



ASSOCIATED  
ENVIRONMENTAL  
GROUP, LLC

## INTERIM SITE REMEDIATION & PROBE SUBSURFACE INVESTIGATIONS

*Conducted on:*

**CLE ELUM 76**  
(Former DeVere and Sons Distributing)  
1000 First Street E  
Cle Elum, Washington 98922  
(Ecology VCP Site # CE0281/Cleanup Site ID 7159 & 7160)

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## 1.0 INTRODUCTION

Associated Environmental Group, LLC (AEG) has completed Interim Site Remediation & Probe Subsurface Investigations at the Cle Elum 76 facility (formerly known as Devere & Son Distributing), located at 1000 E 1st Street in Cle Elum, Kittitas County, Washington (the Site). R.E. Powell Distributing, petroleum fuel distributor for the Cle Elum 76 retail facility, retained AEG to assist in an emergency response and subsequent soil remedial action and subsurface investigations due to a fuel spill at the bulk fuel facility area of the Site on July 23, 2012. The Tasks completed were performed in five phases:

- 1) Emergency Response and Interim Site Remediation where petroleum contaminated soil (PCS) was excavated and disposed offsite at a regulated landfill occurred in July 2012. Existing monitoring wells on-site were monitored/sampled in August 2012 to assess potential impact;
- 2) 1<sup>st</sup> Phase Probe Subsurface Investigation to confirm and assess potential areas (on-site and outside of the fuel containment area) of adverse impact was conducted on July 31, 2012;
- 3) 2<sup>nd</sup> Phase Probe Subsurface Investigation involved further characterization of the impacted areas (on-site and outside of the fuel containment area) and was conducted on October 10, 2012;
- 4) 3<sup>rd</sup> Phase Probe Subsurface Investigation involved characterization of impacted soil within the bulk fuel containment area via a limited access rig (where the fuel spill occurred) and also at the northern and eastern areas of the Site. The field work was completed on November 6, 2012; and
- 5) As of the date of publication of this Report, selected soil and groundwater samples have been submitted for forensic analyses to ascertain the presence of multiple releases of petroleum hydrocarbons and their characteristics as well as chemical degradation and tracers. Findings from the forensic laboratory analyses will be presented under separate cover.

Tasks completed during the Interim Site Remediation (involving PCS remedial action) were presented to the Washington State Department of Ecology (Ecology) Lead Spill Responder/Regional Safety Officer and the US Environmental Protection Agency (EPA) Region X Federal On-Scene Coordinator, and consultation with the Site owner (Mr. Paul Jhutti), RE Powell Distributing (RE Powell) representatives, and the Emergency Response Manager of Action Environmental Group (Action Environmental) on behalf of Nationwide Insurance.

The scope of work (SOW) for the Interim Site Remediation was developed by the above involved parties. The SOW for subsequent subsurface investigations was developed by AEG in conjunction with Action Environmental and RE Powell. Tasks completed for the remedial investigation were conducted in general accordance with the American Society for Testing and Materials (ASTM) Standard EE 1689 – 95 (Reapproved 2008), *Standard Guide for Developing*

*Conceptual Site Models for Contaminated Sites* and ASTM Standard E 2531 – 06, *Standard Guide for Development of Conceptual Site Models and Remediation Strategies for Light Nonaqueous Phase Liquids Released to the Subsurface*. Field methodologies followed the regulatory framework established within Ecology Model Toxics Control Act Chapter 173-340 of the Washington Administrative Code (WAC) (Ecology, 2001 and revised 2007), Model Toxics Control Act (MTCA) cleanup regulations, and Ecology’s *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action* (Ecology, 10/2009). Soil and groundwater sampling methodologies are presented in Appendix D.

### **1.1 Site Background**

The Site, a 76 brand retail fueling station and associated convenience store, is located at the southeast corner of E 1<sup>st</sup> Street and N Shore Ave. in Cle Elum, Washington.

Its corresponding parcel number is Kittitas County Parcel No. 640536 which is situated in Section 25, Township 20 North, and Range 15 East as shown in Figure 2. The western part of Site houses the bulk fuel refueling area for the fueling station which is contained within a 2-foot high containment wall area and is comprised of the following: 1) a 20,000-gallon vertical aboveground storage tank (AST) containing red diesel fuel (designated as T1); 2) a 20,000-gallon vertical AST containing regular diesel fuel (designated as T2); 3) a 20,000-gallon horizontal AST containing gasoline fuel (designated as T3); and 4) a split-tank 18,000-gallon horizontal AST containing gasoline fuel (designated as T4). The fuel spill occurred at the split-tank AST (T4). The fuel dispensary header area is also contained within this area. A diesel Cardlock facility is located adjacent southwest of the containment area. This Cardlock facility was not in operation prior to the fuel spill and remains closed to date.

A canopy housing four dispenser islands (currently operating) with an associated convenience store is located at the northern and eastern area, respectively, of the Site. The remaining structures at the property include a car wash (southeastern) and a warehouse/office building structure (southern area of the property). According to Ecology, the Site historically had five underground storage tanks (USTs) including the following: 1) five 1,000-gallon gasoline containing USTs; and 2) one 4,000-gallon diesel fuel containing UST which was decommissioned by PNE in 1994. It is unclear when the remaining USTs were decommissioned. There are currently six monitoring wells at the property (MW-1 through MW-6). These monitoring wells were placed primarily in the northern, central-eastern, and southern area of the property in response to historical fuel spills at the Site. Figure 1, *Site & Vicinity Map*, presents the general boundaries and vicinity area of the Site. The primary features of the Site and approximate property boundary are presented in Figure 2. Photographs taken during all phases of work are presented in Appendix A, *Site Photographs*.

Based on our review of documents provided by RE Powell, it is estimated that approximately 500 plus gallons of gasoline fuel was spilled on July 23, 2012 when a fuel delivery representative with General Transport delivered to the wrong AST (the 18,000-gallon split tank AST). Fuel spilled over the sides of the AST and flowed surficially (based on presence of standing fuel on the asphalt surface) west-northwest outside the containment area towards a catch basin (dry well), located adjacent north-northwest of the fuel containment area. Documentation for the estimation of the volume of gasoline fuel spilled is provided in Appendix B, *Supporting Documents*.

RE Powell contacted NRC Environmental Services (NRC) as the Emergency Responder to clean up the initial fuel spill area. NRC was also retained to complete the Interim Site Remediation via PCS excavation/removal/disposal at a regulated landfill.

## ***1.2 Previous Environmental Work Summary***

The following timeline of previous environmental activities at the Site is based on AEG's environmental investigations and a review of documents at Ecology:

### Investigations 1994 - 2006

On March 9, 1994, a Pacific Northern Environmental (PNE) technician performed a tracer tank/line test at the Site and noted that a probe, installed by PNE in conjunction with tracer testing conducted a year earlier had been removed. PNE replaced the missing tracer probe. On March 10, 1994, the facility operator's staff performed a tank volume measurement on a 15,000 gallon aboveground storage tank (AST) and realized that there was an 8,400-gallon loss of product. Upon investigation, the operator found that the newly installed replacement tracer probe had punctured the 2-inch fiberglass product line from the diesel AST to the pump island.

On March 12, 1994, five test pits were excavated at the Site to evaluate the concern regarding offsite migration of petroleum products onto the Site and to remove the diesel product fuel from the groundwater. Of the five test pits excavated, only the fifth test pit, located approximately 15 feet east of the spill area, showed petroleum impacted soil and groundwater. A 12-inch perforated PVC extraction pipe was installed in the test pit, and a water-diesel (liquid phase hydrocarbon) mixture was pumped out of the pipe. The extraction pump was thereafter disconnected by PNE because very little product had been recovered.

Status reports filed by Pacific Northern Geoscience (PNG) in January 1995 indicated the following:

- Widespread diesel impact was found in borings and monitoring wells across the site, including areas to the south of the warehouse; north, south and east of both pump islands. (See the attached PNG Figure 1).

- Proposal to install additional monitoring wells offsite.
- A discussion of seasonal ground-water flow patterns indicating a flow reversal from southwest to northeast during dry periods in September and October.
- Discussions indicating that passive product recovery efforts were not successful.
- Initial discussions concerning installation of a ground-water pump and treat system. Subsequent draw down tests did not yield significant product and the proposal for the system was withdrawn.
- Recommendations to cease product recovery effort, but to complete the RI/FS by further on/off-site characterization.

There is no further information regarding this release, other than a May 15, 1996 note from Mr. Gerald Tousley of the Kittitas County Health Department that the 1994 incident was closed because the Site Hazard Assessment process was completed.

In that same memo, Mr. Tousley made reference to a 200 gallon leak of unleaded gas from a 1000 gallon underground storage tank (UST) that had apparently occurred over a span of several months. Mr. Tousley reported that the owner had told him that the offending tank had been drained and that he intended to remove all USTs and install ASTs. Furthermore, Mr. Tousley reported that documentation existed to show that the subsurface soil and groundwater remained contaminated. Mr. Tousley assigned the site a hazard ranking of 5 with a score of one representing the highest relative level of concern and five the lowest.

In June 1994, a Notice of Intent to remove a 4,000 gallon diesel UST was filed with the Ecology. Ecology files do not show a corresponding UST decommissioning report.

On July 16 through 17, 1996, SAGE Earth Sciences, Inc. (SAGE) provided UST closure site assessment services during the decommissioning and removal of one 1,000 gallon leaded and one 1,000 gallon unleaded gasoline UST from an area adjacent south of the Site's current pump islands. SAGE reported that the tanks were "*found to be in fair condition and no holes were observed*" (SAGE, 9/1996a). Soil and groundwater were impacted by gasoline and diesel petroleum hydrocarbons and associated volatile organic compounds, at concentrations above Ecology MTCA Method A cleanup levels. Elevated concentrations of gasoline TPH (20,000 ug/L), diesel range TPH (320,000 ug/L), and benzene (130 ug/L) were reported in a groundwater sample collected from the single excavation pit (SAGE, 9/1996a). Ecology's current Method A cleanup levels for these constituents in groundwater are 800 ug/L, 500 ug/L, and 5 ug/L, respectively. Approximately 80 cubic yard of soil generated during removal of USTs were temporarily stockpiled and subsequently used for backfilling the excavation pit based on laboratory analytical results of stockpile soil samples collected by SAGE. Selected figures presenting the layout of the two USTs removed during July 1996 are included in Appendix B, *Supporting Documents*.

On August 13, 1996, SAGE Earth Sciences, Inc. (SAGE) provided UST closure site assessment services during the decommissioning and removal of three additional USTs located adjacent west of the Site's convenience store: two 1,000 gallon unleaded and one 1,000 gallon leaded gasoline USTs. SAGE reported that the tanks were "*found to be in fair condition and two (2) holes were observed at the base of Tank #5 (the leaded gasoline UST)*" (SAGE, 9/1996b). Soil and groundwater were impacted by gasoline and diesel petroleum hydrocarbons and associated volatile organic compounds, at concentrations above Ecology MTCA Method A cleanup levels. Elevated concentrations of gasoline TPH (350,000 ug/L), diesel range TPH (480,000 ug/L), and benzene (2,600 ug/L) were reported in a groundwater sample collected from the single excavation pit (SAGE, 9/1996b). Approximately 70 cubic yard of soil generated during removal of USTs were temporarily stockpiled and subsequently used for backfilling the excavation pit based on laboratory analytical results of stockpile soil samples collected by SAGE. Selected figures presenting the layout of the three USTs removed during August 1996 are included in Appendix B.

On March 29, 1999, James DeVere, owner of the Site, filed a SPCC Plan Certification that declared that the facility had been cleaned up per the US Environmental Protection Agency.

On August 9, 2000, Ecology received information regarding a small surface spill of approximately 40 gallons of oil/petroleum from an AST. The spill was reportedly cleaned up and on September 28, 2000, Mr. Dick Bassett from Ecology recommended that a No Further Action letter be issued. On May 21, 2003, there was a report of a small release (between 10 and 50 gallons) of heating oil from an UST. Blue Mountain Environmental Consulting Services (Blue Mountain) was retained and cleaned up the spill.

In 2003, Blue Mountain completed a Site Cleanup and Site Assessment at the Site due to an RE Powell kerosene or heating oil fuel spill at the bulk fuel storage area at the facility. Blue Mountain estimated that "*approximately 10 to 50 gallons of heating oil was released into the ground*". The pumps and pipings in vicinity of a bleeder valve within the bulk fuel area were dismantled to access and excavated/removed approximately "*50 to 80 cu/Yards*" of petroleum contaminated soil (Blue Mountain, 2003). Confirmation soil samples were collected after the cleanup activities were completed. A new concrete containment wall was constructed. The bleeder valves at the pumps were modified and directed into the aboveground storage tanks instead of individual PVC buckets (Blue Mountain, 2003).

On August 9, 2006, AEG was retained by Mr. DeVere to sample the three groundwater monitoring wells onsite to check for the presence of residual petroleum contamination from the historical releases and the subsequent cleanup action. Analytical results indicated presence of diesel range hydrocarbons and benzene at levels slightly above Ecology MTCA Method A

groundwater cleanup levels at MW-1 and MW-4. Based on these results, AEG recommended a Phase II ESA Site Characterization to delineate the extent of petroleum contamination at the Site.

On August 31, 2006 AEG conducted a Preliminary Site Characterization at the Site. Five borings were advanced, and three borings were completed as monitoring wells. Analytical results indicated elevated concentrations of gasoline and diesel range total petroleum hydrocarbons (TPH) and benzene in groundwater at levels above Ecology MTCA Method A groundwater cleanup levels. AEG also conducted bioremediation at the Site via injection of 400 pounds of Regenesis Oxygen Releasing Compound (ORC) on April 3, 2007. ORC was injected to accelerate the naturally occurring aerobic contaminant biodegradation in groundwater and saturated soils. ORC was injected from 6 1/2 feet to 10 feet bgs at eight borings. These borings were placed upgradient of the ASTs and dispenser islands at the subject property. Approximately 50 pounds of ORC was injected per boring.

#### Quarterly Groundwater Events 10/2006 – 4/2009

AEG had conducted consecutive quarterly groundwater monitoring/sampling events at the Site from October 2006 through April 2009. During these events, groundwater samples were submitted for analysis of the following: 1) gasoline range TPH via Northwest Method NWTPH-Gx, and 2) gasoline associated volatile organic compounds (VOCs) including BTEX constituents via EPA Method 8021B. Groundwater samples during the initial groundwater quarterly event in October 2006 were submitted for the full suite of analyticals for gasoline range organics as per Ecology Table 830-1, *Required Testing for Petroleum Releases*, and diesel through mineral oil range TPH. No detectable concentrations of associated fuel additives and blending components were detected during this event. Therefore, groundwater samples for subsequent quarterly groundwater events were analyzed for gasoline range TPH, BTEX constituents, and diesel through mineral oil range TPH.

Groundwater analytical results for all monitoring wells with the exception of well MW-4 indicated either no detectable concentrations or detections below Ecology MTCA Method A groundwater cleanup levels for all constituents of concern (gasoline range TPH and BTEX) from October 2006 through August 2007/November 2007 quarterly events (refer to Table 1, *Summary of Groundwater Analytical Results*). AEG ceased groundwater monitoring/sampling activities at MW-1, MW-2b, MW-3, MW-5b, and MW-6 due to the attainment of four quarters of groundwater events where the detections were either no detectable concentrations or detections below Ecology MTCA Method A groundwater cleanup levels. AEG continued to conduct groundwater sampling activities only at MW-4 after these events. Subsequent groundwater analytical results for MW-4 from June 2008 through April 2009 quarterly events have also indicated either no detectable concentrations or detections below Ecology MTCA Method A groundwater cleanup levels for all constituents of concern. Table 1, *Summary of Quarterly*

*Groundwater Analytical Results*, presents laboratory results for all monitoring wells. Figure 1, *Site Plan*, presents the locations of monitoring wells at the Site.

Additionally, groundwater samples for these events were analyzed for diesel, heavy oil, and mineral oil range TPH from October 2006 through June 2008. With the exception of detections of diesel range TPH during only the first quarterly event in October 2006, there have been no detectable concentrations of diesel through mineral oil range TPH from the February 2007 through April 2009 quarterly groundwater events.

#### Quarterly Groundwater Events 11/2009 - 7/2010

Based on the request from Ecology Site Managers Norm Peck and Valerie Bound that four consecutive groundwater monitoring/sampling events be conducted at MW-1, MW-2b, and MW-6 prior to requesting a *No Further Action* determination, AEG subsequently conducted the additional quarterly groundwater events at the Site for these wells from November 2009 through July 2010. During these events, groundwater samples were submitted for the following analyses: 1) gasoline range TPH via Northwest Method NWTPH-Gx; 2) gasoline associated VOC, specifically BTEX, via EPA Method 8021B; and 3) diesel through mineral oil range TPH via Northwest Method NWTPH-D/Dx extended. Groundwater analytical results indicated no detectable concentrations of all constituents of concern during consecutive quarterly sampling events from November 2009 through July 2010 (*refer to Table 2, Summary of Groundwater Analytical Results – Existing Monitoring Wells*).

#### Offsite Remedial Investigation – BNSF Property 2011

At the request of Ecology as a condition for consideration of a No Further Action determination for the Site, AEG conducted remedial investigation (RI) at the southern area of the Site and at offsite areas south on Burlington Northern Santa Fe Railroad (BNSF) property. The purpose of the RI was to assess whether the subsurface (soil and/or groundwater media) at selected locales at the BNSF property, adjacent south of the Site, has residual diesel range total petroleum hydrocarbons (TPH) impact soil – due to previous fuel spills at the Site. Based on an agreement with Ecology Site Manager, this RI also served as confirmation sampling of both the soil and groundwater media at both properties. Diesel range TPH was not exhibited at the six borings advanced in August 2011. Elevated diesel range TPH (60,200 micrograms per liter – ug/L) was detected only at a boring advanced at the Site, adjacent south of the car wash (boring B-7). This detection is above Ecology MTCA Method A groundwater cleanup level of 2,000 ug/L for this constituent. Diesel range TPH was not reported in the remaining groundwater samples.

#### Diesel Fuel Spill – January 2012

AEG was informed by Mr. Paul Jhutti (Site property owner) that a small fuel spill had occurred in the diesel Cardlock area in January 2012. The fuel spill occurred when diesel fuel was in the process of being delivered into a raised aboveground storage tank (less than 500 gallons in

capacity), located at the south area of the fuel containment area. According to Mr. Jhuty, the Cle Elum Fire Department responded to the fuel spill and “*cleaned it up*”. AEG attempted to contact the Cle Elum Fire Department in February 2012 and in November 2012 to obtain additional information. The Fire Department has not responded to our multiple requests as of the date of publication of this report. Mr. Jhuty was unable to provide additional information.

#### In-situ Bioremediation (ORCa) – 2012

At the request of Ecology as a condition for consideration of a No Further Action determination 1,500 pounds of ORC Advanced was injected throughout the southern area of the Site in April 2012 to accelerate residual TPH impacted groundwater in the vicinity of the carwash area/boring B-7 area.

### ***1.3 Objectives and Scope of Interim Site Remediation & Probe Subsurface Investigations***

#### Interim Site Remediation

The Interim Site Remediation objectives was to remediate the July 2012 gasoline fuel spill by excavating petroleum contaminated soil from the immediate impacted area west of the fuel containment area. Initially, the remedial action tasks were specific to gasoline fuel/gasoline range petroleum hydrocarbons and associated volatile organic compounds. However, laboratory analytical results showed the presence of commingled diesel range total petroleum hydrocarbons within the areas of impact. Hence, the constituents of concern were expanded to include: gasoline, diesel, and heavy oil range TPH, associated volatile organic compounds (VOCs) - specifically benzene, toluene, ethylbenzene, and total xylenes (BTEX) constituents. AEG provided oversight to NRC throughout the PCS excavation activities.

The Interim Site Remediation included the following Tasks: 1) Excavation, removal, and disposal of petroleum contaminated soil; 2) collect excavation soil samples throughout the excavation activities; 3) collect confirmation soil samples from the bottom and sidewalls of the excavation pit; 4) submit selected confirmation soil samples for laboratory analysis in accordance with Ecology MTCA Cleanup Regulation Table 830-1, *Required Testing for Petroleum Releases*; and 5) incorporation of Regensis ORC Advanced into the backfill.

#### Probe Subsurface Investigations

The primary objective of the three phases of Probe Subsurface Investigations was to investigate and further characterize the lateral and vertical extent of the petroleum impacts to soil and groundwater at the Site, in particular at areas adjacent and nearby the July 2012 fuel spill/fuel containment area.

Due to the initial finding of diesel petroleum hydrocarbons in soil and sheen in standing water in the excavation pit, in addition to the gasoline fuel spill constituents, the constituents of concern for the overall remedial action and investigations included: gasoline, diesel, and heavy oil range

TPH and associated VOCs, specifically BTEX constituents. At selected locales for confirmation soil sampling (during remedial action activities) and near the area of fuel spill, AEG also analyzed samples for analytes specified in Ecology Table 830-1, *Required Testing for Petroleum Release*.

A total of 24 borings were advanced in three separate subsurface investigation phases. AEG obtained right-of-way entry from the City of Cle Elum to conduct subsurface investigations on N Shore Ave., adjacent west of the Site. Ten borings (B-1 through B-10) were advanced during the 1<sup>st</sup> probe subsurface investigation phase; five additional borings (B-11 through B-15) were advanced during the 2<sup>nd</sup> probe subsurface investigation; and eight borings (B-16 through B-24) were advanced during the 3<sup>rd</sup> probe investigation. The borings were placed at selected areas adjacent to and nearby the fuel containment area to evaluate the impact of the fuel spill to the subsurface (soil and groundwater) at the Site.

Tables 5 and 6 present summaries of soil and groundwater analytical results, respectively, from the three phases of subsurface investigations. The locations of the borings are presented in Figure 4, *Site Plan & Probe Subsurface Investigation Map*.

#### Existing Monitoring Wells Groundwater Monitoring/Sampling – August 2012

The Site's pre-existing groundwater monitoring wells MW-1 through MW-6 were sampled on August 3, 2012 to assess the groundwater quality condition at adjacent and inferred downgradient area from the fuel spill area. A second groundwater sampling event was conducted on August 29, 2012 (after completion of primary PCS excavation work) to assess the potential plume migration.

#### **1.4 Site Geology and Hydrogeology**

According to the *Geologic Map of Washington, Southwest Quadrant*, the Site and vicinity area is underlain by Quaternary age nonglacial alluvium deposits (Qa) and glacial outwash deposits (Qao). The alluvium deposits typically consist of “silt, sand, and gravel deposited in streambeds and fans; surface relatively undissected.” The outwash deposits consist of “stratified sand and gravel; locally contains silt and clay ...” (Walsh, T.J., Korosec, M.A., et. al., 1987).

Subsurface conditions at the Site and vicinity area, at locations of investigation, generally consist fill comprising of silty sand with gravel underlain by alluvium deposits. Alluvium deposits were encountered in all areas explored and generally consisted of medium dense to dense sandy gravel to gravel, to the maximum depth explored, at 16 feet bgs.

Groundwater was encountered during subsurface investigations at depths ranging from approximately 7 feet to 11 feet bgs under unconfined conditions. The sandy gravel and gravel at this depth appear to form the water-bearing zone (refer to soil boring logs in Appendix B,

*Supporting Documents*). Similarly, groundwater seepage was encountered during excavation activities during the Interim Site Remediation at approximately 7 to 8 feet bgs.

The depths-to-water measured at the existing monitoring wells during AEG's August 2012 groundwater events ranged approximately from 5 to 6 feet bgs. Potentially, a smear zone may be present at approximately 5 feet to 12 feet bgs based on field observations and laboratory analytical results.

The direction of shallow groundwater flow at the Site during the August 2012 groundwater event, based on professional surveyed elevations, was generally to the east with tangents to the southeast (refer to Figure 3, *Groundwater Potentiometric Map – August 2012*).

In our professional opinion, the inferred direction of regional groundwater flow is generally to the south based on surface topography and regional discharge points towards the Yakima River (within approximately 2,300 feet south from the Site at its closest point). The existence of irrigation ponds to the southeast and southwest of the Site (approximately 1,800 feet and 1,000 feet, respectively) may also impact the local direction of shallow groundwater flow. The likelihood exists that the local shallow groundwater regime (depth-to-water and direction of groundwater flow) may fluctuate seasonally due to the local irrigation practices. Previous work by others showed a possible reversal of groundwater flow direction in the dry months of September and October.

### **1.5 Conceptual Site Model**

The conceptual site model AEG developed for the Site reflects the findings of previous and current environmental investigations and presents an exposure assessment for the Site. The exposure assessment involved evaluating the distribution of the dissolved and adsorbed phases of gasoline range petroleum hydrocarbons in soil and groundwater onsite and at adjacent downgradient locales, potential pathways, and potential receptors. The conceptual site model will be used to support an evaluation of feasible remediation alternatives technology for the cleanup of petroleum contaminated soil and impacted groundwater at the Site.

The current/recent gasoline fuel spill in July 2012 was the primary conceptual release model for the Site. However, based on a review of Ecology documents and results of recent soil and groundwater testing it appears that historical fuel releases may have commingled with the July 2012 gasoline release. Further, based on the elevated diesel TPH and absence (or low concentrations) of BTEX constituents in both soil and ground water samples in many areas of the Site, it appears that historical releases remain and the impact from the July 2012 gasoline spill may be localized. The findings from the forensic analysis will augment this preliminary assessment.

Additional data and analysis, including forensic analysis, will be necessary to evaluate the impact and degradation of petroleum hydrocarbons and associated volatile organic compounds at the Site (refer to Section 5.0). Hence, the conceptual site model will need to be updated and revised with these subsequent findings.

## **2.0 INTERIM SITE REMEDIATION**

NRC excavated petroleum contaminated soil from areas associated with the migration of the fuel spill to a surficial low area adjacent west-northwest of the fuel containment area/fuel spill area from July 25 through August 2, 2012. Final over-excavation of PCS was completed on October 9, 2012. During the progression of the excavation activities, soil samples were consistently collected from the sidewalls and bottom of the excavation pit and field screened for petroleum hydrocarbon volatiles using a PID instrument to assist in defining the lateral and vertical extents of impact. Confirmation soil samples were collected at the base and sidewalls of the excavation and were analyzed. Gasoline, diesel, and heavy oil range TPH and associated VOCs (BTEX constituents) sample results are provided in Table 1 and Figure 2.

The final dimensions of the irregular shaped excavation pit were approximately 68 feet long by 35 feet wide by 10 feet deep. The width of the excavation pit in the northern area was approximately 15 to 17 feet. Groundwater seepage was encountered during excavation activities at approximately 7 to 8 feet bgs. Moderate to heavy sheen (of fuel product) was observed within the northern area of the excavation pit during excavation activities. NRC installed two sump pumps in the excavation pit to continuously pumped out standing water and groundwater seepage to enable PCS excavation to advance. AEG provided oversight during this phase of remedial action and had NRC excavated five small test pits at areas north, west, and south of the fuel spill and main excavation pit area. One of the test pits was completed on BNSF property with authorization from BNSF to assess the potential of offsite migration of petroleum hydrocarbons.

Based on laboratory analytical results, the main excavation pit was over-excavated to 10 feet bgs on October 9, 2012 to remove additional PCS. A total of approximately 678 tons of PCS was excavated and removed during the Interim Site Remediation. Regenesis Oxygen Releasing Compounds Advanced (ORCa) was incorporated into the backfill to expedite degradation of residual PCS. Approximately 633 tons of pit run was used for backfilling the excavated pit. A 54-inch wheel roller was used for compacting the backfill. The excavation pit was capped with crushed rocks. The approximate area of excavation, site features, and locales of soil samples collected are shown in Figure 2. Photo documentation of the soil excavation and transport/removal of the soil is presented in Appendix A, *Site Photographs*.

### **2.1 Soil Sampling Procedures**

Soil samples were collected and observed to document soil lithology, color, moisture content, and sensory evidence of impairment. To comply with appropriate health and safety practices in the field, soil samples obtained from a depth greater than four feet bgs in the excavation were collected by AEG's field representative from the bucket of the excavator at ground surface. Extensive soil samples were collected throughout the excavation in order to delineate the vertical

and horizontal extent of petroleum impacted soil. A total of 29 soil samples were collected during excavation activities.

All soil samples were immediately transferred to laboratory provided pre-weighted 40-ml VOA glass vials with septum sealed Teflon-lined screw caps and 4 oz. glass jars. Soil sampling for VOCs and field preservation methods followed methods set forth by Ecology's Method 5035A, "Collecting and Preparing Soil Samples for VOC Analysis" which minimizes VOC losses. The soil samples were placed in a portable chilled ice chest and transported to Libby Environmental Chemistry Laboratory (Libby), a Washington state certified analytical laboratory located in Olympia, Washington, for analysis following industry standard chain-of-custody procedures.

Table 1, *Summary of Soil Analytical Results – PCS Excavation*, presents a list of soil samples collected, their location and depth within the excavation. Soil laboratory analytical results are provided in Appendix B, *Supporting Documents*.

## **2.2 Quality Controls**

All soil samples were collected in general accordance with industry protocols for the collection, documentation, and handling of samples. Descriptions of soil and sampling depths were carefully logged in the field, and AEG confirmed sample depths as soil samples were collected.

Soil samples were tightly packed into jars to eliminate sample headspace. Upon sampling, all samples were placed immediately into chilled ice chests or immediately delivered to the mobile laboratory.

All samples were transported and submitted under standard chain-of-custody protocols and remained refrigerated until delivery to Libby analytical laboratory. 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.

## **2.3 Remediation Derived Waste**

A total of approximately 678 tons of petroleum contaminated soil was excavated from the area adjacent west-northwest of the fuel spill area outside of the containment wall. The excavated soil was immediately loaded onto trucks and pups and transported to CEMEX Regional Petroleum Contaminated Soil Treatment facility in Everett, Washington. Preliminary documentation for the tonnage of soil excavated and disposed of at CEMEX was provided by NRC and is included in Appendix B.

Additionally, during the PCS excavation activities NRC pumped approximately 26,930 gallons of impacted groundwater from the excavation pit and contained it in the two poly tanks stored

onsite. Marine Vacuum Services provided subsequent pumping and transportation of the contained water offsite to CEMEX for disposal and treatment. A transportation and disposal log, provided by NRC, is included in Appendix B. Note the total volume pumped includes rinsate and residuals from the poly tanks.

#### **2.4 *In-Situ Bioremediation – 1<sup>st</sup> Phase***

As stated, Regenesis Oxygen Releasing Compounds Advanced (ORCa) formula was selected as a secondary remedial technology to accelerate the microbial degradation of remaining petroleum hydrocarbons in saturated soil and shallow groundwater. ORC is a calcium oxy-hydroxide that provides controlled-release molecular oxygen to the subsurface environment where it will accelerate the rate of naturally occurring aerobic contaminant biodegradation in groundwater and saturated soils.

A total of 600 pounds of ORCa was mixed with clean soil (Class A pit run) to backfill the excavation pit. The ORCa was dispersed in the excavation as dry powder in the backfill at lifts of approximately one to two feet. ORCa/soil mix was brought up from the bottom of the excavation to the vadose zone (to approximately 7 feet bgs) to account for the anticipated groundwater smear zone in the subsurface. The amount of ORCa used in the excavation was calculated following the weight/weight percent of ORC/backfill material recommended by Regenesis, the ORCa manufacturer.

### **3.0 PROBE SUBSURFACE INVESTIGATIONS**

Subsurface investigations were conducted in following three phases after the initial response to the July 2012 gasoline fuel spill at the Site. NRC completed partial demolition of the containment wall on the southeast corner of the bulk fuel area to allow AEG access to investigate areas within the bulk fuel containment area - near the split tank AST:

- The 1<sup>st</sup> Probe Subsurface Investigation (borings B-1 to B-10) was conducted on July 31, 2012 to confirm and assess potential impact areas outside of the fuel containment area. The locations of investigation primarily focused on areas west, northwest, and adjacent/near proximity of the fuel containment area (area of gasoline fuel spill).
- The 2<sup>nd</sup> Probe Subsurface Investigation (borings B-11 to B-15) primarily involved further characterization of areas potentially downgradient to the east, southeast and south of confirmed impacted areas outside of the fuel containment area and was conducted on October 10, 2012. Note: one boring (B-12) was advanced within the containment area.
- The 3<sup>rd</sup> Probe Subsurface Investigation (borings B-16 to B-24) concentrated on areas within the bulk fuel containment area, specifically adjacent to and beneath the spilt tank AST where the July 2012 gasoline fuel occurred. A limited access rig (LAR) was used to advance the borings. AEG also completed further investigation at areas farther to the northeast and southeast of the Site which were previously not investigated. A boring was also advanced within the recently backfilled excavation pit (to the west of the fuel spill area) using a truck-mounted direct push probe drilling rig. Figure 4, *Site Plan & Probe Subsurface Investigation*, presents the layout of the bulk fuel containment area, the remaining Site structures, and locations of borings advanced during all phases of investigation.

With the exception of borings advanced via the LAR, the remaining borings were advanced by ESN Northwest's truck mounted direct push probe drilling rig (Power Probe 9600). The soil sampling procedure involved pushing in increments of four feet using a two-inch, inside diameter, stainless steel sample corer with a four foot long Teflon sample sleeve insert and connecting drilling rods. The maximum depth advanced was 16 feet bgs. Borings advanced within the fuel containment area via the limited access rig (LAR) were advanced to a maximum depth of 11 feet bgs.

Similar to the constituents of concern identified during the PCS excavation/remedial action, the analytes analyzed during all phases of probe subsurface investigation also included gasoline, diesel, and heavy oil range TPH, and associated BTEX constituents due to confirmation of Site-wide presence of both gasoline and diesel range TPH. Selected samples were analyzed for

analytes specified in Ecology MTCA Cleanup Regulation Table 830-1. Photo documentation of the subsurface investigation is presented in Appendix A, *Site Photographs*.

### **3.1 Soil Sampling Procedures**

Soil samples were collected and observed to document soil lithology, color, moisture content, and sensory evidence of impairment. Samples collected via borings utilized a two-inch, inside diameter, stainless steel sample corer with a five foot long Teflon sample sleeve insert and connecting drilling rods. All soil samples were classified in the field, field screened utilizing a PID to facilitate the selection of samples for analysis, and immediately transferred to laboratory provided pre-weighted 40-mL VOA glass vials with septum sealed Teflon-lined screw caps and four ounce glass jars. All soil samples were placed in a portable chilled ice chest. Soil sampling for VOC and field preservation methods followed methods set forth by Ecology's Method 5035A, "*Collecting and Preparing Soil Samples for VOC Analysis*" which minimizes VOC losses.

With the exception of borings B-9 and B-10, one soil sample was selected from each boring for laboratory analysis during the first two probe investigations. Only groundwater samples were collected at B-9 and B-10. Additionally two soil samples were collected from boring B-12 to assess shallow soil at 3 feet bgs and a sample from the capillary zone at approximately 9.5 to 10.0 feet bgs. The soil samples were transported to ESN Northwest laboratory, a Washington State certified analytical laboratory located in Olympia, Washington, for analysis following industry standard chain-of-custody procedures for rushed 48-hour turn-around-time (TAT) for selected samples and standard five to seven business days TAT for other samples.

AEG collected up to three shallow soil samples per borehole for borings advanced within the fuel spill area in order to evaluate gradation of petroleum fuel impact for consideration of soil remedial action within the bulk fuel area and also for selection of samples for forensic analyses. Samples from the 3<sup>rd</sup> probe subsurface investigation were submitted to Friedman & Bruya, Inc., located in Seattle, Washington, for rushed and standard TAT.

Table 5, *Summary of Soil Analytical Results – Probe Subsurface Investigations*, presents laboratory analytical results for all borings advanced at the Site. All analytical soil results were compared to Ecology MTCA Method A soil cleanup levels for the respective constituents of concern. Boring logs and soil laboratory analytical results are provided in Appendix B, *Supporting Documents*.

### **3.2 Groundwater Sampling Procedures**

At all borings, a temporary 3-foot long retractable stainless steel screen was advanced to a depth below the vadose zone, where groundwater was encountered during drilling activities. Sufficient groundwater for sampling purposes was available at all borings. A peristaltic pump was utilized

to collect the groundwater samples via the U.S. EPA approved low-flow purge technique using dedicated polyethylene tubing. The tubing was inserted into the retractable screen. The groundwater was purged until the discharge had been relatively free of sediment for sample collection. The groundwater samples collected were selectively analyzed for constituents of concern similar to the soil laboratory analyses. The groundwater samples were placed in laboratory provided containers including 40 milliliter (mL) glass VOAs (vials) for gasoline range TPH, VOC analyses and 500 mL ambers for diesel/heavy oil range TPH, and 250 mL poly for total lead. Table 6, *Summary of Groundwater Analytical Results – Probe Subsurface Investigations*, presents analytical groundwater results as compared to Ecology MTCA Method A groundwater cleanup levels.

AEG elected to collect additional groundwater samples at selected borings advanced adjacent east of the bulk fuel containment area at borings B-11, B-12, and B-13 for potential future consideration of forensic analysis on selected samples. Selected groundwater samples from the 3<sup>rd</sup> phase probe investigation, specifically within the fuel containment area, were submitted to Friedman & Bruya for forensic analyses.

To reasonably ensure the quality of AEG's samples, the following actions were taken (1) nitrile gloves were used in handling all sampling jars and sampling devices; (2) the sampling equipment was scrubbed with Alconox detergent and rinsed with water prior to each sample extracted; and (3) the containers were then placed in a chilled cooler and transported under a chain-of-custody to ESN Northwest laboratory.

### **3.3 Quality Controls**

All soil and groundwater samples were collected in general accordance with industry protocols for the collection, documentation, and handling of samples. Descriptions of soil and sampling depths were carefully logged in the field, and the drillers and geologist confirmed sample depths as soil samples were collected. Boring location maps were completed prior to leaving the site to document sampling locations.

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.

All samples were transported and submitted under standard chain-of-custody protocols and remained refrigerated until delivery to ESN Northwest analytical laboratory. 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.

### **3.4 Investigation Derived Waste**

Investigation derived waste for this project consisted of soil cuttings from the subsurface exploration activities vicinity area, decontamination water from decontamination of the drilling rods and associated equipment, and purge water. These wastes were separated and placed in Washington State Department of Transportation (DOT) approved 16-gallon drums. One each 16-gallon drums containing soil and decontamination water/purge water were generated during these field services. The drums were stored onsite for subsequent characterization and disposal.

## **4.0 AEG AUGUST 2012 GROUNDWATER EVENT**

AEG conducted groundwater monitoring and sampling events on August 3 and August 29, 2012 at the Site's existing monitoring wells MW-1 through MW-6. The initial groundwater event on August 3, 2012 was completed to assess groundwater quality condition at the Site after the July 2012 gasoline spill. The follow-up event on August 29, 2012 was completed to assess potential changes to the Site's groundwater quality after completion of the bulk removal of PCS (Interim Site Remediation) from the area adjacent west-northwest the bulk fuel plant area and to re-assess the groundwater media at the Site's established monitoring wells. Tasks completed for the August 2012 Groundwater Events are presented below. Groundwater analytical results from the Site's previous groundwater events when the Site was known as the Devere & Sons facility should be used as part of a long-term groundwater quality monitoring/sampling program for the Site to assess impacted areas at the Site and the potential for off-property migration of constituents of concern. Table 2, *Summary of Groundwater Analytical Results – Existing Monitoring Wells*, presents a summary of historical and recent analytical groundwater results for wells MW-1 through MW-6 from October 2006 through August 2012 as compared to Ecology MTCA Method A groundwater cleanup levels.

### **4.1 Groundwater Sampling Procedures**

Prior to sampling, depth-to-water measurements were obtained by using an electronic water level indicator. The depth-to-water levels were measured from the top of casing, on the north side, at each monitoring well.

Prior to sample collection, all monitoring wells were purged following U.S. EPA approved low-flow purge technique. The wells were purged until the field parameters, including pH, temperature, specific conductance, dissolved oxygen, and turbidity, have stabilized. Table 4, *Summary of Water Quality Indicator Parameters – Existing Monitoring Wells*, presents the final stabilized field parameters at each well during the monitoring phase. The wells were sampled with dedicated 0.170" ID x 1/4" OD polyethylene tubing using the peristaltic pump to mitigate cross-contamination during groundwater sampling activities. To further decrease the potential for cross-contamination, the wells were sampled sequentially from the least impacted to most impacted wells (based on historical groundwater analytical results).

Groundwater samples were collected in laboratory provided 40 milliliter (mL) glass VOAs (vials) for gasoline range TPH and VOC and 500 mL amber bottles for diesel/heavy oil range TPH analysis. All samples were transported the day of sample collection and submitted under standard chain-of-custody protocols to Libby Environmental Chemistry Laboratory.

To reasonably ensure the quality of AEG's samples, the following actions were taken (1) nitrile gloves were used in handling all sampling containers and sampling devices; (2) the groundwater

monitoring equipment was scrubbed with Alconox detergent and rinsed with water prior to each sample extracted; and (3) the containers were then placed in a chilled cooler and transported under a chain-of-custody to Libby Environmental Chemistry Laboratory, a Washington State certified analytical laboratory located in Olympia, Washington with a standard seven business days laboratory turn-around-time.

#### **4.2 Quality Controls**

All groundwater samples were collected in general accordance with industry protocols for the collection, documentation, and handling of samples. Water samples were filled carefully in the sampling bottles to prevent volatilization and minimize volatile organic compounds losses. Upon sampling, all samples were placed immediately into chilled ice chests.

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.

#### **4.3 Monitoring Wells Survey**

AEG retained licensed surveyors from Pacific Geomatic Services of Mountlake Terrace, Washington to professionally survey the existing monitoring wells MW-1 through MW-6 on October 15, 2012. The purpose for the survey was to establish elevation data relating the land surface to the potentiometric surface of the shallow groundwater. Vertical and horizontal data were established using the Washington State Department of Transportation monument identifiers in NAVD 88 and NAD 83/07, respectively. Horizontal datum is established using the Washington State Plane North Coordinate System. Ground surface and top of casing elevations were surveyed to the nearest 0.01 foot. The groundwater elevations were measured from the top of the PVC monitoring well casing (north side). Table 3, *Summary of Groundwater Elevations – Existing Monitoring Wells*, presents the depth-to-water and associated groundwater elevations for all monitoring wells. An exhibit presenting the vertical and horizontal datum used by the surveyors and elevations of the wells is included in Appendix B.

#### **4.4 August 2012 Groundwater Elevation/Direction Groundwater Flow**

AEG re-drafted the August 2012 groundwater potentiometric map for the Site based on the professionally surveyed elevations for the existing monitoring. The direction of shallow groundwater flow using surveyed elevations was generally to the east with southeasterly components versus the former estimate using established arbitrary benchmarks at the Site which showed a generally southeasterly groundwater flow direction.

## **5.0 CONCLUSIONS AND RECOMMENDATIONS**

The findings and conclusions derived during the Interim Site Remediation and Probe Subsurface Investigations for the Cle Elum 76 (former Devere & Son Distributing) facility and adjoining/nearby areas are as follows:

### ***5.1 Field Screening Observations***

The highest PID readings were encountered at boring B-16, at the south end of the containment area. The readings are consistent with previous shallow soil sampling in this area (soil samples S1, S2, and S4) and appear to show impact from near surface to the water table interface. This area was directly in the path of the release.

Observations at other locations include:

- Consistent zone of hydrocarbon impact at approximately extending from 8 to 11 feet across most of the Site.
- Inconsistent readings at locations B-1 and B-5. The PID readings were low (refer to Appendix B); however, as indicated below, both locations had relatively low concentrations of VOC and relatively low concentrations of gasoline TPH (52 mg/Kg at B-1 and 2,900 mg/Kg at boring B-5 – refer to Table 5).
- The PID field screening results showed a maximum reading of 147.3 volumetric parts per million (Vppm) at boring B-13 at a depth of approximately 10.5/11.0 feet bgs. Elevated detections of VOC were also recorded at borings B-8, B-11, and B-12 at depths ranging from 7 to 11 feet bgs during the first two probe investigations. A PID reading of 336 Vppm was exhibited for a soil sample collected within the bulk fuel containment area at 4 feet bgs (boring B-16). The PID readings are presented on the soil boring logs.
- Moderate to heavy sheen of fuel product was observed in the northern area of the excavation pit with some of the sheen noted as dark brown to black-brown in color (refer to Appendix A, *Site Photographs*).

### ***5.2 Results of Soil Sampling***

A review of soil sampling analytical results suggests the following:

- B-1 results appear to be anomalous when compared with other Site results. Little to no soil or groundwater impact is present between the spill area and B-1; however, the results appear to show a recent or undegraded spill, which may be migrating from an offsite area from the property.
- B-5 results reflect conditions prior to excavation and appear to show impact from the July 2012 gasoline. Note that this sample was collected in the source removal area.
- Minimal to no impact was found in soil samples from borings B-2 to B-4, B-14, B-15, B-21 and B-22. Soil samples were not analyzed from locations B-9, B-10 and B-24;

- however, as stated above, PID readings were generally non-detect and there were no visible or olfactory indications of impact. These locations suggest a perimeter for the subsurface impact of spills at the site. The exception is B-1, which falls outside this perimeter and, as stated, may be due to offsite migration of hydrocarbons.
- Mixed diesel and gasoline TPH with trace to no BTEX were found in soil samples collected at B-6, B-7 and B-8, B-18, and B-23. The data suggest impact either from diesel or a mixture of diesel and weathered gasoline. Selected samples were submitted to Friedman & Bruya for forensic analyses from borings B-5, B-7, B-8, B-16, B-18, and B-23 to attempt to confirm the release source(s).
  - The soil sample profile for B-16 suggests commingled diesel and recent gasoline. As indicated in Table 5, both diesel and gasoline TPH are elevated and BTEX concentrations are higher than those of other borings.

### **5.3 Results of Groundwater Sampling**

A review of groundwater sampling analytical results suggests the following:

- Groundwater samples collected within the bulk fuel containment area exhibited free product at B-16 (advanced adjacent south of split tank AST where the July 2012 gasoline fuel spill occurred). However, elevated concentrations of both gasoline (up to 70,000 ug/L) and diesel (up to 61,000 ug/L) range TPH were detected at this boring. Elevated diesel range TPH was detected at borings (B-17 and B-18) advanced within the bulk fuel area (refer to Table 6 and Figure 4).
- With the exception of MW-4, groundwater samples collected from the existing monitoring wells onsite, MW-1 through MW-6, exhibited no detectable concentrations of gasoline, diesel, and heavy oil range TPH and associated VOCs during the August 3 and August 29, 2012 groundwater events. Benzene (at 7.1 ug/L) was reported at MW-4 during the August 3, 2012 event (refer to Table 2 and Figure 3). This concentration is above MTCA Method A cleanup level of 5 ug/L.
- The finding of distribution and migration of the dissolved phase gasoline range petroleum hydrocarbons to areas adjacent and downgradient to the east, south, and southeast of the bulk fuel area appears to be potential indications of the following: 1) potential confirmation that the July 2012 spilled gasoline fuel had resulted in subsequent incorporation of it into the subsurface soils via the porous media of the soil matrix (sandy gravel to gravel) and shallow groundwater to allow for the diffusion of petroleum hydrocarbons and its dissolution into groundwater. It also appeared that the presence of cohesionless soils in the area enabled the vertical migration of dissolved phase gasoline range petroleum hydrocarbons to where groundwater was encountered (at approximately 5 feet to 7 feet bgs) and beyond the vadose zone; and/or 2) potential confirmation of a mixture (i.e., commingled) spilled gasoline fuel from recent (July 2012) and older likely more degraded gasoline and diesel fuel spill(s). The absence of high concentrations of volatile organic

compounds associated with a recent gasoline fuel spill (notably benzene, toluene, ethylbenzene, and total xylenes) in both the soil and groundwater media at borings advanced adjacent and near the July 2012 gasoline spill area demonstrates this likelihood (refer to Tables 5 and 6 and Figure 4 for results on borings B-7, B-8, B-9, B-11, and B-12).

- Laboratory analytical results of groundwater samples collected from the Site's pre-existing groundwater monitoring wells MW-1 through MW-6 in August 2012 showed no detectable concentrations of gasoline and diesel and heavy oil range petroleum hydrocarbons with no associated volatile organic compounds except at MW-4 where low detections of benzene and gasoline TPH were reported (refer to Table 2 and Figure 4).
- Groundwater flow direction during the August 2012 groundwater event was generally to the east with tangents to the southeast with a hydraulic gradient of 0.002 ft/ft (refer to Figure 3). This direction of shallow groundwater flow is representative of the area, in our professional opinion, based on AEG's previous groundwater investigations at the Site and due to area-wide topography and regional discharge points in the vicinity area.

#### **5.4 Discussion**

Based on the above findings, it was decided that there was a need for selected soil and groundwater samples collected during the recent subsurface investigations to be submitted for forensic analysis to speciate and differentiate the various petroleum fuel products. An estimate on the extent of fuel (gasoline and diesel petroleum hydrocarbons) degradation will also be ascertained in order to better evaluate the following: 1) whether the gasoline petroleum hydrocarbons exhibited at borings within close proximity of the bulk fuel containment area (such as B-7, B-8, B-11 and B-23) are associated with the July 2012 gasoline fuel spill; and 2) whether the low concentrations of VOCs exhibited at these locales are more indicative of degraded diesel petroleum hydrocarbons (from spills/leakage prior to July 2012).

Therefore, conclusions for the entire investigation will be presented in the AEG *Forensic Analysis & Evaluation Project Summary* (dated January 22, 2013) The report will contain the supplemental forensic findings associated with the July 2012 gasoline spill and past spills at this Site that will allow designation of specific impact areas related to the various releases.. The *Interim Site Remediation & Probe Subsurface Investigations Report* and *Forensic Analyses & Evaluation Project Summary* should be treated as integral components on the assessment and investigation of the July 2012 gasoline spill.

## **6.0 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 RE Powell 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.

## 7.0 REFERENCES

American Society for Testing and Materials (ASTM) Standard E 2531 – 06, *Standard Guide for Development of Conceptual Site Models and Remediation Strategies for Light Nonaqueous Phase Liquids Released to the Subsurface*.

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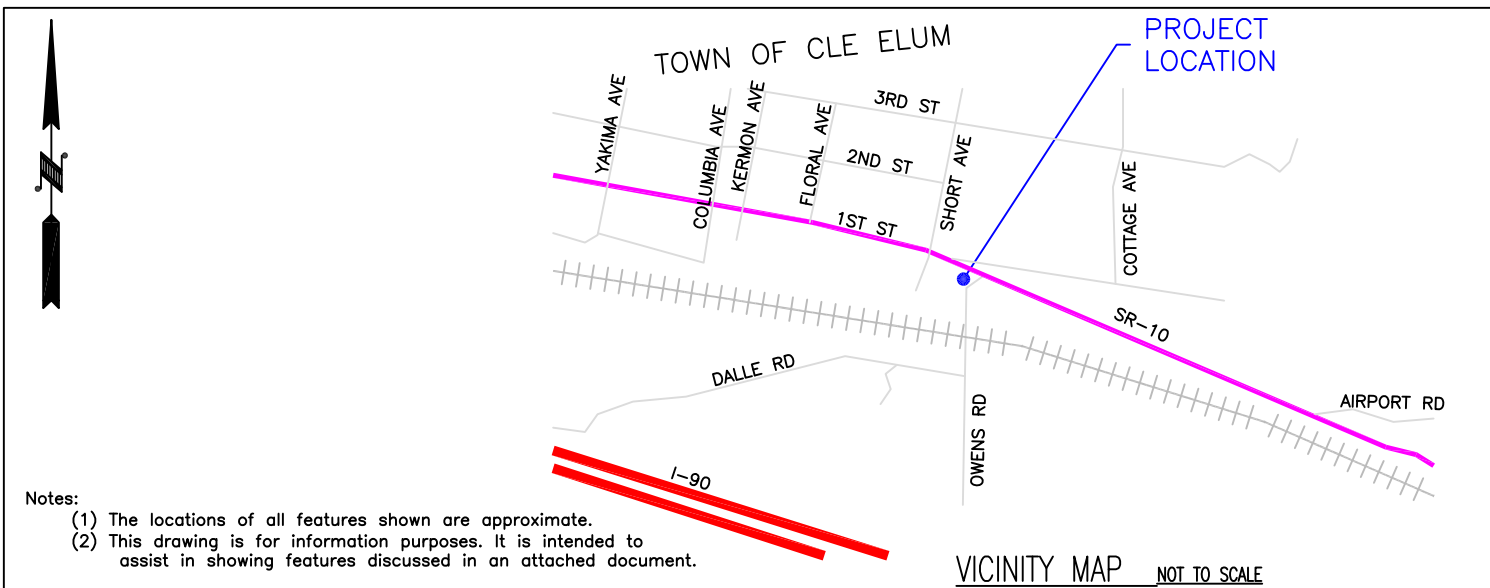
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SAGE Earth Sciences, Inc., 9/1996a. *UST Closure Site Assessment Report for Removal of Two UST's and Associated Ancillary Equipment at the DeVere and Sons Distributing, Inc. Mini-Mart Facility, Cle Elum, WA*.

Walsh, T.J., Korosec, M.A., et al, 1987. *Geologic Map of Washington, Southwest Quadrant, Washington Division of Geology and Earth Resources Geologic Map GM-34*.

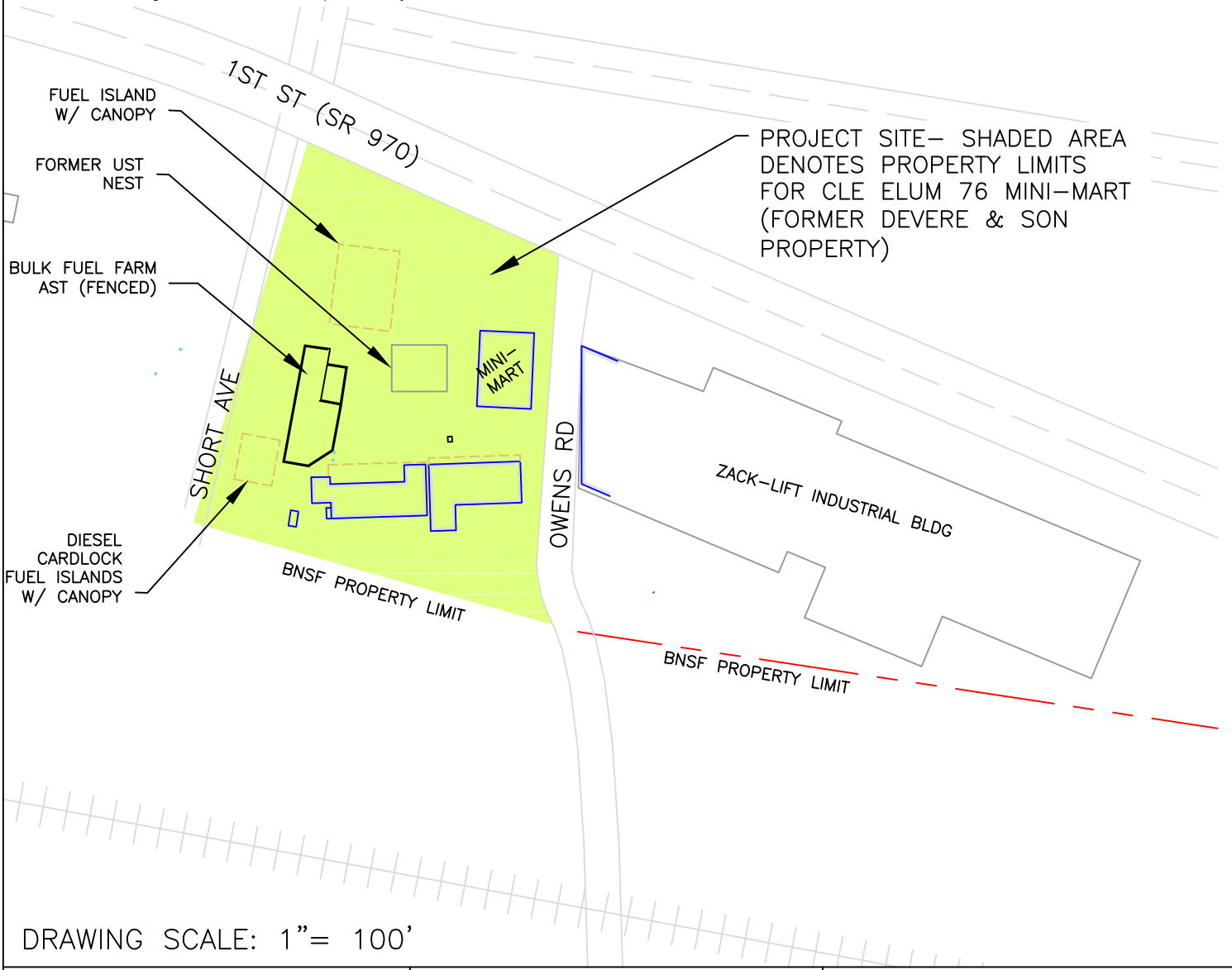
Washington State Department of Ecology, 10/2009. *Review DRAFT Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remediation Action*. Publication no. 09-09-047.

# FIGURES




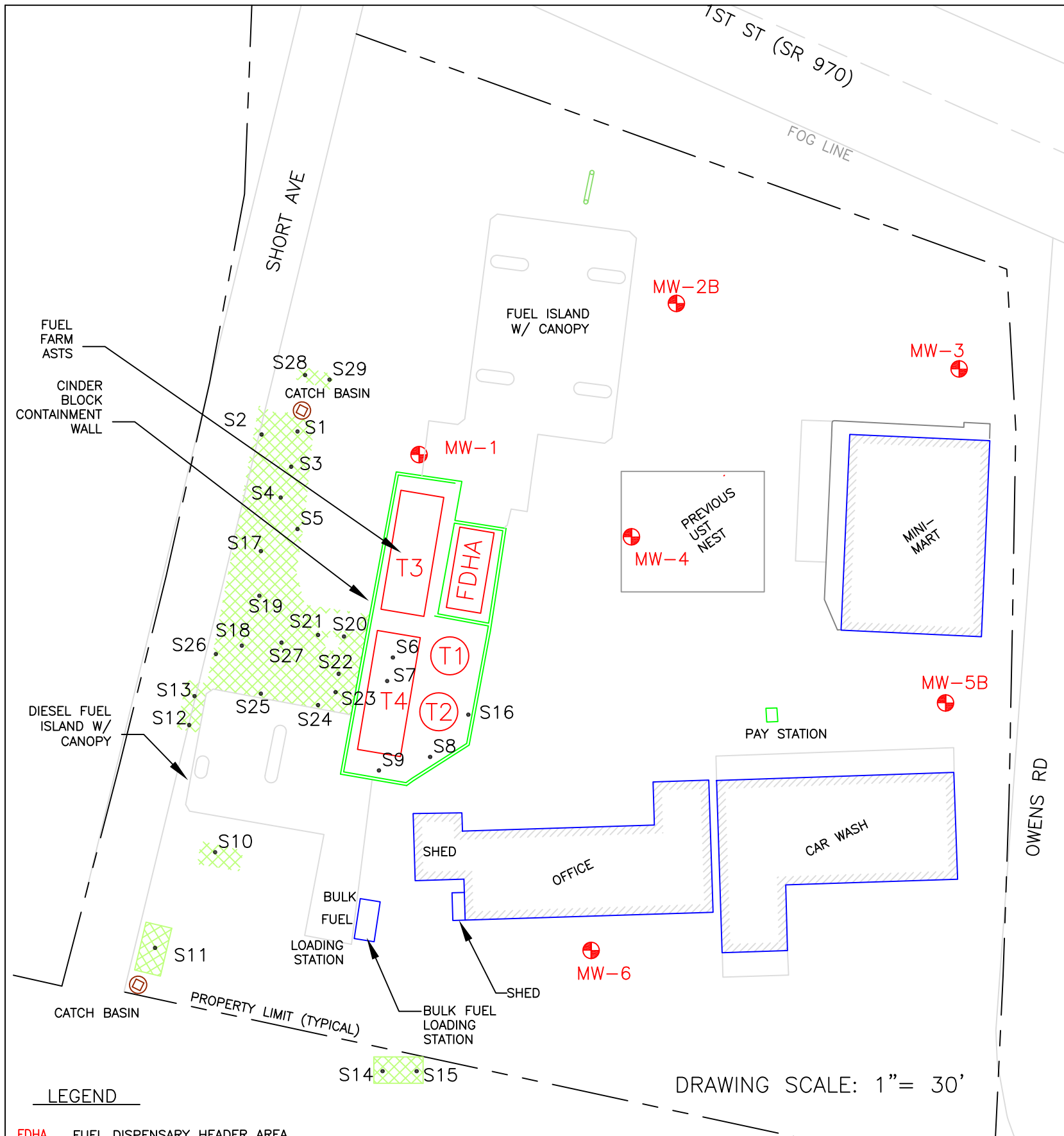
- Notes:
- (1) The locations of all features shown are approximate.
  - (2) This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.

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



DRAWING SCALE: 1" = 100'

 <b>ASSOCIATED ENVIRONMENTAL GROUP, LLC</b> 605 11th Avenue SE, Suite 201 Olympia, WA 98501-2336 (360) 352-9835 Fax (360) 352-8164	<b>FIGURE 1</b> <b>SITE &amp; VICINITY MAP</b>	<b>CLE ELUM 76 (FORMER DEVERE)</b> 1000 1ST STREET CLE ELUM, WA	
		Project# 12-164 File:	Date: 10/22/2012 Sheet 1 OF 5



**LEGEND**

- FDHA FUEL DISPENSARY HEADER AREA
- T-1 AST - RED DIESEL FUEL
- T-2 AST - REGULAR DIESEL
- T-3 AST - GASOLINE
- T-4 AST - SPLIT TANK
- HATCH DENOTES GRAVEL BACKFILLED AREAS
- ⊕ B-1 PROBE BORINGS ADVANCED AFTER FUEL SPILL
- ⊕ MW-1 EXISTING MONITORING WELLS

**Table 3 Summary of Soil Analytical Results - PCS Excavation**  
Cle Elum 76 - July 2012 Fuel Spill  
Cle Elum, WA

Sample #	Sample Description <sup>1</sup>	Sample Depth (feet)	Date Sampled	Gasoline TPH <sup>2</sup> (mg/Kg)	Select Volatile Organic Compounds <sup>3</sup> (mg/Kg)				Diesel Extended TPH <sup>4</sup> (mg/Kg)	
					Benzene	Toluene	Ethylbenzene	Total Xylenes	Diesel	Heavy Oil
S1	TPS-SN-4.0	4.0	7/26/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--
S2	TPN-SW-4.0	4.0	7/26/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--
S3	IPN-B-6.2	6.2	7/26/2012	6,740	19.5	182	92	546	453	<100
S4	IPN-B-5.5	5.5	7/26/2012	277	1.54	6.38	1.63	12.8	--	--
S5	TPN-SE-3.5	3.5	7/26/2012	<10	<0.02	<0.10	<0.05	<0.15	65	<100
S6	S1-2.0	2.0	7/26/2012	50,500	314	214	792	3,840	<25	<100
S7	S2-3.5	3.5	7/26/2012	7,890	8.68	56.9	15.2	109	--	--
S8	S3-2.5	2.5	7/26/2012	112	0.62	3.15	1.31	6.52	145	<100
S9	S4-1.5	1.5	7/26/2012	21,700	324	360	335	1,550	15,510	<100
S10	TPS-B-6.5	6.5	7/26/2012	<10	<0.02	<0.10	<0.05	<0.15	<25	193
S11	TPSW-B-4.0	4.0	7/26/2012	12.7	<0.02	<0.10	<0.05	0.37	--	--
S12	TPW-B-6.5	6.5	7/26/2012	<10	<0.02	<0.10	<0.05	<0.15	<25	180
S13	TPW-B-7.0	7.0	7/26/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--
S14	TPS2-B-4.0	4.0	7/26/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--
S15	TPS2-B-7.0	7.0	7/26/2012	<10	0.25	0.4	0.05	0.29	280	<100
S16	S5-1.5	1.5	7/27/2012	<10	0.078	<0.10	<0.05	0.36	<100	<100
S17	TPN-B5-6.0	6.0	7/27/2012	<10	<0.02	<0.10	<0.05	<0.15	<100	<100
S18	TPN2-BSW-6.0	6.0	7/27/2012	<10	<0.02	<0.10	<0.05	<0.15	<100	<100
S19	TPN2-BNW-6.0	6.0	7/27/2012	<10	<0.02	<0.10	<0.05	<0.15	<100	<100
S20	IPN2-SE-NE-2.0	2.0	7/27/2012	4,210	97.8	502	113	688	<100	<100
S21	IPN2-SE-NE-4.0	4.0	7/27/2012	<10	0.12	0.21	0.11	1.28	269	<100
S22	IPN2-SE-SE-2.0	2.0	7/27/2012	27,800	637	2,800	710	3,330	<100	<100
S23	IPN2-SE-SE-4.0	4.0	7/27/2012	11	0.95	1.36	0.062	0.18	262	<100
S24	IPN2-SS-SE-4.0	4.0	7/27/2012	<10	<0.02	<0.10	<0.05	<0.15	<100	<100
S25	IPN2-SW-SW-2.0	2.0	7/27/2012	<10	<0.02	<0.10	<0.05	<0.15	<100	<100
S26	IPN2-SW-SW-4.0	4.0	7/27/2012	<10	<0.02	<0.10	<0.05	<0.15	<100	<100
S27	IPN2-BC-10.0	10.0	10/9/2012	<10	<0.02	<0.10	<0.05	<0.15	50	<100
S28	IPN3-B-3.5	3.5	7/27/2012	<10	<0.02	<0.10	<0.05	<0.15	<100	<100
S29	IPN3-B-5.5	5.5	7/27/2012	28	0.24	1.61	0.39	3.34	<100	<100
PQL				10	0.02	0.10	0.05	0.15	25 or 100	100
Ecology MTCA Method A Clean Up Levels				30 <sup>5</sup>	0.03	7	6	9	2,000	2,000

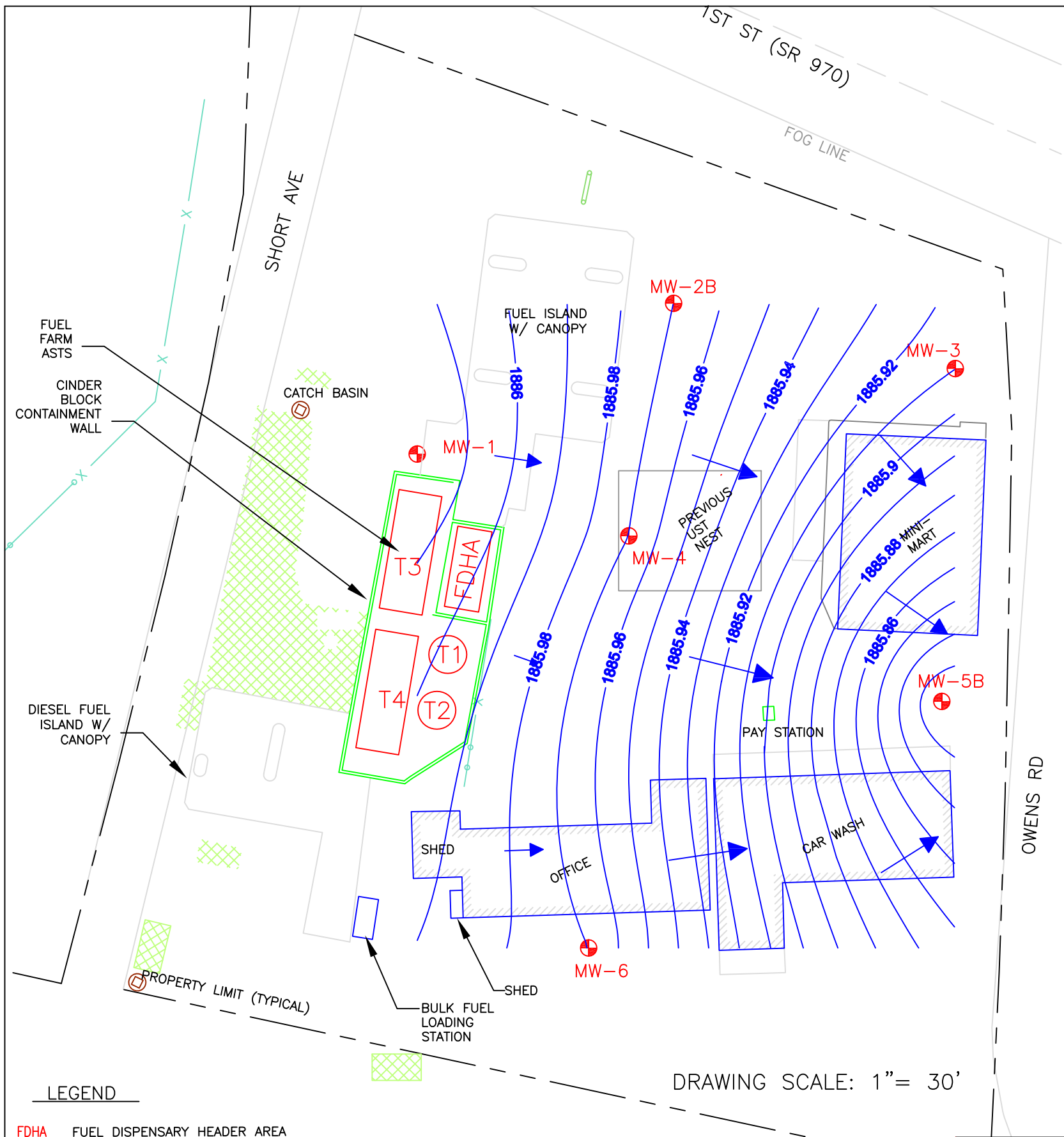
- Notes:
- <sup>1</sup> Approximate sample locations are shown in Field Map
  - <sup>2</sup> Gasoline range total petroleum hydrocarbons (TPH). Analyzed by NWTPH-Gx
  - <sup>3</sup> Select Volatile Organic Compounds. Analyzed by EPA Method Method 8021B
  - <sup>4</sup> Diesel extended range TPH. Analyzed by Northwest Method NWTPH-Dx/Dx Extend
  - <sup>5</sup> Cleanup level with presence of benzene
  - mg/Kg = milligrams per kilograms
  - MTCA = Model Toxics Control Act
  - PQL=Practical Quantitation Limits
  - = not analyzed for this constituent
  - < = not detected above laboratory limits
  - \* Ecology has not designated a MTCA Method A cleanup level for this constituent
  - Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

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FIGURE 2  
PETROLEUM CONTAMINATED SOIL  
EXCAVATION MAP

CLE ELUM 76 (FORMER DEVERE)  
1000 1ST ST  
CLE ELUM, WA

Project# 12-164 Date: 10/30/2012  
File: FILE NAME Sheet 2 OF 5



DRAWING SCALE: 1" = 30'

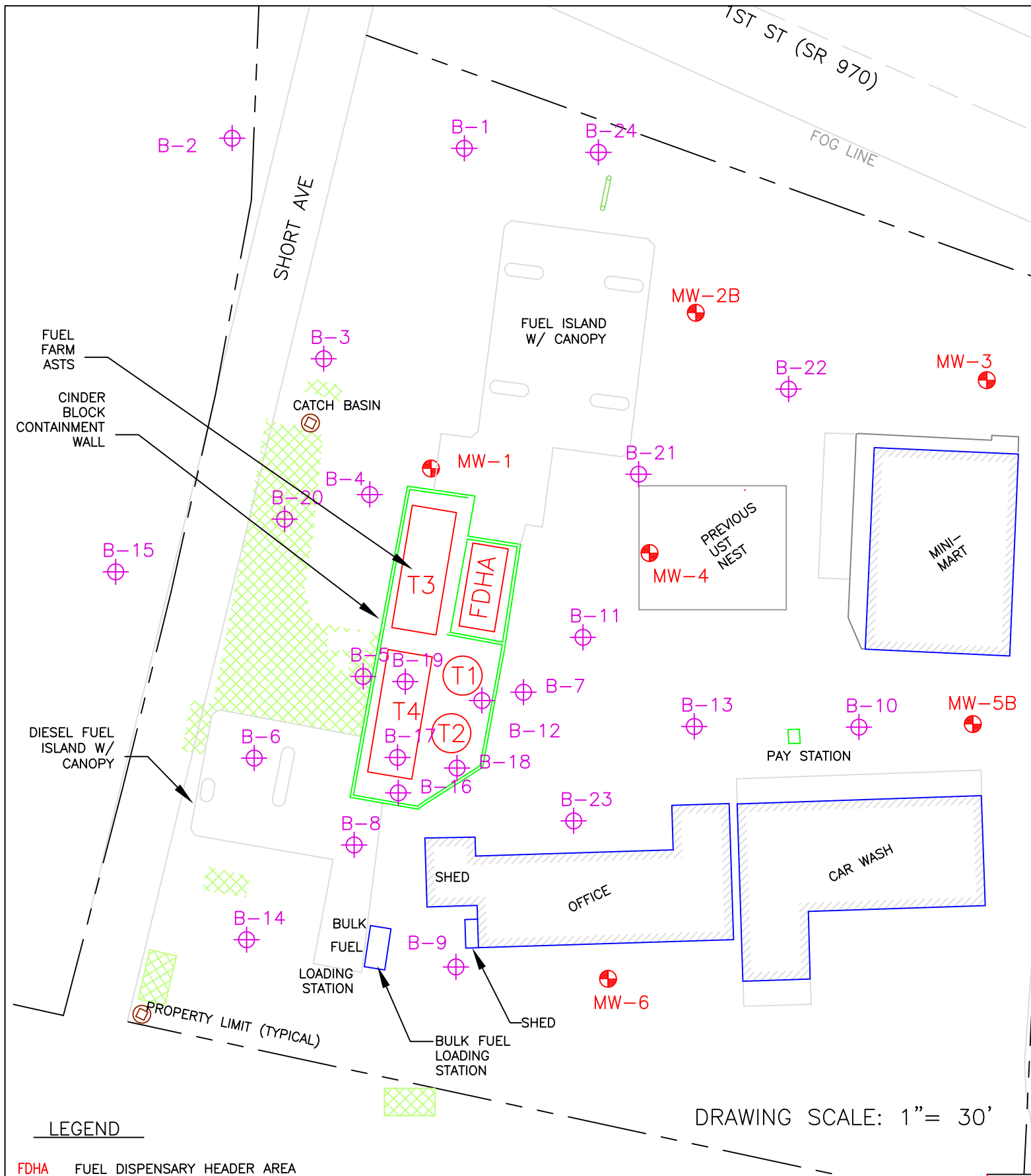
LEGEND

- FDHA FUEL DISPENSARY HEADER AREA
- T-1 AST - RED DIESEL FUEL
- T-2 AST - REGULAR DIESEL
- T-3 AST - GASOLINE
- T-1 AST - SPLIT TANK
- HATCH DENOTES GRAVEL BACKFILLED AREA
- B-1 PROBE BORINGS ADVANCED AFTER FUEL SPILL
- MW-1 EXISTING MONITORING WELLS

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FIGURE 3 - GROUNDWATER POTENTIOMETRIC MAP  
 AUGUST 2012

CLE ELUM 76 (FORMER DEVERE)	
1000 1ST ST CLE ELUM, WA	
Project# 12-164	Date: 10/22/2012
File: FILE NAME	Sheet 3 OF 5



**Table 6 Summary of Groundwater Analytical Results - Probe Subsurface Investigations**  
**Cle Elum 76 - July 2012 Fuel Spill**  
**Cle Elum, WA**

Sample Number <sup>1</sup>	Date Sampled	Gasoline TPH <sup>2</sup> (ug/L)	Table 830-1 GRO Volatile Organic Constituents <sup>3</sup> (ug/L)				Total Lead <sup>5</sup> (ug/L)	Diesel TPH Extended <sup>4</sup> (ug/L)	
			Benzene	Toluene	Ethylbenzene	Total Xylenes		Diesel	Heavy Oil
<b>Poly Tank 1</b>	7/27/2012	<b>12,700</b>	<b>541</b>	97	<1.0	<b>1,170</b>	--	<200	<400
<b>B1-W</b>	7/31/2012	<b>19,000</b>	<b>1,000</b>	<b>1,100</b>	68	440	<b>38</b>	<b>590</b>	<500
B2-W	7/31/2012	<100	<1.0	<1.0	<1.0	<3.0	--	<250	<500
B3-W	7/31/2012	130	<1.0	<1.0	<1.0	<3.0	--	<250	<500
<b>B4-W</b>	7/31/2012	120	<b>70</b>	23	1.7	9.0	<2	<250	<500
<b>B5-W</b>	7/31/2012	<b>30,000</b>	<b>1,600</b>	<b>4,800</b>	<b>7,800</b>	<b>3,700</b>	--	<b>17,000</b>	<500
<b>B6-W</b>	7/31/2012	160	2.5	11	1.7	12	--	<b>570</b>	<500
<b>B7-W</b>	7/31/2012	<b>30,000</b>	<b>23</b>	3.2	20	20	--	<b>45,000</b>	<500
<b>B8-W</b>	7/31/2012	<b>44,000</b>	<b>31</b>	26	18	84	--	<b>57,000</b>	<500
B9-W	7/31/2012	<100	<1.0	<1.0	<1.0	<3.0	--	<250	<500
B10-W	7/31/2012	370	<1.0	<1.0	<1.0	<3.0	--	<250	<500
<b>B11-W</b>	10/10/2012	<b>830</b>	1.0	<1.0	<1.0	<3.0	--	<b>860</b>	<500
B12-W	10/10/2012	200	<1.0	<1.0	2.5	4.0	--	<250	<500
B13-W	10/10/2012	<100	<1.0	<1.0	<1.0	<3.0	--	<250	<500
B14-W	10/10/2012	<100	<1.0	<1.0	<1.0	<3.0	--	<250	<500
B15-W	10/10/2012	<100	<1.0	<1.0	<1.0	<3.0	--	<250	<500
<b>B16-W</b>	11/6/2012	<b>70,000</b>	<b>4,200 ve</b>	<b>8200 ve</b>	<b>1,100</b>	<b>5,500</b>	14.7	<b>61,000 ve</b>	<b>3,100 x</b>
<b>B17-W</b>	11/6/2012	<b>2,000</b>	<b>140</b>	130	23	120	1.94	<b>9,000</b>	<b>590 x</b>
<b>B18-W</b>	11/6/2012	610	<b>35</b>	3.1	3.0	11	--	<b>42,000</b>	<b>890 x</b>
<b>B20-W</b>	11/6/2012	<100	<1	<1	<1	<3	--	<b>710</b>	<250
<b>B21-W</b>	11/6/2012	170	1.2	1.4	1.1	<3	--	<b>25,000</b>	380 x
<b>B22-W</b>	11/6/2012	<100	<1	<1	<1	<3	--	<b>900</b>	<250
<b>B23-W</b>	11/6/2012	250	<b>6.5</b>	1.1	1.1	3.8	--	<b>15,000</b>	<250
B24-W	11/6/2012	<100	<1 ca	<1	<1	<3	--	<50	<250

**LEGEND**

- FDHA FUEL DISPENSARY HEADER AREA
- T-1 AST - RED DIESEL FUEL
- T-2 AST - REGULAR DIESEL
- T-3 AST - GASOLINE
- T-1 AST - SPLIT TANK
- HATCH DENOTES GRAVEL BACKFILLED AREAS
- B-1 PROBE BORINGS ADVANCED AFTER FUEL SPILL
- MW-1 EXISTING MONITORING WELLS

DRAWING SCALE: 1" = 30'

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FIGURE 4  
 SITE PLAN & PROBE  
 SUBSURFACE INVESTIGATION MAP

CLE ELUM 76 (FORMER DEVERE)  
 1000 1ST ST  
 CLE ELUM, WA

Project# 12-164 Date: 12/03/2012  
 File: FILE NAME Sheet 4 OF 4

# TABLES

**Table 1 Summary of Soil Analytical Results - PCS Excavation**  
**Cle Elum 76 - July 2012 Fuel Spill**  
**Cle Elum, WA**

Sample Number <sup>1</sup>	Depth Sampled (feet)	Date Sampled	Gasoline TPH <sup>2</sup> (mg/Kg)	Select Volatile Organic Compounds <sup>3</sup> (mg/Kg)								Diesel Extended TPH <sup>4</sup> (mg/Kg)		Total Lead <sup>5</sup> (mg/Kg)	Total cPAH <sup>6</sup> (mg/Kg)
				Benzene	Toluene	Ethylbenzene	Total Xylenes	1,2-Dichloroethane (EDC)	1,2-Dibromoethane (EDB)	Total Naphthalenes	MTBE	Diesel	Heavy Oil		
TPS-SN-4.0	4.0	7/26/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	--	--	--	--
TPN-SW-4.0	4.0	7/26/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	--	--	--	--
<b>TPN-B-6.2</b>	6.2	7/26/2012	<b>6,740</b>	<b>19.5</b>	<b>182</b>	<b>92</b>	<b>546</b>	<0.03	<0.005	<b>370</b>	<0.02	453	<100	<5.0	--
<b>TPN-B-5.5</b>	5.5	7/26/2012	<b>277</b>	<b>1.54</b>	6.38	1.63	<b>12.8</b>	--	--	--	--	--	--	--	--
TPN-SE-3.5	3.5	7/26/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	65	<100	--	--
<b>S1-2.0</b>	2.0	7/26/2012	<b>50,500</b>	<b>314</b>	<b>214</b>	<b>792</b>	<b>3,840</b>	--	--	--	--	<25	<100	--	--
<b>S2-3.5</b>	3.5	7/26/2012	<b>7,890</b>	<b>8.68</b>	<b>56.9</b>	<b>15.2</b>	<b>109</b>	--	--	--	--	--	--	--	--
<b>S3-2.5</b>	2.5	7/26/2012	<b>112</b>	<b>0.62</b>	3.15	1.31	6.52	--	--	--	--	145	<100	--	--
<b>S4-1.5</b>	1.5	7/26/2012	<b>21,700</b>	<b>324</b>	<b>360</b>	<b>335</b>	<b>1,550</b>	<0.03	<0.005	<b>695</b>	<0.02	<b>15,510</b>	<100	44	<0.02
TPS-B-6.5	6.5	7/26/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	<25	193	--	--
TPSW-B-4.0	4.0	7/26/2012	12.7	<0.02	<0.10	<0.05	0.37	--	--	--	--	--	--	--	--
TPW-B-6.5	6.5	7/26/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	<25	180	--	--
TPW-B-7.0	7.0	7/26/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	--	--	--	--
TPS2-B-4.0	4.0	7/26/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	--	--	--	--
<b>TPS2-B-7.0</b>	7.0	7/26/2012	<10	<b>0.25</b>	0.4	0.05	0.29	--	--	--	--	280	<100	--	--
<b>SS-1.5</b>	1.5	7/27/2012	<10	<b>0.078</b>	<0.10	<0.05	0.36	--	--	--	--	<100	<100	<5.0	<0.02
TPN-B5-6.0	6.0	7/27/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	<100	<100	--	--
TPN2-BSW-6.0	6.0	7/27/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	<100	<100	--	--
TPN2-BNW-6.0	6.0	7/27/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	<100	<100	--	--
<b>TPN2-SE-NE-2.0</b>	2.0	7/27/2012	<b>4,210</b>	<b>97.8</b>	<b>502</b>	<b>113</b>	<b>688</b>	--	--	--	--	<100	<100	--	--
<b>TPN2-SE-NE-4.0</b>	4.0	7/27/2012	<10	<b>0.12</b>	0.21	0.11	1.28	--	--	--	--	269	<100	--	--
<b>TPN2-SE-SE-2.0</b>	2.0	7/27/2012	<b>27,800</b>	<b>637</b>	<b>2,800</b>	<b>710</b>	<b>3,330</b>	--	--	--	--	<100	<100	--	--
<b>TPN2-SE-SE-4.0</b>	4.0	7/27/2012	11	<b>0.95</b>	1.36	0.062	0.18	--	--	--	--	262	<100	--	--
TPN2-SS-SE-4.0	4.0	7/27/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	<100	<100	--	--
TPN2-SW-SW-2.0	2.0	7/27/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	<100	<100	--	--
TPN2-SW-SW-4.0	4.0	7/27/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	<100	<100	--	--
TPN2-BC-10.0	10.0	10/9/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	50	<100	--	--
TPN3-B-3.5	3.5	7/27/2012	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	<100	<100	--	--
<b>TPN3-B-5.5</b>	5.5	7/27/2012	28	<b>0.24</b>	1.61	0.39	3.34	--	--	--	--	<100	<100	--	--
PQL			10	0.02	0.10	0.05	0.15	0.02	0.005	0.20	0.05	25 or 100	100	5	0.02
Ecology MTCA Method A Clean Up Levels			30 <sup>7</sup>	0.03	7	6	9	--	0.005	5	0.1	2,000	2,000	250	0.1 <sup>8</sup>

**Notes:**

<sup>1</sup>Approximate sample locations are shown in Figure 2.

<sup>2</sup>Gasoline range total petroleum hydrocarbons (TPH). Analyzed by NWTPH-Gx

<sup>3</sup>Select Volatile Organic Compounds. Analyzed by EPA Method Method 8021B

<sup>4</sup>Diesel extended range TPH. Analyzed by Northwest Method NWTPH-Dx/Dx Extended

<sup>5</sup>Analyzed by EPA Method 7421

<sup>6</sup>Analyzed by EPA Method 8270

<sup>7</sup>Cleanup level with presence of benzene

<sup>8</sup>Total carcinogens of carcinogenic polynuclear aromatic hydrocarbons (cPAHs) are comprised of benzo(a)anthracene th

mg/Kg = milligrams per kilograms

MTCA = Model Toxics Control Act

PQL=Practical Quantitation Limits

-- = not analyzed for this constituent

< = not detected above laboratory limits

\* Ecology has not designated a MTCA Method A cleanup level for this constituent

Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

**Table 2 Summary of Groundwater Analytical Results - Existing Monitoring Wells  
cle Elum 76 (Former Devere & Son)  
Cle Elum, WA**

Well Number <sup>1</sup>	Date Collected	BTEX <sup>2</sup> (µg/L)				Gasoline TPH <sup>3</sup> (µg/L)	Table 830-1 Constituents <sup>4</sup> (µg/L)					Diesel Extended TPH <sup>5</sup> (ug/L)		
		Benzene	Toluene	Ethylbenzene	Xylenes		Total Lead	1,2-Dichloroethane (EDC)	1,2-Dibromoethane (EDB)	Total Naphthalenes	MTBE	Diesel	Heavy Oil	Mineral Oil
MW-1 <sup>7</sup>	10/20/06	<1.0	<1.0	<1.0	<1.0	<100	<1.0	<1.0	<0.01	<5.0	<5.0	<b>1,660</b>	<400	<400
	2/13/07	**	**	**	**	**	**	**	**	**	**	**	**	**
	5/15/07	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	8/14/07	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	6/23/08	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	11/11/09	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	1/5/10	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	4/12/10	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	7/13/10	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
8/3/12	<1.0	<2.0	<1.0	<3.0	<100	--	--	--	--	--	<200	<400	--	
8/29/12	1.7	<1.0	<1.0	<1.0	<100	--	--	--	--	--	--	--	--	
MW-2b <sup>7</sup>	10/20/06	<1.0	1.3	<1.0	1.5	<100	<1.0	<1.0	<0.01	<5.0	<5.0	<b>1,350</b>	<400	<400
	2/13/07	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	5/15/07	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	8/14/07	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	11/11/09	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	1/5/10	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	4/12/10	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	7/13/10	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	8/3/12	<1.0	<2.0	<1.0	<3.0	<100	--	--	--	--	--	<200	<400	--
8/29/12	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	--	--	--	
MW-3	10/20/06	<1.0	2.1	<1.0	2.6	<100	<1.0	<1.0	<0.01	<5.0	<5.0	<200	<400	<400
	2/13/07	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	5/15/07	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	8/14/07	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	8/3/12	<1.0	<2.0	<1.0	<3.0	<100	--	--	--	--	--	<200	<400	--
	8/29/12	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	--	--	--
MW-4	10/20/06	<b>11</b>	3.0	2.8	4.8	<100	11	<1.0	<0.01	<5.0	<5.0	<b>2,240</b>	<400	<400
	2/13/07	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	5/15/07	<b>50.3</b>	6.7	9.2	9.6	<b>897</b>	--	--	--	--	--	<200	<400	<400
	8/14/07	<b>86.2</b>	22.0	11.4	10.3	<b>822</b>	--	--	--	--	--	<200	<400	<400
	11/25/07	<b>39.3</b>	13.9	1.1	16.6	<b>1,640</b>	--	--	--	--	--	<200	<400	<400
	6/23/08	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	9/29/08	1.4	<1.0	<1.0	<1.0	200	--	--	--	<1.0	--	--	--	--
	1/27/09	2.2	<1.0	1.0	3.3	232	--	--	--	--	--	--	--	--
	4/20/09	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	--	--	--
	8/3/12	<b>7.1</b>	<2.0	<1.0	<3.0	150	--	--	--	--	--	<200	<400	--
8/29/12	<1.0	<1.0	<1.0	<1.0	190	--	--	--	<1.0	--	--	--	--	
MW-5b	10/20/06	<1.0	<1.0	<1.0	<1.0	<100	<1.0	<1.0	<0.01	<5.0	<5.0	<b>1,730</b>	<400	<400
	2/13/07	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	5/15/07	2.9	<1.0	<1.0	<1.0	154	--	--	--	--	--	<200	<400	<400
	8/14/07	1.3	<1.0	<1.0	<1.0	154	--	--	--	--	--	<200	<400	<400
	11/25/07	<1.0	<1.0	<1.0	<1.0	110	--	--	--	--	--	<200	<400	<400
	8/3/12	<1.0	<2.0	<1.0	<3.0	<100	--	--	--	--	--	<200	<400	--
	8/29/12	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	--	--	--
MW-6 <sup>7</sup>	10/20/06	<1.0	<1.0	<1.0	<1.0	<100	6	<1.0	<0.01	<5.0	<5.0	<b>1,310</b>	<400	<400
	2/13/07	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	5/15/07	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	8/14/07	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	11/11/09	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	1/5/10	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	4/12/10	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	7/13/10	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	<200	<400	<400
	8/3/12	<1.0	<2.0	<1.0	<3.0	<100	--	--	--	--	--	<200	<400	--
	8/29/12	<1.0	<1.0	<1.0	<1.0	<100	--	--	--	--	--	--	--	--
PQL		1.0	1.0 or 2.0	1.0	1.0 or 3.0	100	1.0	1.0	0.01	5.0	5.0	200	400	400
Ecology MTCA Method A Cleanup Levels		5	1,000	700	1,000	800 <sup>6</sup>	15	5	0.01	160	20	500	500	500

**Notes:**

- <sup>1</sup>Monitoring well locations are shown in Figure 3
- <sup>2</sup>Analyzed by EPA Method 8021B
- <sup>3</sup>Analyzed by Northwest Method NWTPH-Gx
- <sup>4</sup>Analyzed by EPA Method 8260B
- <sup>5</sup>Analyzed by Northwest Method NWTPH-Dx/Dx extended
- <sup>6</sup>Cleanup level with presence of benzene
- <sup>7</sup>Selected monitoring wells required by Ecology for additional sampling for 4 consecutive quarters

- TPH = total petroleum hydrocarbons
- µg/L = micrograms per Liter
- = Indicates not tested for analyte
- "<" not detected above laboratory detection limits.
- PQL=Practical Quantitation Limit
- Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level
- \*\* Not Sampled

**Table 3 Summary of Groundwater Elevations - Existing Monitoring Wells  
Cle Elum 76 (Former Devere & Sons)  
Cle Elum, Washington**

Well Number/ TOC Elevation (feet)	Date of Measurement	DTW (feet)	DT LPH (feet)	LPH (feet)	GW Elevation (feet)	Change in GW Elevation (feet)
MW-1 1892.66	10/18/06	8.93	--	--	1883.73	
	02/13/07	--	--	--	--	
	05/15/07	6.93	--	--	1885.73	--
	08/14/07	6.66	--	--	1886.00	0.27
	06/19/08	7.78	--	--	1884.88	-1.12
	11/11/09	8.39	--	--	1884.27	-0.61
	01/05/10	8.71	--	--	1883.95	-0.32
	04/12/10	8.08	--	--	1884.58	0.63
	07/13/10	7.16	--	--	1885.50	0.92
	08/03/12	6.40	--	--	1886.26	0.76
	08/29/12	6.64	--	--	1886.02	-0.24
MW-2b 1891.79	10/18/06	8.10	--	--	1883.69	
	02/13/07	6.33	--	--	1885.46	1.77
	05/15/07	6.14	--	--	1885.65	0.19
	08/14/07	5.87	--	--	1885.92	0.27
	11/25/07	7.73	--	--	1884.06	-1.86
	06/19/08	6.95	--	--	1884.84	0.78
	01/27/09	6.52	--	--	1885.27	0.43
	11/11/09	7.54	--	--	1884.25	-1.02
	01/05/10	7.51	--	--	1884.28	0.03
	04/12/10	7.21	--	--	1884.58	0.30
	07/13/10	6.33	--	--	1885.46	0.88
	08/03/12	5.59	--	--	1886.20	0.74
	08/29/12	5.82	--	--	1885.97	-0.23
MW-3 1892.19	10/18/06	8.57	--	--	1883.62	
	02/13/07	6.74	--	--	1885.45	1.83
	05/15/07	6.56	--	--	1885.63	0.18
	08/14/07	6.34	--	--	1885.85	0.22
	06/19/08	7.38	--	--	1884.81	-1.04
	11/11/09	7.99	--	--	1884.20	-0.61
	08/03/12	6.08	--	--	1886.11	1.91
	08/29/12	6.28	--	--	1885.91	-0.20
MW-4 1892.89	10/18/06	9.20	--	--	1883.69	
	02/13/07	7.49	--	--	1885.40	1.71
	05/15/07	7.23	--	--	1885.66	0.26
	08/14/07	6.98	--	--	1885.91	0.25
	11/25/07	8.84	--	--	1884.05	-1.86
	06/19/08	8.07	--	--	1884.82	0.77
	09/26/08	8.70	--	--	1884.19	-0.63
	01/27/09	6.52	--	--	1886.37	2.18
	04/20/09	7.59	--	--	1885.30	-1.07
	11/11/09	8.53	--	--	1884.36	-0.94
		08/03/12	6.72	--	--	1886.17
	08/29/12	6.92	--	--	1885.97	-0.20
MW-5b 1892.25	10/18/06	8.69	--	--	1883.56	
	02/13/07	6.93	--	--	1885.32	1.76
	05/15/07	6.74	--	--	1885.51	0.19
	08/14/07	6.50	--	--	1885.75	0.24
	11/25/07	8.34	--	--	1883.91	-1.84
	06/19/08	7.53	--	--	1884.72	0.81
	11/11/09	8.14	--	--	1884.11	-0.61
		08/03/12	6.20	--	--	1886.05
	08/29/12	6.43	--	--	1885.82	-0.23
MW-6 1892.61	10/18/06	9.00	--	--	1883.61	
	02/13/07	7.27	--	--	1885.34	1.73
	05/15/07	6.98	--	--	1885.63	0.29
	08/14/07	6.72	--	--	1885.89	0.26
	11/25/07	8.62	--	--	1883.99	-1.90
	06/19/08	7.83	--	--	1884.78	0.79
	11/11/09	8.44	--	--	1884.17	-0.61
	01/05/10	9.45	--	--	1883.16	-1.01
	04/12/10	8.14	--	--	1884.47	1.31
	07/13/10	7.17	--	--	1885.44	0.97
		08/03/12	6.38	--	--	1886.23
	08/29/12	6.64	--	--	1885.97	-0.26

TOC = Top of casing elevation relative to assigned benchmark.  
DTW = Depth to water below top of casing.  
DT LPH = Depth to liquid phase hydrocarbons (i.e., free product)  
LPH = Liquid phase hydrocarbons thickness.  
GW Elevation = Groundwater Elevation  
-- = Not measured, not available, or not applicable

**Table 4 Summary of Water Quality Indicator Parameters - Existing Monitoring Wells  
Cle Elum 76 (Former Devere & Sons)  
Cle Elum, WA**

Well Number	Date Analyzed	pH	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp (°C)	Salinity (%)	TDS	ORP
MW-1	10/18/2006	6.41	0.275	10	--	14.50	0.01	--	
	2/13/2007	--	--	--	--	--	--	--	
	5/15/2007	6.45	0.335	35.00	0.85	11.00	0.01	--	
	8/14/2007	5.27	0.264	132.00	0.02	16.10	0.01	--	
	11/25/2007	--	--	--	--	--	--	--	
	6/19/2008	6.88	0.392	9.00	0.53	11.50	0.01	--	
	11/11/2009	6.00	0.339	--	0.17	13.39	0.16	0.220	30.1
	1/5/2010	8.38	0.495	--	0.90	9.80	0.24	0.321	41.1
	4/12/2010	6.52	0.321	--	0.77	8.75	0.15	0.209	-33.6
7/13/2010	6.34	0.424	--	0.49	12.76	0.20	0.275	-77.3	
8/29/2012	7.15	0.296	--	0.51	16.22	0.14	0.192	186.2	
MW-2b	10/18/2006	6.41	0.275	10	--	14.50	0.01	--	
	2/13/2007	5.82	0.680	82	--	7.10	0.02	--	
	5/15/2007	6.28	0.471	80	3.25	11.60	0.01	--	
	8/14/2007	5.32	0.290	216	-0.23	19.40	0.01	--	
	11/11/2009	6.11	0.536	--	0.21	14.02	0.26	0.350	35.1
	1/5/2010	9.67	0.302	--	6.8	3.63	0.14	0.196	76.3
	4/12/2010	6.08	1.224	--	0.34	8.91	0.61	0.795	9.9
	7/13/2010	6.34	0.692	--	0.48	14.22	0.34	0.450	-40.7
8/29/2012	6.84	0.363	--	1.08	17.99	0.17	0.236	228.1	
MW-3	10/18/2006	7.58	0.247	96	--	15.50	0.00	--	
	2/13/2007	6.50	0.345	30	--	8.00	0.01	--	
	5/15/2007	6.32	0.315	26	3.44	10.60	0.01	--	
	8/14/2007	5.47	0.289	147	-0.11	15.90	0.01	--	
	11/11/2009	6.66	0.336	--	2.19	14.09	0.16	0.218	70.3
8/29/2012	5.91	0.293	--	0.67	14.25	0.14	0.190	271.6	
MW-4	10/18/2006	6.85	0.304	628	--	14.60	0.00	--	
	2/13/2007	6.07	1.800	29	--	6.60	0.08	--	
	5/15/2007	6.57	0.367	108	1.14	11.60	0.01	--	
	8/14/2007	5.45	0.280	177	-0.02	16.70	0.01	--	
	11/25/2007	5.85	0.383	76	0.13	12.60	0.01	--	
	6/19/2008	6.74	0.434	12	0	12.30	0.01	--	
	9/26/2008	6.18	0.416	10	-1.43	15.70	0.00	--	
	1/27/2009	6.79	0.598	--	0.47	7.50	0.09	--	
	4/20/2009	--	--	--	--	--	--	--	
	11/11/2009	6.49	0.408	--	0.13	14.71	0.20	0.265	-92.1
8/29/2012	7.69	0.354	--	0.29	15.07	0.17	0.230	-7.2	
MW-5b	10/18/2006	9.93	0.278	10	--	16.70	0.01	--	
	2/13/2007	6.31	0.534	32	--	7.60	0.02	--	
	5/15/2007	6.57	0.358	18	0.76	11.80	0.01	--	
	8/14/2007	5.77	0.302	176	-0.29	17.60	0.01	--	
	11/25/2007	5.93	0.324	21	0.14	11.90	0.01	--	
	11/11/2009	6.56	0.351	--	0.11	13.84	0.17	0.228	-31.6
8/29/2012	7.11	0.322	--	0.36	16.22	0.15	0.209	103.1	
MW-6	10/18/2006	1.00	0.241	999	--	16.60	0.01	--	
	2/13/2007	6.68	0.347	7	--	7.50	0.01	--	
	5/15/2007	6.52	3.300	16	0.64	11.10	0.01	--	
	8/14/2007	5.66	0.247	142	-0.18	16.70	0.00	--	
	11/11/2009	6.11	0.327	--	0.38	14.53	0.16	0.213	131.1
	1/5/2010	8.39	0.348	--	2.24	10.04	0.17	0.226	51.9
	4/12/2010	6.58	0.339	--	1.49	8.88	0.16	0.220	28.9
	7/13/2010	6.62	0.370	--	1.57	13.45	0.18	0.241	57.6
8/29/2012	7.13	0.278	--	0.87	16.42	0.13	0.181	251.1	

Notes:  
-- = Not measured, or not available

**Table 5 Summary of Soil Analytical Results - Probe Subsurface Investigations  
Cle Elum 76 - July 2012 Fuel Spill  
Cle Elum, WA**

Sample Number <sup>1</sup>	Depth Sampled (feet)	Date Sampled	Gasoline TPH <sup>2</sup> (mg/Kg)	Select Volatile Organic Compounds <sup>3</sup> (mg/Kg)				Diesel Extended TPH <sup>4</sup> (mg/Kg)	
				Benzene	Toluene	Ethylbenzene	Total Xylenes	Diesel	Heavy Oil
<b>B1-2-8</b>	8.0	7/31/2012	<b>52</b>	<0.02	<0.05	<0.05	<0.15	380	480
B2-3-10	10.0	7/31/2012	<10	<0.02	<0.05	<0.05	<0.15	<50	<100
B3-3-9	9.0	7/31/2012	<10	<0.02	<0.05	<0.05	<0.15	<50	<100
B4-3-10	10.0	7/31/2012	<10	<0.02	<0.05	<0.05	<0.15	<50	190
<b>B5-3-11</b>	11.0	7/31/2012	<b>2,900</b>	<b>15</b>	<b>77</b>	<b>30</b>	<b>141</b>	440	<100
<b>B6-3-10</b>	10.0	7/31/2012	<b>130</b>	<b>0.03</b>	0.20	0.09	0.57	<b>4,800</b>	<100
<b>B7-3-11</b>	11.0	7/31/2012	<b>2,200</b>	<b>0.06</b>	0.09	0.31	0.41	<b>3,100</b>	<100
<b>B8-3-11</b>	11.0	7/31/2012	<b>690</b>	<0.02	0.08	0.13	0.40	1,100	<100
TPN2-BC-10.0	10.0	10/9/2012	<10	<0.02	<0.05	<0.05	<0.15	50	<100
<b>B11-S3-9.5/10.0</b>	9.5-10.0	10/10/2012	<10	<0.02	<0.05	<0.05	<0.15	<b>2,000</b>	<100
B12-S1-3.0/3.5	3.0-3.5	10/10/2012	<10	<0.02	<0.05	<0.05	<0.15	<50	<100
B12-S3-9.5/10.0	9.5-10.0	10/10/2012	<10	<0.02	<0.05	<0.05	<0.15	410	<100
<b>B13-S3-10.5/11.0</b>	10.5-11.0	10/10/2012	<10	0.02	<0.05	<0.05	<0.15	<b>3,700</b>	<100
B14-S3-11.0/11.5	11.0-11.5	10/10/2012	<10	<0.02	<0.05	<0.05	<0.15	<50	<100
B15-S3-11.5/12.0	11.5-12.0	10/10/2012	<10	<0.02	<0.05	<0.05	<0.15	<50	<100
<b>B16-S1-2</b>	2.0	11/7/2012	<b>1,900</b>	<b>0.91</b>	<b>34</b>	<b>44</b>	<b>230</b>	<b>3,000 x</b>	<250
<b>B16-S2-4</b>	4.0	11/7/2012	<b>2,100</b>	<b>9.2</b>	<b>120</b>	<b>46</b>	<b>230</b>	1,900	<250
<b>B16-S3-7.5</b>	7.5	11/7/2012	<b>1,000</b>	<b>6.1</b>	<b>36</b>	<b>11</b>	<b>59</b>	<b>8,000</b>	<250
<b>B17-S1-2</b>	2.0	11/7/2012	8.4	<b>0.16</b>	0.22	0.064	1.7	<50	<250
B17-S2-4	4.0	11/7/2012	<2	<0.02	<0.02	<0.02	<0.06	<50	<250
<b>B17-S3-9</b>	9.0	11/7/2012	13	<b>0.12</b>	0.25	0.078	1.6	<b>11,000</b>	<250
B18-S1-2	2.0	11/7/2012	3.7	0.029	0.18	0.081	0.52	77	<250
B18-S2-4	4.0	11/7/2012	<2	<0.02	<0.02	<0.02	<0.06	<50	<250
<b>B18-S4-10</b>	10.0	11/7/2012	<b>370</b>	<b>0.12</b>	0.44	3.5	8.9	<b>3,500</b>	<250
<b>B19-S1-2</b>	2.0	11/7/2012	8.1	<b>0.039</b>	0.16	<0.02	1.4	610 x	<250
B21-S3-11.5	11.5	11/7/2012	<2	<0.02	<0.02	<0.02	<0.06	<50	<250
B22-S3-10	10.0	11/7/2012	<2	<0.02	<0.02	<0.02	<0.06	<50	<250
<b>B23-S3-10</b>	10.0	11/7/2012	<b>270</b>	<b>0.03 j</b>	0.31	3.1	1.3	<b>4,500</b>	<250
PQL			2	0.02	0.02	0.02	0.06	50	250
Ecology MTCA Method A Clean Up Levels			30 <sup>5</sup>	0.03	7	6	9	2,000	2,000

Notes:

<sup>1</sup> Approximate sample locations are shown in Figure 4

<sup>2</sup> Gasoline range total petroleum hydrocarbons (TPH). Analyzed by NWTPH-Gx

<sup>3</sup> Select Volatile Organic Compounds. Analyzed by EPA Method Method 8021B

<sup>4</sup> Diesel extended range TPH. Analyzed by Northwest Method NWTPH-Dx/Dx Extended

<sup>5</sup> Cleanup level with presence of benzene

mg/Kg = milligrams per kilograms

MTCA = Model Toxics Control Act

PQL=Practical Quantitation Limits

-- = not analyzed for this constituent

< = not detected above laboratory limits

\* Ecology has not designated a MTCA Method A cleanup level for this constituent

Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

Friedman & Bruya Inc. data qualifiers: 1) j - result is below normal reporting limits. Value reported is an estimate.

2) ve - estimated concentration calculated for an analyte response above the valid instrument calibration range. Dilution is required.

30 x - sample chromatographic pattern does not resemble the fuel standard used for quantitation.

**Table 6 Summary of Groundwater Analytical Results - Probe Subsurface Investigations  
Cle Elum 76 - July 2012 Fuel Spill  
Cle Elum, WA**

Sample Number <sup>1</sup>	Date Sampled	Gasoline TPH <sup>2</sup> (ug/L)	Table 830-1 GRO Volatile Organic Constituents <sup>3</sup> (ug/L)								Total Lead <sup>5</sup> (ug/L)	Diesel TPH Extended <sup>4</sup> (ug/L)	
			Benzene	Toluene	Ethylbenzene	Total Xylenes	EDC	EDB	Total Naphthalenes	MTBE		Diesel	Heavy Oil
<b>Poly Tank 1</b>	7/27/2012	<b>12,700</b>	<b>541</b>	97	<1.0	<b>1,170</b>	--	--	--	--	--	<200	<400
<b>B1-W</b>	7/31/2012	<b>19,000</b>	<b>1,000</b>	<b>1,100</b>	68	440	<1.0	<0.01	4.3	<1.0	<b>38</b>	<b>590</b>	<500
B2-W	7/31/2012	<100	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	<250	<500
B3-W	7/31/2012	130	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	<250	<500
<b>B4-W</b>	7/31/2012	120	<b>70</b>	23	1.7	9.0	<1.0	<0.01	<1.0	<1.0	<2	<250	<500
<b>B5-W</b>	7/31/2012	<b>30,000</b>	<b>1,600</b>	<b>4,800</b>	<b>7,800</b>	<b>3,700</b>	--	--	--	--	--	<b>17,000</b>	<500
<b>B6-W</b>	7/31/2012	160	2.5	11	1.7	12	--	--	--	--	--	<b>570</b>	<500
<b>B7-W</b>	7/31/2012	<b>30,000</b>	<b>23</b>	3.2	20	20	--	--	--	--	--	<b>45,000</b>	<500
<b>B8-W</b>	7/31/2012	<b>44,000</b>	<b>31</b>	26	18	84	--	--	--	--	--	<b>57,000</b>	<500
B9-W	7/31/2012	<100	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	<250	<500
B10-W	7/31/2012	370	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	<250	<500
<b>B11-W</b>	10/10/2012	<b>830</b>	1.0	<1.0	<1.0	<3.0	--	--	--	--	--	<b>860</b>	<500
B12-W	10/10/2012	200	<1.0	<1.0	2.5	4.0	--	--	--	--	--	<250	<500
B13-W	10/10/2012	<100	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	<250	<500
B14-W	10/10/2012	<100	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	<250	<500
B15-W	10/10/2012	<100	<1.0	<1.0	<1.0	<3.0	--	--	--	--	--	<250	<500
<b>B16-W</b>	11/6/2012	<b>70,000</b>	<b>4,200 ve</b>	<b>8200 ve</b>	<b>1,100</b>	<b>5,500</b>	--	--	--	--	14.7	<b>61,000 ve</b>	<b>3,100 x</b>
<b>B17-W</b>	11/6/2012	<b>2,000</b>	<b>140</b>	130	23	120	--	--	--	--	1.94	<b>9,000</b>	<b>590 x</b>
<b>B18-W</b>	11/6/2012	610	<b>35</b>	3.1	3.0	11	--	--	--	--	--	<b>42,000</b>	<b>890 x</b>
<b>B20-W</b>	11/6/2012	<100	<1	<1	<1	<3	--	--	--	--	--	<b>710</b>	<250
<b>B21-W</b>	11/6/2012	170	1.2	1.4	1.1	<3	--	--	--	--	--	<b>25,000</b>	380 x
<b>B22-W</b>	11/6/2012	<100	<1	<1	<1	<3	--	--	--	--	--	<b>900</b>	<250
<b>B23-W</b>	11/6/2012	250	<b>6.5</b>	1.1	1.1	3.8	--	--	--	--	--	<b>15,000</b>	<250
B24-W	11/6/2012	<100	<1 ca	<1	<1	<3	--	--	--	--	--	<50	<250
PQL		100	1	1	1	3	1.0	0.01	1.0	1.0	2	50	250
Ecology MTCA Method A Clean Up Levels		800 <sup>6</sup>	5	1,000	700	1,000	5	0.010	160	20	15	500	500

**Notes:**

<sup>1</sup> Approximate sample locations are shown in Figure 4

<sup>2</sup> Gasoline range total petroleum hydrocarbons (TPH). Analyzed by Northwest Method NWTPH-Gx.

<sup>3</sup> Select Volatile Organic Compounds in gasoline range organics (GRO) per Table 830-1. Analyzed by EPA Method 8021B/or 8260B.

<sup>4</sup> Analyzed by Northwest Method NWTPH-Dx/Dx Extended

<sup>5</sup> Analyzed by EPA Method 7421

<sup>6</sup> Cleanup level with presence of benzene

EDC = 1,2-Dichloroethane

EDB = 1,2-Dibromoethane

MTBE = methyl tertiary-butyl ether

PQL = Practical Quantification Limit

MTCA = Model Toxics Control Act

ug/L= micrograms per liter

-- = not analyzed for this constituent

< = not detected above laboratory limits

\* Ecology has not designated a MTCA Method A cleanup level for this constituent

Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

Friedman & Bruya Inc. data qualifiers: 1) c - presence of analyte may be due to carryover from previous sample injections.

2) ve - estimated concentration calculated for an analyte response above the valid instrument calibration range. Dilution is required.

3) ca - calibration results for this range fell outside of acceptance criteria. Value reported is an estimate.

**APPENDIX A**  
**SITE PHOTOGRAPHS**

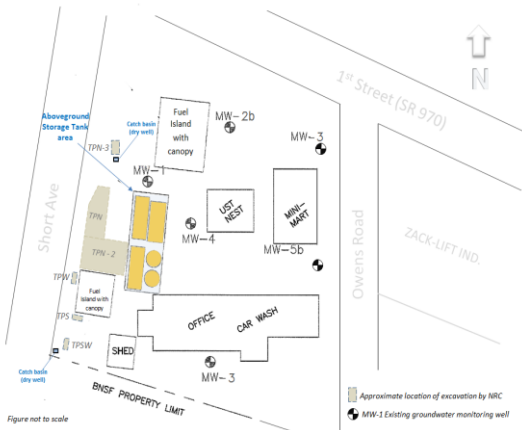


**ASSOCIATED  
ENVIRONMENTAL  
GROUP, LLC**

## SITE PHOTOGRAPHIC RECORD

**Project No.: 12-164**

**Project Name: Cle Elum 76 – Soil Excavation/Interim Site Remediation**



**Photo #1:** Site Plan of Cle Elum 76 (the Site) showing excavated areas TPN, TPN-2, TP-3, TPW, TPS, and TPSW located to the west, northwest, and southwest of the fuel spill.



**Photo #2:** View looking south towards location of aboveground storage tanks (ASTs) fuel farm and location of spill at Site.



**Photo #3:** View looking southwest at eastern side of ASTs fuel farm where spill occurred.



**Photo #4:** View looking south along western property boundary of Site, adjacent west from ASTs fuel farm.



**Photo #5:** View looking south-southwest from location of spill.



**Photo #6:** View looking south-southeast from location of spill.



**ASSOCIATED  
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GROUP, LLC**

## SITE PHOTOGRAPHIC RECORD

Project No.: 12-164

Project Name: Cle Elum 76 – Soil Excavation/Interim Site Remediation



Photo #7: *View looking southeast from southwest corner of Site.*



Photo #8: *View looking east-northeast along southern property boundary of Site.*



Photo #9: *View looking north towards loading station, diesel fuel island w/canopy, and ASTs fuel farm where spill occurred.*



Photo #10: *Area of fuel spill beneath the split aboveground storage tank (AST).*



Photo #11: *Soil staining on the north end of the split AST where the fuel spill occurred. Note secondary containment.*



Photo #12: *Photo showing the west side of the AST enclosure and the diesel fuel dispenser pump. Looking north-northeast.*



ASSOCIATED  
ENVIRONMENTAL  
GROUP, LLC

## SITE PHOTOGRAPHIC RECORD

Project No.: 12-164

Project Name: Cle Elum 76 – Soil Excavation/Interim Site Remediation



Photo #43: *First responders to the fuel spill incident. Photo by the northern catch basin (dry well).*



Photo #14: *Photo of the AST enclosure looking southeast. Note poly tank in foreground and pump for groundwater seepage within test pit north excavation.*



Photo #15: *View looking east-southeast toward the initial excavation of test pit north 2, located adjacent west of spill location.*



Photo #16: *Photo of test pit north and test pit north 2 looking north from south side of test pit north 2.*



Photo #17: *View of test pit north 2 looking east-northeast.*



Photo #18: *View looking north-northeast at initial asphalt cutting in preparation of test pit north 3.*



ASSOCIATED  
ENVIRONMENTAL  
GROUP, LLC

## SITE PHOTOGRAPHIC RECORD

Project No.: 12-164

Project Name: Cle Elum 76 – Soil Excavation/Interim Site Remediation



Photo #19: *View of free product within test pit north 3 at approximately 5.5 feet below ground surface (bgs).*



Photo #20: *View looking north-northwest towards test pit west behind dispenser pump.*



Photo #21: *View looking north towards test pit southwest. Photo taken near southwest corner of Site.*



Photo #22: *View looking northeast towards test pit south. Photo taken adjacent south of diesel fuel island w/canopy.*



Photo #23: *View looking north-northeast towards test pit south 2. Photo taken near southern property boundary of Site.*



Photo #24: *Backfilled excavations of the main test pit comprising of test pits TPN and TPN2.*

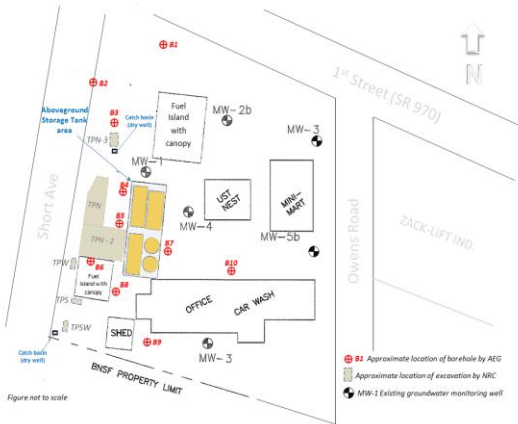


**ASSOCIATED  
ENVIRONMENTAL  
GROUP, LLC**

## SITE PHOTOGRAPHIC RECORD

**Project No.: 12-164**

**Project Name: Cle Elum 76 – 1<sup>st</sup> Probe Subsurface Investigation**



**Photo #1:** Site Plan showing the layout of the Site including borings and groundwater monitoring wells

**Photo #2:** Location of borehole B-1 northwest of the gasoline fuel dispenser island. Photo looking east along 1<sup>st</sup> Street



**Photo #3:** Advancing borehole B-2 northwest of the aboveground fuel tanks seen on the background. Photo looking south from 1<sup>st</sup> Street.

**Photo #4:** Borehole B-3 advanced immediately north of the "north catch basin" shown behind the Geoprobe rig. Photo looking north towards 1<sup>st</sup> Street.



**Photo #5:** Borehole B-4 advanced immediately northeast of the aboveground gasoline storage tank. Gasoline dispenser canopy behind. Photo looking northeast

**Photo #6:** Borehole B-5 advanced between the aboveground fuel storage tanks and the TPN excavation. Photo looking east.



ASSOCIATED  
ENVIRONMENTAL  
GROUP, LLC

## SITE PHOTOGRAPHIC RECORD

Project No.: 12-164

Project Name: Cle Elum 76 – 1<sup>st</sup> Probe Subsurface Investigation



Photo #7: Borehole B-6 advanced within the diesel dispenser area, southwest of the aboveground storage tanks and south of the test pit excavation. Photo looking northwest



Photo #8: Location of borehole B-7 shown in white paint east of the diesel fuel aboveground storage tank (in the background). Photo looking west



Photo #9: Borehole B-8 advanced in the immediate area of the diesel fuel dispenser pump. Photo looking southeast.



Photo #10: A groundwater sample was collected from borehole B-8 as close possible to the fuel storage tanks.



Photo #11: Location of borehole B-9 on the southwest corner of the office building. Photo looking southeast



Photo #12: Stainless steel screen in the borehole and tubing inserted in the screen for groundwater sampling

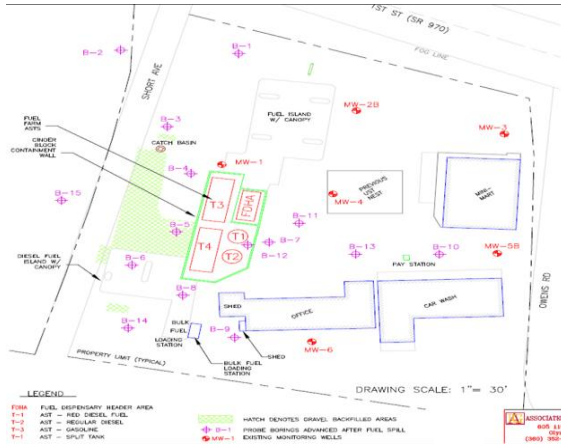


**ASSOCIATED  
ENVIRONMENTAL  
GROUP, LLC**

## SITE PHOTOGRAPHIC RECORD

**Project No.: 12-164**

**Project Name: Cle Elum 76 – 2<sup>nd</sup> Probe Investigation**



**Photo #1:** Site Plan showing the location borings B-10 through B-15 advanced during this phase of subsurface investigation



**Photo #2:** Location of borehole B-10 shown in white paint between the Site's Mini-mart and the carwash. Photo looking west



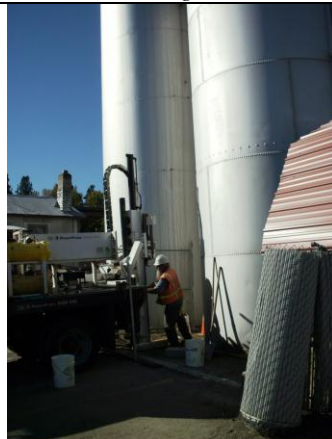
**Photo #3:** Location of borehole B-11 east of the aboveground fuel storage tanks area. Photo looking north.



**Photo #4:** Location of borehole B-11 (white circle) in relation to diesel aboveground storage tanks T-1 and T-2. Photo looking southwest.



**Photo #5:** Location of borehole B-12 (white arrow) immediately east of the diesel fuel aboveground storage tank T-1 shown in the right above corner



**Photo #6:** Geoprobe rig installed in location of borehole B-12 for subsurface soil sampling. Fuel diesel tank T-2 in the background



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ENVIRONMENTAL  
GROUP, LLC

## SITE PHOTOGRAPHIC RECORD

Project No.: 12-164

Project Name: Cle Elum 76 – 2<sup>nd</sup> Probe Investigation



Photo  
#7:

*Location of borehole B-13 advanced east of diesel fuel tanks T-1 and T-2 shown in the background. Photo looking west*



Photo  
#8:

*Borehole B-14 advanced south of the diesel fuel dispenser island and test pit excavation shown behind the Geoprobe rig. Photo looking northwest towards 1<sup>st</sup> Street*



Photo  
#9:

*View of the location of borehole B-14 south of the diesel fuel dispenser island and the TPS excavation. Photo looking northeast*



Photo  
#10:

*Borehole B-15 advanced west of excavation TPN. Poly holding tanks shown on the right hand side of the photo. Looking northeast towards 1<sup>st</sup> Street*



Photo  
#11:

*Location of borehole B-15 in relation to the aboveground fuel storage tank enclosure and the diesel fuel dispenser. Photo looking southeast*



Photo  
#12:

*Subsurface soils encountered at the Site. Soil depth increases from left to right in the 4-foot long sample tubes. Note presence of sand gravel*



## SITE PHOTOGRAPHIC RECORD

Project No.: 12-164

Project Name: Cle Elum 76 – 3<sup>rd</sup> Probe Investigation



Photo #1: Limited access rig advancing borehole B-18 within southeast area of bulk fuel containment area. Photo looking northeast.



Photo #2: Direct push probe drilling at borehole B-16, adjacent south of split tank AST (fuel spill area) within containment. Photo looking north.



Photo #3: Borehole B-17 advanced beneath the split tank AST within bulk fuel containment area. Photo looking west.



Photo #4: Borehole B-19 was hand-bored using a Rotor Hammer due to the inaccessible location of the boring beneath the split AST. Photo looking west.



Photo #5: Borehole B-20 advanced to collect a groundwater sample in the previous excavated area south of the catch basin shown in the foreground. Photo looking south.



Photo #6: Location of borehole B-21, located northeast of the bulk fuel containment area. Photo looking southwest.

**APPENDIX B**  
**SUPPORTING DOCUMENTS**

**RE Powell**

**Fuel Spill Documentation**

ENDING MILES

57979  
BEGINNING MILES

57999

CC4843

# GENERAL TRANSPORT COMPANY

(509) 882-2115

P.O. BOX 98 • GRANDVIEW, WA 98930

TAX I.D.#91-110-7733

TANK TRUCK  
BILL OF LADING

201054

DATE

7/22/2012

SHIPPER  
PHILLIPS 66

ORIGIN  
PHILLIPS 66 - RENTON, WA

BILL OF LADING  
737428

CONSIGNEE  
RE POWELL

DESTINATION  
CLE ELM SPORT STOP  
1002 1ST ST, CLE ELM, WA

FUEL

GALLONS	PRODUCT DESCRIPTION	INCHES BEFORE	INCHES AFTER	WEIGHT	RATE	CHARGES
11402	GASOLINE, 3, UN 1203, PGII UNLEADED REGULAR GASOLINE • OCTANE 87	4 1/2	13 1/2			
	GASOLINE, 3, UN 1203, PGII UNLEADED PLUS GASOLINE • OCTANE 89	157	1109			
	GASOLINE, 3, UN 1203, PGII PREMIUM UNLEADED GASOLINE • OCTANE 92					
	DIESEL FUEL, 3, NA 1993, PGIII ULTRA LOW SULFUR DIESEL #2, NO EVIDENCE OF DYE • 15 PPM SULFUR					
	DIESEL FUEL, 3, NA 1993, PGIII ULTRA LOW SULFUR DIESEL #1, NON-TAXABLE USE ONLY • DYED 15 PPM SULFUR					
	DIESEL FUEL, 3, NA 1993 PGIII HIGH SULFUR DIESEL #2, NON-TAXABLE USE ONLY • DYED 500 PPM SULFUR					
	DIESEL FUEL, 3, NA 1993 PGIII ULTRA LOW SULFUR DIESEL #2, NON-TAXABLE USE ONLY • DYED 15 PPM SULFUR					
	DIESEL FUEL, 3, NA 1993 PGIII BIO-DIESEL B-5, B-20					
	ETHANOL ALCOHOLS, 3, NA 1987					

10402	TOTAL GALLONS	DRIVER M. J. SAVANUOJA	TRK/TRL# 182/120A	MILES 202	TOTAL CHARGES
-------	---------------	---------------------------	----------------------	--------------	---------------

	TOTAL TIME	ARRIVE	START	FINISH	SPLIT PICK-UP/DELIVERY <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
LOAD TIME	45 MIN	1925	1935	2010	
UNLOAD TIME	2 HRS	2200	2240	0000	TRUCK PUMP USED <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

DRIVER SIGNATURE: *M. J. SAVANUOJA*      RECEIVER SIGNATURE: *X*

REMARKS: 30508232

STATELINE			
STATELINE			
STATELINE			
ROUTES USED			
WASHINGTON	OREGON	IDAHO	TOTAL

OFFICE

# Phillips 66 Company

Federal Tax ID 37-1652702

INVOICE DETAIL INFORMATION

**Sold To (0010042433):**  
 POWELL CHRISTENSEN INC  
 501 E WINE COUNTRY RD  
 GRANDVIEW WA 98930

**Ship To (0000817493):**  
 POWELL CHRISTENSEN INC  
 VARIOUS WASHINGTON  
 FERNDAL WA 98248

**Site#:** 0000817493  
**Carrier:** GENERAL TRANSPORT  
**Plant:** RENTON,WA,PSX,ETERM (03HT)  
**INCO Terms:** FOB Origin/Collect  
**Delivery Number:** 0835756782

**Invoice Number:** 0951934172 REG  
**Invoice Date:** Jul 23 2012  
**Accounts Rec. #:** 0010042433  
**Sales Info:** NAW1-N3-NWDE-W08-NAW062  
**Order Number:** 0233768388  
**Consignee Number:** 30508832  
**Pmt Method:** EFT  
**SCAC:** GLTS  
**Truck Number:** 00182

Brand Matl#	Description	BOL#	Shipped	Due Date	Gross Vol	Net Vol	UOM#	S#	Price/Rate	Amount
76	1050065 <b>CONV REG 87 H RVP ETH 10% BRD</b> Conventional gasoline. This product does not meet the requirements for reformulated gasoline and may not be used in any reformulated gasoline covered area. Contains detergent additive satisfying E.P.A. additive regulations. E10: Contains between 9 and 10 vol% ethanol. The RVP does not exceed 10 psi. The 1.0 psi RVP waiver applies to this gasoline except in areas where is it prohibited (see listing by state/by county on EPA web site) where the RVP does not exceed 9 psi. Do not mix with gasoline containing anything other than between 9 and 10 vol% ethanol.	737428	07/22/12 19:35		11402.00	11328.00	UG6	G	\$2.932000	\$33,430.66
76	1050065 <b>Fed Oil Spill Fee</b> 1050065 Federal Excise Tax 1050065 Haz Substance Fee D	737428	07/22/12 19:35		11402.00	11328.00	UG6	G	\$0.001710 \$0.184000 0.700000 %	\$19.50 \$2,097.97 \$234.01

**Remit To: DO NOT PAY**  
 Your account will be drafted on the invoice due date or next valid draft date.

**Product Summary:** \$33,450.16  
**Non-Deferred Taxes:** \$2,331.98  
**Discount Amount:** \$334.31  
**Amount Due:** \$35,447.83

**Payment Terms:** 1% 10 Days Gas, Net From Ship Date  
Date Discount Amount Amount Due  
**If Paid By:** Aug 1 2012 \$334.31 \$35,447.83  
**Invoice Due:** Aug 1 2012 **\$35,782.14**

If you have questions regarding your Fuel Billing invoice, please call 1-800-541-8251 between 7am and 5pm CT, or e-mail us at BillingQuestions@p66.com. All other questions, including EFT (option 4), Credit Card (option 5), Non-Fuel Billing (options 2/2), should be directed to the Wholesale Marketing Customer Support Line at 1-800-654-4129zzz.

*1L TANK 2*  
*9/22 CUEESH*  
*500 SPILLED*

MOTOR CARRIER STRAIGHT BILL OF LADING OR DELIVERY TICKET

Phillips 66 Company  
 Renton Terminal  
 2423 Lind Ave. SW  
 Renton, WA 98057

Ph: 425-228-6142 EPA#: 452881996

Transportation of product received is subject to the classifications tariffs and/or contracts in effect on the date of this Bill of Lading  
 Not a Bill of Lading when moved in a vehicle operated by shipper or owner of product, but merely a receipt for product.

BOL #	VER	LOAD START/STOP	DELIVERY #	TRUCK 00182	TRAILER 01261
737428	1	07/22/2012 19:35		VAPOR CERT.	VAPOR CERT.
		07/22/2012 20:12		CERT. EXP. 11/25/2012	CERT. EXP. 10/20/2012

SHIPPER (Transferor): TH  
 PHILLIPS 66 COMPANY  
 600 N. DAIRY ASHFORD RD.  
 HOUSTON, TX 77079-1175

SOLD TO: 0042433  
 POWELL CHRISTENSEN INC  
 FREIGHT COLLECT

BILLED TO (Transferee): 262  
 PHILLIPS 66 BRANDED  
 600 N. DAIRY ASHFORD  
 HOUSTON, TX

SHIPPED TO: 30508832  
 POWELL CHRISTENSEN INC  
 VARIOUS WASHINGTON  
 VARIOUS, WA 98930

H	M	PRODUCT DESCRIPTION	OCT	TEMP F	API GRAV	MAX RVP	GROSS GALS	NET GALS	
X		UN1203, Gasoline, 3, II Branded Regular 87 w/10% Ethanol	87	69.9	56.4	9.0	11,402	11,328	1 Cargo Tank

This product does not meet requirements for reformulated gasoline, and may not be used in any reformulated gasoline covered area.  
 Gasoline is oxygenated with ethanol. Detergent additized gasoline. E10: Contains between 9 and 10 vol % ethanol  
 The RVP does not exceed 9.0 psi. The 1.0 RVP waiver applies to this gasoline. Do not mix with gasoline containing anything other than  
 between 9 and 10 vol% ethanol.

Net Volumes Corrected To 60 Degrees Fahrenheit

"This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation."

LOADED BY:

RECEIVED BY:

DRIVER: 9875 SAYFUDDIN, MURJAN  
 CARRIER: GLTS GENERAL TRANSPORT CO

I certify that the quantity was received as indicated, except as noted above

FOR CHEMICAL EMERGENCY SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT  
 CALL CHEMTREC DAY OR NIGHT 800-424-9300.

ADDITIONAL HAZARD INFORMATION ON BACK OF FORM.

# R.E. POWELL DISTRIBUTING

Main Office - Grandview Division

P.O. BOX 98 • GRANDVIEW, WA 98930

Toppenish Division: P.O. Box 224 • Zillah, WA 98953

Pasco Division: 151 N. Commercial Ave • Pasco, WA 99301

Walla Walla Division: 948 May Street • Walla Walla, WA 99362

Yakima Division: 311 W. I. Street • Yakima, WA 98902

GASOLINE	Unleaded	Lead	DIESEL	BULK OIL	Washington Hazmat Tax	Sales Tax	Washington State Petroleum Tax
	<input type="checkbox"/>	<input checked="" type="checkbox"/>					
		994Z					

AA 3 4 9	0	0	9	9	4	2
AA 3 7 1	0	0	0	0	0	0

CUSTOMER From Cle-Elum Pup Poles

ADDRESS to Passis Plant Truck #2

VEHICLE # 154 DATE 7/21/12

OPERATOR RG

45300 Rec'd [Signature]

REORDER FORM #758, 1000A FROM DEGREE DAY SYSTEMS, INC CEDAR GROVE, NJ 07009  
 TOLL FREE: 1-800-205-0698 • FAX: (973) 235-4440 • [permits@degreeday.com](mailto:permits@degreeday.com)  
 INSERT FACE DOWN THIS END FIRST  
**All-Weather Eye-Snark Motor Jacket**

**NRC PETROLEUM CONTAMINATED SOIL &  
WATER DISPOSAL LOGS**

# GASOLINE CONTAMINATED SOIL TRANSPORTATION & DISPOSAL LOG

R.E. Powell

1001 East First Street

Cle Elum, WA

Shipping Date	BOL #	Shipping Number	Description	Container Type	Disposal Facility	Facility Ticket ID #	Quantity (tons)	TOTAL Quantity (tons)
25-Jul-12	60359	69527-01	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059266	29.24	29.24
25-Jul-12	60360	69527-02	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059267	23.34	52.58
26-Jul-12	60165	69527-03	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059268	34.11	86.69
26-Jul-12	60346	69527-04	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059273	29.35	116.04
26-Jul-12	60347	69527-05	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059274	28.27	144.31
26-Jul-12	60348	69527-06	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059275	26.83	171.14
26-Jul-12	60349	69527-07	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059276	30.78	201.92
26-Jul-12	60350	69527-08	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059281	26.05	227.97
26-Jul-12	60351	69527-09	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	debris & dust from	27.71	255.68
26-Jul-12	60352	69527-10	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	debris & dust from	19.93	275.61
27-Jul-12	60353	69527-11	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059283	27.70	303.31
27-Jul-12	60355	69527-12	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059284	19.60	322.91
27-Jul-12	60354	69527-13	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059286	27.00	349.91
27-Jul-12	60356	69527-14	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059288	21.78	371.69

# GASOLINE CONTAMINATED SOIL TRANSPORTATION & DISPOSAL LOG

R.E. Powell

1001 East First Street

Cle Elum, WA

Shipping Date	BOL #	Shipping Number	Description	Container Type	Disposal Facility	Facility Ticket ID #	Quantity (tons)	TOTAL Quantity (tons)
30-Jul-12	60113	69527-15	Gasoline contaminated soil	Solo Truck	CEMEX Everett, WA	1876059300	13.80	385.49
1-Aug-12	60358	69527-16	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059309	24.86	410.35
1-Aug-12	60210	69527-17	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059311	30.35	440.70
1-Aug-12	60211	69527-18	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059315	27.95	468.65
1-Aug-12	60212	69527-19	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059316	24.91	493.56
1-Aug-12	60213	69527-20	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059319	29.84	523.40
1-Aug-12	60202	69527-21	Gasoline contaminated soil	Truck & Trailer	CEMEX Everett, WA	1876059324	24.75	548.15
2-Aug-12	60361	69527-22	Gasoline contaminated soil partial load	Truck & Trailer	CEMEX Everett, WA	1876059332	9.79	557.94
9-Oct-12	60689	69527-23	Gasoline contaminated soil partial load	Truck & Trailer	CEMEX Everett, WA	1876060107	27.34	585.28
9-Oct-12	60690	69527-24	Gasoline contaminated soil partial load	Truck & Trailer	CEMEX Everett, WA	1876060108	28.94	614.22
9-Oct-12	60691	69527-25	Gasoline contaminated soil partial load	Truck & Trailer	CEMEX Everett, WA	1876060110	30.97	645.19
9-Oct-12	60692	69527-26	Gasoline contaminated soil partial load	Truck & Trailer	CEMEX Everett, WA	1876060111	32.78	677.97

# GASOLINE CONTAMINATED GROUNDWATER TRANSPORTATION & DISPOSAL LOG

**R.E. Powell**

**Project #69527**

1001 East First Street

Cle Elum, WA

Shipping Date	BOL #	Shipping Number	Description	Container Type	Disposal Facility	Facility Ticket ID #	Quantity (gallons)	TOTAL Quantity (gallons)
30-Jul-12	60321	69527-001	Ground water contaminated with gasoline	Vac Truck 70 bbl	Marine Vacuum Services	5381	3,000	3,000
31-Jul-12	61045	69527-002	Ground water contaminated with gasoline	Vac Truck 70 bbl	Marine Vacuum Services	5385	3,000	6,000
31-Jul-12	61044	69527-003	Ground water contaminated with gasoline	Vac Truck 70 bbl	Marine Vacuum Services	5390	3,000	9,000
1-Aug-12	60357	69527-004	Ground water contaminated with gasoline	Vac Truck 70 bbl	Marine Vacuum Services	5397	3,000	12,000
1-Aug-12	60203	69527-005	Ground water contaminated with gasoline	Vac Truck 70 bbl	Marine Vacuum Services	5398	3,000	15,000
2-Aug-12	60362	69527-006	Ground water contaminated with gasoline	Tractor 120 bbl	Marine Vacuum Services	5404	4,880	19,880
2-Aug-12	60364	69527-007	Ground water contaminated with gasoline	Tractor 120 bbl	Marine Vacuum Services	5860	4,800	24,680
19-Sep-12	60215	69527-008	Rinsate & residual from AST Tanks	Vac Truck 70 bbl	Marine Vacuum Services	4895	1,500	26,180
10-Oct-12	60261	69527-009	Rinsate & residual from storage tanks	Vac Truck 70 bbl	Marine Vacuum Services	4389	750	26,930

# BACKFILL MATERIAL LOG

R.E. Powell

Project #69527

1001 East First Street

Cle Elum, WA

Shipping Date	Shipping Number	Description	Container Type	Transporter	Quantity (tons)	TOTAL Quantity (tons)
2-Aug-12	41123	Pit Run Backfill for sampling slot trenches	Truck & Pup	CEMEX	34.35	34.35
9-Oct-12	479207	Import Pit Run	Solo truck	NRC	16.25	50.60
9-Oct-12	480090	Import Pit Run	Solo truck	NRC	15.63	66.23
9-Oct-12	479202	Import Pit Run	Solo truck	NRC	14.81	81.04
9-Oct-12	480092	Import Pit Run	Solo truck	NRC	15.33	96.37
9-Oct-12	480082	Import Pit Run	Solo truck	NRC	15.64	112.01
9-Oct-12	480078	Import Pit Run	Solo truck	NRC	16.06	128.07
9-Oct-12	480077	Import Pit Run	Solo truck	NRC	15.50	143.57
9-Oct-12	480074	Import Pit Run	Solo truck	NRC	17.05	160.62
9-Oct-12	480071	Import Pit Run	Solo truck	NRC	14.59	175.21
9-Oct-12	480068	Import Pit Run	Solo truck	NRC	16.17	191.38
9-Oct-12	480056	Import Pit Run	Solo truck	NRC	16.12	207.50
9-Oct-12	328356	Import Pit Run	Truck & trailer	CEMEX/KOOY	29.77	237.27
9-Oct-12	328354	Import Pit Run	Truck & trailer	CEMEX/KOOY	27.24	264.51

# BACKFILL MATERIAL LOG

R.E. Powell

Project #69527

1001 East First Street

Cle Elum, WA

Shipping Date	Shipping Number	Description	Container Type	Transporter	Quantity (tons)	TOTAL Quantity (tons)
10-Oct-12	479214	Import Pit Run	Solo truck	ECP	19.07	283.58
10-Oct-12	479215	Import Pit Run	Solo truck	NRC	15.50	299.08
10-Oct-12	479216	Import Pit Run	Solo truck	NRC	15.92	315.00
10-Oct-12	479217	Import Pit Run	Solo truck	NRC	15.78	330.78
10-Oct-12	479219	Import Pit Run	Solo truck	ECP	15.70	346.48
10-Oct-12	479220	Import Pit Run	Solo truck	ECP	14.76	361.24
10-Oct-12	479225	Import Pit Run	Solo truck	ECP	15.05	376.29
10-Oct-12	479229	Import Pit Run	Solo truck	ECP	15.53	391.82
10-Oct-12	479230	Import Pit Run	Solo truck	ECP	15.21	407.03
10-Oct-12	479231	Import Pit Run	Solo truck	ECP	16.28	423.31
10-Oct-12	479232	Import Pit Run	Solo truck	ECP	14.68	437.99
10-Oct-12	479233	Import Pit Run	Solo truck	ECP	15.91	453.90
10-Oct-12	479237	Import Pit Run	Solo truck	NRC	15.75	469.65
10-Oct-12	479238	Import Pit Run	Solo truck	NRC	14.57	484.22

# BACKFILL MATERIAL LOG

R.E. Powell

Project #69527

1001 East First Street

Cle Elum, WA

Shipping Date	Shipping Number	Description	Container Type	Transporter	Quantity (tons)	TOTAL Quantity (tons)
10-Oct-12	479239	Import Pit Run	Solo truck	ECP	15.48	499.70
10-Oct-12	479256	Import Pit Run	Solo truck	NRC	16.08	515.78
10-Oct-12	479260	Import Pit Run	Solo truck	NRC	16.12	531.90
10-Oct-12	479262	Import Pit Run	Solo truck	NRC	15.62	547.52
10-Oct-12	479267	1 1/4 crushed rock	Solo truck	NRC	14.97	562.49
10-Oct-12	479275	1 1/4 crushed rock	Solo truck	NRC	16.32	578.81
10-Oct-12	479276	Import Pit Run	Solo truck	NRC	9.20	588.01
10-Oct-12	479280	1 1/4 crushed rock	Solo truck	NRC	15.90	603.91
10-Oct-12	479286	Import Pit Run	Solo truck	NRC	14.58	618.49
11-Oct-12	480106	1 1/4 crushed rock	Solo truck	NRC	14.56	633.05

# **BORING LOGS**



<b>PROJECT:</b> Cle Elum 76 (RE Powell) - Initial Subsurface Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-1	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 North 1st Steet, Ele Elum, WA	<b>Approximate Elevation:</b>		
<b>Subcontractor/Equipment:</b> ESN - Carlos Trujillo	<b>Drilling Method/Drilling Rig:</b> Direct Push Probe - Geoprobe		
<b>Date:</b> 7/31/2012	<b>Logged By:</b> L. Chaidez		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface, approximately 3 inches, underlain by: Brown, moist, medium dense SAND, with gravel, fine to coarse sand, poorly graded, fine to coarse gravel.	SP				1230	NA			NA
5					B1-1-4	1235		0.0	Not Observed	
		▼			B1-2-8	1240		1.8	Not Observed	
10										
	Brown, wet, medium dense GRAVEL, fine to coarse, some fine to coarse sand. at 11 feet: saturated, trace of sand.	GP			B1-3-11	1243		9.6	Not Observed	
15										
	TD at 16 feet bgs. Groundwater encountered at approximately 8 feet bgs ATD. Boring backfilled with bentonite chips.									
20										
25										

**Explanation**

- |  |  |  |                 |
|--|--|--|-----------------|
|  | 2-inch O.D. split spoon sample                               |  | Monitoring Well |
|  | No Recovery  |  | Clean Sand      |
|  | Contact located approximately                                |  | Bentonite       |
|  | Groundwater level at time of drilling or date of measurement |  | Grout/Concrete  |
|  |  |  | Screened Casing |
|  |  |  | Blank Casing    |



<b>PROJECT:</b> Cle Elum 76 (RE Powell) - Initial Subsurface Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-2	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 North 1st Steet, Ele Elum WA	<b>Approximate Elevation:</b>		
<b>Subcontractor/Equipment:</b> ESN - Carlos Trujillo	<b>Drilling Method/Drilling Rig:</b> Direct Push Probe - Geoprobe		
<b>Date:</b> 7/31/2012	<b>Logged By:</b> L. Chaidez		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Dirt/gravel road underlain by: Brown, moist, medium dense SAND, fine grained, trace-to-some fine to medium gravel.	SP				1320	NA			NA
5	at 5 feet: medium to coarse sand with fine to coarse gravel.				B2-1-4	1323		0.0		
					B2-2-8	1327		0.0		
10					B2-3-10	1333		0.0	Not Observed	
	Dark brown, wet, medium dense GRAVEL, fine to coarse, trace to some coarse sand.	GP								
15	TD at 12 feet bgs. Groundwater encountered at approximately 10-1/2 feet bgs ATD. Boring backfilled with bentonite chips.									
20										
25										

**Explanation**

- |  |  |  |                 |
|--|--|--|-----------------|
|  | 2-inch O.D. split spoon sample                               |  | Monitoring Well |
|  | No Recovery  |  | Clean Sand      |
|  | Contact located approximately                                |  | Bentonite       |
|  | Groundwater level at time of drilling or date of measurement |  | Grout/Concrete  |
|  |  |  | Screened Casing |
|  |  |  | Blank Casing    |



<b>PROJECT:</b>	Cle Elum 76 (RE Powell) - Initial Subsurface Investigation	<b>JOB #</b>	12-164	<b>BORING #</b>	B-3	<b>PAGE 1 OF 1</b>
<b>Location:</b>	1000 North 1st Steet, Ele Elum WA	<b>Approximate Elevation:</b>				
<b>Subcontractor/Equipment:</b>	ESN - Carlos Trujillo	<b>Drilling Method/Drilling Rig:</b>	Direct Push Probe - Geoprobe			
<b>Date:</b>	7/31/2012	<b>Logged By:</b>	L. Chaidez			

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt Surface approximately 3 inches underlain by: Brown, moist, medium dense SAND with gravel, fine grained sand, fine to coarse gravel.	SP				1404	NA			NA
5					B3-1-4	1407		0.0		
	Dark brown, moist, medium dense GRAVEL, medium grained. at 7 feet: wet.	▼			B3-2-7	1410		0.0	Not Observed	
	at 7-1/2 feet: fine to coarse.	GP			B3-3-9	1420		0.0	Not Observed	
10										
15	TD at 12 feet bgs. Groundwater encountered at approximately 7 feet bgs ATD. Boring backfilled with bentonite chips.									
20										
25										

**Explanation**

- |  |   |  |                 |
|--|---|--|-----------------|
|  | 2-inch O.D. split spoon sample                                  |  | Monitoring Well |
|  | No Recovery   |  | Clean Sand      |
|  | Contact located approximately                                   |  | Bentonite       |
|  | Groundwater level at time of drilling<br>or date of measurement |  | Grout/Concrete  |
|  |   |  | Screened Casing |
|  |   |  | Blank Casing    |



<b>PROJECT:</b> Cle Elum 76 (RE Powell) - Initial Subsurface Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-4	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 North 1st Steet, Ele Elum WA	<b>Approximate Elevation:</b>		
<b>Subcontractor/Equipment:</b> ESN - Carlos Trujillo	<b>Drilling Method/Drilling Rig:</b> Direct Push Probe - Geoprobe		
<b>Date:</b> 7/31/2012	<b>Logged By:</b> L. Chaidez		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface, approximately 3 inches, underlain by: Brown, moist, medium dense SAND, fine to medium, poorly graded, with fine to medium gravel.	SP				1100	NA			NA
5					B4-1-4	1103		0.0		
	at 7 feet: coarse gravel.				B4-2-6	1107		0.0		
10		▼			B4-3-10	1114		0.0	Not Observed	
	Dark brown, saturated, medium dense GRAVEL, fine to coarse, some coarse sand.	GP								
15										
	TD at 16 feet bgs. Groundwater encountered at approximately 10 feet bgs ATD. Boring backfilled with bentonite chips.									
20										
25										

**Explanation**

- |  |  |  |                 |
|--|--|--|-----------------|
|  | 2-inch O.D. split spoon sample                               |  | Monitoring Well |
|  | No Recovery  |  | Clean Sand      |
|  | Contact located approximately                                |  | Bentonite       |
|  | Groundwater level at time of drilling or date of measurement |  | Grout/Concrete  |
|  |  |  | Screened Casing |
|  |  |  | Blank Casing    |



<b>PROJECT:</b>	Cle Elum 76 (RE Powell) - Initial Subsurface Investigation	<b>JOB #</b>	12-164	<b>BORING #</b>	B-5	<b>PAGE 1 OF 1</b>
<b>Location:</b>	1000 North 1st Steet, Ele Elum WA	<b>Approximate Elevation:</b>				
<b>Subcontractor/Equipment:</b>	ESN - Carlos Trujillo	<b>Drilling Method/Drilling Rig:</b>	Direct Push Probe - Geoprobe			
<b>Date:</b>	7/31/2012	<b>Logged By:</b>	L. Chaidez			

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface approximately 3 inches underlain by: Light brown, moist, medium dense SAND, coarse grained, poorly graded, some medium to coarse gravel.					0958	NA			NA
5		SP			B5-1-4	1001		1.6		
	at 7 feet: fine to coarse sand with fine to coarse gravel.				B5-2-8	1005		12.1		
10					B5-3-11	1010		48.3	Not Observed	
	Dark gray, wet, medium dense GRAVEL, fine to coarse, some coarse sand.	GP								
15	TD at 12 feet bgs. Groundwater encountered at approximately 11 feet bgs ATD. Boring backfilled with bentonite chips.									
20										
25										

**Explanation**

- |  |  |  |                 |
|--|--|--|-----------------|
|  | 2-inch O.D. split spoon sample                               |  | Monitoring Well |
|  | No Recovery  |  | Clean Sand      |
|  | Contact located approximately                                |  | Bentonite       |
|  | Groundwater level at time of drilling or date of measurement |  | Grout/Concrete  |
|  |  |  | Screened Casing |
|  |  |  | Blank Casing    |



<b>PROJECT:</b>	Cle Elum 76 (RE Powell) - Initial Subsurface Investigation	<b>JOB #</b>	12-164	<b>BORING #</b>	B-6	<b>PAGE 1 OF 1</b>
<b>Location:</b>	1000 North 1st Steet, Ele Elum WA		<b>Approximate Elevation:</b>			
<b>Subcontractor/Equipment:</b>	ESN - Carlos Trujillo		<b>Drilling Method/Drilling Rig:</b> Direct Push Probe - Geoprobe			
<b>Date:</b>	7/31/2012		<b>Logged By:</b> L. Chaidez			

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Concrete surface, approximately 3 inches, underlain by: Brown, moist, loose SAND, fine grained.					1655	NA			NA
		SP								
	at 3-1/2 feet: with fine to coarse gravel.				B6-1-4	1659		0.0		
5										
					B6-2-8	1702		1.9		
10		▼			B6-3-10	1711		20	Not Observed	
	Brown, wet, medium dense GRAVEL, fine to coarse, poorly graded, some fine to coarse sand.	GP								
	at 12 feet: medium grained, trace to no sand, saturated.									
15										
	TD at 16 feet bgs. Groundwater encountered at approximately 10 feet bgs ATD. Boring backfilled with bentonite chips.									
20										
25										

**Explanation**










- |  |  |  |                 |
|--|--|--|-----------------|
|  | 2-inch O.D. split spoon sample                               |  | Monitoring Well |
|  | No Recovery  |  | Clean Sand      |
|  | Contact located approximately                                |  | Bentonite       |
|  | Groundwater level at time of drilling or date of measurement |  | Grout/Concrete  |
|  |  |  | Screened Casing |
|  |  |  | Blank Casing    |



<b>PROJECT:</b> Cle Elum 76 (RE Powell) - Initial Subsurface Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-7	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 North 1st Steet, Ele Elum WA	<b>Approximate Elevation:</b>		
<b>Subcontractor/Equipment:</b> ESN - Carlos Trujillo	<b>Drilling Method/Drilling Rig:</b> Direct Push Probe - Geoprobe		
<b>Date:</b> 7/31/2012	<b>Logged By:</b> L. Chaidez		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface approximately 3 inches underlain by: Brown, moist, medium dense SAND with gravel; fine to coarse sand, poorly graded, medium to coarse gravel.	SP				0908	NA			NA
5					B7-1-4	0912		0.8	Not Observed	
					B7-2-6	0916		0.8		
10	fine to coarse gravel.									
					B7-3-11	0921		48		
	Dark gray, wet, dense GRAVEL, fine grained, with coarse sand. Strong HC odor.	GP								
15	TD at 12 feet bgs. Groundwater encountered at approximately 11 feet bgs ATD. Boring backfilled with bentonite chips.									
20										
25										

**Explanation**

- |   |  |   |                 |
|---|--|---|-----------------|
|  | 2-inch O.D. split spoon sample                               |  | Clean Sand      |
|  | No Recovery  |  | Bentonite       |
|  | Contact located approximately                                |  | Grout/Concrete  |
|  | Groundwater level at time of drilling or date of measurement |  | Screened Casing |
|   |  |  | Blank Casing    |



<b>PROJECT:</b> Cle Elum 76 (RE Powell) - Initial Subsurface Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-8	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 North 1st Steet, Ele Elum WA		<b>Approximate Elevation:</b>	
<b>Subcontractor/Equipment:</b> ESN - Carlos Trujillo		<b>Drilling Method/Drilling Rig:</b> Direct Push Probe - Geoprobe	
<b>Date:</b> 7/31/2012		<b>Logged By:</b> L. Chaidez	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Concrete surface approximately 3 inches underlain by: Brown, moist, loose SAND, fine grained.					1610	NA			NA
5	at 5 feet: fine to coarse grained, poorly graded, with fine to coarse gravel.	SP			B8-1-4	1613		1.8		
					B8-2-8	1618		23.7		
10					B8-3-11	1624		37	Not Observed	
	Brown, wet, medium dense GRAVEL, medium grained.	GP								
15	TD at 12 feet bgs. Groundwater encountered at approximately 11 feet bgs ATD. Boring backfilled with bentonite chips.									
20										
25										

**Explanation**

- |   |  |
|---|--|
| <p> 2-inch O.D. split spoon sample</p> <p> No Recovery</p> <p> Contact located approximately</p> <p> Groundwater level at time of drilling or date of measurement</p> | <p> Monitoring Well</p> <p> Clean Sand</p> <p> Bentonite</p> <p> Grout/Concrete</p> <p> Screened Casing</p> <p> Blank Casing</p> |
|---|--|



<b>PROJECT:</b> Cle Elum 76 (RE Powell) - Initial Subsurface Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-9	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 North 1st Steet, Ele Elum WA	<b>Approximate Elevation:</b>		
<b>Subcontractor/Equipment:</b> ESN - Carlos Trujillo	<b>Drilling Method/Drilling Rig:</b> Direct Push Probe - Geoprobe		
<b>Date:</b> 7/31/2012	<b>Logged By:</b> L. Chaidez		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface - approximately 3 inches - underlain by:					1527	NA			NA
	Brown, moist, loose SAND, fine grained, trace silt.	SP			B9-1-4	1533		0.0		
5										
	at 6 feet: coarse sand with fine to coarse gravel.				B9-2-8	1539		0.0		
10		▼						0.0	Not Observed	
	Brown, wet, medium dense GRAVEL, medium grained, trace coarse sand.	GP								
	at 11 feet: fine to coarse gravel.									
	TD at 12 feet bgs. Groundwater encountered at approximately 10 feet bgs ATD. Boring backfilled with bentonite chips.									
15										
20										
25										

**Explanation**

- |  |  |  |                 |
|--|--|--|-----------------|
|  | 2-inch O.D. split spoon sample                               |  | Monitoring Well |
|  | No Recovery  |  | Clean Sand      |
|  | Contact located approximately                                |  | Bentonite       |
|  | Groundwater level at time of drilling or date of measurement |  | Grout/Concrete  |
|  |  |  | Screened Casing |
|  |  |  | Blank Casing    |



<b>PROJECT:</b> Cle Elum 76 (RE Powell) - Initial Subsurface Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-10	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 North 1st Steet, Ele Elum WA	<b>Approximate Elevation:</b>		
<b>Subcontractor/Equipment:</b> ESN - Carlos Trujillo	<b>Drilling Method/Drilling Rig:</b> Direct Push Probe - Geoprobe		
<b>Date:</b> 7/31/2012	<b>Logged By:</b> L. Chaidez		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface - approximatley 3 inches thick - underlain by:					1448	NA			NA
5	Dark brown, moist, medium dense SAND, fine grained, trace medium gravel.  at 6-1/2 feet: brown, fine to coarse sand, with fine to coarse gravel.	SP			B10-1-4	1453		0.0		
10					B10-2-8	1458		0.0	Not Observed	
	Dark brown, wet, medium dense GRAVEL with sand, fine to coarse gravel, coarse sand.	GP								
15	TD at 12 feet bgs. Groundwater encountered at approximately 10 feet bgs ATD. Boring backfilled with bentonite chips.									
20										
25										

**Explanation**

- |  |  |  |                 |
|--|--|--|-----------------|
|  | 2-inch O.D. split spoon sample                               |  | Monitoring Well |
|  | No Recovery  |  | Clean Sand      |
|  | Contact located approximately                                |  | Bentonite       |
|  | Groundwater level at time of drilling or date of measurement |  | Grout/Concrete  |
|  |  |  | Screened Casing |
|  |  |  | Blank Casing    |



<b>PROJECT:</b> Cle Elum 76 - 2nd Probe Subsurface Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-11	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 East 1st Street, Cle Elum, WA	<b>Approximate Elevation:</b>		
<b>Subcontractor/Equipment:</b> ESN - Marty Haun	<b>Drilling Method/Drilling Rig:</b> Direct Push Probe/Power Probe 9600		
<b>Date:</b> 10/10/2012	<b>Logged By:</b> Y. Van		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface, approximately 2 inches, underlain by Brown, dry, medium dense, silty SAND, local gravel. (FILL)	SM				1910	NA			NA
5					B11-S1-3.5/4.0	0914		0.0		
	Gray-brown, dry, medium dense to dense, sandy GRAVEL, fine to coarse size gravel, fine to coarse grained sand, subround gravel. No petroleum hydrocarbon odor.	GW								
					B11-S2-7.5/8.0	0917		26.8		
10	at 9 1/2 feet to 10 feet: strong fuel odor. Becomes moist to wet.	▼			B11-S3-9.5/10.0	0927		39.4	Not Observed	
					B11-S4-11.5/12.0	0936		6.4	Slight Sheen	
	at 12 feet: saturated. Strong fuel odor. Slight sheen.									
15	at 14 feet to 15 feet: well sorted medium size gravel, subround.	GP/GW								
					B11-S5-15.0/15.5	0946		3.4	Not Observed	
	TD at 16 feet bgs. Groundwater encountered at approximately 10 feet bgs ATD. Installed temporary retractable stainless screen at 11 feet to 14 feet. Groundwater collected at 1022. Boring backfilled with bentonite chips.									
20										
25										

**Explanation**

- |   |  |
|---|--|
| <p> 2-inch O.D. split spoon sample</p> <p> No Recovery</p> <p> Contact located approximately</p> <p> Groundwater level at time of drilling or date of measurement</p> | <p> Monitoring Well</p> <p> Clean Sand</p> <p> Bentonite</p> <p> Grout/Concrete</p> <p> Screened Casing</p> <p> Blank Casing</p> |
|---|--|



<b>PROJECT:</b> Cle Elum 76 - 2nd Probe Subsurface Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-12	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 East 1st Street, Cle Elum, WA	<b>Approximate Elevation:</b>		
<b>Subcontractor/Equipment:</b> ESN - Marty Haun	<b>Drilling Method/Drilling Rig:</b> Direct Push Probe/Power Probe 9600		
<b>Date:</b> 10/10/2012	<b>Logged By:</b> Y. Van		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Dirt/soil surface underlain by Brown, dry, medium dense, silty SAND with gravel. (FILL)	SM				1056	NA			NA
	at 3 feet to 3-1/2 feet: slight fuel odor.				B12-S1-3.0/3.5	1106		0.1		
5	grades to silty SAND with gravel to gravelly silty SAND, fine to coarse size gravel, subangular to subround. No obvious fuel odor.	GW			B12-S2-7.0/7.5	1109		0.4		
10	at 9 1/2 feet to 10 feet: strong fuel odor. Becomes moist to wet.	▼			B12-S3-9.5/10.0	1114		80	Not Observed	
	at 12 feet: Saturated.				B12-S4-11.5/12.0	1117		3.1	Not Observed	
15	at 14 feet to 15 feet: well sorted gravel.	GP/GW			B12-S5-15.5/16.0	1126			Not Observed	
20	TD at 16 feet bgs. Groundwater encountered at approximately 10 feet bgs ATD. Installed temporary retractable stainless screen at 11 feet to 14 feet. Groundwater collected at 1240. Boring backfilled with bentonite chips.									
25										

**Explanation**

- |  |  |  |                 |
|--|--|--|-----------------|
|  | 2-inch O.D. split spoon sample                               |  | Monitoring Well |
|  | No Recovery  |  | Clean Sand      |
|  | Contact located approximately                                |  | Bentonite       |
|  | Groundwater level at time of drilling or date of measurement |  | Grout/Concrete  |
|  |  |  | Screened Casing |
|  |  |  | Blank Casing    |



<b>PROJECT:</b> Cle Elum 76 - 2nd Probe Subsurface Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-13	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 East 1st Street, Cle Elum, WA		<b>Approximate Elevation:</b>	
<b>Subcontractor/Equipment:</b> ESN - Marty Haun		<b>Drilling Method/Drilling Rig:</b> Direct Push Probe/Power Probe 9600	
<b>Date:</b> 10/10/2012		<b>Logged By:</b> Y. Van	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface approximately 2 inches, underlain by Sandy gravel base. (FILL)	GW				1300	NA			NA
	Dark brown, moist, medium stiff, SILT.	ML								
5	Gray, dry, medium dense, sandy GRAVEL, fine to coarse size gravel, fine to coarse grained sand, subround gravel.	GW			B13-S1-3.5/4.0	1306		0.1		
	at 7 1/2 feet to 8 feet: no obvious fuel odor.				B13-S2-7.5/8.0	1312		0.3		
10	at 10-1/2 feet to 11 feet: becomes moist to wet; strong fuel odor.	▼			B13-S3-10.5/11.0	1317		147.3	Slight Sheen	
15	at 12 feet: saturated to approximately 14 feet; local pockets of moisture to 16 feet. Matrix sandy GRAVEL with some silt.				B13-S4-15.0/15.5	1324				
20	TD at 16 feet bgs. Groundwater encountered at approximately 10-1/2 feet to 11 feet bgs ATD. Installed temporary retractable stainless screen at 11 feet to 14 feet. Groundwater collected at 1406. Boring backfilled with bentonite chips.									
25	Note: boring produced discontinuous water.									

**Explanation**

- |  |  |  |                 |
|--|--|--|-----------------|
|  | 2-inch O.D. split spoon sample                               |  | Monitoring Well |
|  | No Recovery  |  | Clean Sand      |
|  | Contact located approximately                                |  | Bentonite       |
|  | Groundwater level at time of drilling or date of measurement |  | Grout/Concrete  |
|  |  |  | Screened Casing |
|  |  |  | Blank Casing    |



<b>PROJECT:</b> Cle Elum 76 - 2nd Probe Subsurface Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-14	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 East 1st Street, Cle Elum, WA	<b>Approximate Elevation:</b>		
<b>Subcontractor/Equipment:</b> ESN - Marty Haun	<b>Drilling Method/Drilling Rig:</b> Direct Push Probe/Power Probe 9600		
<b>Date:</b> 10/10/2012	<b>Logged By:</b> Y. Van		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface approximately 2 inches, underlain by Sandy gravel base. (FILL)					1444	NA			NA
	Brown-gray, dry, medium dense, silty SAND with gravel to gravelly SAND, fine to coarse grained sand.	SM/SW			B14-S1-3.5/4.0	1448		0.0		
5	Gray, dry, medium dense to dense, sandy GRAVEL, fine to coarse size gravel, fine to coarse grained sand, subangular to subround gravel.	GW			B14-S2-7.0/7.5	1454		0.0		
	at 7 feet: slight fuel odor?				B14-S3-11.0/11.5	1502		0.0	Not Observed	
10	at 11 feet to 11-1/2 feet: becomes moist to wet. No obvious fuel odor.	▼			B14-S4-15.5/16.0	1509			Not Observed	
	locally well sorted gravel.	GP GW								
15	TD at 16 feet bgs. Groundwater encountered at approximately 11 feet to 11-1/2 feet bgs ATD. Installed temporary retractable stainless screen at 11 feet to 14 feet. Groundwater collected at 1525. Boring backfilled with bentonite chips.									
20										
25										

**Explanation**

	2-inch O.D. split spoon sample		Monitoring Well
	No Recovery		Clean Sand
	Contact located approximately		Bentonite
	Groundwater level at time of drilling or date of measurement		Grout/Concrete
			Screened Casing
			Blank Casing



<b>PROJECT:</b> Cle Elum 76 - 2nd Probe Subsurface Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-15	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 East 1st Street, Cle Elum, WA	<b>Approximate Elevation:</b>		
<b>Subcontractor/Equipment:</b> ESN - Marty Haun	<b>Drilling Method/Drilling Rig:</b> Direct Push Probe/Power Probe 9600		
<b>Date:</b> 10/10/2012	<b>Logged By:</b> Y. Van		

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 Brown-gray, dry, medium dense, silty SAND with gravel, fine to medium size gravel. (FILL)	SM				1551	NA			NA
5					B15-S1-3.0/3.5	1557		0.0		
	Brown-gray, dry, medium dense to dense, sandy GRAVEL, fine to coarse size gravel, fine to coarse grained sand, subangular to subround gravel.	GW				1604		0.0		
10										
	at 11-1/2 feet to 12 feet: becomes moist to wet.	▼			B15-S3-11.5/12.0	1613		0.0	Not Observed	
15	TD at 14 feet bgs. Groundwater encountered at approximately 11-1/2 feet to 12 feet bgs ATD. Installed temporary retractable stainless screen at 11 feet to 14 feet. Groundwater collected at 1640. Boring backfilled with bentonite chips.									
20										
25										

**Explanation**





- |  |  |  |                 |
|--|--|--|-----------------|
|  | 2-inch O.D. split spoon sample                               |  | Monitoring Well |
|  | No Recovery  |  | Clean Sand      |
|  | Contact located approximately                                |  | Bentonite       |
|  | Groundwater level at time of drilling or date of measurement |  | Grout/Concrete  |
|  |  |  | Screened Casing |
|  |  |  | Blank Casing    |






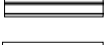

<b>PROJECT:</b> Cle Elum 76 - 3rd Probe Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-16	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 North 1st Street, Cle Elum, WA	<b>Approximate Elevation:</b> 1903' MSL		
<b>Subcontractor/Equipment:</b> ESN / L.A.R. / Chris Ross		<b>Drilling Method/Drilling Rig:</b> Direct Push Probe	
<b>Date:</b> 11/6/2012		<b>Logged By:</b> L. Chaidez	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Dirt surface, underlain by Brown, moist, medium dense, SAND, fine grained. Strong hydrocarbon type odor.					0958	NA			NA
		SP			B16-S1-2	1003		257		
	at 2 1/2 feet: fine to coarse grained SAND, well graded, with fine to coarse gravel, subangular.	SW			B16-S2-4	1006		336		
5										
	at 8 feet: wet. Strong hydrocarbon type odor.	▼			B16-S3-7.5	1016		289	Sheen Observed	
	Gray, saturated, very dense, GRAVEL, medium to coarse, subangular. Strong hydrocarbon type odor.	GW								
10										
	TD at 10 feet bgs. Groundwater encountered at approximately 8 feet bgs ATD. Installed retractable s.s. screen at 7 to 10 ft bgs. Groundwater collected at 1040. 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

**Monitoring Well Construction**

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



<b>PROJECT:</b> Cle Elum 76 - 3rd Probe Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-17	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 North 1st Street, Cle Elum, WA	<b>Approximate Elevation:</b> 1903' MSL		
<b>Subcontractor/Equipment:</b> ESN / L.A.R. / Chris Ross		<b>Drilling Method/Drilling Rig:</b> Direct Push Probe	
<b>Date:</b> 11/6/2012		<b>Logged By:</b> L. Chaidez	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Dirt surface, underlain by Brown, moist, medium dense, SAND, fine grained. Hydrocarbon type odor.					1046	NA			NA
	at 2 feet: fine to coarse grained, well graded, some medium gravel.	SP			B17-S1-2	1050		1.3		
	at 2-1/2 feet: with fine to coarse gravel. Mild hydrocarbon odor.	SW			B17-S2-4	1055		2.5		
5	Brown, moist, very dense, sandy GRAVEL, fine to coarse, fine to coarse grained sand. Mild hydrocarbon odor.	GW								
	at 9 feet: gray, wet. Strong hydrocarbon type odor.	▼			B17-S3-9	1104		2.8	Sheen Observed	
10										
15	TD at 10 feet bgs. Groundwater encountered at approximately 9 feet bgs ATD. Installed retractable s.s. screen at 7 to 10 ft bgs. Groundwater collected at 1120 Boring backfilled with bentonite chips.									
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

**Monitoring Well Construction**





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








<b>PROJECT:</b> Cle Elum 76 - 3rd Probe Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-18	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 North 1st Street, Cle Elum, WA	<b>Approximate Elevation:</b> 1903' MSL		
<b>Subcontractor/Equipment:</b> ESN / L.A.R. / Chris Ross		<b>Drilling Method/Drilling Rig:</b> Direct Push Probe	
<b>Date:</b> 11/6/2012		<b>Logged By:</b> L. Chaidez	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Dirt surface, underlain by Brown, moist, medium dense, SAND, fine to coarse grained.					1155	NA			NA
		SW			B18-S1-2	1201		1.0		
	at 2-1/2 feet: coarse sand, with fine to medium size gravel.				B18-S2-4	1204		0.2		
5										
	Brown, moist, very dense, sandy GRAVEL, fine to coarse, fine to coarse gravel, subrounded, fine to coarse grained sand.	GW			B18-S3-8	1214		0.4		
					B18-S4-10	1218		18.0	Sheen Observed	
10	at 10 feet: gray, wet. Hydrocarbon type odor.	▼								
	TD at 11 feet bgs. Groundwater encountered at approximately 10 feet bgs ATD. Installed retractable s.s. screen at 8 to 11 ft bgs. Groundwater collected at 1232 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

**Monitoring Well Construction**

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



PROJECT: Cle Elum 76 - 3rd Probe Investigation      JOB # 12-164      BORING # B-19      PAGE 1 OF 1





Location: 1000 North 1st Street, Cle Elum, WA      Approximate Elevation: 1903' MSL

Subcontractor/Equipment: ESN / L.A.R. / Chris Ross      Drilling Method/Drilling Rig: Hand Bored






Date: 11/6/2012      Logged By: L. Chaidez

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Dirt surface, underlain by Brown, moist, medium dense, SAND, with gravel.					time?	NA			NA
		SW			B19-S1-2	1312		170		
	Refusal at 4 feet.									
5	TD at 4 feet bgs. 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
-  Groundwater level at time of drilling or date of measurement

**Monitoring Well Construction**

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



<b>PROJECT:</b> Cle Elum 76 - 3rd Probe Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-20	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 North 1st Street, Cle Elum, WA	<b>Approximate Elevation:</b> 1904' MSL		
<b>Subcontractor/Equipment:</b> ESN / L.A.R. / Marty Haun		<b>Drilling Method/Drilling Rig:</b> Direct Push Probe	
<b>Date:</b> 11/6/2012		<b>Logged By:</b> L. Chaidez	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
5	Gravel surface, underlain by Brown, moist, medium dense, SAND with gravel. (FILL)	SW		-----		1329	NA			NA
10	Brown, moist, medium dense, SAND, fine to coarse grained sand, local medium size gravel.	SW		-----	B20-S1-8	1336		0.0	Not Observed	
	Brown, saturated, dense, GRAVEL, fine to coarse, subangular.	▼		-----						
15	TD at 12 feet bgs. Groundwater encountered at approximately 10 feet bgs ATD. Installed retractable s.s. screen at 8 to 11 ft bgs. Groundwater collected at 1357 Boring backfilled with bentonite chips.									
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

**Monitoring Well Construction**





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






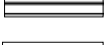

<b>PROJECT:</b> Cle Elum 76 - 3rd Probe Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-21	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 North 1st Street, Cle Elum, WA	<b>Approximate Elevation:</b> 1904' MSL		
<b>Subcontractor/Equipment:</b> ESN / L.A.R. / Marty Haun		<b>Drilling Method/Drilling Rig:</b> Direct Push Probe	
<b>Date:</b> 11/6/2012		<b>Logged By:</b> L. Chaidez	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface, underlain by Brown, moist, dense, SAND with gravel, fine to coarse grained sand, medium to coarse gravel.	SW				1402	NA			NA
5					B21-S1-4	1410		0.4		
	Brown, moist, dense, GRAVEL, with sand, medium to coarse gravel, fine to coarse grained sand.	GW								
10					B21-S2-8	1413		0.6		
	at 11-1/2 feet: gray, wet.	▼								
	TD at 12 feet bgs. Groundwater encountered at approximately 11-1/2 feet bgs ATD. Installed retractable s.s. screen at 8 to 11 ft bgs. Groundwater collected at 1440 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

**Monitoring Well Construction**

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



<b>PROJECT:</b> Cle Elum 76 - 3rd Probe Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-22	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 North 1st Street, Cle Elum, WA	<b>Approximate Elevation:</b> 1904' MSL		
<b>Subcontractor/Equipment:</b> ESN / L.A.R. / Marty Haun		<b>Drilling Method/Drilling Rig:</b> Direct Push Probe / Geoprobe 9500 PTD	
<b>Date:</b> 11/6/2012		<b>Logged By:</b> L. Chaidez	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface, underlain by Brown, moist, medium dense, SAND, with gravel, fine to coarse grained sand, medium to coarse gravel.					1446	NA			NA
5	at 4 feet: very dense.	SW			B22-S1-4	1448		0.0		
10	Brown, moist, very dense, sandy GRAVEL, medium to coarse gravel, fine grained sand.	GW			B22-S2-8	1453		0.0		
		▼			B22-S3-10	1506		0.0	Not Observed	
15	TD at 12 feet bgs. Groundwater encountered at approximately 10 feet bgs ATD. Installed retractable s.s. screen at 8 to 11 feet bgs. Groundwater collected at 1523 Boring backfilled with bentonite chips.									
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 Construction**

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



<b>PROJECT:</b> Cle Elum 76 - 3rd Probe Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-23	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 North 1st Street, Cle Elum, WA	<b>Approximate Elevation:</b> 1903' MSL		
<b>Subcontractor/Equipment:</b> ESN / L.A.R. / Marty Haun		<b>Drilling Method/Drilling Rig:</b> Direct Push Probe / Geoprobe 9500 PTD	
<b>Date:</b> 11/6/2012		<b>Logged By:</b> L. Chaidez	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface, underlain by Brown, moist, medium dense, SAND, fine grained sand.					1615	NA			NA
	at 2-1/2 feet: with gravel, medium to coarse.	SW			B23-S1-4	1618		2.3		
5	Brown, moist, dense, sandy GRAVEL, fine to coarse gravel, fine to coarse grained sand.	GW			B23-S2-8	1621		1.4		
10	at 10 feet: gray. Strong hydrocarbon type odor.				B23-S3-10	1628		84.5		
	at 11 feet: wet.	▼								
15	TD at 12 feet bgs. Groundwater encountered at approximately 11 feet bgs ATD. Installed retractable s.s. screen at 8 to 11 feet bgs. Groundwater collected at 1640 Boring backfilled with bentonite chips.									
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 Construction**





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








<b>PROJECT:</b> Cle Elum 76 - 3rd Probe Investigation	<b>JOB #</b> 12-164	<b>BORING #</b> B-24	<b>PAGE 1 OF 1</b>
<b>Location:</b> 1000 North 1st Street, Cle Elum, WA	<b>Approximate Elevation:</b> 1905' MSL		
<b>Subcontractor/Equipment:</b> ESN / L.A.R. / Marty Haun		<b>Drilling Method/Drilling Rig:</b> Direct Push Probe / Geoprobe	
<b>Date:</b> 11/6/2012		<b>Logged By:</b> L. Chaidez	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt surface, underlain by Brown, moist, dense, SAND, with gravel, fine grained sand, medium gravel.					1535	NA			NA
		SW								
5	at 4 feet: very dense, coarse gravel.				B24-S1-4	1539		0.0		
					B24-S2-8	1545		2.6		
10	Light brown, wet, very dense, GRAVEL, coarse gravel, some coarse grained sand.	GW								
15	TD at 12 feet bgs. Groundwater encountered at approximately 9-1/2 feet bgs ATD. Installed retractable s.s. screen at 8 to 11 feet bgs. Groundwater collected at 1605 Boring backfilled with bentonite chips.									
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

**Monitoring Well Construction**

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

**VERTICAL DATUM:**


THE VERTICAL DATUM FOR THIS SURVEY IS NAVD 88, BASED ON PUBLISHED ELEVATIONS FOR WSDOT MONUMENT 1959 AND MONUMENT 1960.

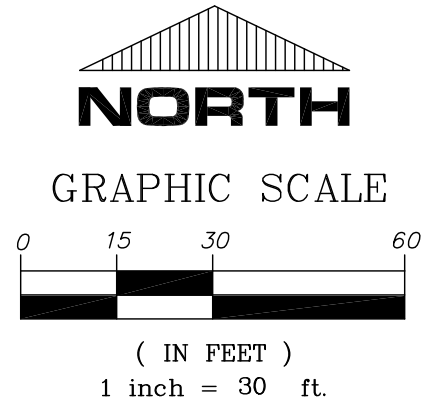
MONUMENT 1959 ELEVATION: 1839.137 FEET  
 MONUMENT 1960 ELEVATION: 1907.536 FEET

**HORIZONTAL DATUM:**

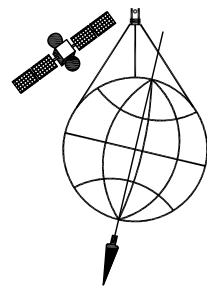
THE HORIZONTAL DATUM FOR THIS SURVEY IS NAD 83/07, WASHINGTON STATE PLANE, SOUTH ZONE, BASED ON PUBLISHED COORDINATES FOR WSDOT MONUMENT 1959 AND MONUMENT 1960.

**LEGEND:**

-  TEMPORARY BENCHMARK
-  PGS CONTROL PK NAIL
-  BORE HOLE
-  MONITORING WELL
-  CATCH BASIN
-  SIGN



**PACIFIC GEOMATIC SERVICES, INC.**



LAND SURVEYING & MAPPING SERVICES  
 QUALITY SERVICE - CREATIVE SOLUTIONS

6608 216TH STREET SW, STE. 304  
 MOUNTLAKE TERRACE, WA 98043  
 PHONE:(425) 778-5620 FAX:(425) 775-2849  
 WEB: www.PacGeolnc.com

JOB NAME: CLE ELUM 76  
 LOCATION: 1000 1ST ST  
 CLE ELUM, WASHINGTON  
 KITTITAS COUNTY

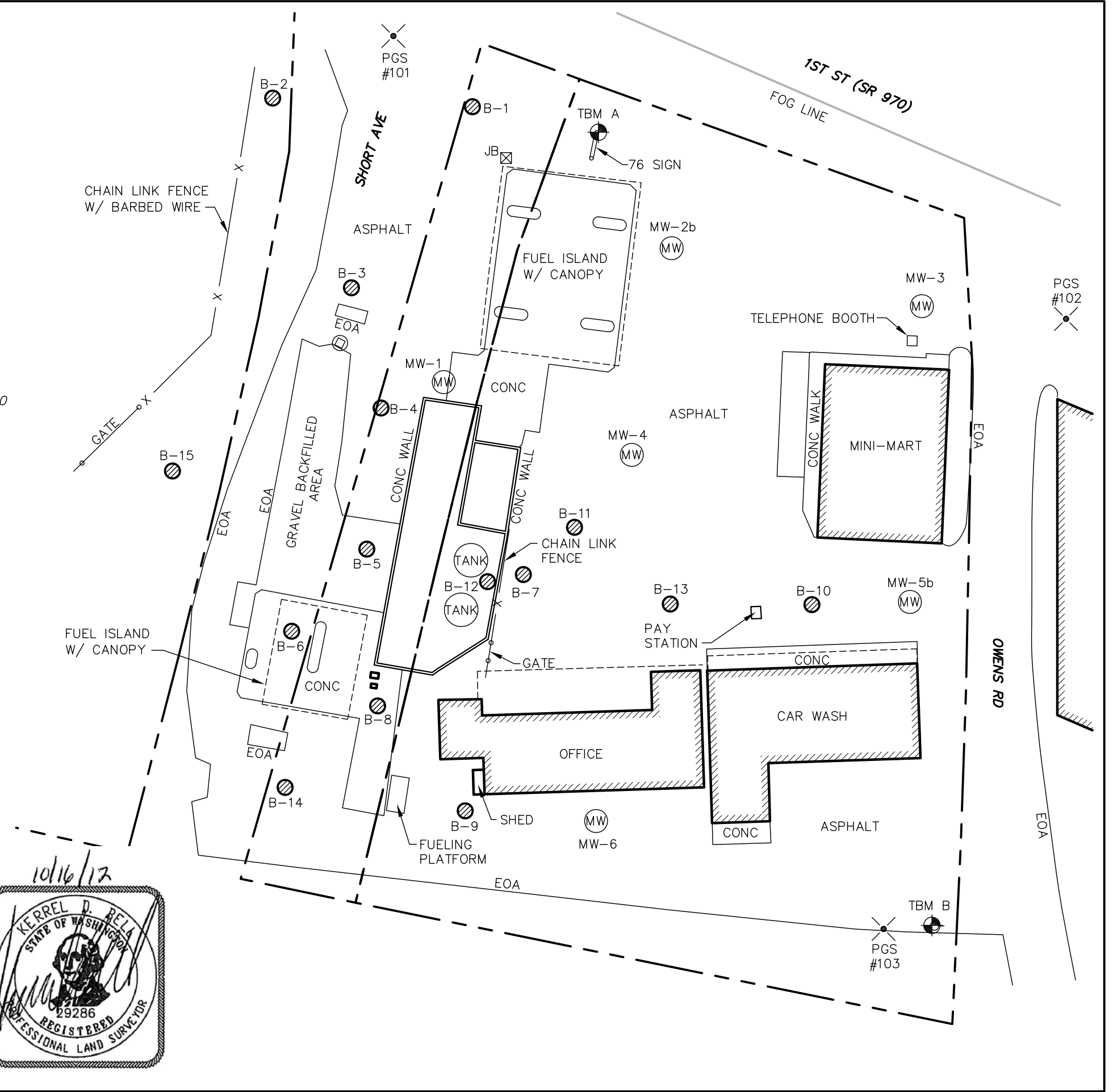
DESCRIPTION: MONITORING WELL EXHIBIT MAP

DRAWN BY: MRN CHECKED BY: JNM

SCALE: 1" = 30'

DATE: 10/16/2012

JOB NUMBER SHEET  
 12-043-01 1 OF 3



**MONITOR WELL COORDINATE TABLE:**

MONITORING WELL	NORTHING	EASTING	NORTH RIM PVC ELEVATION	NORTH RIM CASING ELEVATION
MW-1	677949.0	1536905.7	1892.66	1892.86
MW-2b	677985.8	1536968.4	1891.79	1892.20
MW-3	677969.8	1537037.3	1892.19	1892.46
MW-4	677928.9	1536957.4	1892.89	1892.98
MW-5b	677888.5	1537034.0	1892.25	1892.68
MW-6	677828.2	1536947.6	1892.61	1893.01

**SURVEYOR'S NOTE:**

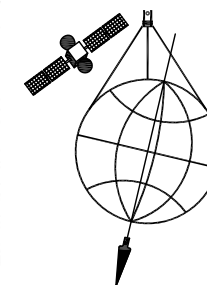
THE PURPOSE OF THIS SURVEY IS TO SHOW THE HORIZONTAL LOCATION AND ELEVATION OF 5 MONITORING WELLS AND 15 BORE HOLES ON THE SUBJECT PROPERTY ALONG WITH GENERAL EXISTING IMPROVEMENTS.

PROPERTY LINES SHOWN ON SHEET 1 OF 3 OF THIS SURVEY ARE KITTITAS COUNTY GIS. THIS SURVEY DOES NOT CONSTITUTE A BOUNDARY RETRACEMENT BY PGS, INC. AND THE PROPERTY LINES HEREON ARE SHOWN FOR GRAPHICAL REFERENCE ONLY.

**PGS CONTROL COORDINATE TABLE:**

TBM A	678017.7	1536948.3	ELEV = 1892.67	SCRIBED "X" ON NE BOLT OF 76 SIGN POST
TBM B	677799.5	1537040.0	ELEV = 1893.55	RR SPIKE IN POWER POLE
PGS# 101	678044.17	1536891.84	ELEV = 1891.80	PK NAIL W/ WASHER
PGS# 102	677966.35	1537076.92	ELEV = 1891.51	PK NAIL W/ WASHER
PGS# 103	677798.51	1537026.72	ELEV = 1892.49	PK NAIL

DRAWN BY: MRN	CHECKED BY: MRN	JOB NAME: CLE ELUM 76 LOCATION: 1000 1ST ST CLE ELUM, WASHINGTON KITTITAS COUNTY
SCALE: 1" = 30'		
DATE: 10/16/2012		
JOB NUMBER 12-043-01	SHEET 2 OF 3	DESCRIPTION: MONITORING WELL EXHIBIT MAP



**PACIFIC GEOMATIC SERVICES, INC.**

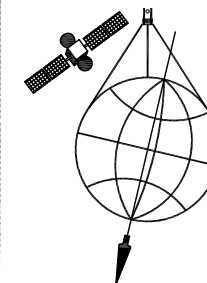
LAND SURVEYING & MAPPING SERVICES  
QUALITY SERVICE - CREATIVE SOLUTIONS

6608 216TH STREET SW, STE. 304  
MOUNTLAKE TERRACE, WA 98043  
PHONE:(425) 778-5620 FAX:(425) 775-2849  
WEB: www.PacGeoInc.com

**BORE HOLE COORDINATE TABLE:**

BORE HOLE	NORTHING	EASTING	GROUND ELEVATION
B-1	678024.7	1536913.6	1891.9
B-2	678027.1	1536858.6	1892.3
B-3	677974.9	1536880.3	1891.7
B-4	677941.8	1536888.5	1892.2
B-5	677903.0	1536884.5	1892.5
B-6	677880.4	1536863.9	1892.5
B-7	677896.0	1536927.6	1893.2
B-8	677859.9	1536887.5	1892.7
B-9	677831.0	1536911.6	1892.9
B-10	677887.8	1537007.0	1892.7
B-11	677909.0	1536941.7	1893.1
B-12	677894.1	1536917.8	1892.9
B-13	677887.9	1536968.0	1892.9
B-14	677837.5	1536862.1	1892.5
B-15	677924.5	1536831.1	1892.5

DRAWN BY: MRN	CHECKED BY: JNM	JOB NAME: CLE ELUM 76 LOCATION: 1000 1ST ST CLE ELUM, WASHINGTON KITTITAS COUNTY
SCALE: 1" = 30'		
DATE: 10/16/2012		
JOB NUMBER 12-043-01	SHEET 3 OF 3	DESCRIPTION: MONITORING WELL EXHIBIT MAP



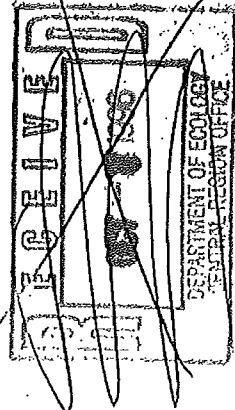
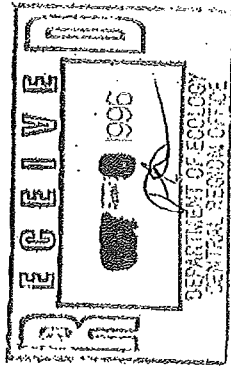
**PACIFIC GEOMATIC SERVICES, INC.**

LAND SURVEYING & MAPPING SERVICES  
QUALITY SERVICE - CREATIVE SOLUTIONS

6608 216TH STREET SW, STE. 304  
MOUNTLAKE TERRACE, WA 98043  
PHONE:(425) 778-5620 FAX:(425) 775-2849  
WEB: www.PacGeoInc.com

# **SAGE EARTH SCIENCES**

**July 1996 UST Removal  
Selected Documents**



#9280  
TOWN PUMP  
V PANTRY  
UST / LUST



July 1996

# UST Closure Site Assessment Report

^

Sellau FD  
# 403976

For Removal of Two UST's  
and Associated Ancillary Equipment  
At The DeVere and Sons Distributing, Inc. Facility,  
Cle Elum, WA

Prepared For:

Northwest Petroleum Equipment, Inc.  
265 Johnson Road  
Selah, WA 98942

Prepared By:



P.O. BOX 1644, ZILLAH, WA 98953  
PHONE (509) 829-6400

September, 1996

DeVere & Sons Distributing, Inc. Cardlock Facility, Cle Elum, WA

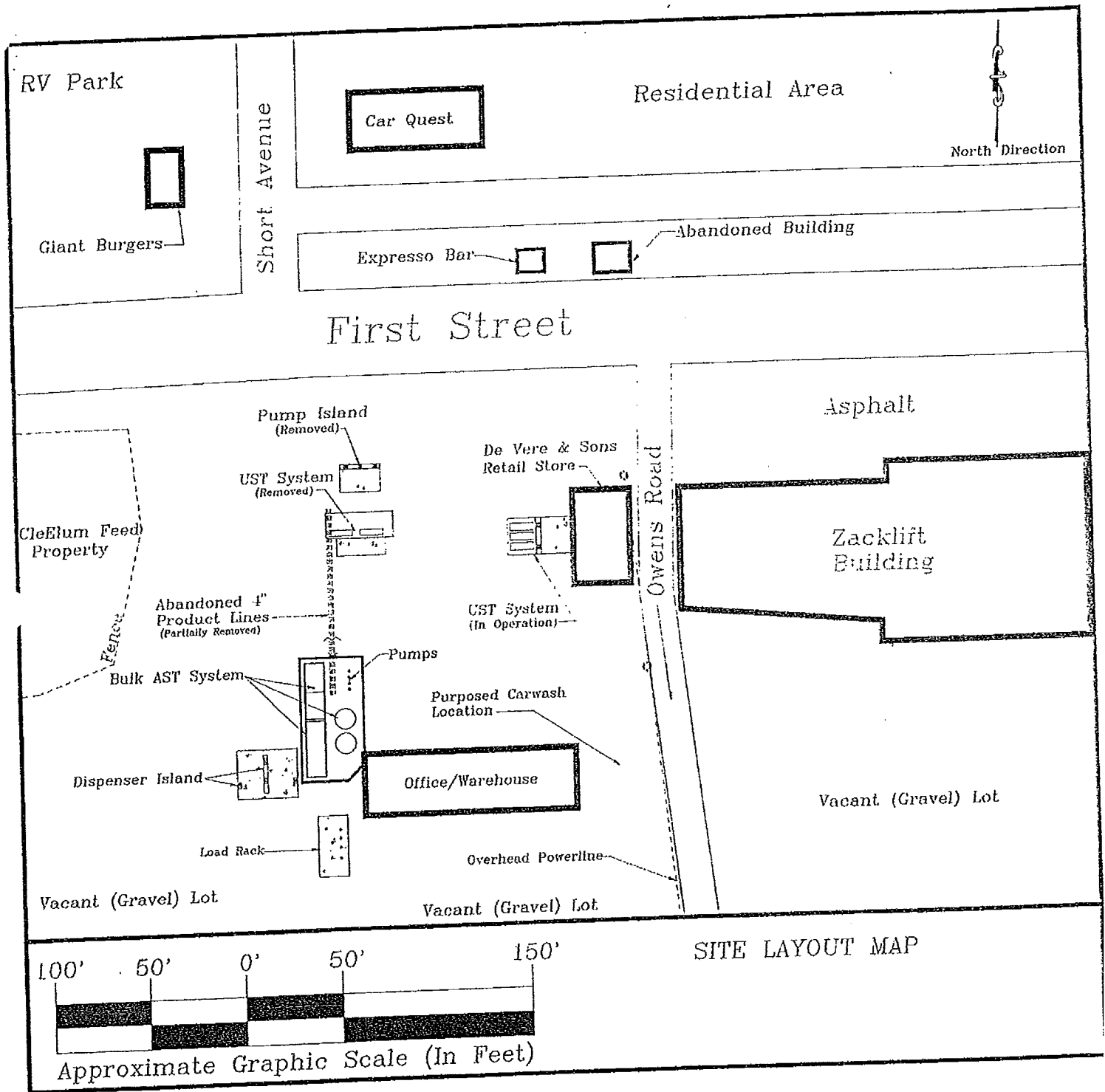


Figure 2. Site Vicinity Map

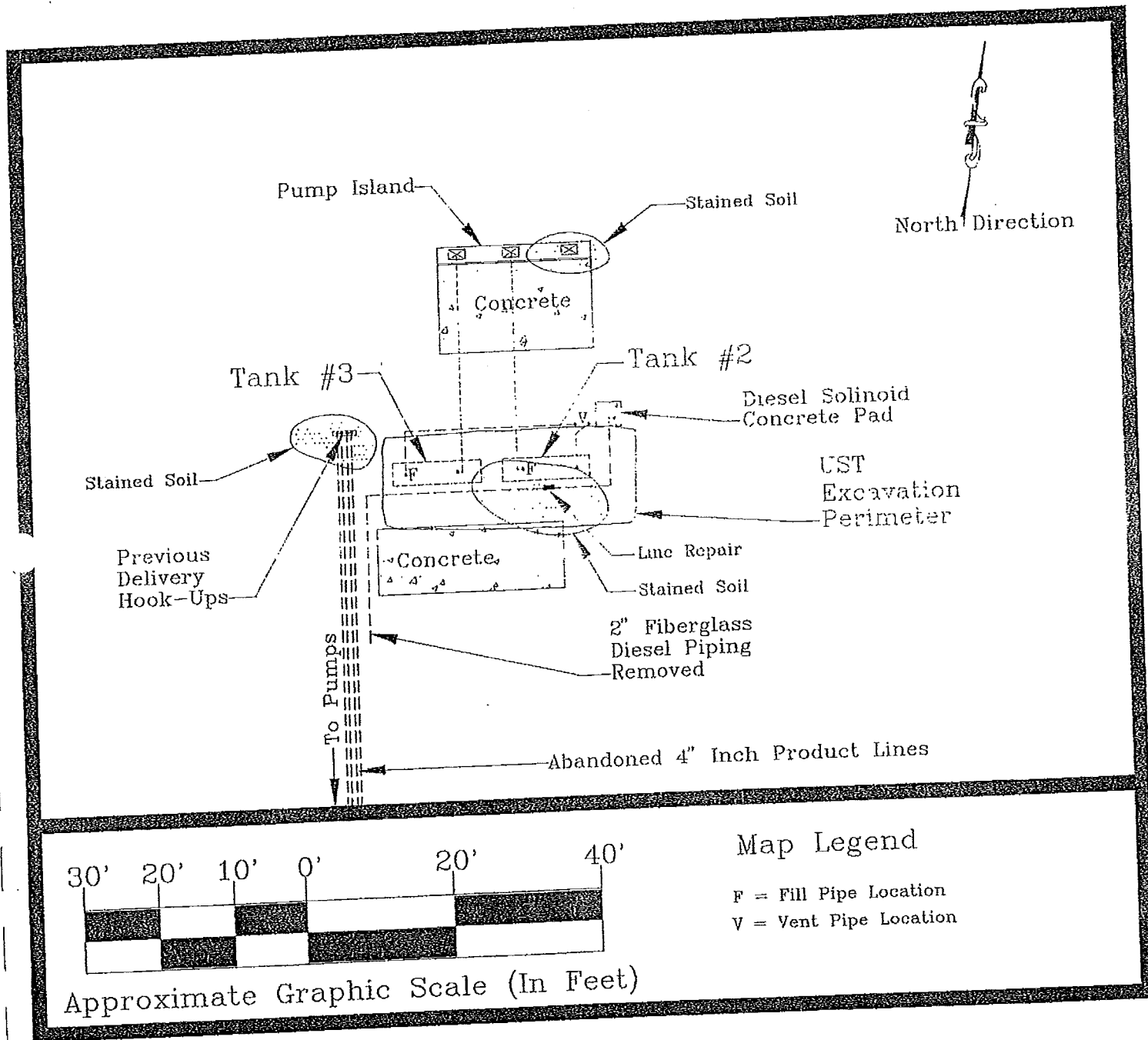


Figure 3. Diagram of UST's Included in the Scope of Work

# **SAGE EARTH SCIENCES**

**August 1996 UST Removal  
Selected Documents**

TXICS



Aug 1996

UST Closure Site Assessment Report

C JS  
9280  
U1788

For Removal of Three UST's  
and Associated Ancillary Equipment  
At The DeVere and Sons Distributing, Inc. Mini-Mart Facility,  
Cle Elum, WA

release # 591903

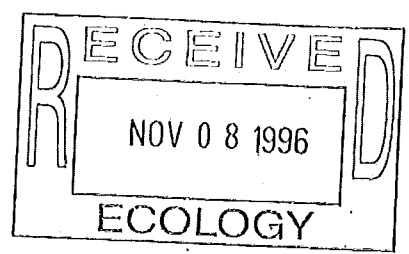
Prepared For:

Northwest Petroleum Equipment, Inc.  
265 Johnson Road  
Selah, WA 98942

Prepared By:



P.O. BOX 1644, ZILLAH, WA 98953  
PHONE (509) 829-6400



September, 1996

DeVere & Sons Distributing, Inc. Mini-Mart Facility, Cle Elum, WA

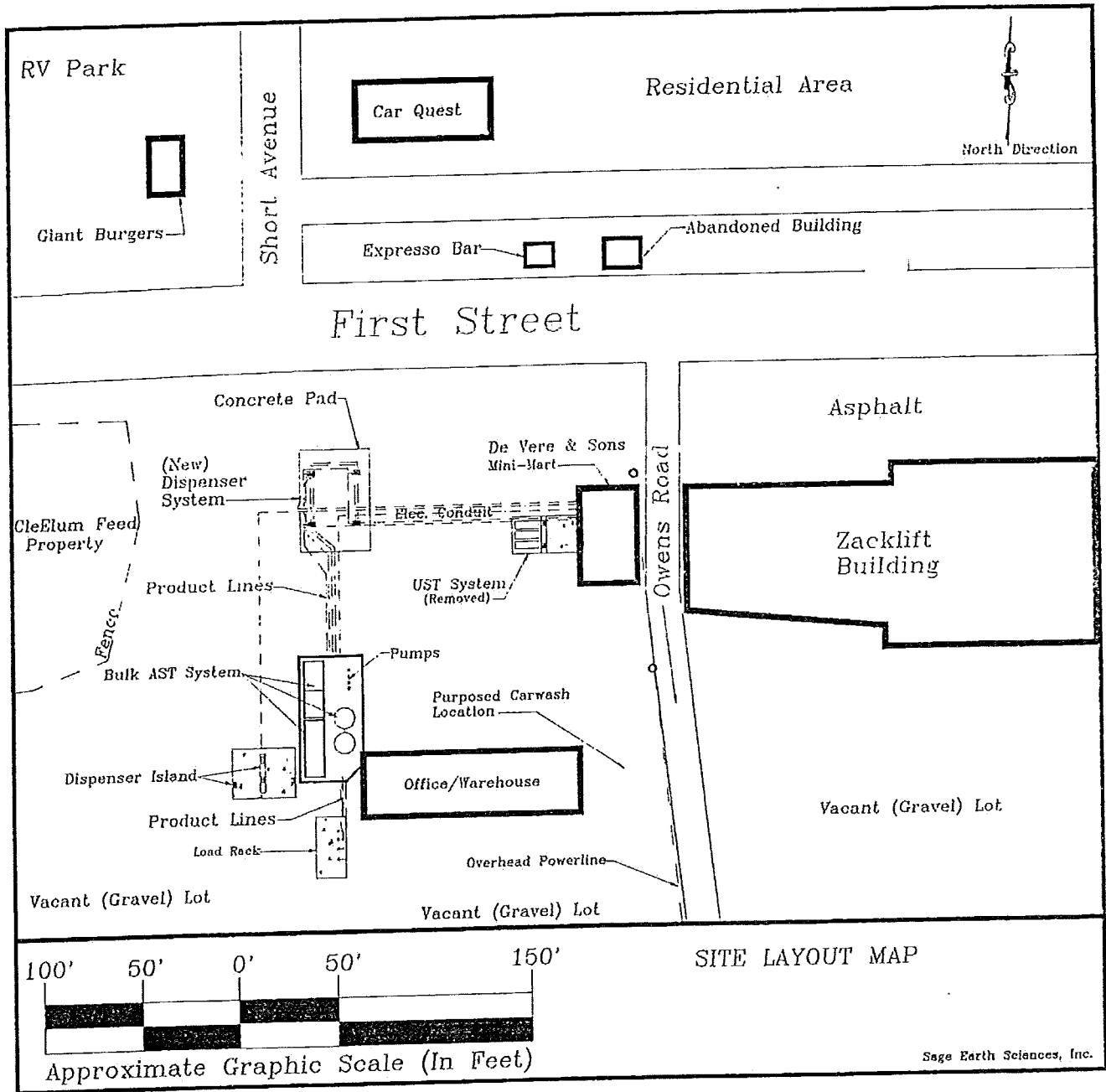


Figure 2. Site Vicinity Map

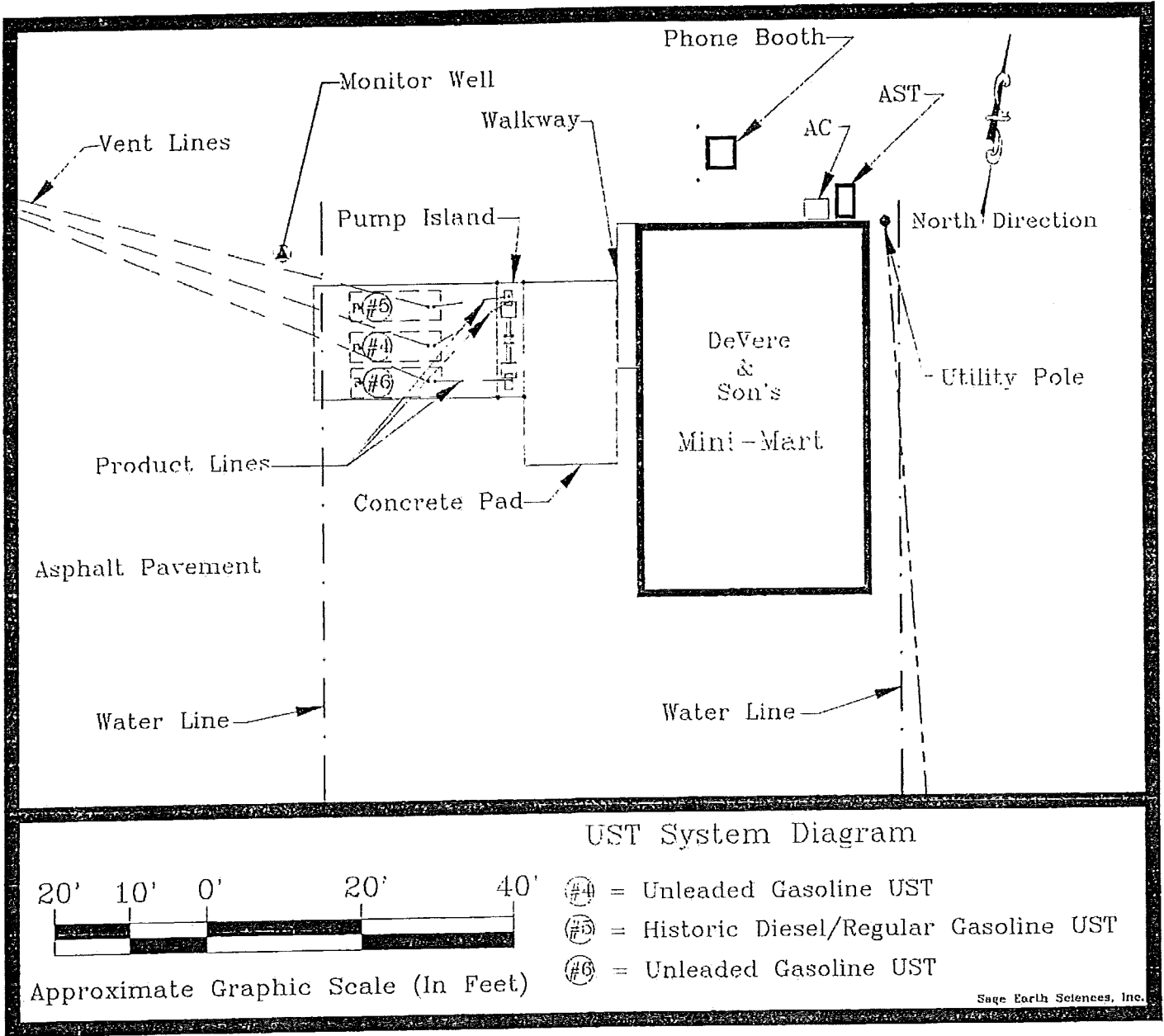


Figure 3. Diagram of UST's Included in the Scope of Work

# **APPENDIX C**

## **LABORATORY ANALYTICAL RESULTS**

**LIBBY ENVIRONMENTAL  
PCS EXCAVATION LAB RESULTS**

# Libby Environmental, Inc.

# Chain of Custody Record

4139 Libby Road NE  
Olympia, WA 98506

Ph: 360-352-2110  
Fax: 360-352-4154

Date: 7/26/12

Page: 1 of

Client: AEG

Project Manager: Y. VAN

Address: 605 11th Ave NE #201, Olympia, WA 98501

Project Name: CLE ELUM 76 FUEL SPILL

Phone: 360-352-9835 Fax: -8164

Location: 1000 N 1st St

City: CLE ELUM

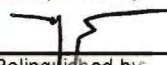
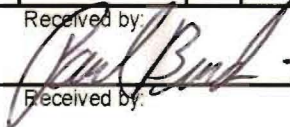
Client Project # 12-

Collector: Y. VAN

Date of Collection: 7/26/12



Sample Number	Depth	Time	Sample Type	Container Type	Analytes											Field Notes			
					VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-GX	NWTPH-DX	PAH 8270	PCB's 8082	MTCA 5 Metals	GRO (STD)				
1 TPS-SN-4.0	4.0	0942	SOIL	101, 407	X				X										
2 TPN-SW-4.0	4.0	1000			X				X										
3 TPN-B-6.2	6.2	1010			X				X		X								Impacted
4 TPN-B-5.5	5.5	1021			X				X										Impacted
5 TPN-SE-3.5	3.5	1032			X				X		X								Impacted
6 S1-2.0	2.0	1052			X				X		X								Impacted
7 S2-3.5	3.5	1106			X				X										"
8 S3-2.5	2.5	1112			X				X		X								"
9 S4-1.5	1.5	1124			X				X		X								"
10 TPS-B-6.5	6.5	1142			X				X		X								
11 TP SW-B-4.0	4.0	1310			X				X										
12 TP W-B-6.5	6.5	1322			X				X		X								
13 TP W-B-7.0	7.0	1331			X				X										
14 TPS2-B-4.0	4.0	1410			X				X										
15 TP S2-B-7.0	7.0	1418			X				X		X								
16																			
17																			
18																			

Relinquished by: 	Date / Time: 7/26/12 5:47	Received by: 	Date / Time: 7/26/12 5:47 PM	Sample Receipt:	Remarks: R = RUSHED OVERNIGHT TAT. Other samples 48 hr TAT. GRO = standard
Relinquished by:	Date / Time:	Received by:	Date / Time:	Good Condition?	
Relinquished by:	Date / Time:	Received by:	Date / Time:	Cold?	
Relinquished by:	Date / Time:	Received by:	Date / Time:	Seals Intact?	
				Total Number of Containers:	

(Call 360 507-2810)

LAT

# Libby Environmental, Inc.

4139 Libby Road NE

Olympia, WA 98506

Phone: (360) 352-2110

FAX: (360) 352-4154

Email: libbyenv@aol.com

CLE ELUM 76 FUEL SPILL PROJECT

AEG, LLC

Cle Elum, Washington

Libby Project # L120726-4

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

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Oil (mg/kg)
Method Blank	7/26/12	99	nd	nd
TPN-B-6.2	7/26/12	int	453	nd
TPN-SE-3.5	7/26/12	83	56	nd
TPN-SE-3.5 Dup	7/26/12	94	65	nd
S1-2.0	7/26/12	130	nd	nd
S3-2.5	7/26/12	int	145	nd
S4-1.5	7/26/12	int	15510	nd
TPS-B-6.5	7/26/12	72	nd	193
TPW-B-6.5	7/26/12	76	nd	180
TPS2-B-7.0	7/26/12	int	280	nd
Practical Quantitation Limit			25	100

"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: Kyle Williams & Paul Burke

# Libby Environmental, Inc.

4139 Libby Road NE  
Olympia, WA 98506  
Phone: (360) 352-2110  
FAX: (360) 352-4154  
Email: libbyenv@aol.com

CLE ELUM 76 FUEL SPILL PROJECT  
AEG, LLC  
Cle Elum, Washington  
Libby Project # L120726-4

## Analyses of Gasoline (NWTPH-Gx) & BTEX (EPA Method 8021B) in Soil

Sample Number	Date Analyzed	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Gasoline (mg/kg)	Surrogate Recovery (%)
Method Blank	7/26/12	nd	nd	nd	nd	nd	98
LCS	7/26/12	101%	112%				99
TPS-SN-4.0	7/26/12	nd	nd	nd	nd	nd	80
TPS-SN-4.0 Dup	7/26/12	nd	nd	nd	nd	nd	87
TPS-B-6.5	7/26/12	nd	nd	nd	nd	nd	74
TPW-B-6.5	7/26/12	nd	nd	nd	nd	nd	75
TPS2-B-7.0	7/26/12	0.25	0.4	0.05	0.29	nd	80
TPS-B-6.5 MS	7/26/12	85%	94%				80
Practical Quantitation Limit		0.02	0.10	0.05	0.15	10	

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

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Trifluorotoluene): 65% TO 135%

ANALYSES PERFORMED BY: Kyle Williams & Paul Burke

# Libby Environmental, Inc.

4139 Libby Road NE  
Olympia, WA 98506  
Phone: (360) 352-2110  
FAX: (360) 352-4154  
Email: libbyenv@aol.com

CLE ELUM 76 FUEL SPILL PROJECT  
AEG, LLC  
Cle Elum, Washington  
Libby Project # L120726-4

## Analyses of Gasoline (NWTPH-Gx) & BTEX (EPA Method 8260C) in Soil

Sample Number	Date Analyzed	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Gasoline (mg/kg)	Surrogate Recovery (%)
Method Blank	7/26/12	nd	nd	nd	nd	nd	111
LCS	7/26/12	76%	76%				94
TPN-B-6.2	7/26/12	19.5	182	92	546	6740	95
TPN-SE-3.5	7/26/12	nd	nd	nd	nd	nd	97
TPN-SE-3.5 Dup	7/26/12	nd	nd	nd	nd	nd	95
S1-2.0	7/26/12	314	214	792	3840	50500	92
S3-2.5	7/26/12	0.62	3.15	1.31	6.52	112	94
S4-1.5	7/26/12	324	360	335	1550	21700	102
L120726-4 MS	7/26/12	70%	70%				94
L120726-4 MSD	7/26/12	72%	74%				94
Practical Quantitation Limit		0.02	0.10	0.05	0.15	10	

"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 / Sherry Chilcutt

# Libby Environmental, Inc.

CLE ELUM 76 FUEL SPILL PROJECT  
AEG, LLC  
Cle Elum, Washington  
Libby Project # L120726-4

4139 Libby Road NE  
Olympia, WA 98506  
Phone: (360) 352-2110  
FAX: (360) 352-4154  
Email: libbyenv@aol.com

## Analyses of Gasoline (NWTPH-Gx) & BTEX (EPA Method 8021B) in Soil

Sample Number	Date Analyzed	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Gasoline (mg/kg)	Surrogate Recovery (%)
Method Blank	7/27/12	nd	nd	nd	nd	nd	87
LCS	7/27/12	92%	104%				91
TPN-SW-4.0	7/27/12	nd	nd	nd	nd	nd	81
TPN-SW-4.0 Dup	7/27/12	nd	nd	nd	nd	nd	86
TPN-B-5.5	7/27/12	1.54	6.38	1.63	12.8	277	87
S2-3.5	7/27/12	8.68	56.9	15.2	109	7890	88
TPSW-B-4.0	7/27/12	nd	nd	nd	0.37	12.7	69
TPW-B-7.0	7/27/12	nd	nd	nd	nd	nd	72
TPS2-B-4.0	7/27/12	nd	nd	nd	nd	nd	81
TPSW-B-4.0 MS	7/27/12	89%	97%				89
Practical Quantitation Limit		0.02	0.10	0.05	0.15	10	

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

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Trifluorotoluene): 65% TO 135%

ANALYSES PERFORMED BY: Kyle Williams & Paul Burke

# Libby Environmental, Inc.

4139 Libby Road NE

Olympia, WA 98506

Phone: (360) 352-2110

FAX: (360) 352-4154

Email: libbyenv@aol.com

CLE ELUM 76 FUEL SPILL PROJECT

AEG, LLC

Cle Elum, Washington

Libby Project # L120726-4

Client Project # 12-164

## Specific Halogenated and Aromatic Hydrocarbons by EPA 8260C in Soil

Sample Description	Method	TPN-B-6.2	S4-1.5	
	Blank			
Date Sampled	N/A	7/26/12	7/26/12	
Date Analyzed	PQL	7/26/12	7/26/12	
	(mg/kg)	(mg/kg)	(mg/kg)	
Benzene	0.02	nd	19.5	
Toluene	0.02	nd	182	
Ethylbenzene	0.03	nd	92.0	
Total Xylenes	0.03	nd	546	
1,2-Dichloroethane (EDC)	0.03	nd	nd	
1,2-Dibromoethane (EDB) *	0.005	nd	nd	
Total Naphthalenes	0.03	nd	370	
Methyl <i>tert</i> - Butyl Ether (MTBE)	0.02	nd	nd	
Surrogate Recovery				
Dibromofluoromethane		89	86	
1,2-Dichloroethane-d4		66	76	
Toluene-d8		111	95	
4-Bromofluorobenzene		81	94	

"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 / Sherry Chilcutt

# Libby Environmental, Inc.

4139 Libby Road NE

Olympia, WA 98506

Phone: (360) 352-2110

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Email: libbyenv@aol.com

CLE ELUM 76 FUEL SPILL PROJECT

AEG, LLC

Cle Elum, Washington

Libby Project # L120726-4

Client Project # 12-164

## QA/QC Data - EPA 8260C Analyses

Sample Identification: L120726-4							
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 (%)	
Benzene	0.5	0.35	70	0.5	0.36	72	2.8
Toluene	0.5	0.35	70	0.5	0.37	74	5.6
Surrogate Recovery							
Dibromofluoromethane			96			84	
1,2-Dichloroethane-d4			108			77	
Toluene-d8			94			94	
4-Bromofluorobenzene			100			93	

Laboratory Control Sample			
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
Benzene	0.5	0.38	76
Toluene	0.5	0.38	76
Surrogate Recovery			
Dibromofluoromethane			88
1,2-Dichloroethane-d4			83
Toluene-d8			94
4-Bromofluorobenzene			94

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Paul Burke / Sherry Chilcutt

# Libby Environmental, Inc.

4139 Libby Road NE

Olympia, WA 98506

Phone: (360) 352-2110

FAX: (360) 352-4154

Email: libbyenv@aol.com

CLE ELUM 76 FUEL SPILL PROJECT

AEG, LLC

Cle Elum, Washington

Libby Project # L120726-4

Client Project # 12-164

## Analyses of Lead in Soil by EPA Method 7421

Sample Number	Date Analyzed	Lead (mg/kg)
Method Blank	7/31/12	nd
TPN-B-6.2	7/31/12	nd
S4-1.5	7/31/12	33
S4-1.5 Dup	7/31/12	44
Practical Quantitation Limit		5.0

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

ANALYSES PERFORMED BY: Dirk Peterson

# Libby Environmental, Inc.

4139 Libby Road NE

Olympia, WA 98506

Phone: (360) 352-2110

FAX: (360) 352-4154

Email: libbyenv@aol.com

CLE ELUM 76 FUEL SPILL PROJECT

AEG, LLC

Cle Elum, Washington

Libby Project # L120726-4

Client Project # 12-164

## QA/QC for Lead in Soil by EPA Method 7421

Sample Number	Date Analyzed	Lead (% Recovery)
LCS	7/31/12	101%
S4-1.5 MS	7/31/12	87%
S4-1.5 MSD	7/31/12	int
RPD	7/31/12	int

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Dirk Peterson

# Libby Environmental, Inc.

# Chain of Custody Record

4139 Libby Road NE  
Olympia, WA 98506

Ph: 360-352-2110  
Fax: 360-352-4154

Date: 7/27/12

Page: 1 of 2

Client: AEG

Project Manager: Yen-Vy Van

Address: 605 11th Ave. SE Suite 201 Olympia, WA

Project Name: Cle Elum 76 Fuel Spill

Phone: 360-352-9835 Fax: 18164

Location: 1000 N 1st St. Cle Elum, WA

Client Project # 12-164

Collector: Matt Wilson Date of Collection: 7/27/12

Sample Number	Depth	Time	Sample Type	Container Type	Analytes											Field Note/# Containers			
					VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	CPAH 8270	PCBs 8082	MTCA 5 Metals	Total Pb		DRD		
1	Poly tank-1	—	12:45	Water	Voas	X				X	X	X							STO TAT / Rush Gx/BTEX & DxD
2	S4-a-1.5	1.5	15:30	Soil	Voas/4oz					X	X	X		X					STO TAT
3	S5-1.5	1.5	15:20	Soil	Voas/4oz	X				X	X	X		X	X				Rush Gx/BTEX & Ox Ext. Only
4	TPN-B5-6.0	6.0	11:20	Soil	Voas/4oz	X				X	X								Rush
5	TPNZ-BSW-6.0	6.0	10:15																Rush
6	TPNZ-BNW-6.0	6.0	10:27																Rush
7	TPNZ-BE-4.5	4.5	15:05																Hold
8	TPNZ-SN-NE-2.0	2.0	14:55																Hold
9	TPNZ-SN-NE-4.0	4.0	15:00																Hold
10	TPNZ-SE-NE-2.0	2.0	13:20																Rush
11	TPNZ-SE-NE-4.0	4.0	13:35																Rush
12	TPNZ-SE-SE-2.0	2.0	13:40																Rush
13	TPNZ-SE-SE-4.0	4.0	13:50																Rush
14	TPNZ-SS-SE-2.0	2.0	14:00																<del>Rush</del> Hold per Matt via phone
15	TPNZ-SS-SE-4.0	4.0	14:10																Rush
16	TPNZ-SS-SW-2.0	2.0	14:25																Hold
17	TPNZ-SS-SW-4.0	4.0	14:30																Hold
18																			

Relinquished by: <u>Matt Wilson</u>	Date / Time: <u>7/27/12/22:00</u>	Received by: <u>Janice L. Dayman</u>	Date / Time: <u>7/27/12 2200</u>	Sample Receipt:	Remarks:
Relinquished by:	Date / Time:	Received by:	Date / Time:	Good Condition?	
Relinquished by:	Date / Time:	Received by:	Date / Time:	Cold?	
Relinquished by:	Date / Time:	Received by:	Date / Time:	Seals Intact?	
				Total Number of Containers:	TAT 24HR 48HR 5-Day

# Libby Environmental, Inc.

# Chain of Custody Record

4139 Libby Road NE  
Olympia, WA 98506

Ph: 360-352-2110  
Fax: 360-352-4154

Date: 7/27/12 Page: 2 of 2

Client: AEG

Project Manager: Yea-Vy Van

Address: 605 11th Ave. SE Olympia, WA

Project Name: Cle Elum 76 Fuel Spill

Phone: 360-352-9835 Fax: 18164

Location: 1000 N 1st St. Cle Elum, WA

Client Project # 12-104

Collector: Matt Wilson Date of Collection: 7/27/12

Sample Number	Depth	Time	Sample Type	Container Type	Analytes										Field Note/# Containers			
					VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	PAH 8270	PCB's 8082	MTCA 5 Metals				
1	TPN2-SW-SW-2.0	2.0	14:35	Soil	Voas/4oz	*				*	*							Rush Hold per Matt Wilson
2	TPN2-SW-SW-4.0	4.0	14:40															Rush phone in
3	TPN2-SW-NW-2.0	2.0	14:43															Hold
4	TPN2-SW-NW-4.0	4.0	14:48															Hold
5	TPN3-B-3.5	3.5	11:50															Rush
6	TPN3-B-5.5	5.5	12:15															Rush
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		

Relinquished by: <u>Matt Wilson</u>	Date / Time: <u>7/27/12 / 22:00</u>	Received by: <u>Janice L. Deynon</u>	Date / Time: <u>7/27/12 2000</u>	Sample Receipt:	Remarks:
Relinquished by:	Date / Time:	Received by:	Date / Time:	Good Condition?	
Relinquished by:	Date / Time:	Received by:	Date / Time:	Cold?	
Relinquished by:	Date / Time:	Received by:	Date / Time:	Seals Intact?	
				Total Number of Containers:	TAT 24HR 48HR 5-Day

# Libby Environmental, Inc.

4139 Libby Road NE  
Olympia, WA 98506  
Phone: (360) 352-2110  
FAX: (360) 352-4154  
Email: libbyenv@aol.com

CLE ELUM 76 FUEL SPILL PROJECT  
AEG, LLC  
Cle Elum, Washington  
Libby Project # L120727-5  
Client Project # 12-164

## Analyses of Gasoline (NWTPH-Gx) & BTEX (EPA Method 8021B) in Water

Sample Number	Date Analyzed	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Xylenes (µg/l)	Gasoline (µg/l)	Surrogate Recovery (%)
Method Blank	7/27/12	nd	nd	nd	nd	nd	93
LCS	7/27/12	81%	86%				93
Poly Tank-1	7/27/12	541	97	nd	1170	12700	86
Poly Tank-1 MS	7/27/12	114%	70%				89
Poly Tank-1 MSD	7/27/12	119%	83%				66
Practical Quantitation Limit		1	2	1	3	100	

"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 / Sherry Chilcutt

# Libby Environmental, Inc.

4139 Libby Road NE

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CLE ELUM 76 FUEL SPILL PROJECT

AEG, LLC

Cle Elum, Washington

Libby Project # L120727-5

Client Project # 12-164

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

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel ( $\mu\text{g/l}$ )	Oil ( $\mu\text{g/l}$ )
Method Blank	7/27/12	112	nd	nd
Poly Tank-1	7/27/12	74	nd	nd
Poly Tank-1 Dup	7/27/12	74	nd	nd
Practical Quantitation Limit			200	400

"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 / Sherry Chilcut

# Libby Environmental, Inc.

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CLE ELUM 76 FUEL SPILL PROJECT

AEG, LLC

Cle Elum, Washington

Libby Project # L120727-5

Client Project # 12-164

## Analyses of Gasoline (NWTPH-Gx) & BTEX (EPA Method 8260C) in Soil

Sample Number	Date Analyzed	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Gasoline (mg/kg)	Surrogate Recovery (%)
Method Blank	7/27/12	nd	nd	nd	nd	nd	93
LCS	7/27/12	81%	86%				93
S5-1.5	7/27/12	0.078	nd	nd	0.20	nd	95
S5-1.5 Dup	7/27/12	0.10	nd	nd	0.36	nd	95
TPN-BS-6.0	7/27/12	nd	nd	nd	nd	nd	94
TPN2-BSW-6.0	7/27/12	nd	nd	nd	nd	nd	95
TPN2-BNW-6.0	7/27/12	nd	nd	nd	nd	nd	94
TPN2-SE-NE-2.0	7/27/12	97.8	502	113	688	4210	110
TPN2-SE-NE-4.0	7/27/12	0.12	0.21	0.11	1.28	nd	94
TPN2-SE-SE-2.0	7/27/12	637	2800	710	3330	27800	96
TPN2-SE-SE-4.0	7/27/12	0.95	1.36	0.056	0.16	10	93
TPN2-SE-SE-4.0 Dup	7/27/12	0.94	1.33	0.062	0.18	11	95
TPN2-SS-SE-4.0	7/27/12	nd	nd	nd	nd	nd	94
TPN2-SW-SW-2.0	7/27/12	nd	nd	nd	nd	nd	92
TPN2-SW-SW-4.0	7/27/12	nd	nd	nd	nd	nd	92
TPN3-B-3.5	7/27/12	nd	nd	nd	nd	nd	93
TPN3-B-5.5	7/27/12	0.24	1.61	0.39	3.34	28	115
TPN2-BNW-6.0 MS	7/27/12	81%	90%				96
TPN2-BNW-6.0 MSD	7/27/12	81%	87%				93
Practical Quantitation Limit		0.02	0.10	0.05	0.15	10	

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

"int" Indicates that interference prevents determination.

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

ANALYSES PERFORMED BY: Paul Burke / Sherry Chilcutt

# Libby Environmental, Inc.

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CLE ELUM 76 FUEL SPILL PROJECT  
AEG, LLC  
Cle Elum, Washington  
Libby Project # L120727-5  
Client Project # 12-164

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

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Oil (mg/kg)
Method Blank	7/27/12	88	nd	nd
S5-1.5	7/27/12	74	nd	nd
S5-1.5 Dup	7/27/12	81	nd	nd
TPN-BS-6.0	7/27/12	73	nd	nd
TPN2-BSW-6.0	7/27/12	86	nd	nd
TPN2-BNW-6.0	7/27/12	88	nd	nd
TPN2-SE-NE-2.0	7/27/12	82	nd	nd
TPN2-SE-NE-4.0	7/27/12	84	269	nd
TPN2-SE-SE-2.0	7/27/12	133	nd	nd
TPN2-SE-SE-4.0	7/27/12	82	211	nd
TPN2-SE-SE-4.0 Dup	7/27/12	71	262	nd
TPN2-SS-SE-4.0	7/27/12	95	nd	nd
TPN2-SW-SW-2.0	7/27/12	88	nd	nd
TPN2-SW-SW-4.0	7/27/12	83	nd	nd
TPN3-B-3.5	7/27/12	77	nd	nd
TPN3-B-5.5	7/27/12	79	nd	nd
Practical Quantitation Limit			100	100

"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 / Sherry Chilcut

# Libby Environmental, Inc.

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CLE ELUM 76 FUEL SPILL PROJECT

AEG, LLC

Cle Elum, Washington

Libby Project # L120727-5

Client Project # 12-164

## Analyses of Lead in Soil by EPA Method 7421

Sample Number	Date Analyzed	Lead (mg/kg)
Method Blank	7/28/12	nd
S4-a-1.5	7/28/12	40
S5-1.5	7/28/12	nd
Practical Quantitation Limit		5.0

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

ANALYSES PERFORMED BY: Dirk Peterson

# Libby Environmental, Inc.

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Email: libbyenv@aol.com

CLE ELUM 76 FUEL SPILL PROJECT

AEG, LLC

Cle Elum, Washington

Libby Project # L120727-5

Client Project # 12-164

## QA/QC for Lead in Soil by EPA Method 7421

Sample Number	Date Analyzed	Lead (% Recovery)
LCS	7/28/12	108%
L120724-1 MS	7/28/12	int
L120724-1 MSD	7/28/12	int
RPD	7/28/12	int

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Dirk Peterson



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**Libby Environmental**

Jamie Deyman  
4139 Libby Rd. NE  
Olympia, Washington 98506

**RE: Cle Elum 76 Fuel Spill**

**Lab ID: 1207162**

August 07, 2012

**Attention Jamie Deyman:**

Fremont Analytical, Inc. received 2 sample(s) on 7/31/2012 for the analyses presented in the following report.

***Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)***

***Sample Moisture (Percent Moisture)***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

A handwritten signature in black ink, appearing to read "M. Dee", is written over a light blue horizontal line.

Michael Dee  
Sr. Chemist / Principal



Date: 08/07/2012

---

**CLIENT:** Libby Environmental  
**Project:** Cle Elum 76 Fuel Spill  
**Lab Order:** 1207162

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## Work Order Sample Summary

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Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1207162-001	S4-a-1.5	07/27/2012 3:30 PM	07/31/2012 9:54 AM
1207162-002	S5-1.5	07/27/2012 3:20 PM	07/31/2012 9:54 AM

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Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

**CLIENT:** Libby Environmental  
**Project:** Cle Elum 76 Fuel Spill

---

**I. SAMPLE RECEIPT:**

All samples were received intact.

**II. GENERAL REPORTING COMMENTS:**

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

**III. ANALYSES AND EXCEPTIONS:**

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.



# Analytical Report

WO#: 1207162  
Date Reported: 8/7/2012

**Client:** Libby Environmental  
**Project:** Cle Elum 76 Fuel Spill  
**Lab ID:** 1207162-001  
**Client Sample ID:** S4-a-1.5

**Collection Date:** 7/27/2012 3:30:00 PM  
**Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)**

Batch ID: 2922      Analyst: PH

Benz(a)anthracene	ND	47.7		µg/Kg-dry	1	8/4/2012 6:59:00 AM
Chrysene	ND	47.7		µg/Kg-dry	1	8/4/2012 6:59:00 AM
Benzo(b)fluoranthene	ND	47.7		µg/Kg-dry	1	8/4/2012 6:59:00 AM
Benzo(k)fluoranthene	ND	47.7		µg/Kg-dry	1	8/4/2012 6:59:00 AM
Benzo(a)pyrene	ND	47.7		µg/Kg-dry	1	8/4/2012 6:59:00 AM
Indeno(1,2,3-cd)pyrene	ND	47.7		µg/Kg-dry	1	8/4/2012 6:59:00 AM
Dibenz(a,h)anthracene	ND	47.7		µg/Kg-dry	1	8/4/2012 6:59:00 AM
Surr: 2-Fluorobiphenyl	96.8	50.4-142		%REC	1	8/4/2012 6:59:00 AM
Surr: Terphenyl-d14 (surr)	99.1	48.8-157		%REC	1	8/4/2012 6:59:00 AM

**Sample Moisture (Percent Moisture)**

Batch ID: R5182      Analyst: SC

Percent Moisture	6.74			wt%	1	8/3/2012 11:36:00 AM
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**Qualifiers:**

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



# Analytical Report

WO#: 1207162  
Date Reported: 8/7/2012

**Client:** Libby Environmental  
**Project:** Cle Elum 76 Fuel Spill  
**Lab ID:** 1207162-002  
**Client Sample ID:** S5-1.5

**Collection Date:** 7/27/2012 3:20:00 PM  
**Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)**

Batch ID: 2922      Analyst: PH

Benz(a)anthracene	ND	47.3		µg/Kg-dry	1	8/4/2012 6:34:00 AM
Chrysene	ND	47.3		µg/Kg-dry	1	8/4/2012 6:34:00 AM
Benzo(b)fluoranthene	ND	47.3		µg/Kg-dry	1	8/4/2012 6:34:00 AM
Benzo(k)fluoranthene	ND	47.3		µg/Kg-dry	1	8/4/2012 6:34:00 AM
Benzo(a)pyrene	ND	47.3		µg/Kg-dry	1	8/4/2012 6:34:00 AM
Indeno(1,2,3-cd)pyrene	ND	47.3		µg/Kg-dry	1	8/4/2012 6:34:00 AM
Dibenz(a,h)anthracene	ND	47.3		µg/Kg-dry	1	8/4/2012 6:34:00 AM
Surr: 2-Fluorobiphenyl	112	50.4-142		%REC	1	8/4/2012 6:34:00 AM
Surr: Terphenyl-d14 (surr)	127	48.8-157		%REC	1	8/4/2012 6:34:00 AM

**Sample Moisture (Percent Moisture)**

Batch ID: R5182      Analyst: SC

Percent Moisture	5.85			wt%	1	8/3/2012 11:36:00 AM
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**Qualifiers:** B Analyte detected in the associated Method Blank      D Dilution was required  
 E Value above quantitation range      H Holding times for preparation or analysis exceeded  
 J Analyte detected below quantitation limits      ND Not detected at the Reporting Limit  
 RL Reporting Limit      S Spike recovery outside accepted recovery limits

**Work Order:** 1207162  
**CLIENT:** Libby Environmental  
**Project:** Cle Elum 76 Fuel Spill

**QC SUMMARY REPORT**  
**Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)**

Sample ID: <b>MB-2922</b>	SampType: <b>MBLK</b>	Units: <b>µg/Kg</b>	Prep Date: <b>8/1/2012</b>	RunNo: <b>5227</b>							
Client ID: <b>MBLKS</b>	Batch ID: <b>2922</b>		Analysis Date: <b>8/4/2012</b>	SeqNo: <b>102278</b>							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Benz(a)anthracene	ND	50.0									
Chrysene	ND	50.0									
Benzo(b)fluoranthene	ND	50.0									
Benzo(k)fluoranthene	ND	50.0									
Benzo(a)pyrene	ND	50.0									
Indeno(1,2,3-cd)pyrene	ND	50.0									
Dibenz(a,h)anthracene	ND	50.0									
Surr: 2-Fluorobiphenyl	567		500.0		113	50.4	142				
Surr: Terphenyl-d14 (surr)	675		500.0		135	48.8	157				

Sample ID: <b>LCS-2922</b>	SampType: <b>LCS</b>	Units: <b>µg/Kg</b>	Prep Date: <b>8/1/2012</b>	RunNo: <b>5227</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>2922</b>		Analysis Date: <b>8/4/2012</b>	SeqNo: <b>102279</b>							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Benz(a)anthracene	1,270	50.0	1,000	0	127	70	130				
Chrysene	1,080	50.0	1,000	0	108	70	130				
Benzo(b)fluoranthene	1,060	50.0	1,000	0	106	70	130				
Benzo(k)fluoranthene	1,060	50.0	1,000	0	106	70	130				
Benzo(a)pyrene	1,050	50.0	1,000	0	105	70	130				
Indeno(1,2,3-cd)pyrene	1,050	50.0	1,000	0	105	70	130				
Dibenz(a,h)anthracene	1,050	50.0	1,000	0	105	70	130				
Surr: 2-Fluorobiphenyl	559		500.0		112	50.4	142				
Surr: Terphenyl-d14 (surr)	632		500.0		126	48.8	157				

**Qualifiers:**

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

**Work Order:** 1207162  
**CLIENT:** Libby Environmental  
**Project:** Cle Elum 76 Fuel Spill

**QC SUMMARY REPORT**  
**Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)**

Sample ID: <b>LCSD-2922</b>	SampType: <b>LCSD</b>	Units: <b>µg/Kg</b>	Prep Date: <b>8/1/2012</b>	RunNo: <b>5227</b>							
Client ID: <b>LCSS02</b>	Batch ID: <b>2922</b>		Analysis Date: <b>8/4/2012</b>	SeqNo: <b>102280</b>							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	1,160	50.0	1,000	0	116	70	130	1,271	9.31	30	
Chrysene	974	50.0	1,000	0	97.4	70	130	1,079	10.2	30	
Benzo(b)fluoranthene	950	50.0	1,000	0	95.0	70	130	1,062	11.2	30	
Benzo(k)fluoranthene	963	50.0	1,000	0	96.3	70	130	1,062	9.78	30	
Benzo(a)pyrene	938	50.0	1,000	0	93.8	70	130	1,051	11.3	30	
Indeno(1,2,3-cd)pyrene	944	50.0	1,000	0	94.4	70	130	1,049	10.5	30	
Dibenz(a,h)anthracene	944	50.0	1,000	0	94.4	70	130	1,046	10.2	30	
Surr: 2-Fluorobiphenyl	490		500.0		98.0	50.4	142		0		
Surr: Terphenyl-d14 (surr)	565		500.0		113	48.8	157		0		

Sample ID: <b>1207162-001ADUP</b>	SampType: <b>DUP</b>	Units: <b>µg/Kg-dry</b>	Prep Date: <b>8/1/2012</b>	RunNo: <b>5227</b>							
Client ID: <b>S4-a-1.5</b>	Batch ID: <b>2922</b>		Analysis Date: <b>8/4/2012</b>	SeqNo: <b>102283</b>							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	ND	48.7						0	0	30	
Chrysene	ND	48.7						0	0	30	
Benzo(b)fluoranthene	ND	48.7						0	0	30	
Benzo(k)fluoranthene	ND	48.7						0	0	30	
Benzo(a)pyrene	ND	48.7						0	0	30	
Indeno(1,2,3-cd)pyrene	ND	48.7						0	0	30	
Dibenz(a,h)anthracene	ND	48.7						0	0	30	
Surr: 2-Fluorobiphenyl	621		487.2		128	50.4	142		0		
Surr: Terphenyl-d14 (surr)	733		487.2		150	48.8	157		0		

**Qualifiers:**

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

# Chain of Custody Record

1207162

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

Client: Libby Environmental, Inc.  
 Address: (See above)

Date: 7-30-12 Page: 1 of 1

Project Manager: Jamie Deyman

Project Name: Cle Elum 76 Fuel Spill

Location: City: Cle Elum, WA

Collector: 7-27-12



Sample Number	Depth	Time	Sample Type	Container Type	Field Notes
1 <u>SH-a-1.5</u>	<u>1.5</u>	<u>1530</u>	<u>Soil</u>	<u>Jar</u>	<u>X</u>
2 <u>SS-1.5</u>	<u>1.5</u>	<u>1520</u>	<u>Soil</u>	<u>Jar</u>	<u>X</u>
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					

Client Project # \_\_\_\_\_

Relinquished by: ASye Date / Time: 7-30-12 9:00 AM Received by: [Signature] Date / Time: 7/31/12 9:54A

Relinquished by: \_\_\_\_\_ Date / Time: \_\_\_\_\_ Received by: \_\_\_\_\_ Date / Time: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ Date / Time: \_\_\_\_\_ Received by: \_\_\_\_\_ Date / Time: \_\_\_\_\_

Remarks: Standard TAT due 8-6-12

Sample Receipt

Good Condition? \_\_\_\_\_ Cold? \_\_\_\_\_ Seals Intact? \_\_\_\_\_ Total Number of Containers: \_\_\_\_\_

# **ESN NORTHWEST LAB RESULTS**

## **1<sup>st</sup> Probe Subsurface Investigation**

# CHAIN-OF-CUSTODY RECORD

CLIENT: AEG  
 ADDRESS: 605 11th St. SE OLYMPIA, WA  
 PHONE: (360) 352-9835 FAX: \_\_\_\_\_  
 CLIENT PROJECT #: 12-164 PROJECT MANAGER: YEN-UY V.

DATE: 07/31/12 PAGE 1 OF \_\_\_\_\_  
 PROJECT NAME: CLEELUM 76  
 LOCATION: 1000 N. 1st St. Cleelum  
 COLLECTOR: LEO CHANDER DATE OF COLLECTION: 07/31/12

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES										Total Containers	Laboratory Note Number							
					PH-HClD	THH - DIESEL & OIL	VOC BASEL	VOC BASEL	SVOC 8270	PCB's 8270	PCB's 8082	CL Pesticides 8081	MTCA 8 Metals	PCRA 8 Metals			Asbestos-PLM	GRO Sulfide	DRO Sulfide	W/O Sulfide	NOTES		
1. B1-2-8		12:40	SOIL	4oz/16oz	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	82	NO GRO
2. B2-3-10		13:33			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3	
3. B3-3-9		14:20			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3	
4. B4-3-10		11:14			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3	NO GRO
5. B5-3-11		10:10			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3	
6. B6-3-10		17:11			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3	
7. B7-3-11		9:21			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3	
8. B8-3-11		16:24			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3	
9. B1-W		13:04	WATER	1LT/10oz	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	8	
10. B2-W		13:45			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3	
11. B3-W		14:28			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	9	
12. B4-W		11:36			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	8	
13. B5-W		10:46			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3	
14. B6-W		17:30			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3	
15. B7-W		9:34			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3	
16. B8-W		16:38			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3	
17. B9-W		15:52			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3	
18. B10-W		15:17			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3	

RELINQUISHED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_ RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_  
 L. Chander 7/31/12 17:54 RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME 7/31/12 17:54  
 RELINQUISHED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_ RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_  
 SAMPLE DISPOSAL INSTRUCTIONS  
 ESN DISPOSAL @ \$2.00 each  Return  Pickup  
 LABORATORY NOTES:  
 GW SAMPLES 24hr  
 SOIL - 5 day  
 Turn Around Time: 24 HR 18 HR 5 DAY

# ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group  
1000 N 1ST ST PROJECT  
Client Project #12-164  
Cle Elum, Washington

ESN Northwest  
1210 Eastside Street SE Suite 200  
Olympia, WA 98501  
(360) 459-4670 (360) 459-3432 Fax  
lab@esnnw.com

## Analysis of Diesel Range Organics & Lube Oil Range Organics in Soil by Method NWTPH-Dx/Dx Extended

Sample Number	Date Prepared	Date Analyzed	Surrogate Recovery (%)	Diesel Range Organics (mg/kg)	Lube Oil Range Organics (mg/kg)
Method Blank	8/6/2012	8/7/2012	95	nd	nd
B1-2-8	8/6/2012	8/7/2012	int	380	260
B1-2-8 Duplicate	8/6/2012	8/7/2012	int	320	480
B2-3-10	8/6/2012	8/7/2012	91	nd	nd
B3-3-9	8/6/2012	8/7/2012	92	nd	nd
B4-3-10	8/6/2012	8/7/2012	84	nd	190
B5-3-11	8/6/2012	8/7/2012	int	440	nd
B6-3-10	8/6/2012	8/7/2012	int	4800	nd
B7-3-11	8/6/2012	8/7/2012	int	3100	nd
B8-3-11	8/6/2012	8/7/2012	int	1100	nd
Reporting Limits				50	100

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

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 50% TO 150%

**ESN NORTHWEST CHEMISTRY LABORATORY**

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 Cle Elum, Washington

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 Olympia, WA 98501  
 (360) 459-4670 (360) 459-3432 Fax  
 lab@esnsw.com

**Analysis of Gasoline Range Organics & BTEX in Soil by Method NWTPH-Gx/8260**

Sample Number	Date Prepared	Date Analyzed	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Gasoline Range Organics (mg/kg)	Surrogate Recovery (%)
Method Blank	8/2/2012	8/3/2012	nd	nd	nd	nd	nd	121
LCS	8/2/2012	8/3/2012	101%	112%	116%	109%	---	105
B1-2-8	8/2/2012	8/3/2012	nd	nd	nd	nd	52	103
B2-3-10	8/2/2012	8/3/2012	nd	nd	nd	nd	nd	100
B2-3-10 dup	8/2/2012	8/3/2012	nd	nd	nd	nd	nd	97
B3-3-9	8/2/2012	8/3/2012	nd	nd	nd	nd	nd	97
B4-3-10	8/2/2012	8/3/2012	nd	nd	nd	nd	nd	105
B5-3-11	8/2/2012	8/3/2012	15	77	30	141	2900	107
B6-3-10	8/2/2012	8/3/2012	0.03	0.20	0.09	0.57	130	102
B7-3-11	8/2/2012	8/3/2012	0.06	0.09	0.31	0.41	2200	103
B8-3-11	8/2/2012	8/3/2012	nd	0.08	0.13	0.40	690	107
Reporting Limits			0.02	0.05	0.05	0.15	10	

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

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Bromofluorobenzene) & LCS: 65% TO 135%

# ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group  
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 Cle Elum, Washington

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 1210 Eastside Street SE Suite 200  
 Olympia, WA 98501  
 (360) 459-4670 (360) 459-3432 Fax  
 lab@esnnw.com

## Analysis of Diesel Range Organics & Lube Oil Range Organics in Water by Method NWTPH-Dx/Dx Extended

Sample Number	Date Prepared	Date Analyzed	Surrogate Recovery (%)	Diesel Range Organics (ug/L)	Lube Oil Range Organics (ug/L)
Method Blank	8/1/2012	8/1/2012	84	nd	nd
LCS	8/1/2012	8/1/2012	103	89%	---
B1-W	8/1/2012	8/1/2012	98	590	nd
B2-W	8/1/2012	8/1/2012	98	nd	nd
B3-W	8/1/2012	8/1/2012	78	nd	nd
B4-W	8/1/2012	8/1/2012	94	nd	nd
B5-W	8/1/2012	8/1/2012	96	17,000	nd
B6-W	8/1/2012	8/1/2012	107	570	nd
B7-W	8/1/2012	8/1/2012	101	45,000	nd
B8-W	8/1/2012	8/1/2012	int	57,000	nd
B9-W	8/1/2012	8/1/2012	58	nd	nd
B10-W	8/1/2012	8/1/2012	144	nd	nd
Reporting Limits				250	500

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

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 50% TO 150%

# ESN NORTHWEST CHEMISTRY LABORATORY

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 Cle Elum, Washington

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 lab@esnnw.com

## Analysis of Gasoline Range Organics, BTEX in Water by Method NWTPH-Gx/8260

Sample Number	Date Analyzed	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Gasoline Range Organics (ug/L)	Surrogate Recovery (%)
Method Blank	8/1/2012	nd	nd	nd	nd	nd	112
LCS	8/1/2012	95%	101%	110%	109%	---	99
LCS D	8/1/2012	94%	94%	102%	105%	---	100
B2-W	8/1/2012	nd	nd	nd	nd	nd	117
B2-W Duplicate	8/1/2012	nd	nd	nd	nd	nd	114
B3-W	8/1/2012	nd	nd	nd	nd	130	115
B5-W	8/1/2012	1,600	4,800	7,800	3,700	30,000	115
B6-W	8/1/2012	2.5	11	1.7	12	160	117
B7-W	8/1/2012	23	3.2	20	20	30,000	114
B8-W	8/1/2012	31	26	18	84	44,000	
B9-W	8/1/2012	nd	nd	nd	nd	nd	114
B10-W	8/1/2012	nd	nd	nd	nd	370	117
Trip Blank	8/1/2012	nd	nd	nd	nd	nd	115
Reporting Limits		1.0	1.0	1.0	3.0	100	

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

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Bromofluorobenzene) & LCS: 65% TO 135%

# ESN NORTHWEST CHEMISTRY LABORATORY

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## Analysis of Volatile Organics and Gasoline Range Organics in Water by Method NWTPH-Gx/8260

### Analytical Results

Date analyzed	Reporting Limits	MB	LCS	LCSD	B1-W	B4-W	Trip Blank
	(ug/L)	08/01/12	08/01/12	08/01/12	08/01/12	08/01/12	08/01/12
Methyl-t-butyl ether (MTBE)	1.0	nd	113%	113%	nd	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd	89%	88%	nd	nd	nd
Benzene	1.0	nd	95%	94%	<b>1,000</b>	<b>70</b>	nd
Toluene	1.0	nd	101%	94%	<b>1,100</b>	<b>23</b>	nd
Ethylbenzene	1.0	nd	110%	102%	<b>68</b>	<b>1.7</b>	nd
Xylenes	3.0	nd	109%	105%	<b>440</b>	<b>9.0</b>	nd
Naphthalene	1.0	nd	112%	101%	<b>4.3</b>	nd	nd
Gasoline Range Organics	100	nd	---	---	<b>19,000</b>	<b>120</b>	

### Surrogate recoveries

Dibromofluoromethane	107%	101%	100%	98%	101%	113%
Toluene-d8	108%	97%	95%	122%	105%	109%
4-Bromofluorobenzene	112%	99%	100%	98%	116%	115%

### Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

Acceptable Recovery limits: 65% TO 135%

Acceptable RPD limit: 35%

# ESN NORTHWEST CHEMISTRY LABORATORY

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Client Project #12-164  
Cle Elum, Washington

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(360) 459-4670 (360) 459-3432 Fax  
lab@esnnw.com

## Total Metals in Water by EPA-6020 Method

Sample Number	Date Analyzed	Lead (Pb) (ug/L)
Method Blank	8/1/2012	nd
B1-W	8/1/2012	38
B4-W	8/1/2012	nd
B4-W Duplicate	8/1/2012	nd
Method Detection Limits		2

"nd" Indicates not detected at listed detection limits.

**ESN NORTHWEST CHEMISTRY LABORATORY**

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**QA/QC Data - Total Metals EPA-6020**

Sample Number: B4-W

	Matrix Spike			Matrix Spike Duplicate			RPD
	Spiked Conc. (ug/L)	Measured Conc. (ug/L)	Spike Recovery (%)	Spiked Conc. (ug/L)	Measured Conc. (ug/L)	Spike Recovery (%)	(%)
Lead	20.0	17.1	85.5	20.0	16.1	80.5	6.02

Laboratory Control Sample			
	Spiked Conc. (ug/L)	Measured Conc. (ug/L)	Spike Recovery (%)
Lead	20.0	18.0	90.0

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 80%-120%

ACCEPTABLE RPD IS 35%

M - Matrix Spike recovery failed due to matrix interference.

## ESN NORTHWEST CHEMISTRY LABORATORY

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Cle Elum, Washington

ESN Northwest  
1210 Eastside Street SE Suite 200  
Olympia, WA 98501  
(360) 459-4670 (360) 459-3432 Fax  
lab@esnw.com

### Analysis of 1,2-Dibromoethane in Water by EPA Method 8011

Sample Number	Date Analyzed	1,2-Dibromoethane (ug/L)
Method Blank	8/2/2012	nd
LCS	8/2/2012	106%
B1-W	8/2/2012	nd
B4-W	8/2/2012	nd
Method Detection Limits		0.01

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

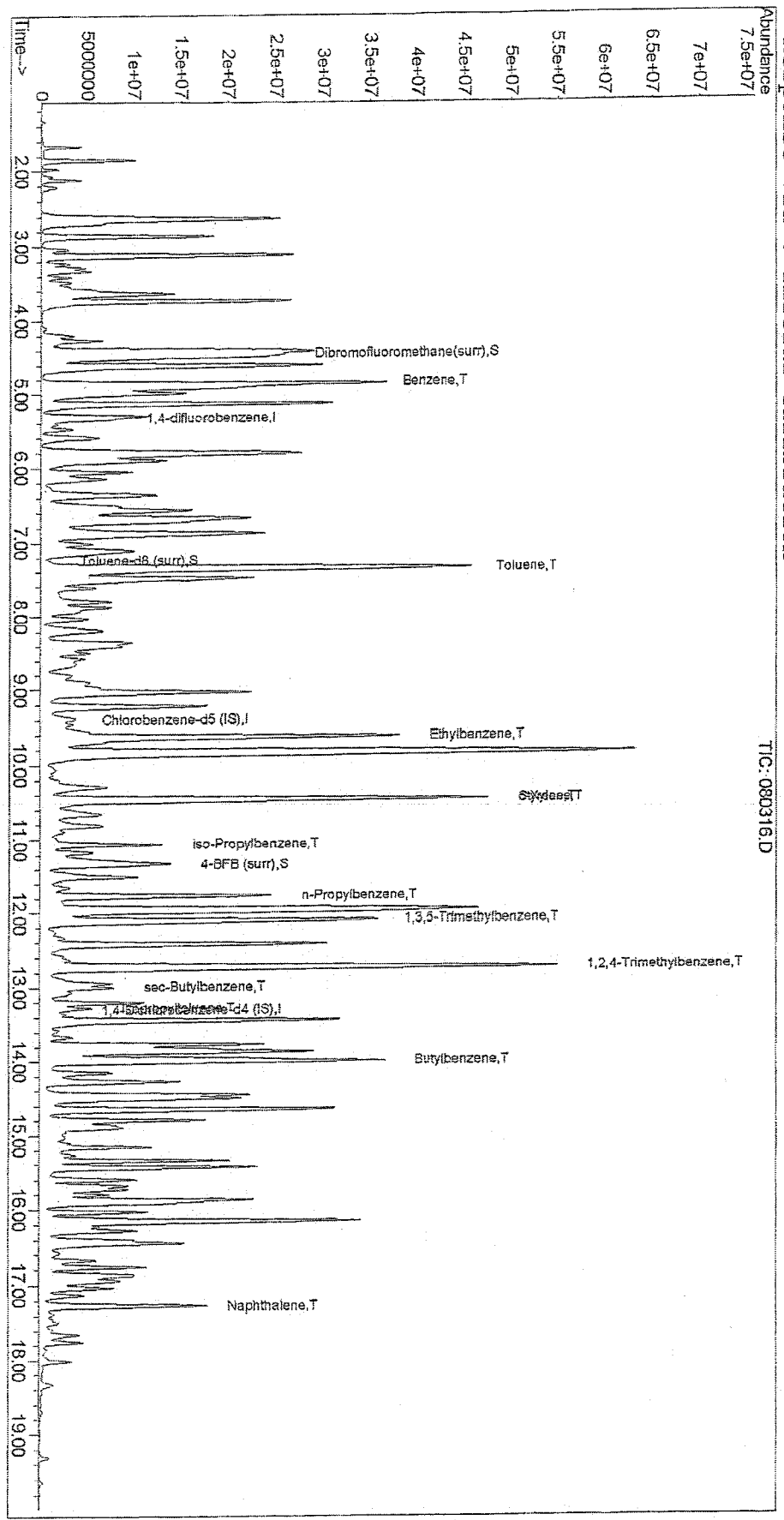
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

Data File : C:\MSDCHEM\1\DATA\080312\080316.D  
 Acq On : 3 Aug 2012 4:38 pm  
 Sample : B5-3-11  
 Misc : 15.40G/10ML  
 MS Integration Params: GAS.P  
 Quant Time: Aug 6 9:53 2012

Vial: 16  
 Operator: LH  
 Inst : msd #1  
 Multiplr: 1.00  
 Quant Results File: 8260072312.RES

Method : C:\MSDCHEM\1\5973N\8260072312.M (RTE Integrator)  
 Title : 8260  
 Last Update : Fri Jul 27 10:47:22 2012  
 Response via : Initial Calibration

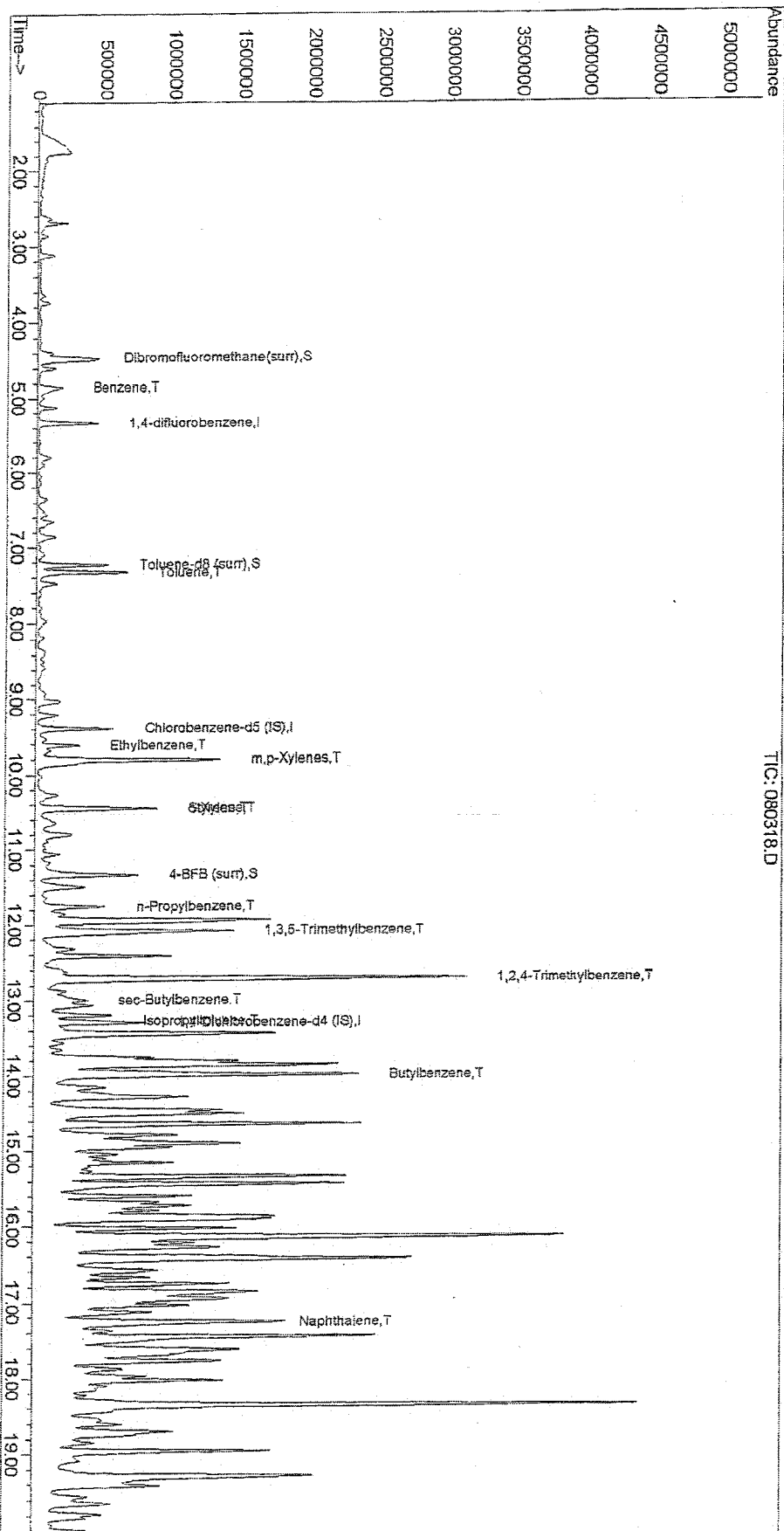


Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\1\DATA\080312\080318.D  
Acq On : 3 Aug 2012 5:33 pm  
Sample : B6-3-10  
Misc : 13.79G/10ML  
MS Integration Params: GAS.P  
Quant Time: Aug 6 10:05 2012

Vial: 18  
Operator: LH  
Inst : msd #1  
Multiplr: 1.00  
Quant Results File: 8260072312.RFS

Method : C:\MSDCHEM\1\5973N\8260072312.M (RTE Integrator)  
Title : 8260  
Last Update : Fri Jul 27 10:47:22 2012  
Response via : Initial Calibration



080318.D 8260072312.M

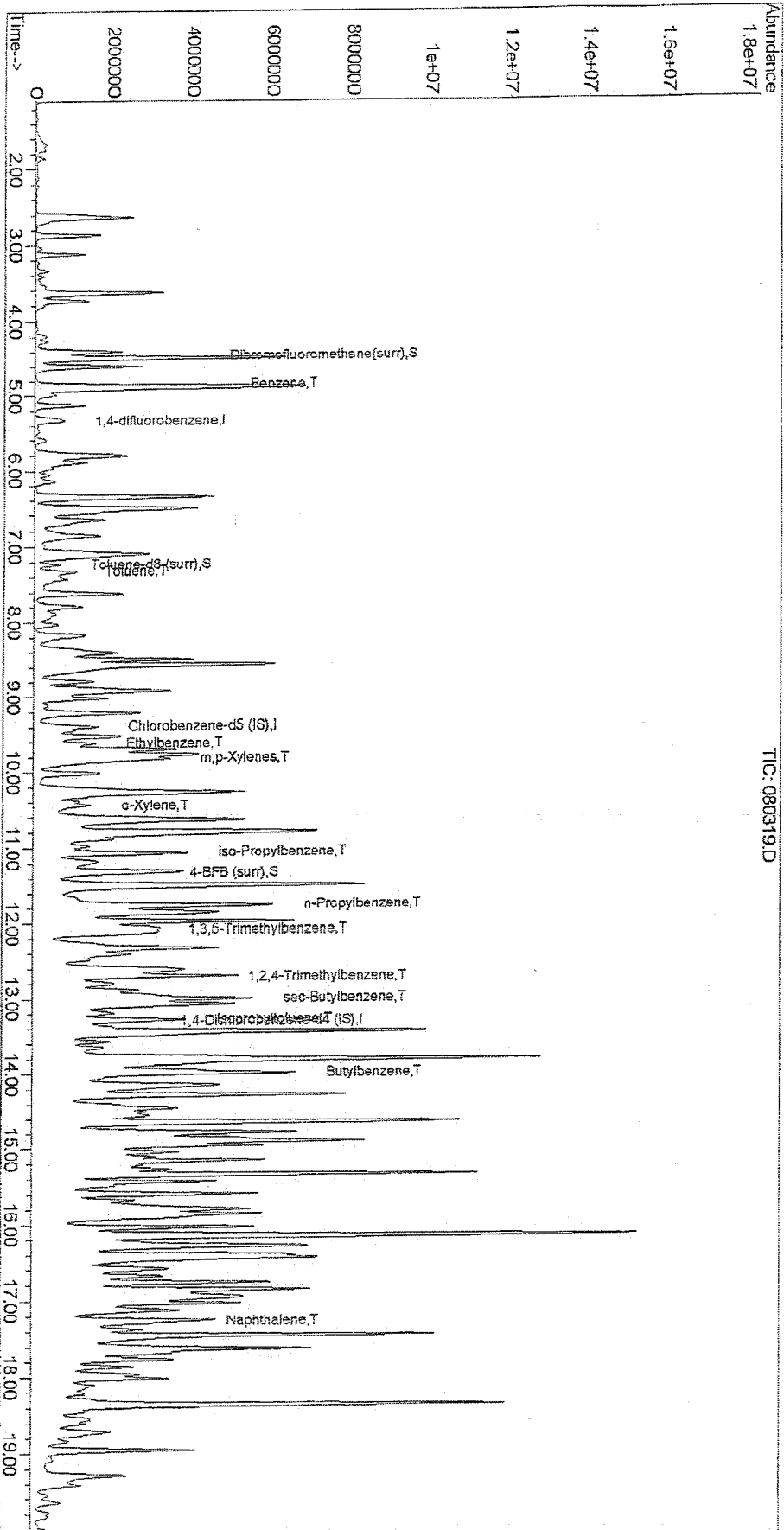
Mon Aug 06 10:05:24 2012

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\1\DATA\080312\080319.D  
Acq On : 3 Aug 2012 6:00 pm  
Sample : B7-3-11  
Misc : 8.85G/10ML  
MS Integration Params: GAS.P  
Quant Time: Aug 6 10:13 2012

Vial: 19  
Operator: LH  
Inst : msd #1  
Multiplr: 1.00  
Quant Results File: 8260072312.RES

Method : C:\MSDCHEM\1\5973N\8260072312.M (RTE Integrator)  
Title : 8260  
Last Update : Fri Jul 27 10:47:22 2012  
Response via : Initial Calibration

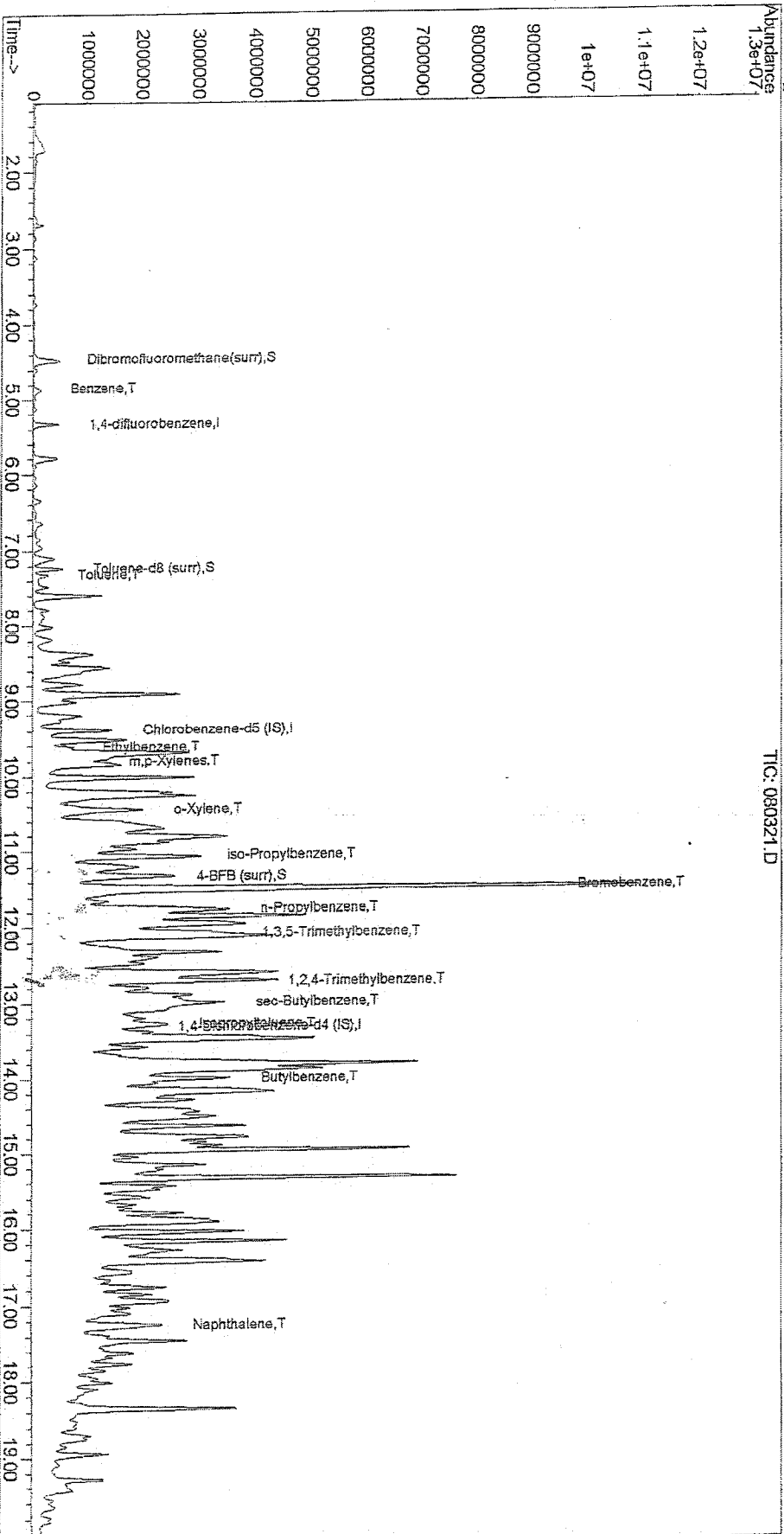


Quantitation Report (QT Reviewed)

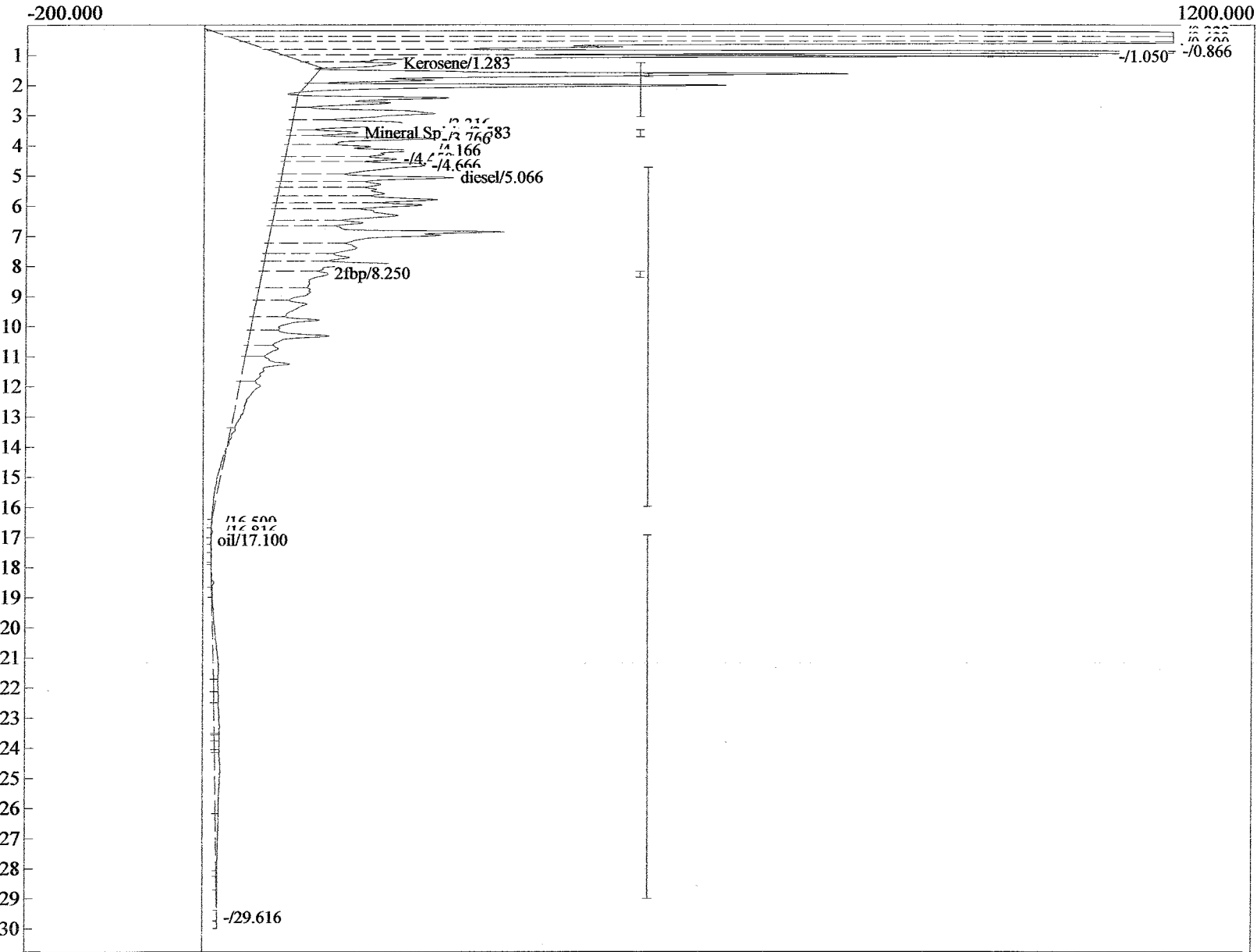
Data File : C:\MSDCHEM\1\DATA\080321\080321.D  
Acq On : 3 Aug 2012 6:55 pm  
Sample : B8-3-11  
Misc : 6.90G/10ML  
MS Integration Params: GAS.P  
Quant Time: Aug 6 10:17 2012

Vial: 21  
Operator: LH  
Inst : msd #1  
Multiplr: 1.00  
Quant Results File: 8260072312.RES

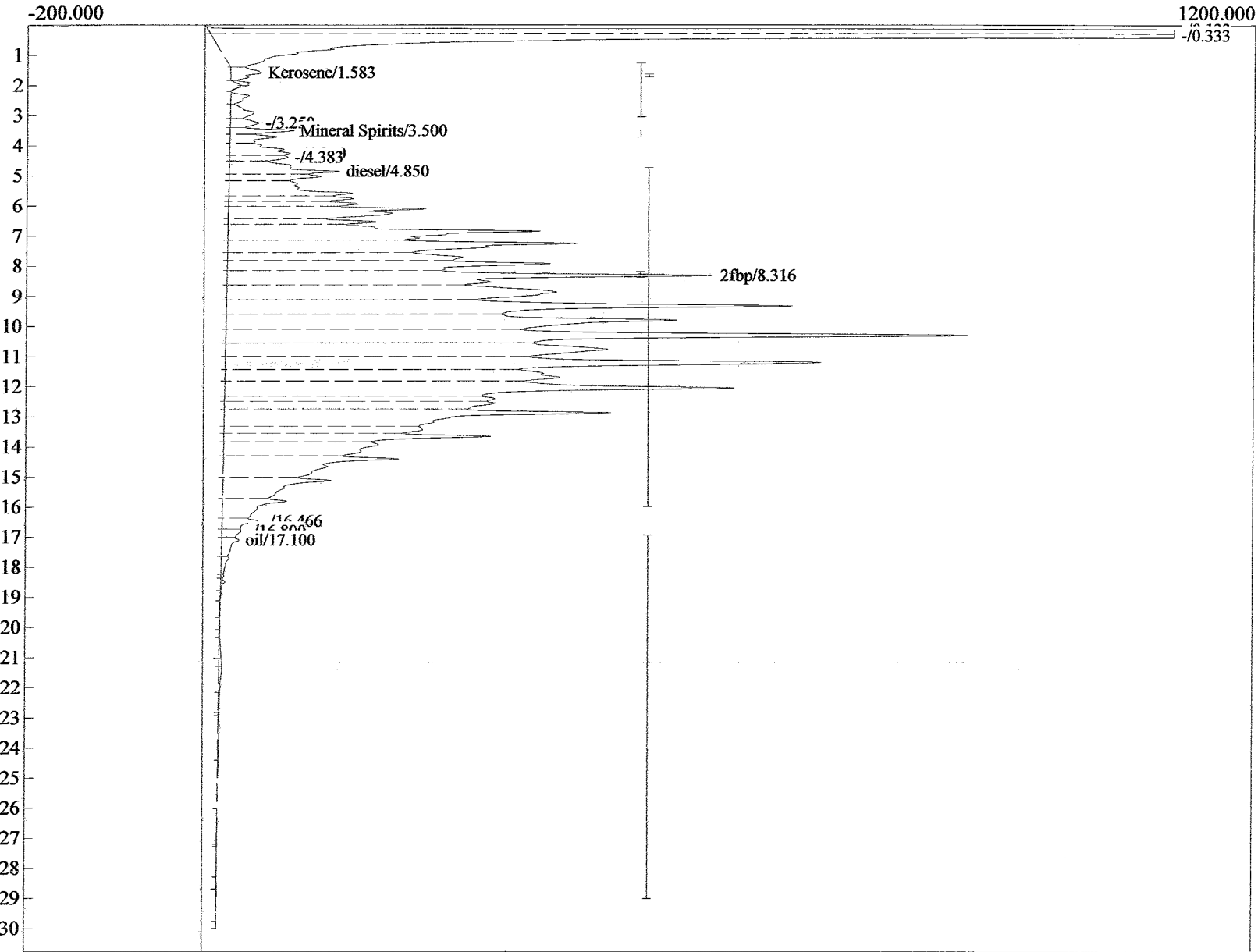
Method : C:\MSDCHEM\1\5973N\8260072312.M (RTE Integrator)  
Title : 8260  
Last Update : Fri Jul 27 10:47:22 2012  
Response via : Initial Calibration



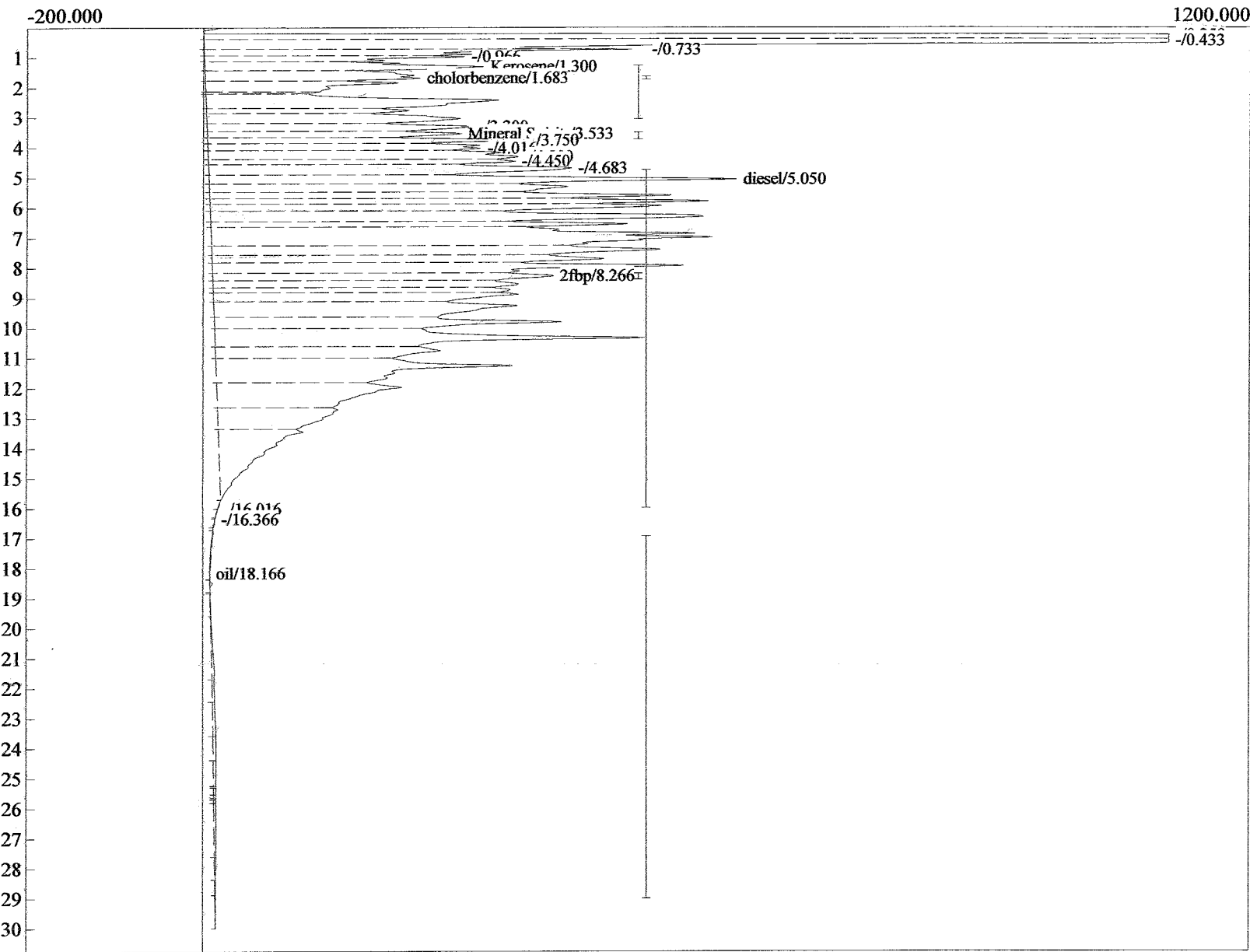
Lab name: ESN Northwest  
Analysis date: 08/07/2012 11:09:42  
Description: CHANNEL 3  
Data file: ch3\_10853.CHR ()  
Sample: AEG B5-3-11



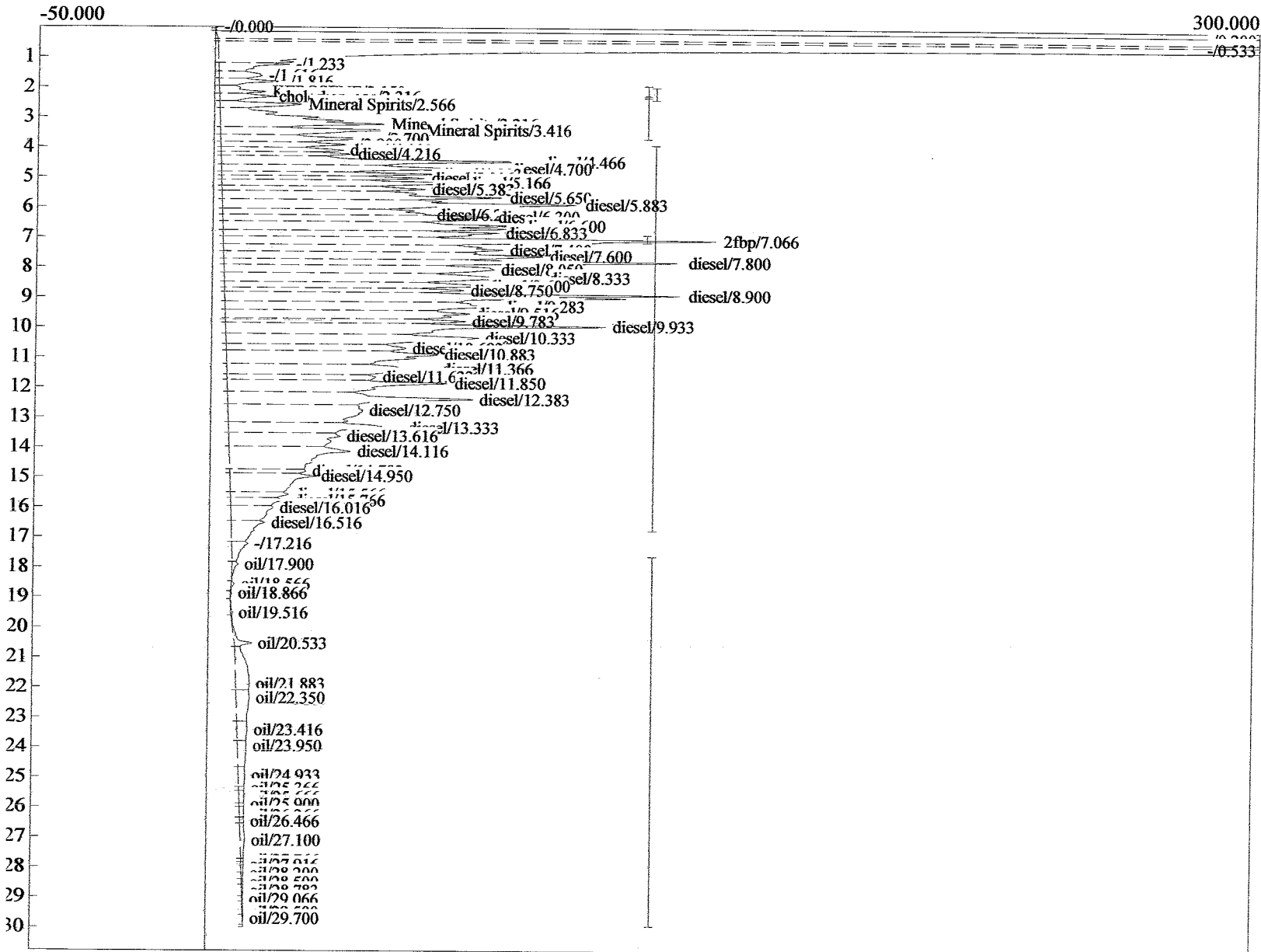
Lab name: ESN Northwest  
Analysis date: 08/07/2012 11:49:20  
Description: CHANNEL 3  
Data file: ch3\_10854.chr ()  
Sample: AEG B6-3-10



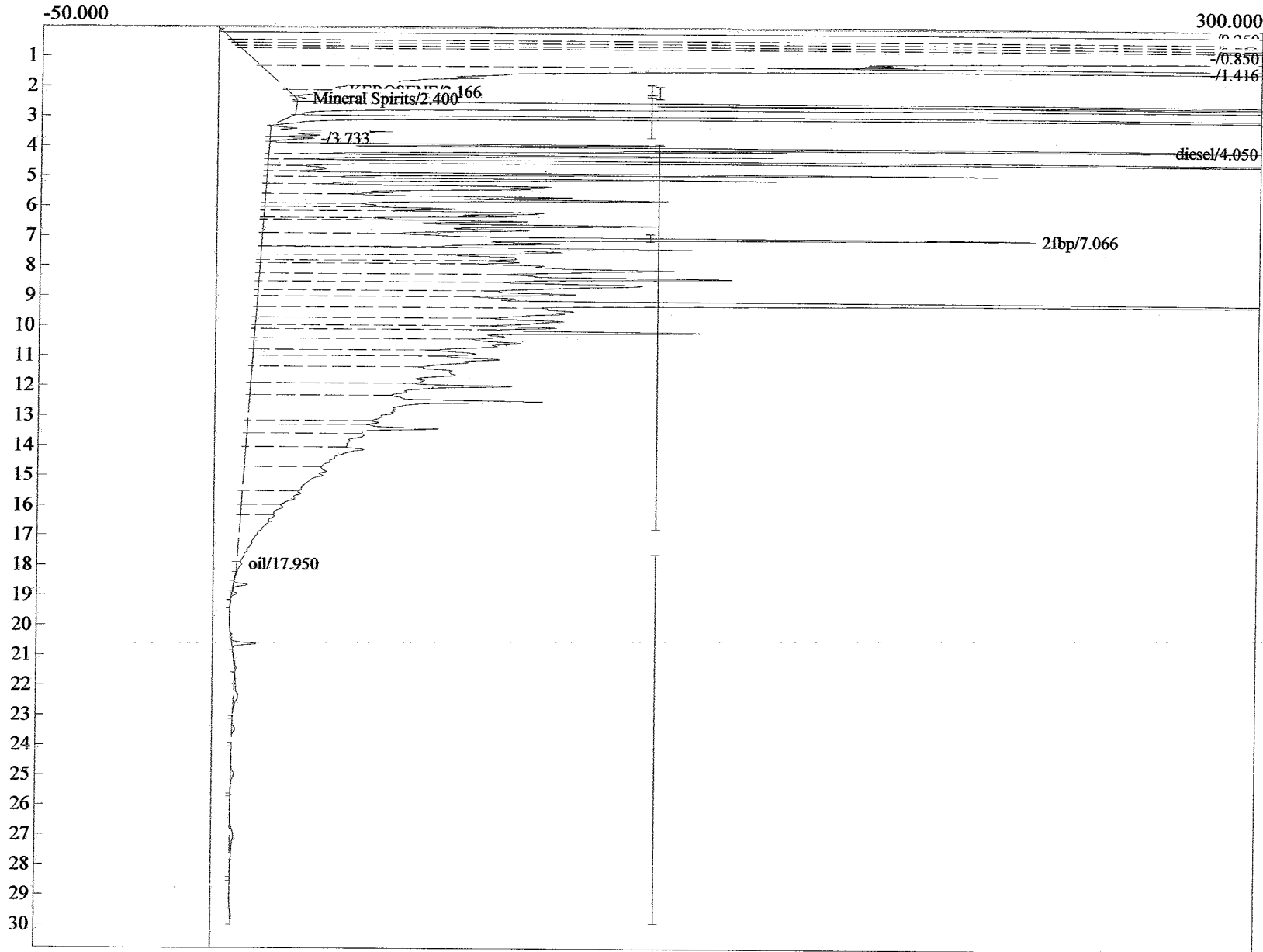
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Analysis date: 08/07/2012 12:26:48  
Description: CHANNEL 3  
Data file: ch3\_10855.chr ()  
Sample: AEG B7-3-11



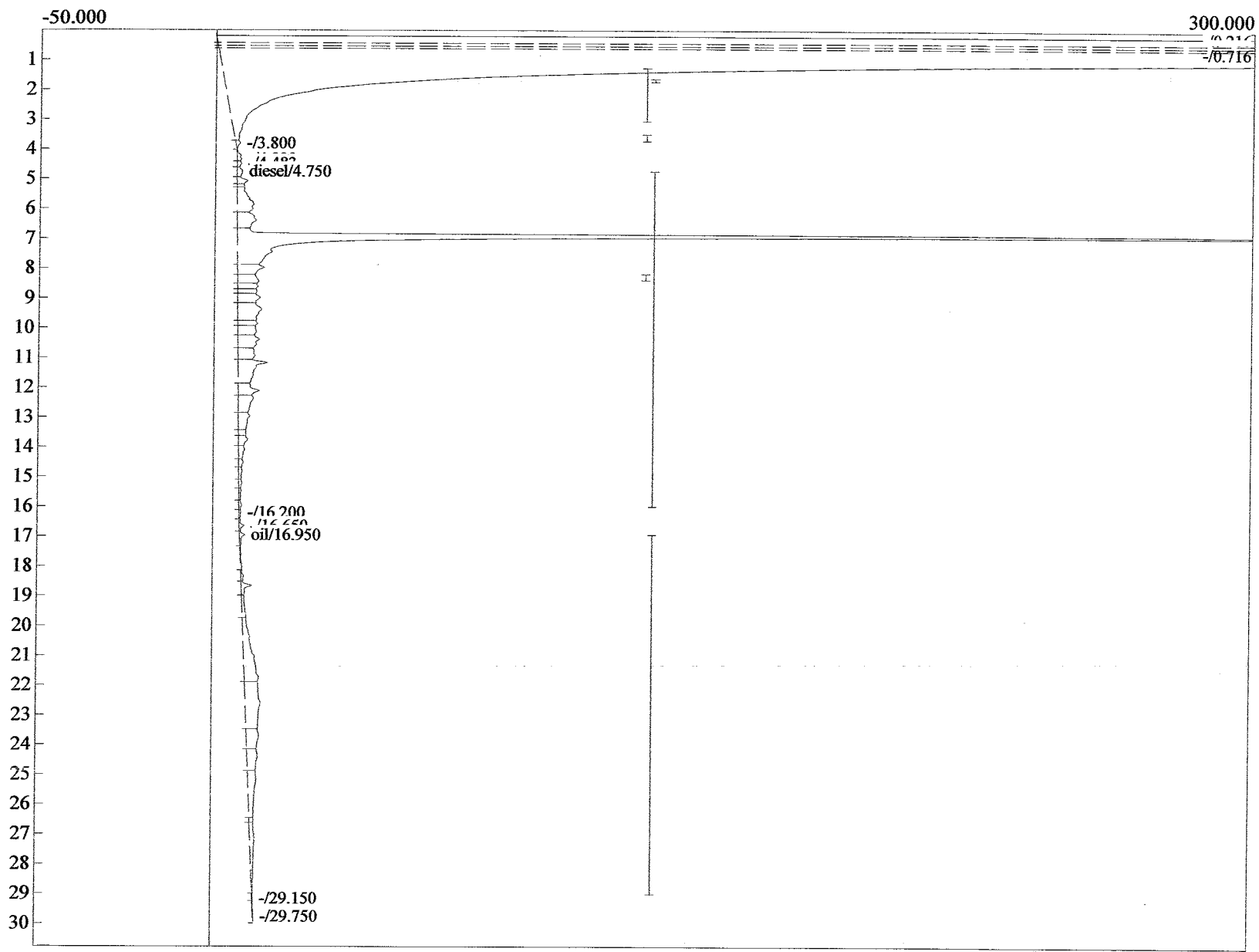
Lab name: ESN Northwest  
 Analysis date: 08/07/2012 12:26:48  
 Description: CHANNEL 4  
 Components: ch4Dieselcomponent121010.cpt  
 Data file: ch4\_10855.CHR ()  
 Sample: AEG B8-3-11



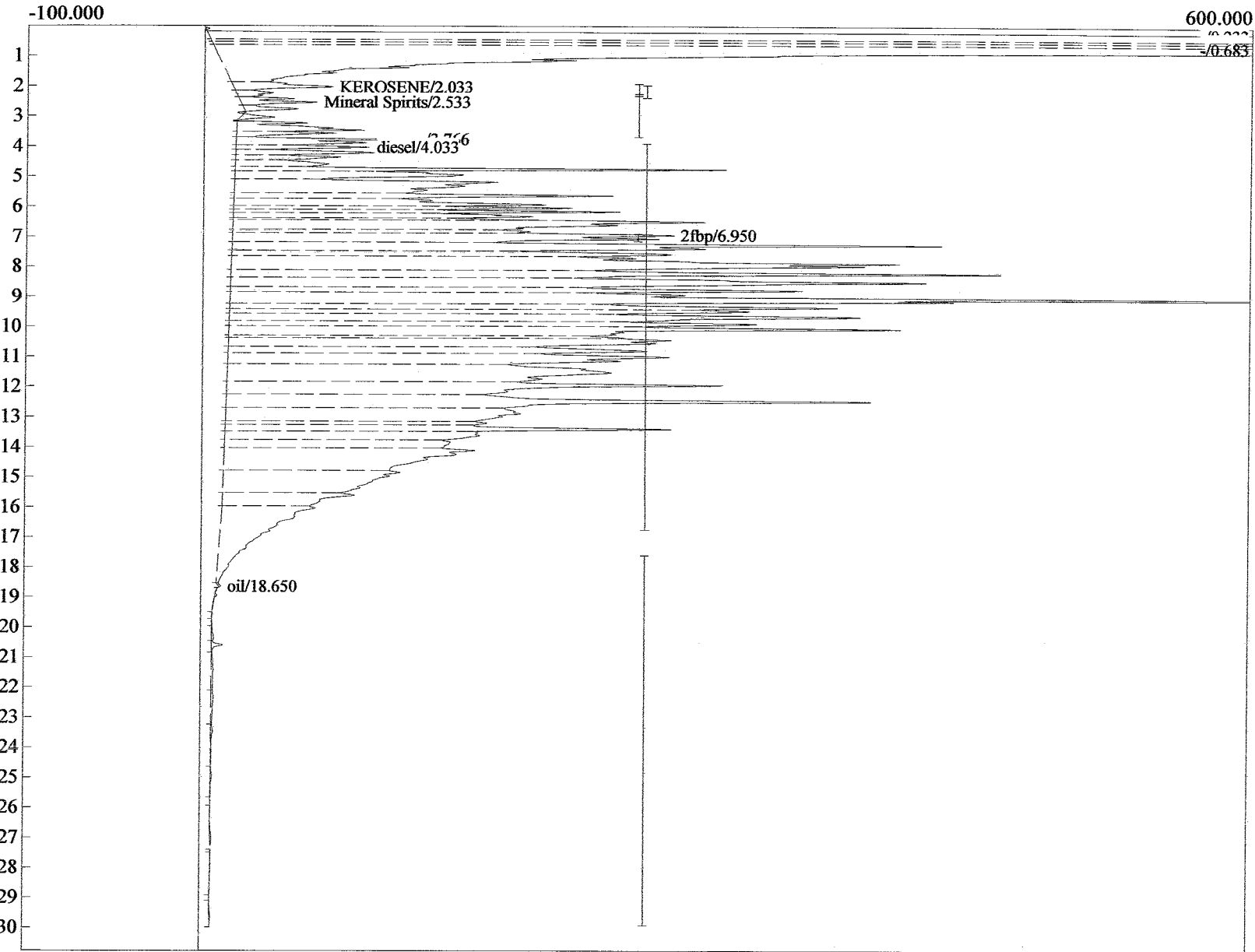
Lab name: ESN Northwest  
Analysis date: 08/01/2012 09:30:00  
Description: CHANNEL 4  
Components: ch4Dieselcomponent121010.cpt  
Data file: ch4\_10799.CHR ()  
Sample: AEG B5-W



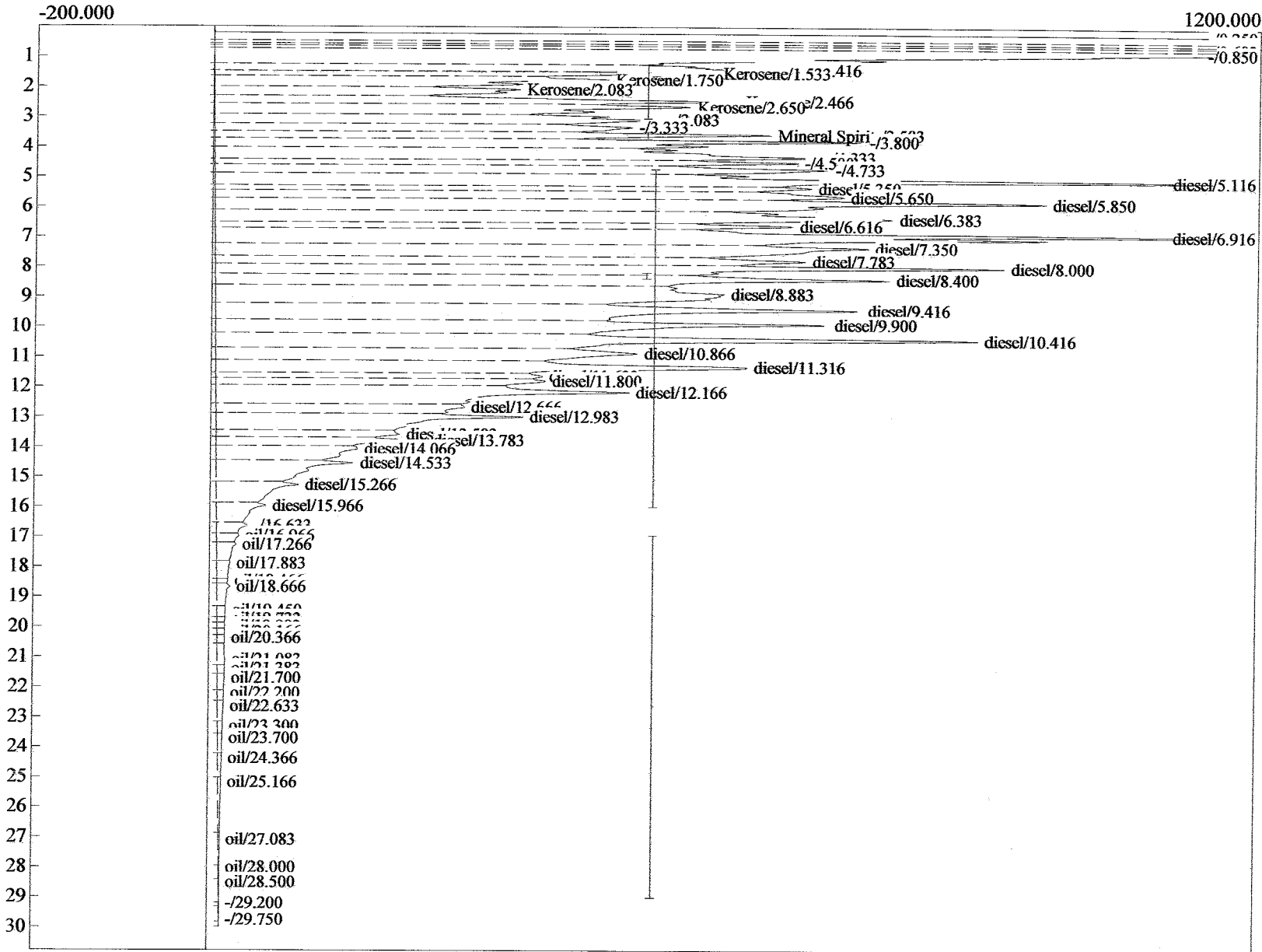
Lab name: ESN Northwest  
Analysis date: 08/01/2012 10:05:50  
Description: CHANNEL 3  
Data file: ch3\_10800.CHR ()  
Sample: AEG B6-W



Lab name: ESN Northwest  
Analysis date: 08/01/2012 10:05:50  
Description: CHANNEL 4  
Components: ch4Dieselcomponent121010.cpt  
Data file: ch4\_10800.CHR ()  
Sample: AEG B7-W



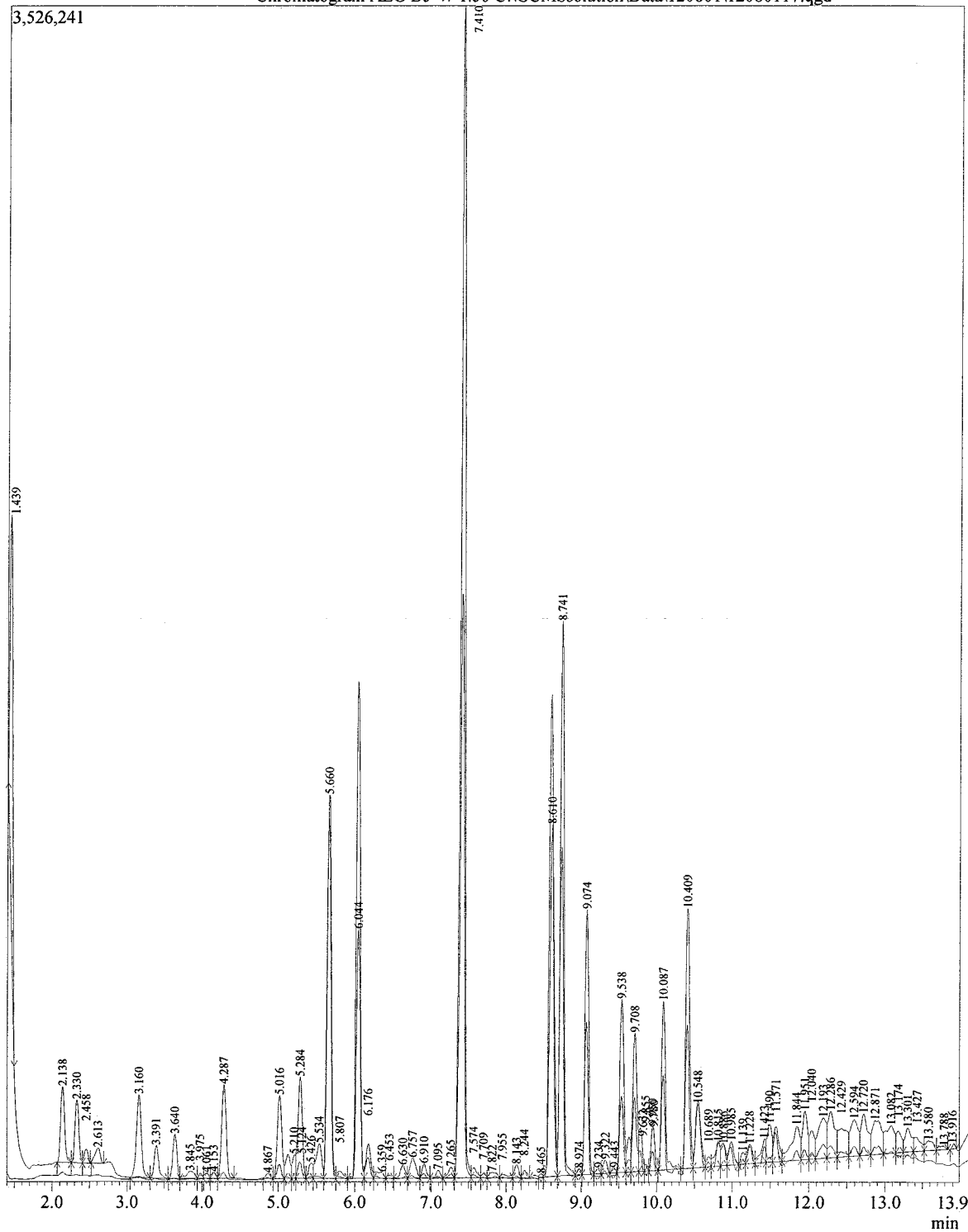
Lab name: ESN Northwest  
 Analysis date: 08/01/2012 10:45:01  
 Description: CHANNEL 3  
 Data file: ch3\_10801.CHR ()  
 Sample: AEG B8-W



Sample Information

Sample Name : AEG B5-W 1:50

Chromatogram AEG B5-W 1:50 C:\GCMSsolution\Data\120801\12080117.qgd

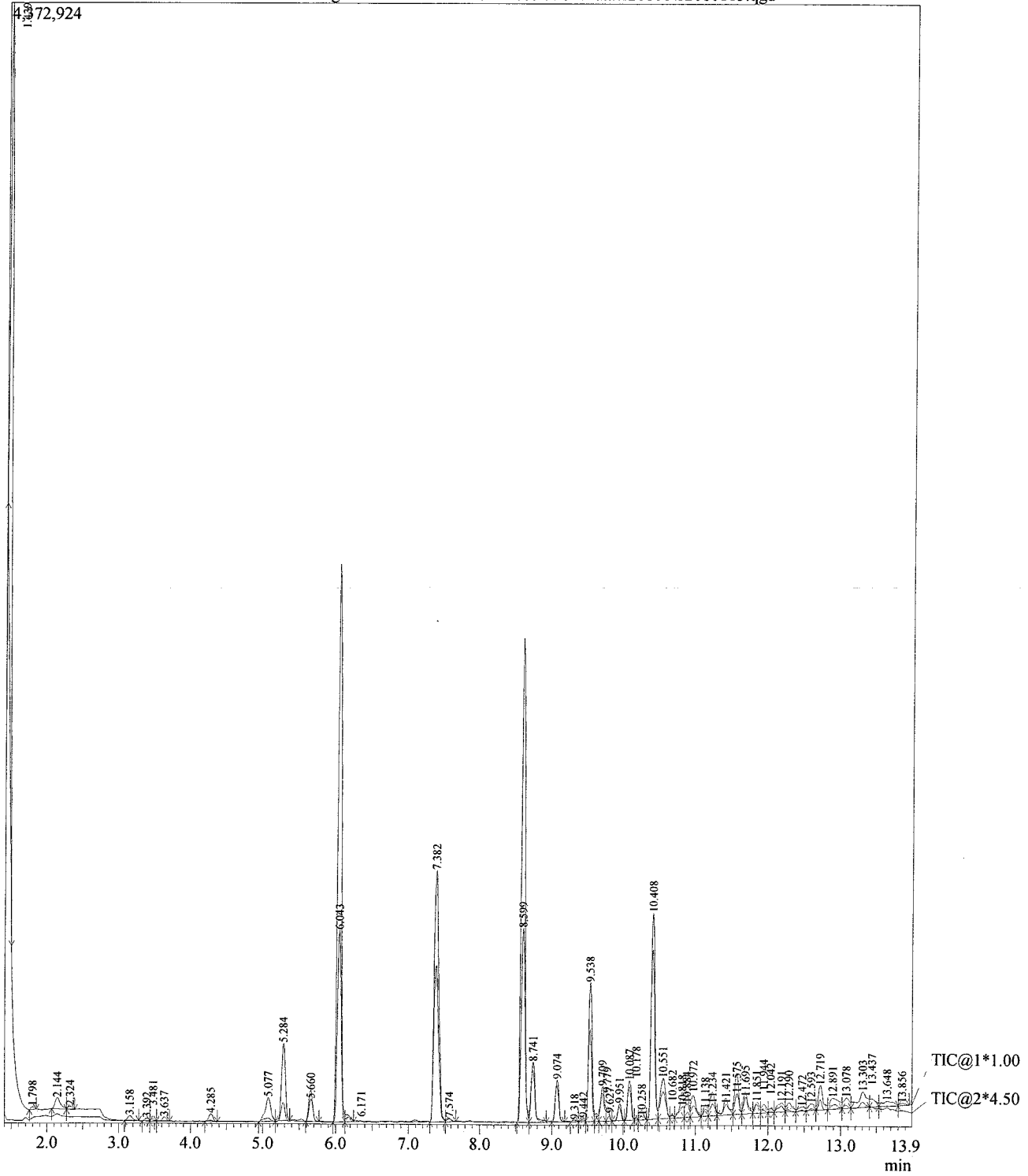


TIC@1\*1.00  
TIC@2\*3.13

Sample Information

Sample Name : AEG B6-W

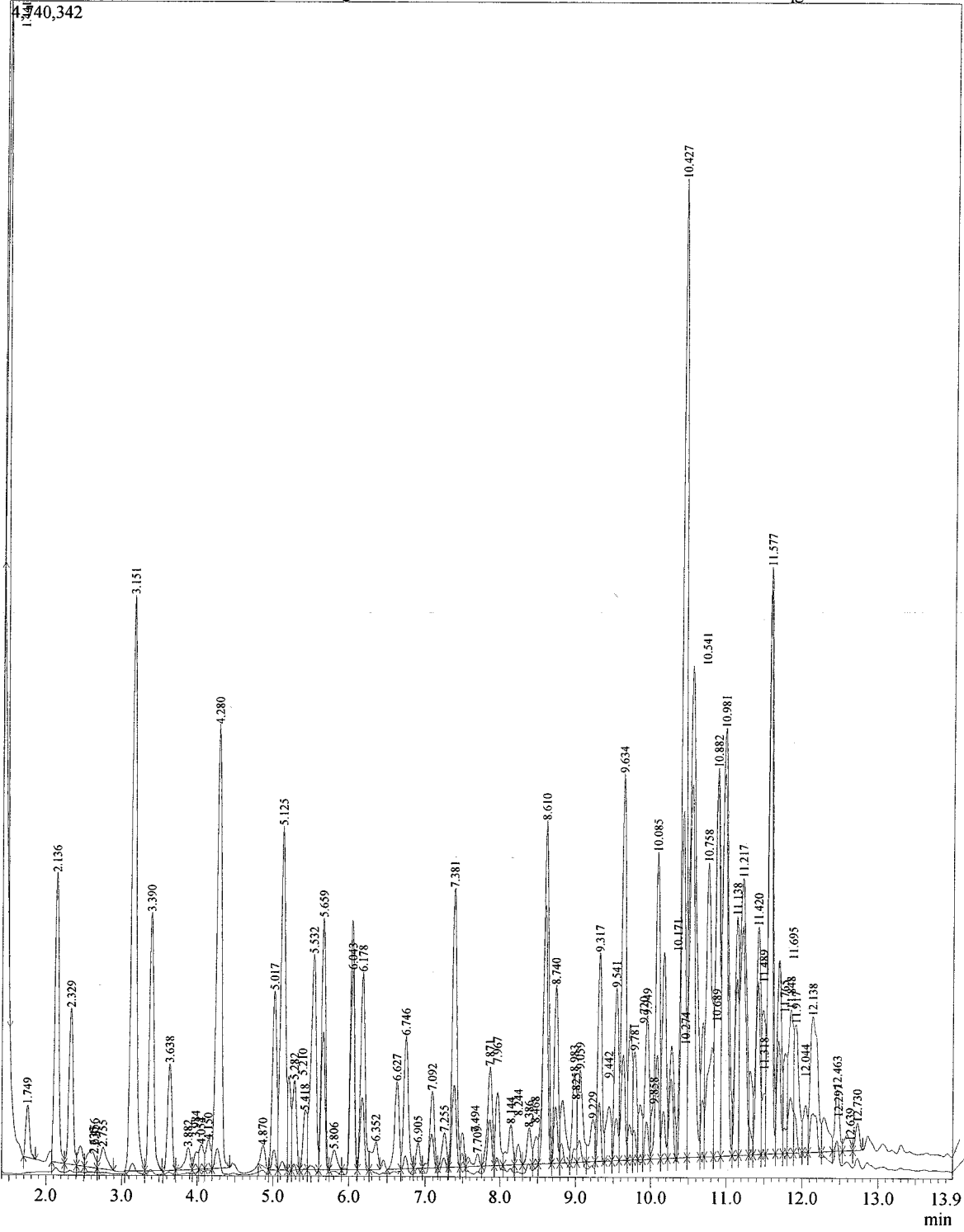
Chromatogram AEG B6-W C:\GCMSsolution\Data\120801\12080113.qgd



Sample Information

Sample Name : AEG B7-W

Chromatogram AEG B7-W C:\GCMSsolution\Data\120801\12080121.qgd

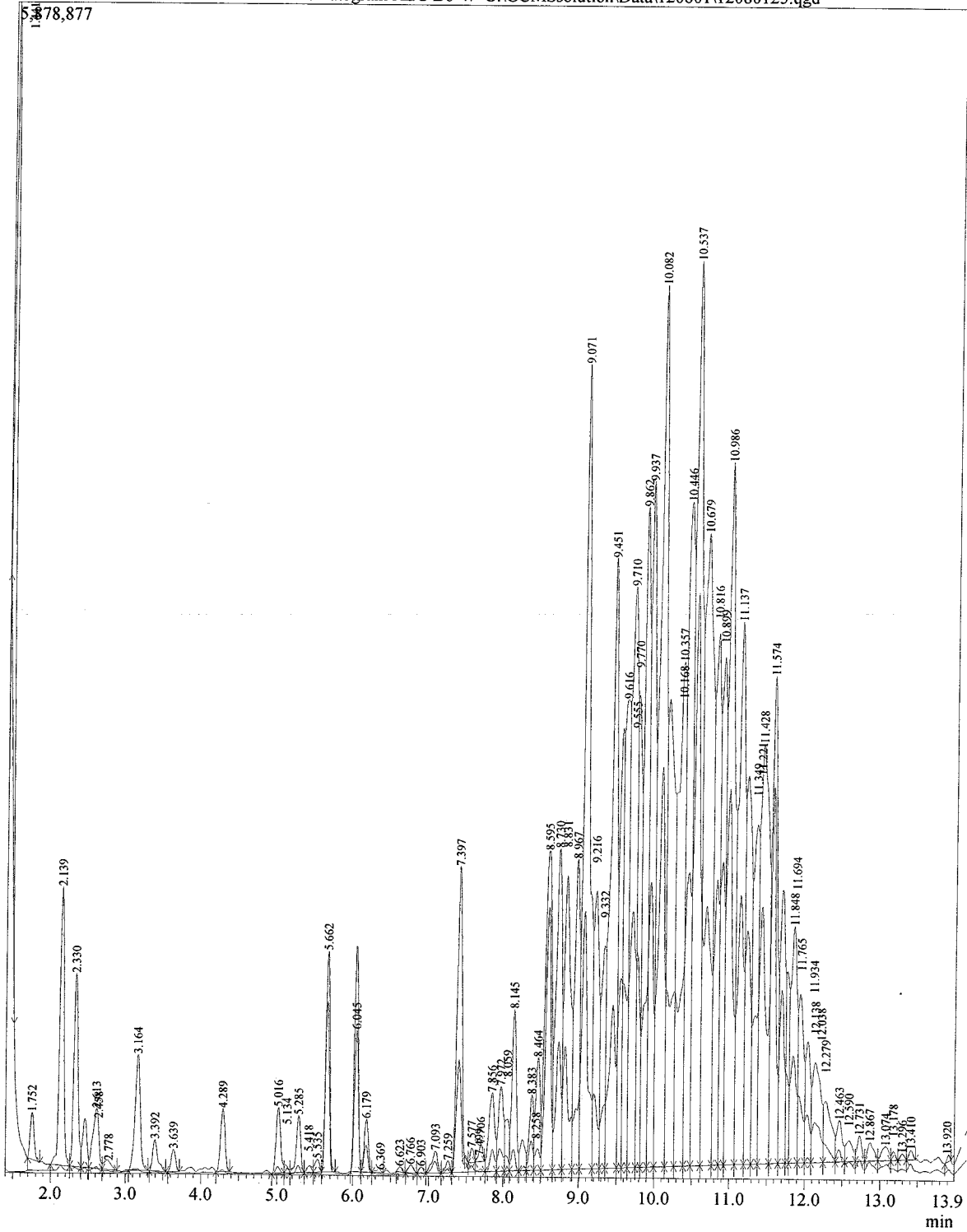


TIC@1\*1.00  
TIC@2\*1.98

Sample Information

Sample Name : AEG B8-W

Chromatogram AEG B8-W C:\GCMSsolution\Data\120801\12080125.qgd



TIC@1\*1.00

TIC@2\*2.53

# **ESN NORTHWEST LAB RESULTS**

## **2<sup>ND</sup> Probe Subsurface Investigation**



## ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group  
CLE ELUM 76, SECOND PROBE INV. PROJECT  
Client Project #12-164  
Cle Elum, Washington

ESN Northwest  
1210 Eastside Street SE Suite 200  
Olympia, WA 98501  
(360) 459-4670 (360) 459-3432 Fax  
lab@esnw.com

### Analysis of Diesel Range Organics & Lube Oil Range Organics in Soil by Method NWTPH-Dx/Dx Extended

Sample Number	Date Prepared	Date Analyzed	Surrogate Recovery (%)	Diesel Range Organics (mg/kg)	Lube Oil Range Organics (mg/kg)
Method Blank	10/11/2012	10/11/2012	89	nd	nd
LCS	10/11/2012	10/11/2012	86	89%	---
B11-S3-9.5/10.0	10/11/2012	10/11/2012	int	<b>2000</b>	nd
B12-S1-3.0/3.5	10/11/2012	10/11/2012	86	nd	nd
B12-S3-9.5/10.0	10/11/2012	10/11/2012	110	<b>410</b>	nd
TPN2-BC-10.0	10/11/2012	10/11/2012	94	<b>50</b>	nd
B13-S3-10.5/11.0	10/11/2012	10/11/2012	int	<b>3700</b>	nd
B14-S3-11.0/11.5	10/11/2012	10/11/2012	72	nd	nd
B15-S3-11.5/12.0	10/11/2012	10/11/2012	89	nd	nd
B15-S3-11.5/12.0 Duplicate	10/11/2012	10/11/2012	90	nd	nd
<b>Reporting Limits</b>				50	100

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

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 50% TO 150%

# ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group  
CLE ELUM 76, SECOND PROBE INV. PROJECT  
Client Project #12-164  
Cle Elum, Washington

ESN Northwest  
1210 Eastside Street SE Suite 200  
Olympia, WA 98501  
(360) 459-4670 (360) 459-3432 Fax  
lab@esnnw.com

## Analysis of Diesel Range Organics & Lube Oil Range Organics in Water by Method NWTPH-Dx/Dx Extended

Sample Number	Date Prepared	Date Analyzed	Surrogate Recovery (%)	Diesel Range Organics (ug/L)	Lube Oil Range Organics (ug/L)
Method Blank	10/12/2012	10/12/2012	88	nd	nd
LCS	10/12/2012	10/12/2012	84	92%	---
B11-W	10/12/2012	10/12/2012	87	<b>860</b>	nd
B12-W	10/12/2012	10/12/2012	89	nd	nd
B13-W	10/12/2012	10/12/2012	89	nd	nd
B14-W	10/12/2012	10/12/2012	89	nd	nd
B15-W	10/12/2012	10/12/2012	82	nd	nd
Reporting Limits				250	500

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

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 50% TO 150%

**ESN NORTHWEST CHEMISTRY LABORATORY**

Associated Environmental Group  
 CLE ELUM 76, SECOND PROBE INV. PROJECT  
 Client Project #12-164  
 Cle Elum, Washington

ESN Northwest  
 1210 Eastside Street SE Suite 200  
 Olympia, WA 98501  
 (360) 459-4670 (360) 459-3432 Fax  
 lab@esnnw.com

**Analysis of Gasoline Range Organics & BTEX in Soil by Method NWTPH-Gx/8260**

Sample Number	Date Prepared	Date Analyzed	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Gasoline Range Organics (mg/kg)	Surrogate Recovery (%)
Method Blank	10/11/2012	10/11/2012	nd	nd	nd	nd	nd	113
LCS	10/11/2012	10/11/2012	122%	112%	110%	109%	---	109
LCSD	10/11/2012	10/11/2012	121%	111%	108%	113%	---	113
B11-S3-9.5/10.0	10/11/2012	10/11/2012	nd	nd	nd	nd	nd	120
B12-S1-3.0/3.5	10/11/2012	10/11/2012	nd	nd	nd	nd	nd	119
B12-S3-9.5/10.0	10/11/2012	10/11/2012	nd	nd	nd	nd	nd	116
TPN2-BC-10.0	10/11/2012	10/11/2012	nd	nd	nd	nd	nd	126
B13-S3-10.5/11.0	10/11/2012	10/11/2012	0.02	nd	nd	nd	nd	120
B14-S3-11.0/11.5	10/11/2012	10/11/2012	nd	nd	nd	nd	nd	118
B15-S3-11.5/12.0	10/11/2012	10/11/2012	nd	nd	nd	nd	nd	115
Reporting Limits			0.02	0.05	0.05	0.15	10	

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

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Bromofluorobenzene) & LCS: 65% TO 135%

# ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group  
CLE ELUM 76, SECOND PROBE INV. PROJECT  
Client Project #12-164  
Cle Elum, Washington

ESN Northwest  
1210 Eastside Street SE Suite 200  
Olympia, WA 98501  
(360) 459-4670 (360) 459-3432 Fax  
lab@esnw.com

## Analysis of Gasoline Range Organics, BTEX in Water by Method NWTPH-Gx/8260

Sample Number	Date Analyzed	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Gasoline Range Organics (ug/L)	Surrogate Recovery (%)
Method Blank	10/12/2012	nd	nd	nd	nd	nd	119
LCS	10/12/2012	115%	111%	109%	111%	108%	106
LCSD	10/12/2012	124%	116%	118%	119%	---	107
B11-W	10/12/2012	1.0	nd	nd	nd	830	128
B12-W	10/12/2012	nd	nd	2.5	4.0	200	116
B13-W	10/12/2012	nd	nd	nd	nd	nd	118
B14-W	10/12/2012	nd	nd	nd	nd	nd	125
B15-W	10/12/2012	nd	nd	nd	nd	nd	125
B15-W Duplicate	10/12/2012	nd	nd	nd	nd	nd	123
Trip Blank	10/12/2012	nd	nd	nd	nd	nd	123
Reporting Limits		1.0	1.0	1.0	3.0	100	

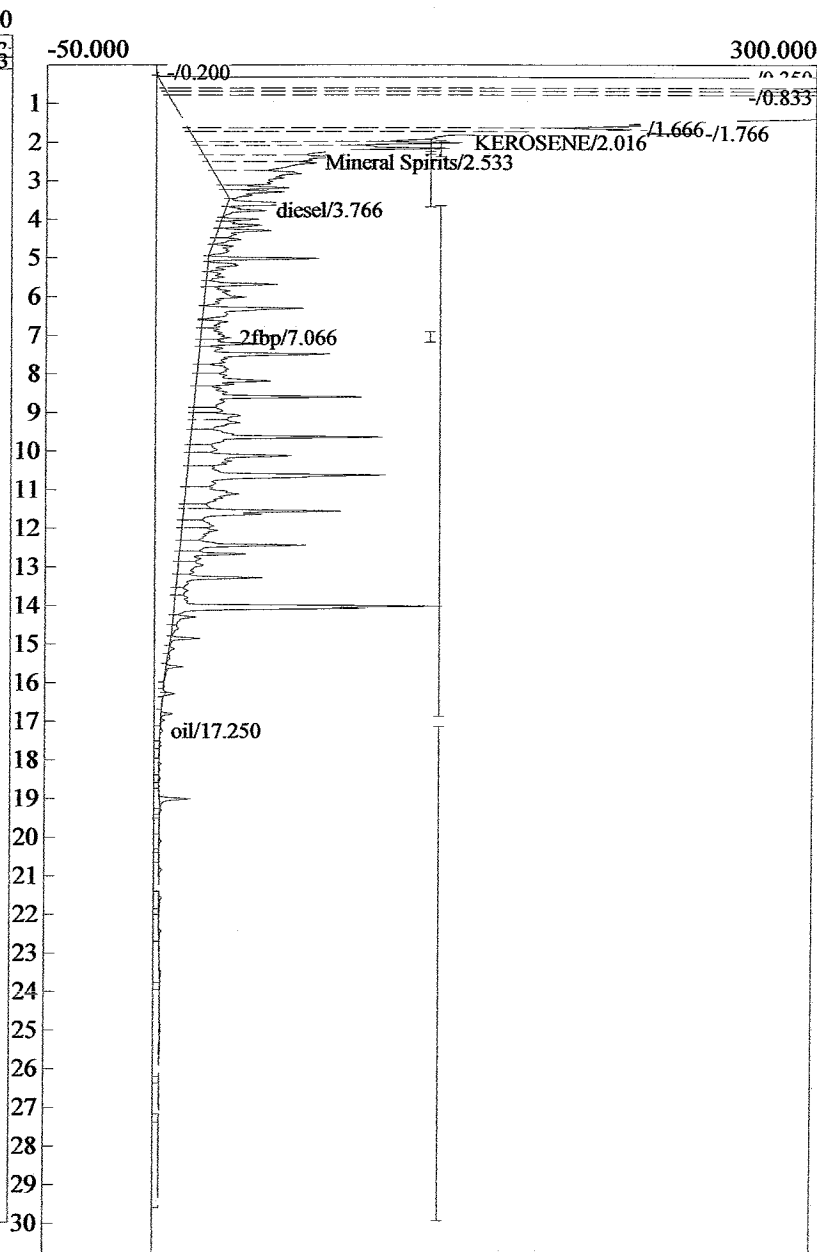
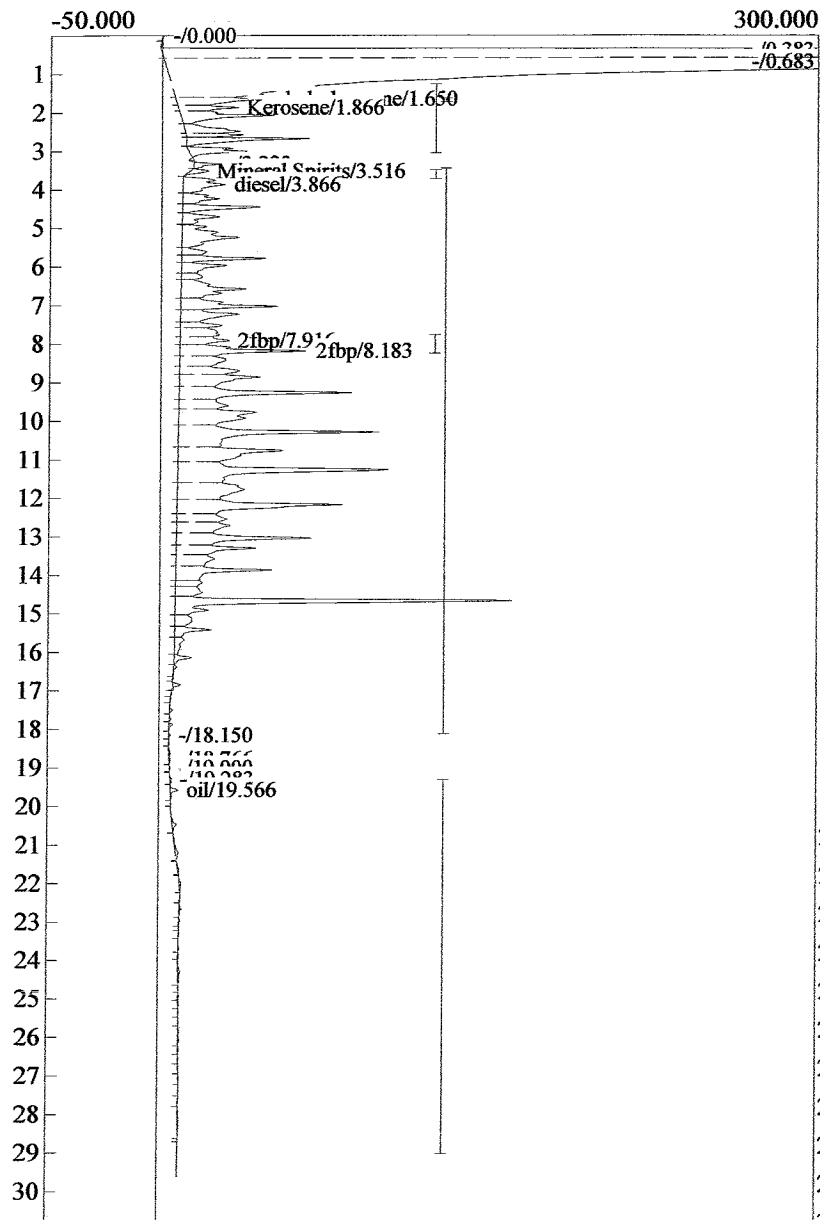
"nd" Indicates not detected at the listed detection limits.

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Bromofluorobenzene) & LCS: 65% TO 135%

Lab name: ESN Northwest  
 Analysis date: 10/12/2012 07:27:35  
 Description: CHANNEL 3  
 Data file: ch3\_11169.CHR ()  
 Sample: 500PPM DX

Lab name: ESN Northwest  
 Analysis date: 10/12/2012 07:27:35  
 Description: CHANNEL 4  
 Components: ch4Dieselcomponent121010.cpt  
 Data file: ch4\_11169.CHR ()  
 Sample: 500PPM DX

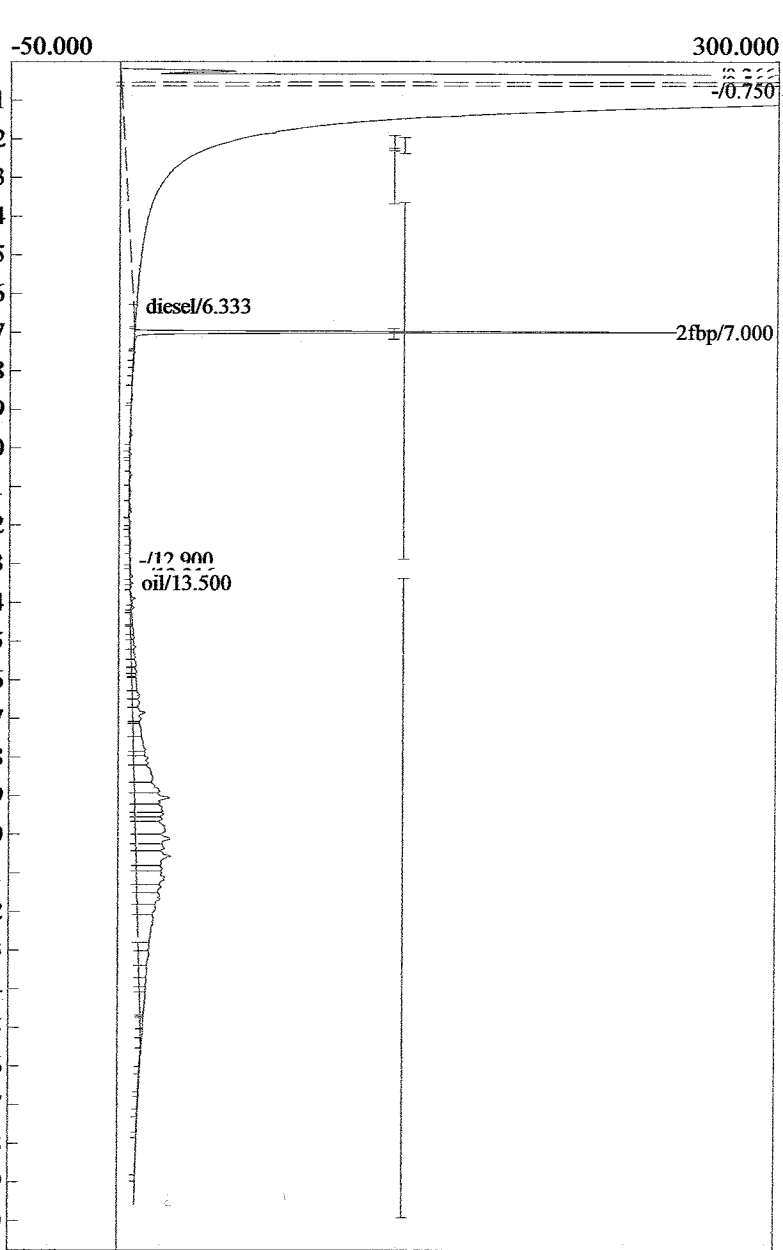
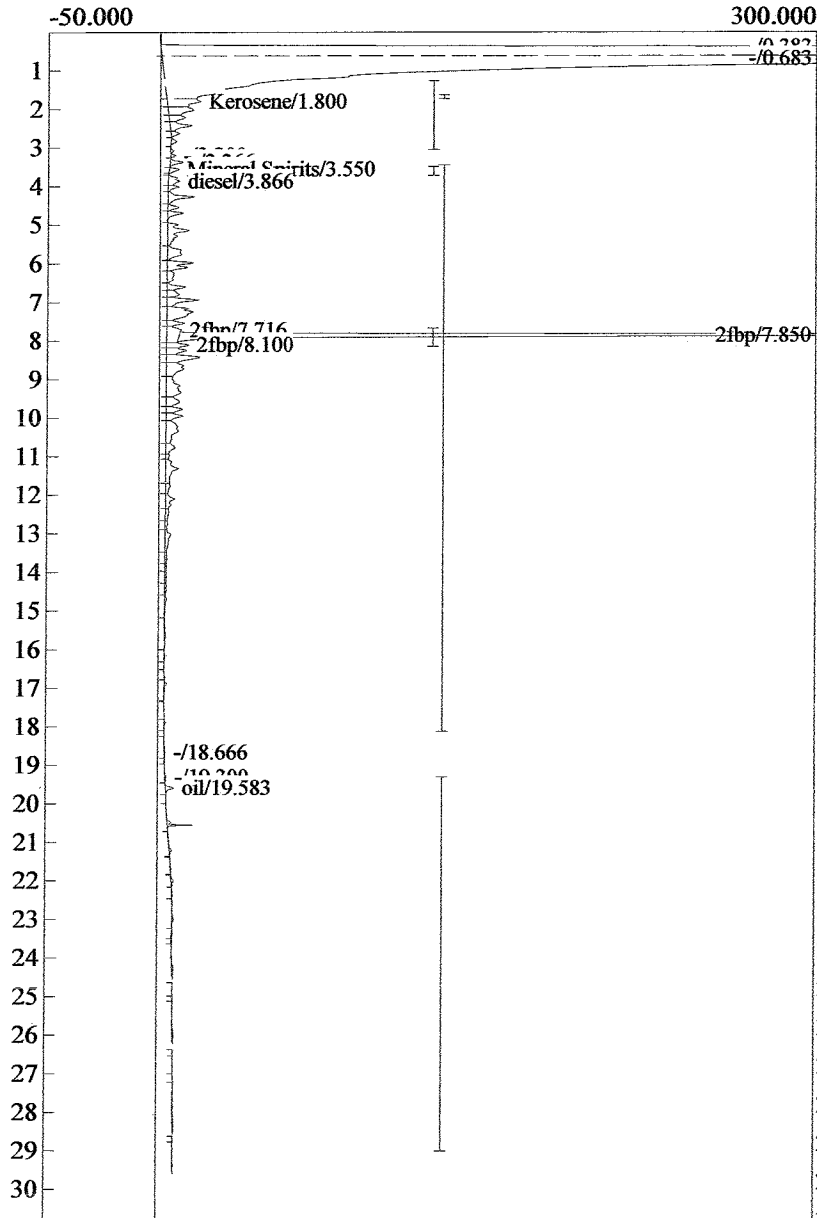


Component	Retention	Area	Height	External
chlorobenzene	1.650	325.5760	41.266	0.0000
Kerosene	1.866	1685.0490	27.337	59.3933
Mineral Spirits	3.516	742.3540	8.499	22.6437
diesel	3.866	14743.0195	19.491	542.9068
2fbp	7.916	203.0340	22.639	14.4293
2fbp	8.183	491.1320	58.167	45.5156
oil	19.566	111.3010	3.518	0.0000
		18301.4655		684.8887

Component	Retention	Area	Height	External
KEROSENE	2.016	2159.2360	122.711	92.7686
Mineral Spirits	2.533	1658.9860	49.144	35.6688
diesel	3.766	9155.5975	19.099	444.3474
2fbp	7.066	146.3080	13.879	24.5023
oil	17.250	144.2710	1.130	0.0000
		13264.3985		597.2871

Lab name: ESN Northwest  
 Analysis date: 10/12/2012 09:14:49  
 Description: CHANNEL 3  
 Data file: ch3\_11172.CHR ()  
 Sample: AEG B11-W

Lab name: ESN Northwest  
 Analysis date: 10/12/2012 09:14:49  
 Description: CHANNEL 4  
 Components: ch4Dieselcomponent121010.cpt  
 Data file: ch4\_11172.CHR ()  
 Sample: ESNPAC MC03A

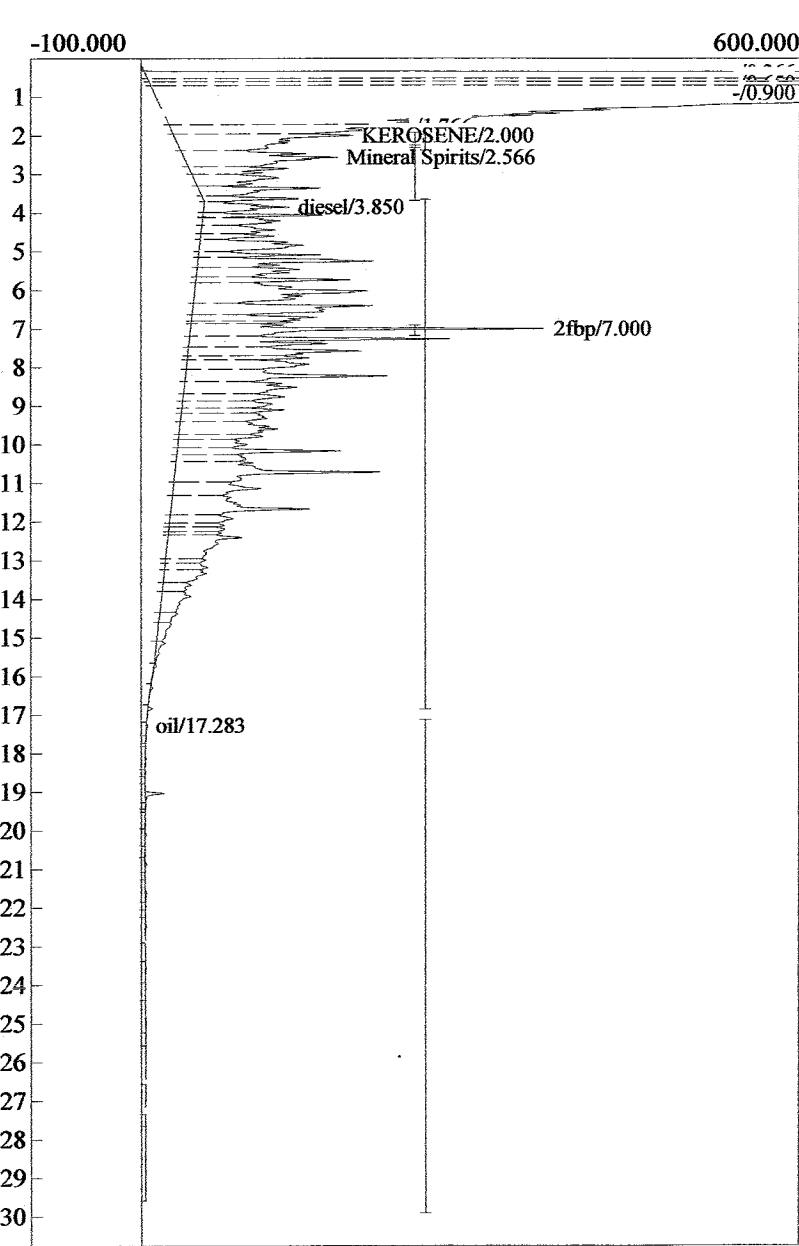
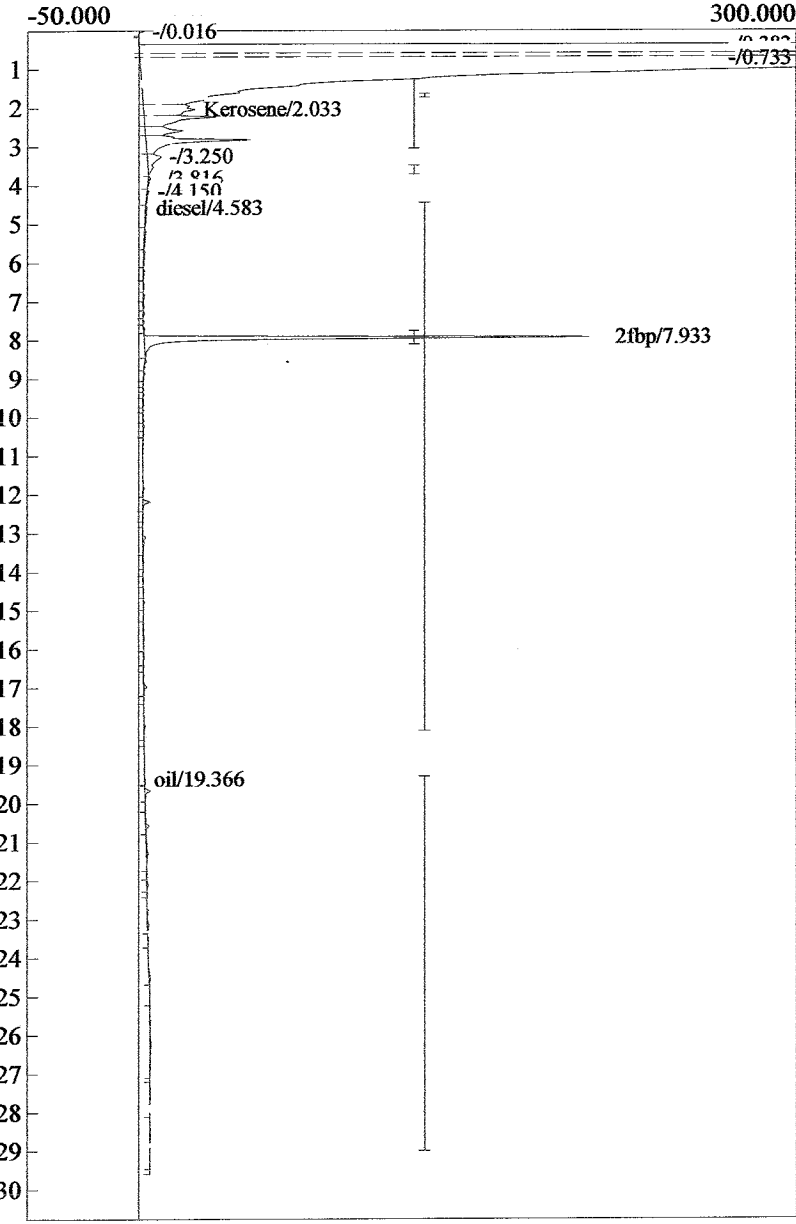


Component	Retention	Area	Height	External
Kerosene	1.800	425.7905	15.330	21.1364
Mineral Spirits	3.550	2308.0300	4.007	70.4009
diesel	3.866	4440.4065	4.880	163.5165
2fbp	7.716	133.8760	6.659	6.9670
2fbp	7.850	2093.1320	524.804	218.3741
2fbp	8.100	58.8080	9.871	0.0000
oil	19.583	94.8390	3.580	0.0000
		9554.8820		480.3950

Component	Retention	Area	Height	External
diesel	6.333	822.0300	1.450	65.2899
2fbp	7.000	740.3660	263.203	87.5143
oil	13.500	3864.1690	1.274	0.0000
		5426.5650		152.8043

Lab name: ESN Northwest  
 Analysis date: 10/11/2012 10:04:56  
 Description: CHANNEL 3  
 Data file: ch3\_11159.CHR ()  
 Sample: MB

Lab name: ESN Northwest  
 Analysis date: 10/11/2012 10:04:56  
 Description: CHANNEL 4  
 Components: ch4Dieselcomponent121010.cpt  
 Data file: ch4\_11159.CHR ()  
 Sample: AEG B11-S3

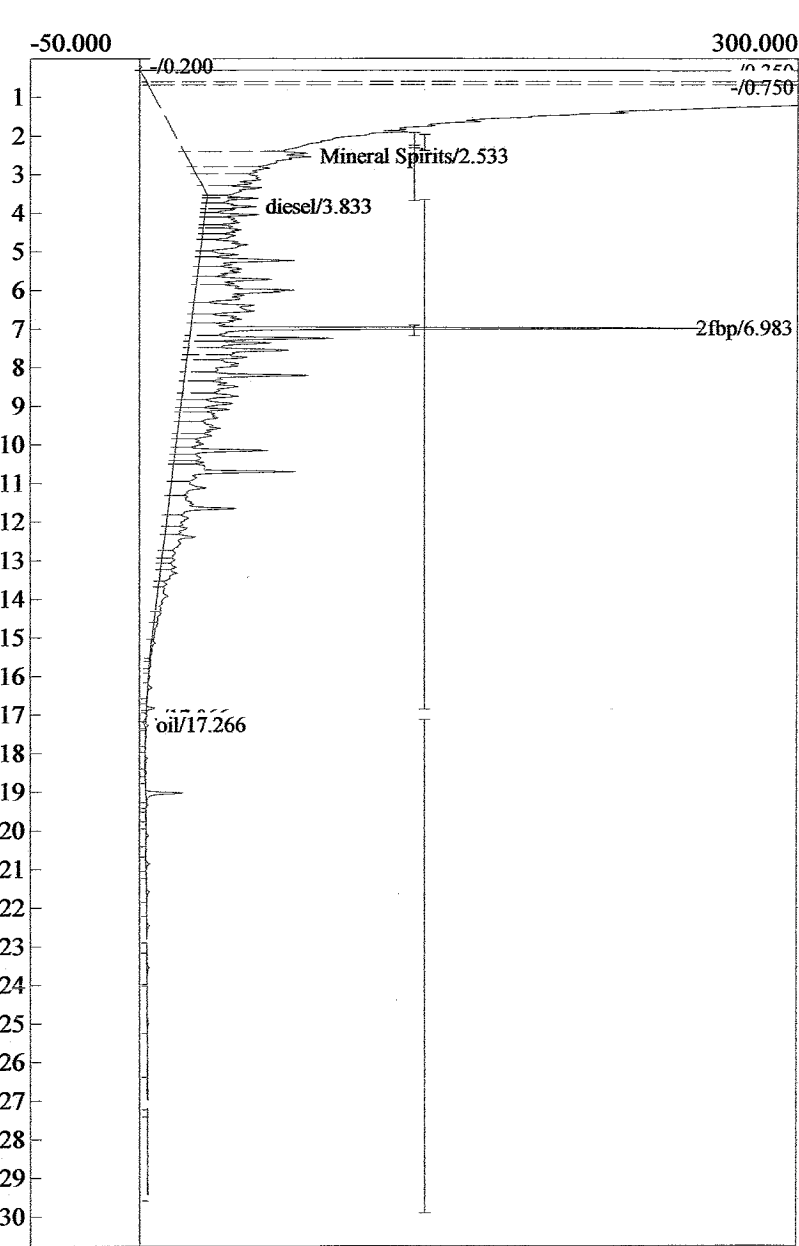
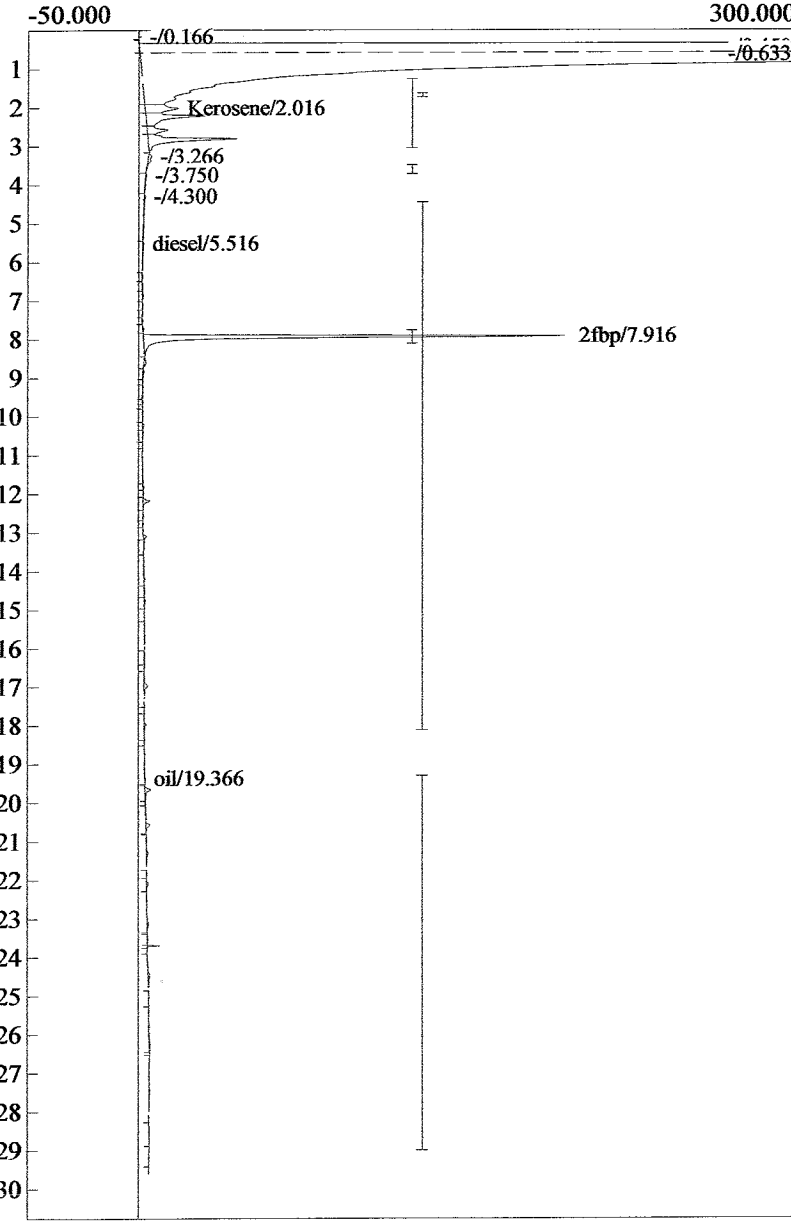


Component	Retention	Area	Height	External
Kerosene	2.033	1151.5155	23.176	43.1843
diesel	4.583	1037.5360	0.681	38.2069
2fbp	7.933	897.2930	210.700	89.3410
oil	19.366	69.9920	0.417	0.0000
		3156.3365		170.7322

Component	Retention	Area	Height	External
KEROSENE	2.000	2622.0700	163.729	108.7086
Mineral Spirits	2.566	5258.6975	140.668	113.0638
diesel	3.850	43132.1980	78.269	1989.7942
2fbp	7.000	2137.2785	323.666	235.6855
oil	17.283	147.5500	1.162	0.0000
		53297.7940		2447.2521

Lab name: ESN Northwest  
 Analysis date: 10/11/2012 10:41:34  
 Description: CHANNEL 3  
 Data file: ch3\_11160.CHR ()  
 Sample: AEG B12-S1

Lab name: ESN Northwest  
 Analysis date: 10/11/2012 10:41:34  
 Description: CHANNEL 4  
 Components: ch4Dieselcomponent121010.cpt  
 Data file: ch4\_11160.CHR ()  
 Sample: AEG B12-S3

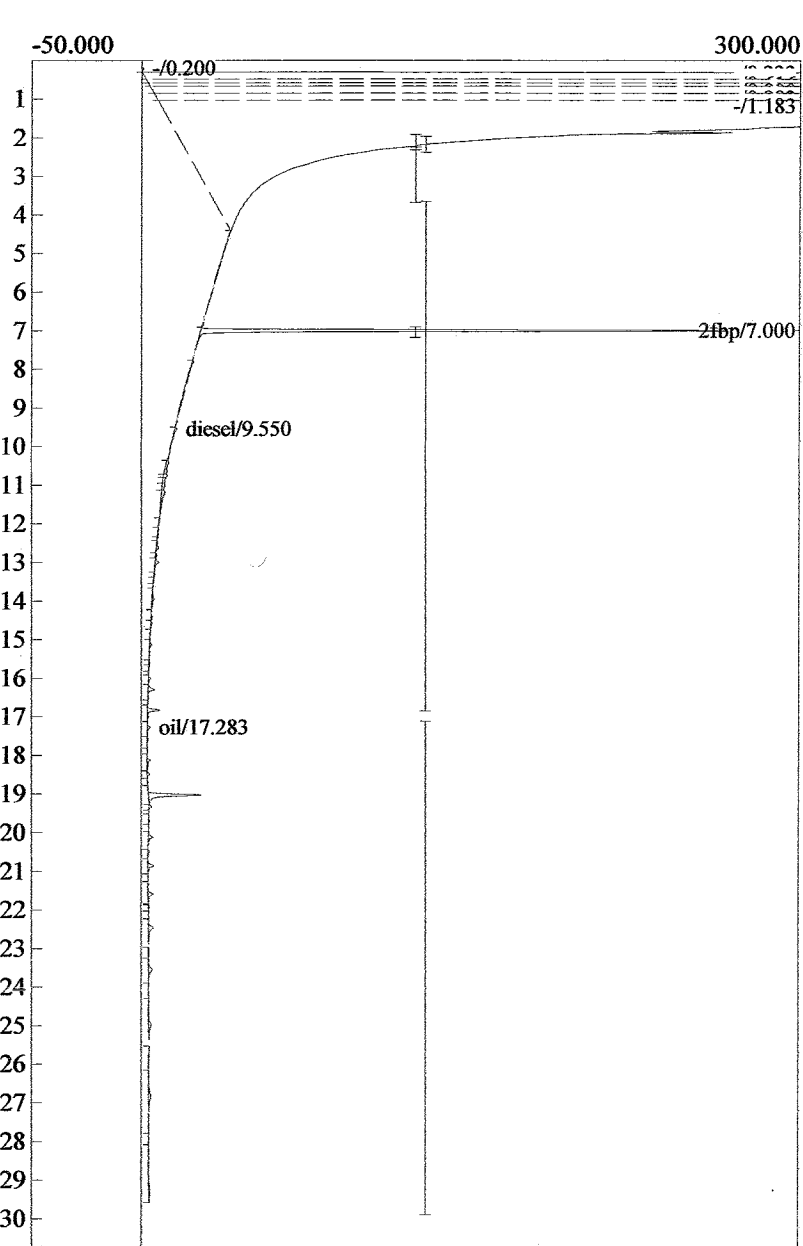
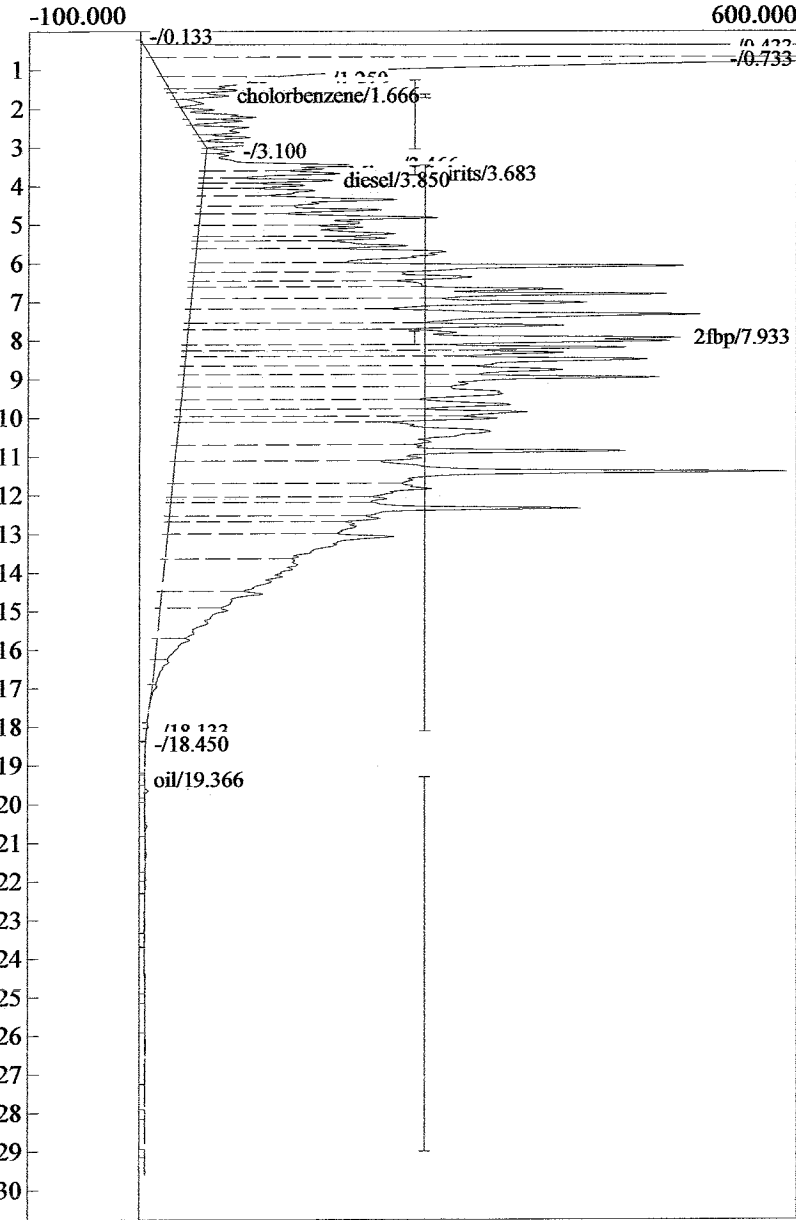


Component	Retention	Area	Height	External
Kerosene	2.016	661.5180	15.315	28.2979
diesel	5.516	982.7420	0.397	36.1891
2fbp	7.916	870.2640	195.259	86.4246
oil	19.366	80.0800	0.417	0.0000
		2594.6040		150.9116

Component	Retention	Area	Height	External
Mineral Spirits	2.533	2225.8645	56.822	47.8568
diesel	3.833	9518.8880	23.291	460.8719
2fbp	6.983	949.1860	247.230	109.6640
oil	17.266	153.8005	1.500	0.0000
		12847.7390		618.3927

Lab name: ESN Northwest  
 Analysis date: 10/11/2012 11:19:47  
 Description: CHANNEL 3  
 Data file: ch3\_11161.CHR ()  
 Sample: AEG B13-S3

Lab name: ESN Northwest  
 Analysis date: 10/11/2012 11:19:47  
 Description: CHANNEL 4  
 Components: ch4Dieselcomponent121010.cpt  
 Data file: ch4\_11161.CHR ()  
 Sample: AEG B14-S3

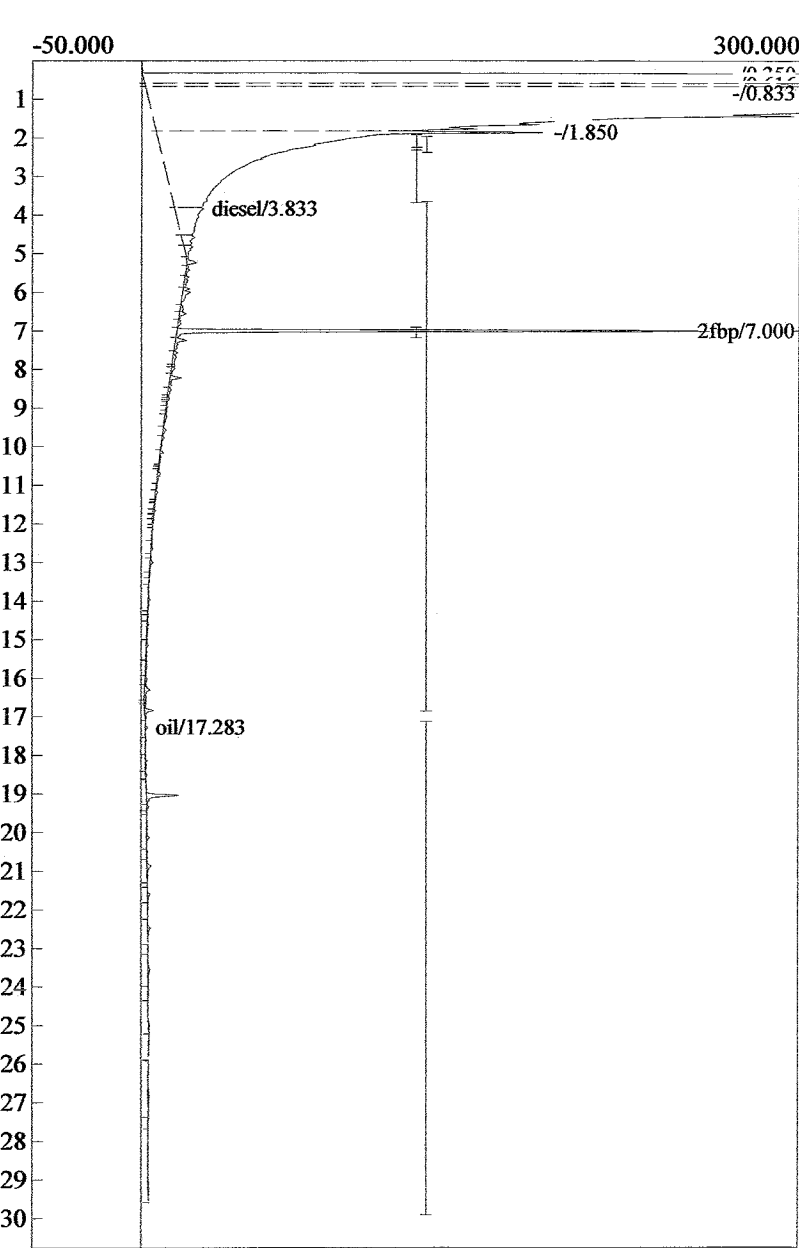
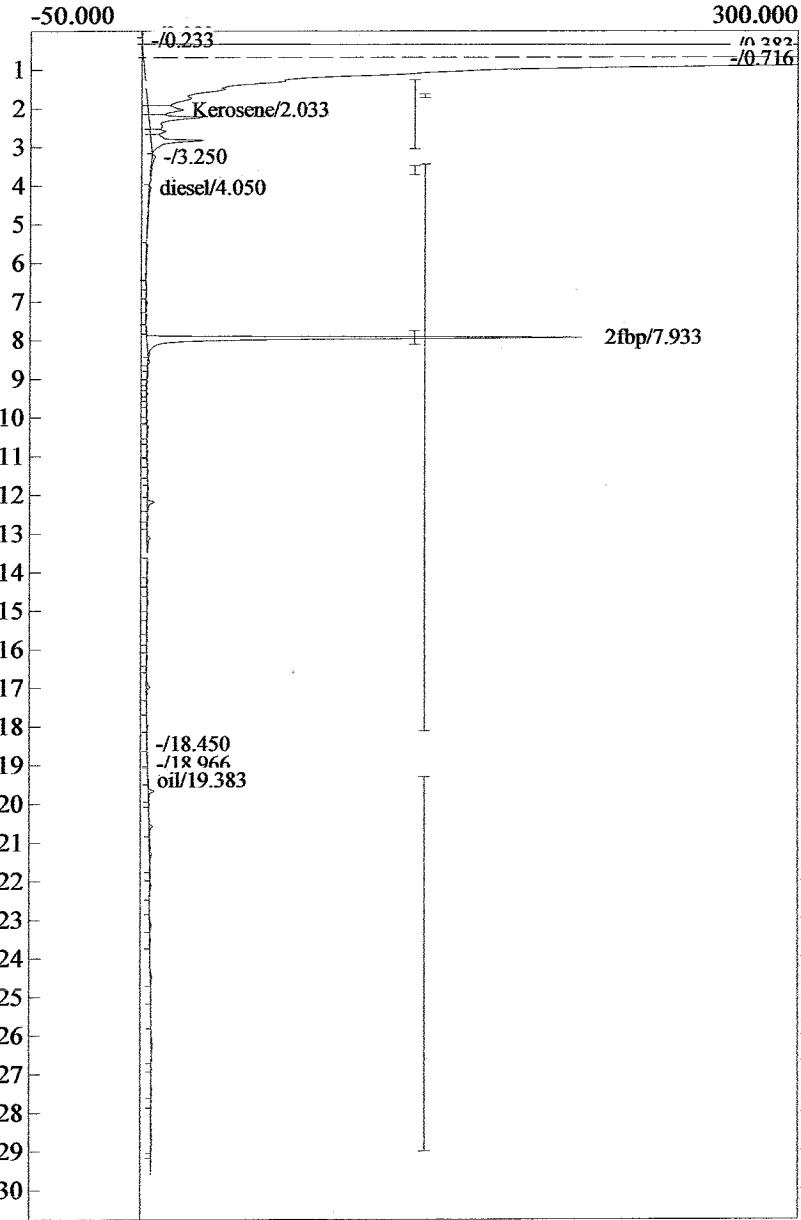


Component	Retention	Area	Height	External
Kerosene	1.516	2658.9290	65.841	88.9803
chlorobenzene	1.666	353.4300	50.116	0.0000
Mineral Spirits	3.683	8282.3565	123.715	252.6335
diesel	3.850	141793.3080	119.887	5221.4916
2fbp	7.933	7348.9000	454.845	785.4806
oil	19.366	93.3590	0.332	0.0000
		160530.2825		6348.5860

Component	Retention	Area	Height	External
2fbp	7.000	780.7500	290.884	91.7979
diesel	9.550	970.4790	1.024	72.0422
oil	17.283	246.9750	1.380	0.0000
		1998.2040		163.8401

Lab name: ESN Northwest  
 Analysis date: 10/11/2012 11:56:42  
 Description: CHANNEL 3  
 Data file: ch3\_11162.CHR ()  
 Sample: AEG B15-S3

Lab name: ESN Northwest  
 Analysis date: 10/11/2012 11:56:42  
 Description: CHANNEL 4  
 Components: ch4Dieselcomponent121010.cpt  
 Data file: ch4\_11162.CHR ()  
 Sample: AEG TPN2-BC



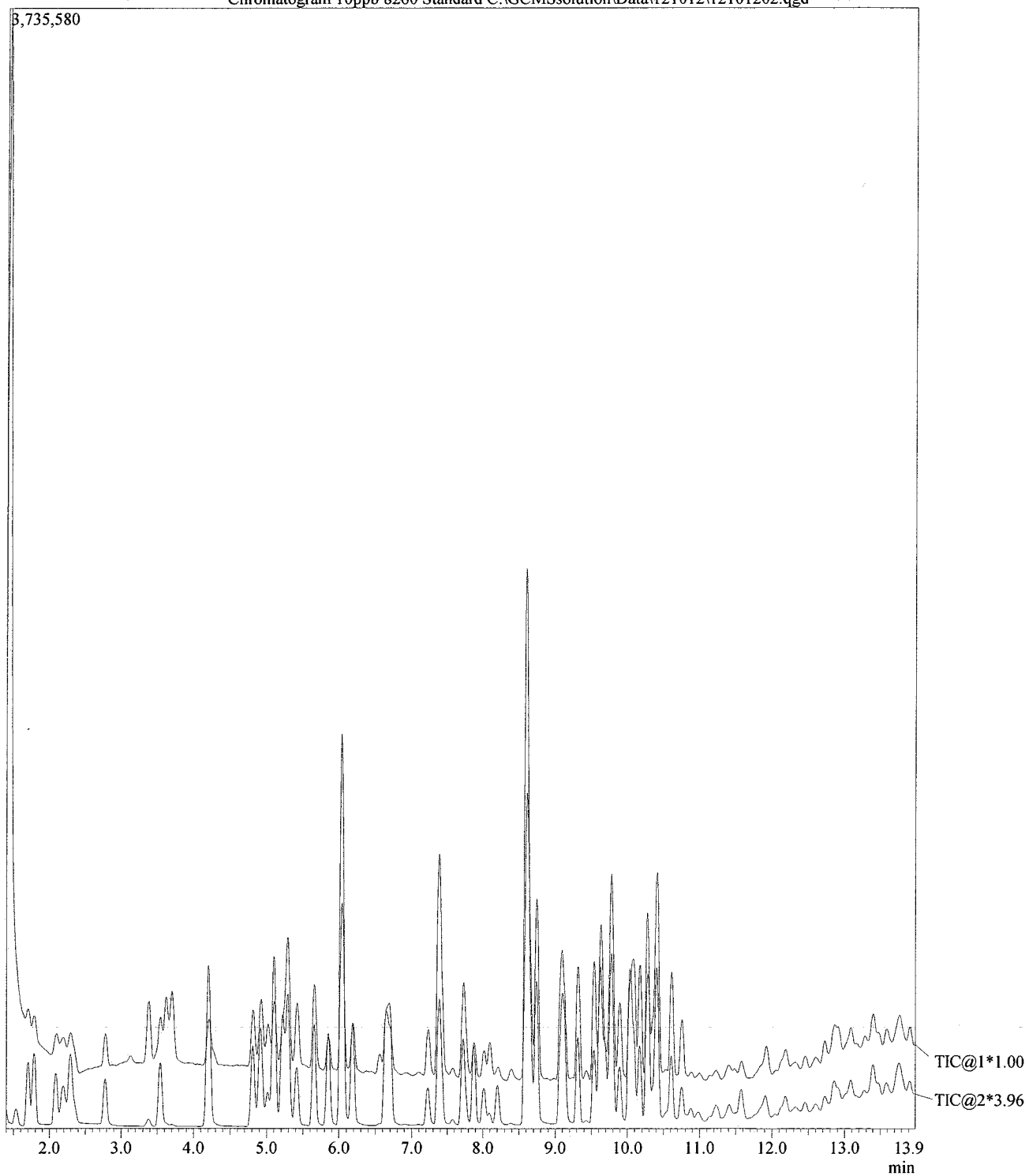
Component	Retention	Area	Height	External
Kerosene	2.033	623.1830	16.112	27.1332
diesel	4.050	1057.1060	0.772	38.9276
2fbp	7.933	891.9780	205.457	88.7675
oil	19.383	78.7390	0.332	0.0000
		2651.0060		154.8284

Component	Retention	Area	Height	External
diesel	3.833	1740.7680	12.852	107.0793
2fbp	7.000	804.2900	293.735	94.2948
oil	17.283	141.6140	0.908	0.0000
		2686.6720		201.3741

Sample Information

Sample Name : 10ppb 8260 Standard

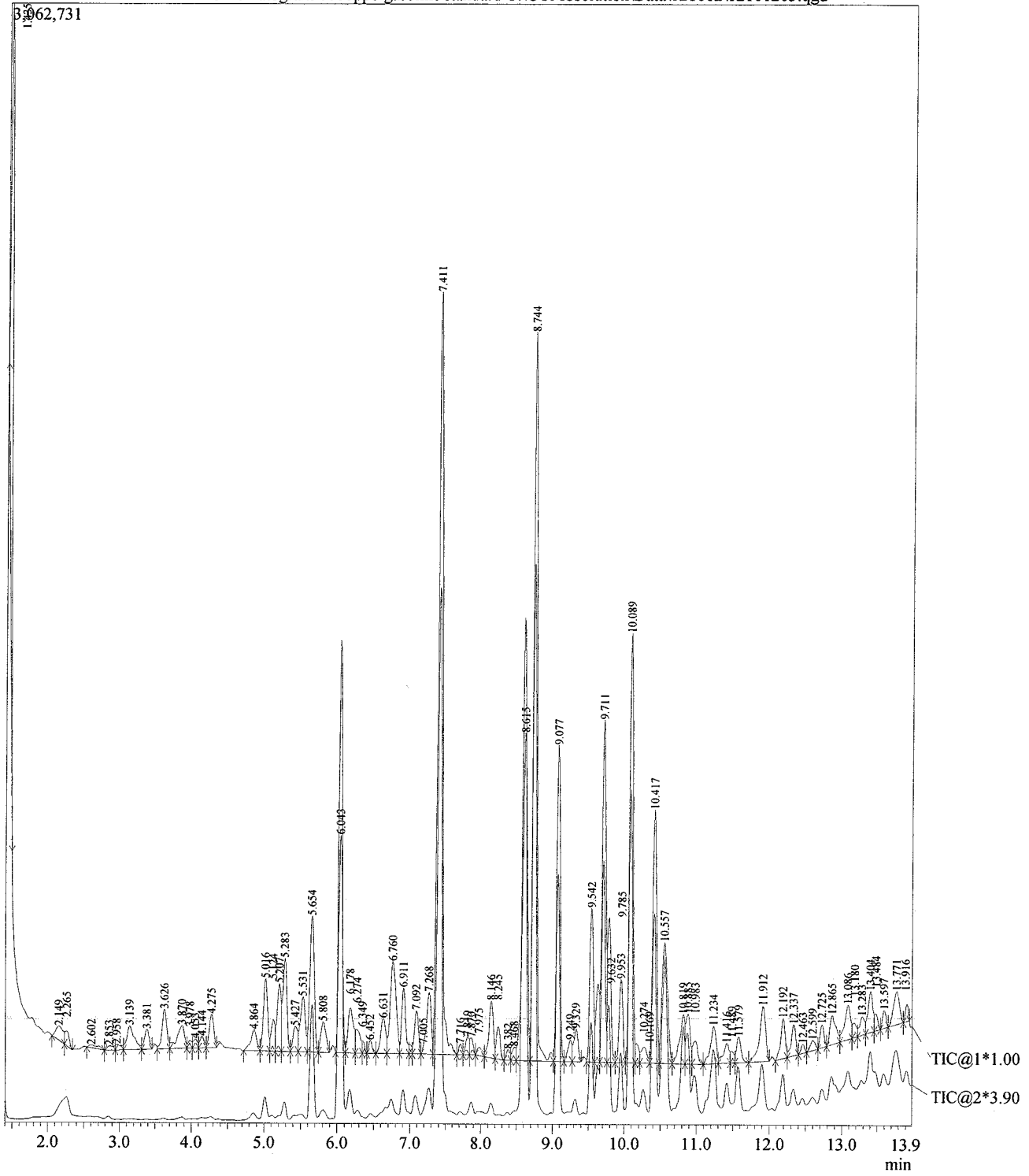
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Sample Information

Sample Name : 1000ppb gasoline standard

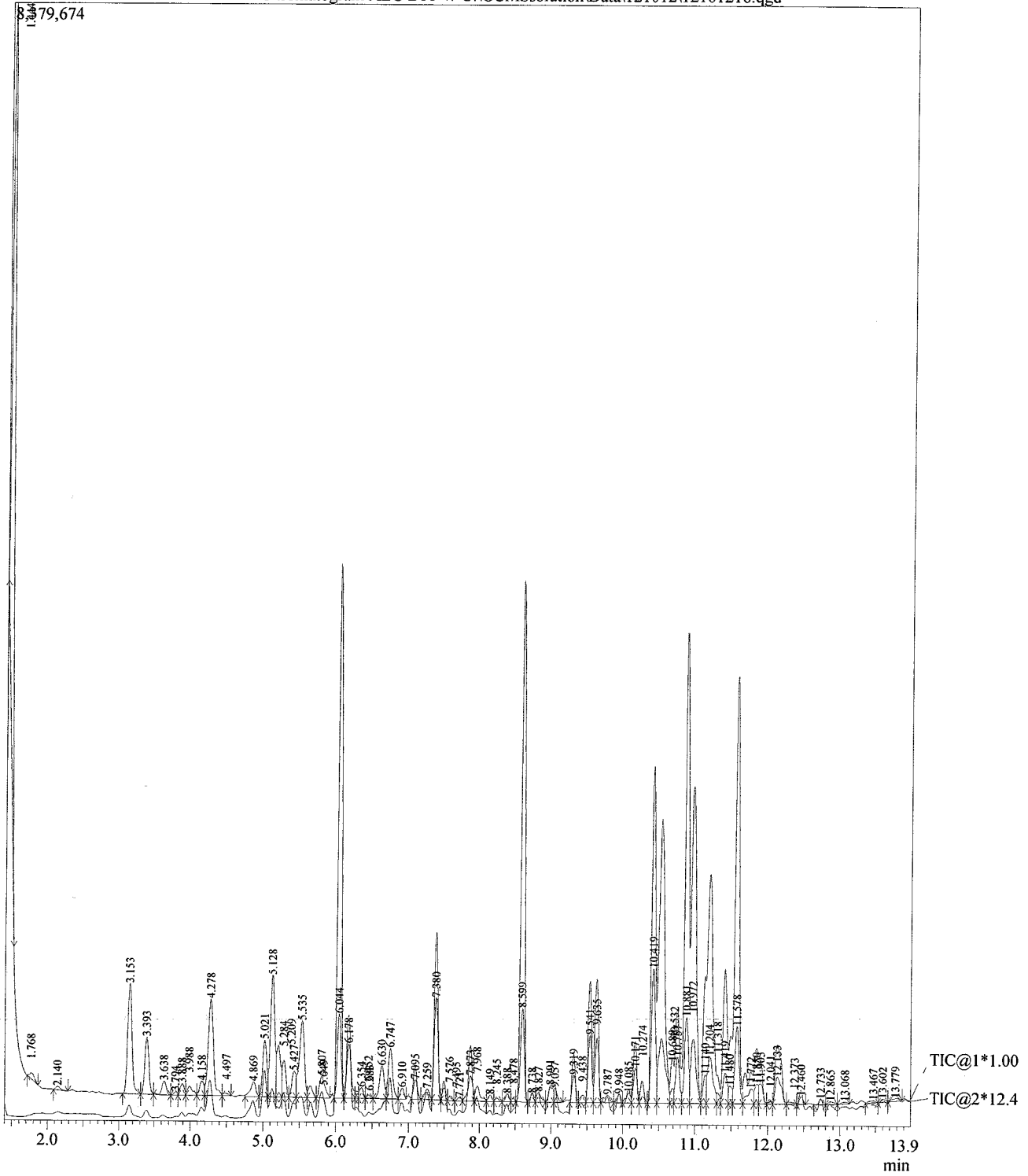
Chromatogram 1000ppb gasoline standard C:\GCMSolution\Data\121012\12101203.qgd



Sample Information

Sample Name : AEG B11-W

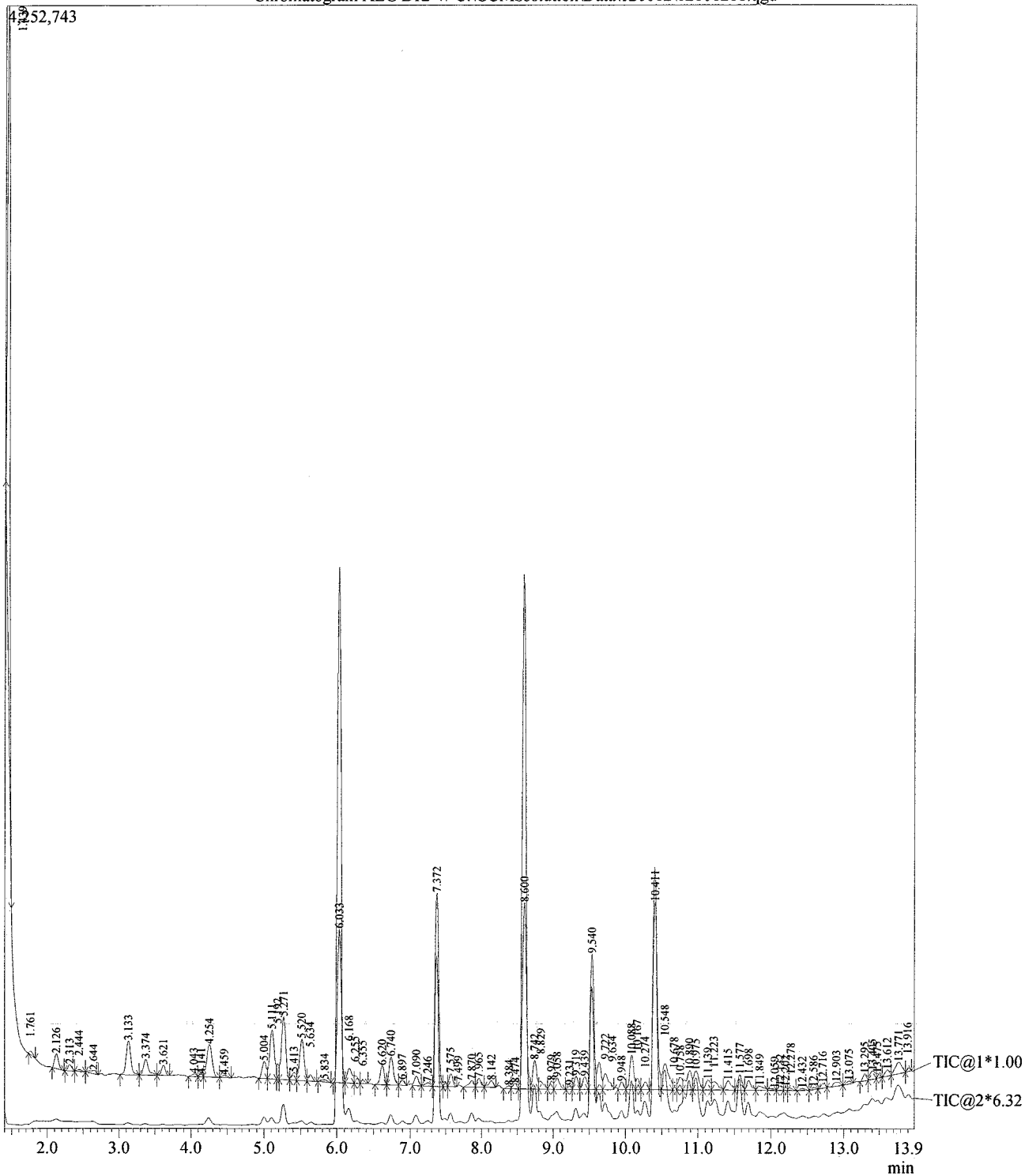
Chromatogram AEG B11-W C:\GCMSsolution\Data\121012\12101216.qgd



Sample Information

Sample Name : AEG B12-W

Chromatogram AEG B12-W C:\GCMSsolution\Data\121012\12101211.ggd



**LIBBY ENVIRONMENTAL  
EXISTING MONITORING WELLS LAB RESULTS**

# Libby Environmental, Inc.

# Chain of Custody Record

4139 Libby Road NE  
Olympia, WA 98506

Ph: 360-352-2110  
Fax: 360-352-4154

Date: 08/03/12

Page: 1 of 1

Client: AEG

Project Manager: YEN-VY

Address: 605 11th AVE. 201

Project Name: CLE ELUM 76

Phone: (360) 352-9835 Fax:

Location: 1000 1st St. E.

City: CLE ELUM

Client Project # 12-164

Collector: LEO CHANDER

Date of Collection: 08/03/12



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	PAH 8270	PCB's 8082	MTCA 5 Metals	Field Notes
1 MW-1		11:24	WATER	VOA/1LT	✓				✓	✓					
2 MW-2b		10:28			✓				✓	✓					
3 MW-3		12:09			✓				✓	✓					
4 MW-4		15:30			✓				✓	✓					
5 MW-5b		14:02			✓				✓	✓					
6 MW-6		16:02			✓				✓	✓					
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															

Relinquished by: L Chandera Date / Time: 08/03/12 20:26

Received by: James L. Dayman Date / Time: 8/3/12 20:26

Sample Receipt:

Remarks: RUSH

Relinquished by: Date / Time

Received by: Date / Time

Good Condition?

Cold?

Relinquished by: Date / Time

Received by: Date / Time

Seals Intact?

Total Number of Containers

# Libby Environmental, Inc.

4139 Libby Road NE  
Olympia, WA 98506  
Phone: (360) 352-2110  
FAX: (360) 352-4154  
Email: libbyenv@aol.com

CLE ELUM 76 PROJECT  
AEG, LLC  
Cle Elum, Washington  
Libby Project # L120803-5  
Client Project # 12-164

## Analyses of Gasoline (NWTPH-Gx) & BTEX (EPA Method 8021B) in Water

Sample Number	Date Analyzed	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Xylenes (µg/l)	Gasoline (µg/l)	Surrogate Recovery (%)
Method Blank	8/6/12	nd	nd	nd	nd	nd	85
LCS	8/6/12	126%	101%				81
MW-1	8/6/12	nd	nd	nd	nd	nd	85
MW-1 Dup	8/6/12	nd	nd	nd	nd	nd	78
MW-2b	8/6/12	nd	nd	nd	nd	nd	78
MW-3	8/6/12	nd	nd	nd	nd	nd	80
MW-4	8/6/12	7.1	nd	nd	nd	150	77
MW-5b	8/6/12	nd	nd	nd	nd	nd	76
MW-6	8/6/12	nd	nd	nd	nd	nd	82
MW-2b MS	8/6/12	107%	87%				84
Practical Quantitation Limit		1	2	1	3	100	

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

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Trifluorotoluene): 65% TO 135%

ANALYSES PERFORMED BY: Kyle Williams

# Libby Environmental, Inc.

4139 Libby Road NE  
Olympia, WA 98506  
Phone: (360) 352-2110  
FAX: (360) 352-4154  
Email: libbyenv@aol.com

CLE ELUM 76 PROJECT  
AEG, LLC  
Cle Elum, Washington  
Libby Project # L120803-5  
Client Project # 12-164

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

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (µg/l)	Oil (µg/l)
Method Blank	8/6/12	94	nd	nd
MW-1	8/6/12	78	nd	nd
MW-1 Dup	8/6/12	88	nd	nd
MW-2b	8/6/12	77	nd	nd
MW-3	8/6/12	95	nd	nd
MW-4	8/6/12	73	nd	nd
MW-5b	8/6/12	100	nd	nd
MW-6	8/6/12	79	nd	nd
Practical Quantitation Limit			200	400

"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: Kyle Williams



# CHAIN-OF-CUSTODY RECORD

CLIENT: AEG DATE: 8/29/12 PAGE 1 OF 1  
 ADDRESS: 605 11th AVE SE, Suite 201, Olympia Wa PROJECT NAME: Cle Elum 76  
 PHONE: (360) 352-9835 FAX: \_\_\_\_\_ LOCATION: Cle Elum, WA  
 CLIENT PROJECT #: # 12-164 PROJECT MANAGER: \_\_\_\_\_ COLLECTOR: Jeff Wilson DATE OF COLLECTION: 8/29/12

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES										NOTES	Total Number of Containers	Laboratory Note Number	
					VOA 8021B BTEX ONLY	VOA 8021B BTEX ONLY	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	PAH 8100 (a & c)	PAH 8270	PCBS 8082	EPA Pesticides 8081	VPH				Metamphthaline
1. MW-1W		11:45	W	VDA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
2. MW-2W		9:22			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
3. MW-3W		9:57			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
4. MW-4W		12:17			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
5. MW-5W		10:32			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
6. MW-6W		11:07			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
7.																		
8.																		
9.																		
10.																		
11.																		
12.																		
13.																		
14.																		
15.																		
16.																		
17.																		
18.																		

RELINQUISHED BY (Signature) Jeff Wilson DATE/TIME 8/29/12 RECEIVED BY (Signature) Jeff Wilson DATE/TIME 8-29-12  
 RELINQUISHED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_ RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_

**SAMPLE RECEIPT**  
 TOTAL NUMBER OF CONTAINERS \_\_\_\_\_  
 CHAIN OF CUSTODY SEALS Y/N/A \_\_\_\_\_  
 SEALS INTACT? Y/N/A \_\_\_\_\_  
 RECEIVED GOOD COND./COLD \_\_\_\_\_  
 NOTES: \_\_\_\_\_

LABORATORY NOTES:  
 MW-1W  
 MW-4W  
 MW-2W  
 MW-3W  
 MW-5W  
 MW-6W  
 Turn Around Time: 24 HR 48 HR 5 DAY

ESN DISPOSAL @ \$2.00 each  Return  Pickup

# ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group  
 1000 N 1ST ST PROJECT  
 Client Project #12-164  
 Cle Elum, Washington

ESN Northwest  
 1210 Eastside Street SE Suite 200  
 Olympia, WA 98501  
 (360) 459-4670 (360) 459-3432 Fax  
 lab@esnnw.com

## Analysis of Gasoline Range Organics, BTEX in Water by Method NWTPH-Gx/8260

Sample Number	Date Analyzed	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Gasoline Range Organics (ug/L)	Surrogate Recovery (%)
Method Blank	8/30/2012	nd	nd	nd	nd	nd	103
LCS	8/30/2012	110%	91%	101%	100%	91%	97
LCSD	8/30/2012	112%	93%	102%	98%	---	95
MW-1W	8/30/2012	1.7	nd	nd	nd	nd	112
MW-2bW	8/30/2012	nd	nd	nd	nd	nd	112
MW-3W	8/30/2012	nd	nd	nd	nd	nd	113
MW-3W Duplicate	8/30/2012	nd	nd	nd	nd	nd	112
MW-4W	8/30/2012	nd	nd	nd	nd	190	110
MW-5bW	8/30/2012	nd	nd	nd	nd	nd	110
MW-6W	8/30/2012	nd	nd	nd	nd	nd	106
Reporting Limits		1.0	1.0	1.0	3.0	100	

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

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Bromofluorobenzene) & LCS: 65% TO 135%

# **FRIEDMAN & BRUYA LAB RESULTS**

## **3<sup>rd</sup> Probe Subsurface Investigation**

FRIEDMAN & BRUYA, INC.

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.  
Yelena Aravkina, M.S.  
Bradley T. Benson, B.S.  
Kurt Johnson, B.S.

3012 16th Avenue West  
Seattle, WA 98119-2029  
TEL: (206) 285-8282  
e-mail: fbi@isomedia.com

November 21, 2012

Yen-Vy Van, Project Manager  
AEG  
605 11<sup>th</sup> Ave SE, Suite 201  
Olympia, WA 98501

Dear Ms. Van:

Included are the results from the testing of material submitted on November 7, 2012 from the Cle Elum 76 - 3rd Probe 12-164, F&BI 211105 project. There are 16 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
NAA1121R.DOC

FRIEDMAN & BRUYA, INC.

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ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 7, 2012 by Friedman & Bruya, Inc. from the AEG Cle Elum 76 - 3rd Probe 12-164, F&BI 211105 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>AEG</u>
211105-01	B16-S1-2
211105-02	B16-S2-4
211105-03	B16-S3-7.5
211105-04	B17-S1-2
211105-05	B17-S2-4
211105-06	B17-S3-9
211105-07	B18-S1-2
211105-08	B18-S2-4
211105-09	B18-S4-10
211105-10	B19-S1-2'
211105-11	B21-S3-11.5
211105-12	B22-S3-10
211105-13	B23-S3-10
211105-14	B16-W
211105-15	B17-W
211105-16	B18-W
211105-17	B20-W
211105-18	B21-W
211105-19	B22-W
211105-20	B23-W
211105-21	B24-W

The benzene, toluene, and diesel range result for sample B16-W exceeded the calibration range of the instrument. The data were flagged accordingly.

All other quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/21/12

Date Received: 11/07/12

Project: Cle Elum 76 - 3rd Probe 12-164, F&BI 211105

Date Extracted: 11/13/12

Date Analyzed: 11/13/12 and 11/14/12

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES  
FOR BENZENE, TOLUENE, ETHYLBENZENE,  
XYLENES AND TPH AS GASOLINE  
USING EPA METHOD 8021B AND NWTPH-Gx**

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 52-124)
B16-W 211105-14 1/40	4,200 ve	8,200 ve	1,100	5,500	70,000	106
B17-W 211105-15 1/10	140	130	23	120	2,000	104
B18-W 211105-16	35	3.1	3.0	11	610	114
B20-W 211105-17	<1	<1	<1	<3	<100	101
B21-W 211105-18	1.2	1.4	1.1	<3	170	102
B22-W 211105-19	<1	<1	<1	<3	<100	101
B23-W 211105-20	6.5	1.1	1.1	3.8	250	116
B24-W 211105-21	<1	<1	<1	<3	<100	99
Method Blank 02-2080 MB	<1	<1	<1	<3	<100	106

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/21/12

Date Received: 11/07/12

Project: Cle Elum 76 - 3rd Probe 12-164, F&BI 211105

Date Extracted: 11/07/12

Date Analyzed: 11/07/12 and 11/13/12

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR BENZENE, TOLUENE, ETHYLBENZENE,  
XYLENES AND TPH AS GASOLINE  
USING EPA METHOD 8021B AND NWTPH-Gx**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 50-150)
B16-S1-2 211105-01 1/10	0.91	34	44	230	1,900	79
B16-S2-4 211105-02 1/100	9.2	120	46	230	2,100	99
B16-S3-7.5 211105-03 1/50	6.1	36	11	59	1,000	109
B17-S1-2 211105-04	0.16	0.22	0.064	1.7	8.4	83
B17-S2-4 211105-05	<0.02	<0.02	<0.02	<0.06	<2	74
B17-S3-9 211105-06	0.12	0.25	0.078	1.6	13	84
B18-S1-2 211105-07	0.029	0.18	0.081	0.52	3.7	78
B18-S2-4 211105-08	<0.02	<0.02	<0.02	<0.06	<2	78
B18-S4-10 211105-09 1/5	0.12	0.44	3.5	8.9	370	ip
B19-S1-2' 211105-10	0.039	0.16	<0.02	1.4	8.1	82

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/21/12

Date Received: 11/07/12

Project: Cle Elum 76 - 3rd Probe 12-164, F&BI 211105

Date Extracted: 11/07/12

Date Analyzed: 11/07/12 and 11/13/12

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR BENZENE, TOLUENE, ETHYLBENZENE,  
XYLENES AND TPH AS GASOLINE  
USING EPA METHOD 8021B AND NWTPH-Gx**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 50-150)
B21-S3-11.5 211105-11	<0.02	<0.02	<0.02	<0.06	<2	78
B22-S3-10 211105-12	<0.02	<0.02	<0.02	<0.06	<2	81
B23-S3-10 211105-13 1/5	0.03 j	0.31	3.1	1.3	270	145
Method Blank 02-2067 MB	<0.02	<0.02	<0.02	<0.06	<2	78

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/21/12

Date Received: 11/07/12

Project: Cle Elum 76 - 3rd Probe 12-164, F&BI 211105

Date Extracted: 11/08/12

Date Analyzed: 11/09/12

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL AND MOTOR OIL  
USING METHOD NWTPH-Dx**  
Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Motor Oil Range</u> (C <sub>25</sub> -C <sub>36</sub> )	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 51-134)
B16-W 211105-14	61,000 ve	3,100 x	127
B17-W 211105-15	9,000	590 x	86
B18-W 211105-16	42,000	890 x	99
B20-W 211105-17	710	<250	116
B21-W 211105-18	25,000	380 x	61
B22-W 211105-19	900	<250	126
B23-W 211105-20	15,000	<250	123
B24-W 211105-21	<50	<250	121
Method Blank 02-2071 MB	<50	<250	98

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/21/12

Date Received: 11/07/12

Project: Cle Elum 76 - 3rd Probe 12-164, F&BI 211105

Date Extracted: 11/08/12

Date Analyzed: 11/08/12

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL AND MOTOR OIL**

**USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Motor Oil Range</u> (C <sub>25</sub> -C <sub>36</sub> )	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
B16-S1-2 211105-01	3,000 x	<250	115
B16-S2-4 211105-02	1,900 x	<250	115
B16-S3-7.5 211105-03	8,000	<250	96
B17-S1-2 211105-04	<50	<250	92
B17-S2-4 211105-05	<50	<250	115
B17-S3-9 211105-06	11,000	<250	113
B18-S1-2 211105-07	77	<250	92
B18-S2-4 211105-08	<50	<250	116
B18-S4-10 211105-09	3,500	<250	92
B19-S1-2' 211105-10	610 x	<250	92

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/21/12

Date Received: 11/07/12

Project: Cle Elum 76 - 3rd Probe 12-164, F&BI 211105

Date Extracted: 11/08/12

Date Analyzed: 11/08/12

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL AND MOTOR OIL**

**USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Motor Oil Range</u> (C <sub>25</sub> -C <sub>36</sub> )	<u>Surrogate</u> (% Recovery) (Limit 50-150)
B21-S3-11.5 211105-11	<50	<250	115
B22-S3-10 211105-12	<50	<250	92
B23-S3-10 211105-13	4,500	<250	91
Method Blank 02-2070 MB	<50	<250	89

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	B16-W	Client:	AEG
Date Received:	11/07/12	Project:	Cle Elum 76 - 3rd Probe 12-164
Date Extracted:	11/09/12	Lab ID:	211105-14 x10
Date Analyzed:	11/09/12	Data File:	211105-14 x10.043
Matrix:	Product	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	94	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	14.7

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	B17-W	Client:	AEG
Date Received:	11/07/12	Project:	Cle Elum 76 - 3rd Probe 12-164
Date Extracted:	11/09/12	Lab ID:	211105-15
Date Analyzed:	11/09/12	Data File:	211105-15.040
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower	Upper
Holmium	93	Limit:	Limit:
		60	125

Analyte:	Concentration
	ug/L (ppb)
Lead	1.94

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	AEG
Date Received:	NA	Project:	Cle Elum 76 - 3rd Probe 12-164
Date Extracted:	11/09/12	Lab ID:	I2-759 mb
Date Analyzed:	11/09/12	Data File:	I2-759 mb.038
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower	Upper
Holmium	102	Limit:	Limit:
		60	125

Analyte:	Concentration
	ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/21/12

Date Received: 11/07/12

Project: Cle Elum 76 - 3rd Probe 12-164, F&BI 211105

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER  
SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE,  
XYLENES, AND TPH AS GASOLINE  
USING EPA METHOD 8021B AND NWTPH-Gx**

Laboratory Code: 211116-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	93	65-118
Toluene	ug/L (ppb)	50	93	72-122
Ethylbenzene	ug/L (ppb)	50	94	73-126
Xylenes	ug/L (ppb)	150	92	74-118
Gasoline	ug/L (ppb)	1,000	98	69-134

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/21/12

Date Received: 11/07/12

Project: Cle Elum 76 - 3rd Probe 12-164, F&BI 211105

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES  
FOR BENZENE, TOLUENE, ETHYLBENZENE,  
XYLENES, AND TPH AS GASOLINE  
USING EPA METHOD 8021B AND NWTPH-Gx**

Laboratory Code: 211106-04 (Duplicate)

Analyte	Reporting Units	(Wet Wt) Sample Result	(Wet Wt) Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	100	69-120
Toluene	mg/kg (ppm)	0.5	104	70-117
Ethylbenzene	mg/kg (ppm)	0.5	106	65-123
Xylenes	mg/kg (ppm)	1.5	105	66-120
Gasoline	mg/kg (ppm)	20	95	71-131

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/21/12

Date Received: 11/07/12

Project: Cle Elum 76 - 3rd Probe 12-164, F&BI 211105

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER  
SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL EXTENDED USING METHOD NWTPH-Dx**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	100	105	58-134	5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/21/12

Date Received: 11/07/12

Project: Cle Elum 76 - 3rd Probe 12-164, F&BI 211105

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL  
SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL EXTENDED USING METHOD NWTPH-Dx**

Laboratory Code: 211109-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	109	104	73-135	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	101	74-139

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/21/12

Date Received: 11/07/12

Project: Cle Elum 76 - 3rd Probe 12-164, F&BI 211105

**QUALITY ASSURANCE RESULTS  
FOR THE ANALYSIS OF WATER SAMPLES  
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 211105-15 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	ug/L (ppb)	10	1.94	89	91	85-115	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	ug/L (ppb)	10	98	84-120

**Data Qualifiers & Definitions**

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 - More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

211105

SAMPLE CHAIN OF CUSTODY

ME 11/07/12

US3/BOS/ATG/12

Send Report To Ms. Yen-Vy Han

Company AEG

Address 605 11th Ave SE Suite 201

City, State, ZIP Olympia, WA. 98501

Phone # 360 352 9835 Fax # 360 352 8164

SAMPLERS (signature) L Chaudhry

PROJECT NAME/NO. Geo ELEM 76-3rd Pools

PO# 12-164

REMARKS NWTH-0 EXT Herdery + emm-11

Page # 1 of 3

TURNAROUND TIME  Standard (2 Weeks)

RUSH Rush charges authorized by

SAMPLE DISPOSAL  Dispose after 30 days  Return samples  Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED					Notes	
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270		HFS
B16-51-2	01AE	11/06/12	10:03	soil	5	✓	✓	✓				
B16-52-4	02	11/06/12	10:06		1	✓	✓	✓				
B16-53-7.5	03	11/06/12	10:16		1	✓	✓	✓				
B17-51-2	04	11/06/12	10:50		1	✓	✓	✓				
B17-52-4	05	11/06/12	10:55		1	✓	✓	✓				
B17-53-9	06	11/06/12	11:04		1	✓	✓	✓				
B18-51-2	07	11/06/12	12:01		1	✓	✓	✓				
B18-52-4	08	11/06/12	12:04		1	✓	✓	✓				
B18-54-10	09	11/06/12	12:24		1	✓	✓	✓				
B19-51-2	10	11/06/12	13:12		1	✓	✓	✓				

Friedman & Bryna, Inc.  
3012 16th Avenue West  
Seattle, WA 98119-2029  
At. (206) 285-8282  
Fax (206) 283-5044  
FORMS/COC/DOC

SIGNATURE		PRINT NAME		COMPANY		DATE	TIME
Relinquished by:	<u>L Chaudhry</u>	<u>LEO CHAUDHRY</u>	<u>AEG</u>	<u>11/7/12</u>	<u>10:21</u>		
Received by:	<u>Kurt Johnson</u>	<u>Kurt Johnson</u>	<u>F&amp;S</u>	<u>11/7/12</u>	<u>10:21</u>		
Relinquished by:							
Received by:							

Sample received at 57 °C

211105

SAMPLE CHAIN OF CUSTODY No 11/07/12

VS3/805/AIG/V2  
Page # 2 of 3

Send Report To Ms. Yervly Wnd

Company ABG

Address 605 11th Ave SE SUITE 201

City, State, ZIP OLYMPIA, WA 98501

Phone # 360 352 9835 Fax # 360 352 8164

SAMPLERS (signature) <u>L Chaudhry</u>		PO#
PROJECT NAME/NO.		12-164
REMARKS <u>C&amp;E EUM 76 - 3rd PROBE</u>		

TURNAROUND TIME  
 Standard (2 Weeks)  
 RUSH  
 Rush charges authorized by \_\_\_\_\_

SAMPLE DISPOSAL  
 Dispose after 30 days  
 Return samples  
 Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED					Notes	
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270		HFS
B21-53-11.5	11AE	11/06/12	14:22	soil	5	✓	✓	✓				
B22-53-10	12T		15:06	↓	↓	✓	✓	✓				
B23-53-10	13		16:28	↓	↓	✓	✓	✓				
B16-W	14KF		10:40	water	6	✓	✓	✓			✓	
B17-W	15KF		11:20		6	✓	✓	✓				
B18-W	16KF		12:32		5	✓	✓	✓				
B20-W	17T		13:57		5	✓	✓	✓				
B21-W	18T		14:40		5	✓	✓	✓				
B22-W	19		15:23		5	✓	✓	✓				
B23-W	20		16:40		5	✓	✓	✓				

Friedman & Bruya, Inc.  
 3012 16th Avenue West  
 Seattle, WA 98119-2029  
 Fax (206) 285-8282  
 Fax (206) 283-5044  
 FOIA/MS/CC/COC/DOC

SIGNATURE		PRINT NAME		COMPANY		DATE		TIME	
<u>L Chaudhry</u>		<u>Leo Chaudhry</u>		<u>ABG</u>		<u>11/07/12</u>		<u>10:21</u>	
Relinquished by:		Received by:		Company		Date		Time	
<u>L Chaudhry</u>		<u>Kurt Johnson</u>		<u>ABG</u>		<u>11/7/12</u>		<u>10:21</u>	
Relinquished by:		Received by:		Company		Date		Time	
		<u>S</u>		<u>ABG</u>					

