylbenzene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
n-Propyl Benzene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
o-Xylene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
s-Butylbenzene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Styrene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
t-Butylbenzene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Tetrachloroethene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Toluene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
trans-1,2-Dichloroethene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
trans-1,3-Dichloropropene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
trans-1,4-Dichloro-2-Butene	EPA Method 8260B	1.0 µg/L	5.0	µg/kg
Trichloroethene	EPA Method 8260B	0.2 µg/L	1.0	µg/kg

TABLE A-7
SUMMARY OF SOIL AND GROUNDWATER SAMPLE ANALYTICAL METHODS AND TARGET REPORTING LIMITS
VERBEEK WRECKING
BOTHELL, WASHINGTON

Analyte	Analytical Method (a)	Target Reporting Limits (b) Groundwater	Target Reporting Limits (b) Soil	
Trichlorofluoromethane	EPA Method 8260B	0.2 µg/L	1.0	µg/kg
Vinyl Acetate	EPA Method 8260B	1.0 µg/L	5.0	µg/kg
Vinyl Chloride	EPA Method 8260B	0.2 µg/L	1.0	µg/kg

SIM = Selected ion monitoring

(a) Analytical methods are from SW-846 (EPA 1986) and upddates, unless otherwise noted.

(b) Reporting limits goals are based on current laboratory data and may be modified during the investigation process as methodology is refined. Laboratory reporting will be based on the lowest standard on the calibration curve. Instances may arise where high sample concentrations, nonhomogeneity of samples, or matrix interferences preclude achieving the desired reporting limits.

(c) NWTPH-Gx Method as described in *Analytical Methods for Petroleum Hydrocarbons* , Washington State Department of Ecology, Publication ECY97-602, June 1997 (Ecology 1997).

(d) Method NWTPH-DX as described in *Analytical Methods for Petroleum Hydrocarbons* , Washington State Department of Ecology, Publication ECY97-602, June 1997 (Ecology 1997).

(e) Soil samples will be analyzed for total metals. Groundwater samples will be analyzed for dissolved metals.

(f) Soil samples will be analyzed by Method 8270. Groundwater samples will be analyzed by Method 8270 SIM.