ASSOCIATED
ENVIRONMENTAL
GROUP, LLC

# Phase II ESA – Subsurface Investigation

*Conducted on:*

**2328, 2400 and 2402**
Gibson Road
Everett, Washington 98204

*Prepared for:*

First Citizens Bank
721 College St. SE
Lacey, WA 98503

*Prepared & Reviewed by:*

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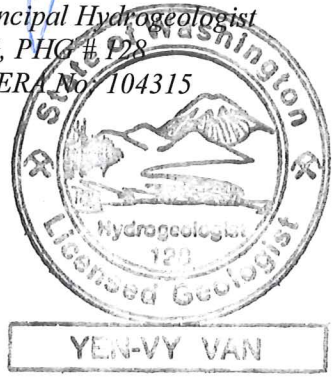


AEG Project #: 11-140

Date of Report: October 17, 2011

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# 1 INTRODUCTION

Associated Environmental Group, LLC (AEG) has completed a Phase II Environmental Assessment (ESA) – Subsurface Investigation at the Gibson Road Everett property which is comprised of three adjoining parcels located at 2328, 2400, and 2402 Gibson Road in Everett, Snohomish County, Washington (the Site). Written authorization from First Citizens Bank was provided to AEG in September 2011 to conduct this work. The work was performed in general accordance with the Washington State Department of Ecology (Ecology) rules governing environmental assessment and subsurface investigations, Model Toxics Control Act (MTCA), and the American Society for Testing and Materials (ASTM) Standard E 1903-97, *Standard Guide Environmental Site Assessments: Phase II Environmental Site Assessment Process.*

## *1.1 Site Setting*

The Site is located on the south side of Gibson Road and west of State Route 99 (aka Evergreen Way) in south Everett, Snohomish County, Washington. It is a rectangular-shaped property, consisting of three adjoining parcels approximately 4.00 acres. The parcels include Snohomish County Assessor's Parcel numbers 00380900400105 (Parcel A – located on the east side of the property), 00380900400104 (Parcel B), and 00380900400101(Parcel C – located on the west side of the property). The geographic coordinates of the center of the Site are approximately: 47° 53' 01.11" North Latitude, 122° 15' 58.57" West Longitude, and is situated in Section 26, Township 28 North, and Range 4 East (WM). The entire subject site is owned by First Citizens Bank.

The Site is currently improved with various buildings; however, they are all unoccupied. The former usages of the Site included automotive repair and services, automobile dismantling, as well as a junk yard. Two vacant buildings are present on Parcel A which includes main auto body repair shop and a minor auto body repair shop. One vacant two story building is present on Parcel B and was used as a living corridor. Two vacant buildings are present on Parcel C which includes a single story home and a garage that was used for auto dismantling. Stained soil, unmarked drums and containers with staining and nearby stressed vegetation, dismantled vehicles, tires, trailers, and hydraulic hoist, among other junk littered the property. The surface is covered by gravel and ground cover over a good portion of the Site, most notably around the perimeter, and is encroaching on gravel sections. The surface topography at the Site and vicinity slopes gently southeast towards Stickney Lake, approximately 3,000 feet southeast from the subject site.

Figure 1, *Site & Vicinity Map*, presents the general boundaries of the Site and vicinity area. Figure 2, Site Plan, present the layout of the Site showing locales of the former auto repair shops

and garage. Photographs documenting the Phase II ESA subsurface investigation activities are presented in Appendix A, *Site Photographs*.

### *1.2 Previous Environmental Work Summary*

AEG conducted a Phase I ESA at the Site in July 2011. AEG concluded that there were historical and current recognized environmental conditions (REC) in connection with the Site. AEG identified the following RECs, as defined by ASTM, in connection with the Site:

***Historical RECs - Onsite***

*The former Gibson Auto Body facility, located at 2328 Gibson Rd (Parcel A), was in operation from approximately 1974 to 2005 as an auto repair and service shop. During a Phase I ESA site reconnaissance on July 5, 2011, AEG observed multiple hazardous waste containers of various sizes, of which, several were leaking. Stressed vegetation was also observed throughout the property around hazardous waste containers. In addition, stained soil from most likely petroleum products was observed at several locations throughout the subject site - most notably on the southeast corner of Parcel A.*

*The former Wholesale Trade facility, located at 2400 Gibson Rd (Parcel B), is listed on the Washington State Department of Ecology (Ecology) SPILLS database and is documented as having a petroleum spill on January 27, 2001. The source of the spill came from an intentional release from a tanker truck with a capacity of 10,000 gallons. According to an Ecology Incident Report, approximately 150 gallons of heating oil diesel was released from the tanker truck, of which, the owner of the tanker claims 120 gallons was recovered. Product from the spill was reported to be four inches thick and spread over a large area heading towards a stormwater drain to the east. Several hazardous waste containers were observed on Parcel B; one of which was leaking, as well as several areas of stained soil.*

*The former Webb Property Auto Dismantlers, located at 2402 Gibson Rd (Parcel C), is listed on the Ecology Confirmed and Suspected Contaminated Sites List (CSCSL). The media impacted was confirmed to be soil and groundwater was suspected to be also adversely impacted. The contaminants of concern include "petroleum products – unspecified" and priority pollutant metals. Soil analytical results from a site hazard assessment conducted by the Snohomish Health District on December 12, 2000, indicated the presence of chromium and heavy oil range total petroleum hydrocarbons (TPH) in concentrations above Ecology Model Toxics Control Act (MTCA) cleanup levels.*

*The following factors are RECs, as defined by ASTM, in connection with the subject site:*

- *The historical usages of the subject site as an auto repair and service shop, auto dismantler facility, and as a junk yard;*

- *The improper storage, handling and disposal of hazardous waste;*
- *The prevalence of stained soil areas throughout the parcels; and*
- *Confirmed impacted soil and suspected impacted groundwater by petroleum hydrocarbons and heavy metals, at concentrations above MTCA cleanup levels.* (AEG, 2011).

### *1.3 Objectives and Scope of Work*

The objective of the Phase II ESA - Subsurface Investigation at the Site included the following: 1) evaluate the potential presence of petroleum hydrocarbons, volatile organic compounds, and/or heavy metals contamination at the property due to the historical usages at the Site; and 2) assess whether groundwater, if encountered, has been impacted. The scope of work was not intended to define the lateral and vertical extent of contamination, if encountered, at the subject site due to its preliminary investigative nature.

Specific tasks performed for the subsurface investigation included the following:

- Conducted both public and private utilities locates for the Site. Locates were performed by Underground Utilities Locate Center included only areas in the public right-of-ways. Applied Professional Services (APS) provided private utility locates on the Site.

- Advanced 14 soil borings (B-1 through B-14) via a direct push probe drilling rig to a maximum depth of 18 feet below ground surface (bgs). The borings were placed at selected areas to evaluate the potential presence of COCs in soil and/or groundwater.

- Continuously logged soil borings documenting soil lithologies encountered, lithologic contacts, moisture, density, sample depths, and information regarding sheens and odors, as applicable. Soil was field screened utilizing a photo-ionization detector (PID) to facilitate the selection of appropriate soil samples to be submitted for chemical analyses of COCs.

- Collected soil samples at select locations and intervals for laboratory analysis of COCs on a standard laboratory turn-around-time:
    - ❖ Petroleum hydrocarbon identification by Northwest Method NWTPH-HCID;
    - ❖ Gasoline range total petroleum hydrocarbons (TPH) by Northwest Method NWTPH-Gx;
    - ❖ Diesel, heavy oil, and mineral oil range TPH by Northwest Method NWTPH-Dx/Dx Extended;
    - ❖ Fuels associated volatile organic compounds (VOCs) including benzene, toluene, ethylbenzene, and total xylenes (BTEX) via EPA Method 8260C;

- ❖ VOCs associated with automobile repair including halogenated VOCs such as tetrachloroethene, trichloroethene, and vinyl chloride via EPA Method 8260B; and
- ❖ Heavy metals (MTCA 5) using EPA methods 7010/7471.

- Compared soil analytical results to the Washington State Department of Ecology Model Toxics Control Act Method A Cleanup Levels.

- Prepared this report containing a summary of the subsurface conditions encountered, a discussion of Site subsurface conditions, analytical laboratory results, findings, and recommendations.

### *1.4 Site Geology and Hydrogeology*

The subject site is located within the central Puget Lowlands of Western Washington State. The Puget Lowland is a north-south trough that lies from the Canadian Border south to near Chehalis, Washington, and between the Olympic Mountains to the west and the Cascade Mountains to the east. Landforms common to this region include Pacific inlets, islands, intermontane and coastal lowlands. The topography is dominated by north-south trending valleys and low, nearly flat-topped terraces that are less than 1,000 feet in elevation. Terraces are deeply eroded by streams and rivers and are susceptible to landslides. The topographic surface of the Site and vicinity area is largely the result of deposition and erosion since the most recent glacial events (Easterbrook, 1970).

According to the *Preliminary Surficial Geologic Map of the Mukilteo and Everett 7.5 Minute Quadrangles, Snohomish County, Washington*, the Site and vicinity area is underlain by Quaternary age Vashon Till (Smith, 2009). Vashon till, a late Pleistocene unit, is a poorly sorted glacial deposit which is moderately homogenous. Glacial till is commonly referred to as hardpan. Glacial till deposits typically consist of "*unsorted, unstratified, highly compacted mixture of clay, silt, sand, gravel, and boulders deposited by glacial ice, may contain interbedded stratified sand, silt, and gravel. Includes part of the Vashon Drift undivided* (Dragovich, J.D., Logan, R. L., et al, 2002). The compact, dense nature of glacial till, and the associated soil characteristics, limits the movement of groundwater. Thus, glacial till is considered as an aquitard which is a confining bed and retards groundwater flow.

The subsurface conditions encountered in the west and central portion of the site was found to be comprised of a thin (5-8) foot thick sequence of grey to brown silty sandy gravel which graded to grey very dense glacial till. Observations of the subsurface in the eastern portions of the Site were made from slightly deeper depths (0-16 feet bgs). The soil profiles from boring locations B-3, B-4, B-8, and B-14 showed silty sand and gravel underlain by very dense glacial till. Saturated conditions were encountered only at soil boring location B-14 at a depth of

approximately 16 feet bgs. The groundwater was observed in a thin sand lens above the till, and was in less than sufficient quantities for collection of a groundwater sample.

The direction of shallow groundwater flow can be highly variable due to the presence of variable depth to perched groundwater at the subject site and vicinity area. Therefore, no definite statement can be made regarding the direction of shallow groundwater flow at the subject site without groundwater elevation data from monitoring wells. The occurrence of shallow groundwater in glacial till is often discontinuous and typically not representative in areal and vertical extent. Based on the surficial topography at the Site and vicinity, the direction of shallow groundwater flow in is inferred to be southeast in the direction of Stickney Lake.

# 2 FIELD ACTIVITIES & METHODOLOGY

AEG advanced 14 soil borings (B-1 through B-14) at the Site on September 23, 2011 to assess the subsurface (soil and groundwater media) for the potential presence of petroleum hydrocarbons, volatile organic compounds, and heavy metals (i.e., constituents of concern) due to the historical activities/operations conducted at the Site. The locales selected for this subsurface investigation were based on the findings from the Phase I ESA performed by AEG at the Site in July 2011, and other investigations and inquiries conducted in reference to the Site. (refer to Section 1.2 in this report).

The borings were advanced using direct push probe drilling techniques. Drilling and sampling was performed by Pacific Northwest Probe from Milton, Washington. The direct push probe drilling procedure involved pushing in increments of five feet using a two-inch, inside diameter, stainless steel sample corer with a five foot long Teflon sample sleeve insert and connecting drilling rods. The maximum depth advanced was 18 feet bgs. Soil sampling locations are presented in Figure 2, *Site Plan.* Photo documentation of the subsurface investigations is presented in Appendix A, *Site Photographs.*

Soil sampling rationale by Parcel is described below:

*Parcel A*
Parcel A (2328 Gibson Rd.) is located in the eastern portion of the Site. Borings B-3, B-8 and B-14 were advanced to a maximum depth of 18 feet bgs in the vicinity of the former auto body shop. Soil samples were analyzed for gasoline and diesel range TPH and heavy metals. Boring B-4 was advanced to a total depth of 13 feet bgs in the southeast portion of the parcel where drums and abandoned motor vehicles were noted. Boring B-13 was placed between boring locations B-3 and B-4 at a surface spill were obvious surficial staining was observed. Soil samples B-4 and B-13 were analyzed for petroleum hydrocarbons.

Parcel B
Parcel B (2400 Gibson Rd.) is located in the central portion of the Site. Boring locations B-2, B-5, B-10 through B-12 were selected to assess soil contamination related to the previous auto wrecking yard, past diesel fuel spills, and other suspected surface releases of unknown origin. The former wrecking yard occupied much of the southern half of the Parcel. Soil samples were collected throughout the Parcel at shallow depths ranging from 1 1/2 feet to 3 1/2 feet below ground surface (bgs). Select soil samples were collected for analysis of petroleum hydrocarbons, VOCs, and/or heavy metals.

Parcel C

Parcel C (2402 Gibson Rd.) is located in the western portion of the Site. Borings B-1, B-6, B-7, and B-9 were selected to assess the soil quality in areas where documentation indicated previous dumping activities and abandonment of drums, containers, and engine parts. As in Parcel B, select soil samples were obtained for chemical analyses of petroleum hydrocarbons, VOCs, and/or heavy metals.

AEG attempted to collect groundwater samples at borings B-3 and B-14 by placing a temporary PVC screen into each borehole for a minimum of two to four hours. However, AEG did not encounter any groundwater at the bottom of the borings. The lack of groundwater is most likely due to the presence of glacial till throughout the property. Drilling refusal was encountered throughout the subsurface investigation at depths ranging from 3 feet to 18 feet below ground surface.

### *2.1 Soil Sampling Procedures*

Soil samples were collected and observed to document soil lithology, color, moisture content, visual and sensory evidence of impairment. Samples were obtained continuously via direct push probe corer with a five foot long Teflon sample sleeve insert and connecting drilling rods. All soil samples were classified in the field, field screen utilizing a PID to facilitate the selection of samples for chemical analysis. The soil samples field screened using a PID did not show detectable readings from any interval.

Samples for volatile analyses were immediately transferred to laboratory provided pre-weighted 40-mL VOA glass vials with septum sealed Teflon-lined plastic screw caps. Samples for other analyses were collected in four ounce clear glass jars with Teflon-lined plastic screw caps. All soil samples were placed in a portable chilled ice chest once collected. Soil sampling for VOCs followed methods set forth by Ecology's Method 5035A, "*Collecting and Preparing Soil Samples for VOC Analysis*" which minimizes VOC losses. Soil samples were delivered within 48 hours Libby Environmental Laboratory, a Washington State certified analytical laboratory located in Olympia, Washington. Soil samples were appropriately handled and transported following industry standard chain-of-custody procedures on a standard laboratory turn-around-time.

Table 1, *Summary of Soil Analytical Results*, presents analytical soil results as compared to Ecology's MTCA Method A cleanup levels for soil.

### *2.2 Groundwater Sampling Procedures*

Temporary well screens were placed in the open boreholes to total depth at boring locations B-3 and B-14 in Parcel A. Groundwater was not encountered at either borings by the end of the drilling activities at the Site.

### *2.3 Quality Controls*

All soil sampling was performed in general accordance with industry protocols for the collection, documentation, and handling of environmental samples. Descriptions of soil and sampling depths were carefully logged in the field by the AEG geologist and drilling subcontractor. A site map showing boring locations was completed prior to leaving the Site.

Soil samples were tightly packed into jars to eliminate sample headspace. Water samples were filled carefully in the sampling bottles to prevent volatilization. Upon sampling, all samples were placed immediately into chilled ice chests.

To reasonably ensure the purity of environmental samples, the following actions were taken (1) nitrile gloves were used in handling all sampling jars and sampling devices during sampling activities; (2) the sampling equipment was scrubbed with Alconox detergent and rinsed with water prior to the extraction of each sample; (3) the sampling containers were collected in the appropriate containers then placed directly in a chilled cooler and transported within 48 hours under chain-of-custody to the laboratory; and 4) the laboratory provided standard quality assurance/quality control (QA/QC) which included the following: surrogate recoveries for each sample, method blank results, duplicate analyses, matrix or blank spiked analyses, and duplicate spiked analyses.

### *2.4 Investigation Derived Waste*

Investigation derived waste generated at the Site during this project consisted only of soil cuttings from the subsurface exploration activities and water generated during the decontamination of drilling implements. These wastes were placed in approved Department of Transportation (DOT) 30-gallon steel drums and stored at the Site for subsequent characterization and disposal. One drum containing both soil and water generated from decontamination between borings were generated during the investigation.

# 3 CONCLUSIONS AND RECOMMENDATIONS

The findings and conclusions derived during the Phase II ESA – Subsurface Investigation at the Gibson Road property, located in Everett, Washington are as follows:

- Soil samples were collected at 14 boreholes advanced at the Site to evaluate the potential presence of petroleum hydrocarbons, volatile organic compounds, and/or heavy metal contamination at the property due to the historical activities/operations at the Site.

- Dense glacial till was encountered throughout the property during subsurface investigation, ranging from 3 to 18 feet below ground surface. Subsequently, drilling refusal (due to the presence of glacial till) was prominent throughout the drilling activities.

- AEG attempted to collect groundwater samples at borings B-3 and B-14 by placing a temporary PVC screen into each borehole for a minimum of two to four hours. However, AEG did not encounter any groundwater at the bottom of the borings. The lack of groundwater is most likely due to the presence of glacial till.

- With the exception of chromium, soil laboratory analytical results indicated no detectable concentrations of all constituents of concern in all samples submitted for laboratory analysis (refer to Table 1). Chromium was exhibited in soil samples selected for heavy metals analysis, ranging from approximately 9 to 17 milligrams per kilograms (mg/Kg). Ecology MTCA Method A soil cleanup level for chromium VI is 19 mg/Kg and 2,000 mg/Kg for chromium III. The need to speciate which type of chromium is present at the Site was not necessary due to the concentrations exhibited (i.e., below cleanup levels).

**Discussion/Recommendation:**
No further investigation at the Site is warranted based on the above presented laboratory analytical results and conclusions. Groundwater was not encountered throughout the subsurface investigation due to the presence of glacial till. It appears that groundwater is not a viable pathway for migration of potential contaminants at the Site due to the characteristics associated with dense glacial till which is a confining bed and retards groundwater flow.

It appears at areas where surficial soil staining was observed that the surficial soil contamination is localized in depth (less than 1.0 foot) based on laboratory results. AEG collected soil samples at locations where surficial soil staining was observed, specifically at borings B-10 through B-13 at depths of 1.0 to 1.5 feet below ground surface. Laboratory analytical results indicated no detections of petroleum hydrocarbons in all these samples.

The scope of work for this Phase II ESA was not intended to define the lateral and vertical extent of contamination, if encountered, at the Site due to its preliminary investigative nature. Therefore, at locations of surficial soil staining, AEG recommends removal of surficial soil, up to 2 to 4 inches, at these locations and disposal at appropriate landfill.

AEG also recommends that drums, containers, and abandoned vehicles parts/vehicles should be removed from the Site. The storm water system at the property should also be identified and assessed for potential environmental concerns.

# 4 LIMITATIONS

This report summarizes the findings of the services authorized under our agreement. It has been prepared using generally accepted professional practices, related to the nature of the work accomplished. This report was prepared for the exclusive use of First Citizens Bank and its designated representatives for the specific application to the project purpose.

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

# 5 REFERENCES

American Society for Testing and Materials (ASTM) Standard E 1903-97, *Standard Guide Environmental Site Assessments: Phase II Environmental Site Assessment Process.*

Associated Environmental Group, LLC, 2011. *Phase I Environmental Site Assessment – Gibson Road Property, 2328, 2400 & 2402 Gibson Road, Everett, WA.*

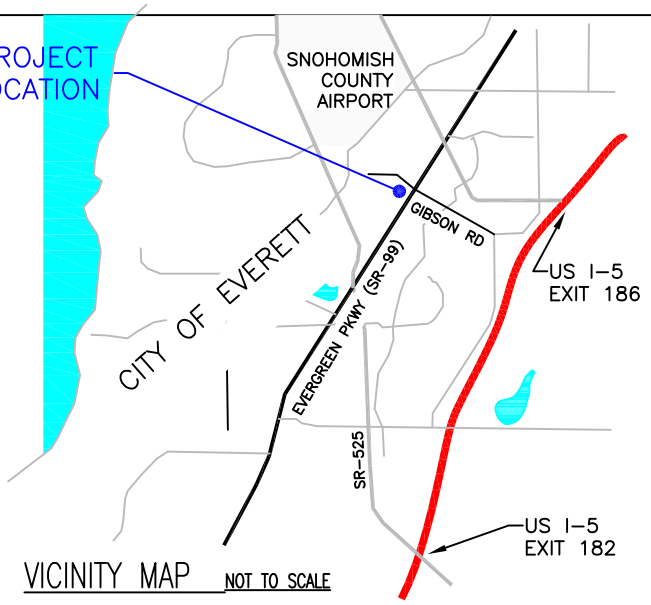
Dragovich, J.D., Logan, H.W., Walsh, T.J., et al, 2002. *Geologic Map of Washington, Northwest Quadrant*, Washington Division of Geology and Earth Resources Geologic Map GM-50.

Smith, M., 2009. Division of Geology and Earth Resources: *Preliminary Surficial Geologic Map of the Mukilteo and Everett 7.5 Minute Quadrangles, Snohomish County, Washington.*

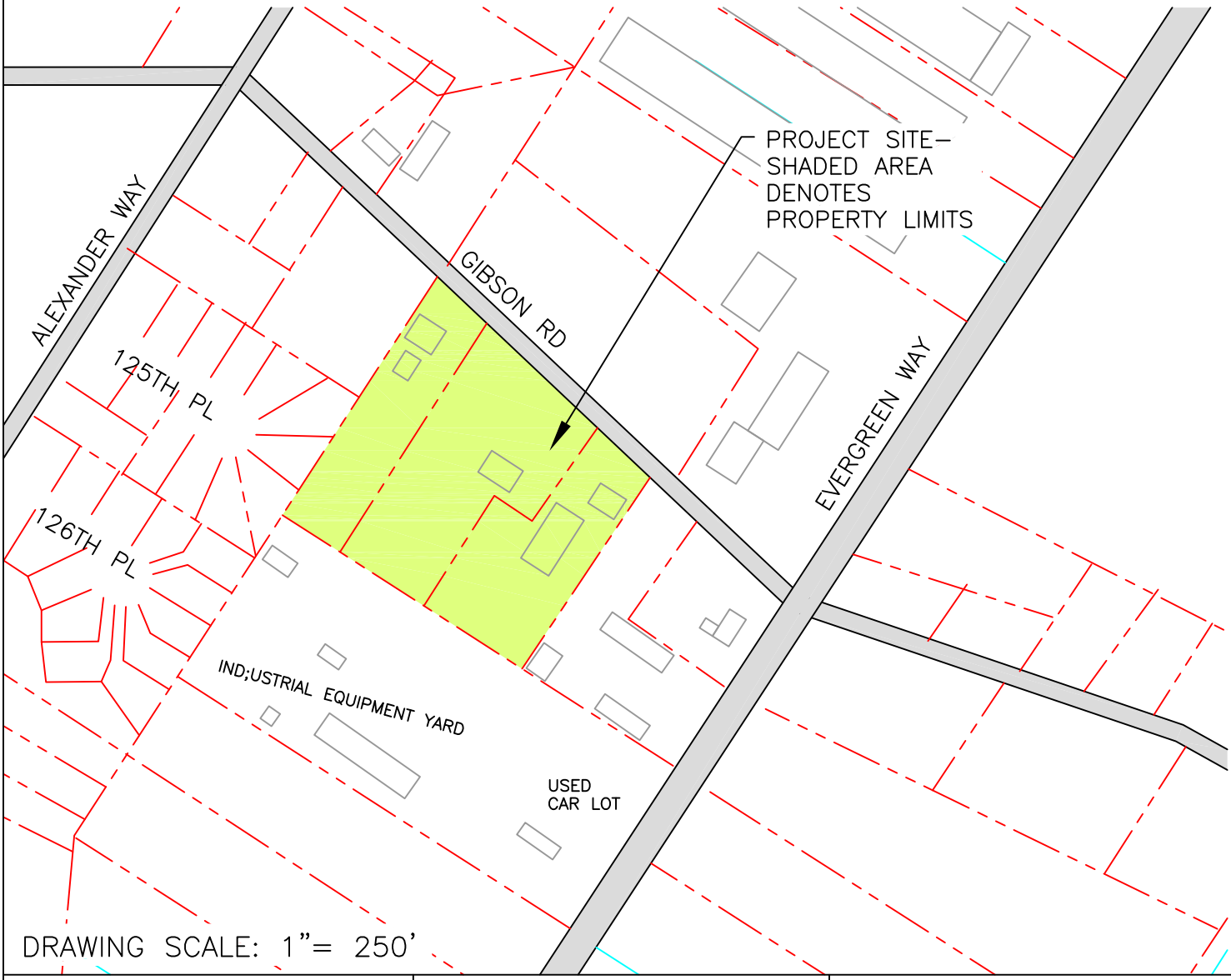
# FIGURES

Notes:
(1) The locations of all features shown are approximate.
(2) This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.

Reference: Drawing created from notes provided by AEG, LLC.




VICINITY MAP NOT TO SCALE




DRAWING SCALE: 1"= 250'

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FIGURE 1

SITE & VICINITY MAP

GIBSON ROAD PROPERTY
2328, 2400, & 2402 GIBSON ROAD
EVERETT, WA

| | |
|---|---|
| Project# 11-140 | Date: 09/29/2011 |
| File: | Sheet 1 OF 2 |

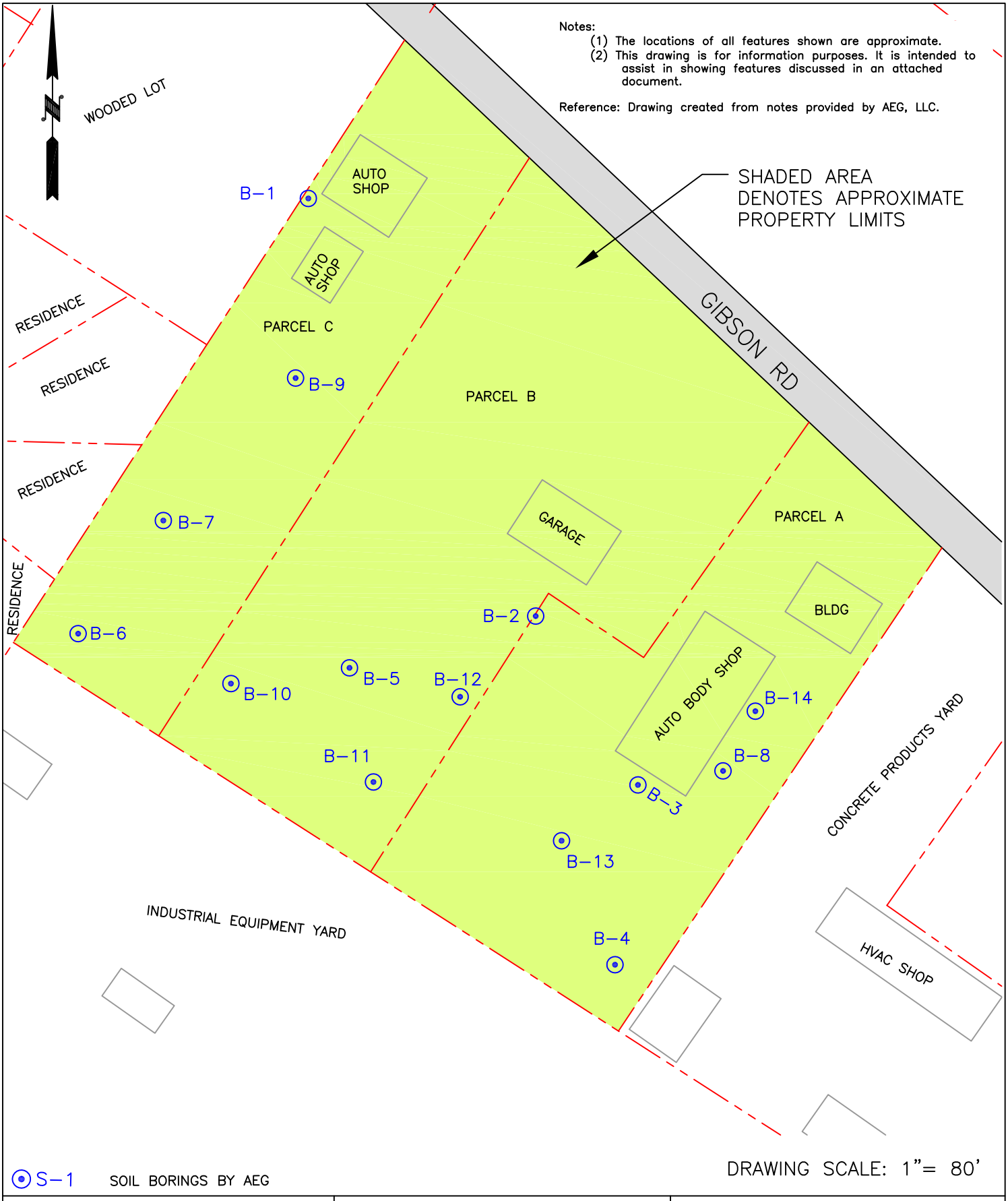


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FIGURE 2
SITE
PLAN

GIBSON ROAD PROPERTY
2328, 2400 & 2402 GIBSON ROAD
EVERETT, WA

| | |
|---|---|
| Project# 11-140 | Date: 10/02/2011 |
| File: FILE NAME | Sheet 2 OF 2 |

**Table 1 Summary of Soil Analytical Results**
**Gibson Road Properties - Phase II ESA**
**Everett, WA**

| Sample Number[1] | Sample Depth (feet) | Date Sampled | HCID[2] (mg/Kg) | | | | Diesel Extended TPH[3] (mg/Kg) | | | Select Volatile Organic Compounds[4] (mg/Kg) | | | | | | | MTCA Metals[5] (mg/Kg) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Gasoline | Diesel | Heavy Oil | Mineral Oil | Diesel | Heavy Oil | Mineral Oil | Benzene | Toluene | Ethylbenzene | Total Xylenes | PCE | TCE | Vinyl Chloride | Mercury | Lead | Cadmium | Chromium VI/III[6] | Arsenic |
| B1-S1-3.0/3.5 | 3.0-3.5 | 9/21/11 | <20 | <50 | <100 | <100 | <25 | -- | -- | <0.02 | <0.10 | <0.05 | <0.15 | -- | -- | -- | -- | -- | -- | -- | -- |
| B2-S1-2.5/3.0 | 2.5-3.0 | 9/21/11 | -- | -- | -- | -- | <25 | <40 | <40 | <0.02 | <0.10 | <0.05 | <0.15 | -- | -- | -- | <0.5 | <5.0 | <1.0 | 15 | <5.0 |
| B3-S3-10.0/10.5 | 10.0-10.5 | 9/21/11 | -- | -- | -- | -- | <25 | <40 | <40 | <0.02 | <0.10 | <0.05 | <0.15 | <0.02 | <0.03 | <0.02 | <0.5 | <5.0 | <1.0 | 17 | <5.0 |
| B4-S2-6.5/7.0 | 6.5-7.0 | 9/21/11 | <20 | <50 | <100 | <100 | <25 | -- | -- | <0.02 | <0.10 | <0.05 | <0.15 | -- | -- | -- | -- | -- | -- | -- | -- |
| B5-S1-3.0/3.5 | 3.0-3.5 | 9/21/11 | <20 | <50 | <100 | <100 | <25 | <40 | <40 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| B6-S1-3.0/3.5 | 3.0-3.5 | 9/21/11 | -- | -- | -- | -- | <25 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| B7-S2-8.0/8.5 | 8.0-8.5 | 9/21/11 | -- | -- | -- | -- | <25 | <40 | <40 | <0.02 | <0.10 | <0.05 | <0.15 | -- | -- | -- | <0.5 | <5.0 | <1.0 | 9.6 | <5.0 |
| B8-S1-1.0/1.5 | 1.0-1.5 | 9/21/11 | -- | -- | -- | -- | <25 | <40 | <40 | <0.02 | <0.10 | <0.05 | <0.15 | <0.02 | <0.03 | <0.02 | <0.5 | 6.0 | <1.0 | 16 | <5.0 |
| B9-S1-3.0/3.5 | 3.0-3.5 | 9/21/11 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| B10-S1-1.0/1.5 | 1.0-1.5 | 9/21/11 | -- | -- | -- | -- | <25 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| B11-S1-1.0/1.5 | 1.0-1.5 | 9/21/11 | <20 | <50 | <100 | <100 | <25 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| B12-S1-1.0/1.5 | 1.0-1.5 | 9/21/11 | -- | -- | -- | -- | <25 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| B13-S1-1.0/1.5 | 1.0-1.5 | 9/21/11 | -- | -- | -- | -- | <25 | <40 | <40 | <0.02 | <0.10 | <0.05 | <0.15 | -- | -- | -- | -- | -- | -- | -- | -- |
| B14-S4-15.0/15.5 | 15.0-15.5 | 9/21/11 | -- | -- | -- | -- | <25 | -- | -- | <0.02 | <0.10 | <0.05 | <0.15 | <0.02 | <0.03 | <0.02 | -- | -- | -- | -- | -- |
| PQL | | | 20 | 50 | 100 | 100 | 25 | 40 | 40 | 0.02 | 0.10 | 0.05 | 0.15 | 0.02 | 0.03 | 0.02 | 0.5 | 5.0 | 1.0 | 5.0 | 5.0 |
| Ecology MTCA Method A Clean Up Levels | | | 100 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 4,000 | 0.03 | 7 | 6 | 9 | 0.05 | 0.03 | * | 2 | 250 | 2 | 19/2,000 | 20 |

Notes:
[1]Approximate Sample locations are shown in figure 2
[2]Hydrocarbon Identification (HCID). Analyzed by Northwest Method NWTPH-HCID
[3]Diesel extended range TPH. Analyzed by Northwest Method NWTPH-Dx/Dx Extended.
[4]Select Volatile Organic Compounds. Analyzed by EPA Method 8260C.
[5]Analyzed by EPA Method 6020 Series
[6]Soil cleanup level for Chromium VI is 19 mg/Kg & Chromium III is 2,000 mg/Kg
mg/Kg - milligrams per Kilogram

-- = not analyzed for constituent
< = not detected above laboratory limits
* Ecology has not designated a MTCA Method A cleanup level for this constituent
PQL = Practical Quantitation Limits
MTCA = Ecology Model Toxics Control Act
Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup levels

# APPENDIX A
# SITE PHOTOGRAPHS

ASSOCIATED
ENVIRONMENTAL
GROUP, LLC

# SITE PHOTOGRAPHIC RECORD

**Project No.: 11-140** **Project Name: Gibson Road Properties, Everett - Phase II ESA**

| | |
|---|---|
| Photo #1: | Direct push probe drilling at boring B-3 located on Parcel A. Note: former auto body shop to left. View looking east. |

| | |
|---|---|
| Photo #2: | Soil profile from boring B-3 showing medium dense silty sand at surface (top right) which grades to stiff silt and very dense grey silty sand bottom right (refusal at 13 ft bgs) |

| | |
|---|---|
| Photo #3: | Surface stain south of former auto body shop in Parcel A. Sampling location B-13 bottom right in picture. View looking east. |

| | |
|---|---|
| Photo #4: | Direct push probe drilling at boring B-4 in southeast portion of Parcel A where stains on ground and unlabelled containers and 55 gallon drums were documented. View looking east. |

| | |
|---|---|
| Photo #5: | Direct push probe drilling at boring B-2 on Parcel B in vicinity of diesel fuel spill and former auto wrecking yard. View looking northwest. |

| | |
|---|---|
| Photo #6: | Direct push probe rig drilling at boring B-6 in Parcel C where documented hazardous materials were spilled on ground. View looking south. |

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ASSOCIATED
ENVIRONMENTAL
GROUP, LLC

# SITE PHOTOGRAPHIC RECORD

**Project No.: 11-140** **Project Name: Gibson Road Properties, Everett - Phase II ESA**

| | |
|---|---|
| Photo #7: | Direct push probe rig at boring B-7 in west central Parcel C. View looking north. |

| | |
|---|---|
| Photo #8: | Direct push probe located at boring B-1 in the northwest portion of Parcel C where dumping of unknown materials occurred. View looking west. |

| | |
|---|---|
| Photo #9: | Temporary PVC screen placed in boring B-14 to attempt groundwater sampling in east central portion of Parcel A Note: former auto body shop in background. View looking west. |

| | |
|---|---|
| Photo #10: | Boring B-8 (center in picture) in east central portion of Parcel A and adjacent to former auto body shop. View looking north. |

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# APPENDIX B
# SUPPORTING DOCUMENTS

# BORING LOGS

**ASSOCIATED ENVIRONMENTAL GROUP, LLC** **LOG OF BOREHOLE**

| | | | | |
|---|---|---|---|---|
| **PROJECT:** | Gibson Road - Phase II ESA | **JOB #** 11-140 | **BORING #** B-1 | **PAGE 1 OF 1** |
| **Location:** | 2400 Gibson Road, Everett WA | **Approximate Elevation:** | | |
| **Subcontractor/Equipment:** | Pacific NW Probe, Rodney Gilseth | **Drilling Method:** | Direct Push Probe | |
| **Date:** | 9/21/2011 | **Logged By:** | D. Brentlinger | |

| Depth (ft) | Soil Description | Unified Soil Symbol | Sample Type | Sample Recovery | Sample Number | Time | Blows/Foot | PID Reading | Sheen | Monitoring Well |
|---|---|---|---|---|---|---|---|---|---|---|
| | Gray-brown to dark brown, very moist, medium dense to dense, silty SAND. | SM | | | | 1155 | NA | | Not Observed | NA |
| | Gray, very moist, very stiff, sandy SILT. | ML | | | B1-S1-3.0/3.5 | 1200 | | 0.0 | | |
| 5 | | | | | | | | | | |
| | Drilling refusal at 7 feet. | | | | | 1210 | | | | |
| | TD at 7 ft bgs.<br>Groundwater not encountered ATD.<br>Boring backfilled with bentonite chips. | | | | | | | | | |
| 10 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 25 | | | | | | | | | | |

## Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

**ASSOCIATED ENVIRONMENTAL GROUP, LLC** **LOG OF BOREHOLE**

| | | | | |
|---|---|---|---|---|
| **PROJECT:** | Gibson Road - Phase II ESA | **JOB #** 11-140 | **BORING #** B-2 | **PAGE 1 OF 1** |
| **Location:** | 2400 Gibson Road, Everett WA | **Approximate Elevation:** | | |
| **Subcontractor/Equipment:** | Pacific NW Probe, Rodney Gilseth | **Drilling Method:** | Direct Push Probe | |
| **Date:** | 9/21/2011 | **Logged By:** | D. Brentlinger | |

| Depth (ft) | Soil Description | Unified Soil Symbol | Sample Type | Sample Recovery | Sample Number | Time | Blows/Foot | PID Reading | Sheen | Monitoring Well |
|---|---|---|---|---|---|---|---|---|---|---|
| | Gravel road surface underlain by: Gray, moist, very dense, silty SAND. (FILL) | SM | | | | 1000 | NA | | Not Observed | NA |
| | | | | | B2-S1-2.5/3.0 | 1005 | | 0.0 | | |
| | Gray, very moist, very stiff, sandy SILT. | ML | | | | | | | | |
| 5 | | | | | B2-S2-5.0/6.5 | 1010 | | 0.0 | | |
| | Drilling refusal at 6 1/2 feet. | | | | | 1015 | | | | |
| | TD at 6-1/2 ft bgs<br>Groundwater not encountered ATD.<br>Boring backfilled with bentonite chips. | | | | | | | | | |
| 10 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 25 | | | | | | | | | | |

## Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

**ASSOCIATED ENVIRONMENTAL GROUP, LLC** **LOG OF BOREHOLE**

| | | | | |
|---|---|---|---|---|
| **PROJECT:** | Gibson Road - Phase II ESA | **JOB #** 11-140 | **BORING #** B-3 | **PAGE 1 OF 1** |
| **Location:** | 2400 Gibson Road, Everett WA | **Approximate Elevation:** | | |
| **Subcontractor/Equipment:** | Pacific NW Probe, Rodney Gilseth | **Drilling Method:** | Direct Push Probe | |
| **Date:** | 9/21/2011 | **Logged By:** | D. Brentlinger | |

| Depth (ft) | Soil Description | Unified Soil Symbol | Sample Type | Sample Recovery | Sample Number | Time | Blows/Foot | PID Reading | Sheen | Monitoring Well |
|---|---|---|---|---|---|---|---|---|---|---|
| | Dark brown to yellow-brown, moist, medium dense, silty SAND. | SM | | | | 0845 | NA | | Not Observed | NA |
| | | | | | B3-S1-2.0/2.5 | 0847 | | 0.0 | | |
| 5 | | | | | | | | | | |
| | Gray-brown, moist, stiff, sandy SILT. | ML | | | | | | | | |
| | | | | | B3-S2-7.0/8.0 | 0850 | | 0.0 | | |
| 10 | | | | | | | | | | |
| | Gray, very moist, very dense, silty SAND | SM | | | B3-S3-10.0/10.5 | 0910 | | 0.0 | | |
| | Drilling refusal at 13 feet. | | | | | | | | | |
| | TD at 13 ft bgs.<br>Groundwater not encountered ATD.<br>Boring backfilled with bentonite chips. | | | | | | | | | |
| 15 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 25 | | | | | | | | | | |

## Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- Groundwater level at time of drilling or date of measurement (ATD)

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

**ASSOCIATED ENVIRONMENTAL GROUP, LLC** **LOG OF BOREHOLE**

| | | | | |
|---|---|---|---|---|
| **PROJECT:** | Gibson Road - Phase II ESA | **JOB #** 11-140 | **BORING #** B-4 | **PAGE 1 OF 1** |
| **Location:** | 2400 Gibson Road, Everett WA | **Approximate Elevation:** | | |
| **Subcontractor/Equipment:** | Pacific NW Probe, Rodney Gilseth | **Drilling Method:** | Direct Push Probe | |
| **Date:** | 9/21/2011 | **Logged By:** | D. Brentlinger | |

| Depth (ft) | Soil Description | Unified Soil Symbol | Sample Type | Sample Recovery | Sample Number | Time | Blows/Foot | PID Reading | Sheen | Monitoring Well |
|---|---|---|---|---|---|---|---|---|---|---|
| | Gray-brown to brown-yellow, moist, medium dense, silty SAND. | SM | | | | 0930 | NA | | Not Observed | NA |
| | | | | | B4-S1-2.0/3.0 | 0936 | | 0.0 | | |
| 5 | | | | | | | | | | |
| | | | | | B4-S2-6.5/7.0 | 0945 | | 0.0 | | |
| 10 | | | | | | | | | | |
| | Gray, very moist, very stiff, sandy SILT. | ML | | | B4-S3-10.0/10.5 | 0950 | | 0.0 | | |
| | **Drilling refusal at 13 feet.** | | | | | 0955 | | | | |
| | **TD at 13 ft bgs ATD.**<br>Groundwater not encountered ATD.<br>Boring backfilled with bentonite chips. | | | | | | | | | |
| 15 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 25 | | | | | | | | | | |

## Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- Groundwater level at time of drilling or date of measurement (ATD)

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

**ASSOCIATED ENVIRONMENTAL GROUP, LLC** **LOG OF BOREHOLE**

| | | | | |
|---|---|---|---|---|
| **PROJECT:** | Gibson Road - Phase II ESA | **JOB #** 11-140 | **BORING #** B-5 | **PAGE 1 OF 1** |
| **Location:** | 2400 Gibson Road, Everett WA | **Approximate Elevation:** | | |
| **Subcontractor/Equipment:** | Pacific NW Probe, Rodney Gilseth | **Drilling Method:** | Direct Push Probe | |
| **Date:** | 9/21/2011 | **Logged By:** | D. Brentlinger | |

| Depth (ft) | Soil Description | Unified Soil Symbol | Sample Type | Sample Recovery | Sample Number | Time | Blows/Foot | PID Reading | Sheen | Monitoring Well |
|---|---|---|---|---|---|---|---|---|---|---|
| | Gravel surface underlain by:<br>Gray, moist, medium dense, silty SAND (FILL) | SM | | | | 1040 | NA | | Not Observed | NA |
| | Gray, very moist, very stiff, sandy SILT. | ML | | | | | | | | |
| | | | | | B5-S1-3.0/3.5 | 1045 | | 0.0 | | |
| 5 | Drilling refusal at 5 feet. | | | | | | | | | |
| | TD at 5 ft bgs.<br>Groundwater not encountered ATD.<br>Boring backfilled with bentonite chips. | | | | | | | | | |
| 10 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 25 | | | | | | | | | | |

## Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

**ASSOCIATED ENVIRONMENTAL GROUP, LLC** **LOG OF BOREHOLE**

| | | | | |
|---|---|---|---|---|
| **PROJECT:** | Gibson Road - Phase II ESA | **JOB #** 11-140 | **BORING #** B-6 | **PAGE 1 OF 1** |
| **Location:** | 2400 Gibson Road, Everett WA | **Approximate Elevation:** | | |
| **Subcontractor/Equipment:** | Pacific NW Probe, Rodney Gilseth | **Drilling Method:** | Direct Push Probe | |
| **Date:** | 9/21/2011 | **Logged By:** | D. Brentlinger | |

| Depth (ft) | Soil Description | Unified Soil Symbol | Sample Type | Sample Recovery | Sample Number | Time | Blows/Foot | PID Reading | Sheen | Monitoring Well |
|---|---|---|---|---|---|---|---|---|---|---|
| | Gravel surface underlain by: | SM | | | | 1100 | NA | | Not Observed | NA |
| | Gray-brown, moist, very dense, silty SAND. | | | | | | | | | |
| | Gray, very moist, very stiff, sandy SILT. | ML | | | | | | | | |
| | | | | | B6-S1-3.0/3.5 | 1110 | | 0.0 | | |
| 5 | Drilling refusal at 5 feet. | | | | | | | | | |
| | TD at 5 ft bgs ATD. | | | | | | | | | |
| | Groundwater not encountered ATD. | | | | | | | | | |
| | Boring backfilled with bentonite chips. | | | | | | | | | |
| 10 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 25 | | | | | | | | | | |

## Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

**ASSOCIATED ENVIRONMENTAL GROUP, LLC** **LOG OF BOREHOLE**

| | | | | |
|---|---|---|---|---|
| **PROJECT:** | Gibson Road - Phase II ESA | **JOB #** 11-140 | **BORING #** B-7 | **PAGE 1 OF 1** |
| **Location:** | 2400 Gibson Road, Everett WA | **Approximate Elevation:** | | |
| **Subcontractor/Equipment:** | Pacific NW Probe, Rodney Gilseth | **Drilling Method:** | Direct Push Probe | |
| **Date:** | 9/21/2011 | **Logged By:** | D. Brentlinger | |

| Depth (ft) | Soil Description | Unified Soil Symbol | Sample Type | Sample Recovery | Sample Number | Time | Blows/Foot | PID Reading | Sheen | Monitoring Well |
|---|---|---|---|---|---|---|---|---|---|---|
| | Gravel surface underlain by:<br>Gray-brown, moist, medium dense, silty SAND (FILL) | SM | | | | 1130 | NA | | Not Observed | NA |
| 5 | | | | | B7-S1-4.5 | 1135 | | 0.0 | | |
| | Brown, moist, very stiff, sandy SILT, with coarse gravel. | ML | | | | | | | | |
| | | | | | B7-S2-8.0/8.5 | 1140 | | 0.0 | | |
| 10 | Drilling refusal at 10 feet. | | | | | | | | | |
| | TD at 10 ft bgs ATD.<br>Groundwater not encountered ATD.<br>Boring backfilled with bentonite chips. | | | | | | | | | |
| 15 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 25 | | | | | | | | | | |

## Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

**ASSOCIATED ENVIRONMENTAL GROUP, LLC** **LOG OF BOREHOLE**

| | | | | |
|---|---|---|---|---|
| **PROJECT:** | Gibson Road - Phase II ESA | **JOB #** 11-140 | **BORING #** B-8 | **PAGE 1 OF 1** |
| **Location:** | 2400 Gibson Road, Everett WA | **Approximate Elevation:** | | |
| **Subcontractor/Equipment:** | Pacific NW Probe, Rodney Gilseth | **Drilling Method:** | Direct Push Probe | |
| **Date:** | 9/21/2011 | **Logged By:** | D. Brentlinger | |

| Depth (ft) | Soil Description | Unified Soil Symbol | Sample Type | Sample Recovery | Sample Number | Time | Blows/Foot | PID Reading | Sheen | Monitoring Well |
|---|---|---|---|---|---|---|---|---|---|---|
| | Grass surface underlain by:<br>Gray-brown, moist, medium dense, silty SAND. | SM | | | B8-S1-1.0/1.5 | 1345 | NA | 0.0 | Not Observed | NA |
| | Drilling refusal at 3 feet . | | | | | | | | | |
| | TD at 3 ft bgs ATD.<br>Groundwater not encountered ATD.<br>Boring backfilled with bentonite chips. | | | | | | | | | |
| 5 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 25 | | | | | | | | | | |

## Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- Groundwater level at time of drilling or date of measurement (ATD)

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

**ASSOCIATED ENVIRONMENTAL GROUP, LLC** **LOG OF BOREHOLE**

| | | | | |
|---|---|---|---|---|
| **PROJECT:** | Gibson Road - Phase II ESA | **JOB #** 11-140 | **BORING #** B-9 | **PAGE 1 OF 1** |
| **Location:** | 2400 Gibson Road, Everett WA | **Approximate Elevation:** | | |
| **Subcontractor/Equipment:** | Pacific NW Probe, Rodney Gilseth | **Drilling Method:** | Direct Push Probe | |
| **Date:** | 9/21/2011 | **Logged By:** | D. Brentlinger | |

| Depth (ft) | Soil Description | Unified Soil Symbol | Sample Type | Sample Recovery | Sample Number | Time | Blows/Foot | PID Reading | Sheen | Monitoring Well |
|---|---|---|---|---|---|---|---|---|---|---|
| | Gravel surface underlain by:<br>Gray-brown, moist, dense-very dense to very stiff/hard, silty SAND to sandy SILT. | SM/ML | | | | 1220 | NA | | Not Observed | NA |
| | | | | | B9-S1-3.0/3.5 | 1225 | | 0.0 | | |
| 5 | Drilling refusal at 5 feet. | | | | | | | | | |
| | TD at 5 ft bgs .<br>Groundwater not encountered ATD.<br>Boring backfilled with bentonite chips. | | | | | | | | | |
| 10 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 25 | | | | | | | | | | |

## Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

**ASSOCIATED ENVIRONMENTAL GROUP, LLC** **LOG OF BOREHOLE**

| | | | | |
|---|---|---|---|---|
| **PROJECT:** | Gibson Road - Phase II ESA | **JOB #** 11-140 | **BORING #** B-10 | **PAGE 1 OF 1** |
| **Location:** | 2400 Gibson Road, Everett WA | **Approximate Elevation:** | | |
| **Subcontractor/Equipment:** | Pacific NW Probe, Rodney Gilseth | **Drilling Method:** | Direct Push Probe | |
| **Date:** | 9/21/2011 | **Logged By:** | D. Brentlinger | |

| Depth (ft) | Soil Description | Unified Soil Symbol | Sample Type | Sample Recovery | Sample Number | Time | Blows/Foot | PID Reading | Sheen | Monitoring Well |
|---|---|---|---|---|---|---|---|---|---|---|
| | Gravel surface underlain by:<br>Gray-brown, moist, medium dense, silty SAND. | SM | | | B10-S1-1.0/1.5 | 1255 | NA | 0.0 | Not Observed | NA |
| | Drilling refusal at 3 feet. | | | | | | | | | |
| | TD at 3 ft bgs.<br>Groundwater not encountered ATD.<br>Boring backfilled with bentonite chips. | | | | | | | | | |
| 5 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 25 | | | | | | | | | | |

## Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- Groundwater level at time of drilling or date of measurement (ATD)

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

**ASSOCIATED ENVIRONMENTAL GROUP, LLC** **LOG OF BOREHOLE**

| | | | | |
|---|---|---|---|---|
| **PROJECT:** | Gibson Road - Phase II ESA | **JOB #** 11-140 | **BORING #** B-11 | **PAGE 1 OF 1** |
| **Location:** | 2400 Gibson Road, Everett WA | **Approximate Elevation:** | | |
| **Subcontractor/Equipment:** | Pacific NW Probe, Rodney Gilseth | **Drilling Method:** | Direct Push Probe | |
| **Date:** | 9/21/2011 | **Logged By:** | D. Brentlinger | |

| Depth (ft) | Soil Description | Unified Soil Symbol | Sample Type | Sample Recovery | Sample Number | Time | Blows/Foot | PID Reading | Sheen | Monitoring Well |
|---|---|---|---|---|---|---|---|---|---|---|
| | Gravel surface underlain by:<br>Gray-brown, moist, medium dense, silty SAND. | SM | | | B11-S1-1.0/1.5 | 1245 | NA | 0.0 | Not Observed | NA |
| | Drilling refusal at 3 feet. | | | | | | | | | |
| | TD at 3 ft bgs.<br>Groundwater not encountered ATD.<br>Boring backfilled with bentonite chips. | | | | | | | | | |
| 5 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 25 | | | | | | | | | | |

## Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- Groundwater level at time of drilling or date of measurement (ATD)

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

**ASSOCIATED ENVIRONMENTAL GROUP, LLC** **LOG OF BOREHOLE**

| | | | | |
|---|---|---|---|---|
| **PROJECT:** | Gibson Road - Phase II ESA | **JOB #** 11-140 | **BORING #** B-12 | **PAGE 1 OF 1** |
| **Location:** | 2400 Gibson Road, Everett WA | **Approximate Elevation:** | | |
| **Subcontractor/Equipment:** | Pacific NW Probe, Rodney Gilseth | **Drilling Method:** | Direct Push Probe | |
| **Date:** | 9/21/2011 | **Logged By:** | D. Brentlinger | |

| Depth (ft) | Soil Description | Unified Soil Symbol | Sample Type | Sample Recovery | Sample Number | Time | Blows/Foot | PID Reading | Sheen | Monitoring Well |
|---|---|---|---|---|---|---|---|---|---|---|
| | Gravel surface underlain by:<br>Gray-brown, moist, medium dense, silty SAND. | SM | | | B12-S1-1.0/1.5 | 1255 | NA | 0.0 | Not Observed | NA |
| | Drilling refusal at 3 feet. | | | | | | | | | |
| | TD at 3 ft bgs.<br>Groundwater not encountered ATD.<br>Boring backfilled with bentonite chips. | | | | | | | | | |
| 5 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 25 | | | | | | | | | | |

## Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- Groundwater level at time of drilling or date of measurement (ATD)

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

**ASSOCIATED ENVIRONMENTAL GROUP, LLC** **LOG OF BOREHOLE**

| | | | | |
|---|---|---|---|---|
| **PROJECT:** | Gibson Road - Phase II ESA | **JOB #** 11-140 | **BORING #** B-13 | **PAGE 1 OF 1** |
| **Location:** | 2400 Gibson Road, Everett WA | **Approximate Elevation:** | | |
| **Subcontractor/Equipment:** | Pacific NW Probe, Rodney Gilseth | **Drilling Method:** | Direct Push Probe | |
| **Date:** | 9/21/2011 | **Logged By:** | D. Brentlinger | |

| Depth (ft) | Soil Description | Unified Soil Symbol | Sample Type | Sample Recovery | Sample Number | Time | Blows/Foot | PID Reading | Sheen | Monitoring Well |
|---|---|---|---|---|---|---|---|---|---|---|
| | Gravel surface underlain by:<br>Gray-brown, moist, medium dense, silty sandy GRAVEL. | GW | | | B13-S1-1.0/1.5 | 1305 | NA | 0.0 | Not Observed | NA |
| | Drilling refusal at 3 feet. | | | | | | | | | |
| | TD at 3 ft bgs.<br>Groundwater not encountered ATD.<br>Boring backfilled with bentonite chips. | | | | | | | | | |
| 5 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 25 | | | | | | | | | | |

## Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- Groundwater level at time of drilling or date of measurement (ATD)

Monitoring Well

- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

**ASSOCIATED ENVIRONMENTAL GROUP, LLC** **LOG OF BOREHOLE**

| | | | | |
|---|---|---|---|---|
| **PROJECT:** | Gibson Road - Phase II ESA | **JOB #** 11-140 | **BORING #** B-14 | **PAGE 1 OF 1** |
| **Location:** | 2400 Gibson Road, Everett WA | **Approximate Elevation:** | | |
| **Subcontractor/Equipment:** | Pacific NW Probe, Rodney Gilseth | **Drilling Method:** | Direct Push Probe | |
| **Date:** | 9/21/2011 | **Logged By:** | D. Brentlinger | |

| Depth (ft) | Soil Description | Unified Soil Symbol | Sample Type | Sample Recovery | Sample Number | Time | Blows/Foot | PID Reading | Sheen | Monitoring Well |
|---|---|---|---|---|---|---|---|---|---|---|
| | Gray-brown, moist, medium dense, silty SAND. | SM | | | | 1310 | NA | | Not Observed | NA |
| 5 | | | | | B14-S1-3.0/4.0 | 1315 | | 0.0 | | |
| | Brown-yellow, very moist, medium dense, sandy SILT to gravelly, silty SAND. | ML SW | | | B14-S2-7.0/8.0 | 1320 | | 0.0 | | |
| 10 | Gray, moist, stiff CLAY. | | | | B14-S3-10.0/10.5 | 1325 | | 0.0 | | |
| 15 | Gray, moist, very dense, sandy SILT. becomes moist to wet at 16 feet bgs | ML | | | B14-S4-15.0/15.5 | 1330 | | 0.0 | | |
| | Drilling refusal at 18 feet. | | | | | 1630 | | | | |
| 20 | TD at 18 ft bgs.<br>Groundwater encountered at approximately 16 ft bgs ATD.<br>Inserted temporary PVC well screen at 15 ft to 18 ft to collect groundwater.<br>Insufficient quantity of groundwater to collect for lab sample.<br>Boring backfilled with bentonite chips. | | | | | | | | | |
| 25 | | | | | | | | | | |

## Explanation

- 2-inch O.D. split spoon sample
- No Recovery
- Contact located approximately
- Groundwater level at time of drilling or date of measurement (ATD)

Monitoring Well
- Clean Sand
- Bentonite
- Grout/Concrete
- Screened Casing
- Blank Casing

# LABORATORY ANALYTICAL RESULTS

## SUBSURFACE INVESTIGATION
## DIRECT PUSH PROBE

# Libby Environmental, Inc.

# Chain of Custody Record

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 9/23/11 Page: 1 of 1

Client: AEG

Project Manager: M. Chen

Address: 1018 Capitol Way #201 Olympia

Project Name: Gibson Road

Phone: (360) 352 9835 Fax:

Location: 2400 Gibson Rd City: Everett WA

Client Project # 11-140

Collector: dbrentlinger Date of Collection: 9/21/11

| Sample Number | Depth | Time | Sample Type | Container Type | VOA 8021B | VOA 8021B BTEX Only | VOA 8260 | SEMI VOL 8270 | NWTPH-HCID | NWTPH-Gx | NWTPH-Dx | NWTPH-Dx Ext. | PAH 8270 | PCB's 8082 | MTCA 5 Metals * | | | Field Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 B1-S1-3/3½ | | 1200 | S | VOA/4oz | X | | | X | | | | | | | | | | |
| 2 B2-S1-2½/3 | | 1005 | S | VOA/4oz | X | | | | | X | | | | X | | | | |
| 3 B3-S3-10/10½ | | 910 | S | VOA/4oz | X | X | | | | X | | | | X | | | | |
| 4 B4-S2-C½/7 | | 945 | S | VOA/4oz | X | | | X | | | | | | | | | | |
| 5 B5-S1-3/3½ | | 1045 | S | VOA/4oz | | | | X | | | | | | | | | | |
| 6 B6-S1-3/3½ | | 1110 | S | 4oz | | | | | | X | | | | | | | | |
| 7 B7-S2-8/8½ | | 1140 | S | VOA/4oz | X | | | | | X | | | | X | | | | |
| 8 B8-S1-1/1½ | | 1345 | S | VOA/4oz | X | X | | | | X | | | | X | | | | |
| 9 B9-S1-3/3½ | | 1225 | S | VOA/4oz | X | | | | | X | | | | X | | | | B9 Hold |
| 10 B10-S1-1/1½ | | 1235 | S | 4oz | | | | | | X | | | | | | | | |
| 11 B11-S1-1/1½ | | 1245 | S | VOA/4oz | | | | X | | | | | | | | | | |
| 12 B12-S1-1/1½ | | 1255 | S | 4oz | | | | | | X | | | | | | | | |
| 13 B13-S1-1/1½ | | 1305 | S | VOA/4oz | X | | | | | X | | | | | | | | |
| 14 B14-S4-15/15 | ½ | 1330 | S | VOA/4oz | X | X | | | | X | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | |

| Relinquished by: | Date / Time | Received by: | Date / Time |
|---|---|---|---|
| [signature] | 9/23/11 7:45 | [signature] | 9-23-11 9:15 |
| Relinquished by: | Date / Time | Received by: | Date / Time |
| Relinquished by: | Date / Time | Received by: | Date / Time |

Sample Receipt:

| | |
|---|---|
| Good Condition? | |
| Cold? | |
| Seals Intact? | |
| Total Number of Containers | |

Remarks:
* metals
Pb, Cr, Cd, As, Hg
STANDARD TAT

Distribution: White - Lab, Yellow - File, Pink - Originator

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

GIBSON ROAD PROJECT
Everett, Washington
AEG, LLC
Client Project # 11-140
Libby Project No. L110923-1

## BTEX (EPA Method 8260C) in Soil

| Sample Number | Date Analyzed | Benzene (mg/kg) | Toluene (mg/kg) | Ethylbenzene (mg/kg) | Xylenes (mg/kg) | Surrogate Recovery (%) |
|---|---|---|---|---|---|---|
| Method Blank | 9/26/11 | nd | nd | nd | nd | 131 |
| LCS | 9/26/11 | 98% | 95% | | | 113 |
| B1-S1-3/3.5' | 9/26/11 | nd | nd | nd | nd | 114 |
| B2-S1-2.5/3' | 9/26/11 | nd | nd | nd | nd | 130 |
| B3-S3-10/10.5' | 9/26/11 | nd | nd | nd | nd | 129 |
| B4-S2-6.5/7' | 9/26/11 | nd | nd | nd | nd | 122 |
| B7-S2-8/8.5' | 9/26/11 | nd | nd | nd | nd | 134 |
| B8-S1-1/1.5' | 9/26/11 | nd | nd | nd | nd | 118 |
| B13-S1-1/1.5' | 9/26/11 | nd | nd | nd | nd | 119 |
| B14-S4-15/15.5 | 9/26/11 | nd | nd | nd | nd | 115 |
| B14-S4-15/15.5 Dup | 9/26/11 | nd | nd | nd | nd | 119 |
| MS | 9/26/11 | 111% | 98% | | | 120 |
| MSD | 9/26/11 | 100% | 84% | | | 116 |
| Practical Quantitation Limit | | 0.02 | 0.10 | 0.05 | 0.15 | |

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Toluene-d8): 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

GIBSON ROAD PROJECT
Everett, Washington
AEG, LLC
Client Project # 11-140
Libby Project No. L110923-1

**Analyses of Diesel (NWTPH-Dx) in Soil**

| Sample Number | Date Analyzed | Surrogate Recovery (%) | Diesel (mg/kg) |
|---|---|---|---|
| Method Blank | 9/26/11 | 126 | nd |
| B1-S1-3/3.5' | 9/26/11 | 132 | nd |
| B2-S1-2.5/3' | 9/26/11 | 86 | nd |
| B3-S3-10/10.5' | 9/26/11 | 121 | nd |
| B4-S2-6.5/7' | 9/26/11 | 103 | nd |
| B5-S1-3/3.5' | 9/26/11 | 126 | nd |
| B5-S1-3/3.5' Dup | 9/26/11 | 110 | nd |
| B6-S1-3/3.5' | 9/26/11 | 131 | nd |
| B7-S2-8/8.5' | 9/26/11 | 95 | nd |
| B8-S1-1/1.5' | 9/26/11 | 117 | nd |
| B10-S1-1/1.5' | 9/26/11 | 107 | nd |
| B11-S1-1/1.5' | 9/26/11 | 125 | nd |
| B12-S1-1/1.5' | 9/26/11 | 108 | nd |
| B13-S1-1/1.5' | 9/26/11 | 126 | nd |
| B14-S4-15/15.5' | 9/26/11 | 109 | nd |
| B14-S4-15/15.5'DUP | 9/26/11 | 130 | nd |
| Practical Quantitation Limi | | | 25 |

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

GIBSON ROAD PROJECT
Everett, Washington
AEG, LLC
Client Project # 11-140
Libby Project No. L110923-1

**Hydrocarbon Identification by NWTPH-HCID for Soil**

| Sample Number | Date Analyzed | Surrogate Recovery (%) | Gasoline (mg/kg) | Diesel (mg/kg) | Mineral Oil (mg/kg) | Heavy Oil (mg/kg) |
|---|---|---|---|---|---|---|
| Method Blank | 9/26/11 | 126 | nd | nd | nd | nd |
| B1-S1-3/3.5' | 9/26/11 | 132 | nd | nd | nd | nd |
| B4-S2-6.5/7' | 9/26/11 | 103 | nd | nd | nd | nd |
| B5-S1-3/3.5' | 9/26/11 | 126 | nd | nd | nd | nd |
| B5-S1-3/3.5' Dup | 9/26/11 | 110 | nd | nd | nd | nd |
| B11-S1-1/1.5' | 9/26/11 | 125 | nd | nd | nd | nd |
| Practical Quantitation Limit | | | 20 | 50 | 100 | 100 |

"nd" Indicates not detected at listed detection limits.
"D" Indicates detected above the listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

GIBSON ROAD PROJECT
Everett, Washington
AEG, LLC
Client Project # 11-140
Libby Project No. L110923-1

## Analyses of Metals in Soil by EPA Method 7010 Series

| Sample Number | Date Analyzed | Lead (mg/kg) | Cadmium (mg/kg) | Chromium (mg/kg) | Arsenic (mg/kg) |
|---|---|---|---|---|---|
| Method Blank | 9/24/11 | nd | nd | nd | nd |
| B2-S1-2.5/3 | 9/24/11 | nd | nd | 15 | nd |
| B3-S3-10/10.5 | 9/24/11 | nd | nd | 17 | nd |
| B7-S2-8/8.5 | 9/24/11 | nd | nd | 9.6 | nd |
| B8-S1-1/1.5 | 9/24/11 | 5.4 | nd | 16 | nd |
| B8-S1-1/1.5 Dup | 9/24/11 | 6.0 | nd | 16 | nd |
| Practical Quantitation Limit | | 5.0 | 1.0 | 5.0 | 5.0 |

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

GIBSON ROAD PROJECT
Everett, Washington
AEG, LLC
Client Project # 11-140
Libby Project No. L110923-1

## QA/QC for Metals in Soil by EPA Method 7010 Series

| Sample Number | Date Analyzed | Lead (% Recovery) | Cadmium (% Recovery) | Chromium (% Recovery) | Arsenic (% Recovery) |
|---|---|---|---|---|---|
| LCS | 9/24/11 | 95% | 88% | 92% | 111% |
| B8-S1-1/1.5 MS | 9/24/11 | 70% | int | int | int |
| B8-S1-1/1.5 MSD | 9/24/11 | int | int | int | int |
| RPD | 9/24/11 | | | | |
| Practical Quantitation Limit | | 5.0 | 1.0 | 5.0 | 5.0 |

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Dirk Peterson

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

GIBSON ROAD PROJECT
Everett, Washington
AEG, LLC
Client Project # 11-140
Libby Project No. L110923-1

## Analyses of Mercury in Soil by EPA Method 7471

| Sample Number | Date Analyzed | Mercury (mg/kg) |
|---|---|---|
| Method Blank | 9/24/11 | nd |
| B2-S1-2.5/3 | 9/24/11 | nd |
| B3-S3-10/10.5 | 9/24/11 | nd |
| B7-S2-8/8.5 | 9/24/11 | nd |
| B8-S1-1/1.5 | 9/24/11 | nd |
| B8-S1-1/1.5 Dup | 9/24/11 | nd |
| Practical Quantitation Limi | | 0.5 |

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcut

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

GIBSON ROAD PROJECT
Everett, Washington
AEG, LLC
Client Project # 11-140
Libby Project No. L110923-1

## QA/QC for Mercury by EPA Method 7471

| Sample Number | Date Analyzed | Mercury (mg/kg) |
|---|---|---|
| LCS | 9/24/11 | 107% |
| B8-S1-1/1.5 MS | 9/24/11 | 78% |
| B8-S1-1/1.5 MSD | 9/24/11 | 70% |
| RPD | 9/24/11 | 11% |
| Practical Quantitation Limi | | 0.5 |

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcut

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

GIBSON ROAD PROJECT
Everett, Washington
AEG, LLC
Client Project # 11-140
Libby Project No. L110923-1

## Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Soil

| Sample Number | Date Analyzed | Surrogate Recovery (%) | Diesel (mg/kg) | Mineral Oil (mg/kg) | Oil (mg/kg) |
|---|---|---|---|---|---|
| Method Blank | 9/26/11 | 126 | nd | nd | nd |
| B2-S1-2.5/3' | 9/26/11 | 86 | nd | nd | nd |
| B3-S3-10/10.5' | 9/26/11 | 121 | nd | nd | nd |
| B5-S1-3/3.5' | 9/26/11 | 126 | nd | nd | nd |
| B7-S2-8/8.5' | 9/26/11 | 95 | nd | nd | nd |
| B8-S1-1/1.5' | 9/26/11 | 117 | nd | nd | nd |
| B13-S1-1/1.5' | 9/26/11 | 126 | nd | nd | nd |
| Practical Quantitation Limit | | | 25 | 40 | 40 |

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

## LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

GIBSON ROAD PROJECT
Everett, Washington
AEG, LLC
Client Project # 11-140
Libby Project No. L110923-1

**VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260C IN SOIL**

| Sample Description | | Method Blank | B3-S3-10 /10.5' | B8-S1-1 /1.5' | B14-S4-15 /15.5' | B14-S4-15 /15.5' Dup |
|---|---|---|---|---|---|---|
| Date Sampled | Reporting | N/A | 9/21/11 | 9/21/11 | 9/21/11 | 9/21/11 |
| Date Analyzed | Limits | 9/26/11 | 9/26/11 | 9/26/11 | 9/26/11 | 9/26/11 |
| | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) |
| Dichlorodifluoromethane | 0.06 | nd | nd | nd | nd | nd |
| Chloromethane | 0.06 | nd | nd | nd | nd | nd |
| Vinyl chloride | 0.02 | nd | nd | nd | nd | nd |
| Bromomethane | 0.09 | nd | nd | nd | nd | nd |
| Chloroethane | 0.06 | nd | nd | nd | nd | nd |
| Trichlorofluoromethane | 0.05 | nd | nd | nd | nd | nd |
| 1,1-Dichloroethene | 0.05 | nd | nd | nd | nd | nd |
| Methylene chloride | 0.02 | nd | nd | nd | nd | nd |
| Methyl *tert*- Butyl Ether (MTBE) | 0.02 | nd | nd | nd | nd | nd |
| *trans* -1,2-Dichloroethene | 0.02 | nd | nd | nd | nd | nd |
| 1,1-Dichloroethane | 0.02 | nd | nd | nd | nd | nd |
| 2,2-Dichloropropane | 0.05 | nd | nd | nd | nd | nd |
| *cis* -1,2-Dichloroethene | 0.02 | nd | nd | nd | nd | nd |
| Chloroform | 0.02 | nd | nd | nd | nd | nd |
| 1,1,1-Trichloroethane (TCA) | 0.02 | nd | nd | nd | nd | nd |
| Carbon tetrachloride | 0.02 | nd | nd | nd | nd | nd |
| 1,1-Dichloropropene | 0.02 | nd | nd | nd | nd | nd |
| Benzene | 0.02 | nd | nd | nd | nd | nd |
| 1,2-Dichloroethane (EDC) | 0.03 | nd | nd | nd | nd | nd |
| Trichloroethene (TCE) | 0.03 | nd | nd | nd | nd | nd |
| 1,2-Dichloropropane | 0.02 | nd | nd | nd | nd | nd |
| Dibromomethane | 0.04 | nd | nd | nd | nd | nd |
| Bromodichloromethane | 0.02 | nd | nd | nd | nd | nd |
| cis-1,3-Dichloropropene | 0.02 | nd | nd | nd | nd | nd |
| Toluene | 0.02 | nd | nd | nd | nd | nd |
| Trans-1,3-Dichloropropene | 0.03 | nd | nd | nd | nd | nd |
| 1,1,2-Trichloroethane | 0.03 | nd | nd | nd | nd | nd |
| Tetrachloroethene (PCE) | 0.02 | nd | nd | nd | nd | nd |
| 1,3-Dichloropropane | 0.05 | nd | nd | nd | nd | nd |
| Dibromochloromethane | 0.03 | nd | nd | nd | nd | nd |
| 1,2-Dibromoethane (EDB) * | 0.005 | nd | nd | nd | nd | nd |
| Chlorobenzene | 0.02 | nd | nd | nd | nd | nd |
| 1,1,1,2-Tetrachloroethane | 0.03 | nd | nd | nd | nd | nd |
| Ethylbenzene | 0.03 | nd | nd | nd | nd | nd |
| Total Xylenes | 0.03 | nd | nd | nd | nd | nd |
| Styrenes | 0.02 | nd | nd | nd | nd | nd |

## LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

GIBSON ROAD PROJECT
Everett, Washington
AEG, LLC
Client Project # 11-140
Libby Project No. L110923-1

**VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260C IN SOIL**

| Sample Description | | Method Blank | B3-S3-10 /10.5' | B8-S1-1 /1.5' | B14-S4-15 /15.5' | B14-S4-15 /15.5' Dup |
|---|---|---|---|---|---|---|
| Date Sampled | Reporting | N/A | 9/21/11 | 9/21/11 | 9/21/11 | 9/21/11 |
| Date Analyzed | Limits | 9/26/11 | 9/26/11 | 9/26/11 | 9/26/11 | 9/26/11 |
| | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) |
| Bromoform | 0.02 | nd | nd | nd | nd | nd |
| Isopropylbenzene | 0.08 | nd | nd | nd | nd | nd |
| 1,2,3-Trichloropropane | 0.02 | nd | nd | nd | nd | nd |
| Bromobenzene | 0.03 | nd | nd | nd | nd | nd |
| 1,1,2,2-Tetrachloroethane | 0.02 | nd | nd | nd | nd | nd |
| n-Propylbenzene | 0.02 | nd | nd | nd | nd | nd |
| 2-Chlorotoluene | 0.02 | nd | nd | nd | nd | nd |
| 4-Chlorotoluene | 0.02 | nd | nd | nd | nd | nd |
| 1,3,5-Trimethylbenzene | 0.02 | nd | nd | nd | nd | nd |
| tert-Butylbenzene | 0.02 | nd | nd | nd | nd | nd |
| 1,2,4-Trimethylbenzene | 0.02 | nd | nd | nd | nd | nd |
| sec-Butylbenzene | 0.02 | nd | nd | nd | nd | nd |
| 1,3-Dichlorobenzene | 0.02 | nd | nd | nd | nd | nd |
| Isopropyltoluene | 0.02 | nd | nd | nd | nd | nd |
| 1,4-Dichlorobenzene | 0.02 | nd | nd | nd | nd | nd |
| 1,2-Dichlorobenzene | 0.02 | nd | nd | nd | nd | nd |
| n-Butylbenzene | 0.02 | nd | nd | nd | nd | nd |
| 1,2-Dibromo-3-Chloropropane | 0.03 | nd | nd | nd | nd | nd |
| 1,2,4-Trichlorolbenzene | 0.05 | nd | nd | nd | nd | nd |
| Hexachloro-1,3-butadiene | 0.10 | nd | nd | nd | nd | nd |
| Naphthalene | 0.03 | nd | nd | nd | nd | nd |
| 1,2,3-Trichlorobenzene | 1.0 | nd | nd | nd | nd | nd |
| Surrogate Recovery | | | | | | |
| Dibromofluoromethane | | 69 | 67 | 74 | 77 | 75 |
| 1,2-Dichloroethane-d4 | | 116 | 114 | 124 | 125 | 118 |
| Toluene-d8 | | 131 | 129 | 118 | 116 | 119 |
| 4-Bromofluorobenzene | | 86 | 92 | 81 | 83 | 83 |

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination.

* INSTRUMENT DETECTION LIMIT

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

**LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY**

GIBSON ROAD PROJECT
Everett, Washington
AEG, LLC
Client Project # 11-140
Libby Project No. L110923-1

**QA/QC Data - EPA 8260C Analyses**

| Sample Identification: 1-S1-3/3.5' | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Matrix Spike | | | Matrix Spike Duplicate | | | RPD |
| | Spiked Conc. (mg/kg) | Measured Conc. (mg/kg) | Spike Recovery (%) | Spiked Conc. (mg/kg) | Measured Conc. (mg/kg) | Spike Recovery (%) | |
| 1,1-Dichloroethene | 0.5 | 0.44 | 88 | 0.5 | 0.47 | 94 | 6.6 |
| Benzene | 0.5 | 0.56 | 112 | 0.5 | 0.50 | 100 | 11.3 |
| Toluene | 0.5 | 0.49 | 98 | 0.5 | 0.42 | 84 | 15.4 |
| Chlorobenzene | 0.5 | 0.66 | 132 | 0.5 | 0.60 | 120 | 9.5 |
| Trichloroethene (TCE) | 0.5 | 0.54 | 108 | 0.5 | 0.45 | 90 | 18.2 |
| Surrogate Recovery | | | | | | | |
| Dibromofluoromethane | | | 70 | | | 74 | |
| 1,2-Dichloroethane-d4 | | | 125 | | | 129 | |
| Toluene-d8 | | | 120 | | | 116 | |
| 4-Bromofluorobenzene | | | 86 | | | 84 | |

| Laboratory Control Sample | | | |
|---|---|---|---|
| | Spiked Conc. (mg/kg) | Measured Conc. (mg/kg) | Spike Recovery (%) |
| 1,1-Dichloroethene | 0.5 | 0.63 | 126 |
| Benzene | 0.5 | 0.49 | 98 |
| Toluene | 0.5 | 0.48 | 96 |
| Chlorobenzene | 0.5 | 0.59 | 118 |
| Trichloroethene (TCE) | 0.5 | 0.50 | 100 |
| Surrogate Recovery | | | |
| Dibromofluoromethane | | | 84 |
| 1,2-Dichloroethane-d4 | | | 115 |
| Toluene-d8 | | | 114 |
| 4-Bromofluorobenzene | | | 74 |

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Paul Burke