

Petroleum Hydrocarbon Contaminated Soil & Groundwater Remediation

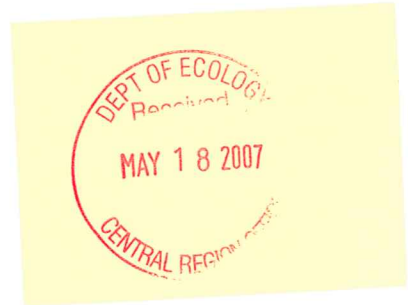
Project Location:

5961 West Powerhouse Road
Yakima, Washington

May 4, 2007

Prepared For:

Yakima County Public Works
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Executive Summary

Environmental Management Services (EMS) was hired to provide environmental compliance consulting services and project oversight during the remediation of petroleum contaminated soil and groundwater located at 5961 West Powerhouse Road in Yakima County Washington.

During a June 2006 UST closure (UST Closure & Site Assessment Report – June 2006 EMS), both olfactory and visual indications of a petroleum release were observed in soil and groundwater at 5961 West Powerhouse Road, Yakima, Washington. Chemical analysis of soil and groundwater collected during the UST closure was completed using Washington Department of Ecology Model Toxic Control Act (MTCA) specific sampling techniques and analytical methodologies. Analytical results reported that one soil sample and one groundwater sample tested positive for heavy oil / motor oil range petroleum hydrocarbons (c24 to c36).

Following UST closure and sampling activities, confirmation soil samples collected from the excavation perimeter were analyzed for total petroleum hydrocarbons by method NWTPH-HCID (Hydrocarbon identification Scan). This analytical method provides a definitive non-quantitative hydrocarbon identification differentiating between gasoline (carbons c6-c10), diesel (carbons c10-c24) and oil (carbons c25-c36) range hydrocarbons. Two soil samples were reported positive to contain heavy oil range hydrocarbons. A Water sample was also reported positive for heavy oil range hydrocarbons. Based on the HCID results, additional testing for specific hydrocarbons was completed. Each of the three positive samples were analyzed for extended diesel (NWTPH-Dx) range hydrocarbons. One soil sample was reported at 410 mg/kg, below the unrestricted MTCA Method A cleanup criteria (MTCA-A) of 2000 mg/kg. The water sample was reported containing heavy oil / motor oil at 730 µg/L exceeding the unrestricted MTCA Method A cleanup criteria of 500 µg/L.

Due to the reported heavy oil / motor oil exceeding the laboratory reporting levels in the soil sample and MTCA-A cleanup levels in the groundwater, additional analytical was completed using the Washington Department of Ecology (WAC 173-340) Table 830, Required Testing for Petroleum Releases (Attached in attachment C). This additional analytical, specifically, Polychlorinated biphenyls (PCBs), Carcinogenetic Polycyclic Aromatic Hydrocarbons (cPAHs), MTCA 5 Metals (Lead, Arsenic, Cadmium, Chromium and Mercury), and chlorinated solvents is required to ascertain specific analytes commonly found within waste motor oil. Testing results reported all additional analytes below practical quantitative reporting limits. Analytical results are presented in Attachment A – Waste Oil Characterization

Soil excavation / remediation activities with Yakima County project sub-contractor KLB Construction (Earthworks subcontractor to project general contractor Cascade Bridge) were started on January 16, 2007. The excavation area was located at the former June 2006 UST excavation (Figure 1). Excavation activities were initiated west of the former UST location

(Figure 3). Soil was excavated to approximately 6.0 feet below ground surface (bgs), the elevation at which groundwater was encountered. Excavation activities were continued to the east under the supervision of EMS professionals following visual and olfactory evidence of hydrocarbons impact in soil. Soil screening using a photoionization detector, olfactory, visual and sheen testing was completed to guide excavation activities.

Petroleum impacted soil observed differed from other non-petroleum impacted soil by color and odor. Native soil in the area consisted of medium to large (6 to 14 inch) rounded gravels and medium to coarse grained sand. Petroleum impacted soil observed within the excavation (Photographs Attached) consisted of dark brown to black medium to coarse sand and had an oily texture and odor. Several sheen tests were completed on samples collected during excavation activities throughout excavation project. Each sample had a slight to moderate sheen and a slight odor.

Excavated soil was loaded into dump truck and trailers sub-contracted through KLB. A total of 357.65 tons of Petroleum Contaminated Soil (PCS) was excavated and transported off site for disposal.

A slight sheen was observed on water entering the excavation from the south and east sidewalls. The east end of the excavation was excavated to 8.0 feet below ground surface (bgs), creating a sump to collect groundwater. Selah Septic was hired through KLB to pump groundwater from the excavation. The pump truck extended a 3-inch hose into the sump and evacuated approximately 12,000 gallons of water. Following dewatering activities, the pump truck transported the water to the City of Yakima sewer manhole 64B, quarter section W47 (City of Yakima Sectional Map) for discharge under a permit through the City of Yakima. Water collected from the excavation was discharged from the pump truck to the manhole. The water appeared semi-clear with slight suspended solids and a sheen.

Following excavation and dewatering activities, three borings were advanced. Two borings were near the south end of the excavation area in the anticipated down gradient and one boring was near the north end of the excavation area in the anticipated up gradient direction. Soil samples were collected from each boring at 4 and 7 feet bgs. Each sample was analyzed for diesel extended range petroleum hydrocarbons and reported below laboratory practical quantitative reporting levels (PQL).

Each of the three borings was converted into a 1-inch monitoring well and sampled for diesel extended range petroleum hydrocarbons and reported below laboratory practical quantitative reporting levels (PQL).

All samples collected for chemical analysis were analyzed for diesel extended range petroleum hydrocarbons by method NWTPH-Dx by a Washington State accredited laboratory.

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Based on soil sampling results from both soil and groundwater samples collected from the excavation and adjacent borings / monitoring wells, petroleum impact to the subsurface soil and groundwater has been adequately remediated and no further action is needed.

1.0 Introduction

Environmental Management Services (EMS) was hired to provide environmental compliance consulting services and project oversight during the remediation of petroleum contaminated soil and groundwater located at 5961 West Powerhouse Road in Yakima County Washington. The scope of the project was:

- To remediate the contaminated soil by excavation and disposal
- Collect samples to confirm the remediation of the soils
- Remediate the contaminated groundwater by removal of a sufficient volume of water to remove the contamination
- Install monitoring wells to confirm ground water has been remediated

Soil remediation activities were completed in accordance with the following documents published by the Washington State Department of Ecology (Ecology) by Ecology licensed UST Site Assessor:

Relevant Publications:

- Guidance For the Remediation of Petroleum Contaminated Soil (Ecology 91-30, November 1995)
- Guidance for Site Checks and Site Assessments for Underground Storage Tanks (Ecology 02/1991);
- The Model Toxics Control Act Cleanup Regulation, Chapter 173-340 WAC (Ecology, 02/2001);
- Collecting and Preparing Soil Samples for VOC Analysis – Ecology Memorandum Number 5, June 2004.

1.2 Site Location and Description

The site is located at 5961 West Powerhouse Road, Yakima, Washington. The immediate area is developed for residential use. Adjacent property appear to be either undeveloped or rural residential.

The Yakima County Assessor lists the property as parcel # 181309-21004.

The partial Legal Description for the site is:

Section 09 Township 13 Range 18 Quarter NW: BEG SE COR NW1/4 NW1/4, TH NW'LY PAR TO NE'LY HWY R/W 68.5 FT, TH SW'LY 61.5 FT TO INTERS NE'LY R/W OF HWY & S LN

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NW1/4 NW1/4, TH 180.83 FT, TH N 45° 09' 51" E 235.28 FT, TH S 38° 54' 34" E TO N'LY
BANK OF NACHES RIVER, TH S 89° 56' 08" W TO W LN SE1/4 NW1/4, TH N TO POB.

Note: Property legal description and parcel number provide by the Yakima County Assessors
office on June 26, 2006.

2.0 Historical & Current Site Conditions

According to Yakima County the site has been historically operated as a single family residence and automobile service station. The station building has been demolished along with all other site improvements. The USTs were located northwest of the former building (Figure 3). The northeast area of the property is gravel. The remaining surface areas are gravel or graded dirt and unimproved

During the remediation activities the site was under construction. Construction activities included surface grading and subsurface utility installation.

2.1 Health and Safety

A site-specific Health and Safety Plan was prepared in accordance with Chapter 296-62 of the Washington Administrative Code (WAC) and 29 CFR 1910.120 (Code of Federal Regulations). The HASP identified potential physical and chemical hazards and specified personal protection and safety monitoring requirements. Site health and safety meetings were conducted during fieldwork at the beginning of each workday to review aspects of the HASP, and to provide an opportunity for EMS site workers and contractor personnel to discuss health and safety issues or concerns. On-site personnel associated with the field activities were required to be familiar with and comply with provisions put forth in the HASP. Subcontractors on-site were required to have their own HASP that identified potential physical and chemical hazards associated with their own work activities.

2.2 Utility location identification

Prior to implementing soil excavation activities at the Site, the public underground utilities alert network was notified of intrusive activities by EMS. The service contacted appropriate agencies or companies with underground utilities in the area. These agencies then marked the location of their utilities along the right-of-ways and easements of the property.

3.0 Previous Environmental Activities & Reports

Underground Closure & Site Assessment Report – EMS, June 2006

During the decommissioning and closure of three underground storage tank (USTs) at the site in 2006, Environmental Management Services LLC completed an underground storage tank (UST) site assessment as required by Washington Administrative Code (WAC) 173-360. During the UST closure, both olfactory and visual indications of a petroleum release were observed in soil and groundwater. Chemical analysis of soil and groundwater collected during the UST closure was completed using Washington Department of Ecology Model Toxic Control Act (MTCA) specific sampling techniques and analytical methodologies. Analytical results reported that one soil sample and one groundwater sample tested positive for heavy oil / motor oil range hydrocarbons.

The UST associated piping including the pump island was dismantled, excavated and removed on June 7, 2006. The contents of the three tanks were as follows: a 1000-gallon tank contained at different times gasoline, diesel, and septic. Gasoline, diesel, and waste oil were stored in the two 2,000-gallon USTs. The three USTs were excavated and removed from the site for disposal on June 8, 2006.

Following UST closure and sampling activities, confirmation soil samples collected from the excavation perimeter were analyzed for total petroleum hydrocarbons by method NWTPH-HCID (Hydrocarbon identification Scan). This analytical method provides a definitive non-quantitative hydrocarbon identification differentiating between gasoline (carbons c6-c10), diesel (carbons c10-c24) and oil (carbons c25-c36) range hydrocarbons. Two soil samples were reported positive to contain heavy oil range hydrocarbons. A water sample was also reported positive for heavy oil range hydrocarbons. Based on the HCID results, additional testing for specific hydrocarbons was completed. Each of the three positive samples was analyzed for extended diesel (NWTPH-Dx) range hydrocarbons. One soil sample was reported less than the laboratory PQL of 250 mg/kg for heavy oil and one sample was reported at 410 mg/kg, below the unrestricted MTCA Method A cleanup criteria (MTCA-A) of 2000 mg/kg. The water sample was reported containing heavy oil / motor oil at 730 µg/L exceeding the unrestricted MTCA Method A cleanup criteria of 500 µg/L.

Due to the reported heavy oil / motor oil exceeding the laboratory reporting levels in the soil sample and MTCA-A cleanup levels in the groundwater, additional analytical was completed on one of the soil samples and on the water sample as required by the Washington Department of Ecology (WAC 173-340). This additional analyses, specifically, Polychlorinated Biphenyls (PCBs), Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs), MTCA 5 Metals (Lead, Arsenic, Cadmium, Chromium and Mercury), and chlorinated solvents, are required to ascertain specific analytes commonly found within waste motor oil. Sample results for this additional sampling were reported below MTCA-A Cleanup Levels and Laboratory PQL.

4.0 Remediation Activities

Based on the previous investigation, it was determined that further remediation was needed at the site. Soil excavation activities were initiated on January 16, 2007. The area of excavation consisted of the former UST basin. Soil samples collected during the June 2006 UST closure and screening samples collected during excavation activities helped guide the excavation activities. Excavation activities were completed under the supervision of a Department of Ecology Registered Site Assessor.

4.1 Soil Remediation Activities

Excavation activities were completed by KLB Construction using a Kabota 290 excavator. Excavated soil was loaded into dump trucks and trailers sub-contracted through KLB. Each truck's capacity was approximately 20 cubic yards or 30 tons. Soil loaded into the trucks was transported to the Yakima County Terrace Heights Landfill located at 7601 Roza Hill Dr Yakima, Washington 98901 (509-574-2452). Weight tickets provided by the contractor totaled 357.65 tons.

During the soil sampling activities, several field-screening techniques were utilized:

- Olfactory Observations
- Visual Observations
- Sheen Test
- Head Space Analysis (Photoionization Detector)

Five field screening samples (SC01 – SC05) were collected during excavation activities. Each sample was field screened and had varying results.

Sample ID	Location	Elevation	Olfactory	Visual	Sheen	Head Space
SC01	NW Corner	4.5' bgs	Slight	None	Slight	<1 ppm
SC02	SW Corner	4.5' bgs	Slight			<1 ppm
SC03	NW Corner	6.5' bgs	None	None	None	<1 ppm
SC04	Center	5' bgs	Slight	None	Slight	<1 ppm
SC05	East End	5.5' bgs	Slight	Slight	Slight	<1 ppm

Soil was excavated until field screening evidence of petroleum hydrocarbons impact was not observed. The bottom of the excavation measured 7 feet bgs grading west to east (Figure 4).

4.2 Groundwater Remediation Activities

Following soil excavation activities, a vacuum truck was used to evacuate impacted water from the excavation (Photograph 8). Water recharge to the excavation was relatively slow, allowing for complete removal of water from the excavation.

A slight sheen was observed on water entering the excavation from the south and east sidewalls. The east end of the excavation was excavated to 8.0 feet bgs, creating a sump to collect groundwater. Selah Septic was hired through KLB to pump groundwater from the excavation. The pump truck extended a 3-inch hose into the sump to evacuate impacted water. Following dewatering activities, the pump truck transported the water to City of Yakima sewer manhole 64B, quarter section W47 (City of Yakima Sectional Map) for discharge under permit through the City of Yakima (Attached). Water collected from the excavation was discharged from the pump truck to the manhole. The water appeared semi-clear with slight suspended solids and a sheen.

Approximately 12,000 gallons of water was evacuated and transported off site for disposal through the Yakima Waste Water Treatment facility.

4.4 Sampling Activities - Soil

Soil sampling and analytical reporting for this project were based on the current MTCA UST Site Assessment and Soil Sampling guidelines and Ecology publication 91-30, *"Guidance For the Remediation of Petroleum Contaminated Soil"* (Ecology, November 1995).

Following the dewatering event, four soil samples were collected from the excavation sidewalls at 5-7 feet bgs near the excavation sidewall / floor intersection and one sample soil sample from the excavation floor at approximately 7-7.5 feet bgs. Each soil sample was collected by a soil sample technician using latex gloves, appropriate sampling equipment and placed into laboratory provided 4-ounce sample collection jars. Sample containers were sealed, labeled, placed into a cooler, and maintained at 4° Celsius and delivered to the analytical laboratory.

Each discrete soil sample was analyzed for diesel extended range petroleum hydrocarbons by method NWTPH-Dx at a Washington State accredited laboratory. Each sample was reported below MTCA-A cleanup levels and laboratory PQL. Sample results are presented in Attachment A. The sample identification reported by the laboratory differed slightly from that recorded in the field. The following clarifies how the field identification correlates with the laboratory identification.

Sample Identification:

Sample S1-7W = S1-WSW - Excavation West Sidewall 5-7 feet bgs
Sample S2-7N = S2-NSW - Excavation North Sidewall 5-7 feet bgs
Sample S3-7S = S3-SSW - Excavation South Sidewall – 5-7 feet bgs
Sample S4-7E = S4-ESW – Excavation East Sidewall – 5-7 feet bgs
Sample S5-7.5 = S5-Floor – Excavation Floor – 7.5 feet bgs

4.5 Site Restoration

KLB Construction completed site restoration under contract with Yakima County. The excavation area was backfilled filled with imported material to meet the surrounding grade.

5.0 Soil Boring & Monitoring Well Placement

Following soil & groundwater remediation activities, three borings were advanced. Two borings (B1 & B2) were placed south of the excavation in the anticipated down gradient direction. One boring (B3) was placed north of the excavation in the anticipated up gradient direction (Figure 3). Boring B1 was placed approximately 20 feet southwest of the excavation area. Boring B2 was placed approximately 20 feet southeast of the excavation area. Boring B3 was placed approximately 20 feet north of the excavation area. Boring locations are shown on Figure 3.

He

Each boring was advanced using direct push drilling techniques by licensed drilling firm of Environmental Services Network. Each boring was advanced continuously until encountering groundwater.

5.1 Soil Boring & Soil Sample Collection

Soil samples were collected using a 2-inch diameter, 4-foot long stainless steel sampler fitted with virgin acetate (Macro) liners. The sampling technique consisted of advancing the macro liner starting at ground surface in four-foot increments. This sampling method allowed for the continuous review of soil from each boring location extending to 12 feet bgs. Subsurface soil conditions were primarily a combination of dry to moist fine brown silty sand with 1 to 12 inch diameter gravels.

Two soil samples were collected from each of the three boring locations at 4 and 7 feet bgs. Each discrete soil sample was visually observed and logged in general accordance with the unified soil classification system. Soil descriptions and field screening results were recorded on the boring logs (Attachment B). Soil samples were placed into laboratory-supplied, 4oz. sample collection jars with Teflon®-lined lids and maintained at 4° Celsius until delivered to the laboratory for chemical analysis.

Each discrete soil sample was analyzed for diesel extended range petroleum hydrocarbons. Each sample was reported below MTCA-A cleanup levels and laboratory PQL. Sample results are presented in Attachment A.

5.2 Groundwater Well Installation & Sampling

Each boring was converted into a 1-inch diameter groundwater monitoring well (MW1 through MW3) and sampled. Static groundwater was observed in each monitoring well at 7-7.5 feet bgs. Well screen for each monitoring well was placed at 4.0 to 12.0 feet bgs.

Dedicated disposable Teflon tubing was inserted into each well to collect groundwater samples. Each sample was collected using a low flow peristaltic pump. EMS purged approximately 1.5 gallons of water from each monitoring well prior to collection of the groundwater sample. This allowed for stabilization of pH, conductivity, temperature and dissolved oxygen. Groundwater

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was collected and placed into analyte specific laboratory-supplied glass jars with Teflon®-lined lids.

Each groundwater sample was analyzed for diesel extended range petroleum hydrocarbons. Each sample was reported below MTCA-A cleanup levels and laboratory practical quantitative limits. Sample results are presented in Attachment A.

6.0 Summary

Environmental Management Services completed soil remediation activities on January 19, 2007. Soil and groundwater remediation was completed based on previous soil and groundwater sample results presented in the June 2006 UST Closure & Site Assessment Report.

EMS supervised the excavation and disposal of approximately 357 tons of petroleum contaminated soil and the removal and disposal of approximately 12,000 gallons of petroleum contaminated groundwater. All soil excavated was transported off site to the Yakima County Landfill for disposal. Groundwater was pumped from the excavation and disposed through the City of Yakima Waste Water Treatment facility. Confirmation soil samples were collected from the excavation perimeter and floor. Each sample was analyzed for diesel extended range petroleum hydrocarbons and reported below the MTCA-A Cleanup Levels and laboratory PQL.

Following excavation and dewatering activities, three borings were advanced, two on the south end of the excavation area, down gradient and one on the north end of the excavation area, up gradient. Soil samples were collected from each boring at 4 and 7 feet bgs. Each sample was analyzed for diesel extended range petroleum hydrocarbons and reported below laboratory practical quantitative reporting levels (PQL).

Each of the three borings was converted into a 1-inch monitoring well and sampled for diesel extended range petroleum hydrocarbons and reported below laboratory practical quantitative reporting levels (PQL).

All samples collected for chemical analysis were analyzed for diesel extended range petroleum hydrocarbons by method NWTPH-Dx by a Washington State accredited laboratory.

Based on soil sampling results from both soil and groundwater samples collected from the excavation and adjacent borings / monitoring wells, petroleum impact to the subsurface soil and groundwater has been adequately remediated and no further action is needed.

6.1 Recommendation

Entering this site into the Washington State Voluntary Cleanup Program (VCP) with the intent to receive a "No Further Action" Determination (NFA) is recommended. It is likely that Ecology will require four consecutive quarterly groundwater-sampling events to confirm that groundwater in the area of the release is no longer contaminated. Based on the excavation soil samples and groundwater sampling results completed as part of this project, it is unlikely that contaminated groundwater will be identified within the three monitoring wells installed at the site.

7.0 Standard Limitations

The findings and conclusions documented in this report have been prepared for the specific application to this project and have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area. A potential always remains for the presence of unknown, unidentified, or unforeseen contamination. No warranty, expressed or implied, is made. This report is for the exclusive use of Yakima County and / or their assigns

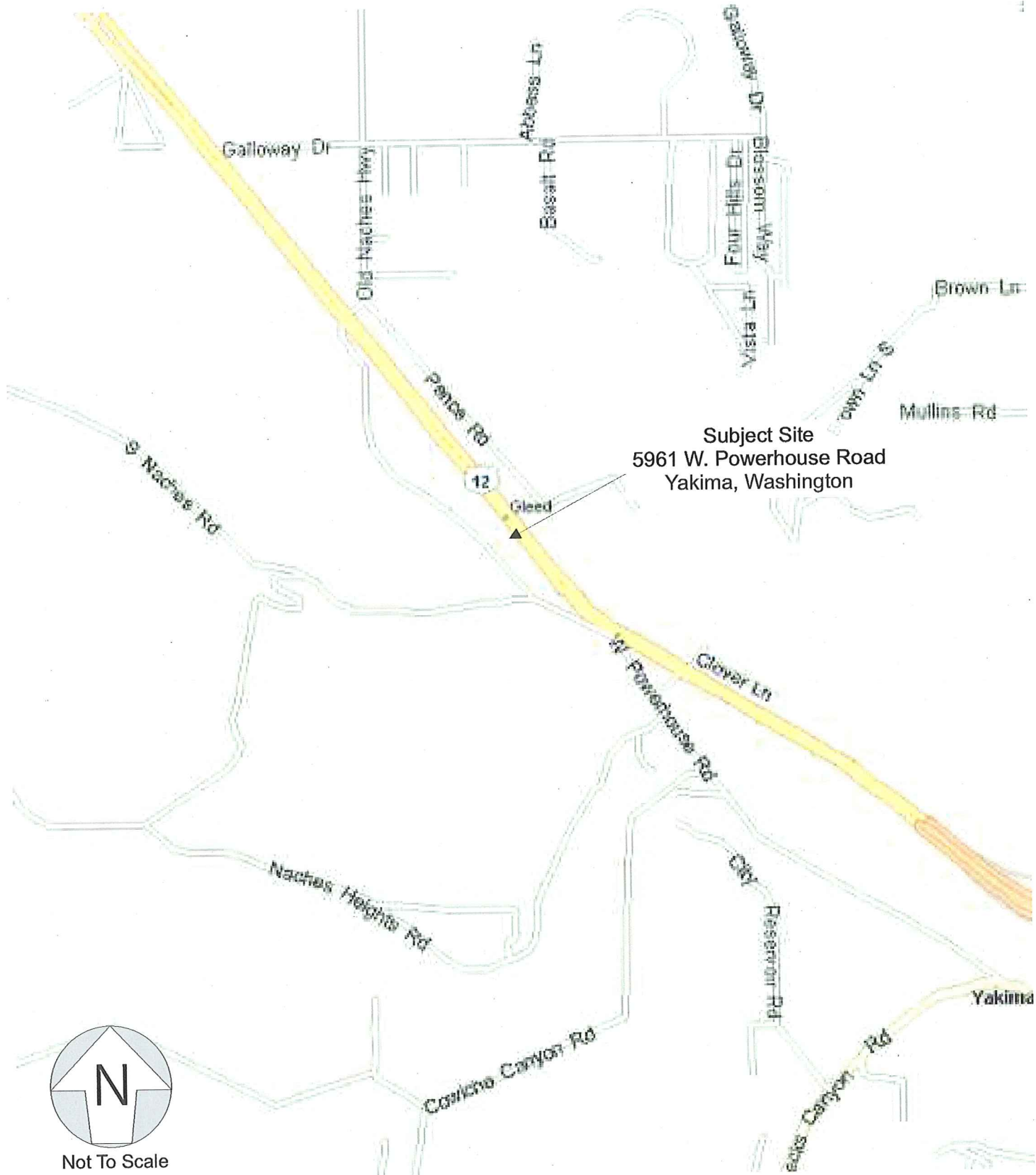
If new information is developed in future site work (which may include excavations, additional borings, or other studies), EMS should be contracted to re-evaluate the interpretations in this report, and to provide amendments as required.

Attachment A

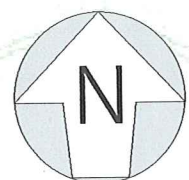
Project Figures

- Figure 1 - Site Location map
- Figure 2 - Site topographic map
- Figure 3 Sample Location Map
- Figure 4 - Project Photographs 2 Sheets


Attachment A

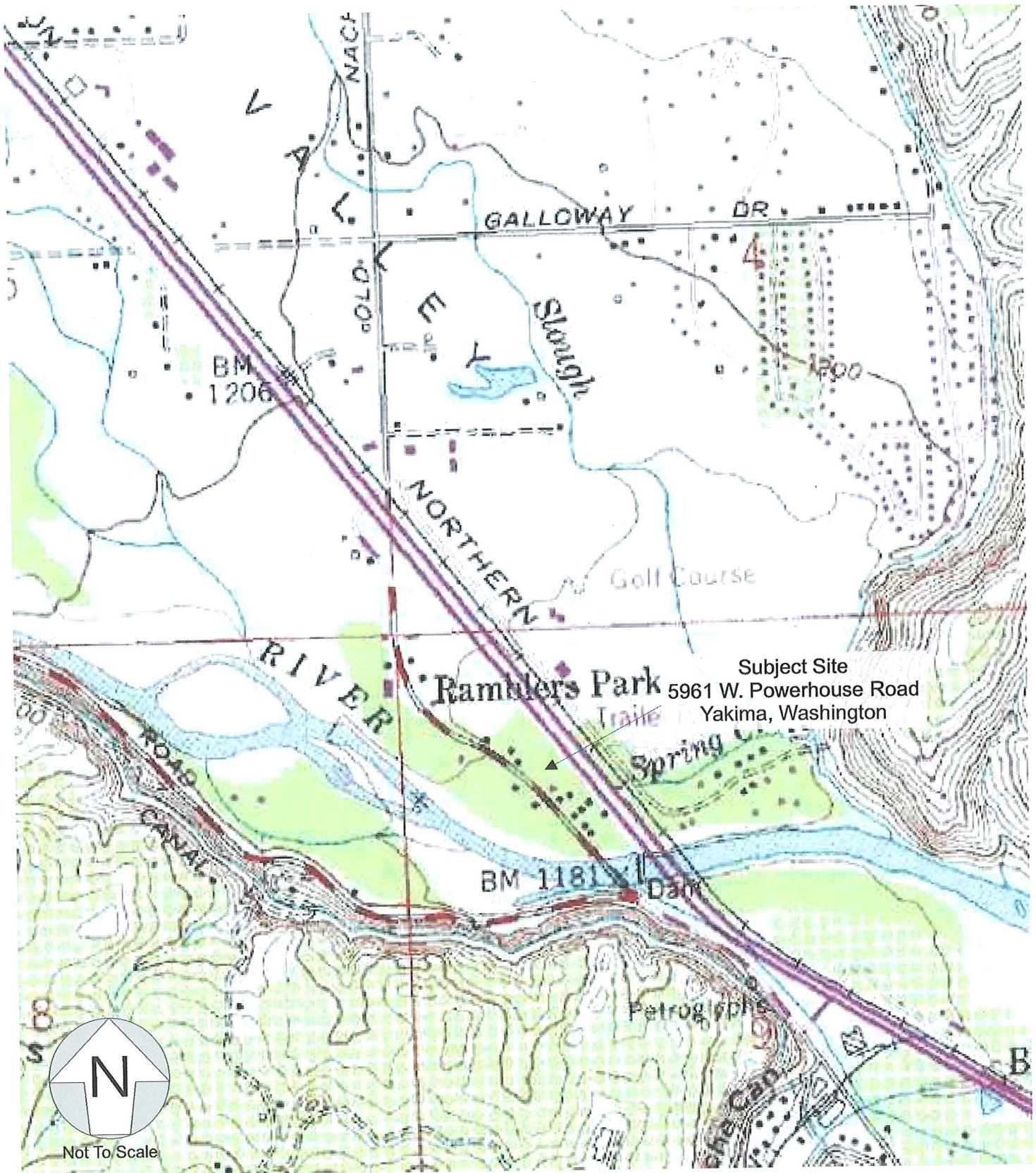


Subject Site
 5961 W. Powerhouse Road
 Yakima, Washington



Not To Scale

 <p>Environmental Services www.emsgrupp.com</p>	<p>Site Location Map Soil & Groundwater Remediation Yakima County Parcel: 181309-21004 5961 W. Powerhouse Road Yakima, Washington</p>	<p>Date: February 22, 2007 Completed: S.Spencer Checked By: D.Donovan</p>	<p>Figure No. 01</p>
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Site Topographic Map
Soil & Groundwater Remediation
Yakima County Parcel: 181309-21004
5961 W. Powerhouse Road
Yakima, Washington

Date: February 22, 2007
Completed: S.Spencer
Checked By: D.Donovan

Figure No.
02



2005 Aerial Photograph - Yakima County Assessors Office

Diesel < 20 mg/kg
 Oil <40 mg/kg
 Mineral Oil <40 mg/kg
 Diesel < 200 ug/L
 Oil <400 ug/L
 Mineral Oil <400 ug/L

B3/MW3

Former UST Area
 Excavation Limits



S2-NSW-5-7'
 Diesel < 20 mg/kg
 Oil <40 mg/kg
 Mineral Oil <40 mg/kg

6-7' bgs

6-7' bgs

S5-WSW-5.5-7'
 Diesel < 20 mg/kg
 Oil <40 mg/kg
 Mineral Oil <40 mg/kg

6-7' bgs

S4-ESW-5-7'
 Diesel < 20 mg/kg
 Oil <40 mg/kg
 Mineral Oil <40 mg/kg

S1-WSW-5-7'
 Diesel < 20 mg/kg
 Oil <40 mg/kg
 Mineral Oil <40 mg/kg

S3-SSW-5-7'
 Diesel < 20 mg/kg
 Oil <40 mg/kg
 Mineral Oil <40 mg/kg

B2/MW2
 Diesel < 20 mg/kg
 Oil <40 mg/kg
 Mineral Oil <40 mg/kg
 Diesel < 200 ug/L
 Oil <400 ug/L
 Mineral Oil <400 ug/L

Powerhouse Road

B1/MW1
 Diesel < 20 mg/kg
 Oil <40 mg/kg
 Mineral Oil <40 mg/kg
 Diesel < 200 ug/L
 Oil <400 ug/L
 Mineral Oil <400 ug/L



Not To Scale

- Soil sample location
- Soil Boring / Groundwater Well Location

Note: Water observed in excavation at 5 to 7 feet below ground surface



Soil Sample Location Map
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Figure No.
03



Photo 01 - Contaminated Soil Excavation - View east



Photo 02 - Continued Contaminated Soil Excavation



Photo 03 - Water in excavation west end - 6' bgs



Photo 04 - Loading out contaminated soil



Photo 05 - Sheen observed on water during excavation



Photo 06 - Pumping water from east end of excavation



Environmental Management Services, LLC

Project Photographs
Soil & Groundwater Remediation
Yakima County Parcel: 181309-21004
5961 W. Powerhouse Road
Yakima, Washington

Date: February 22, 2007
Completed: S.Spencer
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Figure No.

04

Sheet 01 of 02

Providing Practical Environmental Compliance Solutions



Photo 07 - Excavation Area - View Southwest



Photo 08 - Dewatering - South Excavation



Photo 09 - Backfill placement - View south



Photo 10 - Soil boring / well installation - B1/MW1



Photo 11 - Soil boring / well installation - B2/MW2



Photo 12 - Soil boring / well installation - B3/MW3



Project Photographs
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 5961 W. Powerhouse Road
 Yakima, Washington

Date: February 22, 2007
 Completed: S.Spencer
 Checked By: D.Donovan

Figure No.

04

Sheet 02 of 02

Attachment B

Project Tables

Table 1 - Soil Remediation Analytical Results
Table 2 - Groundwater Remediation Analytical Results

Attachment B



**Table 1 - Soil Sample Analytical Results
Soil & Groundwater Remediation Project
5961 West Powerhouse Road
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February 22, 2007

Sample Number	Sample Location	Sample Depth feet bgs	Sample Date	Field Screening Results			Diesel-Dx (NWTPH-Dx)		
				Headspace	Sheen Test	Diesel	Heavy Oil	Mineral Oil	
				ppm	Visual	mg/kg	mg/kg	mg/kg	
S1-WSW	West Sidewall	5-7'	1/18/2007	0 ppm	None	<20	<40	<40	
S2-NSW	North Sidewall	5-7'	1/18/2007	0 ppm	None	<20	<40	<40	
S3-SSW	South Sidewall	5-7'	1/18/2007	0 ppm	None	<20	<40	<40	
S4-ESW	East Sidewall	5-7'	1/18/2007	0 ppm	None	<20	<40	<40	
S5-Floor	Excavation Floor	5.5-7'	1/18/2007	0 ppm	None	<20	<40	<40	
B1-4'	Boring B1	4'	1/18/2007	0 ppm	None	<20	<40	<40	
B1-7'	Boring B1	7'	1/18/2007	0 ppm	None	<20	<40	<40	
B2-4'	Boring B2	4'	1/18/2007	0 ppm	None	<20	<40	<40	
B2-7'	Boring B2	7'	1/18/2007	0 ppm	None	<20	<40	<40	
B3-4'	Boring B3	4'	1/18/2007	0 ppm	None	<20	<40	<40	
B3-7'	Boring B3	7'	1/18/2007	0 ppm	None	<20	<40	<40	
Laboratory Detection or Practical Quantitation Limit Soil						20.0	40.0	40.0	
Model Toxic Control Act (MTCA) Method A Cleanup Levels For Soil						2000	2000	2000	

BOLD/RED = Analyte above MTCA 2001 Method A Cleanup levels.

Values are reported in milligrams per kilograms (mg/kg).

< # (ND) = analyte not detected above the analytical method detection limit cited.

Diesel / Mineral Oil / Oil analytical method NWTPH-Dx

Diesel range petroleum hydrocarbon Method A Cleanup Levels for soil are 2000 mg/kg unless Diesel & Oil 4000 mg/kg Mineral Oil

Gasoline range petroleum hydrocarbon Method A Unrestricted Cleanup Levels: Gasoline mixtures without benzene and the

total of ethyl benzene, toluene and xylene are less than 1% of the gasoline mixture = 100 mg/kg. All other Gasoline / BTEX mixtures = 30 mg/kg

MTCA 2001 Method A Cleanup Levels for Soil from the Model Toxics Control Act (MTCA) amendment Table 740-1 WAC 173-340-900 Tables.

bgs=below ground surface

NA=Not Applicable



**Table 2 - Soil Sample Analytical Results
Soil & Groundwater Remediation Project
5961 West Powerhouse Road
Yakima, Washington**

February 22, 2007

Sample Number	Sample Location	Sample Depth feet bgs	Sample Date	Field Screen		Diesel-Dx (NWTPH-Dx)		
				Sheen Test Visual	Diesel ug/L	Heavy Oil ug/L	Mineral Oil ug/L	
B1	Boring B1	7'	1/18/2007	None	<200	<400	<400	
B2	Boring B2	7'	1/18/2007	None	<200	<400	<400	
B3	Boring B3	7'	1/18/2007	None	<200	<400	<400	
Laboratory Detection or Practical Quantitation Limit Groundwater								
Model Toxic Control Act (MTCA) Method A Cleanup Levels For Groundwater					200.0	400.0	400.0	500

BOLD/UNDERLINED = Analyte above MTCA 2001 Method A Cleanup levels.

Values are reported in micrograms per liter (ug/L).

< # (ND) = analyte not detected above the analytical method detection limit cited.

Diesel / Mineral Oil / Oil analytical method NWTPH-Dx

Diesel range petroleum hydrocarbon Method A Cleanup Levels for soil are 500 ug/L Diesel & Oil, 4000 ug/L Mineral Oil

Gasoline Range Organics: Benzene present in ground water 800 ug/liter No detectable benzene in ground water 1,000 ug/liter

MTCA 2001 Method A Cleanup Levels for Groundwater from the Model Toxics Control Act (MTCA) Table 740-1 WAC 173-340 -900 Tables.

bgs=below ground surface

NA=Not Applicable

Attachment C

Laboratory Analytical Results
UST Site Assessment Soil & Groundwater Sampling
Waste Oil Characterization - Table 830-1
Soil Remediation Analytical Results
Groundwater SAMPLING Results

Model Toxic Control Act Cleanup Criteria
Method A Unrestricted Land Use
Table 830-1 Required Testing For Petroleum Releases

Attachment C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
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June 23, 2006

Steve Spencer, Project Manager
Environmental Management Services, LLC
652 8th Avenue
Fox Island, WA 98333

Dear Mr. Spencer:

Included are the results from the testing of material submitted on June 12, 2006 from the Yakima-Park, F&BI 606125 project. There are 10 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

E-mail: sspencer@emsgroupllc.com

EMS0623R

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/23/06
Date Received: 06/12/06
Project: Yakima-Park, F&BI 606125
Date Extracted: 06/13/06
Date Analyzed: 06/13/06

**RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES
FOR GASOLINE, DIESEL AND HEAVY OIL BY NWTPH-HCID
Results Reported as Not Detected (ND) or Detected (D)**

THE DATA PROVIDED BELOW WAS PERFORMED PER THE GUIDELINES ESTABLISHED BY THE WASHINGTON DEPARTMENT OF ECOLOGY AND WERE NOT DESIGNED TO PROVIDE INFORMATION WITH REGARDS TO THE ACTUAL IDENTIFICATION OF ANY MATERIAL PRESENT

<u>Sample ID</u> Laboratory ID	<u>Gasoline</u>	<u>Diesel</u>	<u>Heavy Oil</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
S1-ESW-7' 606125-01	ND	ND	ND	100
S2-SSW-7' 606125-02	ND	ND	ND	87
S3-NSW-7' 606125-03	ND	ND	ND	87
S4-Floor-9' 606125-04	ND	ND	ND	88
S5-WSW-7' 606125-05	ND	ND	ND	89
S6-SP1 606125-06	ND	ND	D	84
S7-SP2 606125-07	ND	ND	ND	90
S8-SP3 606125-08	ND	ND	D	89
S9-Hyd Floor 606125-09	ND	ND	ND	95
Method Blank	ND	ND	ND	96

ND - Material not detected at or above 20 mg/kg gas, 50 mg/kg diesel and 250 mg/kg heavy oil.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/23/06
Date Received: 06/12/06
Project: Yakima-Park, F&BI 606125
Date Extracted: 06/13/06
Date Analyzed: 06/13/06

**RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES
FOR GASOLINE, DIESEL AND HEAVY OIL BY NWTPH-HCID
Results Reported as Not Detected (ND) or Detected (D)**

THE DATA PROVIDED BELOW WAS PERFORMED PER THE GUIDELINES ESTABLISHED BY THE
WASHINGTON DEPARTMENT OF ECOLOGY AND WERE NOT DESIGNED TO PROVIDE
INFORMATION WITH REGARDS TO THE ACTUAL IDENTIFICATION OF ANY MATERIAL
PRESENT

<u>Sample ID</u> Laboratory ID	<u>Gasoline</u>	<u>Diesel</u>	<u>Heavy Oil</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
S10-H2O 606125-10	ND	ND	D	96
Method Blank	ND	ND	ND	85

ND - Material not detected at or above 0.2 mg/L gas, 0.5 mg/L diesel and 0.5 mg/L heavy

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/23/06
Date Received: 06/12/06
Project: Yakima-Park, F&BI 606125
Date Extracted: 06/20/06
Date Analyzed: 06/21/06

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE AND XYLENES
USING EPA METHOD 8021B

Results Reported on a Dry Weight Basis

Results Reported as µg/g (ppm)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Surrogate (% Recovery)</u> (Limit 50-132)
S1-ESW-7' 606125-01	<0.02	<0.02	<0.02	<0.06	110
S2-SSW-7' 606125-02	<0.02	<0.02	<0.02	<0.06	108
S3-NSW-7' 606125-03	<0.02	<0.02	<0.02	<0.06	109
S4-Floor-9' 606125-04	<0.02	<0.02	<0.02	<0.06	106
S5-WSW-7' 606125-05	<0.02	<0.02	<0.02	<0.06	108
S6-SP1 606125-06	<0.02	<0.02	<0.02	<0.06	111
S7-SP2 606125-07	<0.02	<0.02	<0.02	<0.06	109
S8-SP3 606125-08	<0.02	<0.02	<0.02	<0.06	111
S9-Hyd Floor 606125-09	<0.02	<0.02	<0.02	<0.06	110
Method Blank	<0.02	<0.02	<0.02	<0.06	110

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/23/06
Date Received: 06/12/06
Project: Yakima-Park, F&BI 606125
Date Extracted: 06/16/06
Date Analyzed: 06/19/06

RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE AND XYLENES
USING EPA METHOD 8021B

Results Reported as µg/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Surrogate (% Recovery)</u> Limit (52-124)
S10-H2O 606125-10	<1	<1	<1	<3	109
Method Blank	<1	<1	<1	<3	105

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/23/06
Date Received: 06/12/06
Project: Yakima-Park, F&BI 606125
Date Extracted: 06/16/06
Date Analyzed: 06/17/06

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL
USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as $\mu\text{g/g}$ (ppm)

<u>Sample ID</u> Laboratory ID	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 67-127)
S6-SP1 606125-06	<250	99
S8-SP3 606125-08	410	83
Method Blank	<250	89

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/23/06
Date Received: 06/12/06
Project: Yakima-Park, F&BI 606125
Date Extracted: 06/13/06
Date Analyzed: 06/16/06

**RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL
USING METHOD NWTPH-Dx**

Results Reported as µg/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> (% Recovery) (Limit 51-132)
S10-H2O 606125-10	730 j	93
Method Blank	<250	83

j - The result is below normal reporting limits due to limited initial sample volume.
The value reported is an estimate.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/23/06
 Date Received: 06/12/06
 Project: Yakima-Park, F&BI 606125

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
 FOR BENZENE, TOLUENE, ETHYLBENZENE
 AND XYLENES
 USING EPA METHOD 8021B**

Laboratory Code: 606179-19 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	µg/g (ppm)	<0.02	<0.02	nm
Toluene	µg/g (ppm)	<0.02	<0.02	nm
Ethylbenzene	µg/g (ppm)	<0.02	<0.02	nm
Xylenes	µg/g (ppm)	<0.06	<0.06	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	µg/g (ppm)	0.5	84	53-123
Toluene	µg/g (ppm)	0.5	90	62-124
Ethylbenzene	µg/g (ppm)	0.5	87	59-124
Xylenes	µg/g (ppm)	1.5	88	58-123

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/23/06

Date Received: 06/12/06

Project: Yakima-Park, F&BI 606125

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE
AND XYLENES
USING EPA METHOD 8021B

Laboratory Code: 606132-18 (Duplicate)

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

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	µg/L (ppb)	50	88	69-119
Toluene	µg/L (ppb)	50	89	70-123
Ethylbenzene	µg/L (ppb)	50	92	78-112
Xylenes	µg/L (ppb)	150	91	74-112

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/23/06
Date Received: 06/12/06
Project: Yakima-Park, F&BI 606125

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

Laboratory Code: 606172-06 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	µg/g (ppm)	5,000	<50	108	98	71-137	10

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	µg/g (ppm)	5,000	110	70-129

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/23/06

Date Received: 06/12/06

Project: Yakima-Park, F&BI 606125


**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	µg/L (ppb)	2,500	114	109	73-142	4



SAMPLE CHAIN OF CUSTODY

Send Report To: Steve Spencer
 Company: EMS
 Address: _____
 City, State, ZIP: _____
 Phone #: _____ Fax #: _____

SAMPLERS (signature): 
 PROJECT NAME/NO.: Yammer - Park
 REMARKS: _____

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	Time	Sample Type	# of containers	ANALYSES REQUESTED						Notes	
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS		X HID
S1-ESW-7'	01 A-D	6/12		So. 1	3-1000 3-1002	<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/> per SS
S2-SSW-7'	02 A-D					<input checked="" type="checkbox"/>							6/16/06
S3-NSW-7'	03 A-D					<input checked="" type="checkbox"/>							MS
S4-Floor-9'	04 A-D					<input checked="" type="checkbox"/>							
S5-WSW-7'	05 A-D					<input checked="" type="checkbox"/>							
S6-SP1	06 A-D					<input checked="" type="checkbox"/>							
S7-SP2	07					<input checked="" type="checkbox"/>							
S8-SP3	08					<input checked="" type="checkbox"/>							
S9-Hyd Floor	09					<input checked="" type="checkbox"/>							
S10-H2O	10 A-B				VQA	<input checked="" type="checkbox"/>							

Signature: 
 Relinquished by: Steve Spencer
 Received by: 
 Relinquished by: _____
 Received by: _____
 Signature: _____
 Relinquished by: _____
 Received by: _____

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Ph. (206) 285-8282
 Fax (206) 283-5044

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
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Seattle, WA 98119-2029
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e-mail: fbi@isomedia.com

July 13, 2006

Steve Spencer, Project Manager
Environmental Management Services, LLC
652 8th Avenue
Fox Island, WA 98333

Dear Mr. Spencer:

Included are the results from the additional testing of material submitted on June 12, 2006 from the Yakima-Park, F&BI 606125 project. The sample was analyzed outside of the recommended holding time for PAH, VOC, and PCB's. There are 14 pages included in this report.

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

E-mail: sspencer@emsgroupllc.com

EMS0713R

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/13/06
Date Received: 06/12/06
Project: Yakima-Park, F&BI 606125
Date Extracted: 06/30/06
Date Analyzed: 06/30/06

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR PCBs REPORTED AS AROCLORS
USING EPA METHOD 8082
Results Reported as µg/g (ppm)

<u>Sample ID</u> Laboratory ID	Aroclor								Surrogate
	<u>1221</u>	<u>1232</u>	<u>1016</u>	<u>1242</u>	<u>1248</u>	<u>1254</u>	<u>1260</u>	<u>1262</u>	(% Rec.) (Limit 50-150)
S8-SP3 606125-08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	132
Method Blank	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	109

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: S8-SP3
Date Received: 06/12/06
Date Extracted: 07/03/06
Date Analyzed: 07/05/06
Matrix: Soil
Units: ug/g (ppm)

Client: Environmental Management Services
Project: Yakima-Park, F&BI 606125
Lab ID: 606125-08
Data File: 606125-08.023
Instrument: ICPMS1
Operator: btb

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	85	60	125
Indium	87	60	125
Holmium	89	60	125

Analyte:	Concentration ug/g (ppm)
Chromium	5.40
Arsenic	5.29
Cadmium	<1
Lead	73.5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Management Services
Date Received:	NA	Project:	Yakima-Park, F&BI 606125
Date Extracted:	07/03/06	Lab ID:	I6-302 mb
Date Analyzed:	07/05/06	Data File:	I6-302 mb.008
Matrix:	Soil	Instrument:	ICPMS1
Units:	ug/g (ppm)	Operator:	btb

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	92	60	125
Indium	93	60	125
Holmium	94	60	125

Analyte:	Concentration ug/g (ppm)
Chromium	<1
Arsenic	<1
Cadmium	<1
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/13/06
Date Received: 06/12/06
Project: Yakima-Park, F&BI 606125
Date Extracted: 07/05/06
Date Analyzed: 07/05/06

**RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E**

Results Reported on a Dry Weight Basis
Results Reported as $\mu\text{g/g}$ (ppm)

<u>Sample ID</u> Laboratory ID	<u>Total Mercury</u>
S8-SP3 606125-08	0.20
Method Blank	<0.2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID: S8-SP3
Date Received: 06/12/06
Date Extracted: 07/03/06
Date Analyzed: 07/04/06
Matrix: soil
Units: ug/g (ppm)

Client: Environmental Management Services
Project: Yakima-Park, F&BI 606125
Lab ID: 606125-08
Data File: 070325.D
Instrument: GCMS5
Operator: YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	85	51	134
1,2-Dichloroethane-d4	94	51	137
Toluene-d8	89	54	139
4-Bromofluorobenzene	86	42	164

Compounds:	Concentration ug/g (ppm)
Vinyl chloride	<0.05
Chloroethane	<0.05
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
trans-1,2-Dichloroethene	<0.05
1,1-Dichloroethane	<0.05
cis-1,2-Dichloroethene	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Trichloroethene	<0.03
Tetrachloroethene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	Method Blank	Client:	Environmental Management Services
Date Received:	Not Applicable	Project:	Yakima-Park, F&BI 606125
Date Extracted:	07/03/06	Lab ID:	06-965 mb
Date Analyzed:	07/03/06	Data File:	070307.D
Matrix:	soil	Instrument:	GCMS5
Units:	ug/g (ppm)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	92	51	134
1,2-Dichloroethane-d4	99	51	137
Toluene-d8	100	54	139
4-Bromofluorobenzene	108	42	164

Compounds:	Concentration ug/g (ppm)
Vinyl chloride	<0.05
Chloroethane	<0.05
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
trans-1,2-Dichloroethene	<0.05
1,1-Dichloroethane	<0.05
cis-1,2-Dichloroethene	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Trichloroethene	<0.03
Tetrachloroethene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	S8-SP3	Client:	Environmental Management Services
Date Received:	06/12/06	Project:	Yakima-Park, F&BI 606125
Date Extracted:	06/30/06	Lab ID:	606125-08 1/10
Date Analyzed:	07/01/06	Data File:	063027.D
Matrix:	soil	Instrument:	GCMS3
Units:	ug/kg (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	130	18	150
Benzo(a)anthracene-d12	108	40	143

Compounds:	Concentration ug/kg (ppb)
Naphthalene	<50
Acenaphthylene	<50
Acenaphthene	<50
Fluorene	<50
Phenanthrene	<50
Anthracene	<50
Fluoranthene	<50
Pyrene	<50
Benz(a)anthracene	<50
Chrysene	<50
Benzo(b)fluoranthene	<50
Benzo(k)fluoranthene	<50
Benzo(a)pyrene	<50
Indeno(1,2,3-cd)pyrene	<50
Dibenz(a,h)anthracene	<50
Benzo(g,h,i)perylene	<50

Note: The sample was diluted due to sample matrix effects. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	Method Blank	Client:	Environmental Management Services
Date Received:	Not Applicable	Project:	Yakima-Park, F&BI 606125
Date Extracted:	06/30/06	Lab ID:	06-955mb2
Date Analyzed:	06/30/06	Data File:	063014.D
Matrix:	soil	Instrument:	GCMS3
Units:	ug/kg (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	89	18	150
Benzo(a)anthracene-d12	98	40	143

Compounds:	Concentration ug/kg (ppb)
Naphthalene	<5
Acenaphthylene	<5
Acenaphthene	<5
Fluorene	<5
Phenanthrene	<5
Anthracene	<5
Fluoranthene	<5
Pyrene	<5
Benz(a)anthracene	<5
Chrysene	<5
Benzo(b)fluoranthene	<5
Benzo(k)fluoranthene	<5
Benzo(a)pyrene	<5
Indeno(1,2,3-cd)pyrene	<5
Dibenz(a,h)anthracene	<5
Benzo(g,h,i)perylene	<5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/13/06

Date Received: 06/12/06

Project: Yakima-Park, F&BI 606125

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF SOIL SAMPLES FOR
POLYCHLORINATED BIPHENYLS AS
AROCLOR 1016/1260 BY EPA METHOD 8082**

Laboratory Code: 606276-25 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	µg/g (ppm)	0.8	<0.1	112	101	80-114	10
Aroclor 1260	µg/g (ppm)	0.8	<0.1	106	96	88-127	10

Laboratory Code: 606276-25 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	µg/g (ppm)	0.8	<0.1	112	101	80-114	10
Aroclor 1260	µg/g (ppm)	0.8	<0.1	106	96	88-127	10

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	% Recovery LCS	Acceptance Criteria
Aroclor 1016	µg/g (ppm)	0.8	104	70-139
Aroclor 1260	µg/g (ppm)	0.8	106	83-144

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/13/06
 Date Received: 06/12/06
 Project: Yakima-Park, F&BI 606125

**QUALITY ASSURANCE RESULTS
 FOR THE ANALYSIS OF SOIL SAMPLES
 FOR METALS BY EPA METHOD 200.8**

Laboratory Code: 606276-22 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Chromium	ug/g (ppm)	103	101	2	0-20
Arsenic	ug/g (ppm)	4.69	4.70	0	0-20
Cadmium	ug/g (ppm)	<1	<1	nm	0-20
Lead	ug/g (ppm)	51.3	50.1	2	0-20

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Chromium	ug/g (ppm)	50	100	70-130
Arsenic	ug/g (ppm)	10	95	70-130
Cadmium	ug/g (ppm)	10	99	70-130
Lead	ug/g (ppm)	20	94	70-130

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

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.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/13/06

Date Received: 06/12/06

Project: Yakima-Park, F&BI 606125

QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF SOIL SAMPLES FOR
TOTAL MERCURY
USING EPA METHOD 1631E

Laboratory Code: 606276-25 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Mercury	µg/g (ppm)	<0.2	<0.2	nm

Laboratory Code: 606276-25 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	µg/g (ppm)	0.125	<0.2	101	106	50-150	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	µg/g (ppm)	10	97	70-130

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/13/06

Date Received: 06/12/06

Project: Yakima-Park, F&BI 606125

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR VOLATILES BY EPA METHOD 8260B**

Laboratory Code: 606293-13 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
1,1-Dichloroethene	µg/g (ppm)	2.5	<0.05	67	76	40-127	12
1,2-Dichloroethane (EDC)	µg/g (ppm)	2.5	<0.05	90	100	62-127	10
Trichloroethene	µg/g (ppm)	5	<0.03	86	96	63-123	11

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
1,1-Dichloroethene	µg/g (ppm)	2.5	71	64-132
1,2-Dichloroethane (EDC)	µg/g (ppm)	2.5	95	67-137
Trichloroethene	µg/g (ppm)	5	89	70-122

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/13/06

Date Received: 06/12/06

Project: Yakima-Park, F&BI 606125

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL
SAMPLES FOR PNA'S BY EPA METHOD 8270C SIM

Laboratory Code: 606196-20 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	µg/kg (ppb)	170	<5	89	106	52-109	18
Acenaphthylene	µg/kg (ppb)	170	<5	80	92	47-115	13
Acenaphthene	µg/kg (ppb)	170	22	66	99	53-110	40 ip
Fluorene	µg/kg (ppb)	170	45	74	94	47-114	23 ip
Phenanthrene	µg/kg (ppb)	170	66	60	86	41-114	36 ip
Anthracene	µg/kg (ppb)	170	<5	80	75	43-103	7
Fluoranthene	µg/kg (ppb)	170	<5	77	78	44-118	1
Pyrene	µg/kg (ppb)	170	34	64	68	64-106	6
Benz(a)anthracene	µg/kg (ppb)	170	<5	65	65	51-111	0
Chrysene	µg/kg (ppb)	170	<5	63	65	48-115	2
Benzo(b)fluoranthene	µg/kg (ppb)	170	<5	72	73	57-120	2
Benzo(k)fluoranthene	µg/kg (ppb)	170	<5	69	72	58-117	4
Benzo(a)pyrene	µg/kg (ppb)	170	<5	69	71	53-108	3
Indeno(1,2,3-cd)pyrene	µg/kg (ppb)	170	<5	72	63	24-128	13
Dibenz(a,h)anthracene	µg/kg (ppb)	170	<5	78	68	27-135	13
Benzo(g,h,i)perylene	µg/kg (ppb)	170	<5	66	56	15-131	16

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/13/06

Date Received: 06/12/06

Project: Yakima-Park, F&BI 606125

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL
 SAMPLES FOR PNA'S BY EPA METHOD 8270C SIM

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	µg/kg (ppb)	170	77	78	57-111	2
Acenaphthylene	µg/kg (ppb)	170	75	78	61-108	3
Acenaphthene	µg/kg (ppb)	170	75	76	61-109	2
Fluorene	µg/kg (ppb)	170	79	80	61-110	1
Phenanthrene	µg/kg (ppb)	170	71	72	57-107	1
Anthracene	µg/kg (ppb)	170	69	71	57-101	3
Fluoranthene	µg/kg (ppb)	170	79	79	54-121	1
Pyrene	µg/kg (ppb)	170	77	78	57-115	1
Benz(a)anthracene	µg/kg (ppb)	170	70	72	57-107	2
Chrysene	µg/kg (ppb)	170	72	74	58-111	3
Benzo(b)fluoranthene	µg/kg (ppb)	170	79	80	55-131	2
Benzo(k)fluoranthene	µg/kg (ppb)	170	80	81	54-124	1
Benzo(a)pyrene	µg/kg (ppb)	170	70	75	51-108	7
Indeno(1,2,3-cd)pyrene	µg/kg (ppb)	170	75	76	48-128	2
Dibenz(a,h)anthracene	µg/kg (ppb)	170	79	80	37-147	2
Benzo(g,h,i)perylene	µg/kg (ppb)	170	71	73	45-132	2

606125
 ME 06-12-06
 V2/VSA/C05

SAMPLE CHAIN OF CUSTODY

Page # _____ of _____
 TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by: _____
 SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

SAMPLERS (signature) _____
 PROJECT NAME/NO. _____
 PO # _____
 HPS _____
 MOBIL _____
 PCB _____
 MTA _____
 PAH _____

REMARKS
 Yarnman - P-nek
 REMARKS _____
 REMARKS _____
 REMARKS _____

Send Report To: Steve Spencer
 Company: EMS
 Address: _____
 City, State, ZIP: _____
 Phone #: _____
 Fax #: _____

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	ANALYSES REQUESTED							Notes			
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	HVOCs by 8260	SVOCs by 8270	HPS	MOBIL		PCB	MTA	PAH
S1-BW-7'	01A-D	6/12		So.1	3-VOA 1-TOE	(X)					X					18 per 55 b/13/06
S2-SSW-7'	02A-D					(X)										
S3-NSW-7'	03A-D					(X)										
S4-Floor 9'	04A-D					(X)										
S5-WSW-7'	05A-D					(X)										
S6-SP1	06A-D					(X)										
S7-SP2	07					(X)										
S8-SP3	08					(X)										
S9-Hyd Floor	09					(X)										
S10-H2O	10 A-B				VOA	(X)										
SIGNATURE						PRINT NAME		COMPANY		DATE	TIME					
Relinquished by: _____						STEVEN SPENCER		EMS		6/12	12:20					
Received by: _____						Michael E-dahl		FE Bme.		6/12						
Relinquished by: _____																
Received by: _____																

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/23/06
Date Received: 06/12/06
Project: Yakima-Park, F&BI 606125
Date Extracted: 06/13/06
Date Analyzed: 06/13/06

**RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES
FOR GASOLINE, DIESEL AND HEAVY OIL BY NWTPH-HCID
Results Reported as Not Detected (ND) or Detected (D)**

THE DATA PROVIDED BELOW WAS PERFORMED PER THE GUIDELINES ESTABLISHED BY THE
WASHINGTON DEPARTMENT OF ECOLOGY AND WERE NOT DESIGNED TO PROVIDE
INFORMATION WITH REGARDS TO THE ACTUAL IDENTIFICATION OF ANY MATERIAL
PRESENT

<u>Sample ID</u> Laboratory ID	<u>Gasoline</u>	<u>Diesel</u>	<u>Heavy Oil</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
S10-H2O 606125-10	ND	ND	D	96
Method Blank	ND	ND	ND	85

ND - Material not detected at or above 0.2 mg/L gas, 0.5 mg/L diesel and 0.5 mg/L heavy

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/23/06
 Date Received: 06/12/06
 Project: Yakima-Park, F&BI 606125
 Date Extracted: 06/20/06
 Date Analyzed: 06/21/06

**RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES
 FOR BENZENE, TOLUENE, ETHYLBENZENE AND XYLENES
 USING EPA METHOD 8021B**

Results Reported on a Dry Weight Basis

Results Reported as µg/g (ppm)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Surrogate (% Recovery)</u> (Limit 50-132)
S1-ESW-7' 606125-01	<0.02	<0.02	<0.02	<0.06	110
S2-SSW-7' 606125-02	<0.02	<0.02	<0.02	<0.06	108
S3-NSW-7' 606125-03	<0.02	<0.02	<0.02	<0.06	109
S4-Floor-9' 606125-04	<0.02	<0.02	<0.02	<0.06	106
S5-WSW-7' 606125-05	<0.02	<0.02	<0.02	<0.06	108
S6-SP1 606125-06	<0.02	<0.02	<0.02	<0.06	111
S7-SP2 606125-07	<0.02	<0.02	<0.02	<0.06	109
S8-SP3 606125-08	<0.02	<0.02	<0.02	<0.06	111
S9-Hyd Floor 606125-09	<0.02	<0.02	<0.02	<0.06	110
Method Blank	<0.02	<0.02	<0.02	<0.06	110

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/23/06
Date Received: 06/12/06
Project: Yakima-Park, F&BI 606125
Date Extracted: 06/16/06
Date Analyzed: 06/19/06

**RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE AND XYLENES
USING EPA METHOD 8021B**
Results Reported as µg/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Surrogate (% Recovery)</u> Limit (52-124)
S10-H2O 606125-10	<1	<1	<1	<3	109
Method Blank	<1	<1	<1	<3	105

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

YAKIMA PROJECT
 Yakima, Washington
 EMS, Inc.
 Libby Env. Project No. I.061221-8

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN WATER

Sample Description	Method	EX1-3	EX1-4	
	Blank			
Date Sampled	Reporting	N/A	12/22/06	12/22/06
Date Analyzed	Limits	12/24/06	12/24/06	12/24/06
	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	2.0	nd	nd	nd
Chloromethane	2.0	nd	nd	nd
Vinyl chloride *	0.2	nd	nd	nd
Bromomethane	2.0	nd	nd	nd
Chloroethane	2.0	nd	nd	nd
Trichlorofluoromethane	2.0	nd	nd	nd
1,1-Dichloroethene	2.0	nd	nd	nd
Methylene chloride	1.0	nd	nd	nd
<i>trans</i> -1,2-Dichloroethene	1.0	nd	nd	nd
1,1-Dichloroethane	1.0	nd	nd	nd
2,2-Dichloropropane	2.0	nd	nd	nd
<i>cis</i> -1,2-Dichloroethene	1.0	nd	nd	nd
Chloroform	1.0	nd	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd	nd
Carbon tetrachloride	1.0	nd	nd	nd
1,1-Dichloropropene	1.0	nd	nd	nd
Benzene	1.0	nd	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd	nd	nd
Trichloroethene (TCE)	1.0	nd	nd	nd
1,2-Dichloropropane	1.0	nd	nd	nd
Dibromomethane	1.0	nd	nd	nd
Bromodichloromethane	1.0	nd	nd	nd
<i>cis</i> -1,3-Dichloropropene	1.0	nd	nd	nd
Toluene	1.0	nd	nd	nd
<i>Trans</i> -1,3-Dichloropropene	1.0	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd	nd
1,3-Dichloropropane	1.0	nd	nd	nd
Dibromochloromethane	1.0	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.10	nd	nd	nd
Chlorobenzene	1.0	nd	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd	nd
Ethylbenzene	1.0	nd	nd	nd
Total Xylenes	1.0	nd	nd	nd
Styrenes	1.0	nd	nd	nd

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

YAKIMA PROJECT
 Yakima, Washington
 EMS, Inc.
 Libby Env. Project No. L061221-8

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN WATER

Sample Description	Method	EX1-3	EX1-4	
	Blank			
Date Extracted	Reporting	N/A	12/22/06	
Date Analyzed	Limits	12/24/06	12/24/06	
	(ug/l)	(ug/l)	(ug/l)	
Bromoform	1.0	nd	nd	
Isopropylbenzene	4.0	nd	nd	
1,2,3-Trichloropropane	1.0	nd	nd	
Bromobenzene	1.0	nd	nd	
1,1,2,2-Tetrachloroethane	1.0	nd	nd	
n-Propylbenzene	1.0	nd	nd	
2-Chlorotoluene	1.0	nd	nd	
4-Chlorotoluene	1.0	nd	nd	
1,3,5-Trimethylbenzene	1.0	nd	nd	
tert-Butylbenzene	1.0	nd	nd	
1,2,4-Trimethylbenzene	1.0	nd	nd	
sec-Butylbenzene	1.0	nd	nd	
1,3-Dichlorobenzene	1.0	nd	nd	
Isopropyltoluene	1.0	nd	nd	
1,4-Dichlorobenzene	1.0	nd	nd	
1,2-Dichlorobenzene	1.0	nd	nd	
n-Butylbenzene	1.0	nd	nd	
1,2-Dibromo-3-Chloropropane	1.0	nd	nd	
1,2,4-Trichlorobenzene	2.0	nd	nd	
Hexachloro-1,3-butadiene	5.0	nd	nd	
Naphthalene	1.0	nd	nd	
1,2,3-Trichlorobenzene	5.0	nd	nd	
Surrogate Recovery				
Dibromofluoromethane	102	108	95	
Toluene-d8	87.2	78.2	77.1	
1,2-Dichloroethane-d4	95.5	95.6	92.2	
4-Bromofluorobenzene	85.1	98.2	91.3	

"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: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

YAKIMA PROJECT
 Yakima, Washington
 EMS, Inc.
 Libby Env. Project No. L061221-8

QA/QC Data - EPA 8260B Analyses

Sample Identification: OWB-2							
	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 (%)	
1,1-Dichloroethene	40	29.2	73.0	40	27.9	69.8	4.6
Benzene	40	33.3	83.3	40	31.9	79.8	4.3
Toluene	40	36.3	90.8	40	35.2	88.0	3.1
Chlorobenzene	40	40.7	101.8	40	38.5	96.3	5.6
Trichloroethene (TCE)	40	36.4	91.0	40	35.0	87.5	3.9

Surrogate Recovery

Dibromofluoromethane	80.3	84.7
Toluene-d8	71.0	74.8
1,2-Dichloroethane-d4	84.6	85.6
4-Bromofluorobenzene	82.8	75.7

Laboratory Control Sample

	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)
1,1-Dichloroethene	40	30.9	77.3
Benzene	40	28.3	70.8
Toluene	40	31.0	77.5
Chlorobenzene	40	33.0	82.5
Trichloroethene (TCE)	40	31.0	77.5

Surrogate Recovery

Dibromofluoromethane	91.1
Toluene-d8	75.5
1,2-Dichloroethane-d4	86.3
4-Bromofluorobenzene	76.1

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

AAL Job Number: A61226-1
 Client Name: Libby Environmental
 Client Project Name: Yakima
 Date received: 12/26/08

Analytical Results		Dupl			RPD	
Metals Total (7010), mg/l		MTH BLK	LCS	EX1-1	EX1-1	EX1-1
Matrix	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	12/28/06	12/28/06	12/28/06	12/28/06	12/28/06
Date analyzed	Limits	12/28/06	12/28/06	12/28/06	12/28/06	12/28/06
Lead (Pb)	0.002	nd	114%	0.17	0.18	2%
Chromium (Cr)	0.01	nd	116%	nd	nd	
Cadmium (Cd)	0.005	nd	106%	nd	nd	
Arsenic (As)	0.005	nd	110%	0.006	0.006	7%
Mercury (Hg) (7470A)	0.0005	nd	71%	nd	nd	

Data Qualifiers and Analytical Comments
 nd - not detected at listed reporting limits
 na - not analyzed
 J - estimated value
 Acceptable Recovery limits: 70% TO 130%
 Acceptable RPD limit: 30%

AAL Job Number: A61226-1
 Client Name: Libby Environmental
 Client Project Name: Yakima
 Date received: 12/26/06

Analytical Results

8082(PCBs), µg/l		MTH BLK	LCS	EX1-2
Matrix:	Water	Water	Water	Water
Date extracted	Reporting	12/28/06	12/28/06	12/28/06
Date analyzed	Limits	12/28/06	12/28/06	12/28/06
A1221	0.1*	nd		nd
A1232	0.1*	nd		nd
A1242 (A1016)	0.1*	nd		nd
A1248	0.1*	nd		nd
A1254	0.1*	nd		nd
A1260	0.1*	nd	96%	nd

Surrogate recoveries:

Tetrachloro-m-xylene	102%	96%	107%
Decachlorobiphenyl	92%	96%	99%

* - instrument detection limits

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

na - not analyzed

C - coelution with sample peaks

M - matrix interference

J - estimated value

Acceptable Recovery limits: 70% TO 130%

Acceptable RPD limit: 30%

Libby Environmental, Inc.

Chain of Custody Record

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

Date: 12/21/06

Page: 1 of 1

Client: EMS

Project Manager: Steve Spencer

Address: 652 8th Ave F.I. WA

Project Name: YAKIMA

Phone: ~~360~~ 921-7039 Fax:

Location: "

Client Project # 353

Collector: S. Spencer

Date of Collection: 12/13

Sample Number	Depth	Time	Sample Type	Container Type	VOA 802/18	VOA 802/18 BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-GX	NWTPH-DX	NWTPH-DX EXL	PAH 8270	PCB's 8082	MICA 5 Metals	VOA 8270	Field Notes
1 EXI-1			H ₂ O	Poly													
2 EXI-2				Amber													
3 EXI-3				VOA													
4 EXI-4				VOA													
5				VOA													
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	

Relinquished by: *James Johnson*

Date / Time: 12/21/06 1400

Received by: *Steve Spencer*

Date / Time: 12/21/06 2000

Sample Receipt:

Remarks: STD-A1

Relinquished by:

Date / Time:

Received by:

Date / Time:

Good Condition?

Cold?

Relinquished by:

Date / Time:

Received by:

Date / Time:

Seals Intact?

Distributor: WF To: Yellow - File, Pink - Originator

Total Number of Containers



Environmental
Services Network

January 24, 2007

Steve Spencer
Environmental Management Services LLC
652 8th Avenue
Fox Island, WA 98333

Dear Mr. Spencer:

Please find enclosed the analytical data report for the Yakima County Project located in Yakima, Washington. Probe and Mobile Laboratory services were conducted on January 18, 2007. Soil and water samples were analyzed for Diesel and Oil by NWTPH-Dx/Dx Extended, Gasoline by NWTPH-Gx, and BTEX by Method 8021B.

The results of these analyses are summarized in the attached table. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to EMS for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A. Korosec
President

ESN NORTHWEST CHEMISTRY LABORATORY

YAKIMA COUNTY PROJECT
Yakima, Washington
EMS
Client Project #YC001

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

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

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Oil (mg/kg)	Mineral Oil (mg/kg)
Method Blank	01.18.07	107	nd	nd	nd
S1-7W	01.18.07	84	nd	nd	nd
S2-7N	01.18.07	87	nd	nd	nd
S3-7S	01.18.07	75	nd	nd	nd
S4-7E	01.18.07	69	nd	nd	nd
B1-7	01.18.07	75	nd	nd	nd
B2-7	01.18.07	71	nd	nd	nd
B3-7	01.18.07	87	nd	nd	nd
B1-4	01.18.07	78	nd	nd	nd
B2-4	01.18.07	67	nd	nd	nd
B3-4	01.18.07	69	nd	nd	nd
S5-5.5	01.18.07	80	nd	nd	nd
Method Detection Limits			20	40	40

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

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: G. Dutta

ESN NORTHWEST CHEMISTRY LABORATORY

YAKIMA COUNTY PROJECT
Yakima, Washington
EMS
Client Project #YC001

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

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

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (ug/L)	Oil (ug/L)	Mineral Oil (ug/L)
Method Blank	01.18.07	85	nd	nd	nd
B1	01.18.07	82	nd	nd	nd
B2	01.18.07	80	nd	nd	nd
B3	01.18.07	121	nd	nd	nd
Method Detection Limits			200	400	400

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

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: G. Dutta

Attachment D

Project Documentation

Petroleum Contaminated Soil Disposal
Petroleum Contaminated Water Disposal

Attachment D



TERRACE HEIGHTS LANDFILL
7151 ROZA HILL DRIVE
YAKIMA, WA 98901
PHONE #:509-574-2450

RECEIPT

TICKET #: 1022294

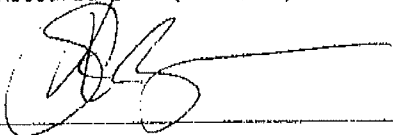
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DATE:01/16/07 01/16/07
TIME:09:00 09:16
ID:LKB LKB

CUSTOMER:0602
COUNTY ROAD DEPARTMEN
YAKIMA COUNTY COURTHOUSE
YAKIMA WA

TRUCK:COUNTYRD
GROSS: 90720 LBS TARE: 37540 LBS

MATERIAL:10 - Garbage
NET LBS: 53180 LBS TIP FEE: 616.89
NET TONS: 26.59 SPEC FEE: 15.00
TAX FEE: 22.21
TOTAL FEE: \$654.10

NOTE:
SPECIALS FEES QTY
Unsecured Load (10 Yds +) 1.00

X 

TERRACE HEIGHTS LANDFILL
7151 ROZA HILL DRIVE
YAKIMA, WA 98901
PHONE #:509-574-2450

RECEIPT

TICKET #: 1022416

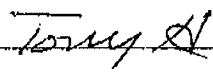
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TIME:13:01 13:03
ID:SHW SHW

CUSTOMER:0602
COUNTY ROAD DEPARTMEN
YAKIMA COUNTY COURTHOUSE
YAKIMA WA

TRUCK:CR
GROSS: 81100 LBS TARE: 36880 LBS

MATERIAL:80 - Waved Fees/Misc.
NET LBS: 44220 LBS TIP FEE: 0.00
NET TONS: 22.11 SPEC FEE: 0.00
TAX FEE: 0.00
TOTAL FEE: 0

NOTE:
SPECIALS FEES QTY

X 

TERRACE HEIGHTS LANDFILL
7151 ROZA HILL DRIVE
YAKIMA, WA 98901
PHONE #:509-574-2450

R E C E I P T

TICKET #: 1022411


---IN--- ---OUT---
DATE:01/16/07 01/16/07
TIME:12:31 12:53
ID:LKB SHW

CUSTOMER:0602
COUNTY ROAD DEPARTMEN
YAKIMA COUNTY COURTHOUSE
YAKIMA WA

TRUCK:COUNTY ROAD
GROSS:105200 LBS TARE: 38420 LBS

MATERIAL:80 - Waved Fees/Misc.
NET LBS: 66780 LBS TIP FEE: 0.00
NET TONS: 33.39 SPEC FEE: 0.00
TAX FEE: 0.00
TOTAL FEE: 0

NOTE:
SPECIALS FEES QTY

X 

TERRACE HEIGHTS LANDFILL ;
7151 ROZA HILL DRIVE
YAKIMA, WA 98901
PHONE #:509-574-2450

R E C E I P T

TICKET #: 1022455

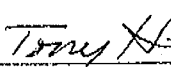
---IN--- ---OUT---
DATE:01/16/07 01/16/07
TIME:13:55 , .08
ID:LKB SHW

CUSTOMER:0602
COUNTY ROAD DEPARTMEN
YAKIMA COUNTY COURTHOUSE
YAKIMA WA

TRUCK:CR DEPARTMEN
GROSS:102520 LBS TARE: 37280 LBS

MATERIAL:80 - Waved Fees/Misc.
NET LBS: 65240 LBS TIP FEE: 0.00
NET TONS: 32.62 SPEC FEE: 0.00
TAX FEE: 0.00
TOTAL FEE: 0

NOTE:
SPECIALS FEES QTY

X 

TERRACE HEIGHTS LANDFILL
7151 ROZA HILL DRIVE
YAKIMA, WA 98901
PHONE #:509-574-2450

RECEIPT

TICKET #: 1022380

---IN--- ---OUT--
DATE:01/16/07 01/16/07
TIME:11:37 11:54
ID:LKB SHW

CUSTOMER:0602
COUNTY ROAD DEPARTMEN
YAKIMA COUNTY COURTHOUSE
YAKIMA WA

TRUCK:COUNTY ROAD
GROSS: 97780 LBS TARE: 36780 LBS

MATERIAL:80 - Waved Fees/Misc.
NET LBS: 61000 LBS TIP FEE: 0.00
NET TONS: 30.50 SPEC FEE: 0.00
TAX FEE: 0.00
TOTAL FEE: 0

NOTE:
SPECIALS FEES QTY

X Troy H

TERRACE HEIGHTS LANDFILL
7151 ROZA HILL DRIVE
YAKIMA, WA 98901
PHONE #:509-574-2450

RECEIPT

TICKET #: 1022447

---IN--- ---OUT--
DATE:01/16/07 01/16/07
TIME:13:46 14:00
ID:LKB SHW

CUSTOMER:0602
COUNTY ROAD DEPARTMEN
YAKIMA COUNTY COURTHOUSE
YAKIMA WA

TRUCK:COUNTY ROAD
GROSS:113040 LBS TARE: 36720 LBS

MATERIAL:80 - Waved Fees/Misc.
NET LBS: 74320 LBS TIP FEE: 0.00
NET TONS: 37.16 SPEC FEE: 0.00
TAX FEE: 0.00
TOTAL FEE: 0

NOTE:
SPECIALS FEES QTY

X [Signature]

TERRACE HEIGHTS LANDFILL
7151 ROZA HILL DRIVE
YAKIMA, WA 98901
PHONE #:509-574-2450

R E C E I P T

TICKET #: 1022487

---IN--- ---OUT--
DATE:01/16/07 01/16/07
TIME:15:09 15:24
ID:SHW SHW

CUSTOMER:0602
COUNTY ROAD DEPARTMEN
YAKIMA COUNTY COURTHOUSE
YAKIMA WA

TRUCK:CR
GROSS:101980 LBS TARE: 37620 LBS

MATERIAL:80 - Waved Fees/Misc.
NET LBS: 64360 LBS TIP FEE: 0.00
NET TONS: 32.18 SPEC FEE: 0.00
TAX FEE: 0.00
TOTAL FEE: 0

NOTE:
SPECIALS FEES QTY

X *[Signature]*

TERRACE HEIGHTS LANDFILL
7151 ROZA HILL DRIVE
YAKIMA, WA 98901
PHONE #:509-574-2450

R E C E I P T

TICKET #: 1022370

---IN--- ---OUT--
DATE:01/16/07 01/16/07
TIME:11:20 11:34
ID:LKB SHW

CUSTOMER:0602
COUNTY ROAD DEPARTMEN
YAKIMA COUNTY COURTHOUSE
YAKIMA WA

TRUCK:COUNTY ROAD
GROSS:110620 LBS TARE: 37760 LBS

MATERIAL:80 - Waved Fees/Misc.
NET LBS: 72860 LBS TIP FEE: 0.00
NET TONS: 36.43 SPEC FEE: 0.00
TAX FEE: 0.00
TOTAL FEE: 0

NOTE:
SPECIALS FEES QTY

X *[Signature]*

TERRACE HEIGHTS LANDFILL
7151 ROZA HILL DRIVE
YAKIMA, WA 98901
PHONE #:509-574-2450

R E C E I P T

TICKET #: 1022308

---IN--- ---OUT--
DATE:01/16/07 01/16/07
TIME:09:43 09:43
ID:LKB LKB

CUSTOMER:0602
COUNTY ROAD DEPARTMEN
YAKIMA COUNTY COURTHOUSE
YAKIMA WA

TRUCK:
GROSS: 79780 LBS TARE: 36160 LBS

MATERIAL:80 - Waved Fees/Misc.
NET LBS: 43620 LBS TIP FEE: 0.00
NET TONS: 21.81 SPEC FEE: 0.00
TAX FEE: 0.00
TOTAL FEE: 0

NOTE:
SPECIALS FEES QTY

x. Tommy Heebaut

TERRACE HEIGHTS LANDFILL
7151 ROZA HILL DRIVE
YAKIMA, WA 98901
PHONE #:509-574-2450

R E C E I P T

TICKET #: 1022483

---IN--- ---OUT--
DATE:01/16/07 01/16/07
TIME:15:02 15:15
ID:SHW SHW

CUSTOMER:0602
COUNTY ROAD DEPARTMEN
YAKIMA COUNTY COURTHOUSE
YAKIMA WA

TRUCK:DMSL
GROSS:102020 LBS TARE: 39060 LBS

MATERIAL:80 - Waved Fees/Misc.
NET LBS: 62960 LBS TIP FEE: 0.00
NET TONS: 31.48 SPEC FEE: 0.00
TAX FEE: 0.00
TOTAL FEE: 0

NOTE:
SPECIALS FEES QTY

[Signature]

TERRACE HEIGHTS LANDFILL
7151 ROZA HILL DRIVE
YAKIMA, WA 98901
PHONE #:509-574-2450

R E C E I P T

TICKET #: 1022332

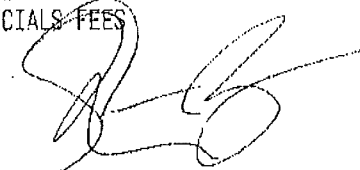
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TIME:10:14 10:27
ID:LKB SH#

CUSTOMER:0602
COUNTY ROAD DEPARTMEN
YAKIMA COUNTY COURTHOUSE
YAKIMA WA

TRUCK:DMSL
GROSS: 92680 LBS TARE: 37640 LBS

MATERIAL:80 - Waved Fees/Misc.
NET LBS: 55040 LBS TIP FEE: 0.00
NET TONS: 27.52 SPEC FEE: 0.00
TAX FEE: 0.00
TOTAL FEE: 0

NOTE:
SPECIALS FEES QTY


X _____

TERRACE HEIGHTS LANDFILL
7151 ROZA HILL DRIVE
YAKIMA, WA 98901
PHONE #: 509-574-2450

R E C E I P T

TICKET #: 1022348

---IN--- ---OUT---
DATE: 01/16/07 01/16/07
TIME: 10:31 10:46
ID: LKB SHW

CUSTOMER: 0602
COUNTY ROAD DEPARTMEN
YAKIMA COUNTY COURTHOUSE
YAKIMA WA

TRUCK: CR
GROSS: 88380 LBS TARE: 36600 LBS

MATERIAL: 80 - Waved Fees/Misc.
NET LBS: 51780 LBS TIP FEE: 0.00
NET TONS: 25.89 SPEC FEE: 0.00
TAX FEE: 0.00
TOTAL FEE: 0

NOTE:
SPECIALS FEES QTY

X _____



CITY OF YAKIMA
WASTEWATER DIVISION
2220 East Viola
Yakima, Washington 98901
Phone: 575-6077 • Fax (509) 575-6116

Fax

To: Stephen Spencer	From: Arlene Carter, Environmental Analyst
Fax: (253) 369-6228	Pages: 8 9
Phone: (253) 921-7059	Date: 1/11/2007
Re: Application for Authorization to Discharge	

Urgent **For Review** **Please Comment** **Please Reply** **Please Recycle**

Stephen,

Please call me if you have any questions concerning the "Authorization to Discharge". If you need assistance and I am not available, please contact Scott Schafer, Assistant Manager Wastewater, at 575-6077.

Please contact Gary Hill on Tuesday, January 16th at 728-4233 for the manhole/discharge location.

I've adjusted the invoice to \$510.53.

Thanks,

Arlene Carter





CITY OF YAKIMA
WASTEWATER DIVISION
2220 East Viola
Yakima, Washington 98901
Phone: 575-6077 • Fax (509) 575-6116

YAKIMA COUNTY PUBLIC WORKS
Yakima County Parcel: 181309-21004
INVOICE

AUTHORIZATION TO DISCHARGE (TEMPORARY)

AUTHORIZATION: Discharge volume up to 15,000 gallons.

* All flow shall be subjected to strong waste charges if applicable. All costs associated with any sampling and testing shall be the responsibility of the permittee.

LOCATION: 5961 West Powerhouse Road
Yakima, WA 98902

Dewatering excavation site

DISCHARGE LOCATION: City of Yakima Sectional Map W47 MH 64B

SITE GENERAL CONTRACTOR: Cascade Bridge
14215 NW 3rd Court
Vancouver, WA 98685

COST: \$510.50

MAILING ADDRESS: Mr. Stephen Spencer
Environmental Management Services
PO Box 153
Fox Island, WA 98333

payment received
1/11/2007
Chk # 3960
\$ 510.50

\$510.50 (S233 WDP)

Invoice is for the "Authorization to Discharge".





CITY OF YAKIMA
WASTEWATER DIVISION
2220 East Viola
Yakima, Washington 98901
Phone: 575-6077 • Fax (509) 575-6116

Authorization To Discharge
Temporary Discharge
January 16, 2007 – January 31, 2007

In accordance with the provisions of City of Yakima Municipal Code 7.65 SEWER USE AND PRETREATMENT REGULATIONS,

Project name and site location: **Yakima County Parcel: 181309-210004**
5961 West Powerhouse Road
Yakima, WA 98902

Discharge site location: **Manhole 64B Quarter Section W47 according to the City of Yakima's Sectional Map (along Powerhouse Road).**

Mailing Address: **Stephen Spencer**
Environmental Management Services, LLC
PO Box 153
Fox Island, WA 98402

is hereby authorized to discharge **groundwater which may contain trace amounts of heavy oil / motor oil contamination from dewatering excavation** from the above identified location into the City of Yakima's sewer system in accordance with the effluent limitations, monitoring requirements, and other conditions set forth in this authorization.

Amount Discharged: ***Up to 15,000 gallons**

Flow volumes are required to be metered, calculated according to the flow rate and length of time of the discharge, or determined by tanker capacity. The entire flow shall be subjected to strong waste charges if applicable.

By the issuance of this authorization to discharge, the City of Yakima has permission and the right, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this authorization to discharge;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this authorization to discharge;



3. Inspect at reasonable times any facilities, equipment (including monitoring and equipment), practices, or operations regulated or required under this authorization to discharge;
4. Sample or monitor, for the purposes of assuring authorization to discharge compliance, any substances or parameters at any location; and
5. Inspect any production, manufacturing, fabricating or storage area where pollutants, regulated under the authorization to discharge, could originate, be stored, or be discharged to the sewer system.

In the event any discharger declines to allow access to the discharger's premises for inspection, monitoring, or sampling, the Wastewater Manager shall not enter such premises without first obtaining a duly issued judicial warrant.

Refusal of such permission shall be sufficient grounds for termination of this authorization to discharge and the right to discharge to the City of Yakima's POTW.

SPECIAL CONDITIONS

1. Discharge volumes are to be metered, calculated according to the flow rate, or determined by tanker capacity.
2. Supernatant shall be treated prior to discharge, such that the discharge does not exceed the local limit of **100 mg/L** for *fat, oil, and grease.
3. Supernatant shall be treated prior to discharge, such that the discharge does not exceed the set limit of **300 mg/L** for *total suspended solids.

* All costs associated with sampling and testing shall be the responsibility of the permittee. All flow shall be subjected to strong waste charges if applicable.

Unless authorized by this authorization to discharge, no person shall discharge or cause to be discharged to the publicly owned treatment plant (POTW), directly or indirectly, any pollutant or wastewater which will cause interference or pass through. No discharger shall discharge or cause to be discharged to the POTW, directly or indirectly, any of the pollutants outlined in Section 7.65.060 B. of the City of Yakima's Municipal Code including but not limited to:

1. Any liquids, solids or gases which by reason of their nature or quantity are, or may be, sufficient either alone or by interaction to cause fire or explosion or to be injurious in any other way to the operation of the POTW, including, but not limited to, wastestreams with a closed cup flashpoint of less than one hundred forty degrees

Fahrenheit or sixty degrees Centigrade using the test methods specified in 40 CFR 261.21. At no time shall two successive readings on a combustible gas meter, at the point of discharge into the system (or at any point in the system), be over five percent, nor any single reading over ten percent of the lower explosive limit (LEL) of the meter. Prohibited materials include, but are not limited to, gasoline, fuel oil, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides, sulfides and any other substances which are a fire hazard or hazard to the POTW.

2. Solid or viscous substances in quantities or of such size that they will or may cause reduction of the effective cross-sectional area of a sewer, obstruction to the flow in a sewer, or other interference with the operation of the POTW. In no case may solids greater than one-fourth inch in any dimension be discharged to the POTW.
3. Any wastewater having a pH less than 5.5 or higher than 12.0, or having any other corrosive property capable of causing damage or hazard to structures, equipment or personnel of the system.
4. Any wastewater having a biochemical oxygen demand (BOD) of more than three hundred (300) mg/L.
5. Any wastewater having a total suspended solids (TSS) content of more than three hundred (300) mg/L.
6. Any wastewater having a chlorine demand of more than twenty (20) mg/L.
7. Any wastewater having an animal/vegetable (polar) based floatable oil, fat waste, oil or grease (whether or not emulsified), hexane or ether-soluble matter content in excess of one hundred mg/L; or a mineral/petroleum (non-polar) based oil or grease (whether or not emulsified), hexane or ether-soluble matter content in excess of one hundred mg/L; or any petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through; or any substance which may solidify or become discernibly viscous at temperatures above zero degrees Centigrade (thirty-two degrees F).
8. Any wastewater containing pollutants in sufficient quantity or concentration, either singly or by interaction, to injure or interfere with any wastewater treatment process, constitute a hazard to humans or animals, or to exceed the limitation set forth in categorical pretreatment standards, or state or local standards.
9. Any pollutants which result in the presence of toxic, noxious or malodorous liquids, gases, vapors, fumes or solids within the POTW in a quantity that which either singly or by intersection are capable of creating a public nuisance or hazard to life or causing acute worker health and safety problems, or are sufficient to prevent entry into the sewers for their maintenance and repair.

10. Any substance which may cause the POTW's effluent or treatment residues, biosolids or scums, to be unsuitable for reclamation and reuse or to interfere with the reclamation process. In no case shall a substance be discharged to the POTW that, either alone or in combination with other discharges, will cause the POTW to be in noncompliance with biosolids use or disposal criteria, guidelines or regulations developed under Section 405 of the Act; or with any criteria, guidelines or regulations affecting biosolids use or disposal developed pursuant to the Solid Waste Disposal Act, 42 U.S.C. 6901 et seq., as now or as it may be amended, the Clean Air Act, 42 U.S.C. 7401 et seq., as now or as it may be amended, the Toxic Substances Control Act (TSCA), 15 U.S.C. 2601 et seq., as now or as it may be amended, or similar state statutes or regulations applicable to the biosolids management method being used.
11. Any substance that will cause the POTW to violate its NPDES and/or other disposal system permits.
12. Any wastewater which imparts color which cannot be removed by the treatment process, such as, but not limited to, dye wastes and vegetable tanning solutions, which consequently imparts color to the treatment plant's effluent thereby violating the city's NPDES permit. Color, alone or in combination with turbidity, shall not cause the treatment plant effluent to reduce the depth of the compensation point for photosynthetic activity by more than ten percent from the seasonably established norm for aquatic life.
13. Any slugload, which shall mean any pollutant, including oxygen demanding pollutants (BOD, etc.), released in a single extraordinary discharge episode of such volume or strength as to cause a violation of this chapter, including, but not limited to, the following: interference to the POTW, or flowrate exceeding the permitted peak flow, or ten percent of the capacity of the available trunk sewer, whichever is greater.
14. Any sludges, screenings or other residues from the pretreatment of industrial wastewater discharges.
15. Any wastewater containing any radioactive wastes or isotopes of such half-life or concentration as exceed limits established by the city in compliance with applicable state or federal regulations.
16. Any wastewater which causes a hazard to human life or creates a public nuisance.
17. Any medical wastes.
18. Any wastewater causing the treatment plant's effluent to fail a toxicity test.
19. Any wastes containing detergents, surface active agents, or other substances in such concentrations that they may cause excessive foaming in the POTW.

**City of Yakima
Local Limits
Daily Maximum**

<u>Material</u>	<u>Concentration (mg/L)</u>
Arsenic (As)	5.0
Barium (Ba)	100.0
Benzene	0.5
Beryllium (Be)	1.0
Cadmium (Cd)	1.0
Carbon Tetrachloride	0.5
Chlorobenzene	100.0
Chloroform	6.0
Chromium (Cr)	5.0
Copper (Cu)	2.0
o-Cresol	200.0
m-Cresol	200.0
p-Cresol	200.0
Cyanide (total) (CN)	1.5
1,4-Dichlorobenzene	7.5
1,2-Dichloroethane	0.5
1,1-Dichloroethylene	0.0
2,4-Dinitrotolulene	0.13
Ethylbenzene	1.4
Hexachlorobenzene	0.13
Hexachloro-1,3-butadiene	0.5
Lead (Pb)	1.5
Mercury (Hg)	0.2
Methylene Chloride	1.7
Methyl Ethyl Ketone	200.0
Nickel (Ni)	2.0
Nitrobenzene	2.0
Pentachlorophenol	2.0
Selenium (Se)	1.0
Silver (Ag)	5.0
Sulfides (Liquid phase)	0.50
Tetrachloroethylene	0.0
Toluene	1.4
Trichloroethylene	0.0
2,4,5-Trichlorophenol	300.0
2,4,6-Trichlorophenol	2.0
Vinyl Chloride	0.0
Xylene	1.4
Zinc (Zn)	5.0

**City of Yakima
Local Limits
Daily Maximum**

Persistent pesticides and/or pesticides regulated by the Federal Insecticide Fungicide/Rodenticide Act (FIFRA), 7 U.S.C. 136 et seq., as now or as it may be amended, including, but not limited to:

<u>Material</u>	<u>Federal EPA Toxicity Characteristic Leaching Concentration(mg/L)</u>
Aldrin	0.0
dieldrin	0.0
chlordane	0.030
2,4-D	10.000
4,4'-DDT	0.0
4,4'-DDX (p,p'-DDX)	0.0
4,4'-DDD (p,p'-TDE)	0.0
a-endosulfan-Alpha	0.0
b-endosulfan-Beta	0.0
endosulfan sulfate	0.0
endrin	0.020
endrin aldehyde	0.0
heptachlor	0.008
heptachlor epoxide	0.0
a-BHC-Alpha	0.0
b-BHC-Beta	0.0
c-BHC-(lindane)-Gamma	0.0
g-BHC-Delta	0.0
Lindane	0.400
Methoxychlor	10.000
Pyridine	5.000
Silvex	1.000
Toxaphene	0.500

All discharges authorized herein shall be consistent with the terms and conditions of this authorization. The discharge of any pollutant more frequently or at a level in excess of that authorized shall constitute a violation of this authorization. The Wastewater Manager may order the suspension of the discharge if there appears to endanger the health or welfare of persons, or to the environment, or if the discharge interferes with the operation of the POTW, or violates pretreatment limits in accordance with § 7.65.260 A. of the City of Yakima's Municipal Code.

Failure to comply with the provisions listed herein can result in authorization revocation, administrative action with penalties, civil litigation, criminal prosecution, or suspension of sewer services. Administration penalties shall be in accordance with § 7.65.240, § 7.65.380 for civil penalties, and § 7.65.400 for criminal penalties of the City of Yakima's Municipal Code.

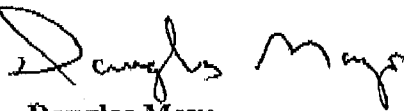
The cost associated with the authorization to discharge is in accordance with § 7.60.105 E (3) of the City of Yakima's Municipal Code.

This authorization to discharge must be posted in a conspicuous place where the discharge is taking place. The discharge will be into the City of Yakima's collection system at the site location above.

This permit shall become effective **January 16, 2007, and will expire upon completion of the project or January 31, 2007**, whichever occurs first, unless changes in the process or changes in the characteristics of the wastewater occur.

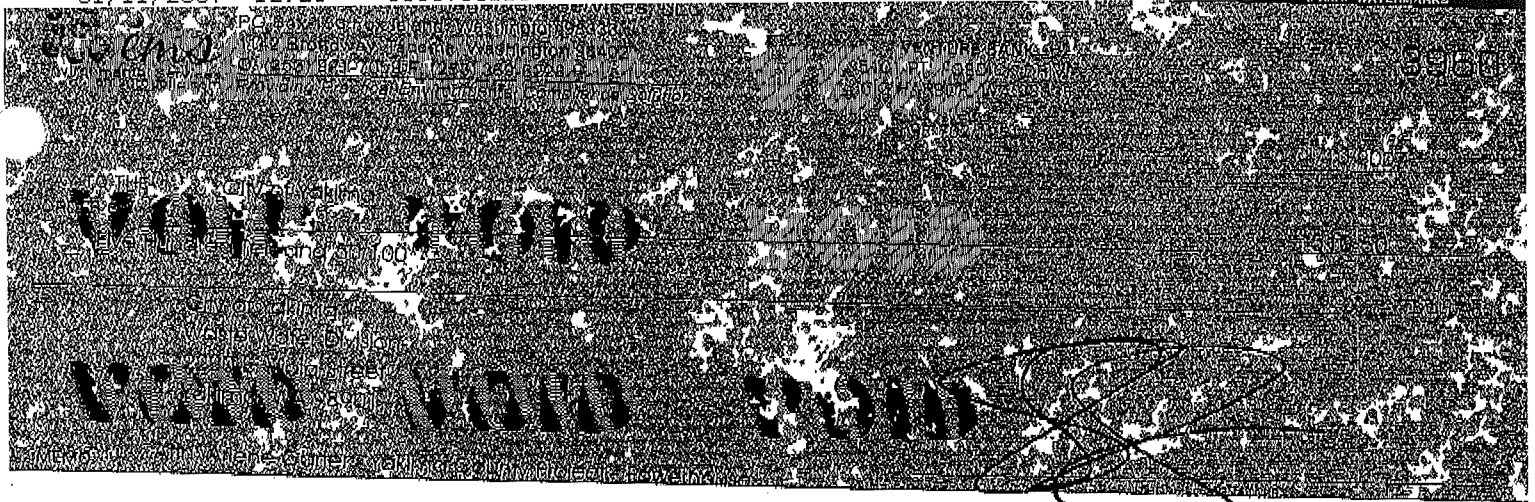
The permittee shall not discharge after this expiration date or after any changes. If the permittee wishes to continue to discharge after the expiration date, an application must be filed for re-issuance of this authorization in accordance with the requirements of the City of Yakima Municipal Code Chapter 7.65 a minimum of 90 days prior to the expiration date. If changes occur in the process, an application must be filed for re-issuance immediately of this authorization in accordance with the requirements of the City of Yakima Municipal Code Chapter 7.65.

By:

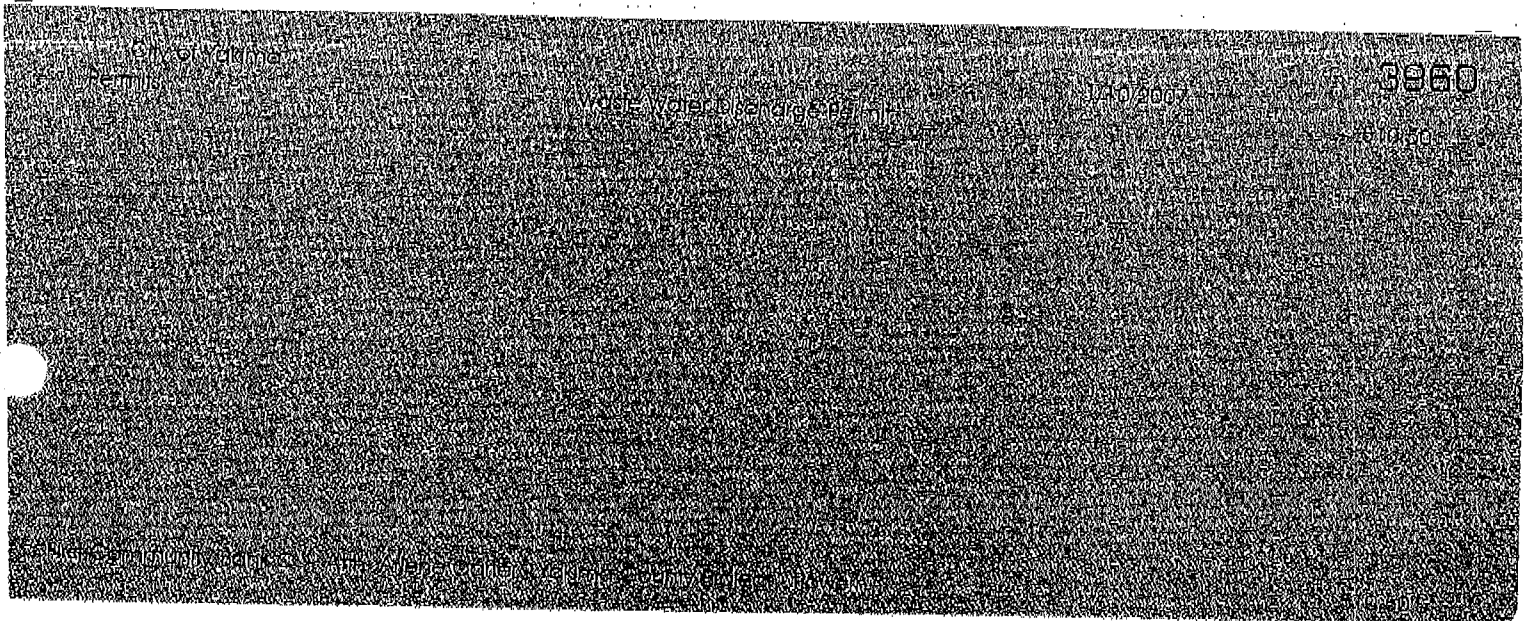


Douglas Mayo
Wastewater Division Manager

Issued: January 11, 2007



003960 1251076710377000385





CITY OF YAKIMA
WASTEWATER DIVISION
2220 East Viola
Yakima, Washington 98901
Phone: 575-6077 • Fax (509) 575-6116

Fax

To: Stephen Spencer **From:** Arlene Carter, Environmental Analyst

Fax: (253) 369-6228 **Pages:** 8 9

Phone: (253) 921-7059 **Date:** 1/11/2007

Re: Application for Authorization to Discharge

Urgent **For Review** **Please Comment** **Please Reply** **Please Recycle**

Stephen,

Please call me if you have any questions concerning the "Authorization to Discharge". If you need assistance and I am not available, please contact Scott Schafer, Assistant Manager Wastewater, at 575-6077.

Please contact Gary Hill on Tuesday, January 16th at 728-4233 for the manhole/discharge location.

I've adjusted the invoice to \$510.53.

Thanks,

Arlene Carter





CITY OF YAKIMA
WASTEWATER DIVISION
2220 East Viola
Yakima, Washington 98901
Phone: 575-6077 • Fax (509) 575-6116

YAKIMA COUNTY PUBLIC WORKS
Yakima County Parcel: 181309-21004
INVOICE

AUTHORIZATION TO DISCHARGE (TEMPORARY)

AUTHORIZATION: Discharge volume up to 15,000 gallons.

* All flow shall be subjected to strong waste charges if applicable. All costs associated with any sampling and testing shall be the responsibility of the permittee.

LOCATION: 5961 West Powerhouse Road
Yakima, WA 98902

Dewatering excavation site

DISCHARGE LOCATION: City of Yakima Sectional Map W47 MH 64B

SITE GENERAL CONTRACTOR: Cascade Bridge
14215 NW 3rd Court
Vancouver, WA 98685

COST: \$510.50

MAILING ADDRESS: Mr. Stephen Spencer
Environmental Management Services
PO Box 153
Fox Island, WA 98333

\$510.50 (S233 WDP)

Invoice is for the "Authorization to Discharge".

*payment received
1/11/2007
Chk # 3960
\$ 510.50*





CITY OF YAKIMA
WASTEWATER DIVISION
2220 East Viola
Yakima, Washington 98901
Phone: 575-6077 • Fax (509) 575-6116

Authorization To Discharge
Temporary Discharge
January 16, 2007 – January 31, 2007

In accordance with the provisions of City of Yakima Municipal Code 7.65 SEWER USE AND PRETREATMENT REGULATIONS,

Project name and site location: **Yakima County Parcel: 181309-210004**
5961 West Powerhouse Road
Yakima, WA 98902

Discharge site location: **Manhole 64B Quarter Section W47 according to the City of Yakima's Sectional Map (along Powerhouse Road).**

Mailing Address: **Stephen Spencer**
Environmental Management Services, LLC
PO Box 153
Fox Island, WA 98402

is hereby authorized to discharge **groundwater which may contain trace amounts of heavy oil / motor oil contamination from dewatering excavation** from the above identified location into the City of Yakima's sewer system in accordance with the effluent limitations, monitoring requirements, and other conditions set forth in this authorization.

Amount Discharged: ***Up to 15,000 gallons**

Flow volumes are required to be metered, calculated according to the flow rate and length of time of the discharge, or determined by tanker capacity. The entire flow shall be subjected to strong waste charges if applicable.

By the issuance of this authorization to discharge, the City of Yakima has permission and the right, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this authorization to discharge;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this authorization to discharge;

3. Inspect at reasonable times any facilities, equipment (including monitoring and equipment), practices, or operations regulated or required under this authorization to discharge;
4. Sample or monitor, for the purposes of assuring authorization to discharge compliance, any substances or parameters at any location; and
5. Inspect any production, manufacturing, fabricating or storage area where pollutants, regulated under the authorization to discharge, could originate, be stored, or be discharged to the sewer system.

In the event any discharger declines to allow access to the discharger's premises for inspection, monitoring, or sampling, the Wastewater Manager shall not enter such premises without first obtaining a duly issued judicial warrant.

Refusal of such permission shall be sufficient grounds for termination of this authorization to discharge and the right to discharge to the City of Yakima's POTW.

SPECIAL CONDITIONS

1. Discharge volumes are to be metered, calculated according to the flow rate, or determined by tanker capacity.
2. Supernatant shall be treated prior to discharge, such that the discharge does not exceed the local limit of 100 mg/L for *fat, oil, and grease.
3. Supernatant shall be treated prior to discharge, such that the discharge does not exceed the set limit of 300 mg/L for *total suspended solids.

* All costs associated with sampling and testing shall be the responsibility of the permittee. All flow shall be subjected to strong waste charges if applicable.

Unless authorized by this authorization to discharge, no person shall discharge or cause to be discharged to the publicly owned treatment plant (POTW), directly or indirectly, any pollutant or wastewater which will cause interference or pass through. No discharger shall discharge or cause to be discharged to the POTW, directly or indirectly, any of the pollutants outlined in Section 7.65.060 B. of the City of Yakima's Municipal Code including but not limited to:

1. Any liquids, solids or gases which by reason of their nature or quantity are, or may be, sufficient either alone or by interaction to cause fire or explosion or to be injurious in any other way to the operation of the POTW, including, but not limited to, wastestreams with a closed cup flashpoint of less than one hundred forty degrees

Fahrenheit or sixty degrees Centigrade using the test methods specified in 40 CFR 261.21. At no time shall two successive readings on a combustible gas meter, at the point of discharge into the system (or at any point in the system), be over five percent, nor any single reading over ten percent of the lower explosive limit (LEL) of the meter. Prohibited materials include, but are not limited to, gasoline, fuel oil, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides, sulfides and any other substances which are a fire hazard or hazard to the POTW.

2. Solid or viscous substances in quantities or of such size that they will or may cause reduction of the effective cross-sectional area of a sewer, obstruction to the flow in a sewer, or other interference with the operation of the POTW. In no case may solids greater than one-fourth inch in any dimension be discharged to the POTW.
3. Any wastewater having a pH less than 5.5 or higher than 12.0, or having any other corrosive property capable of causing damage or hazard to structures, equipment or personnel of the system.
4. Any wastewater having a biochemical oxygen demand (BOD) of more than three hundred (300) mg/L.
5. Any wastewater having a total suspended solids (TSS) content of more than three hundred (300) mg/L.
6. Any wastewater having a chlorine demand of more than twenty (20) mg/L.
7. Any wastewater having an animal/vegetable (polar) based floatable oil, fat waste, oil or grease (whether or not emulsified), hexane or ether-soluble matter content in excess of one hundred mg/L; or a mineral/petroleum (non-polar) based oil or grease (whether or not emulsified), hexane or ether-soluble matter content in excess of one hundred mg/L; or any petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through; or any substance which may solidify or become discernibly viscous at temperatures above zero degrees Centigrade (thirty-two degrees F).
8. Any wastewater containing pollutants in sufficient quantity or concentration, either singly or by interaction, to injure or interfere with any wastewater treatment process, constitute a hazard to humans or animals, or to exceed the limitation set forth in categorical pretreatment standards, or state or local standards.
9. Any pollutants which result in the presence of toxic, noxious or malodorous liquids, gases, vapors, fumes or solids within the POTW in a quantity that which either singly or by intersection are capable of creating a public nuisance or hazard to life or causing acute worker health and safety problems, or are sufficient to prevent entry into the sewers for their maintenance and repair.

10. Any substance which may cause the POTW's effluent or treatment residues, biosolids or scums, to be unsuitable for reclamation and reuse or to interfere with the reclamation process. In no case shall a substance be discharged to the POTW that, either alone or in combination with other discharges, will cause the POTW to be in noncompliance with biosolids use or disposal criteria, guidelines or regulations developed under Section 405 of the Act; or with any criteria, guidelines or regulations affecting biosolids use or disposal developed pursuant to the Solid Waste Disposal Act, 42 U.S.C. 6901 et seq., as now or as it may be amended, the Clean Air Act, 42 U.S.C. 7401 et seq., as now or as it may be amended, the Toxic Substances Control Act (TSCA), 15 U.S.C. 2601 et seq., as now or as it may be amended, or similar state statutes or regulations applicable to the biosolids management method being used.
11. Any substance that will cause the POTW to violate its NPDES and/or other disposal system permits.
12. Any wastewater which imparts color which cannot be removed by the treatment process, such as, but not limited to, dye wastes and vegetable tanning solutions, which consequently imparts color to the treatment plant's effluent thereby violating the city's NPDES permit. Color, alone or in combination with turbidity, shall not cause the treatment plant effluent to reduce the depth of the compensation point for photosynthetic activity by more than ten percent from the seasonably established norm for aquatic life.
13. Any slugload, which shall mean any pollutant, including oxygen demanding pollutants (BOD, etc.), released in a single extraordinary discharge episode of such volume or strength as to cause a violation of this chapter, including, but not limited to, the following: interference to the POTW, or flowrate exceeding the permitted peak flow, or ten percent of the capacity of the available trunk sewer, whichever is greater.
14. Any sludges, screenings or other residues from the pretreatment of industrial wastewater discharges.
15. Any wastewater containing any radioactive wastes or isotopes of such half-life or concentration as exceed limits established by the city in compliance with applicable state or federal regulations.
16. Any wastewater which causes a hazard to human life or creates a public nuisance.
17. Any medical wastes.
18. Any wastewater causing the treatment plant's effluent to fail a toxicity test.
19. Any wastes containing detergents, surface active agents, or other substances in such concentrations that they may cause excessive foaming in the POTW.

City of Yakima
Local Limits
Daily Maximum

<u>Material</u>	<u>Concentration (mg/L)</u>
Arsenic (As)	5.0
Barium (Ba)	100.0
Benzene	0.5
Beryllium (Be)	1.0
Cadmium (Cd)	1.0
Carbon Tetrachloride	0.5
Chlorobenzene	100.0
Chloroform	6.0
Chromium (Cr)	5.0
Copper (Cu)	2.0
o-Cresol	200.0
m-Cresol	200.0
p-Cresol	200.0
Cyanide (total) (CN)	1.5
1,4-Dichlorobenzene	7.5
1,2-Dichloroethane	0.5
1,1-Dichloroethylene	0.0
2,4-Dinitrotolulene	0.13
Ethylbenzene	1.4
Hexachlorobenzene	0.13
Hexachloro-1,3-butadiene	0.5
Lead (Pb)	1.5
Mercury (Hg)	0.2
Methylene Chloride	1.7
Methyl Ethyl Ketone	200.0
Nickel (Ni)	2.0
Nitrobenzene	2.0
Pentachlorophenol	2.0
Selenium (Se)	1.0
Silver (Ag)	5.0
Sulfides (Liquid phase)	0.50
Tetrachloroethylene	0.0
Toluene	1.4
Trichloroethylene	0.0
2,4,5-Trichlorophenol	300.0
2,4,6-Trichlorophenol	2.0
Vinyl Chloride	0.0
Xylene	1.4
Zinc (Zn)	5.0

**City of Yakima
Local Limits
Daily Maximum**

Persistent pesticides and/or pesticides regulated by the Federal Insecticide Fungicide Rodenticide Act (FIFRA), 7 U.S.C. 136 et seq., as now or as it may be amended, including, but not limited to:

Material	Federal EPA Toxicity Characteristic Leaching Concentration(mg/L)
Aldrin	0.0
dieldrin	0.0
chlordane	0.030
2,4-D	10.000
4,4'-DDT	0.0
4,4'-DDX (p,p'-DDX)	0.0
4,4'-DDD (p,p'-TDE)	0.0
a-endosulfan-Alpha	0.0
b-endosulfan-Beta	0.0
endosulfan sulfate	0.0
endrin	0.020
endrin aldehyde	0.0
heptachlor	0.008
heptachlor epoxide	0.0
a-BHC-Alpha	0.0
b-BHC-Beta	0.0
c-BHC-(lindane)-Gamma	0.0
g-BHC-Delta	0.0
Lindane	0.400
Methoxychlor	10.000
Pyridine	5.000
Silvex	1.000
Toxaphene	0.500

All discharges authorized herein shall be consistent with the terms and conditions of this authorization. The discharge of any pollutant more frequently or at a level in excess of that authorized shall constitute a violation of this authorization. The Wastewater Manager may order the suspension of the discharge if there appears to endanger the health or welfare of persons, or to the environment, or if the discharge interferes with the operation of the POTW, or violates pretreatment limits in accordance with § 7.65.260 A. of the City of Yakima's Municipal Code.

Failure to comply with the provisions listed herein can result in authorization revocation, administrative action with penalties, civil litigation, criminal prosecution, or suspension of sewer services. Administration penalties shall be in accordance with § 7.65.240, §7.65.380 for civil penalties, and § 7.65.400 for criminal penalties of the City of Yakima's Municipal Code.

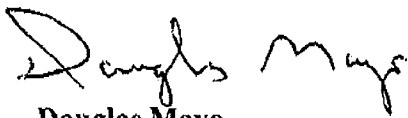
The cost associated with the authorization to discharge is in accordance with § 7.60.105 E (3) of the City of Yakima's Municipal Code.

This authorization to discharge must be posted in a conspicuous place where the discharge is taking place. The discharge will be into the City of Yakima's collection system at the site location above.

This permit shall become effective **January 16, 2007, and will expire upon completion of the project or January 31, 2007**, whichever occurs first, unless changes in the process or changes in the characteristics of the wastewater occur.

The permittee shall not discharge after this expiration date or after any changes. If the permittee wishes to continue to discharge after the expiration date, an application must be filed for re-issuance of this authorization in accordance with the requirements of the City of Yakima Municipal Code Chapter 7.65 a minimum of 90 days prior to the expiration date. If changes occur in the process, an application must be filed for re-issuance immediately of this authorization in accordance with the requirements of the City of Yakima Municipal Code Chapter 7.65.

By:



Douglas Mayo
Wastewater Division Manager

Issued: January 11, 2007

January 8, 2007

Waste Water Characterization

Project: Petroleum Hydrocarbon Contaminated Soil & Groundwater Remediation
Site: West Powerhouse Road, Yakima, Washington
Parcel: 181309-21004 5961

During a June 2006 underground storage tank (UST) closure, both olfactory and visual indications of a petroleum release were observed in soil and groundwater. Chemical analysis of soil and groundwater collected during the UST closure was completed using Washington Department of Ecology Model Toxic Control Act (MTCA) specific sampling techniques and analytical methodologies. Analytical results reported that one soil sample (S6-SP1) and one groundwater sample (S10-H2O) tested positive for heavy oil / motor oil range petroleum hydrocarbons (c24 to c36). An additional groundwater sample was collected and additional analysis was completed in December 2006. The additional analysis included chlorinated solvents, priority metals (lead, arsenic, cadmium, chromium and mercury) and Polychlorinated Biphenyls (PCBs).

Based on the reported heavy oil / motor oil groundwater impact exceeding MTCA cleanup criteria, EMS recommends that the UST excavation be dewatered with the intent to remove any impacted groundwater from within the excavation. Impacted water will be transported off site for recycling and/or disposal at a licensed treatment facility.



Libby Environmental, Inc.

4139 Libby Road N.E., Olympia, WA 98506-2518

January 5, 2007

Stephen Spencer
Environmental Management Services, LLC
652 8th Avenue
Fox Island, WA 98333

Dear Mr. Spencer:

Please find enclosed the analytical data report for the Yakima Project located in Yakima, Washington. Water samples were analyzed for PCB's by EPA Method 8082, VOC's by EPA Method 8260, and Metals by EPA Method 7000 Series on December 24 & 28, 2006.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
President
Libby Environmental, Inc.

Phone (360) 352-2110 * Fax (360) 352-4154 * libbyenv@aol.com

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

YAKIMA PROJECT
 Yakima, Washington
 EMS, Inc.
 Libby Env. Project No. L061221-8

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN WATER

Sample Description	Method	EX1-3	EX1-4
	Blank		
Date Sampled	Reporting	N/A	12/22/06
Date Analyzed	Limits	12/24/06	12/24/06
	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	2.0	nd	nd
Chloromethane	2.0	nd	nd
Vinyl chloride *	0.2	nd	nd
Bromomethane	2.0	nd	nd
Chloroethane	2.0	nd	nd
Trichlorofluoromethane	2.0	nd	nd
1,1-Dichloroethene	2.0	nd	nd
Methylene chloride	1.0	nd	nd
<i>trans</i> -1,2-Dichloroethene	1.0	nd	nd
1,1-Dichloroethane	1.0	nd	nd
2,2-Dichloropropane	2.0	nd	nd
<i>cis</i> -1,2-Dichloroethene	1.0	nd	nd
Chloroform	1.0	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd
Carbon tetrachloride	1.0	nd	nd
1,1-Dichloropropene	1.0	nd	nd
Benzene	1.0	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd	nd
Trichloroethene (TCE)	1.0	nd	nd
1,2-Dichloropropane	1.0	nd	nd
Dibromomethane	1.0	nd	nd
Bromodichloromethane	1.0	nd	nd
<i>cis</i> -1,3-Dichloropropene	1.0	nd	nd
Toluene	1.0	nd	nd
<i>trans</i> -1,3-Dichloropropene	1.0	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd
1,3-Dichloropropane	1.0	nd	nd
Dibromochloromethane	1.0	nd	nd
1,2-Dibromoethane (EDB) *	0.10	nd	nd
Chlorobenzene	1.0	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd
Ethylbenzene	1.0	nd	nd
Total Xylenes	1.0	nd	nd
Styrenes	1.0	nd	nd

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

YAKIMA PROJECT
 Yakima, Washington
 EMS, Inc.
 Libby Env. Project No. L061221-8

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN WATER

Sample Description	Method	EX1-3	EX1-4
	Blank		
Date Extracted	Reporting	N/A	12/22/06
Date Analyzed	Limits	12/24/06	12/24/06
	(ug/l)	(ug/l)	(ug/l)
Bromoform	1.0	nd	nd
Isopropylbenzene	4.0	nd	nd
1,2,3-Trichloropropane	1.0	nd	nd
Bromobenzene	1.0	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd
n-Propylbenzene	1.0	nd	nd
2-Chlorotoluene	1.0	nd	nd
4-Chlorotoluene	1.0	nd	nd
1,3,5-Trimethylbenzene	1.0	nd	nd
tert-Butylbenzene	1.0	nd	nd
1,2,4-Trimethylbenzene	1.0	nd	nd
sec-Butylbenzene	1.0	nd	nd
1,3-Dichlorobenzene	1.0	nd	nd
Isopropyltoluene	1.0	nd	nd
1,4-Dichlorobenzene	1.0	nd	nd
1,2-Dichlorobenzene	1.0	nd	nd
n-Butylbenzene	1.0	nd	nd
1,2-Dibromo-3-Chloropropane	1.0	nd	nd
1,2,4-Trichlorobenzene	2.0	nd	nd
Hexachloro-1,3-butadiene	5.0	nd	nd
Naphthalene	1.0	nd	nd
1,2,3-Trichlorobenzene	5.0	nd	nd
Surrogate Recovery			
Dibromofluoromethane	102	108	95
Toluene-d8	87.2	78.2	77.1
1,2-Dichloroethane-d4	95.5	95.6	92.2
4-Bromofluorobenzene	85.1	98.2	91.3

"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: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

YAKIMA PROJECT
 Yakima, Washington
 EMS, Inc.
 Libby Env. Project No. L061221-8

QA/QC Data - EPA 8260B Analyses

Sample Identification: OWB-2							
	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 (%)	
1,1-Dichloroethene	40	29.2	73.0	40	27.9	69.8	4.6
Benzene	40	33.3	83.3	40	31.9	79.8	4.3
Toluene	40	36.3	90.8	40	35.2	88.0	3.1
Chlorobenzene	40	40.7	101.8	40	38.5	96.3	5.6
Trichloroethene (TCE)	40	36.4	91.0	40	35.0	87.5	3.9
Surrogate Recovery							
Dibromofluoromethane			80.3			84.7	
Toluene-d8			71.0			74.8	
1,2-Dichloroethane-d4			84.6			85.6	
4-Bromofluorobenzene			82.8			75.7	
Laboratory Control Sample							
	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)				
1,1-Dichloroethene	40	30.9	77.3				
Benzene	40	28.3	70.8				
Toluene	40	31.0	77.5				
Chlorobenzene	40	33.0	82.5				
Trichloroethene (TCE)	40	31.0	77.5				
Surrogate Recovery							
Dibromofluoromethane			91.1				
Toluene-d8			75.5				
1,2-Dichloroethane-d4			86.3				
4-Bromofluorobenzene			76.1				

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

AAL Job Number: A61226-1
 Client Name: Libby Environmental
 Client Project Name: Yakima
 Date received: 12/26/06

Analytical Results		Dupl			RPD	
Metals Total (7010), mg/l		MTH BLK	LCS	EX1-1	EX1-1	EX1-1
Matrix	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	12/28/06	12/28/06	12/28/06	12/28/06	12/28/06
Date analyzed	Limits	12/28/06	12/28/06	12/28/06	12/28/06	12/28/06
Lead (Pb)	0.002	nd	114%	0.17	0.18	2%
Chromium (Cr)	0.01	nd	116%	nd	nd	
Cadmium (Cd)	0.005	nd	106%	nd	nd	
Arsenic (As)	0.005	nd	110%	0.006	0.006	7%
Mercury (Hg) (7470A)	0.0005	nd	71%	nd	nd	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

na - not analyzed

J - estimated value

Acceptable Recovery limits: 70% TO 130%

Acceptable RPD limit: 30%

AAL Job Number: A61226-1
 Client Name: Libby Environmental
 Client Project Name: Yakima
 Date received: 12/26/06

Analytical Results

8082(PCBs), µg/l		MTH BLK	LCS	EX1-2
Matrix	Water	Water	Water	Water
Date extracted	Reporting	12/28/06	12/28/06	12/28/06
Date analyzed	Limits	12/28/06	12/28/06	12/28/06
A1221	0.1*	nd		nd
A1232	0.1*	nd		nd
A1242 (A1016)	0.1*	nd		nd
A1248	0.1*	nd		nd
A1254	0.1*	nd		nd
A1260	0.1*	nd	96%	nd

Surrogate recoveries:

Tetrachloro-m-xylene	102%	96%	107%
Decachlorobiphenyl	92%	96%	99%

* - Instrument detection limits

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
 na - not analyzed
 C - coelution with sample peaks
 M - matrix interference
 J - estimated value
 Acceptable Recovery limits: 70% TO 130%
 Acceptable RPD limit: 30%

Libby Environmental, Inc.

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

Client: **FMS**

Address: **653 8th Ave F.I. WA**

Phone: **360-421-7654** Fax:

Client Project #

Chain of Custody Record

Date: **12/21/06** Page: **1** of **1**

Project Manager: **Steve Spence**

Project Name: **YAKUMA**

Location:

Collector: **SPENCE**

Date of Collection: **12/13**

Sample Number	Depth	Time	Sample Type	Container Type	Field Notes
1 EXI-1			W/D	Poly	
2 EXI-2			↓	Amber	
3 EXI-3			↓	W/D	
4 EXI-4			↓	W/D	
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					

Remarks: **STD-TAT**

Sample Receipt:
 Good Condition?
 Cold?
 Seals Intact?
 Total Number of Containers

Received by: **[Signature]** Date / Time: **12/21/06 2:00**

Received by: **[Signature]** Date / Time

Received by: **[Signature]** Date / Time

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

Attachment E

Professional Qualification

Attachment E



EMS PROFESSIONAL QUALIFICATIONS

Environmental Management Services

Environmental Management Services (EMS) is an environmental services company providing practical environmental compliance solutions to clients throughout the Northwest. EMS understands the importance of blending a variety of expertise and experience in order to provide our clients the most effective support in addressing their projects needs. Our professionals combine a high level of technical ability with a broad understanding of the overall regulatory compliance requirements.

As an environmental services and consulting company, EMS is obligated to maintain a broad understanding of the most current regulatory compliance requirements, local and state permitting requirements and our regions environmental advocacy group's positions. EMS provides our clients the services they require by offering non-biased, practical, realistic solutions while maintaining positive relations with the regulatory community.

EMS associates have completed projects including remediation design and management, facility regulatory compliance reviews, due diligence assessments, regulatory compliance training for clients throughout the northwest in all avenues of business. The diverse background of our associates complements the diverse nature of our clientele providing better understanding of our client's needs and ultimate goals for their projects.

The information in the following pages outlines our experience and capabilities in providing environmental management and consulting services.

Stephen M. Spencer Principal Environmental Scientist

- Department of Ecology Licensed Site Assessor
- State of Washington Licensed Risk Assessor
- EPA Licensed Risk Assessor

Mr. Spencer started his career in the environmental services and construction industry in 1987. During his career, Mr. Spencer has worked on and successfully completed projects in many varied aspects of the environmental industry. During the past eight years, as a Senior Project Manager, Mr. Spencer has successfully completed jobs totaling over twenty million dollars for clients throughout the Northwest. His forte is in facility assessment, due diligence investigation, health & safety program development and remediation management. Mr. Spencer has established positive working relationships with regulatory agencies throughout the northwest, affording his clients a



EMS PROFESSIONAL QUALIFICATIONS

superior level of confidence in his approach to their specific project. The majority of Mr. Spencer's remediation projects has been completed through the Washington State Department of Ecology voluntary cleanup program and ultimately received a "No Further Action" determination.

Mr. Spencer's skills as a project manager frequently result in significant savings in both time and budget to his clients. He is proficient in report writing providing a clear, concise detail of project activities including supporting documents and figures. His client's have ranged from property owners and facility operators to the regulatory agencies themselves. Mr. Spencer's overall understanding of environmental compliance requirements provides a unique perspective on assessing potential and realized environmental risk and a creative understanding of remediation technique.

James D. Coppernoll (Sub-Consultant) **Environmental Scientist / Geologist**

- Washington State Licensed Geologist and Hydrogeologist
- Department of Ecology Licensed Site Assessor

James D. Coppernoll is a Washington State licensed Geologist and Hydrogeologist with thirteen years of experience practicing environmental geology in the Northwest. During his career, Mr. Coppernoll worked with clients ranging from major oil companies and national corporations to local businesses to identify, manage, and resolve their environmental problems and helped local agencies, businesses, and individuals with their environmental, geological, and regulatory issues.

Mr. Coppernoll has conducted various environmental and geological investigations ranging from numerous Phase I Environmental Assessments to contaminated site investigations and remedial planning and implementation as well as land use and development studies in Washington, Oregon, Idaho, Montana, and Alaska, and has frequently acted as a regulatory liaison and client representative in third-party negotiations.

Mr. Coppernoll managed all phases of assessment and remediation at dozens of retail and bulk fuel facilities for major oil companies in the Northwest including: excavation and disposal of contaminated soil; free product recovery; feasibility studies; and design, installation, and operation/maintenance of in-situ soil and ground water remediation systems. Mr. Coppernoll managed many of these sites from initial assessment through remediation and closure with the state.



EMS PROFESSIONAL QUALIFICATIONS

Mr. Coppernoll has conducted geological investigations and assessments for diverse property development projects in the northwest including landfills, hot springs, and residential properties. The purpose of these assessments and investigations was to provide professional and reliable information for use in developing sensitive areas properties.

Collette Foley, B.S. Geology (Employee) Environmental Scientist / Geologist

- AHERA Licensed Building Inspector

Ms. Foley received her Bachelors degree in Geology and Environmental Science in 2003 from Pacific Lutheran University. Ms. Foley has one year of experience as a HAZMAT instructor including 40-hour and 24-hour HAZWOPER certification, 8-hour HAZWOPER refresher, 30 hour OSHA Compliance instruction and confined spaces certification. Ms. Foley has three years experience as a field geologist / hydrogeologist conducting Phase I due diligence investigations, sub-surface investigations and hydrogeologic regional characterization.

Ms. Foley's current position is as Project Hydrogeologist / Environmental Scientist. Ms. Foley performs a variety of field activities associated with drilling and installing monitoring wells, completing subsurface investigation and Phase I Environmental Site Assessments.

Deanna Donovan, B.S. Environmental Science / Marine Biology (Employee) Environmental Scientist / Technician

- Department of Ecology Licensed UST Site Assessor
- ICC Licensed UST Decommissioner

Ms. Donovan graduated from Evergreen State College in 2003 with a degree in Environmental Science and Marine Biology. Ms. Donovan worked as a research technician for an Orca field study through the Alaska Sea Life Center through September 2004. Her primary responsibilities were to serve as the master of a 28 foot research vessel, coordinate vessel operations in accordance to policies and permits, participate in the collection of behavioral data including photo identification using single lens refraction and digital cameras, record audio using a DAT recorder and hydrophone. Maintain the organization of data in field conditions.



EMS PROFESSIONAL QUALIFICATIONS

Ms. Donovan also has extensive experienced in laboratory and field techniques for the evaluation and analysis of water quality, soil and plant chemistry, and microbiology. For the past two years Ms. Donovan has worked on project including Phase I Environmental Site Assessments, Phase II Environmental Site Assessment, Underground Storage Tank Closure and Remediation Design and implementation.

Alex Flink, B.S. Geology (Employee) Environmental Scientist / Geologist

- Certified Erosion & Sediment Control Lead
- Nucleonic Density Certification

Mr. Flink has seven years provided technical support in the completion of multiple Phase I and Phase II projects including soil samples including Macro-core, SPT, D&M, Dual Tube, and grab samples, PID, sheen pan, obtain water samples using low-flow and air gap methodology with peristaltic pumps, wale pumps, and bladder pumps. Identifying areas of contaminants and/or geo-structural concerns, maintain various remediation and extraction systems, nucleonic density testing, construction monitoring, construction observation, site walks, report writing, complying with state and federal regulations,

Mr. Flink operated an auger and direct push style drill rig and limited access drill rig for soil, soil vapor, water sampling, and for in-situ bioremediation injections. Mr. Flink was also responsible for the installation and abandonment of water monitoring wells and/or sparge points including the Department of Ecology required submittals.

Kaitlyn Allegretti, B.S. Geology (Employee) Environmental Scientist / Technician

- ICC Licensed UST Decommissioner
- AHERA Licensed Building Inspector

Ms. Allegretti serves as a site manager and field technical for EMS. As a recent graduate from the University of Dayton (2005), Ms. Allegretti's primary responsibilities are field work including monitoring well sampling, underground storage tank closure and decommissioning and asbestos inspections. Ms. Allegretti was licensed as an AHERA building inspector and UST Decommissioner within the first 60 days of her employment.



EMS PROFESSIONAL QUALIFICATIONS

Mary Lofffield, M.S. Environmental Science (Contract Employee) Environmental Scientist

- Department of Ecology Licensed UST Site Assessor
- AHERA Licensed Building Inspector

Mary Lofffield is a soil scientist trained in the assessment, research and design, and field implementation of bioremediation solutions for site clean-up. She has had five years of experience designing supervising remediation projects in the Pacific Northwest. Ms. Lofffield also has extensive experienced in laboratory and field techniques for the evaluation and analysis of water quality, soil and plant chemistry, and microbiology. She specializes in soil and plant remediation (phytoremediation).

Working through the voluntary clean up program Ms. Lofffield has successfully used bioremediation strategies she developed and tested in the laboratory and greenhouse in the field. She successfully used soil amendments to sequester and degrade pollutants in the soil, preventing them from harming human health and the environment. Research into phytoremediation (plant remediation) resulted in field projects using trees to take up and degrade chlorinated solvents and using rhizosphere (rooting zone) remediation to degrade hydrocarbons. Ms. Lofffield's extensive understanding of environmental chemistry and risk assessment as well as her knowledge of passive remediation strategies offer another approach site investigations and cleanups under the Model Toxics Control Act (MTCA) and corrective Action under RCRA/Dangerous Waste.

Jason G. Cook, M.S. Geology, M.S. Geography (Contract Employee) Licensed Geologist / Environmental Scientist

- State of Washington Licensed Geologist
- State of Oregon Licensed Geologist
- AHERA Licensed Building Inspector

Jason G. Cook is a Registered Geologist (#G1990) in Oregon with pending reciprocity in Washington, Illinois and Florida. Mr. Cook's educational background is concentrated in the disciplines of geology and geography, at both the undergraduate and graduate levels, focusing in environmental and engineering geology. Mr. Cook has been working in the environmental industry for approximately six years primarily in the Seattle and Portland markets, with experience ranging from *due diligence*, geotechnical and environmental fieldwork to project management and client-relations/marketing, creating a unique, diverse and multiple skills set.



EMS PROFESSIONAL QUALIFICATIONS

As Project Manager for a national environmental consulting firm, the design, coordination, implementation and management of large-scale environmental projects, (i.e. gasoline station/UST decommissioning and subsequent monitoring) was often implemented, specifically requiring the ability to work with a diverse, multi-disciplinary work group, ranging from engineers to excavators, assuring that the project meets budget/time restraints and achieving client expectations, while adhering to a stringent health and safety protocol as well as any applicable local, state and federal environmental regulatory standards/requirements.

Mr. Cook is well versed in the areas of *due diligence* and field activities, including conducting Phase I and Phase II Environmental Site Assessments, wetland assessments/delineations, asbestos surveys, soil and groundwater sampling, well installation, soil compaction analysis, storm water sampling and permitting, GIS map construction, statistical analysis and presentation, spreadsheet construction, soil classification and geotechnical laboratory analysis.

David R. Polivka, M.S. Geology (Sub-Consultant) **Licensed Geologist & Hydrogeologist / Environmental Scientist**

- State of Washington Licensed Geologist
- State of Washington Licensed Hydrogeologist

David Polivka is a Geologist/Hydrogeologist who has over 18 years of regulatory and technical experience. He has a variety of experience to include aquifer analysis conducted at contamination sites, the design and installing of monitoring wells and soil sampling for contaminant levels. Mr. Polivka has managed site investigations and cleanups under the Model Toxics Control Act (MTCA) and Corrective Action under RCRA/Dangerous Waste. Currently, he is managing the Environmental Program for White Shield's Bellevue Office.

Mr. Polivka was the project manager for Phase I ESAs and transaction screens of various commercial and industrial properties throughout Washington, including the Puget Sound Central Link Light Rail Project. Tasks included site reconnaissance, environmental records review, and historical records review.

As a Senior Project Manager, Mr. Polivka has supervised subsurface investigations at several sites to assess the lateral and vertical extent of contaminants in the soil and groundwater. The investigations included drilling and installation of monitoring wells, soil and groundwater sampling, groundwater monitoring, data analyses and technical report writing.

