LUST # 381905
UST # 4279/551877 (Dup)
SeaTac/King
507

SEATAC DEVELOPMENT
VCP NW 0712

Golder Associates Inc.

18300 NE Union Hill Road, Suite 200
Redmond, WA 98052-3333
Telephone (425) 883-0777
Fax (425) 882-5498

Golder Associates

FINAL
INDEPENDENT REMEDIAL ACTION REPORT
SEATAC PARKING GARAGE DEVELOPMENT SITE
SEATAC, WASHINGTON
(MASTER PARK LOT C)

Prepared for:

SeaTac Investments LLC

RECEIVED
JAN 2 5 2002
DEPT OF ECOLOGY

Submitted by:

Golder Associates Inc.
Redmond, Washington

January 24, 2002

013-1427.600
0124tjn1

TABLE OF CONTENTS Page No.

LIST OF TABLES

LIST OF FIGURES

APPENDICES

EXECUTIVE SUMMARY

SeaTac Investments LLC entered a long-term lease agreement and redeveloped the subject property from four light industrial/commercial properties into Master Park's Lot C located at 16025 International Boulevard, SeaTac, Washington. SeaTac Investments LLC's predecessor (Sunreal Inc.) retained Golder Associates Inc. (Golder) to conduct an environmental site assessment of the subject property during the due diligence period of the real estate transaction.

Golder conducted a Phase I ESA, Phase II ESA, Extended Phase II ESA, and Phase III ESA from fall 2000 to spring 2001. The series of investigations identified several recognized environmental conditions (RECs) on the Site. The RECs consisted of the following:

- The presence of non-volatile petroleum hydrocarbon impacts in shallow soils was identified across a relatively wide area of the Site.
- The presence of three underground storage tanks on-site that were used to store petroleum hydrocarbons. (Two additional USTs were discovered during Site redevelopment construction activities.)
- Petroleum hydrocarbons, semi-volatile organic constituents, and metals above regulatory limits were in sludges sampled in a storm drain sump and an oil/water separator.
- The regional groundwater aquifer beneath the northwestern portion of the Site (~50 ft. depth) is contaminated with elevated levels of gasoline hydrocarbons including benzene, toluene, ethyl benzene, and xylenes (BTEX).

As the new site operator, SeaTac Investments LLC proceeded with remediation activities in coordination with the Site redevelopment. A series of limited remediation activities were conducted related to the RECs as an independent cleanup. The remediation approach was presented to WDOE in the letter submitted on April 12, 2001 under the State's voluntary cleanup program (VCP) and included the following:

- Removal and closure of five underground storage tanks (USTs) and cleanup of all associated impacted soil and perched water to below MTCA Method A cleanup levels.
- Removal of the oil/water separator and selected portions of the Site's storm water management system.
- Removal and landfilling of soil impacted above the Site Specific Near Surface Soil cleanup level.
- Capping of impacted near surface soils not encountered or removed during utility work with an asphalt protective of human health and the environment.

By conducting the remedial actions as summarized in this report and supporting documents during Site redevelopment, SeaTac Investments LLC successfully met the objectives of the remediation as presented in the April 12, 2001 letter to WDOE, "Review of Environmental Site Assessment Reports for the SeaTac Parking Development Project

SeaTac, Washington." Furthermore, the information obtained from the Site investigations and UST closures/remediations did not indicate that any of the potential sources on the subject property contributed or will contribute to contamination of the underlying regional aquifer in the future.

1 INTRODUCTION

This independent remedial action report was prepared for SeaTac Investments LLC by Golder Associates Inc. (Golder) and provides documentation of the remedial actions conducted in conjunction with the redevelopment of the subject property into the Master Park Lot C property located at 16025 Block International Boulevard, SeaTac, Washington (Site). The general Site location is presented in Figure 1. The project consisted of redeveloping several light industrial and commercial properties into a full-service commercial parking facility supporting SeaTac International Airport.

Golder conducted an extensive investigation for the environmental site assessment of the subject property during the due diligence period, on behalf of SeaTac Investments LLC and their predecessor from the fall of 2000 to the spring of 2001 prior to entering a long-term lease agreement. The environmental investigations conducted by Golder identified several recognized environmental conditions (RECs) on the Site. The RECs consisted of the following:

- The presence of petroleum hydrocarbon impacts in shallow soils was identified across a relatively wide area of the Site. The cause of these impacts was presumed to be related to the prior use of the Site as a parking facility and other historical Site activities.
- The environmental investigations identified the presence of three underground storage tanks on Site. Two additional USTs were discovered during Site redevelopment construction activities.
- Chemicals of concern were identified in elevated levels in sludges sampled in a storm drain sump and an oil/water separator. Of these chemicals, petroleum hydrocarbons, semi-volatile constituents, and metals were observed above regulatory limits.
- The regional groundwater aquifer beneath the Site (~50 ft. depth) is contaminated with elevated levels of gasoline hydrocarbons including benzene, toluene, ethyl benzene, and xylenes (BTEX). The groundwater contamination was determined to be limited to the northwestern portion of the Site.

As the new site operator, SeaTac Investments LLC proceeded with remediation activities in coordination with the Site redevelopment. A series of limited remediation activities were conducted related to the RECs as an independent cleanup. The planned remedial actions for the Site were presented to WDOE under the Voluntary Cleanup Program (VCP) in our April 12, 2001 letter RE: "Review of Environmental Site Assessment Reports for the SeaTac Parking Development Project, SeaTac, Washington." WDOE has assigned VCP number NW0712 to the SeaTac Master Park Lot C development. The objective of the remedial actions was to investigate and remove sources on the subject property with the potential to impact soil and/or groundwater and specifically determine if any of the potential Site sources may have contributed to the impacts exhibited in the regional aquifer.

The Site remedial activities consisted of:

- Removal and closure of five Site underground storage tanks (USTs) and cleanup of any associated impacted soil and /or groundwater to below State regulatory limits.
- Removal of the oil/water separator and selected portions of the Site's storm water management system.
- Sampling, removal and landfilling of excavated soils generated during Site utility and grading work, which were determined to be impacted above the Site Specific Near Surface Soil cleanup level. Soils identified for landfilling were transported off-site to Waste Management Inc.'s. Olympic View Landfill in Port Orchard, Washington.
- Capping of impacted near surface soils ~~not~~ encountered or removed during utility work. Placing an adequate cover (asphalt) over these soils allowed impacted soils not disturbed during grading and utility installation to be left in place and to be protective of human health and the environment. — deeper

The remedial actions were conducted in conjunction with Site redevelopment activities, which included demolition, regrading, and underground utility installations.

Based on the results of the previous environmental investigations and the completion of the remedial actions conducted by SeaTac Investments LLC, all of the known potential sources previously located on the Site that could impact soil and groundwater have been removed or remediated. Based on the results of initial investigations and investigations conducted while performing the Site remedial actions, it is believed that the RECs initially identified as potential sources did not contribute to, nor will they contribute to, contamination of the underlying regional aquifer. The observed contamination of the regional aquifer appears to be from off-site source(s) located hydraulically upgradient of the Site.

2 SITE BACKGROUND

2.1 Site Description and Location

The Master Park Lot C is located at 16025 International Boulevard (State Road 99) in a commercial and retail district of SeaTac, Washington. Prior to redevelopment the property consisted of four contiguous properties, identified as the Scarsella, Pong, Cavey, and Collop properties. Each of these properties was located on the west side of the 16000 block of International Boulevard. The Site is located within Section 26, Township 23 North, Range 4 East. Figure 2 shows the general layout of the Site and property boundaries prior to demolition. The Collop and Pong parcels were not included in the final development of the parking lot.

The Site is a rectangular-shaped property with a panhandle in the southwest corner. The primary rectangle is approximately 600 feet in length (northeast to southwest) by 300 feet in width (west to east). The panhandle area is approximately 200 feet in length (northeast to southwest) by 60 feet in width (west to east). The total area of the Site is roughly 4.4 acres. Surrounding properties include International Boulevard to the east, the Washington Memorial Cemetery to the west, a gravel parking lot to the south, and Louden Realty (16015 International Boulevard) to the north.

2.2 Site Environmental Conditions

The Site ground surface elevation generally declines from the southwest to the northeast with a maximum elevation near 400 ft above sea level (asl) at the southwest corner of the Site and a minimum elevation of about 350 ft asl near the northeast corner. An approximately 1-acre wetland is present near the south end of the property in a closed depression.

Glacially derived deposits typical of the Puget Sound region underlie the Site. Near surface soils consist of a layer of fill that may be up to approximately 10 ft thick in places. Beneath the fill, till and/or layers of outwash sand are encountered. In general, the till occurs in the range of 10 to 30 ft bgs. Below the till is dense to very dense advance outwash consisting of unstratified fine- to coarse-grained sandy deposits.

A continuous zone of groundwater representing a regional aquifer occurs across the Site at a depth of approximately 50 ft bgs. This water-bearing unit is contained within outwash sand deposits present beneath till. The thickness of this saturated coarse-grained deposit is at least 40 ft based on the drilling of one "deep" well (MW-10) to a depth of 92 ft. Above this regional aquifer, isolated areas of perched groundwater occur at selected locations at depths less than about 20 ft. These zones are limited in occurrence, not hydraulically continuous across the Site, and likely form over layers of till.

MW
5/9/07

3 PREVIOUS ENVIRONMENTAL SITE ASSESSMENT INVESTIGATIONS

Golder conducted the environmental site assessment in phases. The environmental site assessment was conducted on behalf of SeaTac Investments LLC during the due diligence period of the project. Documentation of the previous environmental site assessment investigations and findings are presented in the following reports.

- *Phase I Environmental Site Assessment, SunReal Inc., SeaTac Parking Garage Site, SeaTac, Washington.* October 12, 2000 - The initial desktop review of the Site history and current operations to identify potential environmental conditions that warranted field investigation.
- *Final Phase II Environmental Site Assessment Report, SeaTac Parking Garage Development Site, SeaTac, Washington,* March 31, 2001 - A limited field investigation involving drilling at 20 locations, soil sampling, surface water sampling, sludge sampling from catch basins and an oil/water separator, and the installation of three groundwater monitoring wells.
- *Final Report for Extended Phase II Environmental Site Assessment, SeaTac Parking Garage Development Site, SeaTac, Washington,* March 31, 2001 - Six additional direct push drilling locations to assess soils in an area of two suspected former USTs believed abandoned in the late 1970s.
- *Final Report for The Phase III Environmental Site Assessment, SeaTac Parking Garage Development Site, SeaTac, Washington,* March 31, 2001 - Completion of seven additional monitoring wells to more fully assess conditions in the aquifer beneath the Site.
- *Collection and Analytical Results of Groundwater Sample From Washington Memorial Park Cemetery Private Well,* September 7, 2001. Letter report addressed to SeaTac Investments LLC, Attention Mr. Douglas Rigoni - Demonstrates that the groundwater at the cemetery's supply well, which is cross-gradient to the impacted regional groundwater plume, has not been impacted by gasoline range hydrocarbons or BTEX constituents.

The first three reports were submitted to WDOE in April 2001 for review under the VCP. The fourth report was submitted to WDOE in October 2001. Golder sampling locations from the due diligence assessment investigations are depicted in Figure 3. Additional reports addressing remedial actions (UST closures) conducted during redevelopment and construction have also been submitted to WDOE under the VCP. A summary of these reports is presented in Section 4.4 of this report. The following sections provide a brief summary of each of the environmental site assessment investigation and findings.

3.1 Phase I

Golder conducted a Phase I Environmental Site Assessment (ESA) for the subject property in October 2000 on behalf of SunReal Inc., the predecessor to SeaTac Investments LLC. The Phase I ESA identified a number of recognized potential environmental conditions and recommended further investigation. A Phase II ESA was

authorized to further investigate and evaluate the recognized potential environmental conditions at the Site. The recognized environmental conditions included the potential for soil and groundwater contamination above regulatory levels at the Site resulting from prior and current Site uses and activities.

3.2 Phase II

The initial Phase II ESA identified gasoline (and potentially diesel) range petroleum hydrocarbons, benzene, toluene, ethyl benzene and total xylenes (BTEX) contamination, accompanied by polyaromatic hydrocarbons (PAHs) in Site groundwater at monitoring well MW-1. MW-1 is located in the northwest portion of the property near the former AirPro repair shop location. The concentrations of gasoline range petroleum hydrocarbons and BTEX reported in MW-1 were substantially above State Regulatory cleanup levels. MW-1 was completed at an approximate depth of 52 feet below ground surface (bgs). At the time of installation it was not known if the well was completed in a deep perched water zone or in the regional water table aquifer. No soil associated with petroleum hydrocarbon contamination was encountered above 45 feet bgs. There was no clear source for the groundwater contamination at MW-1 evident at the conclusion of the original Phase II ESA.

A perched water zone impacted by gasoline range petroleum hydrocarbons was also identified during the Phase II investigation. The source of the petroleum hydrocarbon contamination in the perched groundwater was the UST on the south side of the former Pacific Water Sports retail building. MW-2 was completed in the perched water zone for the purpose of collecting groundwater quality samples.

3.3 Extended Phase II

In conversations subsequent to the original Phase II ESA, the subject property owner (Mr. Jerry Scarsella) clarified that two underground storage tanks were removed from the yard on the east side of the former AirPro repair shop in the early 1970s. In addition, Mr. Scarsella stated that it was his understanding that USTs had also been closed in-place on the adjacent property (Louden Realty) to the north of the subject property.

As a result, the scope of work for the original Phase II ESA was amended to include additional investigations to determine whether either of the two reported UST closure locations could potentially be a source of the petroleum hydrocarbon contamination detected in the groundwater at MW-1. Conclusions drawn from the extended Phase II ESA investigation indicated that the subsurface soils near the suspected (closed) USTs had been impacted by gasoline range petroleum hydrocarbons and BTEX constituents. These soils exhibited concentrations (320 mg/kg) of gasoline petroleum hydrocarbons above the current and proposed MTCA Method A cleanup levels to a depth of 24 feet bgs at the GP11 sample location. However, benzene was not detected in any of the samples collected in this area. The extent of the gasoline range petroleum hydrocarbon impacted soils appeared to be relatively limited.

3.4 Phase III

The Phase III ESA investigation was conducted to determine if groundwater impacted with gasoline range hydrocarbons and BTEX constituents at Site monitoring well MW-1 were associated with a perched water zone or the regional aquifer. During the course of the Phase III ESA investigation, it was determined that MW-1 was in fact completed in the regional aquifer. The focus of the investigation subsequently shifted to identifying the direction of groundwater flow, confirming the suspected source of the gasoline range petroleum hydrocarbons in the regional aquifer, and identifying any other potential sources.

Substantial gasoline range petroleum hydrocarbon contamination was identified in the regional aquifer below the north end of the subject property. Groundwater from monitoring wells MW–1, MW-5, MW-7, MW-8a, MW-9, and MW-10 have concentrations of gasoline range petroleum hydrocarbons and often BTEX constituents above current and proposed MCTA cleanup levels. Diesel range constituents were also detected in one groundwater sample collected from MW-1. However, the petroleum hydrocarbons identified as diesel constituents were likely the result of interference from the gasoline range petroleum hydrocarbons.

Based on the results of the chemical analysis of the deeper soil collected during drilling for monitoring well installations, it does not appear likely that a large source exists on-site that contributed to the groundwater impacts in the areas where the monitoring wells were installed. There were no petroleum hydrocarbons in the gasoline, diesel, or oil ranges that were detected in any soil samples collected below 15 feet with the exception of those that were directly impacted by the contaminated groundwater or the samples collected at GP11.

It is likely that the former USTs in the area on the east side of the AirPro repair shop associated with the removed USTs did not impact the groundwater in the regional aquifer. The contamination identified in the Site's regional aquifer monitoring wells is likely associated with the groundwater from an upgradient off-site source(s). The USTs that would have been associated with the alleged service stations previously located northeast (hydraulically upgradient of the Site) at the intersection of International Boulevard and S 160 Street could provide such an off-site source(s).

In general, the regional aquifer underlying the Site at approximately 50 feet bgs and the direction of groundwater flows to the west/southwest based on the hydraulic gradient as presented in Figure 4. The regional aquifer has been substantially impacted by gasoline range petroleum hydrocarbons in the northwest portion of the subject property. Impacted groundwater is encountered at the northern boundary of the property and extends to the area between the former Pacific Water Sports finishing building on the east side of the property as presented in Figure 5. The extent of the contamination is not known in the areas to the north or southwest of the subject property.

3.5 Washington Memorial Park Cemetery Well Sampling

As a result of the identifying gasoline range hydrocarbons and benzene above MTCA cleanup standards in the regional aquifer in the northwest portion of the Site, SeaTac Investments LLC, with the consent of Washington Memorial Park Cemetery, elected to collect a groundwater sample from the Cemetery's water supply well. The groundwater sample was collected and analyzed to confirm that the petroleum hydrocarbon contamination in the regional aquifer at the Master Park Lot C development did not extend to the Cemetery well.

Chemical analysis of the groundwater sample collected from the cemetery well did not detect petroleum hydrocarbons in the gasoline, diesel or oil range or BTEX constituents above their respective practical quantitation limits (PQLs). Results of the chemical analysis of the groundwater sample collected from the cemetery well confirm that the groundwater has not been impacted by the petroleum hydrocarbons known to exist in the regional aquifer in the northwest portion of the Master Park Lot C Site.

4 REMEDIATION APPROACH

As the new site operator under a long-term lease, SeaTac Investments LLC developed the Site remediation approach with the specific intent of:

- Removing potential sources of contamination to Site soils and groundwater;
- Taking ownership, removing and disposing of any soils impacted above site cleanup levels disturbed during redevelopment;
- Providing an adequate cover over impacted near surface soils not removed during Site redevelopment that are protective of human health and the environment; and
- Preventing infiltration of surface water through impacted soils and removing the potential for migration of petroleum hydrocarbons to perched water zones and the regional groundwater aquifer.

The following sections identify the cleanup standards applied to Site remediation actions and present a summary of the Site RECs and remedial approach taken to address each REC. The remedial actions were conducted in coordination with SeaTac Investments LLC's redevelopment of the Site. Removing the oil/water separator, the sumps, and the USTs greatly reduced potential source materials.

4.1 Selection of Cleanup Standards

Two sets of cleanup standards were used for the Site remedial action. In general, MTCA Method A cleanup levels were used as the cleanup criteria for Site remedial actions addressing subsurface issues, including all UST and other subsurface structure removals. The WDOE Interim Interpretive and Policy Statement Cleanup of Total Petroleum Hydrocarbons (Interim Policy) was used to establish a site-specific cleanup level for Site grading and near surface soils encountered while installing Site subsurface utilities.

4.1.1 Interim TPH Policy Site Specific Cleanup Levels For Soil

To determine a site-specific standard, a biased composite soil sample was collected from near surface Site soils in areas that were obviously the most impacted by petroleum hydrocarbons across the Site. The sample was submitted to an analytical laboratory and analyzed for extractable petroleum hydrocarbons by the WDOE Extractable Petroleum Hydrocarbons Method. Table 1 provides the analytical results of the extractable petroleum hydrocarbon analysis. The results of the analysis were designed to provide the data in a format to support the use of the analytical model. The results were reported in the aliphatic and aromatic by carbon chain groups (e.g. C12-C16) and total aliphatics (36,000 mg/kg) and total aromatics (1,200 mg/kg). The analytical laboratory reports are provided in Appendix A. The results were entered into the WDOE Interim Policy – Cleanup of Total Petroleum Hydrocarbons (TPH) Human Health Soils Contact (Soils Contact) and Raoult's Law Soil to Groundwater Worksheets. Copies of the completed worksheets are provided in Appendix B.

The total aliphatic and total aromatic values were entered into the Soils Contact Worksheet. The results indicated that the Non-Carcinogen residential hazard index exceeded 1.0 by a factor of 8. While maintaining the same ratio between the total aliphatic and total aromatic fractions, exceedingly lower concentrations were tested using the Soils Contact Worksheet. The hazard index was found to equal to 1.0 where the concentrations of the total aliphatic and total aromatic fractions were equal to 4,500 mg/kg and 150 mg/kg, respectively.

Performing the calculations using the State's worksheet shows that site-specific results were higher than the State-proposed MTCA standard of 2,000 mg/kg. The 2,000 mg/kg standard is based on the "residual saturation" of the heavier petroleum hydrocarbons (i.e. diesel and oil). Residual saturation is the concentration where product can flow downward through the soil under the force of gravity. The proposed 2,000 mg/kg standard was considered the upper limit under the interim policy. However, due to the potential variability of petroleum hydrocarbons in the soil and the sensitivity of the field screening method, a conservative value of 1,600 mg/kg total petroleum hydrocarbons (TPH) was used as the site-specific cleanup criteria in the field for the near surface soil. The criterion was applied to soils disturbed during Site grading and subsurface utility installations.

The total aliphatic and aromatic values in the reported carbon ranges were entered into the Soil to Groundwater Worksheet. The results indicated that at the concentrations reported for diesel and oil range petroleum hydrocarbons, the groundwater would not be impacted above the 1.0 mg/L limit. Gasoline range petroleum hydrocarbons were not detected in the near surface soils.

4.2 Near Surface Soils

Near surface soils (~ upper 3 ft.) on the subject property were impacted with diesel and oil range petroleum hydrocarbons above both the previous MTCA Method A soil cleanup standard of 200 mg/kg, and the current MTCA Method A cleanup standard of 2,000 mg/kg. Based on information provided by the environmental site investigations, it was estimated that between 5 percent and 15 percent of the near surface soils could have been above the higher current standard, which would represent approximately 1,000 to 3,000 yd^3. The causes of these impacts were believed to be related to the historical use of the Site.

4.2.1 Remediation - Capping

Since the near surface soils were impacted with diesel and heavy oil range petroleum hydrocarbons that are relatively non hazardous, the remedial action was to leave the impacted soils intact and place a cover over these soils protective of human health and the environment. The parking lot's asphalt surface and footprint of the Site building provide the cover for the near surface soils and prevent potential exposures to the public and the environment.

Diesel and heavy oil range hydrocarbons are not highly mobile in the subsurface. The asphalt cover prevents surface water from contacting and infiltrating through the impacted soils mobilizing the petroleum hydrocarbons. Without mobilization, the asphalt cover prevents petroleum hydrocarbons from migrating to perched water zones and the regional groundwater aquifer (approximately 45 to 50 feet bgs). Therefore, with the asphalt cover in place the petroleum hydrocarbons will not migrate downward in any appreciable manner, or impact groundwater in the future.

4.3 Soils Associated With Utility Trenching and Site Grading

During the Site development an excess of 4,500 yd^3 of near surface soil was either disturbed by excavation and/or grading. Of this amount approximately 250 yd^3 (370 tons) were determined to be impacted by petroleum hydrocarbons above the site-specific cleanup level. As discussed in Section 4.1, since the current MCTA cleanup levels were not in effect at the time, Site excavation activities were initiated and the interim TPH guidelines were utilized to determine a site-specific cleanup level (1,600 mg/kg) for diesel and oil range petroleum hydrocarbons in the near surface soils. Any disturbed soils tested and identified over the site-specific cleanup level were removed from Site and disposed of at a State-permitted facility as part of the Site remediation.

4.3.1 Remediation - Removal of Disturbed Impacted Soils

Soils impacted with petroleum hydrocarbons excavated from trenches for the installation of underground utilities or associated with Site grading were segregated. Soils were identified as contaminated based on exceeding the 1,600 site-specific interim TPH derived cleanup level. Contaminated soils (soils that exceeded 1,600 mg/kg TPH) were removed from the Site and disposed of appropriately at the Waste Management Inc. Olympic View State permitted landfill. Manifests for all soil transported off-site are provided in Appendix B. Soils that did not exceed the Site cleanup standard were considered useable as Site fill and were returned to the original excavations or used elsewhere on-site. The asphalt cap ultimately covered soils that remained on-site.

4.4 USTs, Oil/Water Separator, and Sump

The Site investigations revealed that a total of five USTs ranging from 300 to 10,000 gallons existed on-site. The UST closure locations are presented in Figure 4. None were operational at the time of the investigations. These USTs were previously used to store petroleum hydrocarbons. One 1,000-gallon UST near the former Pacific Water Sports retail building had historically been associated with gasoline and potential diesel fuels. A release from this gasoline UST was suspected of having impacted Site soils (and shallow perched groundwater). The other Site USTs were used to store heating oil and diesel fuel. Initial investigations suggested soils adjacent to the heating oil and diesel fuel USTs had not been significantly impacted.

Site investigations revealed that an underground oil/water separator (northeast corner of the Site) and sump (adjacent to the former AirPro building) at the Site contained oily

sludge. The locations of these structures are presented in Figure 4 with the USTs locations. Polychlorinated biphenyls (below MTCA cleanup levels), polyaromatic hydrocarbons (PAHs), and petroleum hydrocarbons were found to be associated with the oily residues and sludge.

4.4.1 Remediation - Removal of Selected Subsurface Structures

The remedial action was to permanently close all existing USTs by removal. UST site assessments were performed as required by Ecology during for the UST closures. The UST closures consisted of removing residual fuel, inerting the tanks, and excavating, removing and disposing of the USTs and any associated soils impacted with petroleum hydrocarbons above MTCA Method A cleanup standards in effect at the time of the closure.

While the oil/water separator and sumps are not classified as USTs, removal/closure procedures for these structures were similar to those for USTs. The drainlines connecting the sumps and oil/water separator were plugged and sealed at any exposed or open ends.

During Site grading activities, a septic system was encountered on the former Cavey parcel. The drain field portion of the septic system was subsequently investigated.

5 REMEDIATION AND CLOSURE ACTIVITIES

The Site development, remediation, and closure activities were conducted from June 2001 through September 2001. The remediation and closure activities conducted on Site were consistent with those presented to WDOE in Golder's April 12, 2001 letter. The remediation approach and field screening and sampling procedures were presented in the "Final Field Sampling Plan for Limited Remedial Actions at the Sea-Tac Parking Lot Development Site 16000 Block International Boulevard Sea-Tac Washington (Rev.0)" (Golder 2001) (FSP). A summary of the general procedures used for the collection of representative soil samples for field screening and chemical analysis are outlined in Appendix C.

5.1 Capping

The remediation approach acknowledged the presence of areas of near surface Site soils that had been impacted by diesel and oil range petroleum hydrocarbons over an estimated 5 to 15 percent of the Site. Diesel and heavy oil range hydrocarbons are relatively non hazardous and not highly mobile in the subsurface. Therefore the approach of removing only those soils disturbed by redevelopment activities and identified as exceeding the site-specific cleanup criteria was adopted. Undisturbed soils were left in-place and capped.

After demolishing all original Site buildings, removing potential subsurface sources, grading the Site, installing new underground utilities, and constructing the Site building pad, the entire Site (excluding the building pad) was paved with asphalt. Construction of the asphalt pavement was completed in September 2001. The Site asphalt parking lot provides a cap that eliminates the potential for impacted near surface soils to pose a risk to human health and the environment. The cover prevents the infiltration of surface water through the impacted soils and the migration of petroleum hydrocarbons through the soil column, protecting both perched water zones and the deeper regional aquifer.

5.2 Trenching and Site Grading

Grading was conducted across the Site in preparation for the construction of the parking facility. Much of the northwest portion of the property was cut during the grading. The southeast portion of the property required fill to meet final grade. The installation of the Site subsurface utilities required the excavation of trenches over much of the Site. Potentially impacted Site soils were disturbed during grading activities in the cut areas and during trenching. Details of the sample collection and filed screening activities of the soils disturbed during Site grading and trenching are provided in the following sections.

Disturbed soils were subjected to field screening and on-site testing with off-site confirmation of duplicates at an analytical laboratory in accordance with the FSP. Initial field screening of disturbed soils was based on visual and olfactory evidence. Representative samples were collected from soils disturbed during the Site development to determine the appropriate means of handling the material. The samples were tested

on-site using a PetroFlag hydrocarbon analyzer field kit to determine the concentration of diesel and/or oil range petroleum hydrocarbons present in the soil. The PetroFlag hydrocarbon analyzer is based on immunoassay methods. The method is a quantitative field technique effective at detecting heavier, low volatility hydrocarbons, such as diesel and waste oils.

Duplicates of approximately 10% of the samples tested on-site were sent to the laboratory for confirmatory analysis. The analytical laboratory results were used to verify the relative performance of the PetroFlag method in field-testing soils. The confirmatory analysis demonstrated that the field tests with the PetroFlag hydrocarbon analyzer was conservatively calibrated (by design) to over report the concentration of petroleum hydrocarbons in the soil.

Analysis for trenching soils consisted primarily of on-site field screening using the PetroFlag hydrocarbon analyzer with off-site confirmation of duplicates at an analytical laboratory. There was very good correlation between field screening results and the confirmation sample results, which validated use of the field screening approach. In using this approach, results were obtained in real time during field construction activities and allowed for a rapid determination of the disposition of Site soils. These on-site techniques were intended to minimize project costs by reducing the number of samples that must be analyzed by an outside lab, while maintaining data integrity and defensibility.

As previously indicated, the site-specific cleanup level for TPH in the near surface soils was established as 1,600 mg/kg. Soils exceeding these values were disposed off-site at a State-permitted landfill. Soils that did not exceed the threshold standard were returned to the excavation as backfill or used elsewhere on-site as fill. Use of the PetroFlag hydrocarbon analyzer and confirmatory sample analysis ensured that any disturbed soil that exceeded the site-specific cleanup level was removed and transported off site for landfilling.

Large volumes of soils were also excavated in association with the installation of the Site storm water detention vault. Details associated with field screening and confirmatory sampling are addressed with the grading soils as a result of the methodology used in selecting representative soil samples for analysis. During Site grading activities a septic system drainfield was encountered. The drainfield was associated with the demolished building on the former Cavey parcel, which had previously been operated as an equipment rental shop and greenhouse. The soils under the drainfield were sampled and chemically analyzed. Details associated with the drainfield sampling are addressed with the grading soils.

5.2.1 Sampling of Soils Excavated During Trenching

A Golder field representative collected soil samples for analysis from soils disturbed by, or generated from, trench excavations as soils were excavated and temporarily stockpiled. Field screening samples were collected for PetroFlag testing from any areas exhibiting obvious impacts from petroleum hydrocarbons. Initial field screening was by

visual examination and surveying for petroleum odors in the soil. If there were no obvious signs of petroleum impacts, representative soil samples were collected, one per 25 to 50 ft of trench. A total of 34 soil samples associated with trenching were collected and tested in the field using the PetroFlag hydrocarbon analyzer.

The locations of samples were measured and documented in the field notes. Figure 5 shows each of the sample locations. Each sample was assumed to be representative of the soils on either side of the sample from the mid-point to the next sampling location.

Excavated soils remained in the identified stockpiles until the field test results were available and a means of handling the represented soil was determined. Once the results were available, the Golder field representative informed the Contractor which soils required off-site disposal or could be used as on-site fill. Soils requiring off-site disposal were segregated and stockpiled separately for off-site transport.

5.2.1.1 Analytical Results of Soils Disturbed During Trenching

The Interim TPH Policy derived site-specific cleanup level of 1,600 mg/kg was used as the threshold for off-site disposal with the PetroFlag hydrocarbon analyzer. Of the 34 soil samples tested in the field 4 were sent to the analytical laboratory for confirmatory analysis by NWTPH-Dx analysis. Table 2 presents the field screening and confirmatory analytical results for soil samples collected in association with trenching.

Site grading activities were conducted in the areas where Site soils were perceived to be the most impacted prior to conducting trenching activities. Consequently, no soils above the 1,600-mg/kg cleanup standard were encountered during utility trenching.

5.2.2 Sampling of Soils Disturbed During Site Grading and Storm Water Detention Vault Excavation

The Golder field representative conducted the field screening of soils disturbed by, or generated from, site grading activities. Excavation soils associated with the Site stormwater retention vault are addressed in this section with the soils generated during Site grading. Disturbed soils were temporarily stockpiled adjacent to the area graded and were field screened by the Golder field representative. Initial field screening was by visual examination and surveying for petroleum odors in the soil. Samples were collected for testing from any areas exhibiting obvious signs of petroleum hydrocarbon impacts using these screening methods.

A minimum sampling frequency for stockpile soils outlined in WDOE's UST site assessment guidance document was followed to ensure an ample number of samples were collected for testing. Whereby, if less than 100 cubic yards of soil were excavated, three samples were collected for field-testing from the excavated soil stockpile. Additional samples were collected following the recommended number of samples identified in the guidance document if the quantity of soil exceeded 100 cubic yards. Samples were collected biased toward areas obviously impacted or suspected of being

impacted. When there no indications of the presence of petroleum hydrocarbons, the three samples were selected to be representative of the excavated soil.

Representative samples were collected and field screening conducted in accordance with the FSP for soils disturbed by Site grading activities, and the excavation of the storm water detention vault. A total of 29 soil samples was collected and screened in the field in association with the Site grading. Of the 29 soil samples tested in the field 4 were sent to the laboratory for confirmatory analysis. A total of 22 soil samples were collected and screened in the field in association with the soil excavated for installation of the stormwater retention vault. A subset of four of the 22 soil samples tested in the field was sent to the laboratory for confirmatory analysis. Three additional samples were screened in the field in association with the site-building canopy footing excavations, one of which was submitted for confirmatory analysis.

Graded areas and the location of the storm water retention vault where soil samples were collected for field screening were documented in the field notes. Figure 6 shows the locations of these areas. Samples were assumed to be representative of the soils in the stockpile. Soils remained in the identified stockpiles until the analytical results were available and a means of disposal was determined. Once the results were available, the Golder field representative informed the subcontractor which soils required off-site disposal. Soils requiring off-site disposal were segregated and stockpiled separately and covered with plastic until transported off-site.

5.2.2.1 Analytical Results of Soils Disturbed During Site Grading and Storm Water Detention Vault Excavation

As previously noted, soils disturbed during Site grading and the excavation of the stormwater retention vault were screened in the field with a PetroFlag hydrocarbon analyzer. A subset of confirmation duplicate samples was sent off-site to the analytical laboratory for NWTPH-Dx analysis. The near surface soil cleanup criterion of 1,600 mg/kg was used in identifying impacted soils for off-site disposal.

Table 3 presents the field screening and confirmatory analytical results for soil samples collected in association with Site grading. Of the 29 samples tested in the field, 7 had concentrations exceeding the near surface soil cleanup criteria of 1,600 mg/kg. The samples identified as being impacted above the cleanup criteria were limited to two distinct areas (Area 1 and Area 7) as presented in Figure 6.

The impacted soil removed from the Site represented approximately 250 yd^3 (370 tons) of soil. This soil was disposed of at Olympic View Landfill in Port Orchard, Washington. The remainder of the soil generated during grading was below the cleanup criteria and used on-site for fill. Records for the off-site disposal of impacted soils are provided in Appendix D.

Table 4 presents the field screening and confirmatory analytical results for soil samples collected in association with excavation for the stormwater retention vault. Of the 22 samples tested in the field, none were identified with petroleum hydrocarbons

exceeding the cleanup criteria of 1,600 mg/kg. The location of the storm water detention vault is presented in Figure 6.

5.2.3 Former Cavey Parcel Drainfield Soil Sampling

The soil underlying the drainfield found on the former Cavey property was also sampled. A suite of chemical analysis was conducted on the soil sample. The sample was collected from the interval from 1 to 6 inches below the single drainfield line, approximately 8 feet downstream from the septic tank. No water was observed below the drainline and no abnormal odors were noted. The drainline and underlying soils were left intact until the analytical results were reviewed and the risk associated with the drainfield soils assessed with respect to MTCA Method A cleanup levels.

5.2.3.1 Former Cavey Parcel Drainfield Soil Sampling Results

The soil below parcel drainfield found on the former Cavey was analyzed for TPH by the NWTPH hydrocarbon identification (HCID) method, volatile organic compounds (VOCs) by EPA Method 8260B, semivolatile organic compounds (SVOCs) by EPA Method 8270C, organochlorine pesticides by EPA Method 8081and RCRA metals by EPA Methods 6010B and 7471A. The analytical laboratory data report is presented in Appendix A.

The analytical results for the former Cavey parcel drainfield are presented in Table 5. The NWTPH-HCID results indicated that petroleum hydrocarbons were not detected in the heavy oil, diesel, and gasoline ranges above their respective PQLs. The suite of constituents analyzed for SVOCs, VOCs and organochlorine pesticides were all reported as non detected above their respective PQLs, with only one exception reported in each of the analyses methods. The SVOC, VOC and organochlorine pesticides analysis detected concentrations of 4-chloroaniline (0.042 mg/kg), acetone (0.014 mg/kg), and chlordane (0.070 mg/kg) in the drainfield sample, respectively. Acetone was also detected in the laboratory blank at 0.012 mg/kg. At the concentrations reported, acetone, chlordane, and 4-chloroaniline were below their previous MTCA Method B cleanup levels (8,000 mg/kg, 0.769 mg/kg and 320 mg/kg, respectively) for direct pathway (ingestion) as a carcinogen. These concentrations are also below their current MTCA Method B cleanup levels (8,000 mg/kg, 2.86 mg/kg and 320 mg/kg, respectively) for direct pathway (ingestion) as a carcinogen. MTCA Method A cleanup levels for these constituents are not provided by state regulations. Total metals analysis was reported as non-detected above their respective PQLs or in concentrations that are below the previous and current MTCA cleanup levels.

5.3 UST Removal and Closures

The Site investigations revealed that a total of five USTs existed on-site. None were operational at the time of the investigations. These USTs were previously used to store diesel, gasoline, and heating oil. Golder investigated each of the USTs in general accordance with the WDOE UST site assessment guidance document "*Guidance for Site*

Checks and Site Assessments for Underground Storage Tanks" (WDOE 1992). All of the USTs on the Site were removed and closed under the Site redevelopment remedial actions.

At the conclusion of each UST closure there were no soils or groundwater impacted above the current MTCA Method A cleanup levels or those in effect at the time of closure. Figure 4 shows the location of the removed USTs and other subsurface structures removed from the Site. Results of the UST site assessment and closures are presented in the following reports.

- *Closure of a 1,000-Gallon Gasoline Underground Storage Tank and Associated Independent Remedial Action, Master Park Lot C, 16000 Block International Boulevard, SeaTac, Washington,* October 4, 2001 – The removal and closure of a 1,000-gallon gasoline UST and associated remedial actions taken to remediate impacted soil and a shallow perched water zone.
- *Site Assessment Conducted for the Closure of a 3,000- and 10,000-Gallon Underground Storage Tank, Master Park Lot C, 16000 Block International Boulevard, SeaTac, Washington,* October 4, 2001 – The removal and clean closure of heating oil and diesel fuel USTs. The report was submitted with an Underground Storage Tank Site Check/Site Assessment Checklist.
- *Site Assessment Conducted for the Closure of a 1,000-Gallon Underground Storage Tank, Master Park Lot C 16000 Block International Boulevard, SeaTac, Washington,* October 4, 2001 – The removal and clean closure of a 1,000-gallon heating oil UST.
- *Site Assessment for the Closure of a 300-Gallon Underground Storage Tank, Master Park Lot C, 16000 Block International Boulevard, SeaTac, Washington,* October 24, 2001 – The removal and clean closure of a 300-gallon heating oil UST.

These four reports were previously submitted to WDOE under the VCP as described in Section 1.

Of the five UST closures conducted, only the 1,000-gallon gasoline UST was associated with a substantial release of petroleum hydrocarbons. This gasoline tank was located in the southeastern sector of the subject property, over an area of the regional aquifer that was not impacted by petroleum hydrocarbons. The impacts from this 1000-gallon gasoline UST did not have detectable levels of benzene, but the impacted regional aquifer has high levels. The lack of benzene (an ingredient of gasoline but more susceptible to degradation) possibly indicates an older release than observed in the regional aquifer.

Two other USTs were associated with some petroleum hydrocarbons present that appeared to be spillage or overflow around the fill ports. Impacted soils were excavated to below the 200 mg/kg MTCA Method A cleanup levels effective at the time and disposed off-site. There was no indication that the regional aquifer could have been impacted from these USTs or other potential Site sources. The 1,000-gallon gasoline UST that was confirmed with a release was remediated in the same manner. The release impacted a shallow perched groundwater zone (~ 12 ft. depth). This UST was removed and the contaminated soils and perched groundwater was excavated and disposed off-

site. The impacted perched groundwater and associated soils laterally and vertically were followed using direct observation, sensitive screening equipment, and laboratory analyses. Remediation was completed when all floor samples and side samples were determined to be below the MTCA Method A cleanup levels for gasoline range petroleum hydrocarbons and BTEX.

Although the gasoline UST leaked, the results of the remediation show that its impacts were local and did not extend beyond the perched groundwater. This is consistent with the earlier investigation results that indicated that the gasoline impacts from this UST did not contain benzene, which was high in the contaminated portion of the regional aquifer. It also indicated that this UST was located over unimpacted portions of the regional aquifer.

5.4 Closure of Oil/Water Separator and Sump

Although the oil/water separator and sump are not classified as underground tanks, closure procedures used during the investigation and removal of the structures generally followed those outlined above for USTs. These procedures ensured that contaminated material was removed to the extent practicable and that the levels of any remaining contamination was documented and below MTCA Method A cleanup levels.

5.4.1 Oil/Water Separator Closure

The oil/water separator was located in the northeast corner of the Site as identified in Figure 4. Golder provided oversight for the structure closure and conducted the soil sampling activities. The oil/water separator was approximately 4 feet in diameter and 6 feet long. Prior to removal, water and 10 inches of sludge contained in the oil/water separator were removed with a Vac-Truck. The structure was then rinsed with a pressure washer and vacuumed out again. The water was transported to the Emerald facility at 1500 Airport Way Seattle, Washington for processing. At the facility any free product and solids contained in the water were removed prior to being discharged under permit to a Metro sanitary sewer.

The structure was excavated and removed by the Site excavation subcontractor on August 8, 2001. The subcontractor equipment operator used a trackhoe to remove soil from above the oil/water separator and excavated along three sides of the structure. The excavation was approximately 8 feet deep and 13 feet long by 11 feet wide. Excavated soils were placed on plastic sheeting adjacent to the excavation. Upon removal of the structure, visual and olfactory inspections did not indicate a release had occurred. Field screening of excavated soils and representative soils from the sides and bottom of the excavation was performed using a PetroFlag instrument. The field screening indicated that concentrations of TPH if present in the soil were below cleanup levels. Confirmatory samples were collected for off-site analysis from the excavated soil stockpile and from the sides and the bottom of the excavation.

Soil samples were collected from the center portion of the trackhoe bucket using procedures described in Appendix C. Following completion of sampling, plastic sheeting was used to cover the stockpiled soils. No water was observed in the excavation below the removed structure and no petroleum odors were noted during the excavation of soils around the structure.

The following samples were collected in association with the oil/water separator:

- One soil sample, OWS 8-30-01-B1, was collected from the bottom of the excavation from below the former location of the oil/water separator, approximately 9 feet bgs.
- One soil sample, OWS 8-30-012W collected from the excavation sidewalls 6 to 7 feet bgs.
- One composite soil sample, OWS 8-30-01-3STK was collected from the stockpiled soils.

Table 6 identifies the sample identifier, location, and analytical results for each of the soil samples.

All oil/water separator samples were analyzed for the following constituents:

- Diesel/oil range petroleum hydrocarbons using WDOE northwest total petroleum hydrocarbon diesel extended (NWTPH-Dx) method,
- Gasoline range petroleum hydrocarbons and benzene, toluene, ethylbenzene, and total xylenes (BTEX) using WDOE northwest total petroleum hydrocarbon gasoline BTEX (NWTPH-$G_{(BTEX)}$) method.

In addition to the above constituents the bottom and stockpile samples were also analyzed for the following:

- Polyaromatic hydrocarbons (PAHs) by EPA Method 8270C,
- Polychlorinated biphenyls (PCBs) by EPA Method 8270C and
- Total lead by EPA Method 6010B.

5.4.1.1 Analytical Results for the Oil/Water Separator Closure

The analytical results for samples collected in association with the oil water separator are presented in Table 6. The analytical laboratory report for each of the samples collected in association with the removal and closure oil/water separator indicated that no petroleum hydrocarbons in the gasoline, diesel or oil ranges or BTEX were detected above their respective practical quantitation limits (PQLs). The laboratory report also indicated that PAHs, PCBs, and total lead were not detected above their PQLs in either the bottom or stockpile samples. Copies of all laboratory data are included in Appendix A.

5.4.2 Sump Closure

The sump located in the northwest corner of the Site was removed (Figure 6). The sump was approximately 18 by 18 inches and 3.5 feet in depth. Soils surrounding and underlying the sump were excavated and stockpiled until the field representative believed remaining soil was within acceptable limits. Samples were collected for off-site analysis from the stockpile soil and the bottom of the excavation. Laboratory results indicated that stockpiled soils required off-site disposal, while soil from the bottom of the excavation were below MTCA Method A cleanup levels for all constituents in the suite of analysis.

Golder provided oversight for the structure closure and conducted the soil sampling activities. The structure was excavated and removed by the Site excavation subcontractor on August 15, 2001.

The subcontractor equipment operator used a trackhoe to remove soil around the sump and excavated the structure. The excavation was approximately 7.5 feet deep and 10 feet long by 8 feet wide. Excavated soils were placed on plastic sheeting adjacent to the excavation. Upon removal of the structure, visual and olfactory inspections indicated the possible presence of petroleum hydrocarbons. Soils were excavated and stockpiled until the field representative believed remaining soil was within acceptable limits based on visual and olfactory surveys. Confirmatory samples were collected for chemical analysis from the excavated soil stockpile and from the sides and the bottom of the excavation.

Soil samples were collected in the same manner as outlined for the oil/water separator. Following completion of sampling, plastic sheeting was used to cover the stockpiled soils. No water was observed in the excavation below the removed structure.

The following samples were collected in association with the site assessment:

- One composite soil sample, NWCB-Bot, was collected from the bottom of the UST excavation from below the former location of the UST, approximately 7.5 feet bgs.
- One composite soil sample, NWCB-STK, was collected from the stockpiled soils.

Both samples were analyzed for the following constituents:

- Diesel/oil range petroleum hydrocarbons using the NWTPH-Dx method,
- Gasoline range petroleum hydrocarbons and BTEX using the NWTPH-$G_{(BTEX)}$ method,
- PAHs by EPA Method 8270C,
- PCBs by EPA Method 8270C, and
- Total lead by EPA Method 6010B.

5.4.2.1 Analytical Results for the Sump Closure

The analytical results from soil testing conducted on August 15, 2001 for the sump structure indicate that several of the constituents from the suite were detected in the stockpiled soil removed from below the sump. The analytical results for samples collected in association with the sump closure are presented in Table 6. The only constituents detected were 64 mg/kg diesel range petroleum hydrocarbons and 84 mg/kg heavy oil range petroleum hydrocarbons. Both the concentration of diesel and heavy oil range petroleum hydrocarbons were below the previous (200 mg/kg) and current (2,000 mg/kg) MTCA Method A cleanup levels. The list of all constituents detected above their respective PQLs in the stockpile sample and the bottom of the excavation sample are presented in Table 6. Copies of the laboratory data reports are included in Appendix A.

6 SUMMARY

Golder conducted Phase I, Phase II, Extended Phase II and Phase III ESA investigations at the subject property from fall 2000 to spring 2001 during the due diligence period for SeaTac Investments LLC prior to entering a long-term lease with the property owner. During the demolition and construction in the summer of 2001, Golder provided environmental oversight, investigation and sampling services. The following sections provide the RECs as identified during the due diligence and demolition/construction periods of the project with the subsequent remedial actions taken by SeaTac Investments LLC. The objective of the Site remedial actions was to investigate and remove sources on the subject property with the potential to impact soil and/or groundwater and specifically determine if any of the potential Site sources may have contributed to the impacts exhibited in the regional aquifer.

6.1 Near Surface Soils

The presence of petroleum hydrocarbon impacts in near surface soils was identified across a relatively wide area of the Site. During the installation of subsurface utilities and site-grading activities, disturbed soils were quantitatively tested using the PetroFlag Method (supported by confirmatory analysis by an analytical laboratory). Any soils that were disturbed by redevelopment activities and determined to be above the site-specific Interim TPH Policy cleanup level (1,600 mg/kg TPH), were removed from and disposed off-site by landfilling at a State-permitted facility.

The soil underlying the drainfield encountered on the former Cavey property during Site grading was tested by chemical analysis. Analytical data indicated that this soil did not exceed MTCA Method A and/or B cleanup levels.

An asphalt cap (parking lot) was constructed to address any soils that may have been impacted above the site-specific Interim TPH Policy cleanup level but were not disturbed by redevelopment activities and therefore left in place. The asphalt cap provides a barrier that prevents both human and environmental contact with any undisturbed TPH impacted soils that may be above the site-specific Interim TPH Policy cleanup level and those impacted soils left on Site that were below the site-specific cleanup level. In addition, the asphalt cap provides a barrier for the infiltration of water that may have aided in any downward migration of TPH constituents.

6.2 Underground Storage Tanks

Five underground fuel storage tanks (USTs) existed on-site. None were operational at the time of the investigations. These USTs were used to store diesel, gasoline, and heating oil. Five Site USTs were closed by removal in association with the Site redevelopment. A UST site assessment was conducted in association with each of the UST closures, and in general accordance with the WDOE UST site assessment guidance document *"Guidance for Site Checks and Site Assessments for Underground Storage Tanks"* (WDOE 1992). At the conclusion of each of the UST closures there were no soils or

groundwater left in place that were impacted above the current MTCA Method A cleanup levels or those in effect at the time of closure.

Of the five USTs closed, only one UST had a confirmed release that resulted in any substantial impact. The release was confirmed in association with the 1,000-gallon gasoline tank. The release had impacted adjacent soils and an underlying shallow perched water zone; the impacted soils and groundwater were completely remediated. The cleanup of this release was consider complete when: 1) All impacted soils had been removed to below MTCA Method A cleanup levels for gasoline and diesel range petroleum hydrocarbons and BTEX within the vertical and lateral limits of the soil column, and 2) chemical analysis of groundwater samples collected from the shallow perched water zone detected no petroleum hydrocarbons or BTEX constituents.

The 1000-gallon gasoline UST was located in the southeastern sector of the subject property, over an area of the regional aquifer that has not been impacted by petroleum hydrocarbons. The impacts from this 1,000-gallon gasoline UST did not have detectable levels of benzene, but the impacted regional aquifer does have high levels of benzene. The lack of benzene (an ingredient of gasoline but more susceptible to degradation) possibly indicates that the release was older than what is observed in the regional aquifer.

6.3 Oil/Water Separator and Sump

Site investigations revealed that an underground oil/water separator (northeast corner of the Site) and sump (adjacent to the former AirPro building) contained oily sludge. Polychlorinated biphenyls (below MTCA cleanup levels), polyaromatic hydrocarbons (PAHs), and petroleum hydrocarbons were found to be associated with the oily residues and sludge.

Both the oil/water separator and sump were excavated, and transported off-site for disposal at the Olympic View Landfill. At the conclusion of the removal/closures of both the oil/water separator and sump there were no soils left in-place that were impacted above the current MTCA Method A cleanup levels or those in effect at the time of closure for any of the constituents tested.

6.4 Regional Groundwater Aquifer

The regional groundwater aquifer beneath the subject property (~50 ft. depth) was determined to be flowing toward the southwest through the subject property. The groundwater was found to be contaminated with elevated levels of gasoline hydrocarbons and BTEX. The groundwater contamination was found only in the northwestern portion of the subject property. Concentrations of gasoline and BTEX were comparable in the northeast property boundary to the highest levels found in the plume at other downgradient locations within the plume.

Potential on-site sources of petroleum hydrocarbons that were initially considered capable of having contributed to the petroleum impacts in the regional groundwater aquifer included the Site USTs, oil/water separator, and sump. The potential for these subsurface structures to have contributed to the impacts of the regional aquifer was assessed during their closure. The closures were accomplished by removal and subsequent soil testing. Removal is more effective in revealing leaks or releases than closure in-place, because it allows direct observation, screening with sensitive instruments and testing with laboratory quantification. Furthermore, removal ensures that potential sources cannot contribute to aquifer impacts in the future. There was no evidence during the closures indicating that any of the potential Site sources had contributed to the petroleum impacts observed in the regional aquifer.

Concentrations of gasoline and BTEX were comparable in the northeast property boundary to the highest levels found in the plume at other impacted locations. Based on Site investigations, the data indicates that the observed groundwater impacts are a result of an off-site source(s), of which several potential current and historical sources were identified in earlier reports.

7 CONCLUSIONS

As the new site operator, SeaTac Investments LLC conducted remedial actions in conjunction with the Site redevelopment. The company's objectives were to:

1. Identify if any of the known potential sources on the subject property contributed to the impacts found in the regional aquifer,
2. Remove the Site USTs, oil/water separator, and sump and remediate any associated impacted soil (and groundwater, if feasible) to below MTCA Method A cleanup levels. This would ensure that none of these potential sources could contribute to the impacts observed in the regional groundwater aquifer under SeaTac Investments LLC's tenure.
3. Identify and remove any near surface soils above WDOE's Interim TPH Policy based site-specific cleanup level disturbed during Site redevelopment, and
4. Provide a protective cover (asphalt cap) to eliminate the potential for human contact with any undisturbed near surface soils that could potentially be impacted above the site-specific cleanup level or those impacted soils left on-site that were below site-specific TPH cleanup level. Furthermore, the cap isolates any remaining impacted soils from the surrounding environment and provides a barrier that prevents surface water from migrating through the soil column and aiding in the downward transport of any petroleum hydrocarbons.

By conducting the remedial actions as summarized in this report and supporting documents during the Site redevelopment, SeaTac Investments LLC successfully met the objectives of the Site remediation as presented in the April 12, 2001 letter to WDOE. Furthermore, the information obtained from the Site investigations and UST closures/remediations did not indicate that any of the potential sources on the subject property contributed to or will contribute to contamination of the underlying regional aquifer in the future. The contamination observed in the regional aquifer appears to be from off-site source(s) located hydraulically upgradient.

8 STANDARD LIMITATIONS

This report includes data and information collected during Phase I, Phase II and Phase III ESA investigations, and remedial actions conducted during the Site redevelopment, and are based solely on the condition of the property at that time. Golder has reviewed and interpreted data generated during these investigations and activities in good faith using sound professional judgment and our past experience with similar sites. However, there is always the possibility that the disposal or release of hazardous material to the soil or groundwater has occurred and been covered so as not to be readily obvious from the surface and was not detected by the field investigations. Furthermore, it is possible the soil and groundwater collection and testing activities were not sufficient to represent all conditions of potential impact to the property. In addition, Golder supplied information in this report to provide general information regarding site conditions and remediation of contaminated media, but it must be noted that uncertainty always exists with regard to the extent and source(s) of contamination and that the ultimate degree to which the remediation is considered complete at the Site is the decision of the WDOE.

This report is not meant to represent a legal opinion. No other warranty, expressed or implied, is made. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Golder accepts no responsibility for damages, if any suffered by any third party as a result of decisions made or actions based on this report. This study is based on information provided by others that is presumed to be true and correct. Golder is not responsible for misrepresentation and misstatements from these sources used to evaluate this property.

9 REFERENCES

Golder Associates Inc., Phase I Environmental Site Assessment, SunReal Inc., SeaTac Airport Site, SeaTac, Washington, October 12, 2000.

Golder Associates Inc., Final Phase II Environmental Site Assessment Report, SeaTac Parking Garage Development Site, SeaTac, Washington, March 31, 2001.

Golder Associates Inc., Final Report for Extended Phase II Extended Environmental Site Assessment, SeaTac Parking Garage Development Site, SeaTac, Washington, March 31, 2001.

Golder Associates Inc., Final Report for The Phase III Environmental Site Assessment, SeaTac Parking Garage Development Site, SeaTac, Washington, March 31, 2001.

Golder Associates Inc., Final Field Sampling Plan for Limited Remedial Actions at the Sea-Tac Parking Lot Development Site, 16000 Block International Boulevard, Sea-Tac, Washington (Rev.0), June 25, 2001.

Golder Associates Inc., Collection and Analytical Results of Groundwater Sample From Washington Memorial Park Cemetery, Private Well Letter Report Addressed to SeaTac Investments, Attention Mr. Douglas Rigoni, September 7, 2001.

Golder Associates Inc., Site Assessment Conducted for the Closure of a 3,000- and 10,000-Gallon Underground Storage Tank, Master Park Lot C, 16000 Block International Boulevard, SeaTac, Washington, October 4, 2001.

Golder Associates Inc., Site Assessment Conducted for the Closure of a 1,000-Gallon Underground Storage Tank, Master Park Lot C, 16000 Block International Boulevard, SeaTac, Washington, October 4, 2001.

Golder Associates Inc., Site Assessment for the Closure of a 300-Gallon Underground Storage Tank, Master Park Lot C 16000 Block International Boulevard, SeaTac, Washington, October 24, 2001.

Department of Ecology (Washington State), Guidance for Site Checks and Site Assessments for Underground Storage Tanks, February 1992.

Department of Ecology (Washington State), The Model Toxics Control Act Cleanup Regulations, Chapter 173-340, WAC Amended 1993.

Department of Ecology (Washington State), Guidance for Remediation of Petroleum Contaminated Soils, Toxics Cleanup Program, April 1994.

Department of Ecology (Washington State), Model Toxics Control Act Cleanup Levels and Risk Calculations (CLARC II), Publication no. 94-145, updated January 1996.

Department of Ecology (Washington State), WDOE Interim Policy – Cleanup of Total Petroleum Hydrocarbons (TPH) Human Health Soils Contact (Soils Contact), January 1997.

Department of Ecology (Washington State), Proposed Amendments Washington State Register, Issue 00-16. The Model Toxics Control Act Cleanup Regulations, Chapter 173-340 WAC. August 2000.

Department of Ecology (Washington State), The Model Toxics Control Act Cleanup Regulations, Chapter 173-340, WAC amended February 12, 2001.

Department of Ecology (Washington State), Cleanup Levels, and Risk Calculations under the Model Toxics Control Act Cleanup Regulation CLARC, Version 3.0 Publication no. 94-145, updated August 2001.

TABLES

Analytical Results for Near Surface Soil Composite Sample
(Extractable Petroleum Hydrocarbons)

Compounds/Analysis	Units	Sample ID
		ITPH-Comp
Total Aliphatic Hydrocarbons		
Aliphatic C10-C12	mg/kg	9.1
Aliphatic C12-C16	mg/kg	71
Aliphatic C16-C18	mg/kg	270
Aliphatic C18-C21	mg/kg	1300
Aliphatic C21-C28	mg/kg	15000
Aliphatic C28-C36	mg/kg	20000
Total Aromatic Hydrocarbons		
Aromatic C10-C12	mg/kg	< 54
Aromatic C12-C16	mg/kg	< 54
Aromatic C16-C18	mg/kg	81
Aromatic C18-C21	mg/kg	220
Aromatic C21-C28	mg/kg	630
Aromatic C28-C34	mg/kg	240
Note: "<" - Not detected and the PQL is shown on this table		

Trenching Soil Field Screening and Confirmatory Sample Results

Sample ID	Date	Field Screen TPH (ppm)	Laboratory		Comments
			diesel (ppm)	heavy oil (ppm)	
7-27-01-1	7/27/01	352	-	-	Used for Backfill
7-27-01-2	7/27/01	485	-	-	Used for Backfill
7-30-01-1	7/30/01	547	-	-	Used for Backfill
7-30-01-2	7/30/01	54	-	-	Used for Backfill
7-30-01-3	7/30/01	162	-	-	Used for Backfill
7-30-01-4	7/30/01	761	-	-	Used for Backfill
7-30-01-4	7/30/01	62	ND<27	ND<54	Used for Backfill
7-30-01-5	7/30/01	106	-	-	Used for Backfill
7-30-01-6	7/30/01	70	-	-	Used for Backfill
7-30-01-7	7/30/01	65	-	-	Used for Backfill
7-30-01-8	7/30/01	73	-	-	Used for Backfill
7-30-01-9	7/30/01	87	-	-	Used for Backfill
7-31-01-1	7/31/01	11	-	-	Used for Backfill
7-31-01-2	7/31/01	1	-	-	Used for Backfill
7-31-01-3	7/31/01	21	-	-	Used for Backfill
7-31-01-4	7/31/01	180	-	-	Used for Backfill
7-31-01-5	7/31/01	687	190	340	Used for Backfill
7-31-01-6	7/31/01	758	-	-	Used for Backfill
7-31-01-7	7/31/01	526	-	-	Used for Backfill
7-31-01-8	7/31/01	151	-	-	Used for Backfill
7-31-01-9	7/31/01	110	-	-	Used for Backfill
8-01-01-1	8/1/01	72	-	-	Used for Backfill
8-01-01-2	8/1/01	143	-	-	Used for Backfill
8-01-01-3	8/1/01	84	-	-	Used for Backfill
8-01-01-4	8/1/01	108	-	-	Used for Backfill
8-03-01-4	8/3/01	50	-	-	Used for Backfill
8-09-01-1	8/9/01	126	-	-	Used for Backfill
8-31-01-1	8/31/01	9	-	-	Used for Backfill
8-31-01-2	8/31/01	79	-	-	Used for Backfill
8-31-01-4	8/31/01	110	-	-	Used for Backfill
9-13-01-1	9/13/01	55	<28	<56	Used for Backfill
9-13-01-2	9/13/01	17	-	-	Used for Backfill
9-15-01-1	9/15/01	148	<28	130	Used for Backfill
9-15-01-2	9/15/01	84	-	-	Used for Backfill

Note: "<" - Not detected and the PQL is shown on this table

Grading Soil Field Screening and Confirmatory Sample Results

Area	Sample ID	Date	Field Screen	Laboratory		Comments
			TPH (ppm)	heavy oil (ppm)	diesel (ppm)	
1	7-18-01-1	7/18/01	1598	-	-	Removed
	7-18-01-1	7/19/01	982	710	<130	
	7-18-01-2	7/18/01	>2000	-	-	
	7-18-01-3	7/18/01	2003	-	-	
	7-18-01-4	7/18/01	>2000	-	-	
	7-18-01-5	7/18/01	1913	-	-	
	7-18-01-7	7/18/01	1848	-	-	
	7-18-01-7	7/19/01	970	950	<27	
	7-18-01-10	7/18/01	534	-	-	
	7-18-01-14	7/18/01	1130	-	-	
	7-18-01-16	7/18/01	721	-	-	
	7-18-01-21	7/18/01	>2000	-	-	
2	7-30-01-g.s.	7/30/01	1132	-	-	Used for Backfill
3	7-31-01-10	7/31/01	930	-	-	Used for Backfill
4	8-02-01-1	8/2/01	423	-	-	Used for Backfill
	8-02-01-2	8/2/01	292	-	-	
	8-02-01-3	8/2/01	219	120	<28	
5	8-02-01-4	8/2/01	876	-	-	Used for Backfill
6	8-03-01-1	8/3/01	544	-	-	Used for Backfill
	8-03-01-2	8/3/01	238	-	-	
	8-03-01-3	8/3/01	556	-	-	
	8-03-01-6	8/3/01	66	-	-	
7	8-03-01-5	8/3/01	>2000	-	-	Removed
8	8-06-01-1	8/6/01	675	-	-	Used for Backfill
9	8-21-01-1	8/21/01	372	-	-	Used for Backfill
	8-21-01-2	8/21/01	13	-	-	
	9-15-01-1	9/15/01	128	-	-	
10	8-31-01-3	8/31/01	697	-	-	Used for Backfill
11	9-04-01-5	9/4/01	1246	1000	<27	Used for Backfill

Note: "<" - Not detected and the PQL is shown on this table

Storm Water Retention Vault and Canopy Footing Field Screening and Confimatory Results

Area	Sample ID	Date	Field Screen	Laboratory		Comments
			TPH (ppm)	heavy oil (ppm)	diesel (ppm)	
Storm Water	7-19-01-1	7/19/01	33	-	-	Used for Backfill
	7-19-01-2	7/19/01	52	-	-	
	7-19-01-3	7/19/01	21	-	-	
	7-19-01-4	7/19/01	122	-	-	
	7-19-01-5	7/19/01	290	-	-	
	7-19-01-6	7/19/01	73	-	-	
	7-19-01-7	7/19/01	68	<56	<28	
	7-19-01-8	7/19/01	1277	-	-	
	7-19-01-9	7/19/01	92	-	-	
	7-19-01-10	7/19/01	72	-	-	
	7-19-01-11	7/19/01	59	-	-	
	7-19-01-12	7/19/01	21	<57	<29	
	7-21-01-1	7/21/01	0	-	-	
	7-23-01-1	7/23/01	11	-	-	
	7-23-01-2	7/23/01	244	-	-	
	7-23-01-3	7/23/01	42	-	-	
	7-23-01-4	7/23/01	493	520	<28	
	7-23-01-5	7/23/01	1185	1200	170	
	7-23-01-6	7/23/01	23	-	-	
	7-24-01-1	7/24/01	60	-	-	
	7-24-01-2	7/24/01	35	-	-	
	7-24-01-3	7/24/01	45	-	-	
Canopy	8-09-01-2	8/9/01	202	-	-	Used for Backfill
	8-09-01-3	8/9/01	162	69	<27	
	8-14-01-1	8/14/01	94	-	-	

Note: "<" - Not detected and the PQL is shown on this table

Cavey Drainfield Soil Sample Analytical Results

Compounds/Analysis	Units	Sample ID	REGULATORY CLEANUP LEVELS		
		7/18-CDF	MTCA Method A Cleanup Levels (Previous)	MTCA Method A Cleanup Levels (Current)	MTCA Method B Cleanup Levels
Total Petroleum Hydrocarbons (TPH) by NWTPH-HCID					
TPH Gasoline	mg/kg	< 24	100	100	
TPH Diesel	mg/kg	< 60	200	2,000	
TPH Oil	mg/kg	< 120	200	2,000	
VOCs by 8260B					
Acetone	mg/kg	0	8,000		8,000
SVOCs by 8270C					
4-Chloroaniline	mg/kg	0	320		320
Organochlorine Pesiticides 8081		~~ND~~ ?			
Chlordane (Technical)	mg/kg	.07 70 ppb	0.769		2.86
TOTAL METALS 6010B/7471A					
Barium	mg/kg	90	5,600		5,600
Chromium	mg/kg	26	100	19 (VI), 2,000 (III)	
Lead	mg/kg	29	250	250	
Silver	mg/kg	290	400		400

Note: Constituents in analytical suite not shown were not detected above the PQLs
"<" - Not detected and the PQL is shown on this table

Oil-Water Separator and Northwest Sump Soil Samples Analytical Results

Compounds/Analysis	Units	Sample ID					REGULATORY CLEANUP LEVELS		
		OWS 8-30-01 1B	OWS 8-30-01 2W	OWS 8-30-01 3STK	NWCB-STK	NWCB-Bot	MTCA Method A Cleanup Levels (Previous)	MTCA Method A Cleanup Levels (Current)	MTCA Method B Cleanup Levels
Total Petroleum Hydrocarbons and BTEX by NWTPH-(Gx/BTEX and Dx)									
TPH Gas	mg/kg	<5.4	<6.1	<5.8	< 5.6	< 5.3	100	100	
m,p-Xylene$_{(Gx/BTEX)}$	mg/kg	< 0.054	< 0.061	< 0.058	0.092	< 0.053	20	9.0	
TPH Diesel$_{(Dx)}$	mg/kg	<27	<31	<29	1200	64	200	2,000	
TPH Oil$_{(Dx)}$	mg/kg	<54	<61	<58	580	83	200	2,000	
PAHs by 8270C									
Napthalene	mg/kg	< 0.036	NA	< 0.078	0.59	< 0.089	1.0	5.0	
2-Methylnaphthalene	mg/kg	< 0.036	NA	< 0.078	4.8	< 0.089	1.0		
1-Methylnaphthalene	mg/kg	< 0.036	NA	< 0.078	3.9	< 0.089	1.0		
Acenaphthalene	mg/kg	< 0.036	NA	< 0.078	0.16	< 0.089	1.0		
Acenaphthene	mg/kg	< 0.036	NA	< 0.078	0.4	< 0.089	1.0		4,800
Fluorene	mg/kg	< 0.036	NA	< 0.078	1.1	< 0.089	1.0		3,200
Phenanthrene	mg/kg	< 0.036	NA	< 0.078	2.1	< 0.089	1.0		
Anthracene	mg/kg	< 0.036	NA	< 0.078	0.17	< 0.089	1.0		24,000
PCBs by 8082									
	mg/kg	< 0.054	NA	< 0.058	< 0.056	< 0.053	320		320
Total Lead 6010B									
	mg/kg	< 5.4	NA	< 5.8	37	< 5.3	250	250.0	

Note: Constituents in analytical suite not shown were not detected above the PQLs
"<" - Not detected and the PQL is shown on this table
NA - Not analyzed

FIGURES

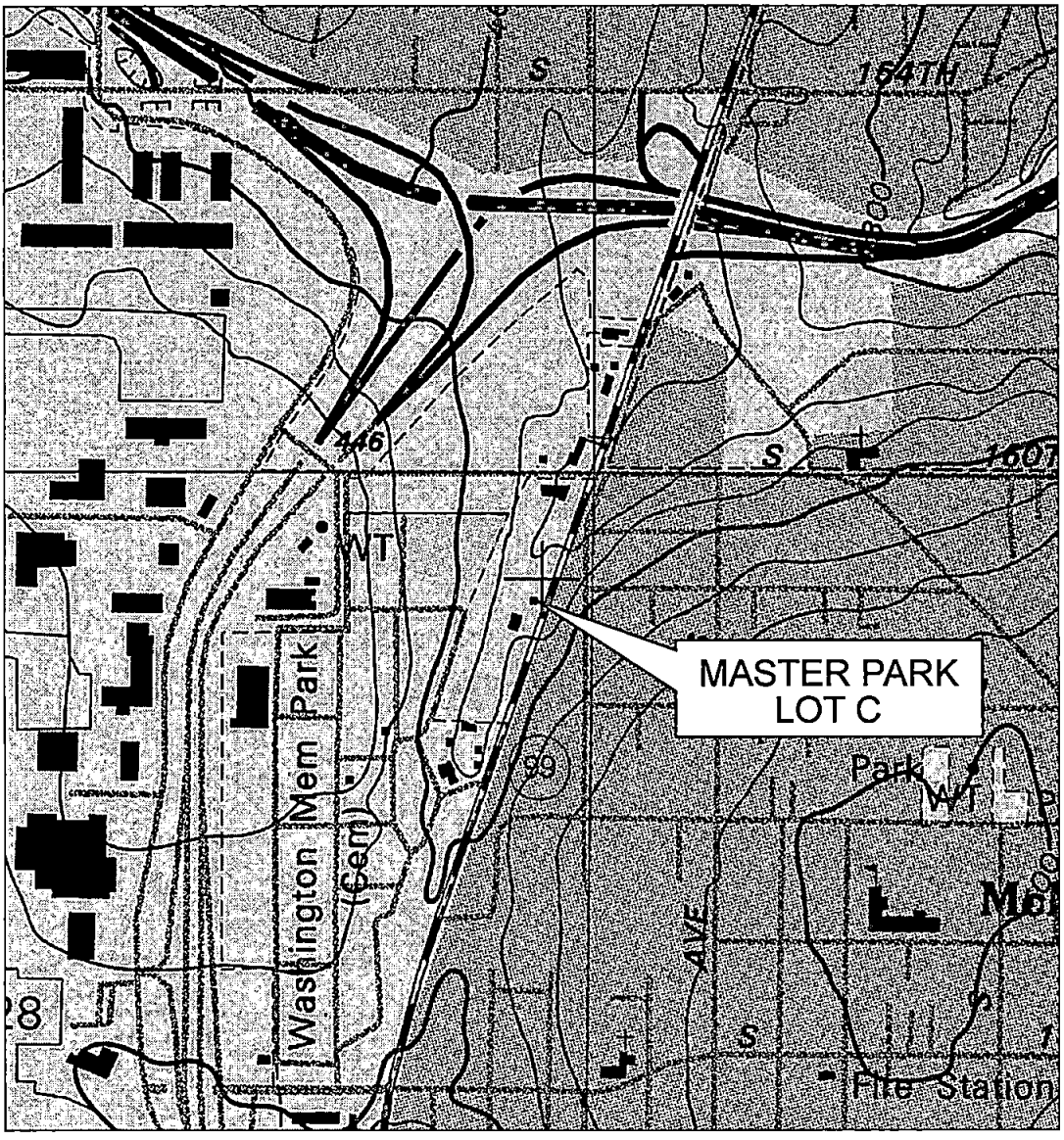


FIGURE 1
SITE VICINITY MAP
SEATAC INVESTMENTS/IRAR LOT/WA

PROJECT NO. 013 1427_600 DRAWING NO. 96960 DATE 01/23/02 DRAWN BY EL

Golder Associates

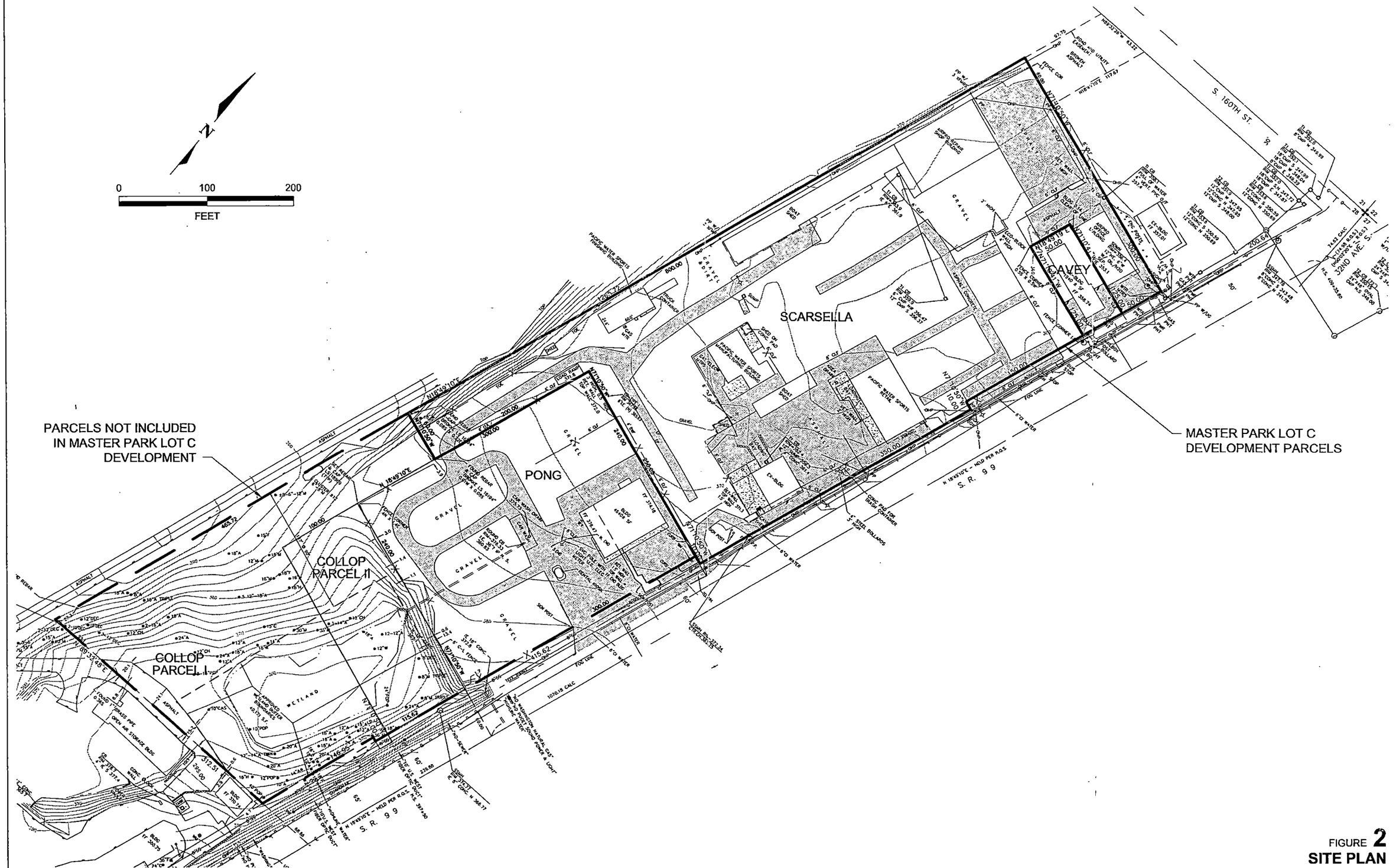


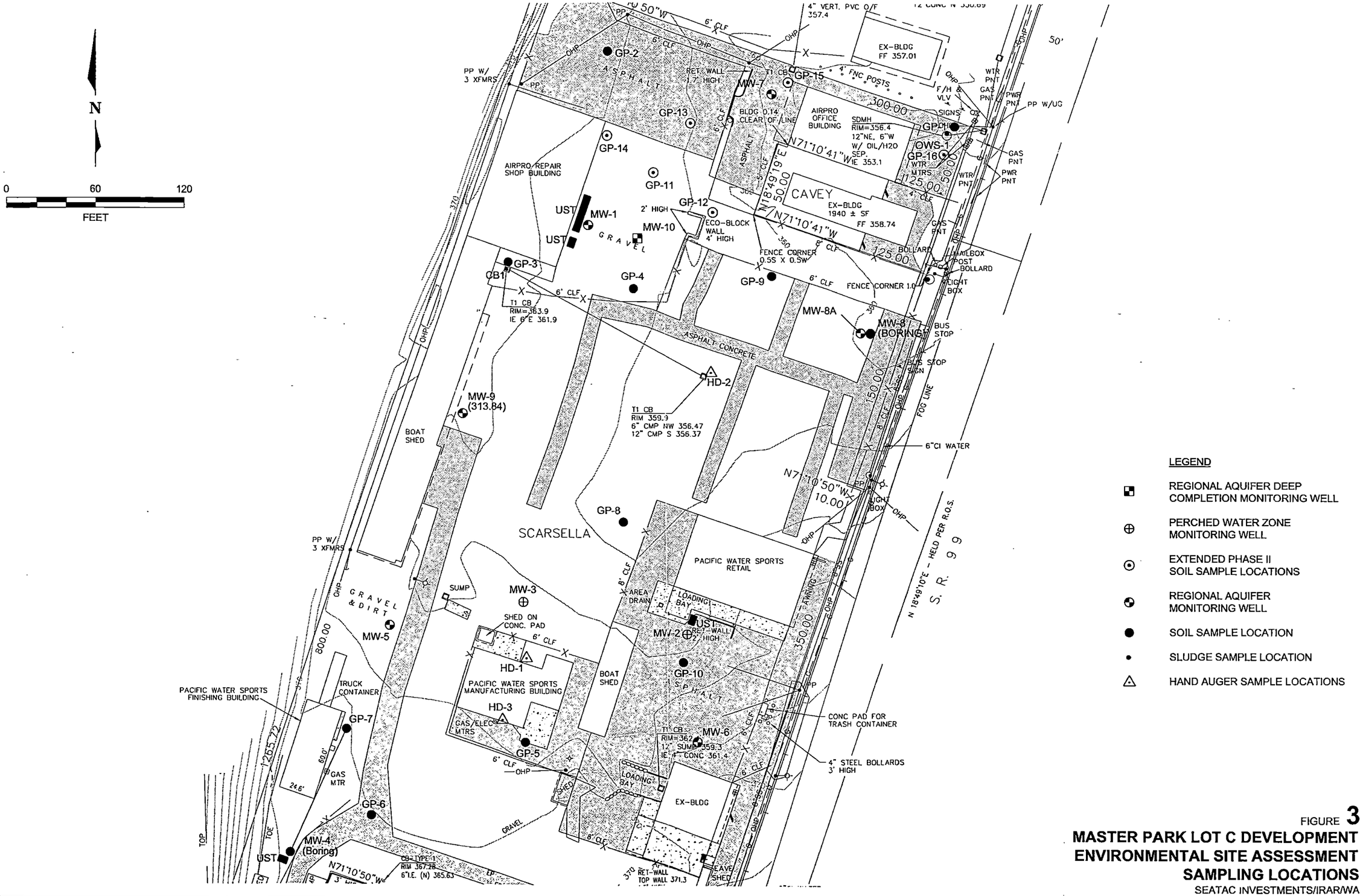
FIGURE **2**

SITE PLAN

SEATAC INVESTMENTS/IRAR/WA

DCabe|K:\Projects\2001\0131427\600\94990.dwg|1-23-2 15:55|pcx-xbase,x-htch|i:-

Golder Associates



LEGEND

- REGIONAL AQUIFER DEEP COMPLETION MONITORING WELL
- PERCHED WATER ZONE MONITORING WELL
- EXTENDED PHASE II SOIL SAMPLE LOCATIONS
- REGIONAL AQUIFER MONITORING WELL
- SOIL SAMPLE LOCATION
- SLUDGE SAMPLE LOCATION
- HAND AUGER SAMPLE LOCATIONS

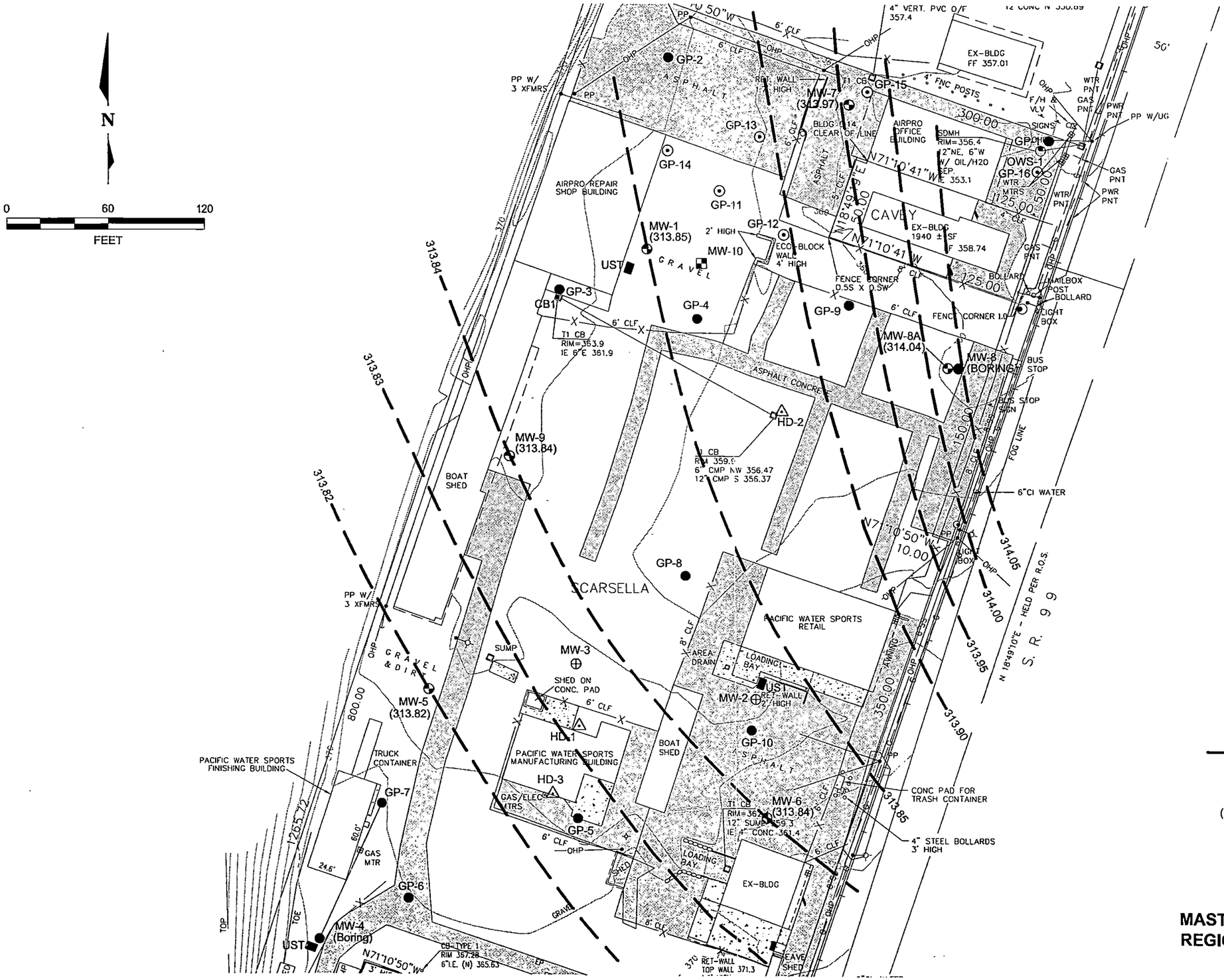
FIGURE **3**

MASTER PARK LOT C DEVELOPMENT
ENVIRONMENTAL SITE ASSESSMENT
SAMPLING LOCATIONS

SEATAC INVESTMENTS/IRAR/WA

DCabe|K:\Projects\2001\0131427\600\94991.dwg|1-23-2 15:56|xcx-xbase,x-htch|i:-

Golder Associates



LEGEND

- REGIONAL AQUIFER DEEP COMPLETION MONITORING WELL
- PERCHED WATER ZONE MONITORING WELL
- EXTENDED PHASE II SOIL SAMPLE LOCATIONS
- REGIONAL AQUIFER MONITORING WELL
- SOIL SAMPLE LOCATION
- SLUDGE SAMPLE LOCATION
- WATER TABLE CONTOURS
- HAND AUGER SAMPLE LOCATIONS
- (313.84) GROUNDWATER ELEVATION FEET AMSL

FIGURE **4**

MASTER PARK LOT C DEVELOPMENT
REGIONAL AQUIFER GROUNDWATER LEVEL CONTOURS (1/08/01)

SUNREAL/SEATAC GARAGE ESA/WA

DCabe|K:\Projects\2001\0131427\600\96975.dwg|1-23-2 15:58|xcx-xbase,x-htch|i:-

Golder Associates

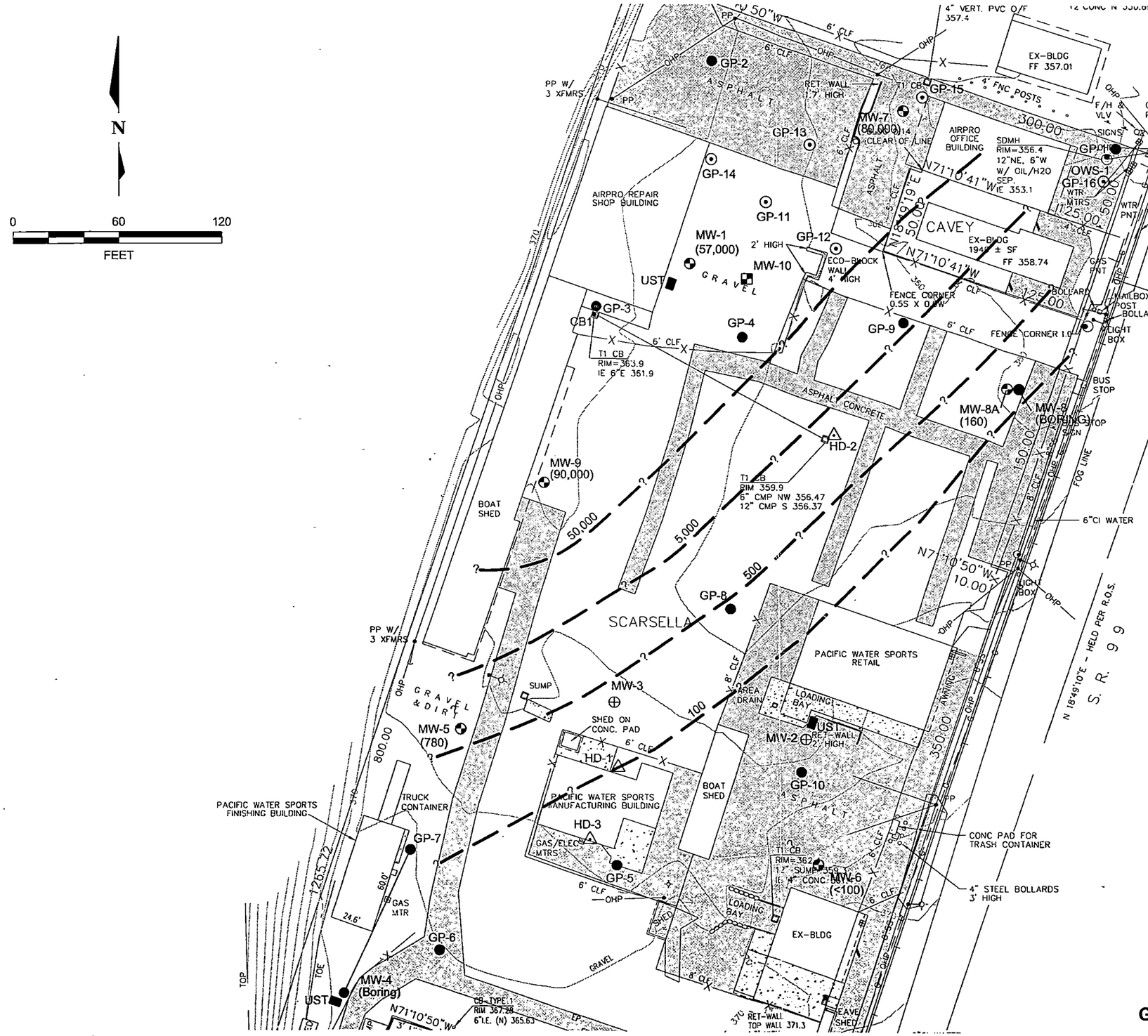


FIGURE **5**

MASTER PARK LOT C DEVELOPMENT
REGIONAL AQUIFER
GASOLINE RANGE PETROLEUM HYDROCARBON
GENERALIZED ISO CONCENTRATION MAP (1/08/01)

SUNREAL/SEATAC GARAGE ESA/WA

DCabe|K:\Projects\2001\0131427\600\96976.dwg|1-23-2 15:59|x:x-xbase,x-htch|i:-

Golder Associates

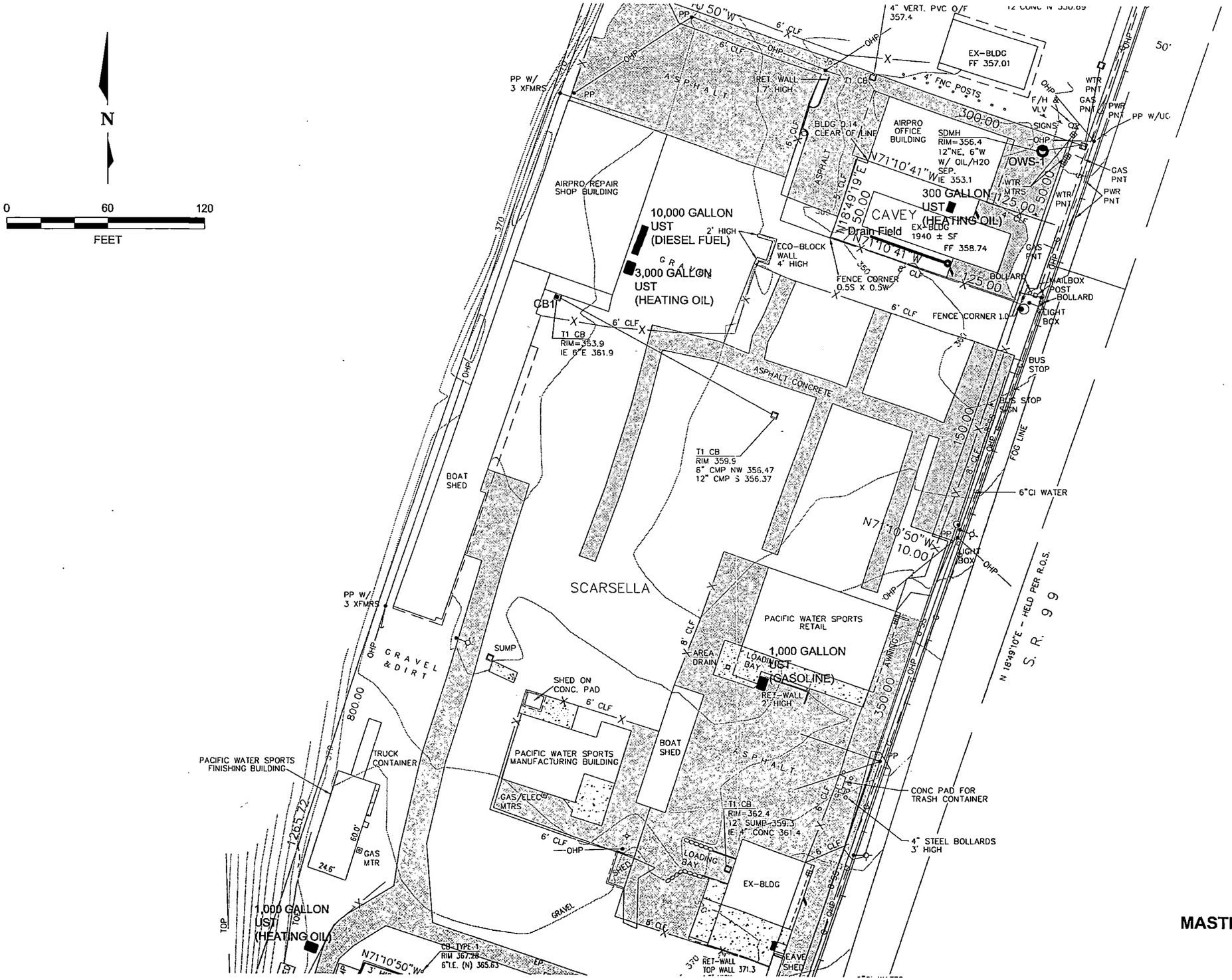


FIGURE **6**

MASTER PARK LOT C DEVELOPMENT
REMOVED SUBSURFACE STRUCTURE LOCATIONS
SEATAC INVESTMENTS/IRAR/WA

DCabe|K:\Projects\2001\0131427\600\94992.dwg|1-23-2 15:57|pcx-xbase,x-htch|i:-

Golder Associates

N

0 50 100
FEET

LEGEND

7-27-01-1	PetroFlag Sample Location
CB#10	Catch Basin
FILL	Area of Fill Using Previously Screened Material

7-30-01-9 7-30-01-8 7-30-01-7 7-30-01-6 7-30-01-5 7-30-01-4 7-31-01-1 7-31-01-3

CB#14 8-01-01-4 8-01-01-1 CB#13 CB#15 7-30-01-3 7-31-01-2 7-31-01-4

CB#4 7-31-01-9 8-01-01-2 7-31-01-8 CB#5 8-01-01-3 7-31-01-7

7-30-01-2 CB#3 7-31-01-6 Flow Splitter 8-03-01-4 FILL 9-15-01-2

7-30-01-1 7-31-01-5 9-15-01-1 7-27-01-2 8-31-01-4

CB#2 8-31-01-1 CB#6 FILL CB#10 FILL 7-27-01-1 8-31-01-2

CB#12 CB#7 CB#8 FILL CB#18 CB#17 8-09-01-1 CB#1 9-13-01-1 9-13-01-2 CB#14

State Route 99 / International Blvd

FIGURE 7
MASTER PARK LOT C DEVELOPMENT
FIELD SCREENED TRENCHING SAMPLE LOCATIONS
SEATAC INVESTMENTS/IRAR/WA

DCabe|K:\Projects\2001\0131427\600\94993.dwg|1-23-2 15:57|c:Xr-Base|i:-

Golder Associates

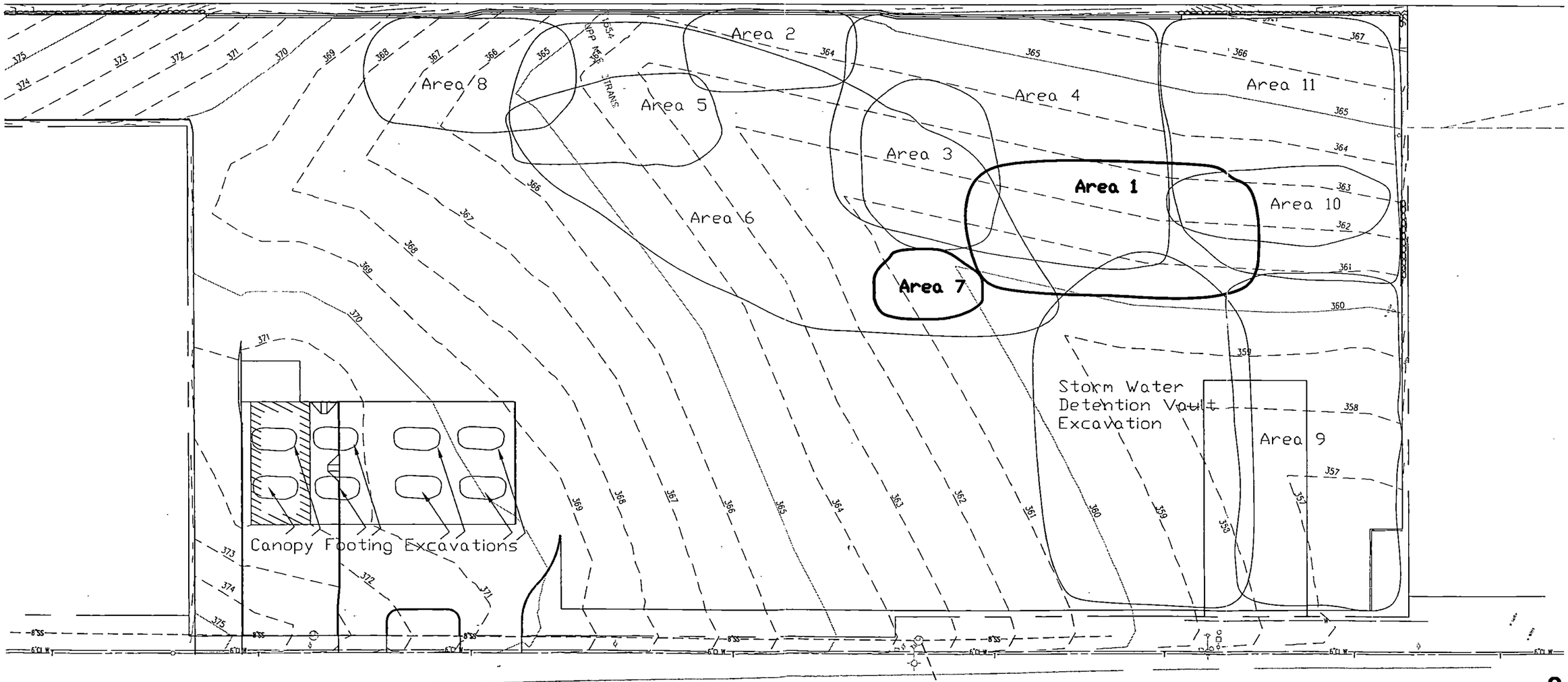
N

0 50 100
FEET

LEGEND

Area 1 Approximate area of soil above site specific near surface soil clean up level (1,600 mg/kg) (removed)

Area 2 Approximate area of soil within site specific near surface soil clean up level (1,600 mg/kg) (used onsite)



State Route 99 / International Blvd

FIGURE 8
MASTER PARK LOT C DEVELOPMENT
FIELD SCREENED SITE GRADING (CUT) AREAS
SEATAC INVESTMENTS/IRAR/WA

DCabe|K:\Projects\2001\0131427\600\94994.dwg|1-23-2 15:58|x:Xr-Base|i:-

Golder Associates

APPENDIX A

ANALYTICAL LABORATORY REPORTS

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

June 26, 2001

Ted Norton
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052-3333

Re: Analytical Data for Project 013-1427.500
Laboratory Reference No. 0106-124

Dear Ted:

Enclosed are the analytical results and associated quality control data for samples submitted on June 18, 2001.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: June 26, 2001
Samples Submitted: June 18, 2001
Lab Traveler: 06-124
Project: 013-1427.500

EXTRACTABLE PETROLEUM HYDROCARBONS

Date Extracted:	6-19-01
Date Analyzed:	6-19&20-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	06-124-17
Client ID:	**ITPH-Comp**

	Results	PQL
Aliphatic C10-C12	9.1	5.4
Aliphatic C12-C16	71	5.4
Aliphatic C16-C18	270	5.4
Aliphatic C18-C21	1300	5.4
Aliphatic C21-C28	15000	5.4
Aliphatic C28-C36	20000	5.4
Total Aliphatic	36000	
Aromatic C10-C12	ND	54
Aromatic C12-C16	ND	54
Aromatic C16-C18	81	54
Aromatic C18-C21	220	54
Aromatic C21-C28	630	54
Aromatic C28-C34	240	54
Total Aromatic	1200	

Surrogate	Percent Recovery	Control Limits
o-Terphenyl	--	50 - 150
1-Chlorooctadecane	--	50 - 150

Flags: F(AL), S(AR)

Date of Report: June 26, 2001
Samples Submitted: June 18, 2001
Lab Traveler: 06-124
Project: 013-1427.500

EXTRACTABLE PETROLEUM HYDROCARBONS
METHOD BLANK QUALITY CONTROL

Date Extracted:	6-19-01
Date Analyzed:	6-19&20-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0619S1

	Results	PQL
Aliphatic C10-C12	ND	5.0
Aliphatic C12-C16	ND	5.0
Aliphatic C16-C18	ND	5.0
Aliphatic C18-C21	ND	5.0
Aliphatic C21-C28	ND	5.0
Aliphatic C28-C36	ND	5.0
Total Aliphatic	NA	
Aromatic C10-C12	ND	5.0
Aromatic C12-C16	ND	5.0
Aromatic C16-C18	ND	5.0
Aromatic C18-C21	ND	5.0
Aromatic C21-C28	ND	5.0
Aromatic C28-C34	ND	5.0
Total Aromatic	NA	

Surrogate	Percent Recovery	Control Limits
o-Terphenyl	77	50 - 150
1-Chlorooctadecane	73	50 - 150

Flags:

Date of Report: June 26, 2001
Samples Submitted: June 18, 2001
Lab Traveler: 06-124
Project: 013-1427.500

EXTRACTABLE PETROLEUM HYDROCARBONS
DUPLICATE QUALITY CONTROL

Date Extracted:	6-19-01	
Date Analyzed:	6-19&20-01	
Matrix:	Soil	
Units:	mg/Kg (ppm)	
Lab ID:	06-124-17	06-124-17 DUP

	Results	Results	PQL	RPD
Aliphatic C10-C12	8.42	7.54	5.0	11
Aliphatic C12-C16	66.4	56.4	5.0	16
Aliphatic C16-C18	248	209	5.0	17
Aliphatic C18-C21	1180	1160	5.0	1.7
Aliphatic C21-C28	13600	11500	5.0	17
Aliphatic C28-C36	18500	15400	5.0	18
Aromatic C10-C12	ND	ND	50	NA
Aromatic C12-C16	ND	ND	50	NA
Aromatic C16-C18	75.4	75.8	50	0.53
Aromatic C18-C21	203	231	50	13
Aromatic C21-C28	586	788	50	29
Aromatic C28-C34	226	324	50	36

Surrogate	Percent Recovery	Percent Recovery	Control Limits
o-Terphenyl	--	--	50 - 150
1-Chlorooctadecane	--	--	50 - 150
Flags:	F(AL), S(AR)	F(AL), S(AR)	

Date of Report: June 26, 2001
Samples Submitted: June 18, 2001
Lab Traveler: 06-124
Project: 013-1427.500

EXTRACTABLE PETROLEUM HYDROCARBONS
SPIKE BLANK QUALITY CONTROL

Date Extracted:	6-19-01
Date Analyzed:	6-19&20-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	SB0619S1
Spike Amount	100 mg/Kg (ppm)

	Results	PQL
Aliphatic C10-C12	ND	5.0
Aliphatic C12-C16	22.6	5.0
Aliphatic C16-C18	12.9	5.0
Aliphatic C18-C21	11.0	5.0
Aliphatic C21-C28	8.43	5.0
Aliphatic C28-C36	ND	5.0
Total Aliphatic	54.9	
Aromatic C10-C12	ND	5.0
Aromatic C12-C16	7.67	5.0
Aromatic C16-C18	9.27	5.0
Aromatic C18-C21	6.79	5.0
Aromatic C21-C28	ND	5.0
Aromatic C28-C34	ND	5.0
Total Aromatic	23.7	
Percent Recovery	79	

Surrogate	Percent Recovery	Control Limits
o-Terphenyl	70	50 - 150
1-Chlorooctadecane	69	50 - 150

Flags:

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Company: Golder
Project No.: 013-1427.500
Project Name: SeaTac Parking
Project Manager: Ted Norton

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☒ 2 Day
- ☐ 3 Day
- ☐ Standard (Hydrocarbon analyses: 5 days, All other analyses: 7 days)
- ☐ 6/21 by Noon (other)

Project Manager: DB

Laboratory No. 06-124

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	Priority Pollutant Metals (13)	TCLP Metals	VPH	EPH	Hold			% Moisture
12	NT1-B-9	6/18/01	1300	Soil	2	✓															✓			X
13	NT2-SW-6.5		1310		2	✓																		X
14	NT-SP1		1420		2	✓																		X
15	NT-SP3		1430		2	✓		⊗																X
16	NT-SP2		1425		1															✓				X
17	ITPH-Comp		870		2															✓				X

RELINQUISHED BY	DATE	RECEIVED BY	DATE
Ted Norton	6/18/01	Kathleen M Spencer	6/18/01
FIRM: Golder	TIME: 1735	FIRM: OSE	TIME: 5:35pm
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS:
⊗ Added 6-20-01
RM

Chromatographs with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

July 20, 2001

Ted Norton
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052-3333

Re: Analytical Data for Project 013-1427.600
Laboratory Reference No. 0107-108

Dear Ted:

Enclosed are the analytical results and associated quality control data for samples submitted on July 18, 2001.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

NWTPH-HCID
METHOD BLANK QUALITY CONTROL

Date Extracted:	7-18-01
Date Analyzed:	7-18-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0718S1
Gasoline:	ND
PQL:	20
Diesel Fuel:	ND
PQL:	50
Heavy Oil:	ND
PQL:	100
Surrogate Recovery:	
o-Terphenyl	133%

Flags

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

NWTPH-HCID

Date Extracted:	7-18-01
Date Analyzed:	7-18-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Client ID:	7/18-CDF
Lab ID:	07-108-01
Gasoline:	ND
PQL:	24
Diesel Fuel:	ND
PQL:	60
Heavy Oil:	ND
PQL:	120
Surrogate Recovery:	
o-Terphenyl	121%

Flags:

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

NWTPH-Dx

Date Extracted:	7-18-01
Date Analyzed:	7-18-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Client ID:	7/18/01 - 1
Lab ID:	07-108-02
Diesel Fuel:	ND
PQL:	130
Heavy Oil:	710
PQL:	260
Surrogate Recovery:	
o-Terphenyl	---
Flags:	S

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	7-18-01
Date Analyzed:	7-18-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0718S1
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	102%

Flags:

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	7-18-01	
Date Analyzed:	7-18-01	
Matrix:	Soil	
Units:	mg/Kg (ppm)	
Lab ID:	07-092-02	07-092-02 DUP
Diesel Fuel:	ND	ND
PQL:	25	25
RPD:	N/A	
Surrogate Recovery:		
o-Terphenyl	88%	89%

Flags:

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

VOLATILES by EPA 8260B

Date Extracted:	7-19-01
Date Analyzed:	7-19-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	07-108-01
Client ID:	**7/18-CDF**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.0012
Chloromethane	ND		0.0012
Vinyl Chloride	ND		0.0012
Bromomethane	ND		0.0060
Chloroethane	ND		0.0012
Trichlorofluoromethane	ND		0.0012
1,1-Dichloroethene	ND		0.0012
Acetone	0.014	B	0.0060
Iodomethane	ND		0.0060
Carbon Disulfide	ND		0.0060
Methylene Chloride	ND		0.0060
(trans) 1,2-Dichloroethene	ND		0.0012
Methyl t-Butyl Ether	ND		0.0012
1,1-Dichloroethane	ND		0.0012
Vinyl Acetate	ND		0.0060
2,2-Dichloropropane	ND		0.0012
(cis) 1,2-Dichloroethene	ND		0.0012
2-Butanone	ND		0.0060
Bromochloromethane	ND		0.0012
Chloroform	ND		0.0012
1,1,1-Trichloroethane	ND		0.0012
Carbon Tetrachloride	ND		0.0012
1,1-Dichloropropene	ND		0.0012
Benzene	ND		0.0012
1,2-Dichloroethane	ND		0.0012
Trichloroethene	ND		0.0012
1,2-Dichloropropane	ND		0.0012
Dibromomethane	ND		0.0012
Bromodichloromethane	ND		0.0012
2-Chloroethyl Vinyl Ether	ND		0.0060
(cis) 1,3-Dichloropropene	ND		0.0012
Methyl Isobutyl Ketone	ND		0.0060
Toluene	ND		0.0012
(trans) 1,3-Dichloropropene	ND		0.0012

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 07-108-01
Client ID: 7/18-CDF

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.0012
Tetrachloroethene	ND		0.0012
1,3-Dichloropropane	ND		0.0012
2-Hexanone	ND		0.0060
Dibromochloromethane	ND		0.0012
1,2-Dibromoethane	ND		0.0012
Chlorobenzene	ND		0.0012
1,1,1,2-Tetrachloroethane	ND		0.0012
Ethylbenzene	ND		0.0012
m,p-Xylene	ND		0.0024
o-Xylene	ND		0.0012
Styrene	ND		0.0012
Bromoform	ND		0.0012
Isopropylbenzene	ND		0.0012
Bromobenzene	ND		0.0012
1,1,2,2-Tetrachloroethane	ND		0.0012
1,2,3-Trichloropropane	ND		0.0012
n-Propylbenzene	ND		0.0012
2-Chlorotoluene	ND		0.0012
4-Chlorotoluene	ND		0.0012
1,3,5-Trimethylbenzene	ND		0.0012
tert-Butylbenzene	ND		0.0012
1,2,4-Trimethylbenzene	ND		0.0012
sec-Butylbenzene	ND		0.0012
1,3-Dichlorobenzene	ND		0.0012
p-Isopropyltoluene	ND		0.0012
1,4-Dichlorobenzene	ND		0.0012
1,2-Dichlorobenzene	ND		0.0012
n-Butylbenzene	ND		0.0012
1,2-Dibromo-3-chloropropane	ND		0.0060
1,2,4-Trichlorobenzene	ND		0.0012
Hexachlorobutadiene	ND		0.0060
Naphthalene	ND		0.0012
1,2,3-Trichlorobenzene	ND		0.0012

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	118	65-125
Toluene, d8	107	77-116
4-Bromofluorobenzene	95	67-133

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Date Extracted:	7-19-01
Date Analyzed:	7-19-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0719S1

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.001
Chloromethane	ND		0.001
Vinyl Chloride	ND		0.001
Bromomethane	ND		0.005
Chloroethane	ND		0.001
Trichlorofluoromethane	ND		0.001
1,1-Dichloroethene	ND		0.001
Acetone	0.012		0.005
Iodomethane	ND		0.005
Carbon Disulfide	ND		0.005
Methylene Chloride	ND		0.005
(trans) 1,2-Dichloroethene	ND		0.001
Methyl t-Butyl Ether	ND		0.001
1,1-Dichloroethane	ND		0.001
Vinyl Acetate	ND		0.005
2,2-Dichloropropane	ND		0.001
(cis) 1,2-Dichloroethene	ND		0.001
2-Butanone	ND		0.005
Bromochloromethane	ND		0.001
Chloroform	ND		0.001
1,1,1-Trichloroethane	ND		0.001
Carbon Tetrachloride	ND		0.001
1,1-Dichloropropene	ND		0.001
Benzene	ND		0.001
1,2-Dichloroethane	ND		0.001
Trichloroethene	ND		0.001
1,2-Dichloropropane	ND		0.001
Dibromomethane	ND		0.001
Bromodichloromethane	ND		0.001
2-Chloroethyl Vinyl Ether	ND		0.005
(cis) 1,3-Dichloropropene	ND		0.001
Methyl Isobutyl Ketone	ND		0.005
Toluene	ND		0.001
(trans) 1,3-Dichloropropene	ND		0.001

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB0719S1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.001
Tetrachloroethene	ND		0.001
1,3-Dichloropropane	ND		0.001
2-Hexanone	ND		0.005
Dibromochloromethane	ND		0.001
1,2-Dibromoethane	ND		0.001
Chlorobenzene	ND		0.001
1,1,1,2-Tetrachloroethane	ND		0.001
Ethylbenzene	ND		0.001
m,p-Xylene	ND		0.002
o-Xylene	ND		0.001
Styrene	ND		0.001
Bromoform	ND		0.001
Isopropylbenzene	ND		0.001
Bromobenzene	ND		0.001
1,1,2,2-Tetrachloroethane	ND		0.001
1,2,3-Trichloropropane	ND		0.001
n-Propylbenzene	ND		0.001
2-Chlorotoluene	ND		0.001
4-Chlorotoluene	ND		0.001
1,3,5-Trimethylbenzene	ND		0.001
tert-Butylbenzene	ND		0.001
1,2,4-Trimethylbenzene	ND		0.001
sec-Butylbenzene	ND		0.001
1,3-Dichlorobenzene	ND		0.001
p-Isopropyltoluene	ND		0.001
1,4-Dichlorobenzene	ND		0.001
1,2-Dichlorobenzene	ND		0.001
n-Butylbenzene	ND		0.001
1,2-Dibromo-3-chloropropane	ND		0.005
1,2,4-Trichlorobenzene	ND		0.001
Hexachlorobutadiene	ND		0.005
Naphthalene	ND		0.001
1,2,3-Trichlorobenzene	ND		0.001

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	116	65-125
Toluene, d8	113	77-116
4-Bromofluorobenzene	108	67-133

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

VOLATILES by EPA 8260B
MS/MSD QUALITY CONTROL

Date Extracted: 7-19-01
Date Analyzed: 7-19-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 07-111-03

Compound	Spike Amount	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
1,1-Dichloroethene	0.0500	0.0490	98	0.0501	100	2.2	
Benzene	0.0500	0.0560	112	0.0573	115	2.3	
Trichloroethene	0.0500	0.0493	99	0.0498	100	0.94	
Toluene	0.0500	0.0556	111	0.0563	113	1.4	
Chlorobenzene	0.0500	0.0437	87	0.0439	88	0.45	

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

SEMIVOLATILES by EPA 8270C
page 1 of 3

Date Extracted:	7-18-01
Date Analyzed:	7-18-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	07-108-01
Client ID:	**7/18-CDF**

Compound:	**Results**	**Flags**	**PQL**
Aniline	ND		0.040
bis(2-Chloroethyl)ether	ND		0.040
Phenol	ND		0.040
2-Chlorophenol	ND		0.040
1,3-Dichlorobenzene	ND		0.040
1,4-Dichlorobenzene	ND		0.040
1,2-Dichlorobenzene	ND		0.040
Benzyl alcohol	ND		0.040
bis(2-chloroisopropyl)ether	ND		0.040
2-Methylphenol	ND		0.040
Hexachloroethane	ND		0.040
N-Nitroso-di-n-propylamine	ND		0.40
4-Methylphenol	ND		0.040
Nitrobenzene	ND		0.040
Isophorone	ND		0.40
2-Nitrophenol	ND		0.40
2,4-Dimethylphenol	ND		0.040
bis(2-Chloroethoxy)methane	ND		0.040
2,4-Dichlorophenol	ND		0.40
Benzoic acid	ND		0.40
1,2,4-Trichlorobenzene	ND		0.040
Naphthalene	ND		0.040
4-Chloroaniline	0.042		0.040
Hexachlorobutadiene	ND		0.040
4-Chloro-3-methylphenol	ND		0.40
2-Methylnaphthalene	ND		0.040
1-Methylnaphthalene	ND		0.040

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

SEMIVOLATILES by EPA 8270C
page 2 of 3

Lab ID: 07-108-01
Client ID: 7/18-CDF

Compound:	Results	Flags	PQL
Hexachlorocyclopentadiene	ND		1.0
2,4,6-Trichlorophenol	ND		0.40
2,4,5-Trichlorophenol	ND		0.40
2-Chloronaphthalene	ND		0.040
2-Nitroaniline	ND		0.40
Acenaphthylene	ND		0.040
Dimethylphthalate	ND		0.040
2,6-Dinitrotoluene	ND		0.40
Acenaphthene	ND		0.040
3-Nitroaniline	ND		0.40
2,4-Dinitrophenol	ND		1.0
Dibenzofuran	ND		0.040
2,4-Dinitrotoluene	ND		0.040
4-Nitrophenol	ND		0.40
Fluorene	ND		0.040
4-Chlorophenyl-phenylether	ND		0.040
Diethylphthalate	ND		0.040
4-Nitroaniline	ND		0.40
4,6-Dinitro-2-methylphenol	ND		1.0
n-Nitrosodiphenylamine	ND		0.040
4-Bromophenyl-phenylether	ND		0.040
Hexachlorobenzene	ND		0.040
Pentachlorophenol	ND		0.40
Phenanthrene	ND		0.040
Anthracene	ND		0.040
Carbazole	ND		0.040
Di-n-butylphthalate	ND		0.040
Fluoranthene	ND		0.040
Benzidine	ND		1.0
Pyrene	ND		0.040

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

SEMIVOLATILES by EPA 8270C
page 3 of 3

Lab ID: 07-108-01
Client ID: 7/18-CDF

Compound:	Results	Flags	PQL
Butylbenzylphthalate	ND		0.40
3,3'-Dichlorobenzidine	ND		0.40
Benzo[a]anthracene	ND		0.040
Chrysene	ND		0.040
bis(2-Ethylhexyl)phthalate	ND		0.40
Di-n-octylphthalate	ND		0.40
Benzo[b]fluoranthene	ND		0.040
Benzo[k]fluoranthene	ND		0.040
Benzo[a]pyrene	ND		0.040
Indeno[1,2,3-cd]pyrene	ND		0.040
Dibenz[a,h]anthracene	ND		0.040
Benzo[g,h,i]perylene	ND		0.040

Surrogate :	Percent Recovery	Control Limits
2-Fluorophenol	45	25 - 121
Phenol-d6	50	24 - 113
Nitrobenzene-d5	44	23 - 120
2-Fluorobiphenyl	57	30 - 115
2,4,6-Tribromophenol	55	19 - 122
Terphenyl-d14	69	18 - 137

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

SEMIVOLATILES by EPA 8270C
METHOD BLANK QUALITY CONTROL
page 1 of 3

Date Extracted:	7-18-01
Date Analyzed:	7-18-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0718S1

Compound:	Results	Flags	PQL
Aniline	ND		0.033
bis(2-Chloroethyl)ether	ND		0.033
Phenol	ND		0.033
2-Chlorophenol	ND		0.033
1,3-Dichlorobenzene	ND		0.033
1,4-Dichlorobenzene	ND		0.033
1,2-Dichlorobenzene	ND		0.033
Benzyl alcohol	ND		0.033
bis(2-chloroisopropyl)ether	ND		0.033
2-Methylphenol	ND		0.033
Hexachloroethane	ND		0.033
N-Nitroso-di-n-propylamine	ND		0.33
4-Methylphenol	ND		0.033
Nitrobenzene	ND		0.033
Isophorone	ND		0.33
2-Nitrophenol	ND		0.33
2,4-Dimethylphenol	ND		0.033
bis(2-Chloroethoxy)methane	ND		0.033
2,4-Dichlorophenol	ND		0.33
Benzoic acid	ND		0.33
1,2,4-Trichlorobenzene	ND		0.033
Naphthalene	ND		0.033
4-Chloroaniline	ND		0.033
Hexachlorobutadiene	ND		0.033
4-Chloro-3-methylphenol	ND		0.33
2-Methylnaphthalene	ND		0.033
1-Methylnaphthalene	ND		0.033

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

SEMIVOLATILES by EPA 8270C
METHOD BLANK QUALITY CONTROL
page 2 of 3

Lab ID: MB0718S1

Compound:	Results	Flags	PQL
Hexachlorocyclopentadiene	ND		0.83
2,4,6-Trichlorophenol	ND		0.33
2,4,5-Trichlorophenol	ND		0.33
2-Chloronaphthalene	ND		0.033
2-Nitroaniline	ND		0.33
Acenaphthylene	ND		0.033
Dimethylphthalate	ND		0.033
2,6-Dinitrotoluene	ND		0.33
Acenaphthene	ND		0.033
3-Nitroaniline	ND		0.33
2,4-Dinitrophenol	ND		0.83
Dibenzofuran	ND		0.033
2,4-Dinitrotoluene	ND		0.033
4-Nitrophenol	ND		0.33
Fluorene	ND		0.033
4-Chlorophenyl-phenylether	ND		0.033
Diethylphthalate	ND		0.033
4-Nitroaniline	ND		0.33
4,6-Dinitro-2-methylphenol	ND		0.83
n-Nitrosodiphenylamine	ND		0.033
4-Bromophenyl-phenylether	ND		0.033
Hexachlorobenzene	ND		0.033
Pentachlorophenol	ND		0.33
Phenanthrene	ND		0.033
Anthracene	ND		0.033
Carbazole	ND		0.033
Di-n-butylphthalate	ND		0.033
Fluoranthene	ND		0.033
Benzidine	ND		0.83
Pyrene	ND		0.033

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

SEMIVOLATILES by EPA 8270C
METHOD BLANK QUALITY CONTROL
page 3 of 3

Lab ID: MB0718S1

Compound:	Results	Flags	PQL
Butylbenzylphthalate	ND		0.33
3,3'-Dichlorobenzidine	ND		0.33
Benzo[a]anthracene	ND		0.033
Chrysene	ND		0.033
bis(2-Ethylhexyl)phthalate	ND		0.33
Di-n-octylphthalate	ND		0.33
Benzo[b]fluoranthene	ND		0.033
Benzo[k]fluoranthene	ND		0.033
Benzo[a]pyrene	ND		0.033
Indeno[1,2,3-cd]pyrene	ND		0.033
Dibenz[a,h]anthracene	ND		0.033
Benzo[g,h,i]perylene	ND		0.033

Surrogate :	Percent Recovery	Control Limits
2-Fluorophenol	70	25 - 121
Phenol-d6	74	24 - 113
Nitrobenzene-d5	65	23 - 120
2-Fluorobiphenyl	80	30 - 115
2,4,6-Tribromophenol	71	19 - 122
Terphenyl-d14	97	18 - 137

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

SEMIVOLATILES by EPA 8270C
MS/MSD QUALITY CONTROL

Date Extracted: 7-18-01
Date Analyzed: 7-18-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 07-108-01

Compound:	Spike Amount	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Phenol	3.33	1.61	48	1.91	57	17	
2-Chlorophenol	3.33	1.72	52	2.03	61	17	
1,4-Dichlorobenzene	1.67	0.72	43	0.829	50	13	
N-Nitroso-di-n-propylamine	1.67	0.74	45	0.900	54	19	
1,2,4-Trichlorobenzene	1.67	0.83	50	0.988	59	18	I
4-Chloro-3-methylphenol	3.33	2.06	62	2.24	67	8.7	
Acenaphthene	1.67	1.10	66	1.27	76	14	
2,4-Dinitrotoluene	1.67	1.19	71	1.31	78	9.3	
4-Nitrophenol	3.33	1.95	58	2.10	63	7.3	
Pentachlorophenol	3.33	2.24	67	2.42	72	7.5	
Pyrene	1.67	1.17	70	1.26	76	7.6	

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

ORGANOCHLORINE PESTICIDES by EPA 8081

Date Extracted:	7-18-01
Date Analyzed:	7-18-01
Matrix:	Soil
Units:	ug/Kg (ppb)
Lab ID:	07-108-01
Client ID:	**7/18-CDF**

Analyte	Result	PQL	Flags
alpha-BHC	**ND**	12	
gamma-BHC	**ND**	12	
Heptachlor	**ND**	12	
Aldrin	**ND**	12	
beta-BHC	**ND**	12	
delta-BHC	**ND**	12	
Heptachlor epoxide	**ND**	12	
Endosulfan I	**ND**	12	
4,4'-DDE	**ND**	24	
Dieldrin	**ND**	24	
Endrin	**ND**	24	
Endosulfan II	**ND**	24	
4,4'-DDD	**ND**	24	
4,4'-DDT	**ND**	24	
Endrin Aldehyde	**ND**	24	
Endosulfan Sulfate	**ND**	24	
Methoxychlor	**ND**	24	
Endrin ketone	**ND**	24	
Toxaphene	**ND**	600	
Chlordane (Technical)	**70**	60	

Surrogate	Percent Recovery	Control Limits
2,4,5,6-Tetrachloro-m-xylene	87	36 - 118
Decachlorobiphenyl	89	32 - 133

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

ORGANOCHLORINE PESTICIDES by EPA 8081 METHOD BLANK QUALITY CONTROL

Date Extracted:	7-18-01
Date Analyzed:	7-18-01
Matrix:	Soil
Units:	ug/Kg (ppb)
Lab ID:	MB0718S1

Analyte	Result	PQL	Flags
alpha-BHC	ND	10	
gamma-BHC	ND	10	
Heptachlor	ND	10	
Aldrin	ND	10	
beta-BHC	ND	10	
delta-BHC	ND	10	
Heptachlor epoxide	ND	10	
Endosulfan I	ND	10	
4,4'-DDE	ND	20	
Dieldrin	ND	20	
Endrin	ND	20	
Endosulfan II	ND	20	
4,4'-DDD	ND	20	
4,4'-DDT	ND	20	
Endrin Aldehyde	ND	20	
Endosulfan Sulfate	ND	20	
Methoxychlor	ND	20	
Endrin ketone	ND	20	
Toxaphene	ND	500	
Chlordane (Technical)	ND	50	

Surrogate	Percent Recovery	Control Limits
2,4,5,6-Tetrachloro-m-xylene	91	36 - 118
Decachlorobiphenyl	100	32 - 133

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

ORGANOCHLORINE PESTICIDES by EPA 8081 MS/MSD QUALITY CONTROL

Date Extracted: 7-18-01
Date Analyzed: 7-18-01

Matrix: Soil
Units: ug/Kg (ppb)

Lab ID: 07-108-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD
gamma-BHC	50	42.6	85	39.2	78	8.3
Heptachlor	50	42.4	85	46.9	94	10
Aldrin	50	42.8	86	39.6	79	7.8
Dieldrin	125	110	88	102	82	7.5
Endrin	125	105	84	97.5	78	7.4
4,4'-DDT	125	116	93	106	85	9.0

Surrogate	Percent Recovery	Percent Recovery	Control Limits
2,4,5,6-Tetrachloro-m-xylene	94	92	36 - 118
Decachlorobiphenyl	97	92	32 - 133

Flags:

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

ORGANOCHLORINE PESTICIDES by EPA 8081 SPIKE BLANK QUALITY CONTROL

Date Extracted:	7-18-01
Date Analyzed:	7-18-01
Matrix:	Soil
Units:	ug/Kg (ppb)
Lab ID:	SB0718S1

Analyte	Spike Level	Result	Percent Recovery
gamma-BHC	50	45.8	92
Heptachlor	50	45.3	91
Aldrin	50	46.7	93
Dieldrin	125	118	94
Endrin	125	113	90
4,4'-DDT	125	120	96

Surrogate	Percent Recovery	Control Limits
2,4,5,6-Tetrachloro-m-xylene	106	36 - 118
Decachlorobiphenyl	116	32 - 133

Flags:

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 7-18&19-01
Date Analyzed: 7-18&19-01

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 07-108-01
Client ID: 7/18-CDF

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	12
Barium	6010B	**90**	6.0
Cadmium	6010B	**ND**	0.60
Chromium	6010B	**26**	0.60
Lead	6010B	**29**	6.0
Mercury	7471A	**ND**	0.30
Selenium	6010B	**ND**	12
Silver	6010B	**290**	0.60

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	7-18&19-01
Date Analyzed:	7-18&19-01
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0718S1,MB0719S1&MB0719S3

Analyte	Method	Result	PQL
Arsenic	6010B	ND	10
Barium	6010B	ND	5.0
Cadmium	6010B	ND	0.50
Chromium	6010B	ND	0.50
Lead	6010B	ND	5.0
Mercury	7471A	ND	0.25
Selenium	6010B	ND	10
Silver	6010B	ND	0.50

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 7-18&19-01
Date Analyzed: 7-18&19-01

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 07-101-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**46.5**	**52.7**	12	5.0	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**14.8**	**15.3**	3.2	0.50	
Lead	**14.3**	**19.0**	28	5.0	C
Mercury	**ND**	**ND**	NA	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 7-18&19-01
Date Analyzed: 7-18&19-01

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 07-101-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**99.8**	100	**106**	106	5.9	
Barium	100	**138**	92	**144**	97	3.7	
Cadmium	50	**37.3**	75	**37.8**	76	1.2	
Chromium	100	**91.3**	76	**89.5**	75	2.0	
Lead	250	**190**	70	**192**	71	1.2	
Mercury	1.0	**1.01**	101	**1.04**	104	2.9	
Selenium	100	**94.4**	94	**103**	103	8.8	
Silver	50	**40.3**	81	**43.0**	86	6.3	

Date of Report: July 20, 2001
Samples Submitted: July 18, 2001
Lab Traveler: 07-108
Project: 013-1427.600

% MOISTURE

Date Analyzed: 7-18-01

Client ID	Lab ID	% Moisture
7/18-CDF	07-108-01	17
7/18/01-1	07-108-02	5.0

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Turnaround Request (in working days)

(Check One)

- [ ] Same Day
- [x] 1 Day
- [ ] 2 Day
- [ ] 3 Day
- [ ] Standard (Hydrocarbon analyses: 5 days, All other analyses: 7 days)
- [ ] By NOON (other)

Project Manager: DB

Laboratory No. 07-108

Company: Golder Assoc

Project No.: 013-1427.600

Project Name: SeaTac Invest / Parking

Project Manager: T. Norton

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	Priority Pollutant Metals (13)	TCLP Metals	VPH	EPH					% Moisture
1	7/18-CDF	7/18/01	935	S	2	X			X		X			X		X									X
2	7/18/01-1	"	1200	S	1			X																	X

RELINQUISHED BY	DATE	RECEIVED BY	DATE
[signature]	7/18/01	Raisa Kent	7/18/01
FIRM: Golder	TIME: 1315	FIRM: OSE	TIME: 13:15
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS:

Chromatographs with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

July 20, 2001

Ted Norton
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052-3333

Re: Analytical Data for Project 013-1427.600
Laboratory Reference No. 0107-120

Dear Ted:

Enclosed are the analytical results and associated quality control data for samples submitted on July 19, 2001.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: July 20, 2001
Samples Submitted: July 19, 2001
Lab Traveler: 07-120
Project: 013-1427.600

NWTPH-Dx

Date Extracted:	7-19-01
Date Analyzed:	7-19-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Client ID:	7/18/01 - 7	7/19/01 - 7	7/19/01 - 12
Lab ID:	07-120-01	07-120-02	07-120-03
Diesel Fuel:	ND	ND	ND
PQL:	27	28	29
Heavy Oil:	950	ND	ND
PQL:	54	56	57
Surrogate Recovery:			
o-Terphenyl	95%	90%	82%

Flags:

Date of Report: July 20, 2001
Samples Submitted: July 19, 2001
Lab Traveler: 07-120
Project: 013-1427.600

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	7-19-01
Date Analyzed:	7-19-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0719S2
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	121%
Flags:	

Date of Report: July 20, 2001
Samples Submitted: July 19, 2001
Lab Traveler: 07-120
Project: 013-1427.600

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	7-19-01	
Date Analyzed:	7-19-01	
Matrix:	Soil	
Units:	mg/Kg (ppm)	
Lab ID:	07-120-01	07-120-01 DUP
Diesel Fuel:	ND	ND
PQL:	25	25
RPD:	N/A	
Surrogate Recovery:		
o-Terphenyl	95%	93%
Flags:		

Date of Report: July 20, 2001
Samples Submitted: July 19, 2001
Lab Traveler: 07-120
Project: 013-1427.600

% MOISTURE

Date Analyzed: 7-19-01

Client ID	Lab ID	% Moisture
7/18/01-7	07-120-01	7.0
7/19/01-7	07-120-02	10
7/19/01-12	07-120-03	13

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page _____ of _____

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☒ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☐ Standard (Hydrocarbon analyses: 5 days, All other analyses: 7 days)
- ☐ AM for #1. (other)

Project Manager: DB

Laboratory No. 07-120

Company: Golder

Project No.: 013-1427.600

Project Name: SeaTac Parking

Project Manager: T. Norton

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	Priority Pollutant Metals (13)	TCLP Metals	VPH	EPH				% Moisture
1	7/18/01 - 7	7/19/01	1030	Soil	1			✓																X
2	7/19/01 - 7	7/19/01	1014	Soil	1			✓																X
3	7/19/01 - 12	7/19/01	1300	Soil	1			✓																X

RELINQUISHED BY	DATE	RECEIVED BY	DATE
[signature]	7/19/01	Kathra Kent	7/19/01
FIRM: Golder	TIME: 1455	FIRM: OSE	TIME: 2:55
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS:

Chromatographs with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

July 24, 2001

Ted Norton
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052-3333

Re: Analytical Data for Project 013-1427.600
Laboratory Reference No. 0107-143

Dear Ted:

Enclosed are the analytical results and associated quality control data for samples submitted on July 23, 2001.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: July 24, 2001
Samples Submitted: July 23, 2001
Lab Traveler: 07-143
Project: 013-1427.600

NWTPH-Dx

Date Extracted:	7-23-01
Date Analyzed:	7-23-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Client ID:	7/23/01 - 4	7/23/01 - 5
Lab ID:	07-143-01	07-143-02
Diesel Fuel:	ND	170
PQL:	28	130
Heavy Oil:	520	1200
PQL:	57	270
Surrogate Recovery:		
o-Terphenyl	91%	---
Flags:		S

Date of Report: July 24, 2001
Samples Submitted: July 23, 2001
Lab Traveler: 07-143
Project: 013-1427.600

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	7-23-01
Date Analyzed:	7-23-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0723S1
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	88%

Flags:

Date of Report: July 24, 2001
Samples Submitted: July 23, 2001
Lab Traveler: 07-143
Project: 013-1427.600

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	7-23-01
Date Analyzed:	7-23-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Lab ID:	07-131-01	07-131-01 DUP
Diesel Fuel:	ND	ND
PQL:	25	25
RPD:	N/A	
Surrogate Recovery:		
o-Terphenyl	149%	150%
Flags:	Y	Y

Date of Report: July 24, 2001
Samples Submitted: July 23, 2001
Lab Traveler: 07-143
Project: 013-1427.600

% MOISTURE

Date Analyzed: 7-23-01

Client ID	Lab ID	% Moisture
7/23/01-4	07-143-01	12
7/23/01-5	07-143-02	7.0

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page _____ of _____

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Turnaround Request (in working days)

(Check One)

☐ Same Day ☒ 1 Day

☐ 2 Day ☐ 3 Day

☐ Standard (Hydrocarbon analyses: 5 days, All other analyses: 7 days)

☐ 7/24 BY 3PM (other)

Project Manager: DB

Laboratory No. 07-143

Company: Goldr

Project No.: 013-1427.600

Project Name: Sea Tac Parking

Project Manager:

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	Priority Pollutant Metals (13)	TCLP Metals	VPH	EPH				% Moisture
1	7/23/01 -4	7/23/01	905	Soil	1			✓																X
2	7/23/01 -5	7/23/01	945	Soil	1			✓																X

RELINQUISHED BY	DATE	RECEIVED BY	DATE
	7/23/01		7.23.01
FIRM Goldr	TIME 1235	FIRM CSE	TIME 12:30 PM
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS:

Chromatographs with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

August 3, 2001

Ted Norton
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052-3333

Re: Analytical Data for Project 013-1427.600
Laboratory Reference No. 0107-217

Dear Ted:

Enclosed are the analytical results and associated quality control data for samples submitted on July 31, 2001.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: August 3, 2001
Samples Submitted: July 31, 2001
Lab Traveler: 07-217
Project: 013-1427.600

NWTPH-Dx

Date Extracted:	7-31-01
Date Analyzed:	7-31-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Client ID:	7/30/01-4
Lab ID:	07-217-01
Diesel Fuel:	ND
PQL:	27
Heavy Oil:	ND
PQL:	54

Surrogate Recovery:

o-Terphenyl	62%

Flags:

Date of Report: August 3, 2001
Samples Submitted: July 31, 2001
Lab Traveler: 07-217
Project: 013-1427.600

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	7-31-01
Date Analyzed:	7-31-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0731S1
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	60%

Flags:

Date of Report: August 3, 2001
Samples Submitted: July 31, 2001
Lab Traveler: 07-217
Project: 013-1427.600

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	7-31-01
Date Analyzed:	7-31-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Lab ID:	07-183-01	07-183-01 DUP
Diesel Fuel:	1460	1270
PQL:	25	25
RPD:	14	
Surrogate Recovery:		
o-Terphenyl	---	---
Flags:	Z	Z

Date of Report: August 3, 2001
Samples Submitted: July 31, 2001
Lab Traveler: 07-217
Project: 013-1427.600

% MOISTURE

Date Analyzed: 7-31-01

Client ID	Lab ID	% Moisture
7/30/01-4	07-217-01	8.0

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z - Diesel Fuel quantitiated as Diesel Fuel #1.

ND - Not Detected at PQL
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☒ 2 Day
- ☐ 3 Day
- ☐ Standard (Hydrocarbon analyses: 5 days, All other analyses: 7 days)
- ☐ _____ (other)

Company: Golder

Project No.: 013-1427.600

Project Name: SeaTac Inv. / SeaTac Parking

Project Manager: T. Norton

Project Manager: DB

Laboratory No. 07-217

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	Priority Pollutant Metals (13)	TCLP Metals	VPH	EPH				% Moisture
1	7/30/01-4	7/30/01	1305	Soil	1			X																X

RELINQUISHED BY	DATE	RECEIVED BY	DATE
Josh Harrison	7/30/01		7/30/01
FIRM: Golder	TIME: 1730	FIRM: Golder	TIME: 1730
RELINQUISHED BY	DATE: 7/31/01	RECEIVED BY	DATE: 7/31/01
FIRM: Golder	TIME: 1238	FIRM: OnSite Env.	TIME: 12:38
REVIEWED BY		DATE REVIEWED	

COMMENTS:

Chromatographs with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

August 3, 2001

Ted Norton
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052-3333

Re: Analytical Data for Project 013-1427.600
Laboratory Reference No: 0108-003

Dear Ted:

Enclosed are the analytical results and associated quality control data for samples submitted on August 1, 2001.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: August 3, 2001
Samples Submitted: August 1, 2001
Lab Traveler: 08-003
Project: 013-1427.600

NWTPH-Dx

Date Extracted:	8-1-01
Date Analyzed:	8-1-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Client ID:	7-31-01-5
Lab ID:	08-003-01
Diesel Fuel:	190
PQL:	29
Heavy Oil:	340
PQL:	57
Surrogate Recovery:	
o-Terphenyl	122%

Flags:

Date of Report: August 3, 2001
Samples Submitted: August 1, 2001
Lab Traveler: 08-003
Project: 013-1427.600

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-1-01
Date Analyzed:	8-1-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0801S1
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	85%

Flags:

Date of Report: August 3, 2001
Samples Submitted: August 1, 2001
Lab Traveler: 08-003
Project: 013-1427.600

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	8-1-01
Date Analyzed:	8-1-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Lab ID:	07-219-07	07-219-07 DUP
Diesel Fuel:	ND	ND
PQL:	25	25
RPD:	N/A	
Surrogate Recovery:		
o-Terphenyl	103%	99%

Flags:

Date of Report: August 3, 2001
Samples Submitted: August 1, 2001
Lab Traveler: 08-003
Project: 013-1427.600

% MOISTURE

Date Analyzed: 8-1-01

Client ID	Lab ID	% Moisture
7-31-01-5	08-003-01	13

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Fax: (425) 885-4603 • Phone: (425) 883-3881

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☒ 2 Day
- ☐ 3 Day
- ☐ Standard (Hydrocarbon analyses: 5 days, All other analyses: 7 days)
- ☐ _____ (other)

Project Chemist: DB

Laboratory No. 08-003

Company: Golder

Project No.: 013-1427.600

Project Name: SeaTac Parking

Project Manager: T. Norton

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Total RCRA Metals (8)	TCLP Metals	VPH	EPH	% Moisture
1	7-31-01-5	7/31/01	1110	Soil	1			X											X

RELINQUISHED BY	DATE	RECEIVED BY	DATE
[signature]	8/1/01	Laura Kent	8/1/01
FIRM: Golder	TIME: 1202	FIRM: OSE	TIME: 12:02
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS:

Chromatographs with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

August 9, 2001

Ted Norton
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052-3333

Re: Analytical Data for Project 013-1427.600
Laboratory Reference No. 0108-039

Dear Ted:

Enclosed are the analytical results and associated quality control data for samples submitted on August 6, 2001.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: August 9, 2001
Samples Submitted: August 6, 2001
Lab Traveler: 08-039
Project: 013-1427.600

NWTPH-Dx

Date Extracted:	8-7-01
Date Analyzed:	8-7-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Client ID:	08-02-01-3
Lab ID:	08-039-01
Diesel Fuel:	ND
PQL:	28
Heavy Oil:	120
PQL:	56
Surrogate Recovery:	
o-Terphenyl	101%

Flags:

Date of Report: August 9, 2001
Samples Submitted: August 6, 2001
Lab Traveler: 08-039
Project: 013-1427.600

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-7-01
Date Analyzed:	8-7-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0807S1
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	110%

Flags:

Date of Report: August 9, 2001
Samples Submitted: August 6, 2001
Lab Traveler: 08-039
Project: 013-1427.600

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	8-7-01
Date Analyzed:	8-7-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Lab ID:	08-039-01	08-039-01 DUP
Diesel Fuel:	ND	ND
PQL:	25	25
RPD:	N/A	
Surrogate Recovery:		
o-Terphenyl	101%	102%

Flags:

Date of Report: August 9, 2001
Samples Submitted: August 6, 2001
Lab Traveler: 08-039
Project: 013-1427.600

% MOISTURE

Date Analyzed: 8-7-01

Client ID	Lab ID	% Moisture
08-02-01-3	08-039-01	11

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page _____ of _____

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☐ Standard (Hydrocarbon analyses: 5 days, All other analyses: 7 days)
☐ 48 hours (other)

Project Manager: DB

Laboratory No. 08-039

Company: Golder
Project No.: 013-1427.610
Project Name: Suntec Partners
Project Manager: T. Norton

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	Priority Pollutant Metals (13)	TCLP Metals	VPH	EPH	% Moisture
1	08-02-01-3	8/2/01	14:00	Soil	1			X													X

RELINQUISHED BY	DATE	RECEIVED BY	DATE
	8/6/01		8-6-01
FIRM: Golder	TIME: 1305	FIRM: OSE	TIME: 1:05
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS:

Chromatographs with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

August 14, 2001

Ted Norton
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052-3333

Re: Analytical Data for Project 013-1427.600
Laboratory Reference No. 0108-081

Dear Ted:

Enclosed are the analytical results and associated quality control data for samples submitted on August 10, 2001.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: August 14, 2001
Samples Submitted: August 10, 2001
Lab Traveler: 08-081
Project: 013-1427.600

NWTPH-Dx

Date Extracted:	8-10-01
Date Analyzed:	8-10-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Client ID:	08-09-01-3
Lab ID:	08-081-01
Diesel Fuel:	ND
PQL:	27
Heavy Oil:	69
PQL:	54

Surrogate Recovery:

o-Terphenyl	102%

Flags:

Date of Report: August 14, 2001
Samples Submitted: August 10, 2001
Lab Traveler: 08-081
Project: 013-1427.600

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-10-01
Date Analyzed:	8-10-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0810S1
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	103%
Flags:	

Date of Report: August 14, 2001
Samples Submitted: August 10, 2001
Lab Traveler: 08-081
Project: 013-1427.600

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	8-10-01
Date Analyzed:	8-10-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Lab ID:	08-077-08	08-077-08 DUP
Diesel Fuel:	ND	ND
PQL:	25	25
RPD:	N/A	
Surrogate Recovery:		
o-Terphenyl	114%	103%

Flags:

Date of Report: August 14, 2001
Samples Submitted: August 10, 2001
Lab Traveler: 08-081
Project: 013-1427.600

% MOISTURE

Date Analyzed: 8-10-01

Client ID	Lab ID	% Moisture
08-09-01-3	08-081-01	7.0

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page _____ of _____

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Fax: (425) 885-4603 • Phone: (425) 883-3881

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☒ 2 Day ☐ 3 Day
☐ Standard (Hydrocarbon analyses: 5 days, All other analyses: 7 days)
☐ _____ (other)

Project Chemist:

Laboratory No. 08-081

Company: Golder

Project No.: 013-1427.600

Project Name: SeaTac Parking

Project Manager: T. Norton

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Total RCRA Metals (8)	TCLP Metals	VPH	EPH	% Moisture
1	04-09-01-3	8/9/01	1325	Soil	1			✓											✓

RELINQUISHED BY	DATE	RECEIVED BY	DATE
Tony Norton	8-10-01	Loren R Knutson	8-10-01
FIRM: Golder	TIME: 1212	FIRM: OSE	TIME: 12:13
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS:

Chromatographs with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

September 10, 2001

Ted Norton
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052-3333

Re: Analytical Data for Project 13-1427.500
Laboratory Reference No. 0109-006

Dear Ted:

Enclosed are the analytical results and associated quality control data for samples submitted on September 4, 2001.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 10, 2001
Samples Submitted: September 4, 2001
Lab Traveler: 09-006
Project: 13-1427.500

NWTPH-Dx

Date Extracted:	9-5-01
Date Analyzed:	9-5&6-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Client ID:	SPC-2	9-4-01-5
Lab ID:	09-006-07	09-006-08
Diesel Fuel:	2000	ND
PQL:	28	27
Heavy Oil:	ND	1000
PQL:	55	54
Surrogate Recovery:		
o-Terphenyl	---	91%
Flags:	F,Z	

Date of Report: September 10, 2001
Samples Submitted: September 4, 2001
Lab Traveler: 09-006
Project: 13-1427.500

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-5-01
Date Analyzed:	9-5-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0905S1
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	72%
Flags:	

Date of Report: September 10, 2001
Samples Submitted: September 4, 2001
Lab Traveler: 09-006
Project: 13-1427.500

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 9-5-01
Date Analyzed: 9-5-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID:	09-006-01	09-006-01 DUP
Diesel Fuel:	ND	ND
PQL:	25	25
RPD:	N/A	
Surrogate Recovery:		
o-Terphenyl	76%	81%

Flags:

Date of Report: September 10, 2001
Samples Submitted: September 4, 2001
Lab Traveler: 09-006
Project: 13-1427.500

% MOISTURE

Date Analyzed: 9-5-01

Client ID	Lab ID	% Moisture
EX-Bottom	09-006-01	7.0
EX-West	09-006-02	7.0
EX-South	09-006-03	7.0
EX-East	09-006-04	9.0
EX-North	09-006-05	6.0
SPC-1	09-006-06	12
SPC-2	09-006-07	9.0
9-4-01-5	09-006-08	8.0

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z - Diesel Fuel quantitiated as Diesel Fuel #1 and #2.

ND - Not Detected at PQL
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day

☒ 2 Day ☐ 3 Day

☐ Standard
(Hydrocarbon analyses: 5 days, All other analyses: 7 days)

☒ Thursday 12:00
(other)

Project Manager: DB

Laboratory No. 09-006

Company: Golder Associates

Project No.: 013-1427.500

Project Name: Sea Tac

Project Manager: Ted Norton

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	~~NWTPH-Gx~~/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	Priority Pollutant Metals (13)	TCLP Metals	VPH	EPH					% Moisture
1	EX-Bottom	9-4-01	1035	S	1		✓	✓																	X
2	EX-West		1140	S	1			✓																	X
3	EX-South		1155	S	1			✓																	X
4	EX-East		1215	S	1			✓																	X
5	EX-North		1235	S	1			✓																	X
6	SPC-1		1240	S	1			✓																	X
7	SPC-2	↓	1245	S	1		✓	✓																	X
8	9-4-01-5	9-4-01	1245	S	1			✓																	X

RELINQUISHED BY	DATE	RECEIVED BY	DATE
[signature]	9-4-01	[signature]	9/4/01
FIRM Golder	TIME 1430	FIRM OSE	TIME 1430
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS:

Chromatographs with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

August 16, 2001

Ted Norton
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052-3333

Re: Analytical Data for Project 013-1427.600 500.N
Laboratory Reference No. 0108-134

Dear Ted:

Enclosed are the analytical results and associated quality control data for samples submitted on August 16, 2001.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

NWTPH-Gx/BTEX

Date Extracted: 8-16-01
Date Analyzed: 8-16-01

Matrix: Soil
Units: mg/Kg (ppm)

Client ID:	**NWCB-Bot**			**NWCB-STK**		
Lab ID:	08-134-01			08-134-02		
	Result	Flags	PQL	**Result**	Flags	PQL
Benzene	**ND**		0.011	**ND**		0.011
Toluene	**ND**		0.053	**ND**		0.056
Ethyl Benzene	**ND**		0.053	**ND**		0.056
m,p-Xylene	**ND**		0.053	**0.092**		0.056
o-Xylene	**ND**		0.053	**ND**		0.056
TPH-Gas	**ND**		5.3	**ND**		5.6
Surrogate Recovery:						
Fluorobenzene	83%			82%		

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL

Date Extracted: 8-16-01
Date Analyzed: 8-16-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: MB0816S1

	Result	Flags	PQL
Benzene	ND		0.010
Toluene	ND		0.050
Ethyl Benzene	ND		0.050
m,p-Xylene	ND		0.050
o-Xylene	ND		0.050
TPH-Gas	ND		5.0

Surrogate Recovery:
Fluorobenzene 85%

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

NWTPH-Gx/BTEX
DUPLICATE QUALITY CONTROL

Date Extracted: 8-16-01
Date Analyzed: 8-16-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID:	08-134-02 Original	08-134-02 Duplicate	RPD	Flags
Benzene	ND	ND	NA	
Toluene	ND	ND	NA	
Ethyl Benzene	ND	ND	NA	
m,p-Xylene	0.0830	0.0746	11	
o-Xylene	ND	ND	NA	
TPH-Gas	ND	ND	NA	
Surrogate Recovery:				
Fluorobenzene	82%	85%		

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

NWTPH-Gx/BTEX
SB/SBD QUALITY CONTROL

Date Extracted: 8-16-01
Date Analyzed: 8-16-01

Matrix: Soil
Units: mg/Kg (ppm)

Spike Level: 1.00 ppm

Lab ID:	SB0816S1 **SB**	Percent Recovery	SB0816S1 DUP **SBD**	Percent Recovery	RPD	Flags
Benzene	**0.813**	**81**	**0.892**	**89**	9.3	
Toluene	**0.816**	**82**	**0.891**	**89**	8.8	
Ethyl Benzene	**0.812**	**81**	**0.896**	**90**	9.8	
m,p-Xylene	**0.814**	**81**	**0.891**	**89**	9.0	
o-Xylene	**0.817**	**82**	**0.898**	**90**	9.5	

Surrogate Recovery:

Fluorobenzene	82%	90%

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

NWTPH-Dx

Date Extracted:	8-16-01
Date Analyzed:	8-16-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Client ID:	N WCB-Bot	N WCB-STK
Lab ID:	08-134-01	08-134-02
Diesel Fuel:	64	1200
PQL:	27	28
Heavy Oil:	83	580
PQL:	53	56
Surrogate Recovery:		
o-Terphenyl	78%	---
Flags:		F

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-16-01
Date Analyzed:	8-16-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0816S1
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	100%

Flags:

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	8-16-01	
Date Analyzed:	8-16-01	
Matrix:	Soil	
Units:	mg/Kg (ppm)	
Lab ID:	08-134-02	08-134-02 DUP
Diesel Fuel:	1059	1307
PQL:	25	25
RPD:	21	
Surrogate Recovery:		
o-Terphenyl	---	---
Flags:	F	F

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

PAH's by EPA 8270C

Date Extracted:	8-16-01
Date Analyzed:	8-16-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	08-134-01
Client ID:	**NWCB-Bot**

Compound:	**Results**	**Flags**	**PQL**
Naphthalene	ND		0.089
2-Methylnaphthalene	ND		0.089
1-Methylnaphthalene	ND		0.089
Acenaphthylene	ND		0.089
Acenaphthene	ND		0.089
Fluorene	ND		0.089
Phenanthrene	ND		0.089
Anthracene	ND		0.089
Fluoranthene	ND		0.089
Pyrene	ND		0.089
Benzo[a]anthracene	ND		0.089
Chrysene	ND		0.089
Benzo[b]fluoranthene	ND		0.089
Benzo[k]fluoranthene	ND		0.089
Benzo[a]pyrene	ND		0.089
Indeno[1,2,3-cd]pyrene	ND		0.089
Dibenz[a,h]anthracene	ND		0.089
Benzo[g,h,i]perylene	ND		0.089

Surrogate :	**Percent Recovery**	**Control Limits**
Nitrobenzene-d5	55	23 - 120
2-Fluorobiphenyl	81	30 - 115
Terphenyl-d14	92	18 - 137

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

PAH's by EPA 8270C

Date Extracted:	8-16-01
Date Analyzed:	8-16-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	08-134-02
Client ID:	**NWCB-STK**

Compound:	**Results**	**Flags**	**PQL**
Naphthalene	0.59		0.22
2-Methylnaphthalene	4.8		0.22
1-Methylnaphthalene	3.9		0.22
Acenaphthylene	0.16	J	0.22
Acenaphthene	0.40		0.22
Fluorene	1.1		0.22
Phenanthrene	2.1		0.22
Anthracene	0.17	J	0.22
Fluoranthene	ND		0.22
Pyrene	ND		0.22
Benzo[a]anthracene	ND		0.22
Chrysene	ND		0.22
Benzo[b]fluoranthene	ND		0.22
Benzo[k]fluoranthene	ND		0.22
Benzo[a]pyrene	ND		0.22
Indeno[1,2,3-cd]pyrene	ND		0.22
Dibenz[a,h]anthracene	ND		0.22
Benzo[g,h,i]perylene	ND		0.22

Surrogate :	**Percent Recovery**	**Control Limits**
Nitrobenzene-d5	57	23 - 120
2-Fluorobiphenyl	83	30 - 115
Terphenyl-d14	90	18 - 137

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

PAH's by EPA 8270C
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-16-01
Date Analyzed:	8-16-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0816S1

Compound:	Results	Flags	PQL
Naphthalene	ND		0.033
2-Methylnaphthalene	ND		0.033
1-Methylnaphthalene	ND		0.033
Acenaphthylene	ND		0.033
Acenaphthene	ND		0.033
Fluorene	ND		0.033
Phenanthrene	ND		0.033
Anthracene	ND		0.033
Fluoranthene	ND		0.033
Pyrene	ND		0.033
Benzo[a]anthracene	ND		0.033
Chrysene	ND		0.033
Benzo[b]fluoranthene	ND		0.033
Benzo[k]fluoranthene	ND		0.033
Benzo[a]pyrene	ND		0.033
Indeno[1,2,3-cd]pyrene	ND		0.033
Dibenz[a,h]anthracene	ND		0.033
Benzo[g,h,i]perylene	ND		0.033

Surrogate :	Percent Recovery	Control Limits
Nitrobenzene-d5	59	23 - 120
2-Fluorobiphenyl	74	30 - 115
Terphenyl-d14	88	18 - 137

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

PAH's by EPA 8270C
MS/MSD QUALITY CONTROL

Date Extracted: 8-16-01
Date Analyzed: 8-16-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 08-134-02

Compound:	Spike Amount	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Acenaphthene	1.67	2.46	129	2.30	120	6.5	
Pyrene	1.67	1.92	115	2.11	126	9.0	

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

PCB's by EPA 8082

Date Extracted: 8-16-01
Date Analyzed: 8-16-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 08-134-01
Client ID: **NWCB-BOT**

	Result	PQL
Aroclor 1016:	**ND**	0.053
Aroclor 1221:	**ND**	0.053
Aroclor 1232:	**ND**	0.053
Aroclor 1242:	**ND**	0.053
Aroclor 1248:	**ND**	0.053
Aroclor 1254:	**ND**	0.053
Aroclor 1260:	**ND**	0.053

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	96	45 - 149

Flags:

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

PCB's by EPA 8082

Date Extracted: 8-16-01
Date Analyzed: 8-16-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 08-134-02
Client ID: **NWCB-STK**

	Result	PQL
Aroclor 1016:	**ND**	0.056
Aroclor 1221:	**ND**	0.056
Aroclor 1232:	**ND**	0.056
Aroclor 1242:	**ND**	0.056
Aroclor 1248:	**ND**	0.056
Aroclor 1254:	**ND**	0.056
Aroclor 1260:	**ND**	0.056

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	84	45 - 149

Flags:

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

PCB's by EPA 8082
METHOD BLANK QUALITY CONTROL

Date Extracted: 8-16-01
Date Analyzed: 8-16-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: MB0816S1

	Result	PQL
Aroclor 1016:	ND	0.050
Aroclor 1221:	ND	0.050
Aroclor 1232:	ND	0.050
Aroclor 1242:	ND	0.050
Aroclor 1248:	ND	0.050
Aroclor 1254:	ND	0.050
Aroclor 1260:	ND	0.050

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	128	45 - 149

Flags:

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

PCB's by EPA 8082
MS/MSD QUALITY CONTROL

Date Extracted: 8-16-01
Date Analyzed: 8-16-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 08-134-01

Spike Level: 0.500

	MS Result	Percent Recovery	MSD Result	Percent Recovery	RPD
Aroclor 1260:	0.426	85	0.466	93	9.0
PQL	0.050		0.050		

Surrogate	Percent Recovery	Percent Recovery	Control Limits
Decachlorobiphenyl	101	115	45 - 149

Flags:

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

PCB's by EPA 8082
SPIKE BLANK QUALITY CONTROL

Date Extracted:	8-16-01
Date Analyzed:	8-16-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	SB0816S1
Spike Level:	0.500

	Result	Percent Recovery
Aroclor 1260:	0.447	89

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	107	45 - 149

Flags:

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

TOTAL LEAD
EPA 6010B

Date Extracted:	8-16-01
Date Analyzed:	8-16-01
Matrix:	Soil
Units:	mg/kg (ppm)

Client ID	Lab ID	Result	PQL
NWCB-Bot	08-134-01	**ND**	5.3
NWCB-STK	08-134-02	**37**	5.6

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

TOTAL LEAD
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-16-01
Date Analyzed:	8-16-01
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0816S2

Analyte	Method	Result	PQL
Lead	6010B	**ND**	5.0

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

TOTAL LEAD
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 8-16-01
Date Analyzed: 8-16-01

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-134-01

Analyte	Sample Result	Duplicate Result	RPD	Flags	PQL
Lead	**ND**	**ND**	NA		5.0

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

TOTAL LEAD
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 8-16-01
Date Analyzed: 8-16-01

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-134-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**230**	92	**235**	94	2.1	

Date of Report: August 16, 2001
Samples Submitted: August 16, 2001
Lab Traveler: 08-134
Project: 013-1427.600

% MOISTURE

Date Analyzed: 8-16-01

Client ID	Lab ID	% Moisture
NWCB-Bot	08-134-01	6.0
NWCB-Stk	08-134-02	10

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Fax: (425) 885-4603 • Phone: (425) 883-3881

Turnaround Request (in working days)

(Check One)

- ☒ Same Day
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☐ Standard (Hydrocarbon analyses: 5 days, All other analyses: 7 days)
- ☒ Thursday 3:30 PM (other) August 16, 2001

Project Chemist: CB

Laboratory No. 08-134

Company: Golder

Project No.: 013-1477.600

Project Name: SeaTac / Parking / WA

Project Manager: T. Norton

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Total RCRA Metals (8 only)	TCLP Metals	VPH	EPH	% Moisture
1	NWCB-Bot	8/15/01		Soil	2		✓	✓				✓	✓		✓				X
2	NWCB-STK	8/15/01		Soil	2		✓	✓				✓	✓		✓				X

RELINQUISHED BY	DATE	RECEIVED BY	DATE
Chris	8/16/01		8.16.01
FIRM: Golder Assoc.	TIME: 0750	FIRM	TIME: 7:50 AM
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS:

Chromatographs with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

September 5, 2001

Ted Norton
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052-3333

Re: Analytical Data for Project 013-1427.500
Laboratory Reference No. 0108-266

Dear Ted:

Enclosed are the analytical results and associated quality control data for samples submitted on August 30, 2001.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

NWTPH-Gx/BTEX

Date Extracted: 8-30-01
Date Analyzed: 8-30-01

Matrix: Soil
Units: mg/Kg (ppm)

Client ID:	OWS 8-30-01-1B			OWS 8-30-01-3STK		
Lab ID:	08-266-01			08-266-02		
	Result	Flags	PQL	**Result**	Flags	PQL
Benzene	**ND**		0.011	**ND**		0.012
Toluene	**ND**		0.054	**ND**		0.058
Ethyl Benzene	**ND**		0.054	**ND**		0.058
m,p-Xylene	**ND**		0.054	**ND**		0.058
o-Xylene	**ND**		0.054	**ND**		0.058
TPH-Gas	**ND**		5.4	**ND**		5.8
Surrogate Recovery:						
Fluorobenzene	87%			89%		

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

NWTPH-Gx/BTEX

Date Extracted: 8-30-01
Date Analyzed: 8-30-01

Matrix: Soil
Units: mg/Kg (ppm)

Client ID: **OWS 8-30-01-2W**
Lab ID: 08-266-03

	Result	Flags	PQL
Benzene	ND		0.012
Toluene	ND		0.061
Ethyl Benzene	ND		0.061
m,p-Xylene	ND		0.061
o-Xylene	ND		0.061
TPH-Gas	ND		6.1

Surrogate Recovery:
Fluorobenzene 85%

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL

Date Extracted: 8-30-01
Date Analyzed: 8-30-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: MB0830S2

	Result	Flags	PQL
Benzene	ND		0.010
Toluene	ND		0.050
Ethyl Benzene	ND		0.050
m,p-Xylene	ND		0.050
o-Xylene	ND		0.050
TPH-Gas	ND		5.0

Surrogate Recovery:
Fluorobenzene 96%

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

NWTPH-Gx/BTEX
DUPLICATE QUALITY CONTROL

Date Extracted: 8-30-01
Date Analyzed: 8-30-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID:	08-266-01 Original	08-266-01 Duplicate	RPD	Flags
Benzene	ND	ND	NA	
Toluene	ND	ND	NA	
Ethyl Benzene	ND	ND	NA	
m,p-Xylene	ND	ND	NA	
o-Xylene	ND	ND	NA	
TPH-Gas	ND	ND	NA	
Surrogate Recovery:				
Fluorobenzene	87%	93%		

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

NWTPH-Gx/BTEX
MS/MSD QUALITY CONTROL

Date Extracted: 8-30-01
Date Analyzed: 8-30-01

Matrix: Soil
Units: mg/Kg (ppm)

Spike Level: 1.00 ppm

Lab ID:	08-253-03 MS	Percent Recovery	08-253-03 MSD	Percent Recovery	RPD	Flags
Benzene	1.01	101	0.996	100	1.5	
Toluene	0.969	97	0.956	96	1.4	
Ethyl Benzene	0.966	97	0.955	95	1.1	
m,p-Xylene	0.949	95	0.934	93	1.6	
o-Xylene	0.954	95	0.945	94	0.95	

Surrogate Recovery:

Fluorobenzene	87%	86%

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

NWTPH-Dx

Date Extracted:	8-31-01
Date Analyzed:	8-31-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Client ID:	OWS 8-30-01-1B	OWS 8-30-01-3STK	OWS 8-30-01-2W
Lab ID:	08-266-01	08-266-02	08-266-03
Diesel Fuel:	ND	ND	ND
PQL:	27	29	31
Heavy Oil:	ND	ND	ND
PQL:	54	58	61
Surrogate Recovery:			
o-Terphenyl	95%	92%	95%

Flags:

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-31-01
Date Analyzed:	8-31-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0831S1
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	88%

Flags:

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	8-31-01
Date Analyzed:	8-31-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Lab ID:	08-271-06	08-271-06 DUP
Diesel Fuel:	ND	ND
PQL:	25	25
RPD:	N/A	
Surrogate Recovery:		
o-Terphenyl	81%	105%

Flags:

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

PAH's by EPA 8270C

Date Extracted:	8-30-01
Date Analyzed:	8-31-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	08-266-01
Client ID:	**OWS 8-30-01-1B**

Compound:	**Results**	**Flags**	**PQL**
Naphthalene	ND		0.036
2-Methylnaphthalene	ND		0.036
1-Methylnaphthalene	ND		0.036
Acenaphthylene	ND		0.036
Acenaphthene	ND		0.036
Fluorene	ND		0.036
Phenanthrene	ND		0.036
Anthracene	ND		0.036
Fluoranthene	ND		0.036
Pyrene	ND		0.036
Benzo[a]anthracene	ND		0.036
Chrysene	ND		0.036
Benzo[b]fluoranthene	ND		0.036
Benzo[k]fluoranthene	ND		0.036
Benzo[a]pyrene	ND		0.036
Indeno[1,2,3-cd]pyrene	ND		0.036
Dibenz[a,h]anthracene	ND		0.036
Benzo[g,h,i]perylene	ND		0.036

Surrogate :	**Percent Recovery**	**Control Limits**
Nitrobenzene-d5	48	23 - 120
2-Fluorobiphenyl	55	30 - 115
Terphenyl-d14	87	18 - 137

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

PAH's by EPA 8270C

Date Extracted:	8-30-01
Date Analyzed:	8-31-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	08-266-02
Client ID:	**OWS 8-30-01-3STK**

Compound:	**Results**	**Flags**	**PQL**
Naphthalene	ND		0.078
2-Methylnaphthalene	ND		0.078
1-Methylnaphthalene	ND		0.078
Acenaphthylene	ND		0.078
Acenaphthene	ND		0.078
Fluorene	ND		0.078
Phenanthrene	ND		0.078
Anthracene	ND		0.078
Fluoranthene	ND		0.078
Pyrene	ND		0.078
Benzo[a]anthracene	ND		0.078
Chrysene	ND		0.078
Benzo[b]fluoranthene	ND		0.078
Benzo[k]fluoranthene	ND		0.078
Benzo[a]pyrene	ND		0.078
Indeno[1,2,3-cd]pyrene	ND		0.078
Dibenz[a,h]anthracene	ND		0.078
Benzo[g,h,i]perylene	ND		0.078

Surrogate :	**Percent Recovery**	**Control Limits**
Nitrobenzene-d5	47	23 - 120
2-Fluorobiphenyl	61	30 - 115
Terphenyl-d14	81	18 - 137

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

PAH's by EPA 8270C
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-30-01
Date Analyzed:	8-30-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0830S1

Compound:	Results	Flags	PQL
Naphthalene	ND		0.033
2-Methylnaphthalene	ND		0.033
1-Methylnaphthalene	ND		0.033
Acenaphthylene	ND		0.033
Acenaphthene	ND		0.033
Fluorene	ND		0.033
Phenanthrene	ND		0.033
Anthracene	ND		0.033
Fluoranthene	ND		0.033
Pyrene	ND		0.033
Benzo[a]anthracene	ND		0.033
Chrysene	ND		0.033
Benzo[b]fluoranthene	ND		0.033
Benzo[k]fluoranthene	ND		0.033
Benzo[a]pyrene	ND		0.033
Indeno[1,2,3-cd]pyrene	ND		0.033
Dibenz[a,h]anthracene	ND		0.033
Benzo[g,h,i]perylene	ND		0.033

Surrogate :	Percent Recovery	Control Limits
Nitrobenzene-d5	63	23 - 120
2-Fluorobiphenyl	68	30 - 115
Terphenyl-d14	93	18 - 137

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

PAH's by EPA 8270C
SB/SBD QUALITY CONTROL

Date Extracted: 8-30-01
Date Analyzed: 8-30-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: SB0830S1

Compound:	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	RPD	Flags
Acenaphthene	1.67	1.26	76	1.15	69	9.9	
Pyrene	1.67	1.53	92	1.45	87	5.7	

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

PCB's by EPA 8082

Date Extracted: 8-31-01
Date Analyzed: 8-31-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 08-266-01
Client ID: **OWS 8-30-01-1B**

	Result	PQL
Aroclor 1016:	**ND**	0.054
Aroclor 1221:	**ND**	0.054
Aroclor 1232:	**ND**	0.054
Aroclor 1242:	**ND**	0.054
Aroclor 1248:	**ND**	0.054
Aroclor 1254:	**ND**	0.054
Aroclor 1260:	**ND**	0.054

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	87	45 - 149

Flags:

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

PCB's by EPA 8082

Date Extracted: 8-31-01
Date Analyzed: 8-31-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 08-266-02
Client ID: **OWS 8-30-01-3STK**

	Result	PQL
Aroclor 1016:	ND	0.058
Aroclor 1221:	ND	0.058
Aroclor 1232:	ND	0.058
Aroclor 1242:	ND	0.058
Aroclor 1248:	ND	0.058
Aroclor 1254:	ND	0.058
Aroclor 1260:	ND	0.058

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	117	45 - 149

Flags:

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

PCB's by EPA 8082
METHOD BLANK QUALITY CONTROL

Date Extracted: 8-31-01
Date Analyzed: 8-31-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: MB0831S1

	Result	PQL
Aroclor 1016:	ND	0.050
Aroclor 1221:	ND	0.050
Aroclor 1232:	ND	0.050
Aroclor 1242:	ND	0.050
Aroclor 1248:	ND	0.050
Aroclor 1254:	ND	0.050
Aroclor 1260:	ND	0.050

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	95	45 - 149

Flags:

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

PCB's by EPA 8082
MS/MSD QUALITY CONTROL

Date Extracted: 8-31-01
Date Analyzed: 8-31-01

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 08-266-01

Spike Level: 0.500

	MS Result	Percent Recovery	MSD Result	Percent Recovery	RPD
Aroclor 1260:	0.489	98	0.459	92	6.3
PQL	0.050		0.050		

Surrogate	Percent Recovery	Percent Recovery	Control Limits
Decachlorobiphenyl	94	84	45 - 149

Flags:

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

PCB's by EPA 8082
SPIKE BLANK QUALITY CONTROL

Date Extracted:	8-31-01
Date Analyzed:	8-31-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	SB0831S1
Spike Level:	0.500

	Result	Percent Recovery
Aroclor 1260:	0.502	100

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	95	45 - 149

Flags:

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

TOTAL LEAD
EPA 6010B

Date Extracted:	8-30-01
Date Analyzed:	8-31-01
Matrix:	Soil
Units:	mg/kg (ppm)

Client ID	Lab ID	Result	PQL
OWS 8-30-01-1B	08-266-01	**ND**	5.4
OWS 8-30-01-3STK	08-266-02	**ND**	5.8

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

TOTAL LEAD
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-30-01
Date Analyzed:	8-30-01
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0830S1

Analyte	Method	Result	PQL
Lead	6010B	ND	5.0

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

TOTAL LEAD
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 8-30-01
Date Analyzed: 8-30-01

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-248-01

Analyte	Sample Result	Duplicate Result	RPD	Flags	PQL
Lead	**29.1**	**29.3**	0.75		5.0

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

TOTAL LEAD
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 8-30-01
Date Analyzed: 8-30-01

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 08-248-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**244**	86	**244**	86	0	

Date of Report: September 5, 2001
Samples Submitted: August 30, 2001
Lab Traveler: 08-266
Project: 013-1427.500

% MOISTURE

Date Analyzed: 8-30-01

Client ID	Lab ID	% Moisture
OWS 8-30-01-1B	08-266-01	8.0
OWS 8-30-01-3STK	08-266-02	14
OWS 8-30-01-2W	08-266-03	18

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☒ 2 Day
- ☐ 3 Day
- ☐ Standard (Hydrocarbon analyses: 5 days, All other analyses: 7 days)
- ☒ Sep, T 4 3:PM (other)

Project Manager: DB

Laboratory No. 08-266

Company: Golder

Project No.: 013-1477.500

Project Name: SeaTac Parking

Project Manager: T. Norton

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	Priority Pollutant Metals (13)	TCLP Metals	VPH	EPH	Total Lead			% Moisture
1	~~OSW~~ OWS 8-30-01-1B	8/30/01	810	So.1	2		✓	✓				✓	✓								✓			✓
2	OWS 8-30-01-3 ST4	"	830	So.1	2		✓	✓				✓	✓								✓			✓
3	OWS 8-30-01-7W	"	915	So.1	2		✓	✓																✓

RELINQUISHED BY	DATE	RECEIVED BY	DATE
Josh Hanson	8/30/01		8/30/01
FIRM Golder	TIME 1325	FIRM OSE	TIME 1325
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS:

Chromatographs with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

September 19, 2001

Ted Norton
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052-3333

Re: Analytical Data for Project 013-1427
Laboratory Reference No. 0109-091

Dear Ted:

Enclosed are the analytical results and associated quality control data for samples submitted on September 15, 2001.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 19, 2001
Samples Submitted: September 15, 2001
Lab Traveler: 09-091
Project: 013-1427

NWTPH-Dx

Date Extracted:	9-18-01
Date Analyzed:	9-18-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Client ID:	9-15-01-1
Lab ID:	09-091-01
Diesel Fuel:	ND
PQL:	28
Heavy Oil:	130
PQL:	56
Surrogate Recovery:	
o-Terphenyl	80%

Flags:

Date of Report: September 19, 2001
Samples Submitted: September 15, 2001
Lab Traveler: 09-091
Project: 013-1427

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-18-01
Date Analyzed:	9-18-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0918S1
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	85%

Flags:

Date of Report: September 19, 2001
Samples Submitted: September 15, 2001
Lab Traveler: 09-091
Project: 013-1427

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	9-18-01	
Date Analyzed:	9-18-01	
Matrix:	Soil	
Units:	mg/Kg (ppm)	
Lab ID:	09-076-01	09-076-01 DUP
Diesel Fuel:	ND	ND
PQL:	25	25
RPD:	N/A	
Surrogate Recovery:		
o-Terphenyl	80%	89%

Flags:

Date of Report: September 19, 2001
Samples Submitted: September 15, 2001
Lab Traveler: 09-091
Project: 013-1427

% MOISTURE

Date Analyzed: 9-18-01

Client ID	Lab ID	% Moisture
9-15-01-1	09-091-01	11

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page _____ of _____

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Project Manager: DB

Laboratory No. 09-091

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☒ Standard (Hydrocarbon analyses: 5 days, All other analyses: 7 days)
- ☐ _____ (other)

Company: Golder

Project No.: 013-1427

Project Name: SeaTac Inv LLC/SeaTac Parking

Project Manager: Tod Norton

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	Priority Pollutant Metals (13)	TCLP Metals	VPH	EPH				% Moisture
1	9-15-01-1	9/15/01	1145	Soil				X																X

RELINQUISHED BY: Josh Hanson	DATE: 9-15-01	RECEIVED BY:	DATE: 9/15/01
FIRM: Golder	TIME: 426pm	FIRM:	TIME: 4:26
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS:

Chromatographs with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

September 19, 2001

Ted Norton
Golder Associates Inc.
18300 NE Union Hill Road
Suite 200
Redmond, WA 98052-3333

Re: Analytical Data for Project 013-1427
Laboratory Reference No. 0109-076

Dear Ted:

Enclosed are the analytical results and associated quality control data for samples submitted on September 14, 2001.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 19, 2001
Samples Submitted: September 14, 2001
Lab Traveler: 09-076
Project: 013-1427

NWTPH-Dx

Date Extracted:	9-18-01
Date Analyzed:	9-18-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Client ID:	9-13-01-1
Lab ID:	09-076-01
Diesel Fuel:	ND
PQL:	28
Heavy Oil:	ND
PQL:	56
Surrogate Recovery:	
o-Terphenyl	80%

Flags:

Date of Report: September 19, 2001
Samples Submitted: September 14, 2001
Lab Traveler: 09-076
Project: 013-1427

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-18-01
Date Analyzed:	9-18-01
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0918S1
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	85%

Flags:

Date of Report: September 19, 2001
Samples Submitted: September 14, 2001
Lab Traveler: 09-076
Project: 013-1427

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	9-18-01
Date Analyzed:	9-18-01
Matrix:	Soil
Units:	mg/Kg (ppm)

Lab ID:	09-076-01	09-076-01 DUP
Diesel Fuel:	ND	ND
PQL:	25	25
RPD:	N/A	
Surrogate Recovery:		
o-Terphenyl	80%	89%

Flags:

Date of Report: September 19, 2001
Samples Submitted: September 14, 2001
Lab Traveler: 09-076
Project: 013-1427

% MOISTURE

Date Analyzed: 9-18-01

Client ID	Lab ID	% Moisture
9-13-01-1	09-076-01	11

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page _____ of _____

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day

☐ 2 Day ☐ 3 Day

☒ Standard
(Hydrocarbon analyses: 5 days, All other analyses: 7 days)

☐ _____ (other)

Project Manager: DB

Laboratory No. 09-076

Company: Golder

Project No.: 013-1427

Project Name: SeaTac Inv LLC/SeaTac Parking/WA

Project Manager: Ted Norton

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	Priority Pollutant Metals (13)	TCLP Metals	VPH	EPH				% Moisture
1	9-13-01-1	9/13/01	1500	Soil				X																X

RELINQUISHED BY	DATE	RECEIVED BY	DATE
John Hanson	9/14/01	Melissa Kent	9-14-01
FIRM Golder	TIME 837	FIRM OSE	TIME 9:40
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS:

Chromatographs with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

APPENDIX B

WASHINGTON DEPARTMENT OF ECOLOGY
INTERIM TPH POLICY WORKSHEETS

HUMAN HEALTH SOILS CONTACT WORKSHEETS

CLIENT ID Master Park Lot C

LAB ID ITPH-Comp (1/8 ratio)

Non-Carcinogen--Hazard Index

			Residential			***Commercial***			***Industrial***		
Compound	Soil ppm	ORfD	Factor	Res. Mult.	HQ	Factor	Com. Mult.	HQ	Factor	Ind. Mult.	HQ
Total alipha	4500.0	0.06	1.25E-05	2.08E-04	0.94	3.13E-06	5.21E-05	0.23	2.86E-07	4.77E-06	0.02
Total arom	150.0	0.03									
Benzene											
Ethylbenzene		0.10	1.25E-05	1.25E-04	0.00	3.13E-06	3.13E-05	0.00	2.86E-07	2.86E-06	0.00
Toluene		0.20	1.25E-05	6.25E-05	0.00	3.13E-06	1.56E-05	0.00	2.86E-07	1.43E-06	0.00
Xylenes		2.00	1.25E-05	6.25E-06	0.00	3.13E-06	1.56E-06	0.00	2.86E-07	1.43E-07	0.00
Total arom	150.0	0.03	1.25E-05	4.17E-04	0.06	3.13E-06	1.04E-04	0.02	2.86E-07	9.53E-06	0.00
Hazard Index					1.00			0.25			0.02

Carcinogen Risk

			Residential		***Commercial***		***Industrial***	
Compound	Soil ppm	OCPF	Res. Mult.	Risk	Com. Mult.	Risk	Ind. Mult.	Risk
Benzene *		0.029	1.00E-06	0.00E+00	2.50E-07	0.00E+00	7.62E-08	0.00E+00
Total cPAHs *		7.30	1.00E-06	0.00E+00	2.50E-07	0.00E+00	7.62E-08	0.00E+00

* For parameters not detected PQL values are subsitiuted

FATE AND TRANSPORT - SOIL TO GROUNDWATER

"Raoult's Law" Worksheet

CLIENT ID Tac Investment LLC

LAB ID ITPH-Comp

COMPOUND	Soil mg/kg	MW g/mol	Moles mmol/kg	Mol Frac.	Solubility mg/l	Effect. Sol. mg/l	DF	Well Conc. mg/l
Aliphatics								
EC 5 - 6		81	0.0	0.00	2.8E+01	0.0E+00	20	0.0E+00
EC >6 - 8		100	0.0	0.00	4.2E+00	0.0E+00	20	0.0E+00
EC >8 - 10		130	0.0	0.00	3.3E-01	0.0E+00	20	0.0E+00
EC >10 - 12	9.1	160	0.1	0.00	2.6E-02	1.1E-05	20	5.3E-07
EC >12 - 16	71	200	0.4	0.00	5.9E-04	1.5E-06	20	7.5E-08
EC >16 - 21	36000	270	133.3	0.96	1.0E-06	9.6E-07	20	4.8E-08
Aromatics								
Benzene		78	0.0	0.00	1.8E+03	0.0E+00	20	0.0E+00
Toluene		92	0.0	0.00	5.2E+02	0.0E+00	20	0.0E+00
EC >8 - 10		120	0.0	0.00	6.5E+01	0.0E+00	20	0.0E+00
EC >10 - 12		130	0.0	0.00	2.5E+01	0.0E+00	20	0.0E+00
EC >12 - 16	81	150	0.5	0.00	5.8E+00	2.3E-02	20	1.1E-03
EC >16 - 21	220	190	1.2	0.01	5.1E-01	4.2E-03	20	2.1E-04
EC >21 - 35	870	240	3.6	0.03	6.6E-03	1.7E-04	20	8.6E-06
			139.1	1.00				0.0

Well Concentration must be 1 mg/l or less for soil concentrations to be protective of Method A drinking water standard.

APPENDIX C

SOIL SAMPLING PROCEDURES

C-1. SOIL SAMPLING PROCEDURES

Representative soil samples were collected in association with the remedial actions conducted at the Master Park Lot C development. Soils disturbed during site trenching and grading soils were analyzed in the field for petroleum hydrocarbons using a PetroFlag hydrocarbon analyzer kit. The field screening results were compared to the Washington State Interim Policy TPH Policy derived site specific cleanup criteria to determine the disposition requirements for disturbed soils. Approximately 10% of the field screening samples were submitted to an analytical laboratory for confirmatory analysis by the NWTPH-Dx Method. Soil samples were also collected for chemical analysis in association with the closure of the site oil/water separator, northwest corner sump and the drainfield encountered on the former Cavey property during site grading. Soil samples collected for chemical analysis were submitted to OnSite Environmental Inc. of Redmond, Washington.

Soil samples associated with the trenching and site grading activities for field screening and chemical analysis were collected in accordance with Golder Technical Procedures TP-1.2-5 (Drilling, Sampling, and Logging of Soils), TP-1.2-6 (Field Identification of Soil), and TP-1.2-23 (Chain of Custody). The Golder Technical Procedures were implemented to ensure reliability in the investigation data.

In general, samples collected from soils disturbed by trenching and grading were collected using decontaminated stainless steel utensils or disposable plastic spoons to obtain representative sample material from the. The soil was placed in a disposable plastic ziplock bag and mixed. The plastic bag was labeled with a sample identifier, placed in an ice chest with blue ice and maintained at approximately 4°C until field screening test were conducted. If an individual sample was to be submitted for confirmatory analysis, a portion of the soil in the plastic bag was transferred into glass jar and sealed Teflon lined lid. The jars were labeled with the sample identifier and placed back into the ice chest and maintained at approximately 4°C until relinquished to the analytical laboratory for analysis.

Soil samples collected in association with the closure of drainfield were collected in general accordance with the Golder Technical Procedures identified above. The samples associated with the closures of the site oil/water separator and northwest corner sump were also collected in general accordance with the WDOE UST site assessment guidance document *"Guidance for Site Checks and Site Assessments for Underground Storage Tanks"* (WDOE 1992). Soil samples associated with the closure of the subsurface structure were not placed in plastic bags but were placed directly into the glass sample jars, and handled in the manner as described above. A trackhoe was used to collect soil samples from deeper portions of the sump and oil/water separator excavation. Samples collected using the trackhoe were obtained from the middle portion of the bucket away from the sidewall to avoid the potential for cross contamination.

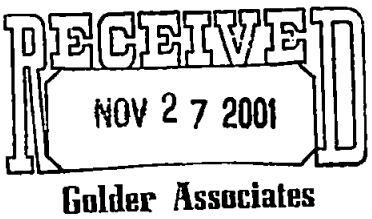
Sampling equipment decontamination procedures were followed, as outlined in TP-1.2-5, Section 8.2. All of these samples were stored in a cooler at 4° C, as outlined in the Golder Technical Procedures TP-1.2-5, and TP-1.2-12. All sampling equipment was

decontaminated prior to use and between samples using an Alconox and tap water wash, distilled/deionized water rinse, and final distilled/deionized water rinse. The soil samples collected for the oil/water and sump structures were submitted to OnSite Environmental Inc. of Redmond, Washington for chemical analysis.

APPENDIX D

RECORD OF DISPOSAL

Clearcreek Contractors
PO Box 1706
Everett, WA 98206



TRANSMITTAL # 10

D: Ted Norton
Golder & Associates
18300 NE Union Hill Road #200
Redmond, WA 98052-3333

Date: 11/27/2001
Job Number/Name:
Masterpark Lot C
Job #201005

☐	Mail/UPS	☐	Per Your Request	☐	# of Pages Incl. Transmittal
☐	For Action	☐	Read & Return	☐	Per Our Conversation
☐	For Approval	☐	For Your Info	☐	Read & Route to File
☐	For Signature	☐	Return to Sender	☐	For Your Comments

By _____

☐	Change Order Proposal	☐	Certificate of Insurance
☐	Field Authorization No.	☐	Job Cost/Status Report as of _____
☐	Intent to Pay Prevailing Wages	☐	Plans/or Specifications
☐	Affidavit of Wages Paid	☐	Schedule/or Cost Estimate
☐	Certified Payroll Records	☐	Analytical Results
☐	Waste Product Questionnaires (WPQ's)	☐	Invoice Vouchers

☐ Other: _____

Attached:

Copies of scale tickets for PCS hauled through 7/26, 7/27, 7/30 & 8/7

Signature: Mark McCullough
Title: President

Olympic View Sanitary Landfill
10015 SE Barney White Road
Port Orchard, WA 98367
Phone (360) 674-2452

TICKET: 142379
DATE: 07/26/2001
TIME: 09:28 - 09:39

CUSTOMER: 1191 / Clearcreek Contractors inc. P.O.:
GENERATOR: SEATAC INV / Seatac InvePROFILE #: 2001-081GROSS: 109180 LBS Manual
TARE: 39760 LBS Manual
COUNTY: KING / King
TRUCK: PENNY19 LICENSE: NET: 69420 LBS
ROUTE: NA / Non App
COMMENT:

COMMODITY	UNIT	QNTY	RATE	PRETAX	TAX	AMOUNT
CNTSL / Contaminated Soil	T	34.71	$ 20.00	$ 694.20	$ 70.11	$ 764.31

$ 694.20 $ 70.11 $ 764.31

IN OPERATOR: Lennie H
OUT OPERATOR: Lennie H

DRIVER:

Olympic View Sanitary Landfill
10015 SE Barney White Road
Port Orchard, WA 98367
Phone (360) 674-2452

TICKET: 142462
DATE: 07/26/2001
TIME: 12:18 - 12:19

CUSTOMER: 1191 / Clearcreek Contractors inc. P.O.:
GENERATOR: SEATAC INV / Seatac InvePROFILE #: 2001-081GROSS: 98980 LBS Manual
TARE: 39760 LBS Manual
COUNTY: KING / King
TRUCK: PENNY19 LICENSE: NET: 59220 LBS
ROUTE: NA / Non App
COMMENT:

COMMODITY	UNIT	QNTY	RATE	PRETAX	TAX	AMOUNT
CNTSL / Contaminated Soil	T	29.61	$ 20.00	$ 592.20	$ 59.81	$ 652.01

$ 592.20 $ 59.81 $ 652.01

IN OPERATOR: Carole S.
OUT OPERATOR: Carole S.

DRIVER:

Olympic View Sanitary Landfill
10015 SE Barney White Road
Port Orchard, WA 98367
Phone (360) 674-2452

TICKET: 142583
DATE: 07/26/2001
TIME: 15:06 - 15:06

CUSTOMER: 1191 / Clearcreek Contractors inc. P.O.:
GENERATOR: SEATAC INV / Seatac InvePROFILE #: 2001-081GROSS: 97280 LBS Manual
COUNTY: KING / King TARE: 39760 LBS Manual
TRUCK: PENNY19 LICENSE: NET: 57520 LBS
ROUTE: NA / Non App
COMMENT:

COMMODITY	UNIT	QNTY	RATE	PRETAX	TAX	AMOUNT
CNTSL / Contaminated Soil	T	28.76	$ 20.00	$ 575.20	$ 58.10	$ 633.30

$ 575.20 $ 58.10 $ 633.30

IN OPERATOR: Carole S. OUT OPERATOR: Carole S.

DRIVER: Allison W

Olympic View Sanitary Landfill
10015 SE Barney White Road
Port Orchard, WA 98367
Phone (360) 674-2452

TICKET: 142641
DATE: 07/27/2001
TIME: 08:29 - 08:35

CUSTOMER: 1191 / Clearcreek Contractors inc. P.O.:
GENERATOR: SEATAC INV / Seatac InvePROFILE #: 2001-081GROSS: 92860 LBS Manual
COUNTY: KING / King TARE: 39040 LBS Manual
TRUCK: PENNY43 LICENSE: NET: 53820 LBS
ROUTE: NA / Non App
COMMENT:

COMMODITY	UNIT	QNTY	RATE	PRETAX	TAX	AMOUNT
CNTSL / Contaminated Soil	T	26.91	$ 20.00	$ 538.20	$ 54.36	$ 592.56

$ 538.20 $ 54.36 $ 592.56

IN OPERATOR: Lennie H OUT OPERATOR: Lennie H

DRIVER:

Olympic View Sanitary Landfill
10015 SE Barney White Road
Port Orchard, WA 98367
Phone (360) 674-2452

TICKET: 142647
DATE: 07/27/2001
TIME: 08:37 - 08:47

CUSTOMER: 1191 / Clearcreek Contractors inc. P.O.:
GENERATOR: SEATAC INV / Seatac InvePROFILE #: 2001-081GROSS: 92980 LBS Manual
COUNTY: KING / King TARE: 37200 LBS
TRUCK: PENNY3i LICENSE: NET: 55780 LBS
ROUTE: NA / Non App
COMMENT:

COMMODITY	UNIT	QNTY	RATE	PRETAX	TAX	AMOUNT
CNTSL / Contaminated Soil	T	27.89	$ 20.00	$ 557.80	$ 56.34	$ 614.14

$ 557.80 $ 56.34 $ 614.14

IN OPERATOR: Lennie H OUT OPERATOR: Lennie H

DRIVER: Dave

Olympic View Sanitary Landfill
10015 SE Barney White Road
Port Orchard, WA 98367
Phone (360) 674-2452

TICKET: 142701
DATE: 07/27/2001
TIME: 11:09 - 11:09

CUSTOMER: 1191 / Clearcreek Contractors inc. P.O.:
GENERATOR: SEATAC INV / Seatac InvePROFILE #: 2001-081GROSS: 96560 LBS
COUNTY: KING / King TARE: 39040 LBS
TRUCK: PENNY43 LICENSE: NET: 57520 LBS
ROUTE: NA / Non App
COMMENT:

COMMODITY	UNIT	QNTY	RATE	PRETAX	TAX	AMOUNT
CNTSL / Contaminated Soil	T	28.76	$ 20.00	$ 575.20	$ 58.10	$ 633.30

$ 575.20 $ 58.10 $ 633.30

IN OPERATOR: Carole S. OUT OPERATOR: Carole S.

DRIVER:

Olympic View Sanitary Landfill
10015 SE Barney White Road
Port Orchard, WA 98367
Phone (360) 674-2452

TICKET: 142704
DATE: 07/27/2001
TIME: 11:18 - 11:18

CUSTOMER: 1191 / Clearcreek Contractors inc. P.O.:
GENERATOR: SEATAC INV / Seatac InvePROFILE #: 2001-081 GROSS: 95220 LBS
COUNTY: KING / King TARE: 37200 LBS
TRUCK: PENNY31 LICENSE: NET: 58020 LBS
ROUTE: NA / Non App
COMMENT:

COMMODITY	UNIT	QNTY	RATE	PRETAX	TAX	AMOUNT
CNTSL / Contaminated Soil	T	29.01	$ 20.00	$ 580.20	$ 58.60	$ 638.80

$ 580.20 $ 58.60 $ 638.80

IN OPERATOR: Carole S. OUT OPERATOR: Carole S.

DRIVER: Dave

Olympic View Sanitary Landfill
10015 SE Barney White Road
Port Orchard, WA 98367
Phone (360) 674-2452

TICKET: 142851
DATE: 07/27/2001
TIME: 14:16 - 14:16

CUSTOMER: 1191 / Clearcreek Contractors inc. P.O.:
GENERATOR: SEATAC INV / Seatac InvePROFILE #: 2001-081 GROSS: 102320 LBS
COUNTY: KING / King TARE: 39040 LBS
TRUCK: PENNY43 LICENSE: NET: 63280 LBS
ROUTE: NA / Non App
COMMENT:

COMMODITY	UNIT	QNTY	RATE	PRETAX	TAX	AMOUNT
CNTSL / Contaminated Soil	T	31.64	$ 20.00	$ 632.80	$ 63.91	$ 696.71

$ 632.80 $ 63.91 $ 696.71

IN OPERATOR: Carole S. OUT OPERATOR: Carole S.

DRIVER:

Olympic View Sanitary Landfill
10015 SE Barney White Road
Port Orchard, WA 98367
Phone (360) 674-2452

TICKET: 142852
DATE: 07/27/2001
TIME: 14:18 - 14:18

CUSTOMER: 1191 / Clearcreek Contractors inc. P.O.:
GENERATOR: SEATAC INV / Seatac InvePROFILE #: 2001-081 GROSS: 93520 LBS
TARE: 37200 LBS
COUNTY: KING / King NET: 56320 LBS
TRUCK: PENNY31 LICENSE:
ROUTE: NA / Non App
COMMENT:

COMMODITY	UNIT	QNTY	RATE	PRETAX	TAX	AMOUNT
CNTSL / Contaminated Soil	T	28.16	$ 20.00	$ 563.20	$ 56.88	$ 620.08

$ 563.20 $ 56.88 $ 620.08

IN OPERATOR: Carole S. OUT OPERATOR: Carole S.

DRIVER: Dave

Olympic View Sanitary Landfill
10015 SE Barney White Road
Port Orchard, WA 98367
Phone (360) 674-2452

TICKET: 143209
DATE: 07/30/2001
TIME: 09:40 - 09:50

CUSTOMER: 1191 / Clearcreek Contractors inc. P.O.:
GENERATOR: SEATAC INV / Seatac InvePROFILE #: 2001-081 GROSS: 91480 LBS Manual
TARE: 36580 LBS
COUNTY: KING / King NET: 54900 LBS
TRUCK: CLEARCRK40 LICENSE:
ROUTE: NA / Non App
COMMENT:

COMMODITY	UNIT	QNTY	RATE	PRETAX	TAX	AMOUNT
CNTSL / Contaminated Soil	T	27.45	$ 20.00	$ 549.00	$ 55.45	$ 604.45

$ 549.00 $ 55.45 $ 604.45

IN OPERATOR: Lennie H OUT OPERATOR: Lennie H

DRIVER:

Olympic View Sanitary Landfill
10015 SE Barney White Road
Port Orchard, WA 98367
Phone (360) 674-2452

TICKET: 143289
DATE: 07/30/2001
TIME: 12:39 - 12:40

CUSTOMER: 1191 / Clearcreek Contractors inc. P.O.:
GENERATOR: SEATAC INV / Seatac InvePROFILE #: 2001-081 GROSS: 88020 LBS Manual
COUNTY: KING / King TARE: 36580 LBS Manual
TRUCK: CLEARCRK40 LICENSE: NET: 51440 LBS
ROUTE: NA / Non App
COMMENT:

COMMODITY	UNIT	QNTY	RATE	PRETAX	TAX	AMOUNT
CNTSL / Contaminated Soil	T	25.72	$ 20.00	$ 514.40	$ 51.95	$ 566.35

$ 514.40 $ 51.95 $ 566.35

IN OPERATOR: Lennie H OUT OPERATOR: Lennie H

DRIVER: Tom Rodd

Olympic View Sanitary Landfill
10015 SE Barney White Road
Port Orchard, WA 98367
Phone (360) 674-2452

TICKET: 143454
DATE: 07/31/2001
TIME: 07:52 - 07:52

CUSTOMER: 1191 / Clearcreek Contractors inc. P.O.:
GENERATOR: SEATAC INV / Seatac InvePROFILE #: 2001-081 GROSS: 90340 LBS Manual
COUNTY: KING / King TARE: 36580 LBS Manual
TRUCK: CLEARCRK40 LICENSE: NET: 53760 LBS
ROUTE: NA / Non App
COMMENT:

COMMODITY	UNIT	QNTY	RATE	PRETAX	TAX	AMOUNT
CNTSL / Contaminated Soil	T	26.88	$ 20.00	$ 537.60	$ 54.30	$ 591.90

$ 537.60 $ 54.30 $ 591.90

IN OPERATOR: Lennie H OUT OPERATOR: Lennie H

DRIVER: Tom Rodd

Olympic View Sanitary Landfill
10015 SE Barney White Road
Port Orchard, WA 98367
Phone (360) 674-2452

TICKET: 145075
DATE: 08/07/2001
TIME: 09:35 - 09:35

CUSTOMER: 1191 / Clearcreek Contractors inc. P.O.:
GENERATOR: SEATAC INV / Seatac InvePROFILE #: 2001-081GROSS: 92440 LBS Manual
COUNTY: KING / King TARE: 36580 LBS Manual
TRUCK: CLEARCRK40 LICENSE: NET: 55860 LBS
ROUTE: NA / Non App
COMMENT:

COMMODITY	UNIT	QNTY	RATE	PRETAX	TAX	AMOUNT
CNTSL / Contaminated Soil	T	27.93	$ 20.00	$ 558.60	$ 56.42	$ 615.02
				$ 558.60	$ 56.42	$ 615.02

IN OPERATOR: Lennie H OUT OPERATOR: Lennie H

DRIVER: Tom Dodd